Bourne Estate (South) Regeneration

Planning and Conservation Area Consent Application

SD17 MUGA Noise Impact Assessment

November 2012

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Report for

The London Borough of Camden

Bourne Estate, London Borough of Camden

Multi-Use Games Area (MUGA) – Noise Impact Assessment

Status: Final **Date: 16.11.2012**

The London Borough of Camden

MUGA - Noise Impact Assessment

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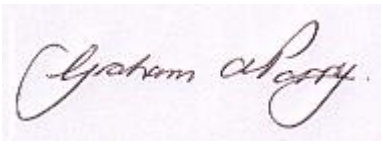
Approved By:	 **Graham Parry** **Managing Director**
Report For:	**The London Borough of Camden**
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1. INTRODUCTION

ACCON UK Limited (ACCON) has been commissioned by Hilary Satchwell of Tibbalds Planning & Urban Design Limited on behalf of the London Borough of Camden to carry out a noise impact assessment in relation to a proposed Multi-Use Games Area (MUGA) positioned within the Bourne Estate, situated in the London Borough of Camden.

This report follows on from work carried out by ACCON for a noise assessment previously carried out for both the Tybalds and Bourne Estates (ACCON Report dated 05.11.2012). This report takes account of the proposed layout for the Bourne Estate which is shown in **Figure 1.1** below.

The object of this report will be, through on site noise measurements and associated noise modelling, to determine the extent to which the use of the proposed MUGA facility will impact on existing noise sensitive receptors in close proximity to the facility.

The proposed MUGA facility is located to the north of St. Albans C.E Primary School and Nursery with four and five storey residential accommodation located adjacent to the site to the north, east and west. In addition there are proposals for three new residential accommodation blocks to the south-east and north-east of the site within relatively close proximity of the MUGA.

An acoustic glossary is provided in **Appendix 1** and a location plan is displayed in **Appendix 2**.

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Figure 1.1: Proposed Multi-Use Games Area Location

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2. THE NATURE, MEASUREMENT AND EFFECT OF NOISE

Noise is often defined as sound that is undesired by the recipient. Whilst it is impossible to measure nuisance caused by noise directly, it is possible to measure the loudness of that noise. 'Loudness' is related to both sound pressure and frequency, both of which can be measured. The human ear is sensitive to a wide range of sound levels. The sound pressure level of the threshold of pain is over a million times that of the quietest audible sound. In order to reduce the relative magnitudes of the numbers involved, a logarithmic scale of decibels (dB) is normally used, based on a reference level of the lowest audible sound.

The response of the human ear is not constant over all frequencies. It is therefore usual to weight the measured frequencies to approximate the human response. The resulting 'A' weighted decibel, dB(A), has been shown to correlate closely to the subjective human response.

When related to changes in noise, a change of ten decibels from say 60 dB(A) to 70 dB(A) would represent a doubling in 'loudness'. Similarly, a decrease in noise from 70 dB(A) to 60 dB(A) would represent a halving in 'loudness'. A change of 3 dB(A) is generally considered to be just perceptible[1]. **Table 2.1** details typical noise levels.

Table 2.1: Typical Noise Levels

Approximate Noise Level (dB(A))	Example
0	Limit of hearing
30	Rural area at night
40	Library
50	Quiet office
60	Normal conversation at 1 m
70	In car noise without radio
80	Household vacuum cleaner at 1 m
100	Pneumatic drill at 1 m
120	Threshold of pain

[1] Communities & Local Government (1994). Planning Policy Guidance 24: Planning & Noise.

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3. NOISE ASSESSMENT POLICY & CRITERIA

The new National Planning Policy Framework (NPPF) released in March 2012 has replaced the Planning Policy Guidance which previously covered planning and pollution control and new development in England. The purpose of the planning system is to contribute to the achievement of sustainable development. There are three dimensions to sustainable development: economic, social and environmental. The environmental role is to contribute to protecting and enhancing our natural, built and historic environment; and as part of this, helping to improve biodiversity, use natural resources prudently, minimise waste and pollution, and mitigate to adapt to climate change including moving to a low carbon economy.

One of the core planning principles is to contribute to conserving and enhancing the natural environment and reducing pollution. Allocations of land for development should prefer land of lesser value, where consistent with other policies in the Framework. The planning system should contribute to and enhance the natural and local environment by preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability.

