ARUN DISTRICT COUNCIL A/158/08/

Nicola Spencer

From: Eve Hearsey
Sent: 18 March 2009 10:07
To: Nicola Spencer
Subject: FW: Station Rd, Angmering
Attachments: Noise Assessment 02March09.doc; PPG24 (Road) - Bloor - Angmering - Final - 24.02.2009..pdf; ATT33479.txt

Nicola

These attachments relate to A/158/08 please could they be scanned for the application?

Thanks

Eve

From: peter [mailto:peter.m@tetlowking.co.uk]
Sent: 17 March 2009 18:46
To: Eve Hearsey
Cc: Jonathan Wheeler; Roger
Subject: Station Rd, Angmering

Dear Eve,

Please find attached the Noise Assessment report which accompanied our letter to you of 27th February also attached.

I would be grateful if you would accept the attached report as part of our current application.

Regards

Peter

Peter Morgan
Managing Director

Tetlow King Limited
Lone Barn Studios
Stanbridge Lane
Romsey
Hampshire
SO51 0HE

Tel: 01794 517333
Fax: 01794 515517
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ARUN DISTRICT COUNCIL A/158/08/

27th February 2009

Planning Department
Arun District Council
Maltravers Road
Littlehampton
West Sussex
BN17 5LF

RB/ja/PL081005

For the attention of: Eve Hearsey

Planning Portal Ref: 00621829

Dear Ms Hearsey,

Re: Land at Station Road, Angmering – JS Bloor Homes (Newbury)

We have now had a noise assessment report completed in relation to the above development by Acoustic Associates Sussex Ltd.

The report sets out in detail the NEC day and nightime noise levels and prescribes, where appropriate, various acoustic treatments to the building facades facing Station Road.

We have enclosed for your attention 4no. copies of the report titled; '**PPG24 Assessment of the Impact of Road Traffic Noise**', dated 18th February.

We would be obliged if you would accept the enclosed report in relation to our current application.

Yours sincerely,

Peter Morgan
Managing Director
Tetlow King

Enc

cc: Mr. J. Wheeler - JS Bloor Homes (Newbury)

ARUN DISTRICT COUNCIL A/158/08/

Acoustic Associates Sussex Ltd

PPG24 Assessment of the Impact of Road Traffic Noise

Site: Station Road, Angmering
Client: Bloor Homes (Newbury)

Report by: George Orton BEng(Hons) MIOA

Date : 18 February 2009

Institute of Acoustics

ANC THE ASSOCIATION OF NOISE CONSULTANTS

ATTMA

BINDT

Acoustic Associates

Sound Insulation Testing - Acoustic Design of Buildings - BS4142 - PPG24 - Schools Acoustics BB93 - Vibration - Expert Witness Testimony - Noise at Work - Air Tightness Testing - Auditorium Acoustics

Part of the Acoustic Associates Group of consultancies:
DEVON HUMBERSIDE LEICESTERSHIRE NOTTINGHAMSHIRE PETERBOROUGH **SUSSEX** WESSEX WORCESTERSHIRE

Acoustic Associates Sussex Ltd., 8 Highdown House, Shoreham Airport, Shoreham-by-Sea, West Sussex BN43 5PB
Tel: (01273) 455074 Fax: (01273) 455075 e-mail: info@aasussex.co.uk **www.aasussex.co.uk**

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1 Introduction

1.1 The purpose of this assessment is to establish the Noise Exposure Categories (NEC) that the proposed development would fall into under the provisions of Planning Policy Guidance Note 24: Planning and Noise (PPG 24). This gives an indication of the ability of the property to gain residential planning consent on traffic noise grounds.

1.3 As the site is in close proximity to the A 259 and Station Road it will be necessary for road noise to be measured and assessed.

1.4 The road noise survey has been carried out in accordance with Planning Policy Guidance Note 24: Planning and Noise (PPG 24) and the document: Calculation of Road Traffic Noise (CRTN).

1.5 The road noise survey and assessment shows that:

- Bedrooms on the front façades of plots 3-10 fall into NEC "C". (Night-time)
- Bedrooms on the façades of plots 1&2 fall into NEC "B". (Night-time)
- Bedrooms on the rear façades of plots 3-10 fall into NEC "B". (Night-time)
- Kitchens of plots 1-10 fall into NEC "C" (Daytime)
- Lounges of plots 1-10 fall into NEC "A" (Daytime)
- Plot 11 falls into NEC "B/A" (Day or Night)

1.6 If the recommended glazing and noise mitigation measures detailed in section 8 are implemented it is considered that there is no reason, on noise grounds, for planning consent to be withheld.

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2 Road Noise Survey

Road Noise levels were monitored at two individual locations on the (empty) site. Road noise was monitored continuously for several days at a point close to the A259. Further measurements were also taken at a position close to Station Road. These additional measurements (conducted for approximately 2.5hrs) were completed concurrently with the A259 Measurements. The Continuous Survey position is called position "A" and the short term survey "B".

2.1 Equipment used:

- Castle GA123 Type 1 Sound Level Meter (Continuous Survey)
- Norsonic NOR140 Type 1 Integrating Sound Level Meter (Short Survey)
- Weatherproof microphone housing
- Castle GA607 Class 1 Acoustic Calibrator
- Microphone Mounting Poles
- Tripod

2.2 Survey carried out by: George Orton BEng(Hons) MIOA

2.3 Measurement Positions:

Both microphones were positioned on a pole approximately 4.2m above the ground. The microphone pole, in each case, was attached to the 3m high plywood hoarding fence which marks the site boundary to the A259 and Station Road. Position "A" and "B" are marked on the site plan shown in 2.7.

2.4 Façade Free Field Correction

Taking in to account the microphone location it follows that all measurements at this location are free-field measurements and therefore require no correction.

2.5 Weather conditions

- Variable (dry, occasional showers); approx. 2-8^{o}C
- Wind: variable direction no greater than 5ms^{-2}

2.6 Measurement Duration

Measurements were carried out between the 10th and 17th February 2009.

