SALLY WALTHAM
BA (Hons) F.C.I.H.
Director of Housing & Planning Services

Housing and Planning
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Council Offices,
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FILE COPY

SOUTH HOLLAND DISTRICT COUNCIL
HOUSING & PLANNING SERVICES DEPARTMENT

Application no: H04/1157/00

Original Applicant:
Conservatories & Windows Direct
Birds Drove
Surfleet
Spalding, Lincs. PE11 4BE

Original Agent:
Alan Hornsby Architectural Svc
Little Acre
Peak Hill
Cowbit
Spalding, Lincs. PE12 6AW

Description: Change of use from agricultural grain store to fabrication of windows and conservatories.

Location: The Grainstore
Days Lane
Bicker Road
Donington

Amendment: Revised site plan showing temporary portacabin offices
Dwg. no. 00/42/01A

25-JAN-01

Dear Sir/Madam

TOWN AND COUNTRY PLANNING ACT 1990
PROPOSED AMENDMENT

The amended details submitted in respect of the above proposal have been received and I consider that the changes are too significant to be treated merely as a amendment. A fresh application will therefore be required (forms enclosed). This does not imply that premission will or will not be forthcoming for any such revised application.

Yours faithfully

Director of Housing and Planning Services

AMENDMENT RECORD SHEET - POST DECISION

Admin

Validation:

Inadequate/Inappropriate ☐

Appears valid ☑ KP

Clarification/Details required:

Registered 8.1.01

DC Procedural Assessment

Is the information given correct? Yes/~~No (If No, state above what details are needed)~~

Is it an amendment in principle? ~~Immaterial~~/Needs new app

Confirmed: 11-1-01

Give a revised description if the details accepted are different to the submission:

Acceptance issued: ✓ 1/11

PLANNING AMENDMENT

For office use only

Application No. 20 DEC 2000

Date Registered H04/1157/00/1

Case Officer PJU

1. Please complete in block letters

NAME AND ADDRESS OF APPLICANT

Conservatories + Windows
Birds Drove
Surfleet

Tel. No.

NAME AND ADDRESS OF AGENT
(if form completed by agent)

Tel. No. (Contact)

Please complete in block letters

FULL POSTAL ADDRESS OF THE APPLICATION SITE

The Grainstore, Days Lane, Donington

Please complete

APPLICATION No.

This amendment **cannot be considered** unless the relevant reference is stated

H04/1157/00

Building Regulation reference relating to same development (if any)

OFFICE COPY

2. Please tick **one** box only

A — Amendment is proposed where permission already granted ☑
If yes, submit two forms and two plans.

or

B — Amendment is to a proposal currently being considered ☐
If yes, submit four forms and four plans.

Please complete

I attach the necessary plans and request that the changes described below be accepted as an amendment. I understand that the Council may require a fresh application, together with fee if appropriate. If the amendment relates to a current application, I agree to an extension of the terminal date.

Signed ..... Date .....

3. Please complete in block letters

FULL DESCRIPTION OF DEVELOPMENT IN ORIGINAL APPLICATION

COU of grainstore to fabrications of windows + conservatories

State details of amendments proposed

(Give a full detailed list of the changes, and also mark these clearly on the accompanying plans. Only the changes listed here will be considered.)

Revised Site Plan showing temporary Portakabin offices

State drawing no's of the current submission

Has this amendment been requested by the Council? (If so, state Officer dealing with the application)

YES / NO

Describe any part of the original development which is excluded by virtue of the amendment, and state any alteration to plot numbers

Has a similar amendment been submitted under Building Regulations? Yes / No

Alan Hornsby
Architectural Services

Little Acre, Peak Hill, Cowbit,
Spalding, Lincs. PE12 6AW
Tel: Holbeach (01406) 380591
Fax: 01406 380591

South Holland District Council
Housing and Planning Services Department
Council Offices
Priory Road
SPALDING Lincs
PEII 2XE

Your ref. H04/1157/00
Date 19th December 2000

For the attention of Peter Udy

RE: PROPOSED DEVELOPMENT FOR CONSERVATORIES & WINDOWS DIRECT

Dear Peter,

Further to our recent telephone conversation regarding the above, I enclose 2 copies of a revised site plan showing the location of the temporary portakabin offices for your comments. Also indicated on this drawing is the proposed phasing of the works.

I confirm that a condition compliance has been submitted showing the proposed alterations to the building.

Yours faithfully

Alan Hornsby

A1

1157/00

SOUTH HOLLAND DC
HOUSING & PLANNING
24 OCT 2000
Ref:

Acoustic Associates

Environmental Noise Assessment of

Proposed Change of use of Existing Grain Store

Into Workshop and Offices dealing with the

Fabrication of Windows and Conservatories.