Paragraph 123 of the NPPF states that planning policies and decisions should aim to:

- Avoid noise from giving rise to significant adverse impacts (see Explanatory Note to the Noise Policy Statement for England (DEFRA)) on health and quality of life as a result of new development;
- Mitigate and reduce to a minimum other adverse impacts (see Explanatory Note to the Noise Policy Statement for England (DEFRA)) on health and quality of life arising from noise from new development, including through the use of conditions;
- Recognise that development will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them because of changes in nearby land use since they were established (Subject to the provisions of the Environmental Protection Act 1990 and other relevant law); and
- Identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.

The Noise Policy Statement for England (NPSE) was developed by DEFRA and published in March 2010. The vision of the NPSE is to '*Promote good health and good quality of life through the effective management of noise within the context of Government policy on sustainable development.*

Planning Policy Guidance Note 24 'Planning and Noise' (PPG 24) was previously the main guidance document with respect to acceptable noise levels for dwellings (now revoked by NPPF).

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3.2 Noise Policy Statement England (NPSE)

The NPSE aims to *'Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:*

- *avoid significant adverse impacts on health and quality of life;*
- *mitigate and minimise adverse impacts on health and quality of life; and*
- *where possible, contribute to the improvement of health and quality of life'*

3.3 BS8233 and World Health Organization Criteria

There are no specific noise criteria that particularly relate to sports facilities. BS 8233 and the World Health Organisation criteria are both absolute noise criteria and consider the maximum noise levels that would normally be considered acceptable for a range of noise sources.

Noise predictions can be made of the likely anticipated noise levels arising from the MUGA activities at the closest residential receptors and these can be compared to absolute noise levels proposed by both the World Health Organisation's "*Guidelines for Community Noise"* and BS 8233: *Sound Insulation and Noise Reduction for Buildings*, in order to determine the acceptability of the proposals . Accordingly, the proposed acceptability criteria for this development are outlined in **Table 4.2** below.

Table 3.1: Summary of Noise Criteria: BS 8233 & WHO

	Criterion	Location	Good Level $L_{Aeq,T}$	Reasonable Level $L_{Aeq,T}$
WHO	To prevent annoyance in external amenity areas	External	50	55
BS 8233	To ensure a reasonable resting condition inside living rooms	Internal	30	40

It should be noted that the above criteria relate to the daytime period, which is normally defined as 07:00 hours to 23:00 hours and that the good internal level referenced in BS 8233 is recognised as being at the very on-set of sleep disturbance. Accordingly, the Reasonable Level referenced in BS 8233 should be considered as a minimum design objective.

Additionally, it is important to understand the extent to which noise from the proposed MUGA facility would potentially intrude over and above the existing background noise levels and accordingly for completeness that comparison is also made.

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3.4 Local Policy

The LBC's Local Development Framework – (*Camdens Development Policies – 2010 – 2025*) does not provide specific advice with respect to noise from Multi-Use Games Areas but does provide general advice in relation to community facilities. Policy DP15 - Community and Leisure Uses specifically states the following:

'*15.12 New community and/or leisure uses should not harm residential amenity, the environment or transport networks in line with all the policies in this document. They must also be consistent with their surroundings in terms of scale, character and mix of uses'*

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4. NOISE MEASUREMENT SURVEY

A noise measurement survey was carried out on Thursday 15th November 2012 with the purpose of obtaining short-term noise measurements in the vicinity of those properties most likely to be affected by the use of the new MUGA. Noise measurements were carried out at four locations representative of the nearest sensitive receptors, which were identified as being adjacent to Gooch House, in front of Nigel Buildings and at two locations adjacent to Buckridge House sited to the north and south respectively. The locations are shown on the site plan in **Appendix 2**.

A CEL 440 Sound Level Meter was utilised to carry out the noise measurements. Before and after the measurement periods the equipment was calibrated in order to ensure that the equipment had remained within reasonable calibration limits (± 0.5 dB). At all monitoring positions, measurements were carried out at approximately 1m from the façade of nearby buildings and at 1.2m above ground level.

Noise measurements were carried out on 15th November 2012. The weather was dry and cloudy, with very little wind and a temperature of approximately 12°C and was therefore considered suitable for representative measurements.

The results of the noise levels for the façade positions are identified in **Table 4.1** below.

