

**Addendum to Apex Report 2405.2B
Noise Impact Assessment
Stagecoach Bus Depot Extension
Barnsley**

Report Number: 2405.2
Version: B Addendum Second Issue
Date: 26th August 2011

Prepared by: Andrew C Gibson MEng MIOA
Checked by: Jack Harvie-Clark MA MIOA

**Apex Acoustics Limited
Design Works
William Street
Gateshead
NE10 0JP**

**Tel: 0191 423 6272
www.apexacoustics.co.uk**

Prepared for: Montagu Evans LLP
Clarges House
6-12 Clarges Street
London
W1J 8HB

1. Revision register

Version	Changes from previous version	Issued by	Date
First Issue	First Issue	ACG	25/08/11
Second Issue	Added Revision Register Revised 3.17	ACG	26/08/11

2. Introduction

- 2.1 This addendum to Apex Report 2405.2B dated 20th June 2011 has been produced in response to the queries raised by Lucy Allen, Senior Environmental Health Officer at Barnsley in her email dated the 12th August 2011.
- 2.2 This document should not be read as a standalone report and should only be read in conjunction with Apex Report 2405.2B.

3. Response to Comments from Environmental Health

- 3.1 Each of the comments from Environmental Health has been reproduced in red and our response to her comments shown below each one.
- 3.2 Firstly, the application states that operating hours will be till 3am. I am therefore presuming that Stagecoach wish to extend their current operating hours in order to operate at these times. The background noise survey carried out was done at times when the buses are currently operating but at, say, 2am -3 am the background noise may well be lower than those measured and therefore the impact of buses operating at these new times has not been adequately assessed.
- 3.3 Apex understood at the time that the survey and report were carried out that activities within the new extension would be restricted to parking activities up to approximately 00:30 hrs i.e. the last bus run in.
- 3.4 It is now understood however that to allow time to clean and prepare buses for the following day some parking of buses is desirable up to 03:00 hrs within the new extension.

- 3.5 Apex has previously carried out background noise measurements on the 8th December 2008 between 00:00 and 03:00 hrs on Brunswick Close at the position shown in Figure A1.
- 3.6 The background noise levels at this position are as shown in Table A1. This table shows a reduction in the background noise level of 4 dB between the period between 00:00 - 01:00 and 02:00 – 03:00.
- 3.7 If this reduction of 4 dB in background noise level is also assumed to take place at the rear of the Royal Arms, the background level could potentially be as low as 34 dB(A) at this position between 02:00 and 03:00 hrs.
- 3.8 It is therefore proposed that bus parking is restricted to two buses parking in any 5 minute period between 23:00 and 00:30 hrs and one bus parking in any 5 minute period between 00:30 and 03:00 hrs.
- 3.9 On this basis activities will still be limited to below that of marginal significance when rated according to BS 4142.
- 3.10 Bus cleaning and maintenance activities will be carried out on the existing site for all the additional proposed buses. As the existing capacity for 96 buses is proposed to be increased to 130 buses. The increase in the noise level due to the additional buses within the existing site would be $10 \cdot \log_{10}(130/96) = 1.3$ dB.
- 3.11 Secondly, the number of bus engines running in any 5 minute period will include those leaving the depot, but also idling engines, preparing to leave the depot in the next 6 minutes (if we accept that buses are only started 6 minutes in advance of setting off - I suspect that that period might be longer in colder weather). Therefore the number of engines running in any 5 minute period has not been accurately assessed.
- 3.12 Apex has been advised that drivers may run their bus engines for six minutes before setting off.
- 3.13 Hence the total number of engines that may be running in any six minute period is the same number as the peak number of buses that may depart the depot in this period. The peak number of buses at night in any six minute period is seven buses. The noise impact assessment has been based on ten buses by applying the percentage increase in capacity to the seven buses currently time tabled.