Client: CONSERVATORIES & WINDOWS DIRECT
Birds Drove
Surfleet
Spalding
Lincolnshire
PE11 4BE

Report No: TM/J664/6751

Author: T Marshall AMIOA

Date: October 2000

ACOUSTIC ASSOCIATES (PETERBOROUGH)
7A Flag Business Exchange, Vicarage Farm Road, Peterborough, PE1 5TX.
Tel: 01733 896346 Fax: 01733 567779 e-mail: Acoustic.Associates@btinternet.com

SUMMARY

Conservatories & Windows Direct propose to move to larger premises which entails a change of use of existing Grain Store into Workshop and Offices dealing with the fabrication of windows and conservatories. In support of the planning application, South Holland District Council (SHDC) have requested that a noise assessment is carried out to ensure that noise levels associated with the change of use does not give rise to noise complaints from nearby residents.

Noise levels associated with the fabrication of windows and conservatories were measured at the existing premises. This data was used to calculate the noise at the proposed site. The predictions show that with the proposed site / building layout (as indicated in Figure 1), and operating times between 0600 and 1800 hours, noise levels at the adjacent residential property would exceed the Local Authorities noise criteria when assessed against British Standard 4142:1997.

Increasing the proposed height of the concrete block screen wall on the northern side of the premises from 2 to 2.7 metres can result in an acceptable noise situation at the nearby residential property.

CONTENTS

		Page No.
	SUMMARY	2
1.	OBJECTIVES	4
2.	CONCLUSIONS	4
3.	RECOMMENDATIONS	5
4.	BACKGROUND	6
5.	NOISE ASSESSMENT	6 - 10
6.	NOISE MITIGATION MEASURES.	11 - 12
	REFERENCES	13
APPENDIX 1	Glossary of Terms	14
APPENDIX 2	Noise Instrumentation	15
APPENDIX 3	Residual & Background Noise Levels at the Proposed Site	16 - 17
APPENDIX 4	Specific Noise Source Levels	18
APPENDIX 5	Predictions using the IMMI Software.	19 - 21
Figure 1	Location of Site and Residential Properties.	22

1. OBJECTIVES

1.1 To carry out an environmental noise assessment against British Standard 4142:1997, (Ref. 1) for the proposed change of use of existing Grain Store into Workshop and Offices dealing with the fabrication of windows and conservatories for Conservatories & Windows Direct.

1.2 To recommend solutions to any problems identified by the assessment.

2. CONCLUSIONS

2.1 Based on the noise levels within the existing Workshop; the proposed site / building layout and operating times, noise levels at the adjacent residential property would exceed the Local Authorities noise criteria when assessed against British Standard 4142:1997.

2.2 Assessing the proposed change of use of existing Grain Store into Workshop and Offices dealing with the fabrication of windows and conservatories, in accordance with British Standard 4142:1997 results in an Assessment Level of up to +8 dB*. The limit normally specified by the Local Authority is for a maximum of +5 dB.

2.3 Specific noise source levels ($L_{Aeq,T}$)* associated with the manufacture of windows and conservatories within the existing Workshop were in the region of 71 to 93.9 dB(A).

2.4 The minimum background noise levels ($L_{A90,T}$)* measured at the site during the proposed operating hours within the B.S. 4142:1997 'daytime' and 'night-time' reference periods, were 48 and 41 dB(A) respectively.

2.5 Predictions show that increasing the proposed height of the concrete block screen wall on the northern side of the premises from 2 to 2.7 metres can result in an acceptable noise situation at the nearby residential property.

*** See Appendix for 1 for Glossary of Terms.**

3. RECOMMENDATIONS

3.1 In order to meet the Local Authorities noise criteria for a maximum Assessment Level of +5 dB at the boundary of the residential properties, the height of the proposed concrete block screen wall on the northern side of the premises should be increased from 2 to a minimum of 2.7 metres.

3.2 It is recommended that the purpose built Workshop is constructed within the northern end area of the Grain Store, and the proposed Offices are located within the southern end (i.e. nearest to the residential property identified in Figure 1 as Rampart House).

3.3 Specific details of the materials to be used in the construction of the Workshop are not yet known. The assessment has been based on a stud partition construction with access doors and glazed areas, of the following construction:

Walls - stud partition 125 mm thick, 50mm x 100mm studs, 12mm insulating board both sides.

Glazed Areas - single glazed windows, thickness 6 mm, in metal frame. (Note: any glazed areas that can be opened within the Workshop will have to remain 'closed' between the hours of 0600 and 0700 hours.

Ceiling/Roof - Fibreboard sheets, thickness 12 mm, on wood framework.

Doors - Flush panel, thickness 43 mm, hollow core, normal cracks as usually hung, OR, 'Hiflex' pvc clear curtains, 400 mm wide strips x 4 mm thick, overlapped by 200 mm.

Alternatives to this construction could be used provided that the acoustic performance (sound reduction index) of the building elements are equivalent to or better than those for the above specification and as detailed below.

Building Element	Superficial weight kg/m^2	Octave Band Sound Reduction Index (SRI)							
		63	125	250	500	1K	2K	4K	8K
Walls	19	12	16	22	28	38	50	52	55
Glazing	15	17	11	24	28	32	27	35	39
Ceiling/Roof	4	10	12	16	20	24	30	31	36
Doors	9	9	12	13	14	16	18	24	26

3.4 Any additional windows required for lighting purposes, which can be 'opened', should only be fitted within the north, east and west façades of the existing Grain Store building.

