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By email: chris.maltby@edgeplan.co.uk

Our reference: 8270/DO

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Dear Chris,

Meadow High School, Planning Comments

Thank you for your email. As requested, I am pleased to provide our response to the comments made by Anderson Acoustics on behalf of London Borough of Hillingdon in the report 4761_001R_1-0_AG.

The report comments in detail on a number of noise and planning related points and these are then summarised on the final page of the report as a number of conclusions and bullet points. It is the recommendations that I address in this response. The recommendations and our response are as follows.

The baseline survey and measurements presented are missing information on the duration and sound levels and the baseline noise survey report by Hann Tucker and ACL measurements should be submitted as part of the planning application;

This is provided as an attachment to this letter. As professional consultants we have reviewed and relied upon the data within the Hann Tucker report and are of the view the monitoring locations, methodology and resultant gathered data is reliable and representative of the area.

An assessment should be made of the use of the MUGA, in particular outside of school hours for community use and mitigation secured, if indicated to be required by the assessment;

The MUGA is a replacement hard sports court located centrally within the school site. This court is to replace the existing hard courts which are directly adjacent to housing to the south of the site.

The proposed MUGA is not to be floodlit but will be available for some form of community use. The hours of use will be naturally restricted to daylight hours and given its size and surface type will not be suitable for many team sports.

The location of the MUGA, being central within the site, will have a lesser impact on nearby noise sensitive properties than the existing courts which are adjacent to residential properties and could be used by the community. The proposals therefore reduce the impact of sports and play noise on noise sensitive receptors, resulting in an improvement in the quality of life of those residents in accordance with the third aim of the Noise Statement for England.



To assess the potential impact of the proposed MUGA on other residential noise sensitive receptors a noise impact assessment has been undertaken.

Relevant Criteria

The World Health Organisation 'Guidelines for Community Noise' published in 1999 gives the following description of community noise.

"Community noise (also called environmental noise, residential noise or domestic noise) is defined as noise emitted from all sources except noise at the industrial workplace. Main sources of community noise include road, rail and air traffic, industries, construction and public work, and the neighbourhood. Typical neighbourhood noise comes from premises and installations related to the catering trade (restaurant, cafeterias, discotheques, etc.); from live or recorded music; sport events including motor sports; playgrounds; car parks; and domestic animals such as barking dogs."

This includes "sport events" and as such the use of AGP sites.

For noise levels internally and externally to dwellings it states:

"In Dwellings. The effect of noise in dwellings, typically, are sleep disturbance, annoyance and speech interference. For bedrooms the critical effect is sleep disturbance. Indoor guideline values for bedrooms are 30 LAeq for continuous noise and 45 LMax for single sound events. Lower noise levels may be disturbing depending on the nature of the noise source. At night-time, outside sound levels about 1 metre from façades of living spaces should not exceed 45 dB LAeq, so that people may sleep with bedrooms open. This value was obtained by assuming the noise reduction from outside to inside with the window open is 15 dB. To enable casual conversation indoors during daytime, the sound level of interfering noise should not exceed 35 dB LAeq. The maximum sound pressure level should be measured with the sound pressure meter set at "fast"."

Based on the same methodology used to determine the night time noise level (with a 15 dB(A) for an open window) outside a residential property the daytime noise level about 1 metre from façades of living spaces should not exceed 50 dB LAeq.

Table 4.1 of the document provides guidelines for community noise in specific environments, suggesting noise levels at which adverse health and annoyance effects are likely. The relevant noise criteria are as follows:

Specific Environment	Critical Health Effect	L _{eq(T)} dB(A)
Outdoor living area	Serious annoyance, daytime and evening	55
	Moderate annoyance, daytime and evening	50
Dwelling indoors	Speech intelligibility & moderate annoyance, daytime & evening	35



According to the WHO guidance the onset of moderate annoyance can start to occur at noise levels exceeding 50 $L_{Aeq(T)}$ dB externally and 35 $L_{Aeq(T)}$ dB internally. With relation to the adverse effect level we would consider this threshold of the Lowest Observed Adverse Effect Level.

Therefore, where noise levels from the proposed development do not exceed 50 $L_{Aeq(T)}$ dB externally and 35 $L_{Aeq(T)}$ dB internally, the effect is below the Lowest Observed Adverse Effect Level, and will have no adverse effect. The noise level of the AGP may be noticeable but not intrusive and is considered acceptable in planning terms.

The equivalent noise level is determined over a specific time period. The World Health Organisation guidelines for residential development are typically equivalent noise levels calculated over a 16-hour daytime period.

In our opinion an AGP 16-hour assessment period may not truly reflect the noise impact, as it takes into account times of use and non-use. We would propose an alternative, more stringent but appropriate assessment time period of one hour, $L_{Aeq(1 \text{ hour})}$, as this is the typical time period for a sports session such as during a PE lesson.

Therefore we would suggest the more stringent target noise level of 50 dB $L_{Aeq(1 \text{ hour})}$ is more suitable for the more sensitive evening time.

