

UPDATED REPORT  
20/6/13

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## **Paul Horsley Acoustics Limited**

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# **Acoustic Report**

## **Environmental Noise Survey Headlands Road Liversedge**

Our Reference - J1987-R1  
Survey Date – 12<sup>th</sup> / 13<sup>th</sup> March 2012  
Survey and Report by – Paul Horsley MIOA

Date of Report – 23<sup>rd</sup> March 2012  
Revision 1 – 20.06.13 – Appendix C added

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## **1.0 Agent**

JA Oldroyd & Sons Ltd  
3 Primrose Lane  
Hightown  
Liversedge  
WF15 6NS

## **2.0 Subject**

Development of Land at  
Headlands Road  
Liversedge

## **3.0 Aims**

The aim of this report is to determine the existing baseline background noise environment levels, over a typical 24-hour weekday period, affecting the proposed development location in accordance with the requirements of BS4142: 1997 "Method for Rating Industrial Noise affecting Mixed Residential and Industrial areas", in support of any future planning application for the site.

Provide an assessment of the results in accordance with Planning Policy Guidance 24, PPG 24, for the proposed development site.

Provide mitigating noise control advice relating to the achievement of an acceptable internal environment for the development.

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### **4.0 Location and Description of Existing Noise Sources**

The proposed development site is positioned on partially open land at Woodhouse Headlands Road, Liversedge.

The site is best described as rectangular in shape occupying a maximum area of 130m x 80m in dimensions. The site is currently sloping from south down to the north, in line with the surrounding topography, it is grassed over for approximately 60% of the western side of the site, with the eastern side of the site currently occupied by factory units and related yard and carpark area. These buildings are to be demolished as part of the site redevelopment.

The northern site boundary is formed by a narrow public footpath, beyond which is Birkby Plastics factory building and associated car park. The western site boundary is formed by school playing fields, with the school building positioned south west of the boundary. The southern site boundary is formed by residential premises accessed from Headlands Road and Huddersfield Road. The eastern site boundary is formed by Headlands Road itself, with residential premises positioned on the opposite side of the road.

The primary noise sources within the vicinity of the site are predominantly due to traffic noise along Headlands Road during all daytime periods. Industrial noise produced by the plant and equipment serving the Birkby Plastics site, specifically audible from the 3 No façade louvres and the externally located chiller unit. This plant is dominant during evening and nighttime periods. Other sources of note are due to pedestrian movements and school children playing the playgrounds and playing fields.

It is the noise from these sources that are under consideration within this report.

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### **5.0 Guidance on the Assessment of Noise Levels**

The purpose of any criterion or standard for environmental noise should be to safeguard against unacceptable levels of community response, deemed as a feeling of annoyance during daytime or disturbance at night. WHO defines annoyance as "...a feeling of displeasure evoked by noise."

The main source of information relating to noise and the community response are field studies including noise measurements and social surveys. These studies then attempt to establish a correlation between the two sets of results.

In the absence of any definitive guidance and in order to establish suitable noise criteria, it is necessary to rely on general guidance and assessment methods used for community noise sources. Discussions on the current methods are given below.

#### **5.1 BS4142:1997 'Method for Rating Industrial Noise Affecting Mixed residential and Industrial Areas'**

This standard provides a method by which the impact of noise from factories, industrial premises, fixed installations and noise sources of an industrial nature in commercial premises can be predicted in terms of the likelihood of complaints arising from people residing in nearby dwellings. The standard is intended for assessing the measured or calculated noise levels from both existing and new or modified premises.

The likelihood that an individual will complain depends on individual attitudes and perceptions in addition to the noise levels and acoustic features present. The standard however, is only concerned with the rating of a noise based on the margin by which it exceeds a background noise level, with an appropriate allowance for any acoustic characteristics that may be present. In general, a noise is likely to cause complaints when it exceeds the background by a certain margin.

- A difference of around +10 dB or more indicates that complaints are likely
- A difference of around +5 dB is of marginal significance

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

An important cautionary note is included within the standard:

*"...the user is reminded that this standard is not based on substantive research but rather on accumulated experience"*

It is also states that the method is not suitable for assessing noise measured inside buildings or when the background and rating levels are both very low<sup>1</sup>.