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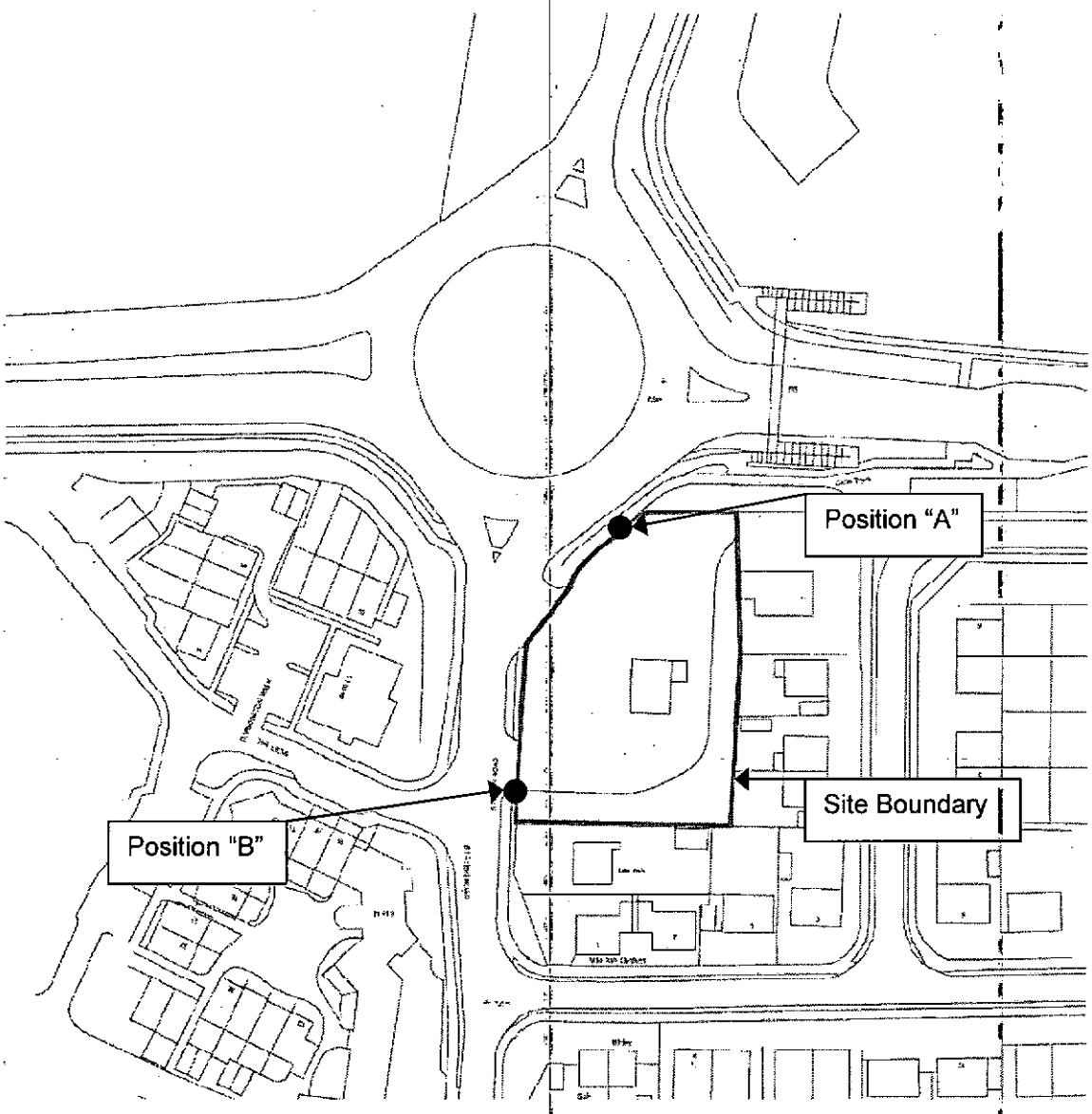
2.7 Existing Site Layout and Measurement Positions



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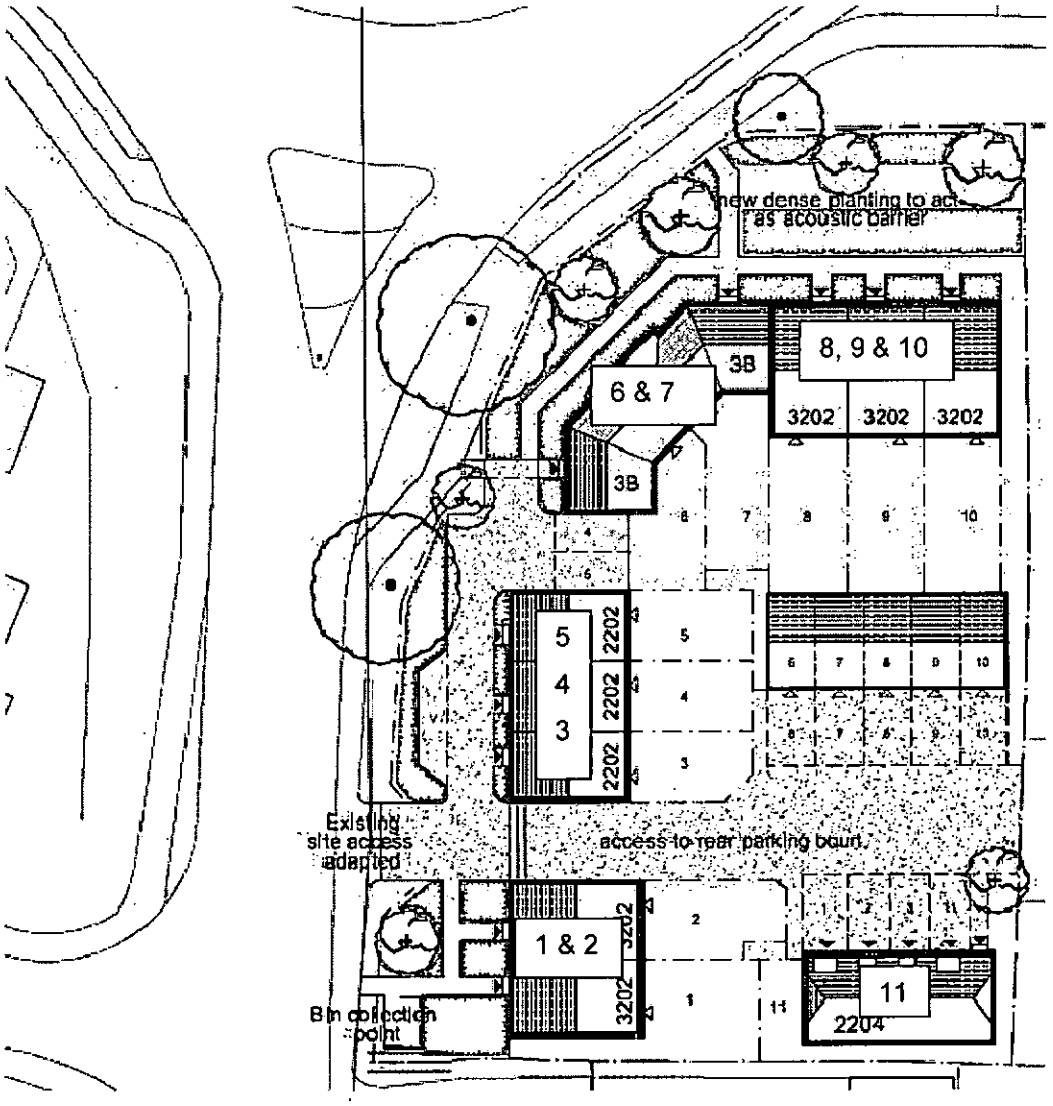
2.8 Proposed Layout and Plot Numbers



