SYNTEGRA CONSULTING

Collis Primary School, Teddington, TW11 9BS

Activity Noise Assessment

July 2019

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1. Executive Summary

This report has been prepared to assess the impact of activity noise at nearby noise sensitive receptors from the proposed relocated netball courts at **Collis Primary School, Teddington, TW11 9BS**.

The scheme involves the construction of a new build two storey primary school containing twelve classrooms (Reception and Years 1 and 2), a nursery, an art/DT room, a dining hall, a kitchen and various offices and ancillary spaces.

As part of the development, the existing netball courts will be relocated with an additional court added to take the number of courts from 2 to 3.

The assessment has considered the Local Authority planning criteria, Sports England Guidance and Best Practice Guidance.

It has been identified that the noise levels from the proposed relocated netball pitches will achieve the identified criteria and therefore it can be determined that adverse impacts from the use of the pitches is very unlikely and the proposed relocation should therefore be acceptable on noise grounds.

2. Introduction

This report has been prepared to assess the impact of activity noise at nearby noise sensitive receptors from the use of netball courts at **Collis Primary School, Teddington, TW11 9BS**.

The scheme involves the construction of a new build two storey primary school containing twelve classrooms (Reception and Years 1 and 2), a nursery, an art/DT room, a dining hall, a kitchen and various offices and ancillary spaces.

As part of the development, the existing netball courts will be relocated with an additional court added to take the number of courts from 2 to 3.

This report assesses the impact of activity noise from the relocated netball courts. A glossary of acoustic terminology is provided in **Appendix 1**.

The location of the existing courts is presented in **Figure 2.1** and the proposed future location of the netball courts is presented in **Figure 2.2**.