1 - For the purposes of the standard, background noise levels below 30 dB and rating levels below say 35 dB are considered to be very low.

### **5.2 PPG 24 Planning Policy Guidance "Planning and Noise"**

Planning policy guidance note PPG 24 gives guidance to local authorities in England on the use of their planning powers to minimise the adverse impacts of noise and builds upon the advice previously contained in DoE Circular 10/73.

The PPG outlines the considerations to be taken into account in determining planning applications both for noise-sensitive developments and for those activities that will generate noise. It introduces important standards and references including BS8233:1987 *"Sound insulation and noise reduction for buildings"*, CRTN *"Calculation of road traffic noise"*, BS 7445 *"Description and measurement (1Hz to 80 Hz)"* etc.

The concept of noise exposure categories for residential development is also introduced, and recommendations are made regarding appropriate levels of exposure to different sources of noise. However, Annex 1 of the PPG it is stated that:

*"the NEC procedure is only applicable where consideration is being given to introducing residential development in an area with an existing noise source, rather than the reverse situation where new sources are to be introduced into an existing residential area"*

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The reason given in the PPG is as follows:

*"This is because the planning system can be used to impose conditions to protect incoming residential development from an existing noise source but, in general, developers are under no statutory obligation to offer noise protection measures to existing dwellings which will be affected by a proposed new noise source"*

The four NECs are defined thus:

NEC	
A	Noise need not be considered as a determining factor in granting planning permission, although the level at the 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.

The noise levels corresponding to the NECs for road and mixed noise sources are given below.

Values in the table refer to noise levels measured on an open site at the position of the proposed dwellings, well away from any existing buildings, and 1.2m to 1.5m above the ground.

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### **13.0 Mitigating Circumstances**

The proposal for which planning is being sought is for the re-development of the site with the erection of detached, semi-detached and terraced housing.

It is assumed that the building envelope will be constructed to the latest Building Regulations, and be of a robust construction to provide adequate attenuation against the external noise sources, identified in the vicinity, to achieve comfortable internal noise levels. The details of the building envelope have yet to be determined as this is only an outline planning application and further guidance can be provided once finalised.

There are 3 main areas to consider within the development to ensure that the new buildings are providing adequate attenuation against the ingress of external noise sources that are likely to affect the comfort and amenity of the residents.

- Building Fabric Construction
- Glazing Units
- External Recreational Areas

#### **13.1 Building Fabric Construction**

The Building Regulation, relating to the minimum acoustic requirements for the various areas of the development, must be met. Again, the finalized details of the construction methods for the proposed building have yet to be made.

Actual verification of the acoustic properties of the buildings fabric will need to be executed by pre-completion sound testing prior to occupation, or through certified test data with a Robust Details construction method.

Based upon the external baseline noise levels recorded, primarily due to both traffic and industrial noise, the minimum weighted sound reduction,  $R_w$ , of the external façades will need to be  $R_w$  40 dB to ensure that an internal specification of 30  $L_{Aeq, 8\text{hours}}$  dB maximum is met within the noise sensitive dwelling areas during nighttime periods, as determined within the



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WHO recommendations. The LAMax of 69 dB will be attenuated such that the internal level will be lower than 30 LAMax dB, again in line with the requirements of WHO.

Any internal wall construction will need to provide the minimum acoustic requirements necessary to meet with the Building Regulations of  $D_{nT,w} + C_{tr}$  45 dB for airborne and  $L'_{nTw}$  62 dB for impact noise transmission, when considered between all residential attached dwellings.

The roof of the building should provide the necessary sound insulation to meet the Building Regulations with respect to the passage of sound.

### 13.2 Glazing Units

The primary weakness in any building envelope is usually due to windows, ventilation louvres and other apertures.

The development will not have air conditioning installed within the noise sensitive residential areas of this developments, other than extraction from the bathrooms and kitchen hoods, which are self contained within each property, and therefore the only area of concern are the window systems.

In order to provide adequate attenuation against the noise levels in the area and achieve the Building Regulations and WHO criteria, it is recommended that the glazing employed on these developments should be a sealed unit double glazing incorporating acoustic trickle vents.

Using the noise exposure levels assessed for the site the minimum recommended Weighted Sound Reductive Index,  $R_w$ , for the glazing should be as follows for all facades of the buildings taking account of the worst case levels recorded.