Typical Noise Levels from MUGA use

To determine noise levels from PE use of the existing sports pitches measurements were undertaken on the site of Khalsa Academy in Stoke Poges on 18th October 2017. The purpose of the survey was to measure noise from the use of a sports pitch as a discrete event which could then be used in a noise modelling exercise as part of the assessment. The activity is considered representative of sports and play use which would be expected by the school and community use.

The site noise survey was undertaken by a member of Acoustic Consultants Limited staff who is a member of the Institute of Acoustics. Measurements general following the guidance of BS7445-1. Measurements were undertaken using a Type 1 sound level meter. The equipment and calibration status is as follows:

Equipment Description / Manufacturer / Type	Serial number	Date of calibration	Calibration Certification Number
NTI XL2 Sound Level Meter	A2A-11053-E0	10/03/2016	42439
NTI MA220 Pre-Amp	5871	10/03/2016	42439
NTI Microphone Capsule	9276	10/03/2016	42439
Larson Davis Calibrator CAL200	12605	--	--

The equipment was checked before and after use with the calibrator and no drift was detected. During the site noise survey the weather conditions were overcast and calm with an air temperature of approximately 14 degrees Celsius. It was raining prior to the survey and the ground was damp during the measurements. The conditions are considered suitable for environmental noise monitoring and are not expected to have adversely affected the measured noise levels.



To determine the noise generated by a single pitch noise monitoring was undertaken at a distance of 10 metres from the sideline at the halfway line. Where there were multiple sports activities taking place the monitoring location was on the opposite side of the court to ensure that the dominant and determining noise source was the pitch under assessment.

During the noise survey two sports sessions were measured, these were both Netball games and training on the hard standing courts. The main source of noise from these activities was from the voices of pupils and teachers.

The following table gives the measured noise level over the monitoring period for both measured sessions.

Monitoring Session	Equivalent Noise Level $L_{Aeq,T}$ (dB)	Maximum Noise Level $L_{AF,max}$ (dB)
1	61	81
2	59	79

Noise from existing AGPs was also measured at nine sports sessions on four separate AGPs as part of the Sport England 'Design Guidance Note, Artificial Grass (AGP) Acoustics – Planning Considerations' project. The measurements included football, hockey and rugby, with men, women and children participating in different sessions. The purpose of the measurements was to determine a 'typical' noise level for an AGP sports session. From the measurement data, a typical free-field noise level of 58 dB L_{Aeq} (1 hour) at a distance of 10 metres from the side-line at the halfway line has been determined as representative for noise from an AGP.

The measured noise levels at the Khalsa Academy are of a similar order to those measured at full size AGPs and are considered representative of the proposed use. On the basis of the various measurement we would consider a noise level of 59dB $L_{Aeq,T}$ to be representative of the proposed MUGA.

Noise Predictions

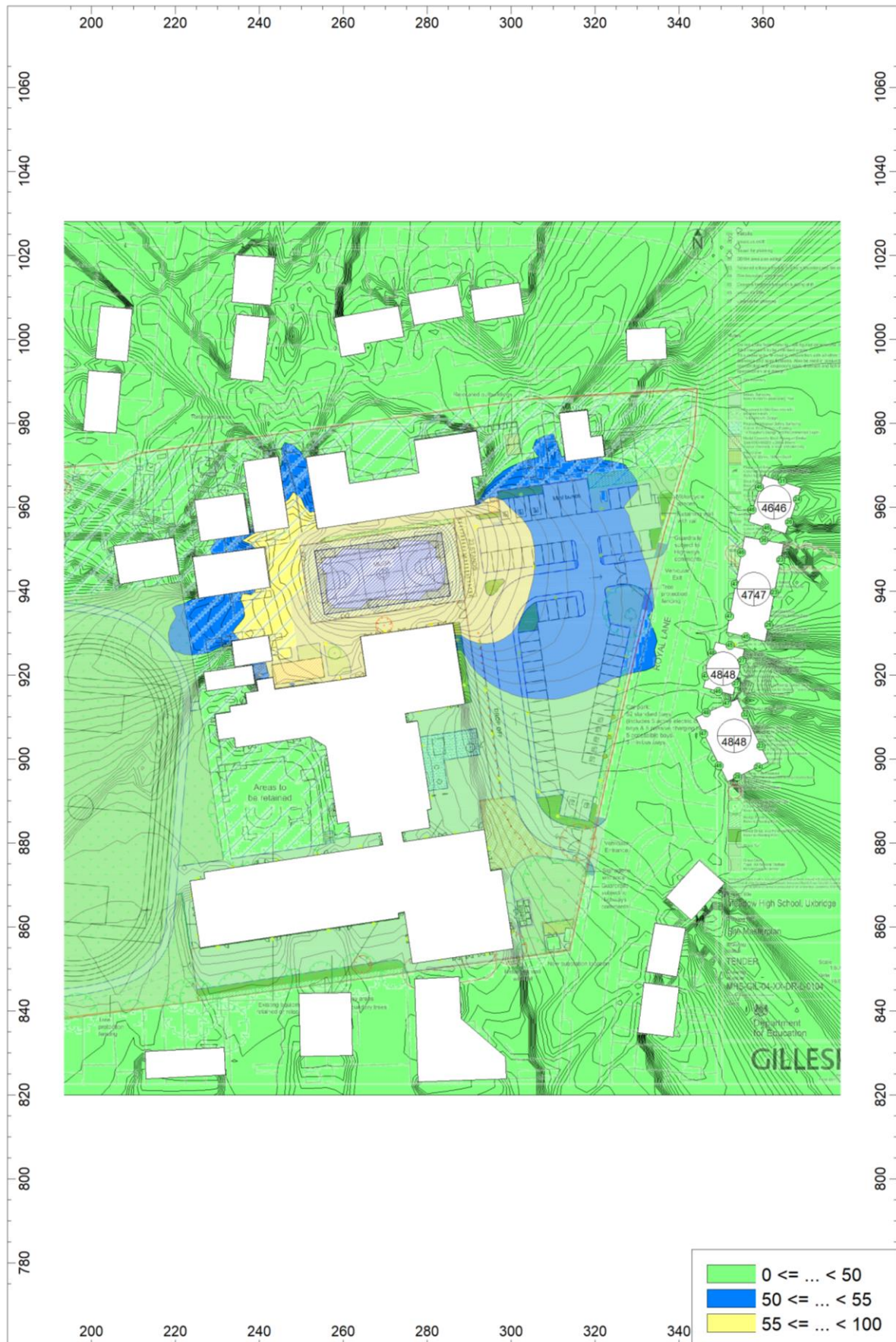
The measured AGP noise emission data have been used to generate a noise map of the site, in order to predict the noise level at the nearby noise-sensitive residential properties. The modelling has been undertaken using noise mapping software CadnaA by DataKustik. This uses the calculation method of ISO 9613 to predict noise levels.