4. BACKGROUND

Conservatories & Windows Direct propose to move to larger premises which entails a change of use of existing Grain Store into Workshop and Offices dealing with the fabrication of windows and conservatories. In support of the planning application, South Holland District Council (SHDC) have requested that a noise assessment against British Standard 4142:1997 (Ref. 1) is carried out to ensure that noise levels associated with the change of use does not give rise to noise complaints from nearby residents.

This report documents the results of the Noise Assessment carried out by Acoustic Associates (Peterborough) and includes the residential properties identified in Figure 1 as 'Rampart House' (to the south of the site) and 'Ashcroft' (northeast of the site).

5. NOISE ASSESSMENT

5.1 Noise Instrumentation.

The noise measurements were carried out using Precision (type 1) integrating sound level meters, the calibration of which were checked before and after the measurements. Details of all the instrumentation used are given in Appendix 2.

5.2 Existing Background and Ambient Noise At The Site

Background and Ambient noise levels were monitored at the proposed site between the hours of 06:00 on Friday 6th October and 13:00 hours on Monday 9th October 2000. Between the hours of 06:00 and 07:00 hours on the morning of Friday 6th October, noise measurements were taken over 5 minute periods at Locations [1] and [2] as identified in Figure 1. Between the hours of 07:00 on Friday 6th October and 13:00 hours on Monday 9th October, noise levels were continuously monitored over 1 hour periods at Location [3]. A summary of measured levels and graphical output of the monitored noise data, in terms of L_{Amax} (maximum), $L_{Aeq,T}$ (average), and $L_{A90,T}$ (background noise) are shown in Appendix 3.

Conservatories & Windows Direct propose to operate between 06:00 and 18:00 hours on Monday to Friday, and between 06:00 and 13:00 hours on Saturday's. From the noise measurements, a minimum background noise ($L_{A90,5min}$) of **41** dB(A) was recorded for the 'Night-time' period; and for the 'Daytime' period **48** $L_{A90,1hour}$.

5. NOISE ASSESSMENT (continued)

5.3 Specific Noise Sources.

Specific noise sources associated with the manufacture of conservatories and windows would be as those currently found at the existing premises, i.e.

- **workshop** activities (i.e. various machines and equipment used for cutting conservatory and window profiles, etc).
- **light vans** and **employees vehicles** arriving and departing from the premises.
- **H.G.V.** delivery (one per week between the hours of 0700 and 1800).

5.4 Specification Of Existing Grain Store.

The Grain Store is a large barn, primarily of a corrugated asbestos sheet construction with large sliding wooden access doors. Internally, at a height of approximately 2 metres around the walls, are wooden sleepers laid horizontally; and the underside of the roof is lined with boarding.

It is proposed to house all the machinery and equipment used in the manufacturing of the conservatories and windows within a purpose built room inside the building. This room would be of a stud partition construction and approximately 15m x 8m x 3m high. The remaining area within the building would be used for Storage, Offices, etc. The existing high level wooden louvers within the apex of the building would be replaced with glazed panels for lighting purposes. Additional windows would also be added to selected areas of the walls.

The existing sliding wooden access doors would be retained for vehicle access, etc.

5.5 Specific Noise Source Levels ($L_{Aeq,T}$)

Specific noise source levels ($L_{Aeq,T}$) associated with the various machinery and equipment used in the manufacture of the conservatories and windows would be as those measured within the Workshop at the existing premises. Measurement of these noise levels were taken over 5 minute periods in order to establish the variation in noise levels that occur within the Workshop during the manufacture of the conservatories and windows.

Noise levels ($L_{Aeq,5min}$) measured within the existing Workshop ranged between 71.0 and 93.9 dB(A), with full details given in Appendix 4.

5. NOISE ASSESSMENT (continued)

5.5 Specific Noise Source Levels ($L_{Aeq,T}$) (continued)

For noise levels associated with vehicles arriving and departing from the site, noise data held within the records of Acoustic Associates have been used. Details of these noise levels are as shown in Appendix 4.

The predicted resultant $L_{Aeq,T}$ at the boundary of the residential properties considered within this assessment are as summarised in Table 1 below. These levels take into account the noise attenuation offered by the purpose built Workshop room within the existing building (Grain Store); any further attenuation offered by the building and barriers, and the effect of distance between the building and the residential properties. Further details of the predicted specific noise source levels, using the IMMI software programme (Ref. 3), are as documented within Appendix 5.

Assessment Location	Existing Grain Store Doors	Specific Noise Source level	
		Daytime ($L_{Aeq,1hour}$)	**Night-time** ($L_{Aeq,5min}$)
[1]	**CLOSED**	**42.3**	**30.7**
[2]		**33.5**	**43.1**
[3]		**31.6**	**33.5**
[4]		**36.1**	**35.9**
[1]	**OPEN**	**43.8**	**39.3**
[2]		**38.9**	**44.2**
[3]		**32.8**	**34.3**
[4]		**36.5**	**36.3**

Table 1 - Combined Specific Noise Source Levels ($L_{Aeq,T}$) Associated with Activities at Conservatories & Windows Direct.