Table 4.1: Summary of Measured Noise Levels

Location	L_{Aeq}	$L_{AF(max)}$	L_{A90}
MP1 - Gooch House			
16:15 – 16-20	58.1	81.2	47.5
MP2 - Nigel Buildings			
17:35 – 17:40	55.5	75.6	46.0
MP3 - Buckridge House (North)			
16:50 – 16:55	52.9	65.0	48.0
MP4 - Buckridge House (South)			
17:00 – 17:05	53.8	63.2	50.5

During the noise survey, the dominant noise sources comprised of road traffic noise, occasional aircraft, noise from children playing and intermittent building work.

As seen in **Table 4.1** above the range of ambient noise levels (L_{Aeq}) values range from 52.9dB to 58.1dB L_{Aeq}. The range of L_{AFmax} values vary from 63.2 L_{Amax} adjacent to Buckridge House to 81.2 L_{Amax} adjacent to Gooch House. It was noted during the measurement period that the elevated L_{Amax} level adjacent to Gooch House was caused by intermittent construction work in close proximity to the measurement position.

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Background noise levels ranged from between 47.5 to 50.5 L_{A90}.

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5. NOISE LEVEL PREDICTIONS

In order to determine whether the absolute noise levels emanating from the MUGA facility are within reasonable limits, it is necessary to predict the future noise levels when the MUGA is open and activity is ongoing.

5.2 Sensitive Receptor Locations

The four receptor locations previously identified in **Chapter 3** will be utilised for the purpose of predicting the future noise impact of the MUGA. In addition the proposal for new build accommodation to the north-west and south-east of the MUGA has introduced additional receptors, however the location R4 adjacent to Buckridge House represents the worst case scenario with the building being approximately 7m from the edge of the MUGA.

5.3 Noise from MUGA facilities

In order to provide necessary source noise data to calculate the likely levels of noise from the use of the MUGA, ACCON have undertaken a review of data utilised for similar projects where noise predictions from MUGA activities have been carried out.

The data utilised is taken from measured data from existing MUGA's and on reviewing the data available ACCON have determined that a Sound Power Level of 78dB L_{WA} is appropriate when considering the size and likely intensity of use of the proposed MUGA located within the Bourne Estate.

The acoustic characteristics of a MUGA facility invariably involves impact noise from balls on the ground and also on fencing and from raised voices during periods of activity. The CadnaA noise model was re-run with the Sound Power Level increased by 10dB in order to predict L_{Amax} levels emanating from the facility.

5.1.1. Predicted Noise Levels

The noise modelling software CadnaA has been utilised to determine the receptor noise levels using the source term from the MUGA, as detailed above. CadnaA is a three dimensional noise model developed by DataKustik and has been extensively used by ACCON and others to develop noise models for a wide variety of situations and noise sources. CadnaA utilises the methodology in *ISO 9613: Acoustics – Attenuation of sound during propagation outdoors* to predict the noise level from a point source. The receptor location noise predictions are summarised in **Table 6.1** below.

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Table 5.1: Predicted Noise Level from the MUGA

Receptor	Noise Level arising from MUGA	
	L_{Aeq}	L_{Amax}
R1 - Gooch House (34m)	16.8	26.8
R2 - Nigel Buildings (23m)	37.5	47.5
R3 - Buckridge House (North) (20m)	38.0	48.0
R4 - Buckridge House (South) (5m)	45.6	55.6
R5 – New Build Apartments (7m)	41.7	51.7

The model was run using acoustically hard ground conditions (G=0) and with source and receiver heights modelled at 1.5m height in order to represent a worst case scenario.

Appendix 3 provides a graphical representation of the CadnaA noise model.

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6. NOISE IMPACT ASSESSMENT

6.1 BS 8233 and WHO Assessment

In order to determine the noise impact and the acceptability of the MUGA facility a comparison has been carried out against the noise criteria identified in **Section 3**. **Table 6.1** below identifies the assessment carried out to determine the compliance with BS 8233 and World Health Organisation Guidelines.