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### 14.0 Report Summary

An attended noise survey was carried out of the existing environmental noise exposure over a typical 24-hour weekday on 12<sup>th</sup> / 13<sup>th</sup> March 2012, by the writer, in respect of any planning application for development of land at Headlands Road, Liversedge.

The noise levels recorded during the survey were utilized to provide the raw data to carry out an assessment of the site in accordance with the rating levels laid down in Planning Policy Guidance 24, Planning and Noise, PPG24. The PPG 24 Rating is used by the local authorities to assess the proposal for residential developments close to existing noise sources with view to granting planning permission.

The results indicate that the site is subject to **Categories A - B**, during the survey period, with the primary background environment being due to traffic movements along Headlands Road and the nearby industrial noise from Birkby Plastics.

No finalized plans of the specific building envelopes exist for acoustic analysis or appraisal; therefore, in the absence of these details, any proposed new build building fabric will need to provide a minimum of Rw 40 dB to ensure that the internal noise levels are maintained in line with WHO recommendations.

Recommendations have been proposed for the double-glazing systems to be employed on this development, in order to achieve the internal dwelling room design target exposure levels as determined within WHO recommendations.

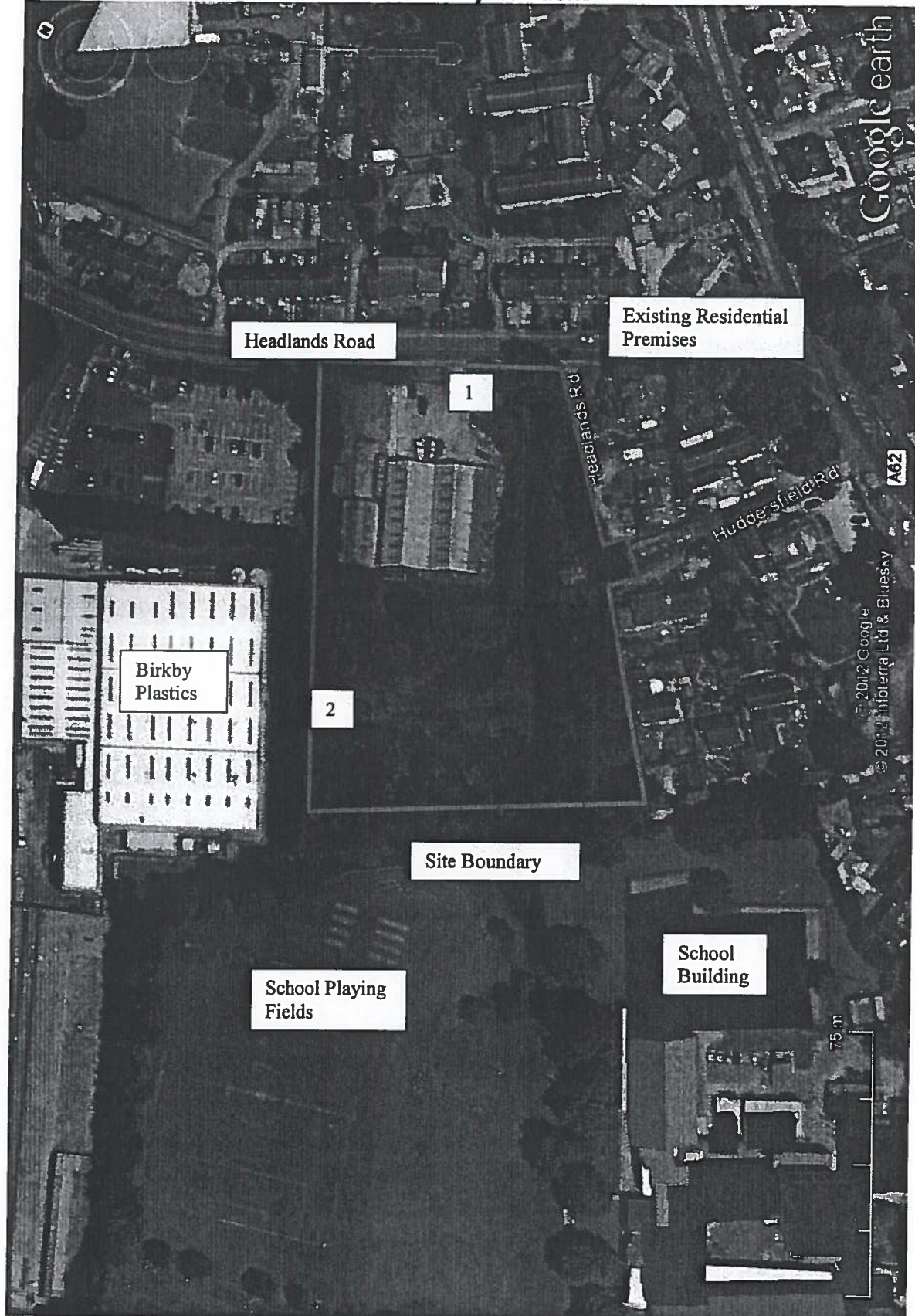
**Glazing Recommendation - 4-20-4 float glass-air-glass combination, with acoustic trickle vents, or "Whole House" ventilation systems installed.**