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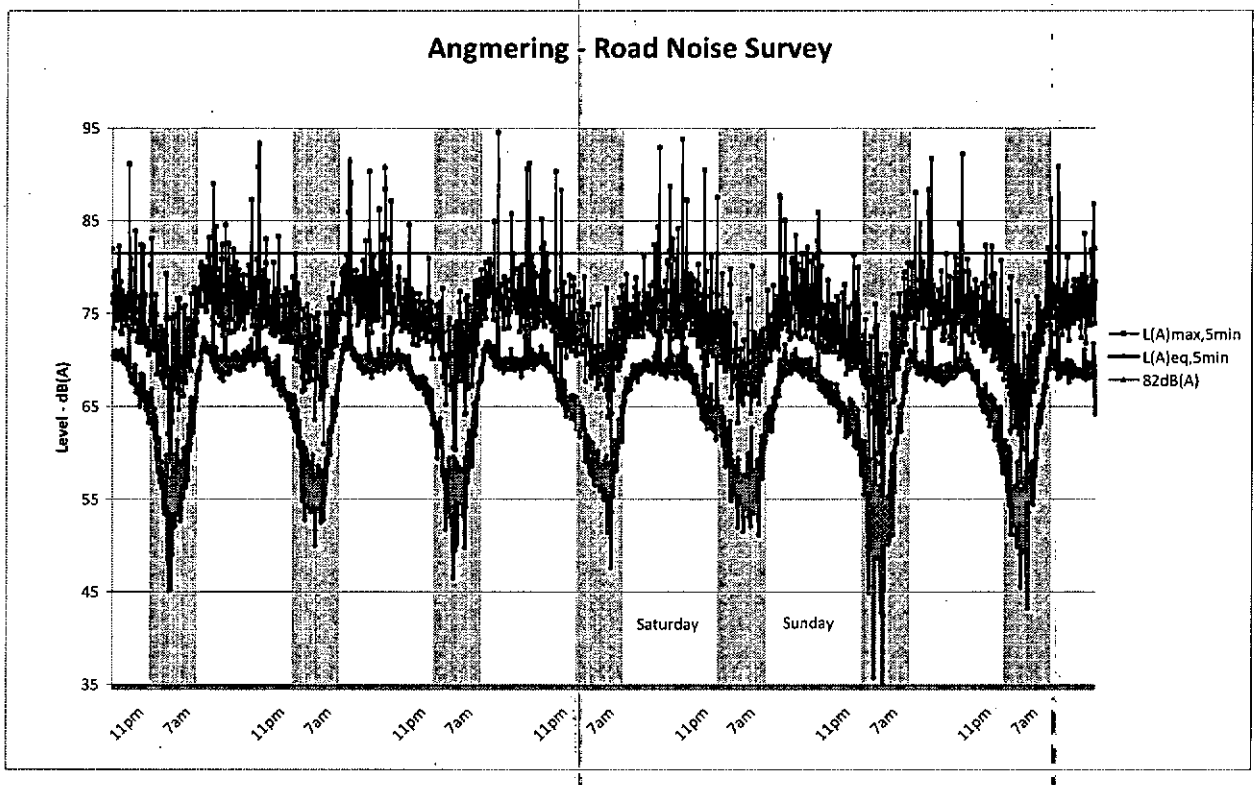
3 Continuous Noise Survey Results (Position "A")

3.1 Whole Survey

The graph below shows the road noise $L(A)_{eq}$ and $L(A)_{max}$ values for position "A";



N.B. Levels reported are free-field levels, as required by PPG 24. Levels reported correspond to measurement position rather than nearest façade to road. Noise levels at nearest façade will be lower than at measurement position due to increased distance attenuation

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3.2 Day and Night-time Period Road Noise Levels and Maximum Levels.

The tables below detail the day and night-time period noise levels and the number of individual noise events that exceed L(A)max 82dB(A) within the night-time periods. Information is also given regarding the highest number of L(A)max events within any individual hour of the night-time time periods. Levels reported correspond to measurement position rather than nearest façade to road. Noise levels at nearest façade will be lower than at measurement position due to increased distance attenuation:

3.2.1 10th – 11th February 2009

Time Period	*$L(A)_{eq}$ - dB(A))*	*No. of $L(A)_{Max}$>82dB(A)*	*Highest No. of $L(A)_{Max}$>82 in any hour*
07:00-23:00hrs	[redacted]	[redacted]	[redacted]
23:00-07:00hrs	62	1	1

3.2.2 11th -12th February 2009

Time Period	*$L(A)_{eq}$ - dB(A))*	*No. of $L(A)_{Max}$>82dB(A)*	*Highest No. of $L(A)_{Max}$>82 in any hour*
07:00-23:00hrs	70	[redacted]	[redacted]
23:00-07:00hrs	62	0	0

3.2.3 12th -13th February 2009

Time Period	*$L(A)_{eq}$ - dB(A))*	*No. of $L(A)_{Max}$>82dB(A)*	*Highest No. of $L(A)_{Max}$>82 in any hour*
07:00-23:00hrs	70	[redacted]	[redacted]
23:00-07:00hrs	61	0	0

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3.2.4 13th -14th February 2009 (Weekend)

Time Period	*$L(A)_{eq}$ - dB(A))*	*No. of $L(A)_{Max}$>82dB(A)*	*Highest No. of $L(A)_{Max}$>82 in any hour*
07:00-23:00hrs	70	-	-
23:00-07:00hrs	61	0	0

3.2.5 14th – 15th February 2009 (Weekend)

Time Period	*$L(A)_{eq}$ - dB(A))*	*No. of $L(A)_{Max}$>82dB(A)*	*Highest No. of $L(A)_{Max}$>82 in any hour*
07:00-23:00hrs	69	-	-
23:00-07:00hrs	60	0	0

3.2.6 15th – 16th February 2009 (Weekend)

Time Period	*$L(A)_{eq}$ - dB(A))*	*No. of $L(A)_{Max}$>82dB(A)*	*Highest No. of $L(A)_{Max}$>82 in any hour*
07:00-23:00hrs	67	-	-
23:00-07:00hrs	60	0	0

3.2.7 16th – 17th February 2009

Time Period	*$L(A)_{eq}$ - dB(A))*	*No. of $L(A)_{Max}$>82dB(A)*	*Highest No. of $L(A)_{Max}$>82 in any hour*
07:00-23:00hrs	69	-	-
23:00-07:00hrs	61	0	0

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3.3 Average Noise Levels (Weekdays Only)

The measurement results below have been used to calibrate the noise model.

Time Period	*$L(A)_{eq}$ - dB(A))*	*No. of $L(A)_{Max}$>82dB(A)*	*Highest No. of $L(A)_{Max}$>82 in any hour*
07:00-23:00hrs	69	-	-
23:00-07:00hrs	61	1	1

N.B. $L(A)_{eq}$ *Levels reported are free-field levels, as required by PPG 24.*

3.4 Maximum Night time Noise Levels

PPG 24 also states:

"Night-time noise levels (23.00 - 07.00): *sites where individual noise events regularly exceed 82 dB LAmax (Slow time weighting) several times in any hour should be treated as being in NEC C, regardless of the LAeq,8h (except where the LAeq,8h already puts the site in NEC D)."*

The results tables above demonstrate that during the night time LA_{MAX} events will not regularly exceeded 82dB several times in any one hour.

However, noise levels at the front façade are likely to be within the NEC "C" level range.

4 Short Survey Measurement Results (Position "A" & "B")

Between 13:00hrs and 15:25hrs on the 17th February road noise measurements were measured simultaneously at position "A" & "B". The purpose of carrying out the simultaneous measurements is to estimate the difference in noise levels generated by vehicles traveling on the A259 & vehicles traveling on Station Road. This information will be used to aid the completion of the computer noise contour model which is detailed in the next section.

The noise level measurements, on average, at position "B" were 2.4dB(A) lower than the noise level measurements at position "A".

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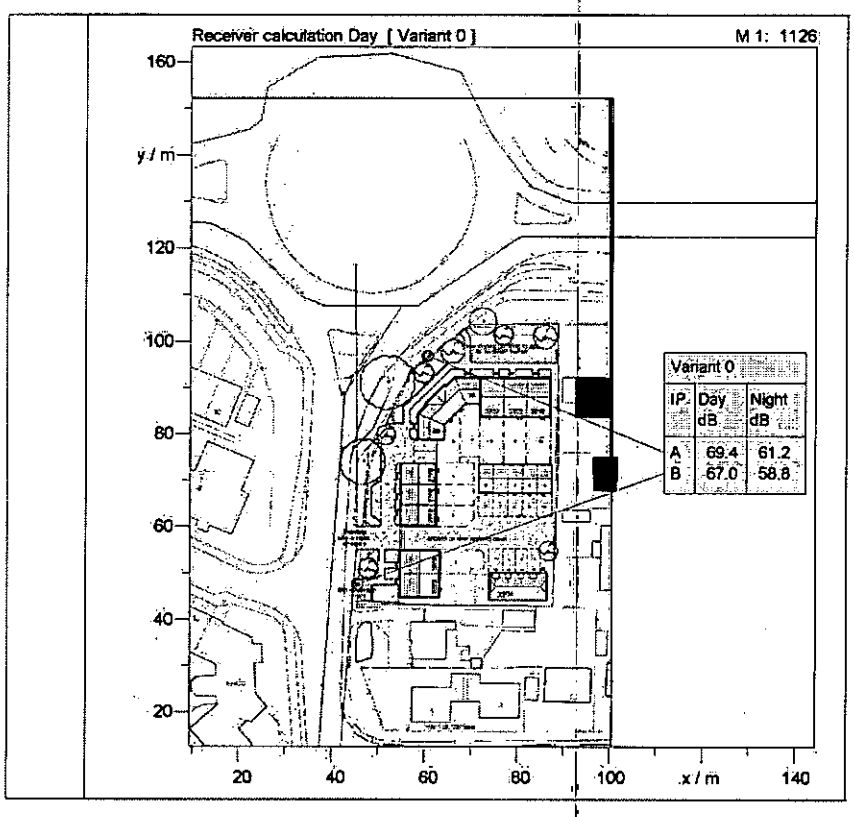
5 Computer Noise Model