Table 6.1: Noise Impact Assessment of the MUGA

Receptor	Predicted External Noise Level (L_{Aeq})	Existing Ambient Noise Level (L_{Aeq})	Predicted Internal Noise Level[(1)] (L_{Aeq})	Compliance with Criteria	
				WHO Guidelines (55 L_{Aeq} external)	BS 8233 (40 L_{Aeq} internal)
R1 - Gooch House	36.0	58.1	23.0	✓	✓
R2 - Nigel Buildings	37.5	55.5	24.5	✓	✓
R3 - Buckbridge House (North)	38.0	52.9	25.0	✓	✓
R4 - Buckbridge House (South)	45.6	53.8	32.6	✓	✓
R5 - New Build Apartments	41.1	55.5[(2)]	28.1	✓	✓

Notes: (1) Where internal noise levels are concerned we have assumed a minimum reduction of 13 dB(A) with windows open.
(2) Location assumed to have similar ambient noise levels as those outside Nigel Buildings

It can be seen by reference to **Table 6.1** that noise levels from the MUGA facility will not result in an exceedance of any of the noise criteria. This is a positive indication that noise from the proposed facility will not result in any reduction of the overall environmental amenity of the area which is in accordance with Policy DP15 of the LBC's Local Development Framework relating to community facilities.

Furthermore by reference to **Table 4.1** above it is evident that predicted noise levels are significantly below the measured ambient (L_{Aeq}) and background noise levels (L_{A90}). In addition it will be noted by comparing the maximum noise levels in **Table 5.1** with the measured noise levels shown in **Table 4.1** that in all cases the predicted L_{Amax} levels are lower than those measured at the monitoring positions identified. It is important to understand that the predicted L_{Amax} levels are for comparative purposes only because at present there is no noise assessment criterion for the L_{Amax} parameter for the daytime period.

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At the present time the opening hours of the MUGA facility are not known, however due to the close proximity of receptor locations it is assumed that the facility will not be accessible during the night-time period. It is recommended that the facility should not be accessible between 9.00pm – 7.30am to minimise the potential for night-time noise disturbance to local residents.

It should be noted that the proposed MUGA will replace an existing ball court facility which is currently located within approximately 15m of the proposed facility. Furthermore an existing school playground is located less than 5m from the proposed MUGA where raised voices from children will be commonplace during the school hours.

Given the above it is reasonable to assume that nearby residents will have become habituated to some extent to the characteristic noise sources likely to emanate from the proposed MUGA.

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7. CONCLUSION

A noise measurement study has been carried out in order to determine the current noise climate at existing receptor locations in close proximity to the proposed MUGA located at the Bourne Estate, within the London Borough of Camden.

Additionally noise level predictions have been carried out at the nearest noise sensitive receptors to determine the noise impact of activity within the MUGA.

In all cases the predicted noise levels demonstrate that noise emanating from the MUGA facility will be significantly below existing measured ambient (L_{Aeq}) and background (L_{A90}) noise levels.

Whilst there is no recognised assessment methodology for noise from MUGA facilities a comparison against BS8233 and WHO recommended guideline values demonstrates that in all cases the predicted noise levels comfortably meet the internal and external noise criteria.

It can be concluded that noise from the use of the MUGA will not have a detrimental impact on the amenity of existing or future noise sensitive receptors and with regard to paragraph 123 of the NPPF detailed in **Chapter 3**, a significant adverse impact in relation to noise is unlikely to occur.

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Appendix 1
Glossary of Acoustic Terms

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Appendix 1: Glossary of Acoustic Terms

'A'-Weighting - This is the main way of adjusting measured sound pressure levels to take into account human hearing, and our uneven frequency response.

Decibel (dB) - This is a tenth (deci) of a bel. Decibel can be a measure of the magnitude of sound, changes in sound level and a measure of sound insulation. Decibels are not an absolute unit of measurement but are an expression of ratio between two quantities expressed in logarithmic form.

$L_{Aeq,T}$ - The equivalent steady sound level in dB containing the same acoustic energy as the actual fluctuating sound level over the given period, T. T may be as short as 1 second when used to describe a single event, or as long as 24 hours when used to describe the noise climate at a specified location. $L_{Aeq,T}$ can be measured directly with an integrating sound level meter.

L_{A10} - The 'A'-weighted sound pressure level of the residual noise in decibels exceeded for 10 per cent of a given time and is the L_{A10T}. The L_{A10} is used to describe the levels of road traffic noise at a particular location.

L_{A50} - The 'A'-weighted sound pressure level of the residual noise in decibels exceeded for 50 per cent of a given time and is the L_{A50T}.