Figure 2.1: Existing Site Plan

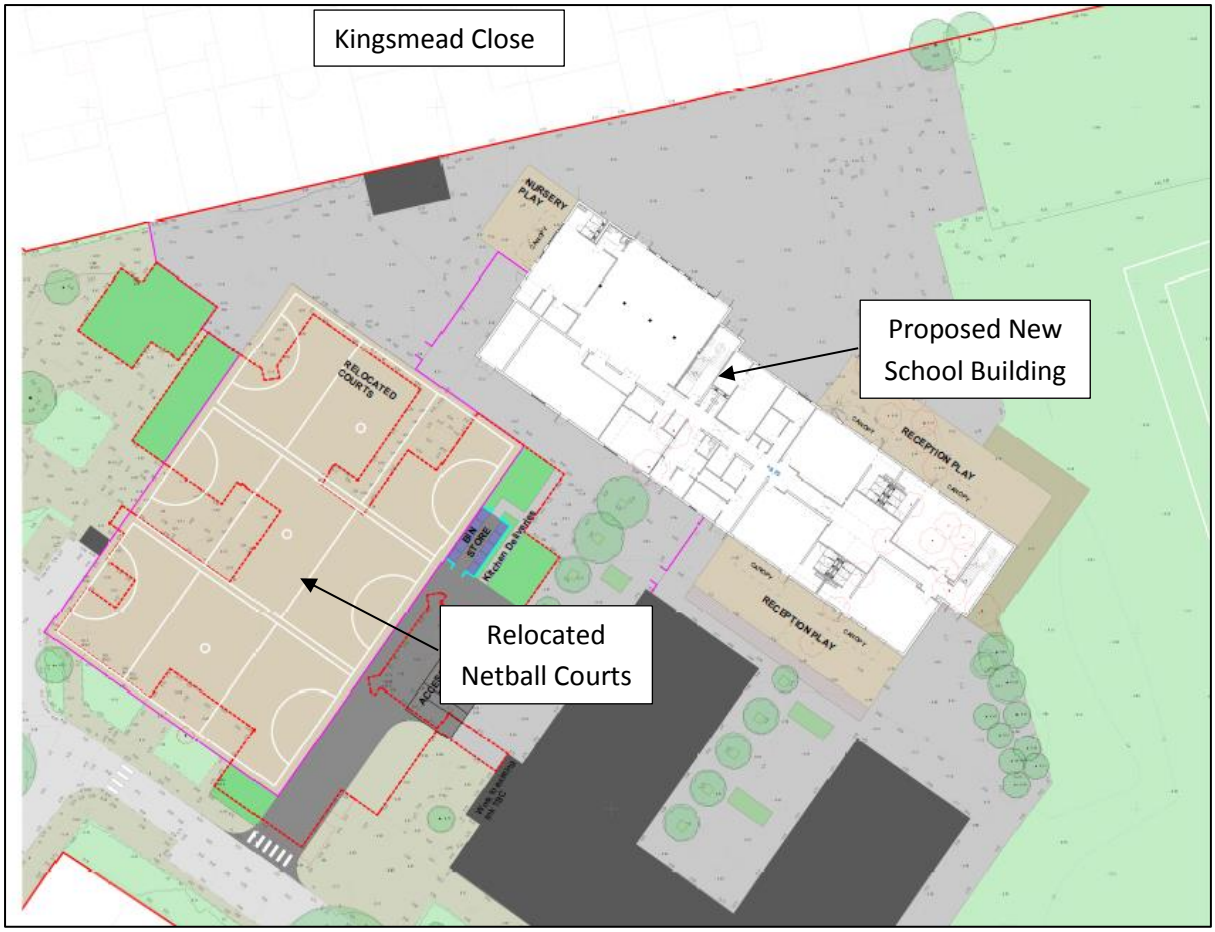

Figure 2.2: Proposed Site Plan

3. Local Planning Policy and Guidance Documents

3.1. Local Planning Policy

The site is located within the administrative boundary of the London Borough of Richmond upon Thames (LBRuT). LBRuT have provided, within their Supplementary Planning Document *"Development Control for Noise Generating and Noise Sensitive Development"*, the following advice in respect of noise from Multi Use Games Areas and Artificial Grass Pitches:

"6.8 Multi Use Games Areas and Artificial Grass Pitches

Both Multi Use Games Areas (MUGA's) and Artificial Grass Pitches (AGP's) are becoming a more common feature in school and community redevelopments and play a key role in developing sporting opportunities for school children and the wider community. However, if inappropriately located and operated they can cause noise and other forms of disturbance to residents and businesses located in the vicinity of the development.

*Recent guidance has been produced by "*Sports England: Artificial Grass Pitches – Acoustics – Planning Implications*". This guidance provides information on the application of appropriate noise criteria, assessment methods as well as examples of noise mitigation measures that can be implemented.*

Table 3: MUGA & AGP – External Noise Standards

Noise Impact from MUGA or AGP	***Development Outcome***
50dB(A) LAeq,1hour	*Normally acceptable*

The Borough would expect that in most cases for any new or modified MUGAs or AGPs the Sports England guidance is applied and the application should demonstrate that these levels can be complied with. In other cases, it may be necessary to seek to achieve better standards due to particular sensitivity of the location or hours of proposed use. In such cases it is recommended that early discussions are undertaken between the applicant and the Borough."

3.2. Sport England – Design Guidance Note – Artificial Grass Pitches (AGP) Acoustics – Planning Implications

Sports England have produced a Design Guidance Note on planning implications regarding acoustics for Artificial Grass Pitches (AGP) in August 2015. The aim of the guidance note is to:

- *"Increase awareness of good design in sports facilities.*
- *Help key building professions, clients, user representatives and other stakeholders to follow best practice.*
- *Encourage well designed sports facilities that meet the needs of sports and are a pleasure to use."*

The document states:

"This guidance expands on the general technical advice already available from Sport England. It provides details of acoustic implications associated with such facilities and follows on from an acoustic research programme involving detailed analysis of relevant noise guidance documents and site testing

in a range of locations. It proposes appropriate noise criteria and assessment methods and outlines practical measures that can be applied to reduce noise in particularly sensitive areas."

The document recommends that, in some instances, it can be beneficial to carry out noise impact assessments using both comparative and absolute methods.