The proposed development is to contain several blocks of residential dwellings. This means that the parts of the development further from road will benefit from increased distance attenuation from the road noise. Other areas of the development will also benefit from "acoustic shadowing" from the development itself. In order to see how the road noise varies at different positions around the proposed development it is possible to produce a noise contour map. The survey measurement data, architects plans and the computer programme IMMI have been used to generate a computer noise contour model of the whole site. The model displays the PPG24 Noise Exposure Categories over the area of the site for both the day and night time periods. The noise contour model can be used in order to gauge what noise control measures (such as enhanced glazing) may or may not be needed. Different contours have been individually plotted for the Gnd & 1st floor levels in order to gauge what effect the increased height will have on the noise levels. Reception points have also been added (for each floor). Each model also has a table which shows the estimated noise level (dB(A)) at each reception point. The noise model was calibrated by first completing a noise contour model detailing the empty site, boundary fencing and the two measurement positions. The near and far A259 carriage ways and Station Road were added as noise sources. These noise sources were then adjusted until reception points (at positions "A" & "B") matched the measured noise levels. A new noise model was then completed which no longer included the boundary fence but did include the proposed houses. The figure below shows the empty site noise model and reception points:



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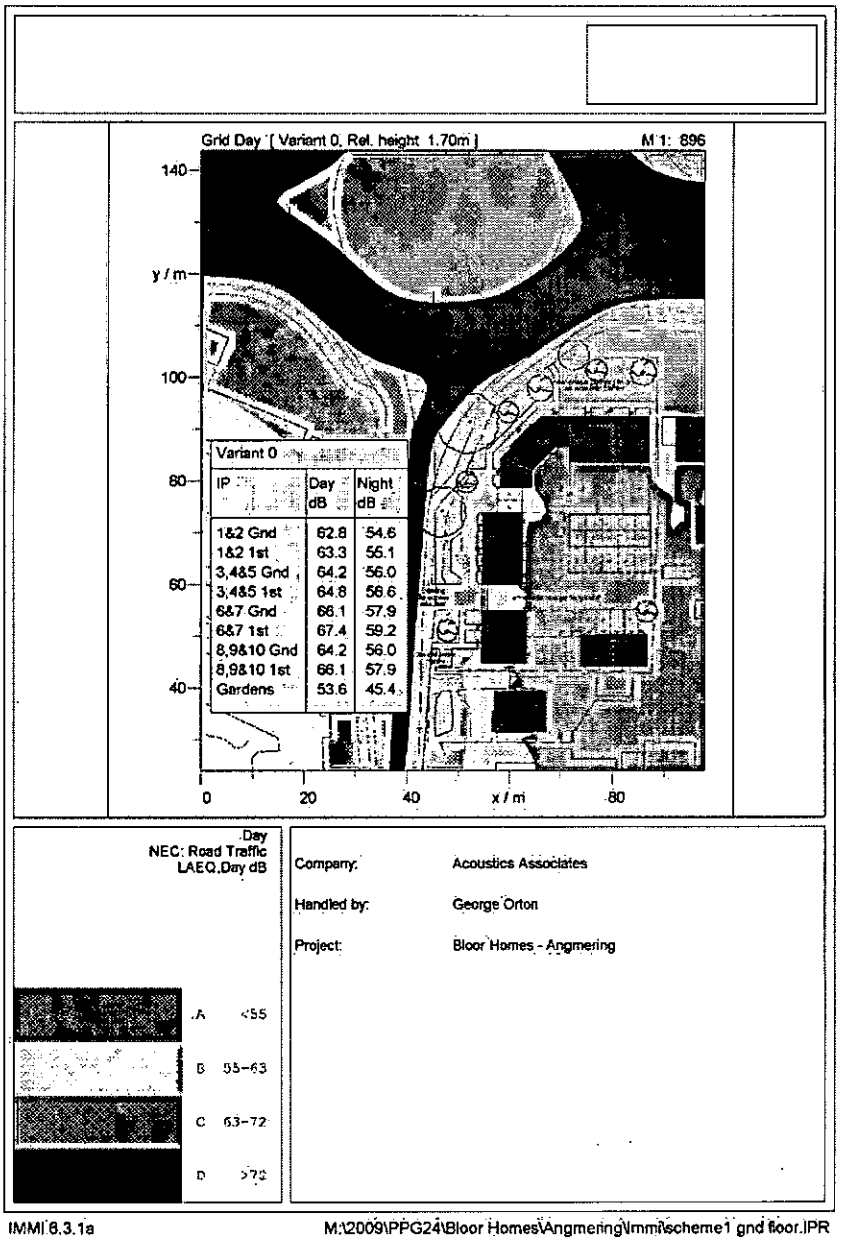
5.1 PPG 24 Noise Contours (Day Time, Ground Floor)



IMMI 6.3.1a M:\2009\PPG24\Bloor Homes\Angmering\Immi\scheme1 gnd floor.IPR

Acoustic Associates

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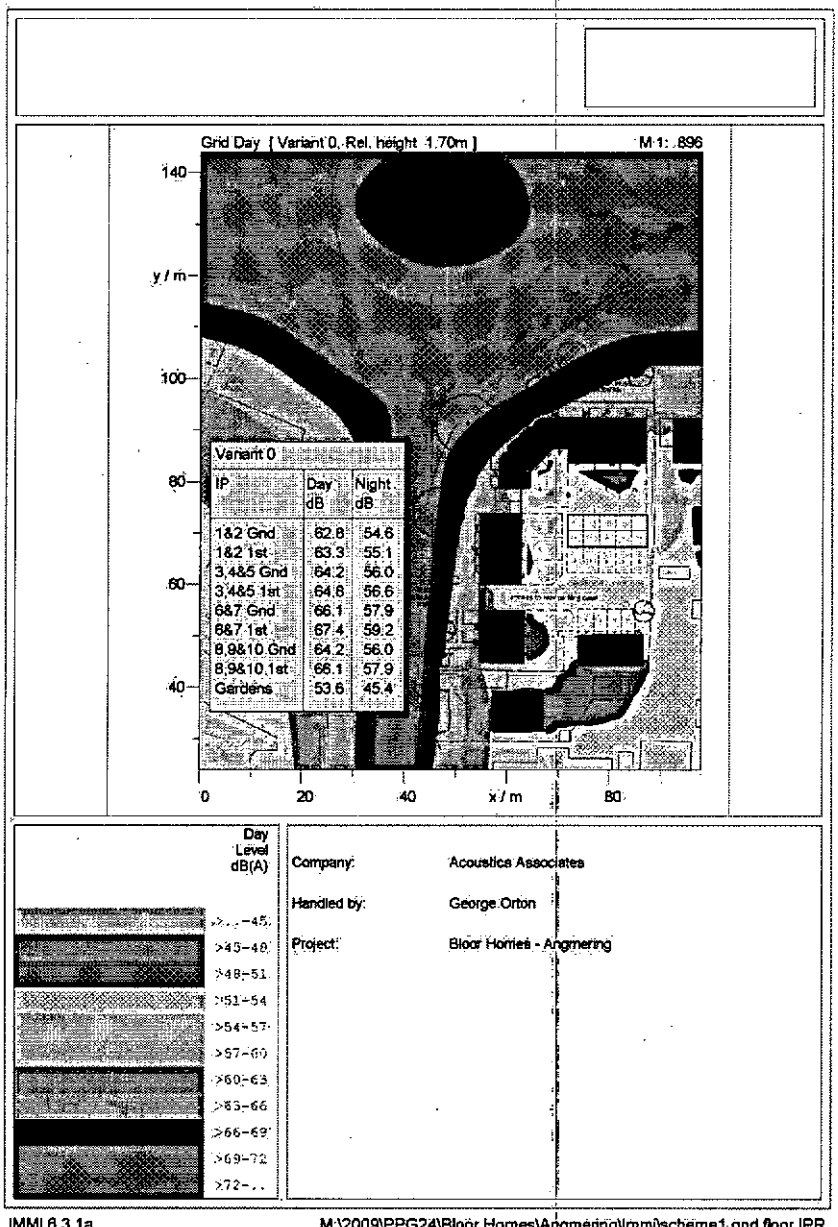
5.2 Noise Contours (Day Time, Ground Floor)