5.6 Rating Level ($L_{Ar,T}$) In Accordance With British Standard BS 4142:1997

Where the noise source contains a distinguishable note (e.g., tonal, whine, hiss, hum, etc), or distinct impulses (e.g. bangs, clicks, clatters, thumps etc), or, if the noise is irregular enough in character to attract attention, then a +5 dB correction factor is added to the Specific Noise Level to obtain the 'Rating Level'. It is considered that a correction factor of +5 dB has to be added to the noise associated with the manufacture of the conservatories and windows.

5. NOISE ASSESSMENT (continued)

5.6 Rating Level ($L_{Ar,T}$) In Accordance With British Standard BS 4142:1997 (continued)

Therefore, the Rating Level ($L_{Ar,T}$) at the residential properties considered within the assessment would be as shown in Table 2.

Assessment Location	Existing Grain Store Doors	Specific Noise Source Level ($L_{Aeq,T}$)		Character Correction	**Rating Level ($L_{Ar,T}$)**	
		Daytime	Night-time		**Daytime Period**	**Night-time Period**
[1]	**CLOSED**	42	31	+5	**47**	**36**
[2]		34	43		**39**	**48**
[3]		32	34		**37**	**39**
[4]		36	36		**41**	**41**
[1]	**OPEN**	44	39	+5	**49**	**44**
[2]		39	44		**44**	**49**
[3]		33	34		**38**	**39**
[4]		37	36		**42**	**41**

Table 2 - Rating Level ($L_{Ar,T}$) for Activities Associated with Conservatories & Windows Direct.

5.7 Assessment Level ($L_{Ar,T}$ - $L_{A90,T}$)

The B.S. 4142:1997 assessment method is to "*assess the likelihood of complaints by subtracting the measured background noise level from the rating level. The greater this difference the greater the likelihood of complaints –*

A difference of around +10 dB or more indicates that complaints are likely.

A difference of around +5 dB is of marginal significance.

If the rating level is more than 10 dB below the measured background noise level then this is a positive indication that complaints are unlikely".

The Local Authority (SHDC) normally accept a maximum Assessment Level of +5dB as being a reasonable compromise between the requirements of industry and of nearby residents.

The 'Daytime' and 'Night-time' **Assessment Levels** for the locations at the boundary of the residential properties considered within the assessment, will be as shown in Table 3.

5. NOISE ASSESSMENT (continued)

5.7 Assessment Level ($L_{Ar,T}$ - $L_{A90,T}$) (continued)

Assessment Location	Grain Store Doors	Rating Level ($L_{Ar,T}$)		Background Noise Level ($L_{A90,T}$)		**ASSESSMENT LEVEL**	
		Daytime	Nighttime	Daytime	Nighttime	**Daytime**	**Nighttime**
[1]	**CLOSED**	47	36	48	41	**-1**	**-5**
[2]		39	48			**-9**	**+7**
[3]		37	39			**-11**	**-2**
[4]		41	41			**-7**	**0**
[1]	**OPEN**	49	44			**+1**	**+3**
[2]		44	49			**-4**	**+8**
[3]		38	39			**-10**	**-2**
[4]		42	41			**-6**	**0**

Table 3 - ASSESSMENT LEVELS for Proposed Activities at Conservatories & Windows Direct.

At these Assessment Levels, noise associated with the proposed change of use of existing Grain Store into Workshop and Offices dealing with the fabrication of windows and conservatories for Conservatories & Windows Direct would indicate an acceptable noise situation for the proposed working hours covering the B.S. 4142:1997 'daytime' reference period (i.e. 0700 to 1800 hours).

However, the assessment shows that starting Conservatories & Windows Direct activities at 0600 hours would result in Assessment Levels of up to +8 dB, which exceed the Local Authorities normal criteria for a maximum of +5 dB. Against B.S. 4142:1997, an Assessment Level of +8 dB would equate to a *'marginal / complaints likely'* situation.

6. NOISE MITIGATION MEASURES

6.1 Acoustic Barrier

Noise levels during the proposed Conservatories & Windows Direct operating times which fall within the B.S. 4142:199 'night-time' reference period (i.e. 0600 to 0700 hours), are dominated by activities associated with light vans arriving/departing from the northern side of the premises. Predictions show that increasing the height of the proposed 2 metre high concrete block screen wall on the northern side of the premises (see Figure1) to a minimum of 2.7 metres would result in an acceptable noise situation - as indicated in Table 4 below.

Assessment Location	Grain Store Doors	Rating Level ($L_{Ar,T}$)	Background Noise Level ($L_{A90,T}$)	**ASSESSMENT LEVEL**
		Night-time	Night-time	**Night-time**
[1]	**CLOSED**	36	41	**-5**
[2]		45		**+4**
[3]		39		**-2**
[4]		41		**0**
[1]	**OPEN**	44		**+3**
[2]		46		**+5**
[3]		38		**-3**
[4]		40		**-1**

Table 4 - ASSESSMENT LEVELS for Proposed Activities at Conservatories & Windows Direct with 2.7m high Concrete Block Screen Wall on Northern Side of Premises.

