MARTIN
ENVIRONMENTAL
SOLUTIONS

Acoustic Survey and Assessment for Proposed Service Station and Shop at, 245 Barnsley Road, Wombwell, Barnsley, S73 8DT.

Prepared for:

ADP Architects,
The Old Police Station,
16 Bridge Lane,
Holmfirth,
HD9 7AN

July 2018

Additional Information Requested by Environmental Health

1. Introduction

1.1. A request for further information has been made by the Environmental Health Officer following the revised report dated July 2018 by Martin Environmental Solutions. This note aims to provide that information.

2. Requested Information

2.1. The following additional information has been requested:

a) Frequency reduction provided by the proposed barrier fence.
b) BS4142: 2014 assessment for the opening and closing of car doors
c) Confirmation of the properties used within the calculations
d) Explanation of why no tonal penalty has been added to the BS4142 assessments.

2.2. The table provided in Appendix 1 details the frequency reduction anticipated for the proposed barriers.

2.3. Specific frequency for the jet washers vary considerably during a wash cycle depending on the type of vehicle being cleaned, the area of the vehicle e.g. roof, door, wheel arch and the operator. Information obtained and used within the report for the sound levels from the vehicle wash demonstrate this variance throughout the wash cycle

2.4. Details of the plant to be used are not currently available although modern refrigeration plant tends not to have any identifiable tonal element.

2.5. The attached Appendix provides a BS4142: 2014 assessment for opening and closing of car doors. This is based on previous work undertaken by Martin Environmental Solutions which has identified a sound level of 52-62dB L_{Amax} at 5m from the vehicles.

2.6. The BS4142 assessment based on the on-time of 1 second per door closure, indicates no adverse impact on the nearest residential receptor to the rear of the site, 2 Roy Kilner Road.

2.7. The properties used within the assessment are as follows:

a) Jet wash assessment – The property to the rear of the proposed wash, 2 Roy Kilner Road.
b) Plant assessment rear – The row of three new terrace properties to the rear of the site identified as plot 5, 6 & 7 on application 2016/0374
c) Plant Assessment to the north – 3 Barnwell Crescent
d) Deliveries - The row of three new terrace properties to the rear of the site identified as plot 5, 6 & 7 on application 2016/0374
e) Vehicles movements - the row of three terrace properties and the 2 Roy Kilner Road.

2.8. No tonal penalty has been applied to the previously undertaken BS4142: 2014 assessment for plant noise. While the exact plant to be used is not currently know, the previous report identified a maximum sound level for the plant so as not to result in any adverse impact on the nearby properties. Modern plant used in similar projects rarely consists of any tonal element as identified within BS4142:2014. They are however intermittent hence the correction applied. This is something that can be confirmed once the plant has been chosen, taken into account the prevailing background sound levels.

Figure 1 – Aerial Photograph

Monitoring locations

Appendix A – Calculations

	Anticipated barrier attenuation at each frequency								
	63	**125**	**250**	**500**	**1000**	**2000**	**4000**	**8000**	**Lp**
Jet wash	6.2	7.2	8.7	10.8	13.2	15.9	18.7	21.6	15.9
Plant to rear houses ground	5.9	6.9	8.3	10.2	12.5	15.1	17.9	20.8	15.1
Plant to rear houses first	4.9	5.1	5.4	6	7	8.4	10.4	12.7	8.4
Plant to side houses patio	8.8	10.8	13.2	15.9	18.8	21.7	24.7	27.6	21.7
Plant to side houses ground	8.9	11	13.5	16.2	19	21.9	24.9	27.9	21.9
Plant to side houses first	8.8	10	12.3	14.9	17.7	20.6	23.6	26.6	20.6

BS4142: 2014

	Car doors day	Car doors Night	
Measured Ambient sound level			
Residual Sound level	L_{Aeq} = 49.6dB	L_{Aeq} = 42.7dB	Average sound level in area over the day from monitoring results
Background Sound Level	L_{A90} = 38.0dB	L_{A90} = 36.9dB	Lowest background sound level over the day. Taken from the July Sunday morning monitoring
Reference period	60mins	15mins	Normal ref period,
On time correction	10log(120/3600) = -14.8	10log(10/480) = -16.8	Based on 60 visits/hr during the day (120 doors closing) and 20/hr at night, 5 in 15 mins.
Specific sound Level	L_{Aeq} = 42.1-14.8 in rear garden = 27.3dB	L_{Aeq} = 46.2-16.8 at first floor façade = 29.4dB	Calculated level
Acoustic feature	3dB	6dB	impulsivity
Rating level	(27.3+3) = 30.3dB	(29.4+6) = 35.4dB	
Background sound level	L_{A90} = 38.0dB	L_{A90} = 36.9dB	Lowest measured on Sunday morning
Excess of Rating level over background level	(30.3-38.0) dB = **-7.7dB** indicates no adverse impact	(35.4-36.9) dB = **-1.5dB** indicates no adverse impact	

Uncertainty	Assumes all cars are located within 8m of the nearest property, in reality these would be spaced across the site. Assumes a very busy garage with 2 car per minute during the day with a 1/3 of this during the 'night-time' periods. Assumes a great impact at night from the closing doors than during the day with the busy traffic.

Specific sound level calculations

Car doors slamming range from 52-62dB L_{Amax} at 5m based on previous work.

Nearest property along Roy Kilner Road is at least 8m from the nearest car, therefore a reduction of 4dB

$$Dist\ att = 20log\left(\frac{r}{R}\right)$$

62-4 = 58dB(A)

Barrier attenuation taken from previous calculations of 15.9dB to rear garden and 11.8dB to first floor of 2 Roy Kilner Road.

58-15.9 = 42.1dB

58-11.8 = 46.2dB