IMMI 6.3.1a M:\2009\PPG24\Bloor Homes\Angmering\Immi\scheme1 gnd floor.IPR

Acoustic Associates

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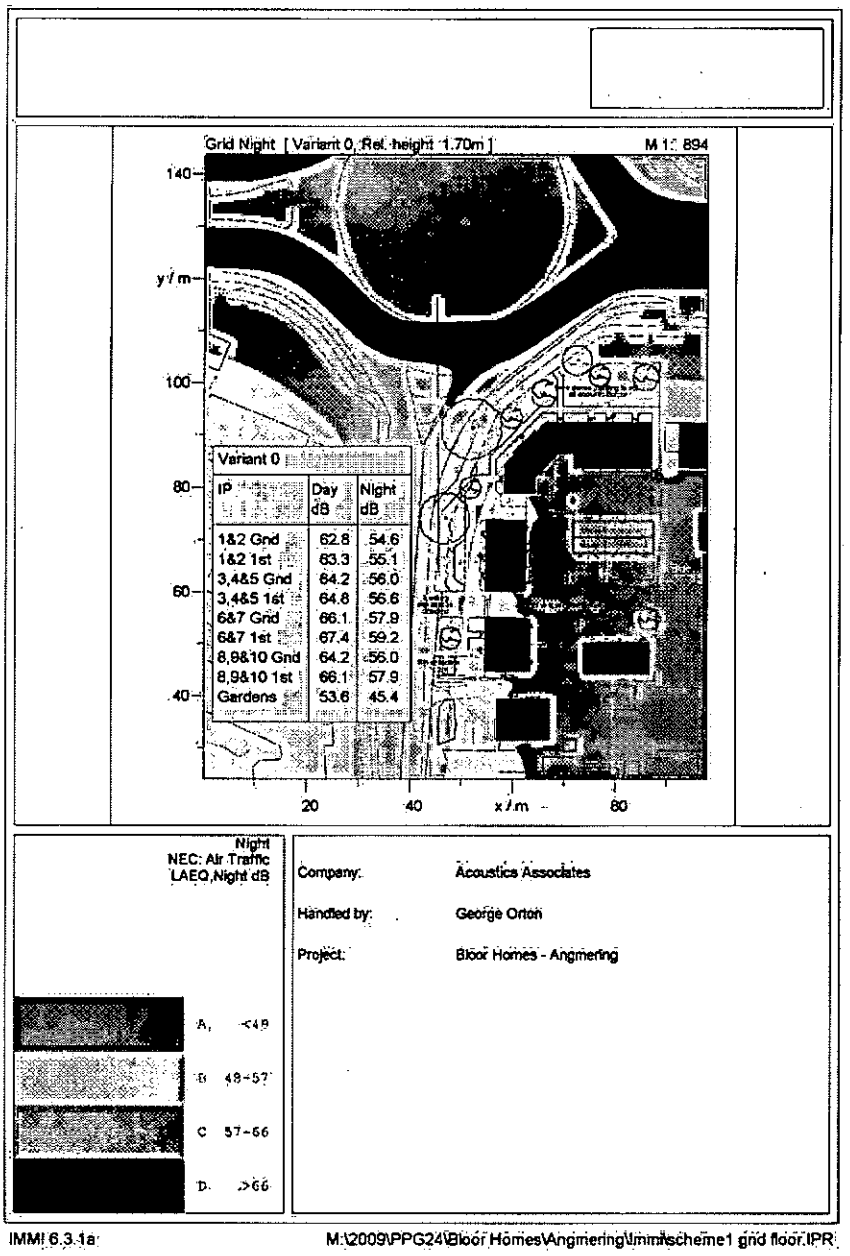
5.3 PPG 24 Noise Contours (Night Time, Ground Floor)



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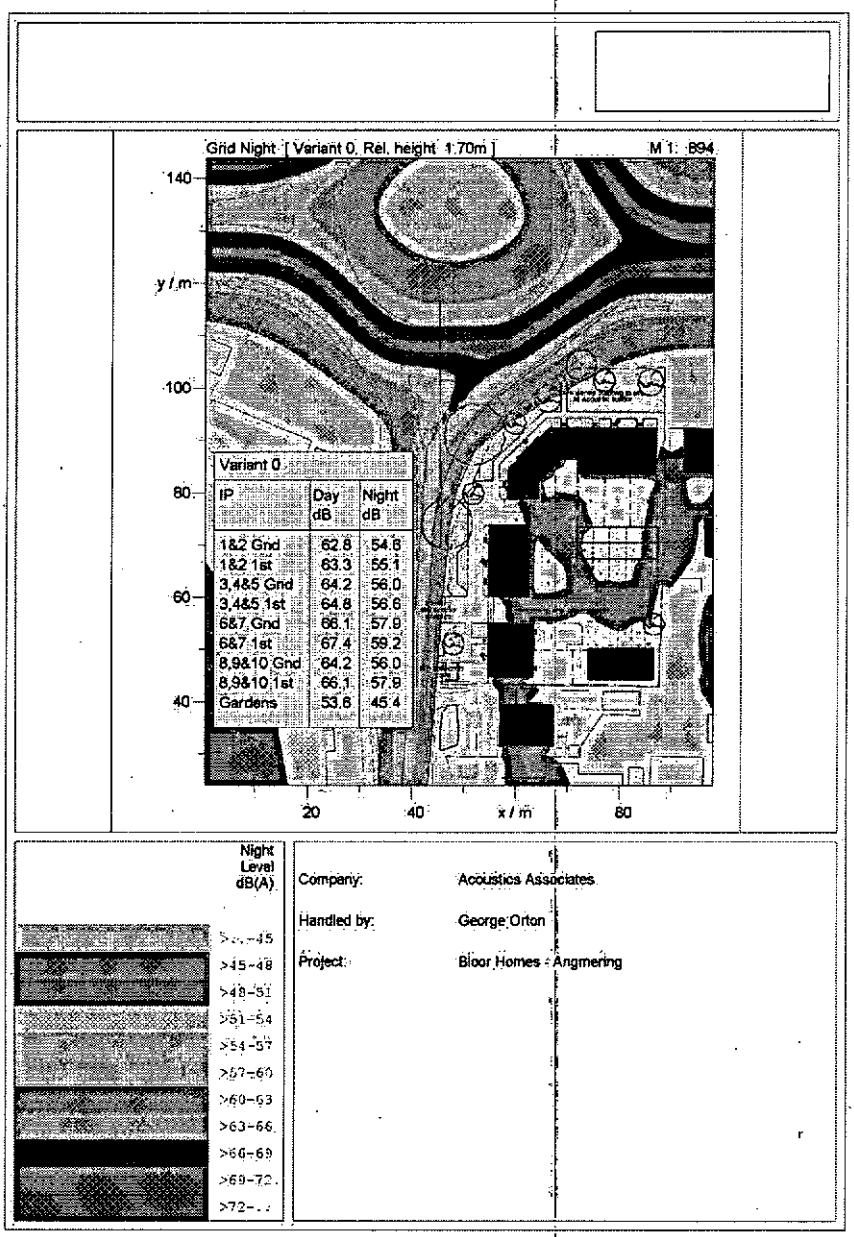
5.4 Noise Contours (Night Time, Ground Floor)