6.2 Specification for Workshop Room Within the Grain Store Building

Noise levels ($L_{Aeq,T}$) associated with the manufacturing process of conservatories and windows have been shown to be in excess of 90 dB(A), and in order to reduce these high noise levels, it is proposed to build a Workshop (similar in size to the existing workshop) within the Grain Store. It is proposed to build this Workshop as a stud partition construction with access doors and glazed areas. The assessment has been carried out assuming the following construction:

Walls - stud partition 125 mm thick, 50mm x 100mm studs, 12mm insulating board both sides.

Glazed Areas - single glazed windows, thickness 6 mm, in metal frame. (Note: any glazed areas that can be opened within the Workshop will have to remain 'closed' between the hours of 0600 and 0700 hours.

6. NOISE MITIGATION MEASURES (continued)

6.2 Specification for Workshop Room Within the Grain Store Building (continued)

Ceiling/Roof - Fibreboard sheets, thickness 12 mm, on wood framework.

Doors - Flush panel, thickness 43 mm, hollow core, normal cracks as usually hung, OR, 'Hiflex' pvc clear curtains, 400 mm wide strips x 4 mm thick, overlapped by 200 mm.

Alternatives to this construction could be used provided that the acoustic performance (sound reduction index) of the building elements are equivalent to or better than those for the above specification and as detailed below.

Building Element	Superficial weight kg/m^2	Octave Band Sound Reduction Index (SRI)							
		63	125	250	500	1K	2K	4K	8K
Walls	19	12	16	22	28	38	50	52	55
Glazing	15	17	11	24	28	32	27	35	39
Ceiling/Roof	4	10	12	16	20	24	30	31	36
Doors	9	9	12	13	14	16	18	24	26

It is recommended that the Workshop is constructed within the northern end area of the Grain Store, and the proposed Offices are located within the southern end (i.e. nearest to the residential property identified in figure 1 as Rampart House).

Any additional windows required for lighting purposes, which can be 'opened', should only be fitted within the north, east and west façades of the existing Grain Store building.

REFERENCES

1. British Standard BS4142:1997 - "Method For Rating Industrial Noise Affecting Mixed Residential and Industrial Areas"
BSI Publication.

2. ISO9613-2, Acoustics – Attenuation of sound during propagation outdoors, 1996

3. Woelfel IMMI light software with ISO9613 – 2 module.

4. Noise Control in Industry
Third Edition
Sound Research Laboratories Limited
ISBN 0 – 419 – 17170 - 3.

5. Woods Practical Guide To Noise Control
Ian Sharland, printed by Courier International Ltd, Sixth Impression 1990

APPENDIX 1

Glossary of Terms

Sound Pressure The variation of ambient pressure that is detected by the ear as sound.

Decibel (dB) Ten times the logarithm of the square of the ratio of the Sound Pressure to a reference pressure (20 micro-pascals).

Sound Pressure Level (L_p) The decibel version of the Sound Pressure.

A-Weighting A frequency weighting which simulates the response of the ear.

$L_{Aeq,T}$ The value of the A-weighted sound pressure level, in decibels [dB(A)], of a continuous steady sound that within a specified time interval (T), has the same mean-square sound pressure as a sound that varies with time.

$L_{A90,T}$ The value of the A-weighted sound pressure level, in decibels, which is exceeded for 90% of a given time interval. The $L_{A90,T}$ is often used as a measure of "**background noise**".

T The reference time interval over which an equivalent continuous A-weighted sound pressure is determined.

Daytime = 1 hour
Night time = 5 minutes

T_m The measurement time interval over which measurements are taken.

Ambient Noise Total sound in a given situation at a given time.

Residual Noise The ambient noise remaining at a given position in a given situation when the specific noise is suppressed to a degree such that it does not contribute to the ambient noise.

Specific Noise Level The dB $L_{Aeq,T}$ of the noise sources being assessed at a site.

Rating Level The Rating Level ($L_{Ar,Tr}$) is the Specific Noise Level plus any adjustment (+5 dB) for the character of the noise.

Octave Band A band of frequencies where the upper limit is twice the lower limit. They are known by their centre frequency, e.g., 125 Hz, 250 Hz, 500 Hz, 1000 Hz, 2000 Hz, etc.

Reverberant Noise The noise from a source which is reflected from the walls, floor, roof, etc.

Reverberation Time (RT) The time taken for noise to decay by 60 dB

APPENDIX 2

Noise Instrumentation

* Castle GA120 Type 1, Datalogging Sound Level Meter, S/N 036278.

* CEL - 593 Sound Level Analyser, Type 1, Serial Number C1.T 055489□
Precision ½" Electret MK250 F/F Microphone, Serial Number 0439.

* Castle GA607 Calibrator, Type 1, Serial Number 032942

* Microphone Windscreens

The calibration of the sound level meter was checked, before and after each test, at 94.0 +/- 0.1 dB.

APPENDIX 3.1 – Residual ($L_{Aeq,T}$) & Background ($L_{A90,T}$) Levels Measured at Proposed Site During visit on Friday 06/10/00.

