

Acoustic South East



Client:	Tates Bros
Site:	East Brook Allotments - Condition 8
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Issue 1	21/08/2025	
Issue 2	15/12/2025	Additional carwash info

1 Summary and Conclusion

Acoustic Southeast were originally appointed to undertake a noise assessment relating to the "Proposed Development at Brooklands Allotment" development.

The original report accompanied the planning application for the development. The development was approved with several planning conditions. Condition 8 which relates to noise has been copied below:

The development hereby permitted shall not be occupied until a 1.8m noise barrier has been erected along the western boundary and around the jet wash station as specified in section 7.3 of the Noise Impact Assessment (Car Showroom and Garage Complex) (ref: J2993 dated 15/10/2020). The barrier should be solid in construction, have no gaps or hit and miss systems and have a minimum mass of 13 kg/m². Following completion of the scheme, a test to Ref: AWD/1032/21 demonstrate that the attenuation measures carried out as part of the approved scheme are effective and achieve the specified criteria shall be undertaken within one month of the use commencing.

A 2.2m propriety acoustic barrier fence has been installed along the site boundary(exceeding the 1.8m design/condition target). The barrier is a Jakoustic "reflective" barrier with a claimed superficial mass of 25Kg/m³ which easily achieves the design target ($\geq 13\text{Kg/m}^3$).

For the workshop sound sources final testing was also completed after the barrier was constructed. The testing used a loudspeaker system broadcasting a steady noise source signal. The onsite survey results were compared to the original planning stage noise model. The measured sound reduction levels were marginally greater than as predicted by the model. Therefore the sound levels at the receptors will be lower than as calculated at the planning stage (marginally lower impacts).

The carwash element was also included in the original model. The final location of the carwash was moved away from the NSRs. There was also a plant room building added (and built) which acts as a barrier. 2.1m toughened glass glazed screens were also added on two sides of the car wash. The model was revised to demonstrate that the worst case final carwash sound levels are 3dB lower than assessed at the planning stage. Therefore the impact would be lower than as predicted and the sound level will be at least 20dB below the background sound level.

Based on the above points it is considered that planning condition 8 has been satisfied.

2 Noise Model Validation – Workshop Noise

2.1 Planning Stage Model

At the planning stage a computer noise model has been completed using the computer package IMMI. IMMI faithfully implements the propagation method of ISO-9613:1996; Acoustics – Attenuation of sound during propagation outdoors.

Reception points were added to the model at plan/height position corresponding to nearest noise sensitive properties (NSRs). Reception points (RPs) predict the noise level at a discreet position within the noise model space. The garage noise model, as shown in the planning application assessment, can be seen in the appendix.

2.2 On-Site Sound Measurements

2.2.1 Details

Before the garage opened, sound measurements were completed to show the sound reduction provided by the new sound barrier. Details of the survey can be found below:

- Date: 12/08/2025
- Survey carried out by: George Orton BEng (Hons) MIOA
- Equipment used: Norsonic NOR140 - Type 1 Sound Level Meter
- Weather conditions: Dry, Wind speed average less than 5ms^{-1} ,

The meter was calibrated before and after commencing the noise measurements (@114dB with no drift). Outdoor measurements were taken with the microphone 1.5m above ground level and indoor measurements were completed using a swept path technique to spatially average the sound levels inside the empty workshop areas.

2.2.2 Details

All roller shutter doors were open during the tests as shown in the photos below:

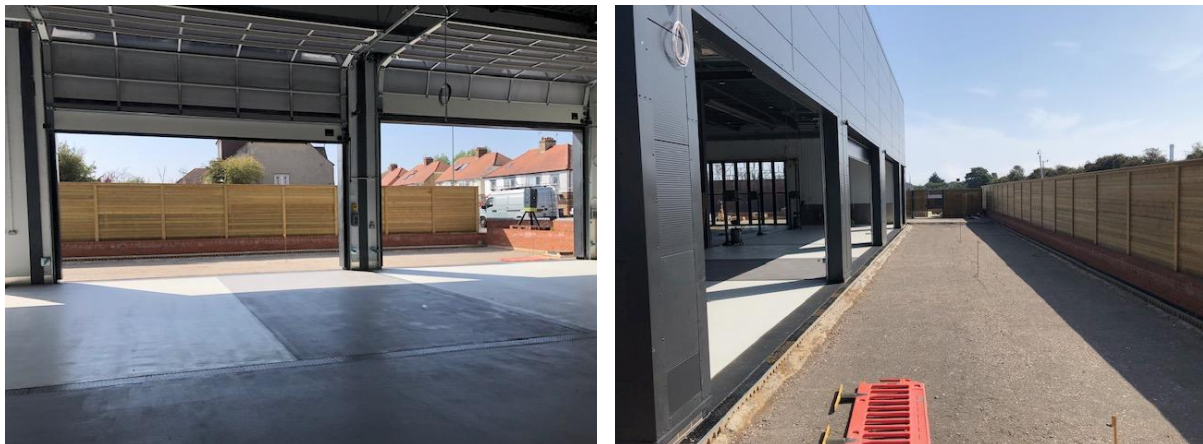


Figure 1: Sound Survey Photos

2.2.3 Sound Survey Measurements

For each of the two larger open roller shutter doors the following was completed (creating Test 1 and Test 2):

- Sound Source – Indoor loudspeaker broadcasting pink noise at high volume
- Source Room – Microphone sweep inside workshop area behind the roller shutter door
- Outdoor Measurements – Sound Source on
 - A = 5m from barrier (garage side)
 - B = 1m from barrier (garage side)
 - C = 1m from barrier (NSR side)
 - D = 5m from barrier (NSR side)
- Outdoor Measurements – Sound Source off
 - Background/residual sound of passing traffic 5m from barrier (NSR side).

Measurements were completed in 1/3 octave bands from 50Hz-5KHz. The sound levels at positions A-D were corrected by dB subtracting the background/residual sound level (for all 1/3 octave sound levels the average correction was -0.3dB, I.E. in general measured levels for the tests were well above the residual sound level).

2.2.4 Revised Model Details

The original planning model was altered as follows:

- Test 1
 - Model indoor level (1/3 octaves) set to source room level measured inside Test 1 workshop (closer to road).
 - Outdoor Measurement positions added to model for positions 1A-1D
 - Indoor/outdoor reduction altered so Model 1A matched measured 1A (completed for linear level to present worst case. However, in this case, the A-weighted also matched)
- Test 2
 - Model indoor level (1/3 octaves) set to source room level measured inside Test 2 workshop (further from road).
 - Outdoor Measurement positions added to model for positions 2A-2D
 - Indoor/outdoor reduction altered so Model 2A matched measured 2A (completed for linear level to present worst case.)

2.2.5 Model Check

The results of the survey and model check can be seen in the table below (full details can be found in the appendix of the report)

Test 1 Point	Linear & A-Weighted Sound Level			
	Measured		Model	
	dB	dBA	dB	dBA
1A	100	93	100	93
1B	99	92	96	89
1C	85	72	89	79
1D	84	73	87	80

Test 2 Point	Linear & A-Weighted Sound Level			
	Measured		Model	
	dB	dBA	dB	dBA
2A	100	94	100	93
2B	98	92	96	90
2C	83	72	89	79
2D	83	72	86	81

Table 1: Model Check Table

The above shows that if the model is adjusted for the point closest to the roller shutter door, the level at the barrier is 3dB lower than as measured. This relates to the model presenting sound levels as free field (when close to a barrier). Therefore the workshop side predictions are as to be expected.