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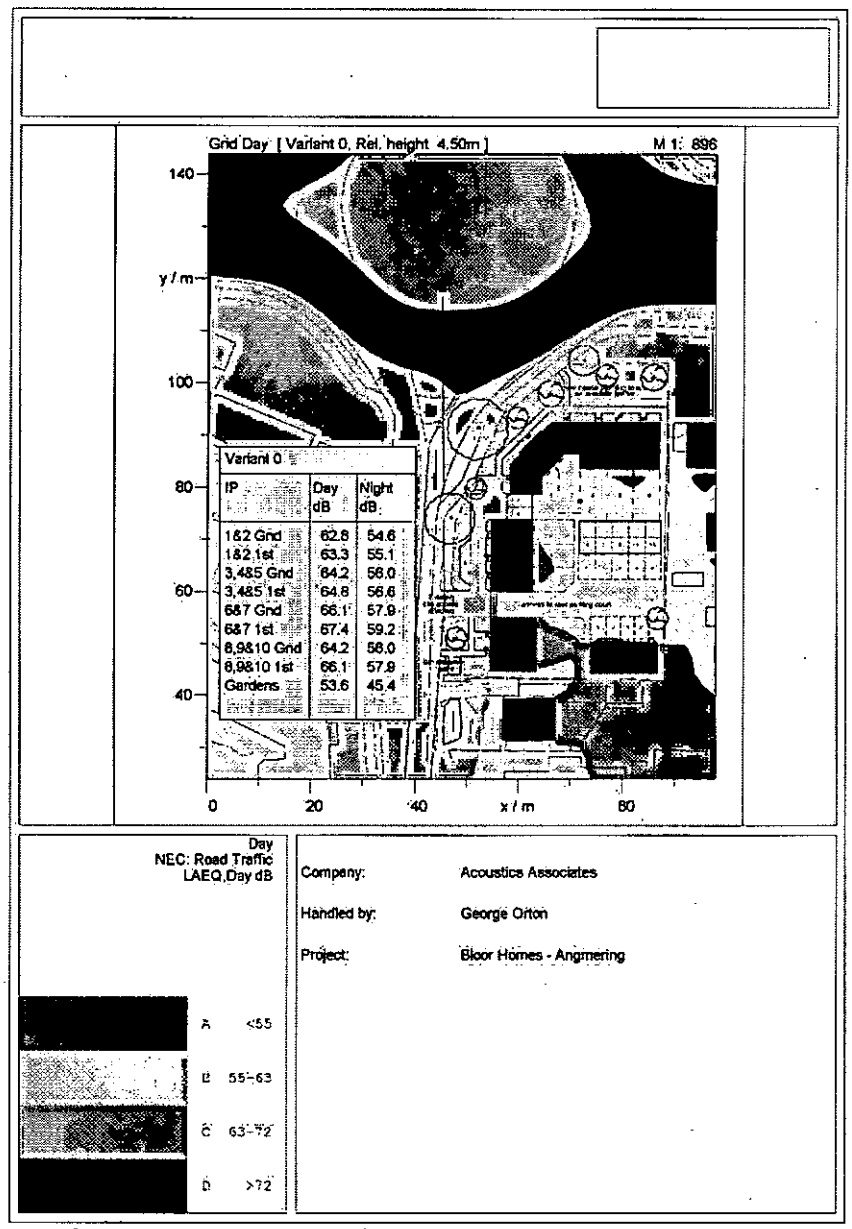
5.5 PPG 24 Noise Contours (Day Time, 1st Floor)



IMMI.6.3.1a M:\2009\PPG24\Bloor Homes\Angmering\Imm\scheme1 1st floor.IPR

Acoustic Associates

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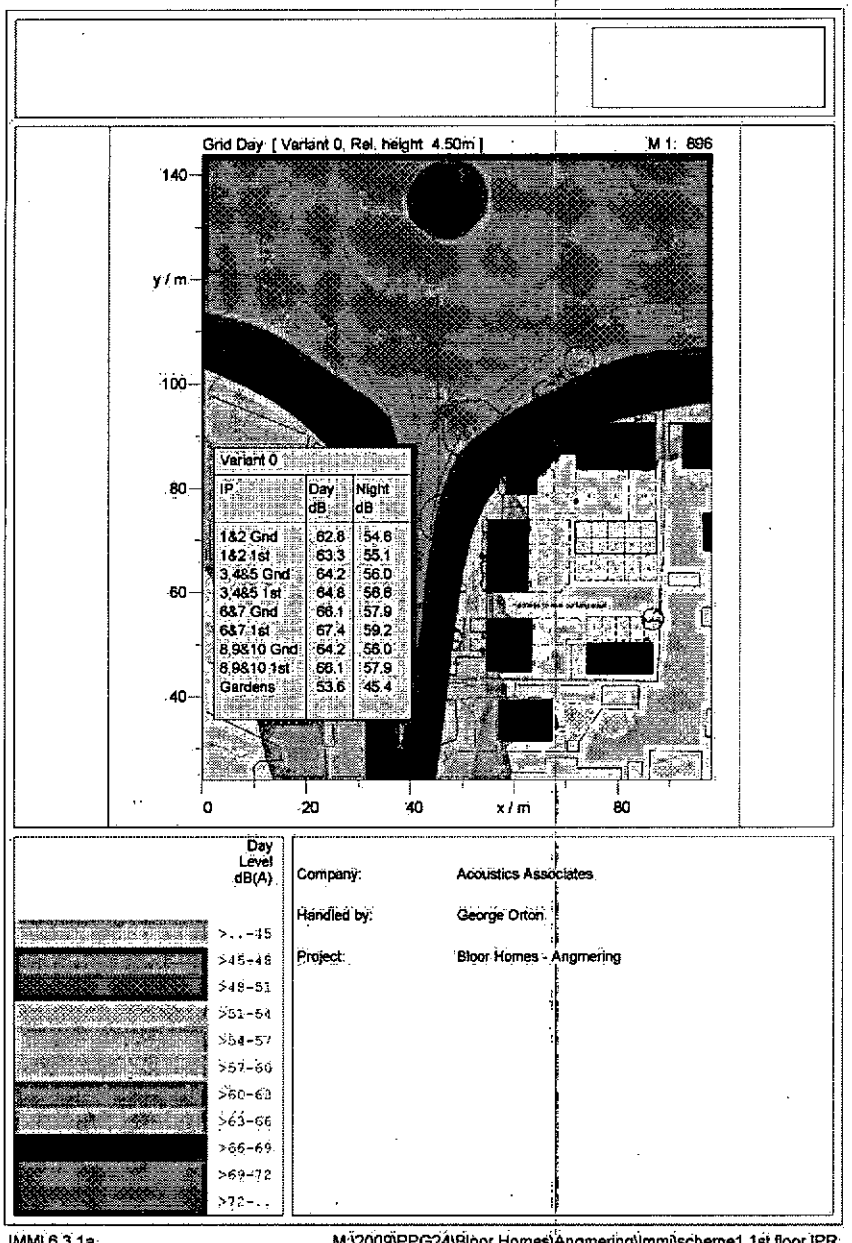
5.6 Noise Contours (Day Time, 1st Floor)