- 3.14 Although during the period some buses that will depart in the following period will start their engines, this will not cause additional bus numbers as more of the buses will depart in that period than will start their engines for the next period - because it is the peak rate of bus departures that has been selected for the period in question, which is the greatest possible number of bus movements over the reference period (or 6 minutes as a worse case in this instance).
- 3.15 This can be represented graphically if a horizontal line is drawn for each bus, with subsequent buses on horizontal lines staggered below, it can be seen from a vertical section that the peak number of buses is the same number as that departing in any particular period.
- 3.16 There is also no assessment of what impact the additional 100 members of staff may have, in terms of noise from car parking.
- 3.17 It is understood as a worst case that there could be a 44% increase in car movements as a result of the depot extension. The potential worst case increase in noise level from the cars parking within the existing site would be $10 \cdot \log_{10}(1.44) = 1.6$ dB. However, it should be borne in mind that cars generate significantly less noise than buses, and car drivers do not generally spend 6 minutes warming their vehicles through before departing. As the noise from car parking will be much less significant than that from buses, the small increase in noise from this already marginal source is very unlikely to be of any significance at all, and negligible compared with noise from cars on Wakefield Road.

- 3.18 Thirdly, the existing background levels show that noise levels prior to 7am outside the proposed residential dwellings on the site of the Royal Arms are already high enough to potentially affect sleep disturbance and therefore I would argue that anything that adds to existing background levels should be avoided. We would normally look to achieve at least the "reasonable" standard in BS 8233, if not the "good" in terms of levels of internal noise.
- 3.19 Measurements indicate that the existing residual noise level at the Royal Arms is dominated by road traffic on Wakefield Road, rather than bus activities. In order to achieve a "good" internal noise level standard in accordance with BS 8233 a suitable glazing and ventilation strategy will need to be developed to protect occupiers from road traffic noise on Wakefield Road alone irrespective of the proposed bus extension. Any façade treatment that reduces the noise impact from Wakefield road will also suitably attenuate noise from bus activities.
- 3.20 I also note that the ramp leading to the additional parking area runs immediately to the rear of the proposed residential properties and would question whether the applicant has considered access to the new parking area along the western boundary of the site which would distance the noise from the residential properties.
- 3.21 The noise impact had been evaluated on the basis of the proposed scheme.
- 3.22 Furthermore it would be useful to have a printout of the parameters used in the noise modelling software.
- 3.23 Tables A2, A3 and A4 showing the parameters used in the noise modelling software.

4. Figures



Figure A1: Site location

5. Tables

Measurement Period	L _{A90}
00:00 – 01:00	45
01:00 – 02:00	43
02:00 – 03:00	41

Table A1: Measured background noise levels at Brunswick Close

Source		Partial Level Day
Name	ID	NNSL1
Bus	B	36.6
Bus	B	38.3
Bus	B	28.7
Bus	B	38.0
Bus	B	35.0
Bus	B	28.2
Bus	B	36.6
Bus	B	29.8
Bus	B	38.2
Bus	B	38.9

Table A2: Calculated partial noise level from each bus during run out

Source		Partial Level Day
Name	ID	NNSL1
Bus	B	36.6
Bus	B	38.3

Table A3: Calculated partial noise level from each bus during run in

Name	ID	Absorption	Height	
			Begin	
			(m)	
New Workshop	NW	0.21	4.50	r
Existing Workshop	EW	0.21	4.50	r
Chassis Wash	CW	0.21	4.50	r
Service Lane	SL	0.21	4.50	r
Bus	Bus	0.21	2.80	r
Bus	Bus	0.21	2.80	r
Bus	Bus	0.21	2.80	r
Bus	Bus	0.21	2.80	r
Bus	Bus	0.21	2.80	r
Bus	Bus	0.21	2.80	r
Bus	Bus	0.21	2.80	r
Bus	Bus	0.21	2.80	r
NNSL	NNSL	0.21	6.00	r
Generator	Generator	0.21	2.00	r
Bus	Bus	0.21	2.80	r
NNSL	NNSL	0.21	6.00	r
NNSL	NNSL	0.21	6.00	r
NNSL	NNSL	0.21	6.00	r
NNSL	NNSL	0.21	6.00	r
NNSL	NNSL	0.21	6.00	r
NNSL	NNSL	0.21	6.00	r
NNSL	NNSL	0.21	6.00	r
NNSL	NNSL	0.21	6.00	r
NNSL	NNSL	0.21	6.00	r
NNSL	NNSL	0.21	6.00	r
NNSL	NNSL	0.21	6.00	r
NNSL	NNSL	0.21	6.00	r
NNSL	NNSL	0.21	6.00	r
Bus	Bus	0.21	2.80	r

Table A4: Absorption coefficient and assumed height of building and buses