Location	Time	Octave Band Centre Frequency (Hz)								Overall Level
		63	125	250	500	1K	2K	4K	8K	
[1] Night-time Period	0610-0615	45.8	47.4	48.1	53.8	59.4	55.5	45.5	32.8	61.9
	0615-0620	37.7	44.2	45.0	52.0	59.1	54.8	45.3	32.3	61.1
	0620-0625	43.7	45.9	46.9	54.4	59.3	54.6	44.7	34.7	61.7
	0625-0630	34.5	39.6	40.9	47.1	56.8	53.0	42.7	34.8	58.6
	0630-0635	45.8	48.7	49.4	54.9	61.8	57.7	47.9	46.9	64.1
[1] Daytime Period	0733-0803	45.4	48.5	50.0	55.9	63.8	59.6	49.6	37.2	65.7
[2] Night-time Period	0640-0645	37.6	36.2	36.6	42.9	49.7	44.9	37.9	35.8	52.0
	0645-0650	41.8	39.3	40.1	45.7	51.1	46.8	38.3	30.1	53.8
	0650-0655	34.9	36.6	36.7	43.7	51.3	45.9	36.4	32.4	53.1
	0655-0700	34.9	36.9	38.5	44.9	51.5	46.8	37.9	33.4	53.6
[2] Daytime Period	0700-0730	37.0	40.8	39.3	46.0	52.7	48.0	38.2	27.1	54.8

Residual Noise Levels ($L_{Aeq,T}$) Measured on 06/10/00.

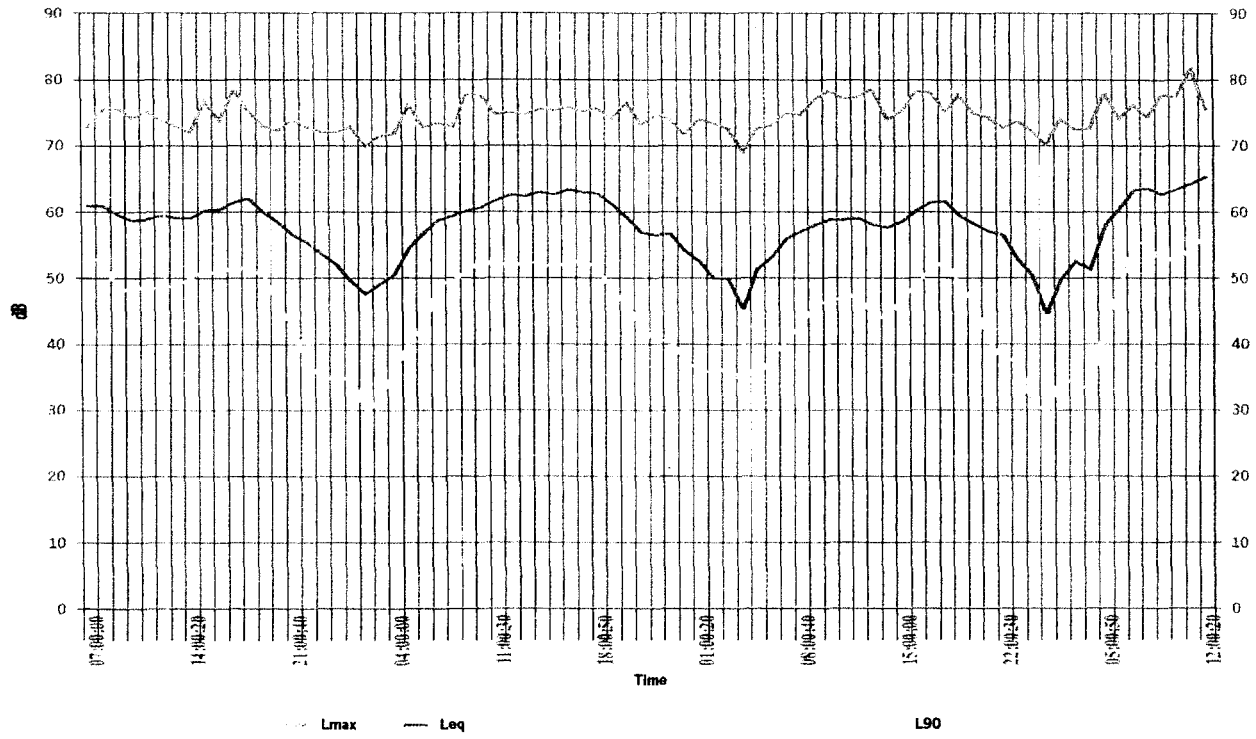
Location	Time	Octave Band Centre Frequency (Hz)								Overall Level
		63	125	250	500	1K	2K	4K	8K	
[1] Night-time Period	0610-0615	< 25	27	31	38	42	34	< 25	< 25	45
	0615-0620	< 25	< 25	27	35	39	30	< 25	< 25	
	0620-0625	< 25	26	29	39	41	33	26	< 25	44
	0625-0630	< 25	< 25	27	35	37	31	26	< 25	
	0630-0635	28	29	31	39	45	39	30	< 25	47
[1] Daytime Period	0733-0803	30	34	37	44	51	48	36	< 25	54
[2] Night-time Period	0640-0645	< 25	27	30	38	43	38	30	< 25	46
	0645-0650	25	27	30	38	42	37	29	< 25	46
	0650-0655	< 25	26	30	38	43	38	29	< 25	46
	0655-0700	27	26	31	39	46	41	29	< 25	48
[2] Daytime Period	0700-0730	26	28	31	39	45	40	26	< 25	

Background Noise Levels ($L_{A90,T}$) Measured on 06/10/00.