2.2.6 Sound Reductions

The sound reductions, at 5m from the barrier (on NSR side) were calculated based on the A-weighted and un-weighted sound levels (predicted and as measured):

	Measured		Model	
	dB	dBA	dB	dBA
Test 1	16	21	13	13
Test 2	18	21	14	12

Table 2: Sound Reduction Table

The above shows that, at worst for Test 1 un-weighted values, the measurements have a sound reduction that is 3dB higher (better) than the model predictions (I.E. actual garage sound levels, close to the NSRs, should be higher than as predicted by the panning stage model used to complete the original assessment

3 Noise Model Validation – Carwash Noise

3.1 Carwash Details

The carwash element was also included in the original model. The final location of the carwash was moved away from the NSRs. There was also a plant room building added (and built) which acts as a barrier. 2.1m toughened glass glazed screens were also added as shown below:



Figure 2: Installed Carwash

3.2 Updated Carwash Model

The planning model was updated to predict the noise from the carwash in the final location (with plantroom and screens in place). The final and planning stage model predictions have been summarised below (full details can be found in the appendix of the report)

NSR	A-Weighted Sound Level - dBA	
	Planning	Final
1	24	21
2	19	18
3	35	32

Table 3: Carwash Model

The above shows that the worst case final carwash sound levels are 3dB lower than assessed at the planning stage. Therefore the impact would be lower than as predicted and the sound level will be at least 20dB below the background sound level.

Also as noted in the previous section the model may marginally underestimate the sound reduction provided by the main timber barrier

	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz	250 Hz	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz	1.0 kHz	1.25 kHz	1.6 kHz	2.0 kHz	2.5 kHz	3.15 kHz	4.0 kHz	5.0 kHz
1 Source	77.2	89.3	96.2	97.5	97.2	95.2	94.1	91.9	90.9	91.4	89.5	88.2	89.3	87.6	85.2	83.4	85.3	84.2	82.2	83	82.2
1A	70.5	85.8	90.3	92.6	91.4	90.3	88.8	87.3	86.1	86.5	85.6	84.3	84.8	84.4	83.8	80.7	77.6	77.6	77.7	78.7	79.3
1B	70.6	81.6	89.8	88.9	91.8	91.8	89.3	87.9	83.6	82.3	82.2	81.8	82.6	83.1	83.7	81.4	78.7	78.9	77.9	75.2	75.8
1C	65.2	73	79.1	77.7	77.8	74.3	70.5	67.2	66.6	66.7	65.1	63.7	63.5	61.2	60.1	56.1	55.9	56.1	54.7	53.4	52.7
1D	64.9	73.4	78.4	78.5	74.5	72.5	72.7	71.6	68.9	66.2	66.8	64.9	63.7	61.7	60.9	56.9	56.3	56	55.7	53	51.4
Background 2 Source	65.9	65.8	54.7	56.2	53.6	53.4	53.1	54.4	54.2	53	53	54.6	55.7	54.4	52.6	50	47.1	44.5	41.3	38	34.5
2A	76.5	90.6	97.3	98.3	97	95.9	94.8	92.8	92.3	92.5	90.8	89.7	91.3	89.4	86.7	84.9	86.6	85.8	85.7	85.7	84.9
2B	75.5	85.1	91.7	94.2	92	89.3	84.2	86.7	85.6	86	84.9	84.6	85.3	85.1	84.1	81.5	78.3	78	77	77.9	78.4
2C	74.6	84.1	87.2	88.2	89.1	91.7	88.6	84	84	83.6	81.7	81.7	82.4	82.2	81.3	79.8	80.3	78.3	76.2	74.7	
2D	68.1	71.6	74.7	74.7	74.6	74.4	72	67.8	66.6	66.3	65.1	64.5	63.3	62.5	60.5	57	55.6	55.8	55.5	53.9	53.9
	61.5	71.8	76.3	76.3	72	73.6	71.9	69.9	68	65.5	65.9	63.9	63.5	61.7	60.1	56.2	55.2	55	54.8	52.8	52.7
Background Recorded Values:																					
	50 Hz	63 Hz	80 Hz	100 Hz	125 Hz	160 Hz	200 Hz	250 Hz	315 Hz	400 Hz	500 Hz	630 Hz	800 Hz	1.0 kHz	1.25 kHz	1.6 kHz	2.0 kHz	2.5 kHz	3.15 kHz	4.0 kHz	5.0 kHz
1A	68.05088	85.75635	90.2988	92.959	91.39928	90.29911	88.79883	87.29777	86.0972	86.49806	85.59761	84.29534	84.79465	84.39565	83.79567	80.6963	77.59813	77.59787	78.69963	79.29986	
1B	68.80304	81.48424	89.78966	88.87967	91.79394	91.49393	89.29896	87.89806	83.59501	82.29489	82.19478	81.79172	82.59112	83.09414	83.69663	81.39685	78.69699	78.89842	77.89905	75.19917	75.79968
1C	62.2	72.08192	79.0842	77.66914	77.78346	74.26455	70.42024	66.96588	66.34261	66.51067	64.8236	63.12986	62.71188	60.18215	59.24963	54.87676	55.28609	55.78864	54.49681	53.27291	52.63376
1D	61.2	72.57096	78.38143	78.47435	74.46455	72.44624	72.65212	71.51645	68.75029	65.98699	66.61507	64.67451	62.9506	60.80513	60.20485	55.90818	55.74371	55.68112	55.53938	52.86045	51.31041
2	76.5	90.6	97.3	98.3	97	95.9	94.8	92.8	92.3	92.5	90.8	89.7	91.3	89.4	86.7	84.9	86.6	85.8	85.7	85.7	84.9
2A	74.99562	85.04867	91.69913	94.199																	