IMMI 6.3.1a M:\2009\PPG24\Bloor Homes\Angmering\immi\scheme1 1st floor.IPR

Acoustic Associates

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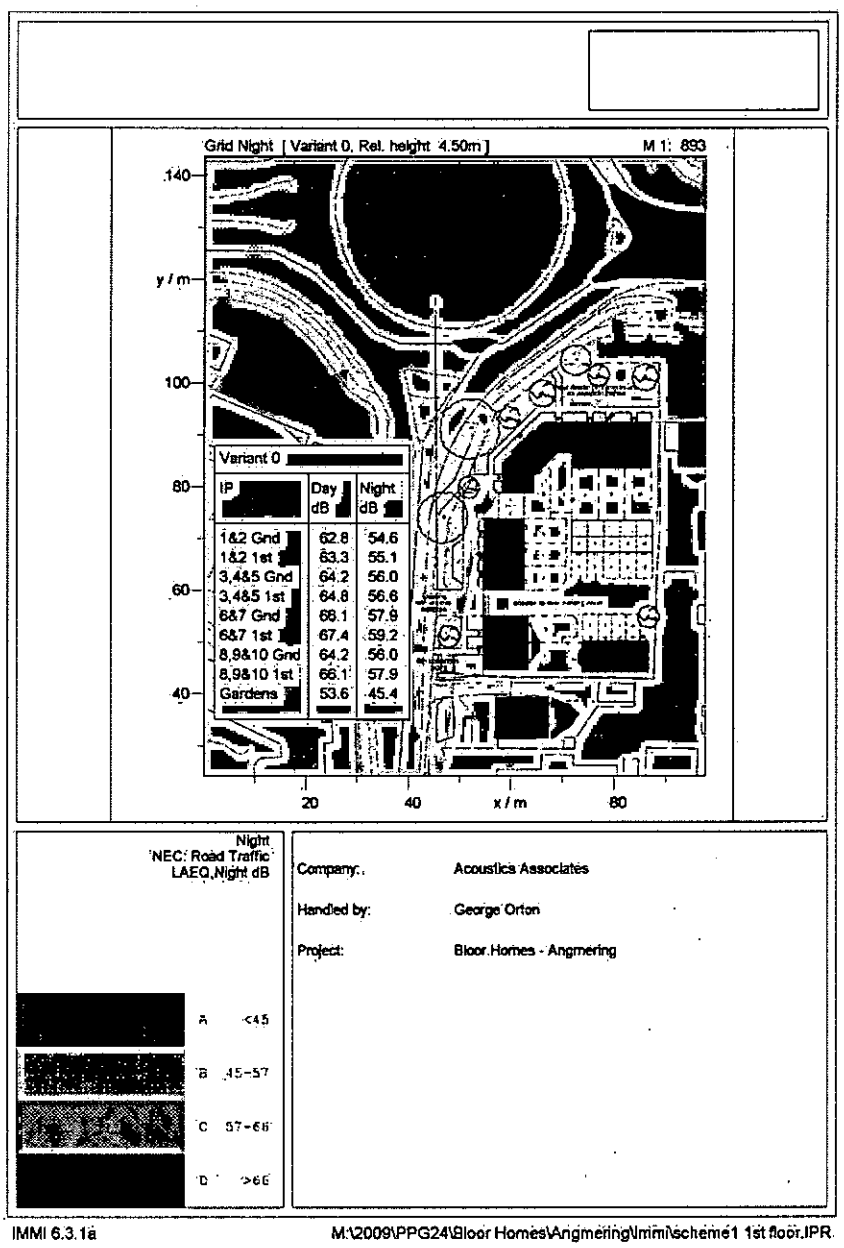
5.7 PPG 24 Noise Contours (Night Time, 1st Floor)



IMMI 6.3.1a M:\2009\PPG24\Bloor Homes\Angmering\immi\scheme1 1st floor.IPR

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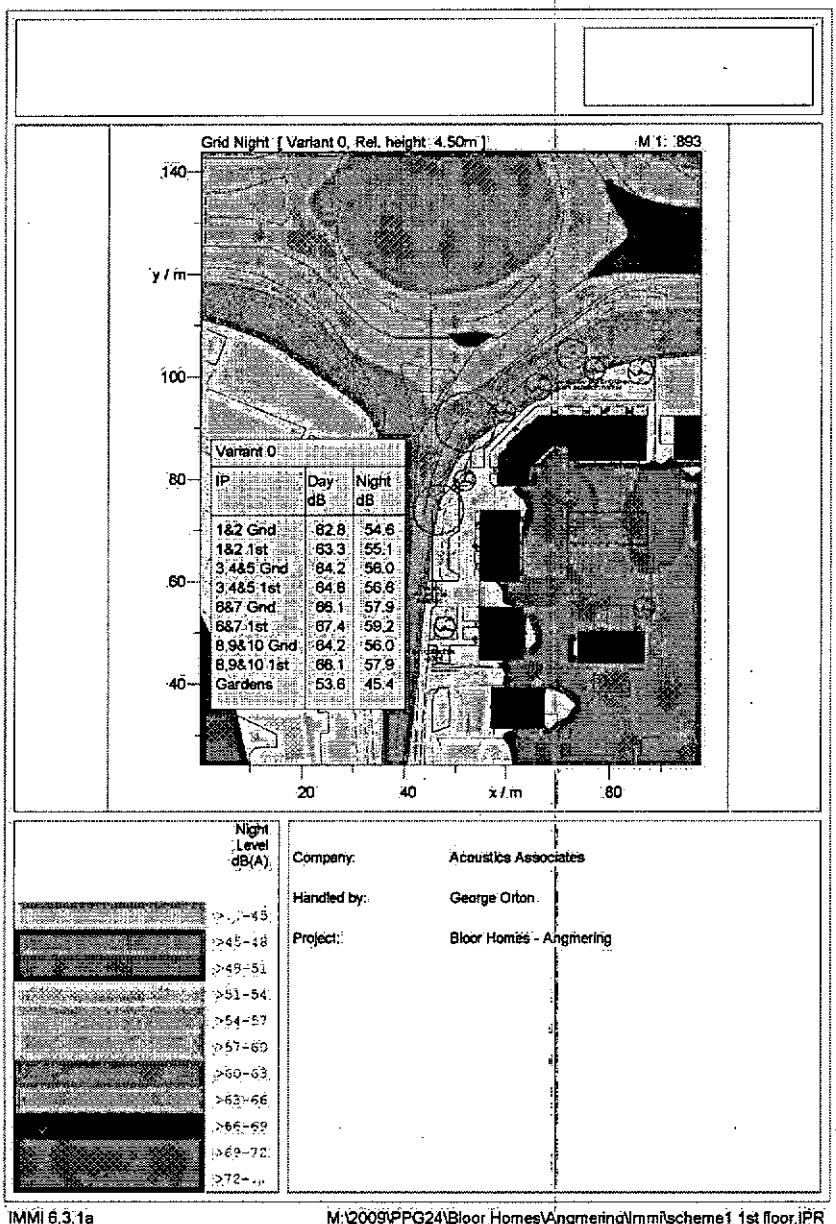
5.8 Noise Contours (Night Time, 1st Floor)