L_{A90} - The 'A'-weighted sound pressure level of the residual noise in decibels exceeded for 90 per cent of a given time and is the L_{A90T}. The L_{A90} is used to describe the background noise levels at a particular location.

L_{Amax} - The 'A'-weighted maximum sound pressure level measured over a measurement period.

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Appendix 2
Site Plan & Monitoring Locations

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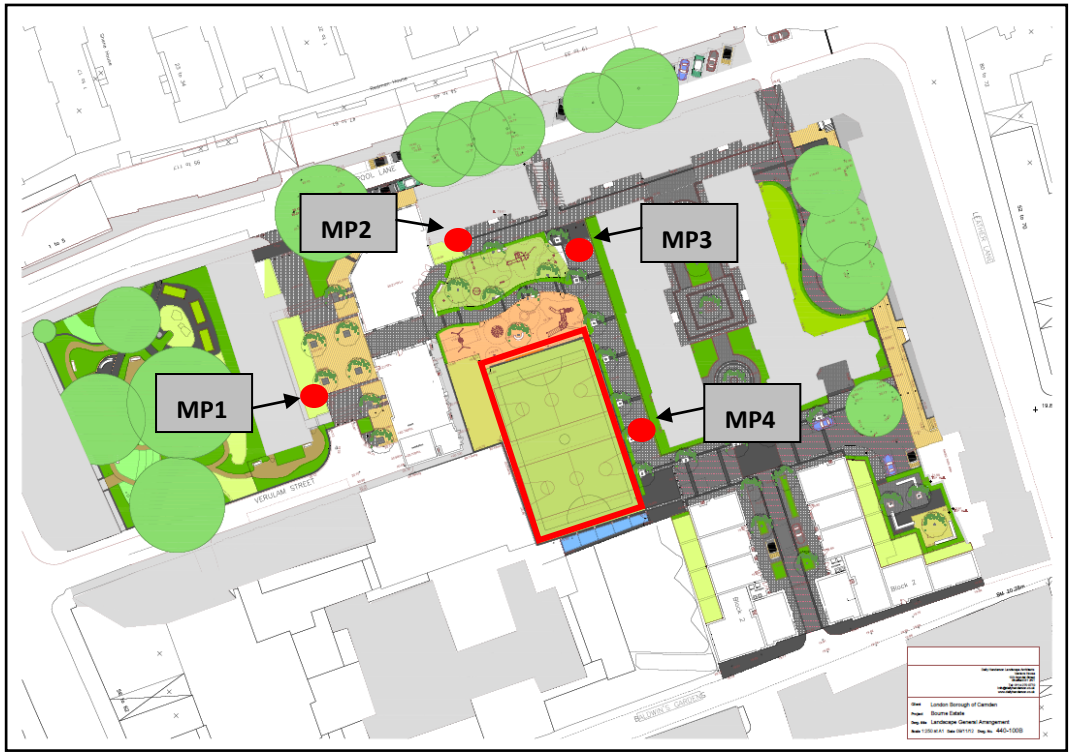
Appendix 2: Monitoring Locations



LEGEND

Noise Monitoring Position

MUGA Boundary

N
W
E
S

Client: The London Borough of Camden		Description: Location of the Proposed MUGA with Noise Monitoring Locations		Design	DD	05/11/12	
				Drawn	DD	05/11/12	
Rev:	Description: FINAL	Project: Bourne Estate		Checked	GP	05/11/12	*Appendix Two*
				Approved	GP	05/11/12	Scale: Not to Scale

Appendix 3
Site Noise Contours

Appendix 3: Site Noise Contours

LEGEND

- > -99.0 dB
- > 35.0 dB
- > 40.0 dB
- > 45.0 dB
- > 50.0 dB
- > 55.0 dB
- > 60.0 dB
- > 65.0 dB
- > 70.0 dB
- > 75.0 dB
- > 80.0 dB
- > 85.0 dB

N
W E
S

Client: The London Borough of Camden		Description: Noise Model Contours		Design	DD	16/11/12	ACCON UK
				Drawn	DD	16/11/12	
Rev:	Description: FINAL	Project: MUGA - Bourne Estate		Checked	GP	16/11/12	*Appendix Three*
				Approved	GP	16/11/12	Scale: Not to Scale

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