In respect of an absolute method, the document recommends that a level of 50 dB L_{Aeq} is utilised, which is derived from the World Health Organization (WHO) Guidelines (1999) and is designed to be an average noise level across the entire daytime period (i.e. 50 dB $L_{Aeq,16hr}$). Syntegra note that this is slightly different from the criteria presented in LBRuT's local plan which sets a limit in terms of 1 hour (i.e. 50 dB $L_{Aeq,1hr}$).

In respect of comparative methods, the Sport England document notes that an increase of existing ambient noise levels due to activity noise of no more than 3 dB would be considered to be a "slight impact" and "just perceptible".

Accordingly, Syntegra will carry out the assessment procedure by comparing predicted noise levels at the nearest noise sensitive receptors against two criteria; 50 dB $L_{Aeq,1hr}$ and by comparison against existing ambient noise levels with the aim of an increase of 3 dB or less.

4. Baseline Noise Levels

The ambient noise levels at the site have previously been obtained by measurement by Mott Macdonald on the 20th and 21st September 2016 and have been previously reported in their report *'Collis Primary School – Acoustic Feasibility Assessment'* dated October 2016 with reference 374941 | 1 | A | 26 October 2016.

All measurements were undertaken by consultants competent in environmental noise monitoring and completed in accordance with the principles of BS 7445:2003 *Description and measurement of environmental noise* (BSI, 2003). All acoustic measurement equipment used during the noise survey was designed to be in conformance with the Class 1 standard. All meters and field calibrators used held current calibration certificates obtained under laboratory conditions traceable to UK and International Standards. Before and after the measurement session the reference calibration level of the sound level meter was checked using a field calibrator.

During teaching hours, the local noise climate at the site was dominated by air traffic associated with Heathrow Airport, which is located 5 miles to the north-west of the site and occasional road traffic noise.

The sound level meters were positioned at ground floor level with the microphone at a height of 1.5m above local ground level.

An unattended noise logger was deployed for 24 hours in a façade location from 1023 hrs on Tuesday 20th September 2016 to 1630 hrs on Wednesday 21st September 2016 at the southern boundary of the site at one metre from the rear façades of the nearest residential receptors. This measurement position (referenced LT1) was selected to be representative of the background sound level at the nearest noise sensitive receptors, as well as recording the noise levels incident upon that part of the school site.

The weather conditions during the survey were dry with temperatures in the range 17°C to 22°C. Wind speeds were measured at <5m/s. Road surfaces were dry throughout the measurement days. Cloud cover during the measurement periods ranged from 30% to 90%. The conditions were considered suitable for noise measurement.

A summary of the results of the baseline noise survey are displayed in **Table 4.1**

Measurement Position	Daytime $L_{Aeq,30min}$ (dB)
LT1	57

Table 4.1: Summary of Measured Noise Levels

5. Activity Noise Levels

5.1. Source Noise Levels

The Sports England Design Guidance Note on planning implications regarding acoustics for Artificial Grass Pitches (AGP) (August 2015) contains advice on typical activity noise levels. The document explains the measurement procedure as follows:

"Noise levels were measured during nine sports sessions on three separate AGPs. The sessions included football, hockey and rugby and participation by men, women and children. The purpose was to determine a 'typical' noise level generated from a 'typical' AGP sports session.

Noise level measurements were taken at a distance of 10 metres behind the mid-way points along goal lines and sidelines. They were found to be highest behind the sideline halfway line.

The most significant noise levels were found to be generally derived from the voices of players, with the exception of hockey where impact noises of balls hitting perimeter strike boards and goal back boards were more noticeable. Such impact noises can be mitigated by incorporating shock absorbing noise reduction measures. Assuming such mitigation measures, the most significant noise source from typical AGP sports sessions is therefore voice and as such, a typical noise level can be determined.

From the measurement data, a typical free-field noise level of 58 dB $L_{Aeq(1\ hour)}$ at a distance of 10 metres (m) from the sideline halfway marking has been determined as representative for noise from an AGP."

Accordingly, Syntegra will utilise an activity noise level of 58 dB $L_{Aeq,1hr}$ at a distance of 10m to represent the activity noise levels.

5.2. Receptor Noise Levels

Receptor noise levels have been predicted from each of the three proposed netball courts to the nearest noise sensitive receptors at Kingsmead Close and Fairfax Road.