The AGP location and surrounding area has been determined from the proposed site plan. The ground of the MUGA and surrounding area are considered to be 'hard' (i.e. tarmac) for the purposes of the assessment. The topography of the site and surrounding area is considered to be flat.

Residential and non-residential buildings in the vicinity of the playing fields have been built within the model. Houses have a height of 6 metres.

The noise from an AGP is primarily from voice. The noise source is at a height of 1.5 metres above the ground (approximately head height). Third-order reflections are calculated. Noise maps show noise emission from the AGP predicted at ground floor level (1.5 metres above the ground), which is typical of a 'daytime' habitable room in a house and external amenity areas.

The noise map showing predicted noise emission is as follows:





The predicted noise level at the façade of the worst case noise sensitive receptors is 48dB LAeq,T with a level of 25-30dB LAeq,T in residential gardens.

The predicted noise level is within the proposed criterion of 50 dB LAeq (1 hour) derived from WHO1999 as being the threshold for the onset of moderate community annoyance.

The World Health Organisation provides a sound reduction through an open window of 15 dB(A) which results in a predicted internal equivalent noise level of 33 dB LAeq (1 hour).

The World Health Organisation guidance states "To enable casual conversation indoors during daytime, the sound level of interfering noise should not exceed 35 dB LAeq." British Standard 8233:2014 provides the same noise criteria for a bedroom during the daytime period.

The predicted noise level in gardens is significantly below the criteria at which moderate community annoyance in outside living areas (such as gardens) can start to occur, stated in World Health Organisation 1999 as 50 dB LAeq (1 hour).

On the basis of the above, the proposals are considered acceptable in terms of noise.

Confirmation should be sought of the influence of existing recreational/commercial noise on ambient noise levels, if any;

The Hann Tucker report states the following regarding the measured noise climate "*During the survey period the dominant noise sources were noted to be the noise from pupils in class and road traffic from Noahs Arc Road at Position 3 or road traffic from Astor Avenue at Positions 4 and 5*".

No observations of commercial or recreational noise were made and a desktop investigation no commercial sites have been identified in the locality of the school. The main noise source affecting the site which is not from school activities is road traffic on Noahs Arc Road and Astor Avenue.

Explanation why the Energy & Sustainability Statement for Planning states the site is not suitable for natural ventilation on noise grounds;

The noise report prepared by ACL and Hann Tucker take precedence over the Energy & Sustainability Statement with regards to noise impact. It is not clear why this statement is made in the Energy & Sustainability Statement but it is clear from the noise impact assessment that this statement is incorrect. This is not relevant to the assessment of noise impact.

The plant noise rating level limits proposed should be secured through a planning condition;

This is agreed.

A commitment be made to manage the potential construction noise and vibration issues from works on the existing teaching spaces through the s.61 (of CoPA 1974) consent process. An informative for this should be placed on the decision notice.

This is agreed.



Summary

The additional information within and appended with this letter address the comments made by Anderson Acoustics and clearly demonstrate that the site is suitable for educational use and will not have an adverse impact on noise sensitive receptors in the area. On this basis and with the planning condition and advisory proposed, noise is adequately considered in planning terms.

I trust this is of assistance. Please do not hesitate to contact me if you require anything further.

Yours sincerely,

Daniel Oldaker BSc. (Hons) MIOA
Director
For Acoustic Consultants Limited