The external recreational areas forming part of the development should be enclosed by a 1.8m high boundary fence to ensure that the external amenity of the incumbent residents is below 50 dBA, as deemed acceptable within WHO.

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## APPENDIX A – Locational Plan and Survey Positions





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## APPENDIX B - Noise Survey Frequency Results Table 1 of 2

### HEADLANDS ROAD SITE - NOISE SURVEY FREQUENCY RESULTS TABLE

Linear Octave Band Frequency Results Data																
Map Location	Survey Period	Data ID	L <sub>Amax</sub> dB	L <sub>Amin</sub> dB	L <sub>Aeq</sub> dB	63	125	250	500	1	2	4	8	LA10	LA90	PPG 24 Category
						Hz	Hz	Hz	Hz	kHz	kHz	kHz	kHz	dB	dB	
1	07.00 - 08.00	1	63.1	41.9	51.4	61.4	63.0	52.4	53.3	49.6	43.9	41.6	31.4	55.3	43.9	A
1	08.00 - 09.00	2	66.3	43.7	52.5	62.7	63.5	53.9	53.5	49.0	43.1	40.4	35.6	55.3	47.0	A
1	09.00 - 10.00	3	68.1	45.6	55.9	63.5	63.5	53.4	53.0	49.6	44.0	40.0	31.4	58.4	50.9	B
1	10.00 - 11.00	4	66.8	44.2	52.8	61.8	63.1	52.9	53.1	49.9	42.5	36.7	27.9	56.1	46.9	A
1	11.00 - 12.00	5	61.4	42.1	52.1	63.2	63.1	53.0	53.1	49.5	42.2	40.4	31.7	56.2	43.8	A
1	12.00 - 13.00	6	72.2	45.2	55.5	61.4	53.5	42.6	44.8	42.5	40.3	38.8	31.7	57.7	47.9	B
1	13.00 - 14.00	7	74.3	45.6	58.1	59.0	55.7	44.3	44.0	41.9	36.7	36.9	26.9	60.8	50.1	B
1	14.00 - 15.00	8	72.4	41.3	55.1	58.5	55.8	46.5	45.1	49.6	40.3	40.5	31.5	58.6	46.1	B
1	15.00 - 16.00	9	71.4	42.4	55.6	61.3	64.6	45.8	42.6	39.9	36.4	36.5	26.4	57.5	48.9	B
1	16.00 - 17.00	10	71.7	42.4	50.7	60.0	61.8	47.3	44.5	40.6	38.4	42.7	35.1	53.0	45.5	A
1	17.00 - 18.00	11	64.8	43.1	55.3	58.5	50.6	45.9	43.1	40.4	36.9	34.7	27.7	58.8	46.8	B
1	18.00 - 19.00	12	69.4	43.3	54.5	58.8	49.4	44.9	43.2	40.7	36.7	38.2	38.3	57.9	45.5	A
1	19.00 - 20.00	13	76.8	42.7	54.5	59.1	57.2	48.1	49.3	45.5	41.2	34.7	28.4	57.3	47.2	A
1	20.00 - 21.00	14	66.6	40.4	51.2	56.5	58.0	45.7	46.4	41.7	37.2	32.8	29.3	54.0	45.6	A
1	21.00 - 22.00	15	69.0	38.6	46.1	56.2	57.5	45.9	47.5	43.8	39.5	35.0	32.8	48.7	40.0	A
1	22.00 - 23.00	16	57.1	38.8	47.0	55.3	51.9	40.8	39.1	36.0	31.2	27.8	25.2	51.1	40.4	A
1	23.00 - 00.00	17	53.0	38.2	40.5	61.2	64.3	52.0	53.7	48.6	42.8	36.3	32.5	42.1	39.0	A
1	00.00 - 01.00	18	40.7	37.4	38.9	60.6	63.3	51.9	52.8	48.2	43.1	36.8	33.2	39.6	38.5	A
1	01.00 - 02.00	19	44.2	37.2	39.6	58.7	63.2	47.9	51.8	48.8	41.6	38.0	33.2	41.3	38.3	A
1	02.00 - 03.00	20	45.5	37.8	39.4	60.7	62.7	52.1	52.1	47.6	41.7	37.8	32.5	40.3	38.6	A
1	03.00 - 04.00	21	46.1	37.3	39.1	60.4	65.6	48.4	54.3	48.9	43.3	38.5	34.5	40.1	38.1	A
1	04.00 - 05.00	22	46.8	37.6	39.9	61.3	62.8	51.9	53.1	49.2	42.9	39.1	33.0	41.3	38.5	A
1	05.00 - 06.00	23	65.4	41.5	49.6	58.7	63.7	48.0	51.9	49.7	42.5	42.9	37.3	51.4	43.4	B
1	06.00 - 07.00	24	67.7	41.6	53.2	62.0	62.8	53.2	53.1	49.5	45.1	41.5	31.7	56.3	44.9	B