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6 Specific Design Issues and Other Areas

The computer noise contour model can be used to complete a building specific noise exposure category (NEC) classification. The following table taken from PPG24 shows the road noise level ranges for the different NEC's:

5.1 Floor/Façade Specific NEC's

Noise Levels Corresponding To The Noise Exposure Categories For New Dwellings LAeq,T dB				
	Noise Exposure Category			
Road Noise	**A**	**B**	**C**	**D**
07.00 - 23.00	<55	55 - 63	63 - 72	>72
23.00 - 07.00	<45	45 - 57	57 - 66	>66

5.1.1 Gnd Floor

Façade/Plot	*Day Level dB(A)*	*NEC*	*Night Level dB(A)*	*NEC*
Front/1&2	63	B/C	55	B
Front/3,4&5	65	C	56	C
Front/6&7	68	C	58	B
Front/8,9&10	67	C	56	B
Rear/1-10	<55	A	<45	A
All/11	<55	A	<45	A

5.1.2 1st Floor

Façade/Plot	*Day Level dB(A)*	*NEC*	*Night Level dB(A)*	*NEC*
Front/1&2	64	C	56	B
Front/3,4&5	65	C	57	B/C
Front/6&7	67	C	60	C
Front/8,9&10	65	C	58	C
Rear/1-10	<63	A/B	<57	B
All/11	<55	A	<45	A

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7 Glazing & Noise Criteria

7.1 Glazing

The noise model in the above section predicts that the worst case day and night time noise levels will be:

- Worst Case Day Time $L(A)_{eq,16hr}$ = 68dB(A)
- Worst Case Night Time $L(A)_{eq,8hr}$ = 60dB(A)
-

With respect to outside-to-inside attenuation of various transportation noise sources PPG24 (Annex 6, Para. 4) states the following:

"Because the sound insulation of a window (and other components of the building envelope) varies with the frequency (or pitch) of the sound, the overall noise reduction provided by a window will depend, among other factors, on the spectrum of the external noise. Table 1 shows typical reductions in noise levels from common sources which would be expected from various types of window installations fitted in brick/block walls in a dwelling. The insulation provided by any type of window when partially open will be in the region of 10-15 dB (A)"

Table 1: Typical noise reduction of a dwelling facade with windows set in a brick/block wall:

Noise Source	Single Glazing	Thermal Double Glazing	Secondary Glazing
Road Traffic	28	33	34
Civil Aircraft	27	32	35
Military Aircraft	29	35	39
Diesel Train	28	32	35
Electric Train	30	36	41

It should be noted that if proposed development is to be constructed using a timber frame with brickwork cladding, this type of construction will provide at least 10dB more attenuation than good thermal double glazing. Therefore it will still be acceptable to use the table above.

If parts of the development are to be timber frame, with timber cladding boards, it is recommended that the sound reduction index (Rw) should be at least 45 dB(A) to prevent noise break-in through the timber frame.

The table above shows that for road traffic thermal double glazing set a brick/block wall will provide 33 dB(A) of attenuation.

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7.2 World Health Organisation

The World Health Organisation (WHO) guidelines for community noise state possible target internal noise levels as follows:

Room Type	Target Internal Level - Leq dB (A)
Living rooms	35 (Daytime)
Bedrooms	30 (Night time)

The predicted (worst case) external road noise levels are as follows:

- Worst Case Day Time $L(A)_{eq,16hr.}$ = 68dB(A)
- Worst Case Night Time $L(A)_{eq,8hr.}$ = 60dB(A)

Therefore using the 33dB(A) noise reduction provided by thermal glazing the predicted (worst case) internal noise levels will be:

- Internal Worst Case Day Time $L(A)_{eq,16hr.}$ = 35dB(A)
- Worst Case Night Time $L(A)_{eq,8hr.}$ = 27dB(A)

Therefore in order to achieve the WHO target noise level for the worst case noise levels the façade/glazing will have to provide at least 33dB(A) of attenuation. 7.1 above shows that normal thermal double glazing should provide this level of attenuation.

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8 Conclusion & Noise Mitigation Measures

PPG 24 states that:

"When assessing a proposal for residential development near a source of noise, local planning authorities should determine into which of the four noise exposure categories (NEC) the proposed site falls, taking account of both day and night-time noise levels. Local planning authorities should then have regard to the advice in the appropriate NEC, as below:"

NEC	
A	***Noise need not be considered as a determining factor in granting planning permission, although the noise level at the high end of the category should not be regarded as a desirable level.***
B	***Noise should be taken into account when determining planning applications and, where appropriate, conditions imposed to ensure an adequate level of protection against noise.***
C	***Planning permission should not normally be granted. Where it is considered that permission should be given, for example because there are no alternative quieter sites available, conditions should be imposed to ensure a commensurate level of protection against noise.***
D	***Planning permission should normally be refused.***

At present within the ground floor of plots 1-10 only kitchens face on to the two roads. The Lounges of plots 1-10 face away from the roads.

The road noise survey and assessment shows that:

- Bedrooms on the front façades of plots 3-10 fall into NEC "C". (Night-time)
- Bedrooms on all façades of plots 1&2 fall into NEC "B". (Night-time)
- Bedrooms on the rear façades of plots 3-10 fall into NEC "B". (Night-time)
- Kitchens of plots 1-10 fall into NEC "C" (Daytime)
- Lounges of plots 1-10 fall into NEC "A" (Daytime)
- Plot 11 falls into NEC "B/A" (Day or Night)

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8.1 Glazing and Ventilation

8.1.1 Noise Exposure Category "A" or "B"

- If standard thermal glazing (e.g. 4/12/4) is implemented then the areas detailed will have an internal level that the World Health Organisation (WHO) deem acceptable with respect to transport/industrial noise.
- With respect to Noise Exposure Category "B" PPG24 states the following (Annex 2, Para 10): *"Because noise should be taken into account when determining planning applications in NEC B, it has been assumed that the minimum amelioration measure available to an occupant at night will be to close bedroom windows."*

8.1.2 Noise Exposure Category "C"

- If the glazing specification detailed in the section above is implemented then the areas detailed will have an internal level that the World Health Organisation (WHO) deem acceptable with respect to road noise if the windows are closed.
- As these areas are in Noise exposure category "C", means of ventilation may be required other than from an open window. Ventilation units on these facades should provide acoustic attenuation in order to achieve the target internal noise levels. Manufacturers of these types of ventilation system include Silvent or Nuaire

8.2 Possible Acoustic Ventilation Systems:

- Individual Attenuated Ventilation Unit.
  This type of ventilation unit is a single unit that would provide ventilation to one room only. The unit would be fitted to the wall of any room that requires acoustic ventilation.
- Whole House Ventilation System
  This type of system would have one central fan unit with ducting leading to different rooms within a dwelling. The advantage of this system is the air intake location could be positioned on the least noisy façade of each dwelling. The noise reduction that this unit would have to provide would depend on its mounting location.

8.3 Amenity Areas

The layout of the proposed houses means that the main garden areas are to the rear of the houses that front the two roads. The noise model predicts that the day time (07:00-23:00hrs) noise level in this area will be less than 55 dB(A). With respect to WHO guidelines this level is lower than the noise level that is likely cause serious annoyance.

The glazing and ventilation system, where required and correctly designed, may also help reduce the energy consumption of the development.

If the recommended glazing and noise mitigation measures detailed in the section above are implemented it is considered that there is no reason, on noise grounds, for planning consent to be withheld.

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