Castle advanced sound solutions

Location Report

Location [3]



Mode: Environmental
Frequency Weighting: A
Time Weighting: Fast

Log Start: 07:00:04 on 06/10/00
Log End: 13:24:28 on 09/10/00

Log Interval: 60Mins

Leq: 58.4dB
SEL: 107.8dB
L10: 64dB
NNO: 49dB
L90: 37.5dB

Lmax: 81.9dB at 11:40:56 on 09/10/00
Lmin: 20.3dB at 02:40:07 on 07/10/00

APPENDIX 3.2 – Residual ($L_{Aeq,T}$) & Background ($L_{A90,T}$) Levels Monitored at Location [3] between 0700 hours on Friday 06/10/00 and 1300 hours on Monday 09/10/00.

APPENDIX 4

Date of Measurement	Time	Octave Band Centre Frequency (Hz)								Overall Level
		63	125	250	500	1K	2K	4K	8K	
04/10/00	**1424-1522** includes	**< 65**	**< 65**	**65.8**	**73.2**	**81.4**	**86.6**	**83.2**	**78.1**	**89.4**
	1424-1429	< 65	< 65	< 65	71.0	83.0	90.5	84.7	76.6	92.1
	1429-1434	< 65	< 65	< 65	72.2	83.7	91.2	84.6	77.3	92.7
	1434-1439	< 65	< 65	< 65	74.4	85.1	91.0	88.6	83.2	93.8
	1439-1444	< 65	< 65	< 65	70.2	79.3	80.2	83.9	78.1	86.8
	1444-1449									
	1449-1454	< 65	< 65	66.7	76.9	81.4	82.2	80.1	72.1	86.6
	1454-1459	< 65	< 65	< 65	< 65	65.0	66.1	< 65	< 65	71.0
	1459-1504	< 65	< 65	< 65	68.6	72.4	73.9	69.8	66.9	78.0
	1504-1509	< 65	< 65	< 65	65.6	71.5	73.5	74.2	69.3	78.7
	1509-1514	< 65	< 65	< 65	67.9	73.0	77.3	81.5	83.5	87.0
	1514-1519	< 65	< 65	< 65	66.8	72.7	75.7	73.2	68.0	79.3

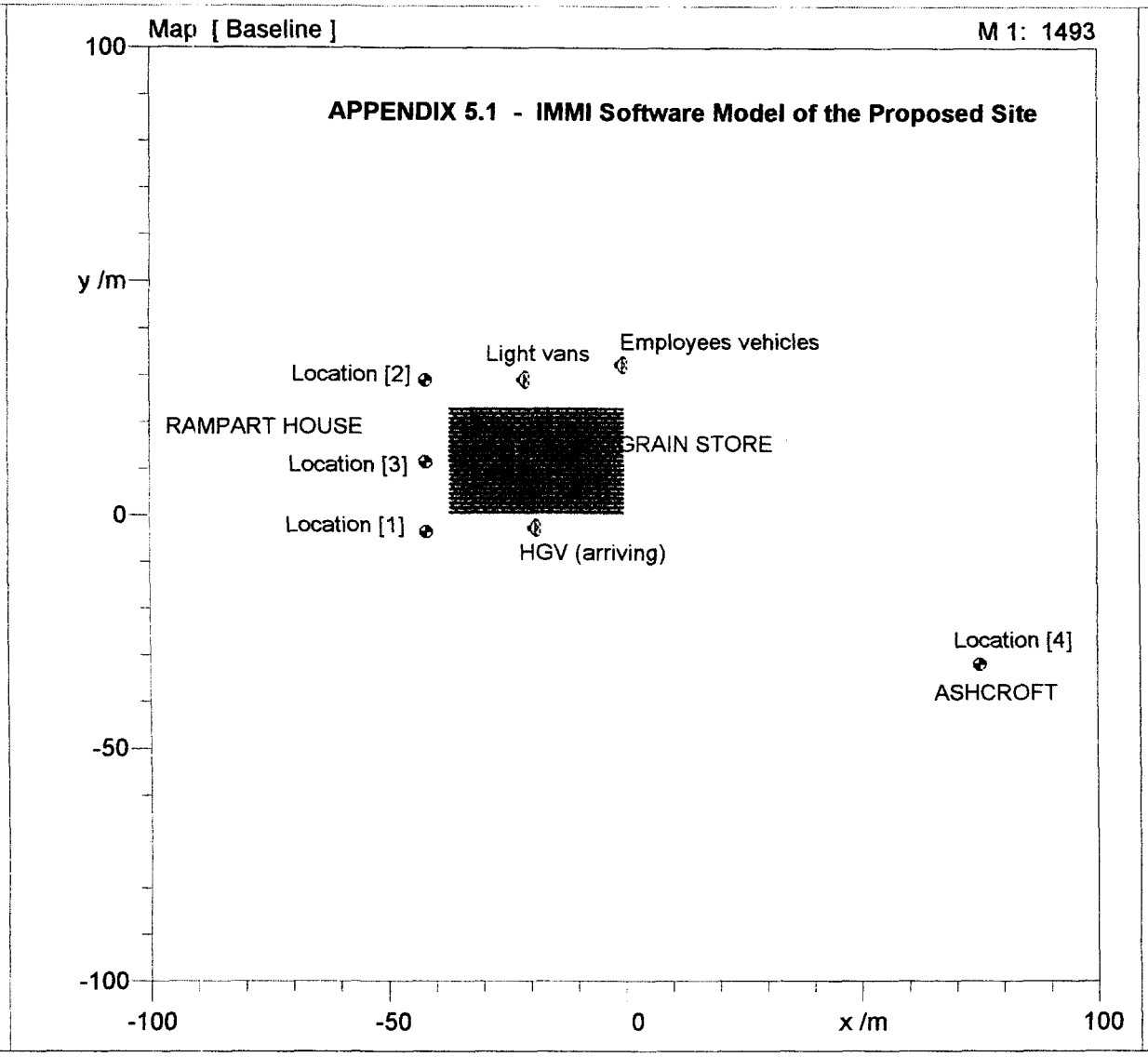
Noise levels ($L_{Aeq,T}$) Measured within Existing Workshop at Conservatories & Windows Direct.