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## APPENDIX B - Noise Survey Frequency Results Table 2 of 2

### HEADLANDS ROAD SITE - NOISE SURVEY FREQUENCY RESULTS TABLE

Map Location	Survey Period	Data ID	Linear Octave Band Frequency Results Data										LAeq dB	LAmin dB	LAmax dB	PPG 24 Category
			63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	LA10 dB	LA90 dB				
2	07.00 - 08.00	1	61.4	63.0	52.4	53.3	49.6	43.9	41.6	31.4	55.4	54.0	A			A
2	08.00 - 09.00	2	62.7	63.5	53.9	53.5	49.0	43.1	40.4	35.6	55.5	54.2	A			A
2	09.00 - 10.00	3	63.5	63.5	53.4	53.0	49.6	44.0	40.0	31.4	55.3	54.3	A			A
2	10.00 - 11.00	4	61.8	63.1	52.9	53.1	49.9	42.5	36.7	27.9	55.3	54.0	A			A
2	11.00 - 12.00	5	63.2	63.1	53.0	53.1	49.5	42.2	40.4	31.7	55.2	54.0	A			A
2	12.00 - 13.00	6	61.4	53.5	42.6	44.8	42.5	40.3	38.6	31.7	50.1	45.5	A			A
2	13.00 - 14.00	7	59.0	55.7	44.3	44.0	41.9	36.7	36.9	28.9	48.8	44.6	A			A
2	14.00 - 15.00	8	58.5	55.8	46.5	45.1	49.6	40.3	40.5	31.5	53.5	46.9	A			A
2	15.00 - 16.00	9	61.3	64.6	45.8	42.6	39.9	36.4	36.5	29.4	50.2	46.5	A			A
2	16.00 - 17.00	10	60.0	61.8	47.3	44.5	40.6	38.4	42.7	35.1	51.4	45.4	A			A
2	17.00 - 18.00	11	58.5	50.6	45.9	43.1	40.4	36.9	34.7	27.7	47.6	44.6	A			A
2	18.00 - 19.00	12	58.8	49.4	44.9	43.2	40.7	36.7	38.2	38.3	48.5	44.7	A			A
2	19.00 - 20.00	13	59.1	57.2	48.1	49.3	45.5	41.2	34.7	28.4	52.1	49.6	A			A
2	20.00 - 21.00	14	56.5	58.0	45.7	46.4	41.7	37.2	32.8	29.3	49.4	45.2	A			A
2	21.00 - 22.00	15	56.2	57.5	45.9	47.5	43.8	39.5	35.0	32.8	51.5	46.0	A			A
2	22.00 - 23.00	16	55.3	51.9	40.8	39.1	36.0	31.2	27.8	25.2	45.0	38.6	A			A
2	23.00 - 00.00	17	61.2	64.3	52.0	53.7	48.6	42.8	38.3	32.5	56.0	51.6	B			B
2	00.00 - 01.00	18	60.6	63.3	51.9	52.8	48.2	43.1	38.8	33.2	55.7	49.3	B			B
2	01.00 - 02.00	19	58.7	63.2	47.9	51.8	48.8	41.6	38.0	33.2	54.8	51.3	B			B
2	02.00 - 03.00	20	60.7	62.7	52.1	52.1	47.6	41.7	37.8	32.5	55.6	49.7	B			B
2	03.00 - 04.00	21	60.4	65.6	48.4	54.3	48.9	43.3	38.5	34.5	55.9	54.3	B			B
2	04.00 - 05.00	22	61.3	62.8	51.9	53.1	49.2	42.9	39.1	33.0	56.0	47.8	B			B
2	05.00 - 06.00	23	58.7	63.7	48.0	51.9	49.7	42.5	42.9	37.3	55.1	53.5	B			B
2	06.00 - 07.00	24	62.0	62.8	53.2	53.1	49.5	45.1	41.5	31.7	55.5	54.3	B			B