To the nearest noise sensitive receptor on Kingsmead Close, the courts have been determined to be at distances of approximately 30m, 45m and 60m respectively.

To the nearest noise sensitive receptor on Fairfax Road, the courts have been determined to be at distances of approximately 50m, 70m and 90m respectively.

The noise levels at the nearest noise sensitive receptors have been predicted using standard acoustic formulae, assuming point source attenuation from each of the three proposed courts. An additional 5 dB screening correction has been taken for a standard garden fence on the boundaries of the properties. The individual contributions from each court at each noise sensitive receptor has then been summed logarithmically. The calculation procedure is summarised in **Table 5.1**.

	Receptor	
	Kingsmead Close	**Fairfax Road**
Court 1		
Sound Pressure Level at 10m from Court (L_{Aeq} dB)	58	58
Distance to Receptor (approx.)	30m	90m
Distance Correction (dB)	-10	-19
Screening Correction (dB)	-5	-5
Predicted Noise Level at Receptor (L_{Aeq} dB)	43	34
Court 2		
Sound Pressure Level at 10m from Court (L_{Aeq} dB)	58	58
Distance to Receptor (approx.)	45m	70m
Distance Correction (dB)	-13	-17
Screening Correction (dB)	-5	-5
Predicted Noise Level at Receptor (L_{Aeq} dB)	40	36
Court 3		
Sound Pressure Level at 10m from Court (L_{Aeq} dB)	58	58
Distance to Receptor (approx.)	60m	50m
Distance Correction (dB)	-16	-14
Screening Correction (dB)	-5	-5
Predicted Noise Level at Receptor (L_{Aeq} dB)	37	39
Total Noise Level		
Predicted Total Noise Level at Receptor (L_{Aeq} dB)	**45**	**42**

Table 5.1: Predicted Receptor Noise Levels

6. Noise Impact Assessment

In order to determine the noise impact and the acceptability of the use of the netball courts, a comparison has been carried out against the noise criteria identified in **Section 3**. **Table 6.1** identifies the assessment carried out to determine compliance with the WHO Guidelines and against the increase in ambient noise levels criteria.

Receptor	Predicted External Noise Level L_{Aeq} (dB)	Existing Ambient Noise Level L_{Aeq} (dB)	Change in External Noise Level (dB)	Compliance with Criteria[1]	
				WHO Guidelines (50 dB L_{Aeq} external)	Change less than +3 dB
Kingsmead Close	45	57	+0	✓	✓
Fairfax Road	42	57	+0	✓	✓

Table 6.1: Noise Impact Assessment of the Netball Courts

Notes: (1) The assessment against the WHO Guidelines noise criteria considers the predicted noise from the netball courts only, and not the existing ambient noise level.

It can be identified, from **Table 6.1**, that the predicted noise levels from the use of the proposed relocated netball courts will achieve the identified criteria and should therefore be acceptable.

7. Conclusion

This report has been prepared to assess the impact of activity noise at nearby noise sensitive receptors from the proposed relocated netball courts at **Collis Primary School, Teddington, TW11 9BS**.

The scheme involves the construction of a new build two storey primary school containing twelve classrooms (Reception and Years 1 and 2), a nursery, an art/DT room, a dining hall, a kitchen and various offices and ancillary spaces.

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8. Appendix 1: Glossary of Acoustic Terminology

Term	Description
'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. The 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.*

9. Appendix 2: Professional Statement

David Yates

David Yates is a full member of the Institute of Acoustics (MIOA) and has approximately ten years' experience in acoustic consultancy. David has particular expertise in environmental noise providing acoustic consultancy for residential and mixed use planning applications, plant noise and vibration, construction noise and the design of acoustic, noise and vibration control. David is also experienced in providing sound insulation testing and design advice. David is familiar with the application of all relevant standards associated with his work, including but not limited to, BS 4142, BS 8233, BS 7445, BS 6472, BS 5228, BS 140 series, BS 16283 series and BS 717 series. David manages the acoustic department and is responsible for maintaining Syntegra's ANC membership.