Source of Data	Distance (m)	Octave Band Centre Frequency (Hz)								Overall Level
		63	125	250	500	1K	2K	4K	8K	
Acoustic Associates Database	25	**36.2**	**37.3**	**39.3**	**46.4**	**46.1**	**41.4**	**40.2**	**34.3**	**50.9**

Typical Noise levels ($L_{Aeq,5min}$) for Light Vans/Employees Vehicles Arriving & Departing.

Source of Data	Distance (m)	Octave Band Centre Frequency (Hz)								Overall Level
		63	125	250	500	1K	2K	4K	8K	
Acoustic Associates Database	20	**44.1**	**45.8**	**51.8**	**57.8**	**58.9**	**58.3**	**51.7**	**43.0**	**63.9**

Typical Noise levels ($L_{Aeq,6min}$) for H.G.V. Arriving, Idling, Opening Doors, Manoeuvring, etc.



Company:	Conservatories & Windows Dir
Handled by:	T Marshall
Project:	Relocation

IMMI 5.023 E:\Program Files\IWIN5\J664.IPR

APPENDIX 5.2 - IMMI Software Predicted Specific Noise Source Levels at the Assessment Locations with the Grain Store Doors 'CLOSED'.

Assessment Location	Specific Noise Source	Specific Noise Source level ($L_{Aeq,T}$)	
		Daytime ($L_{Aeq,1hour}$)	Night-time ($L_{Aeq,5min}$)
[1]	(i) Workshop ( )	24.4	24.4
	(ii) Light Vans/Employees Vehicles	18.8	29.6
	(iii) H.G.V.	42.2	n.a.
	Combined Specific Noise Source Level	**42.3**	**30.7**
[2]	(i) Workshop ( )	19.0	19.0
	(ii) Light Vans/Employees Vehicles	32.3	43.1
	(iii) H.G.V.	26.4	n.a
	Combined Specific Noise Source Level	**33.5**	**43.1**
[3]	(i) Workshop ( )	22.4	22.4
	(ii) Light Vans/Employees Vehicles	22.3	33.1
	(iii) H.G.V.	30.4	n.a.
	Combined Specific Noise Source Level	**31.6**	**33.5**
[4]	(i) Workshop ( )	18.4	18.4
	(ii) Light Vans/Employees Vehicles	25.0	35.8
	(iii) H.G.V.	35.7	n.a
	Combined Specific Noise Source Level	**36.1**	**35.9**

APPENDIX 5.3 - IMMI Software Predicted Specific Noise Source Levels at the Assessment Locations with the Grain Store Doors 'OPEN'.

Assessment Location	Specific Noise Source	Specific Noise Source level ($L_{Aeq,T}$)	
		Daytime ($L_{Aeq,1hour}$)	Night-time ($L_{Aeq,5min}$)
[1]	(i) Workshop ( )	38.8	38.8
	(ii) Light Vans/Employees Vehicles	18.8	29.6
	(iii) H.G.V.	42.2	n.a.
	Combined Specific Noise Source Level	**43.8**	**39.3**
[2]	(i) Workshop ( )	37.5	37.5
	(ii) Light Vans/Employees Vehicles	32.3	43.1
	(iii) H.G.V.	26.4	n.a
	Combined Specific Noise Source Level	**38.9**	**44.2**
[3]	(i) Workshop ( )	28.2	28.2
	(ii) Light Vans/Employees Vehicles	22.3	33.1
	(iii) H.G.V.	30.4	n.a.
	Combined Specific Noise Source Level	**32.8**	**34.3**
[4]	(i) Workshop ( )	26.3	26.3
	(ii) Light Vans/Employees Vehicles	25.0	35.8
	(iii) H.G.V.	35.7	n.a
	Combined Specific Noise Source Level	**36.5**	**36.3**