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**REVISION 1**

**20.06.13**

### **APPENDIX C BS 4142:1997 Assessment & Comments**

The following is an assessment in accordance with BS4142: 1997, which has been based upon the nighttime results from site boundary location 2, representing the closest potential noise sensitive residential dwelling on the site and comparing the results of the noise from the Birkby Plastics Ltd factory (Factory now ceased to exist and as such not operational).

Measured Noise Level Loc 2, ID21	$L_{Aeq} (10 \text{ min})$	55 dB
Residual Noise Level Loc 1, ID21	$L_{Aeq} (10 \text{ min})$	39 dB
Background Noise Level Loc 1, ID21	$L_{A90} (10 \text{ min})$	38 dB
Assessment made during nighttime periods with a reference time period of 10 minutes.		
Correction from BS4142 Table 1 is 0 dB		
Corrected measured level	$(55 - 0)$	= 55 dB
Specified Noise Level Acoustic feature (Tonal Drone)	$L_{Aeq} (10 \text{ min}) + 5\text{dB}$	= 5 dB
Rating level	$(55 + 5)$	= 60 dB
Background Level	$L_{A90} (10 \text{ min})$	= 39 dB
Excess of Rating over background level	$(60 - 39)$	= <b>+21 dB</b>

The above indicates that at there was a Rating of +21 dB background level due to the specific plant and activity noise emanating from the Birkby Plastics Ltd site when considered at the closest potential site boundary. A rating of this magnitude indicates that had the factory been operational complaints are would be likely from the plant activities, when considered at this location, without the inclusion of mitigating noise control measures being included within the development.

Had the Birkby Plastics Ltd factory still been operational then the recommended mitigating measures noted within Section 13 of this report would have been adequate to provide the

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necessary noise control requirements to achieve an acceptable internal and external noise climate for the residents once the premises were occupied.

Birkby Plastics Ltd has ceased to operate on site since March 2013 and consequently the noise sources monitored within the above report are no longer present or operational.

Should the site become live in the future, then it would be the responsibility of the new occupants of the site to ensure that any plant or equipment used on site achieved an acceptable noise output level such that it was not increasing any new background level that is present prior to their occupation and thus preserve the amenity of the nearby noise sensitive residential premises.

**The above has shown that when the previous noise sources were present, the mitigating measures recommended would allow for an acceptable noise climate for the incumbent residents. The existing situation, as of June 2013, is that the noise sources measured have ceased to operate and as such the noise climate has reduced significantly. The previous mitigation recommendations offered are still proposed and as such would provide a high level of noise control against any increased noise levels in the future.**

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requirements necessary to ensure that the internal noise levels inside the bedrooms are maintained for all elevations of this project. Other manufacturers could be considered provided that the  $D_{n,e,w}$  dB value is maintained.