Short list		- Unnamed -					
Noise prediction							
Variant 0		Setting: Copy of reference					
		Day					
		LV	L r,A				
		/dB	/dB				
IPkt008	1A 5m		92.536				
IPkt009	1D 5m		80.214				
IPkt010	1C 1m		79.146				
IPkt011	1B 1m		88.531				
IPkt012	2A 5m		93.558				
IPkt013	2D 5m		81.786				
IPkt014	2C 1m		80.083				
IPkt015	2B 1m		89.967				

Press F1 to obtain information relative to further features



Short list		- Unnamed -					
Noise prediction							
Variant 0		Setting: Copy of reference					
		Day					
		LV		LrA			
		/dB		/dB			
IPkt008	1A 5m			92.099			
IPkt009	1D 5m			79.916			
IPkt010	1C 1m			78.533			
IPkt011	1B 1m			88.121			
IPkt012	2A 5m			93.064			
IPkt013	2D 5m			81.412			
IPkt014	2C 1m			79.430			
IPkt015	2B 1m			89.525			

Press F1 to obtain information relative to further features

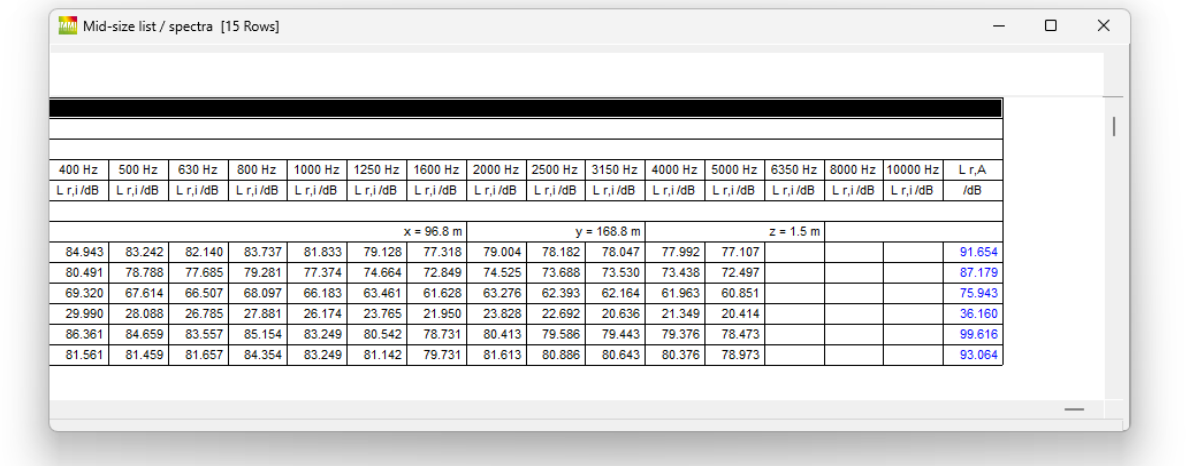


Figure 5: Test 2 Model Predictions

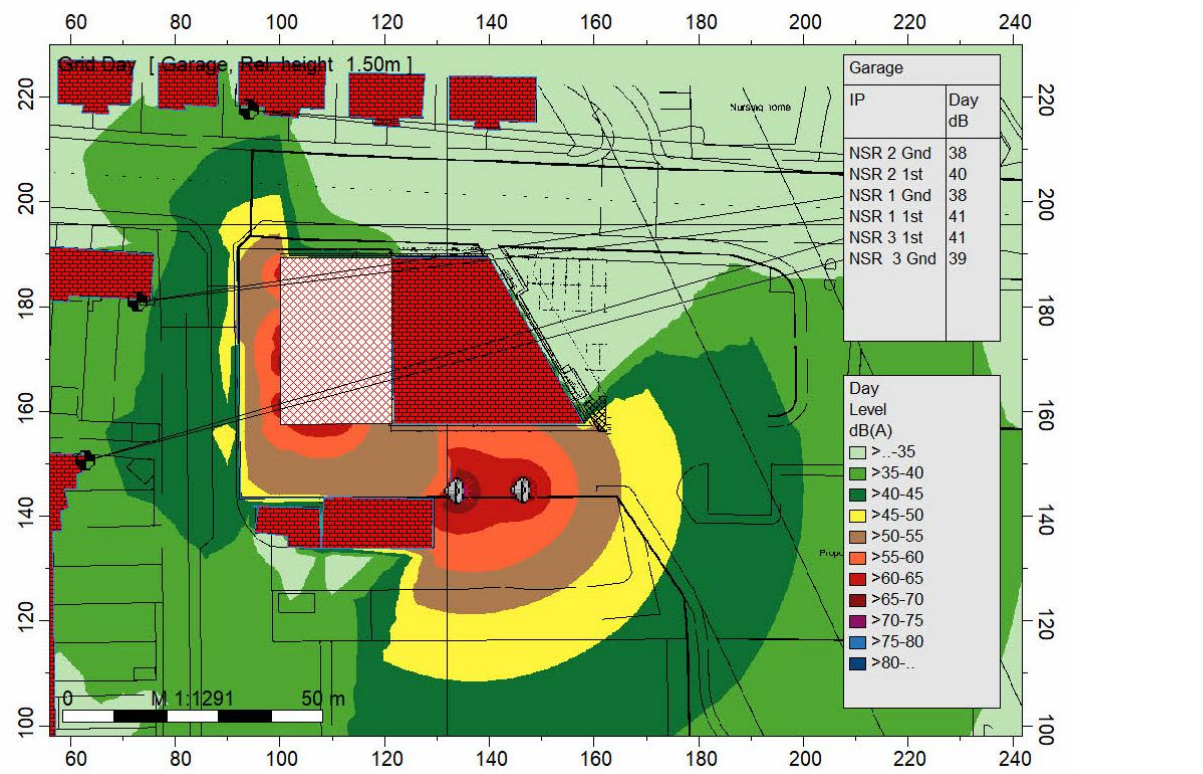


Figure 6: Planning Stage Garage Noise Model

Short list		- Unnamed -	
Noise prediction			
Variant 0		Setting: Copy of reference	
		Day	
		LV	L r,A
		/dB	/dB
IPkt001	Survey		21.093
IPkt002	NSR 1 Gnd		20.323
IPkt003	NSR 1 1st		23.382
IPkt004	NSR 2 Gnd		17.678
IPkt005	NSR 2 1st		18.654
IPkt006	NSR 3 Gnd		30.648
IPkt007	NSR 3 1st		34.900

Short list		- Unnamed -	
Noise prediction			
Variant 0		Setting: Copy of reference	
		Day	
		LV	L r,A
		/dB	/dB
IPkt001	Survey		19.066
IPkt002	NSR 1 Gnd		18.678
IPkt003	NSR 1 1st		20.953
IPkt004	NSR 2 Gnd		17.289
IPkt005	NSR 2 1st		18.148
IPkt006	NSR 3 Gnd		27.779
IPkt007	NSR 3 1st		31.832

Figure 7: Carwash Noise Model