An alternative would also be the use of a forced ventilation system, either attending to the bedrooms only or a "Whole House" system that would remove the need for opening windows during nighttime periods. This type of system is usually located within the roof space of the dwelling and as such not likely to give rise to noise issues from its own operation.

### **13.3 External Recreational Areas**

The external recreational areas should be adequately screened from ingress of noise to allow the amenity of the spaces to be enjoyed without undue disturbance from external noise sources. The acceptable noise climate acceptable to the majority of people has been set at below 50 dBA within WHO. Presently the site is exposed to between 51 and 54 dBA for day and evening periods. In order to reduce this level when considered within the external recreational areas of the dwellings, it is recommended that a close bonded solid fence is erected around the gardens to a height of 1.8m. This type of fencing will provide up to 10 dBA reduction in the exposure levels and reduce the noise experienced to below the accepted annoyance value set within WHO.



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Period	Noise Exposure Level	Maximum Internal Bedroom Target Level	Minimum Rw Values Required
Daytime (0700 – 2300 Hrs)	LAeq, 16 Hours – 54 dB	LAeq, 16 Hours – 35 dB	<b>Rw 19 dB</b>
Night-time (2300 – 0700 Hrs)	LAeq, 8 Hours – 54 dB LMax - 69 dB	LAeq, 8 Hours – 30 dB LMax - 45 dB	<b>Rw 24 dB</b> <b>Rw 24 dB</b>

Based upon generic acoustic data the acoustic properties of a double glazing system containing a **4-20-4**, float glass – air - glass combination provides an acoustic sound insulation of **Rw 30 dB**. This is the recommended minimum combination and acoustic properties necessary to achieve the minimum requirements for these development sites.

If we consider an opening a window within a bedroom to provide additional room ventilation, the accepted attenuation value of the open window is 15 dB, this would allow for an internal noise level within a bedroom of 39 LAeq dB. This level of ingress is deemed as likely to result in sleep disturbance due to external sources, set at 30 LAeq dB within WHO. Also, taking account of the 69 LMax dB nighttime value, this would place the event noise contribution at 55 LMax dB, which is again above the recommendation of 45 LMax dB within WHO.

To avoid disturbance due to external noise source events and still provide adequate ventilation within a bedroom areas, an alternative to opening a window would be to consider installation of a sealed unit double glazing system with integral acoustic trickle ventilation system.

The glazing provided for this project must include for the a trickle ventilation system that provides both adequate background ventilation in accordance with Approved Document F1 and the minimum acoustic properties to maintain the internal noise characteristics of a closed window using a through frame ventilator. The Rw values quoted above do not include for the trickle vent combination within their values and as such inclusion of a standard trickle vent will diminish the Rw values quoted.

The combined acoustic properties of the acoustic trickle vent system proposed for use on this site, Passivent TVALdB 450/40 achieve a specified sound reduction of **40 Dn,e,w dB** through the ventilator in the open position. This level of attenuation is achieving the minimum

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### 11.0 Results Analysis

The above attended noise survey, carried out between 12<sup>th</sup> and 13<sup>th</sup> March 2012, was chosen as a representative period to reflect the typical noise climate for the area surrounding the proposed residential site.

The noise survey results obtained for the site can, therefore, be deemed to be representative of normal activities for the area and will be used as the base for analysis and assessment purposes below.

Assessments of the individual results are included with a Planning Policy Guidance 24: Planning and Noise, PPG24, noise exposure category, NEC, rating from A to B, for the specific site.

The PPG 24 Rating is used by the local authorities to assess the proposal for residential developments close to existing noise sources with view to granting planning permission. This is a useful guideline in assessing the exposure of a site.

### 12.0 Assessment Conclusions

The noise sources are predominantly due to industrial and traffic noise and as such the assessment categories used are the "Mixed Source" rating levels within PPG 24.

As can be seen from the results table above, the site was experiencing a rating of **Category A through to B** at the specific hour of assessment. This was due mainly to traffic noise during the daytime periods passing along Headlands Road, in both directions, for Location 1 and due to industrial noise emanating from the Birky Plastics site for Location 2 for all periods of the day.

The predominant result is a Category A at the Headlands Road elevation for the noise sensitive nighttime periods, taking account of this result local planning authorities would take consideration of PPG 24 the requirements of which state: