

Date: 14th December 2023
Our Ref: MAN.889.001.NO.A.001

Michael Hanlon
Green Circle Estates Ltd

Dear Michael,

RE: Kirkby Valley Golf Course, Knowsley – Noise Addendum

This addendum has been prepared in relation to the redevelopment of the Kirkby Valley Golf Course, in Knowsley near Liverpool. The works covered in this assessment include the following elements:

- Additional noise monitoring in the vicinity of Oxton Close;
- Additional calculations to the dwellings on Oxton Close; and,
- Consideration of noise arising from events/functions at the golf course.

This addendum should be read in conjunction with the original noise assessment documented in Enzygo report referenced MAN.889.001.NO.R.001 dated November 2023. This addendum makes regular reference to the work undertaken in the original noise assessment including tables, figures, and other supporting information. The calculations and assessment in this addendum replicate the calculation methodologies using the standards detailed in the original noise assessment.

The addendum has been prepared to address the concerns raised by a member of the public in relation to the original noise assessment. The concerns were initially raised directly to Enzygo in an email dated 6th December 2023. The same queries were raised to the Local Planning Authority who forwarded the queries to Roman Summer Associates Ltd in an email dated 7th December 2023.

The initial email centred on the omission of specific dwellings in the vicinity of Oxton Close and Ingoe Lane in the initial assessment.

In a subsequent email, dated 8th December, the resident raised concerns relating to functions and events at the new clubhouse. The email indicates that residents of Oxton Close and Ingoe Lane have previously had cause to complain due to noise from the existing clubhouse. The email goes on to conclude that the residents feel the proposed scheme will have a major impact due to construction noise. Particularly activities associated with the refurbishment of the golf academy and clubhouse.

These elements have been addressed below.

Additional Noise monitoring – Oxton Close

The initial noise assessment considered representative receptor locations in the vicinity of the golf course. The assessment was not obligated to assess to all dwellings in the vicinity. The representative

assessment locations are identified in Table 1-1 and Figure 1-1 of the original report. In all instances, baseline noise monitoring was undertaken at locations considered reasonable proxies for the assessment locations.

In relation to the dwellings to the east of the golf course, the assessments were undertaken to Croxteth House, referred to in the noise report as AL01. Corresponding noise monitoring was undertaken at location M01. The rationale behind the use of this assessment location is detailed below:

- The assessment location (AL01) is marginally closer to the existing clubhouse which is to be refurbished to a 'golf academy'. The proximity is pertinent to the construction noise calculations, and is likely to result in higher construction noise levels than at Oxton Close;
- The noise monitoring location is more removed from Valley Road (A506), giving conservative (lower) baseline noise levels. This would result in worst-case impact assessment when construction calculations were undertaken to the receptor location; and,
- The change of use of the existing clubhouse to the golf academy, and the construction of the new site access directly off Valley Road, would result in a marked reduction in the number of vehicle movements into/out of the existing car park resulting in a betterment for residents in the vicinity of Oxton Close/Ingloe Lane.

Notwithstanding the above, additional noise monitoring has been undertaken in vicinity of the dwellings on Oxton Close. The survey was undertaken between 11th and 12th December 2023. The noise monitoring location is detailed in Table 1 and in Figure 1 below. Note, the figure includes both the monitoring locations (blue pins) and assessment locations (red pins) identified as M01, M04, AL01 and AL04.

Table 1: Additional Noise Monitoring Location

Monitoring Location	Approximate Grid Coordinates	
	Easting	Northing
M04	339907	397736

The noise monitoring equipment is detailed in Table 2 below.

Table 2: Noise Monitoring Equipment

Position	Equipment	Make and Model	Serial Number	Calibration Due Date
M04	Sound Level Meter	SVAN 971	80342	Nov 2024
	Microphone	ACO 7052E	71683	
	Preamp	SV18	71576	
All	Calibrator	01dB-Stell Cal 21	34675335	Sept 2024

The monitoring equipment used the same set up parameters as the initial survey and the microphone was set up to a height of 1.5m above local ground level in a free field location. Calibration certificates are available on request.

The monitoring data established during the survey is summarised in Table 3 below. The full dataset is appended to this document in Appendix A-1.

Figure 1: Additional Noise Monitoring Location

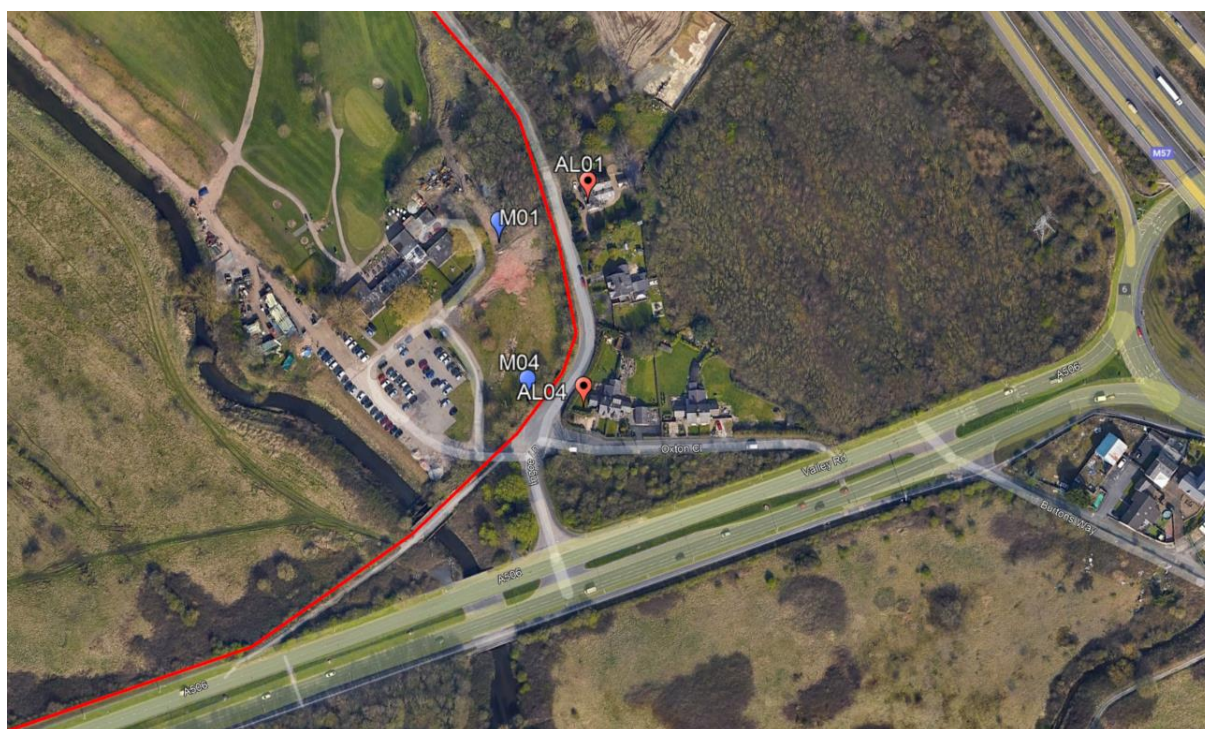


Table 3: Summary of Baseline Survey Results, dB

Location	Period	Duration hh:mm	Measured Sound Pressure Level (dB)			
			Average ¹ L _{Aeq,T}	L _{Afmax} ²	Background Sound Level, L _{A90}	
					Min	Mean ³
M01	Day (07:00 – 23:00)	16:00	58.5	79.8	52.0	55.6
	Night (23:00 – 07:00)	08:00	53.9	75.8	40.0	48.4

¹ Logarithmic average L_{Aeq,15mins} sound pressure levels during relevant periods
² Maximum L_{Afmax,15mins} sound pressure level
³ Arithmetic average L_{A90,15mins} sound pressure level during relevant survey period

The noise climate in the vicinity was governed by road traffic movements in the vicinity including Valley Road (A506) and the motorway (M57).

Weather during the survey period was noted as dry and mild with wind speeds noted as being below 5m/s. Rain had fallen prior to the measurement survey however road surfaces were sufficiently dry having no detrimental effect on the measured noise data.

When compared to the original survey dataset, the measured ambient (L_{Aeq}) at M04 is around 4dB higher during both the daytime and night-time periods when compared to M01. The corresponding background sound levels are higher, being 3dB higher during the day and 2dB higher during the night. This is presumed to be a function of the difference in distance of the monitoring locations to Valley Road.

Given the above, it is considered that location M01, used in the original assessment, was a reasonable worst-case proxy for the noise climate to the east of the golf course.

Additional Calculations – Construction Phase

As indicated above, there is no obligation to consider all receptors in a vicinity. Therefore representative locations are identified and calculations are undertaken to that location.

In this instance, additional calculations have been undertaken to the property identified as 1 Oxton Close, located to the southeast of the golf course, at the junction between Oxton Close and Ingoe Lane, opposite the existing course access point. For the purposes of this assessment, calculations have been undertaken to a receptor point (AL04) located in the external amenity area, to the west of the dwelling. The location is detailed in Table 4 below and identified in Figure 1 above.

Table 4: Additional Assessment Location

Receptor	Approximate Grid Coordinates	
	Easting	Northing
AL04	339928	397727

Using the baseline survey data detailed in Table 3, construction noise threshold values have been determined for the assessment location. It is considered that this threshold value would be common to all receptors in the vicinity of Oxton Close and Ingoe Lane.

Table 5: Construction Noise Threshold

Receptor	Average Measured dB $L_{Aeq,T}$	Column 2 rounded to the nearest 5dB “ABC Method”, dB	BS5228 Methodology	
			“ABC” Method	“+5dB Change” Method
AL04 – Oxton Close	58.5	60	65	65

The calculations below are based on those undertaken in the initial report. That includes the calculation methodology used, all inherent assumptions and noise source information. The detailed calculation tables are presented in Appendix 2.

The calculation of noise associated with mobile plant undertaking earthworks give a noise level of **55dB L_{Aeq}** , based on the methodology detailed in Table 4-2 of the original report. This is considered a worst-case assessment of earthworks being undertaken at the closest approach to the dwelling (approximately 130m) and no screening by the existing clubhouse building.

Static plant calculations for works associated with the clubhouse indicate noise from the localised construction plant would result in noise levels of between **41dB** and **60dB L_{Aeq}** depending on the activity and an assumed distance of 88m to the construction site.

In both instances above, the construction noise levels would fall well below the noise thresholds identified in Table 5 above.

Additional Calculations – Operational Phase

The calculation of noise from the academy parking area, based on an assumed separation distance of 35m (to the carpark entrance), gives a noise level of **44dB L_{Aeq}** during typical operational hours. This would fall

well below the existing ambient sound level in the vicinity and is unlikely to be audible above existing vehicle movements in the vicinity.

It is reiterated that the construction of the new access point directly on to the A506, approximately 340m from AL04, will reduce the number of vehicles accessing the academy parking area resulting in a betterment for residents adjacent to the existing access point.

Noise limits for static plant are presented in Table 6 below. These assume some degree of plant will be installed at the new facilities including the golf academy and new clubhouse. The limits are based on the arithmetic average of the background sound levels detailed in Table 3 above.

Table 6: BS4142 Noise Limits

Receptor Location	Period	'Typical' Background noise level, L_{A90} , dB	Rating Noise Limit, L_{Ar} , dB
AL04	Daytime	59	59
	Night ¹	54	54

As detailed in the original report, factors such as tonality, intermittency and impulsiveness would be considered in any subsequent calculations. The limits may need to be apportioned to each building depending on the phasing of works etc i.e. divided between the clubhouse and academy as appropriate.

Event/Function Noise Considerations

The existing clubhouse is to be refurbished and converted into a golf academy. The existing event space within the clubhouse will be changed to include some teaching and accommodation spaces. It will no longer host any events or functions. To that end, again, the proposed redevelopment is considered a betterment for the residents at the closest properties.

The new clubhouse located some 190m from Oxton Close, and approximately 65m north of Valley Road, will include an event/function space which is likely to host regular events. Internal noise levels for events or functions with loud amplified music may reach 85dB internally. Distance attenuation alone would afford 46dB L_{Aeq} reduction in noise levels¹, therefore noise levels at AL04 could be up to 39dB. This would fall 20dB below the existing ambient sound level and, while it may be audible at times in outdoor amenity spaces, it would not result in any loss of outdoor amenity at AL04.

Note, the calculations are very simplified in nature and do not include any attenuation for the façade elements, atmospheric absorption, etc. These factors would further reduce the noise levels at the receptors.

Conclusion

The assessments presented in this addendum report conclude that noise during the construction phase of the redevelopment plan would not exceed the threshold criteria and would therefore not result in any adverse impacts.

¹ Based on Equation F.1 in BS5228 assuming a noise level at 1m from the building façade, no attenuation for façade elements and soft ground between the source and receptor.

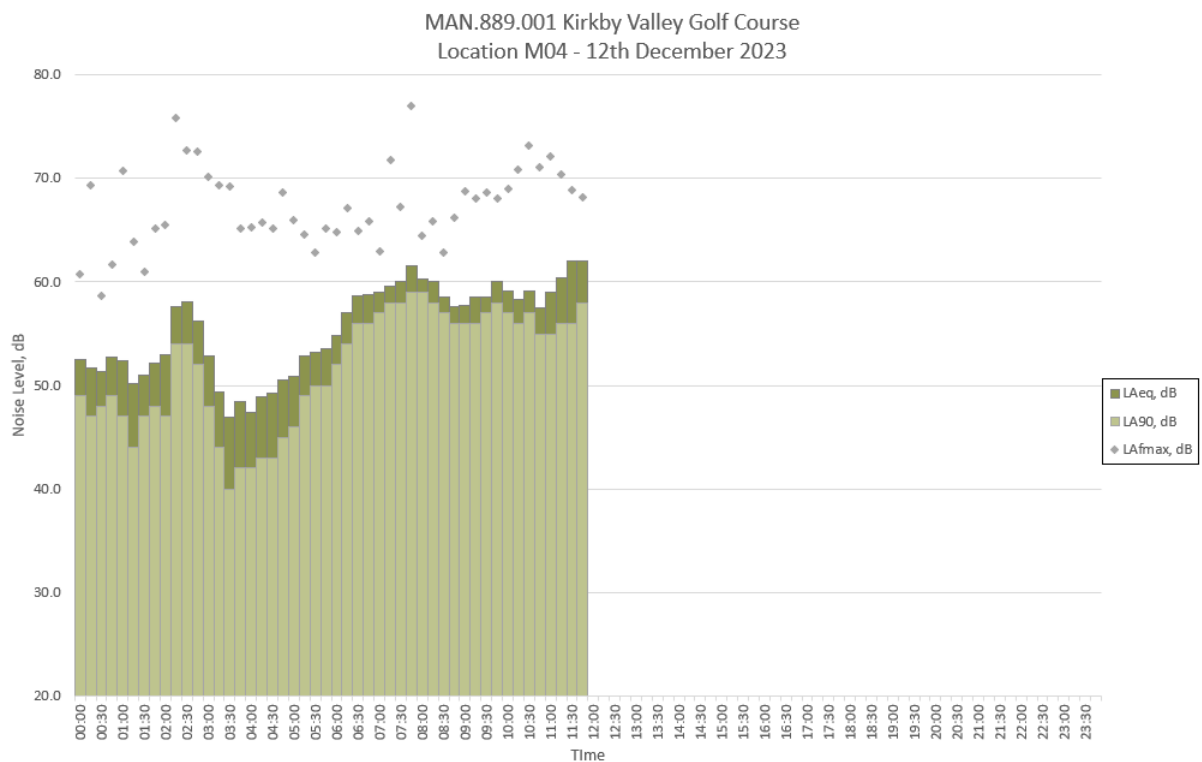
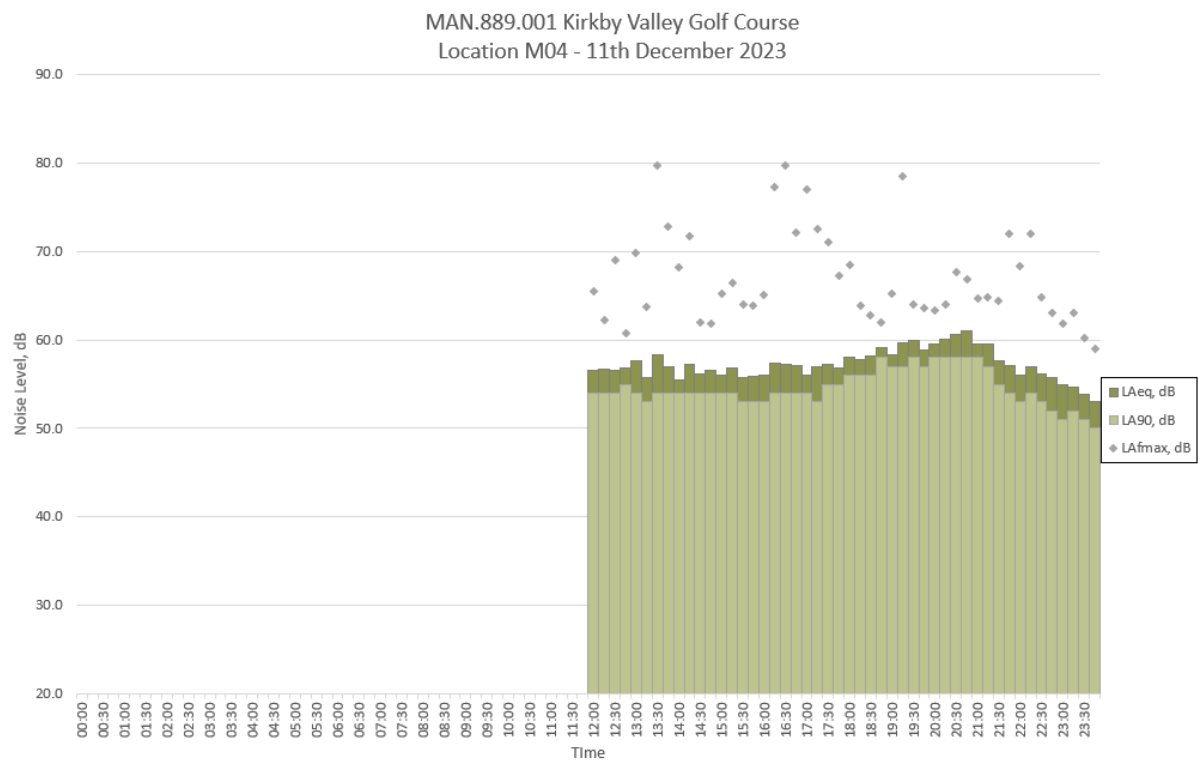
During the operational phase, noise from parking area movements would fall well below the prevailing ambient sound level, indicating no significant noise impacts would occur. Further to this, assuming any static plant adheres to the identified noise limits, a low noise impact would be expected in accordance with BS4142.

Noise levels from events and functions at the new clubhouse are expected to be low and are unlikely to result in any adverse impact at AL04.

Given the above, it is concluded that noise arising from the proposed redevelopment of the Kirkby Valley Golf Course would not result in any adverse noise impacts at the dwellings in the vicinity of Oxton Close. Given this, and the outcomes of the original noise report, it is demonstrated that there are no reasons on noise grounds why planning consent for the proposed redevelopment cannot be granted.

Appendix 1: Survey Data

Location M04



Period Start	L _{Aeq} dB	L _{Afmax} dB	L _{A10} dB	L _{A90} dB	Period Start	L _{Aeq} dB	L _{Afmax} dB	L _{A10} dB	L _{A90} dB
11/12/2023 12:00	56.6	65.5	58.2	54.0	12/12/2023 00:00	52.5	60.8	54.5	49.0
11/12/2023 12:15	56.7	62.3	58.5	54.0	12/12/2023 00:15	51.7	69.3	53.9	47.0
11/12/2023 12:30	56.6	69.0	57.9	54.0	12/12/2023 00:30	51.3	58.7	53.8	48.0
11/12/2023 12:45	56.8	60.8	58.3	55.0	12/12/2023 00:45	52.7	61.7	54.8	49.0
11/12/2023 13:00	57.6	69.9	59.3	54.0	12/12/2023 01:00	52.4	70.7	54.9	47.0
11/12/2023 13:15	55.8	63.8	57.7	53.0	12/12/2023 01:15	50.2	63.9	53.2	44.0
11/12/2023 13:30	58.3	79.7	61.4	54.0	12/12/2023 01:30	51.0	61.0	53.6	47.0
11/12/2023 13:45	57.0	72.8	58.7	54.0	12/12/2023 01:45	52.2	65.2	54.9	48.0
11/12/2023 14:00	55.5	68.2	56.7	54.0	12/12/2023 02:00	53.0	65.5	55.8	47.0
11/12/2023 14:15	57.3	71.8	58.3	54.0	12/12/2023 02:15	57.6	75.8	59.8	54.0
11/12/2023 14:30	56.1	62.0	57.7	54.0	12/12/2023 02:30	58.1	72.7	60.4	54.0
11/12/2023 14:45	56.6	61.8	58.5	54.0	12/12/2023 02:45	56.2	72.6	58.7	52.0
11/12/2023 15:00	56.0	65.3	57.6	54.0	12/12/2023 03:00	52.8	70.2	55.2	48.0
11/12/2023 15:15	56.9	66.5	58.8	54.0	12/12/2023 03:15	49.4	69.3	51.8	44.0
11/12/2023 15:30	55.7	64.0	57.3	53.0	12/12/2023 03:30	46.9	69.2	49.5	40.0
11/12/2023 15:45	55.9	63.9	57.6	53.0	12/12/2023 03:45	48.4	65.2	51.4	42.0
11/12/2023 16:00	56.0	65.1	57.8	53.0	12/12/2023 04:00	47.4	65.3	50.3	42.0
11/12/2023 16:15	57.4	77.3	57.9	54.0	12/12/2023 04:15	48.9	65.8	51.9	43.0
11/12/2023 16:30	57.3	79.8	57.8	54.0	12/12/2023 04:30	49.2	65.2	52.4	43.0
11/12/2023 16:45	57.1	72.1	58.0	54.0	12/12/2023 04:45	50.5	68.6	53.1	45.0
11/12/2023 17:00	56.0	77.0	57.5	54.0	12/12/2023 05:00	50.9	66.0	53.6	46.0
11/12/2023 17:15	57.0	72.5	57.5	53.0	12/12/2023 05:15	52.9	64.6	55.5	49.0
11/12/2023 17:30	57.2	71.0	58.2	55.0	12/12/2023 05:30	53.2	62.8	55.2	50.0
11/12/2023 17:45	56.9	67.3	58.5	55.0	12/12/2023 05:45	53.6	65.2	56.1	50.0
11/12/2023 18:00	58.0	68.5	59.3	56.0	12/12/2023 06:00	54.8	64.8	56.7	52.0
11/12/2023 18:15	57.8	63.9	59.2	56.0	12/12/2023 06:15	57.0	67.1	58.8	54.0
11/12/2023 18:30	58.2	62.8	59.7	56.0	12/12/2023 06:30	58.7	64.9	60.7	56.0
11/12/2023 18:45	59.2	62.0	60.6	58.0	12/12/2023 06:45	58.8	65.9	60.6	56.0
11/12/2023 19:00	58.3	65.2	59.6	57.0	12/12/2023 07:00	59.0	63.0	60.5	57.0
11/12/2023 19:15	59.7	78.5	60.8	57.0	12/12/2023 07:15	59.6	71.8	60.9	58.0
11/12/2023 19:30	59.9	64.0	61.1	58.0	12/12/2023 07:30	60.0	67.3	61.4	58.0
11/12/2023 19:45	58.9	63.6	60.3	57.0	12/12/2023 07:45	61.6	77.0	62.3	59.0
11/12/2023 20:00	59.5	63.4	60.9	58.0	12/12/2023 08:00	60.3	64.5	61.6	59.0
11/12/2023 20:15	60.1	64.0	61.7	58.0	12/12/2023 08:15	60.0	65.9	61.4	58.0
11/12/2023 20:30	60.7	67.7	62.7	58.0	12/12/2023 08:30	58.5	62.8	59.9	57.0
11/12/2023 20:45	61.0	66.9	62.7	58.0	12/12/2023 08:45	57.6	66.2	58.9	56.0
11/12/2023 21:00	59.6	64.7	61.0	58.0	12/12/2023 09:00	57.7	68.8	58.9	56.0
11/12/2023 21:15	59.6	64.9	61.3	57.0	12/12/2023 09:15	58.6	68.1	59.9	56.0
11/12/2023 21:30	57.7	64.4	59.5	55.0	12/12/2023 09:30	58.6	68.7	60.0	57.0
11/12/2023 21:45	57.1	72.0	58.8	54.0	12/12/2023 09:45	60.0	68.1	61.5	58.0
11/12/2023 22:00	56.0	68.3	57.9	53.0	12/12/2023 10:00	59.1	69.0	60.5	57.0
11/12/2023 22:15	57.0	72.0	58.8	54.0	12/12/2023 10:15	58.3	70.8	59.3	56.0
11/12/2023 22:30	56.2	64.8	58.3	53.0	12/12/2023 10:30	59.1	73.2	59.8	57.0
11/12/2023 22:45	55.8	63.1	58.0	52.0	12/12/2023 10:45	57.5	71.1	58.7	55.0
11/12/2023 23:00	54.9	61.9	57.2	51.0	12/12/2023 11:00	59.0	72.1	60.3	55.0
11/12/2023 23:15	54.7	63.1	56.8	52.0	12/12/2023 11:15	60.4	70.4	62.9	56.0
11/12/2023 23:30	53.9	60.2	55.9	51.0	12/12/2023 11:30	62.0	68.9	65.8	56.0
11/12/2023 23:45	53.0	59.0	55.1	50.0	12/12/2023 11:45	62.0	68.2	64.7	58.0

Appendix 2: Calculation Tables

Mobile Construction Plant Calculations – AL04

Receptor Location	Plant Item	BS5228 Reference	Sound Pressure Level at 10m, dB	Distance, m	Distance Correction, dB ¹	Resultant L _p , dB	Traverse Distance, m	On-time Correction, dB ²	Activity, L _{Aeq} , 10h, dB	Total L _{Aeq} , 10h, dB
AL04	20t Dozer	Table C.2 ref 12	81	130	-22.3	58.7	50	-4	58.7	55.3
	15t Excavator	Table C.2 ref 24	73	130	-22.3	50.7	50	-4	46.7	
Notes 1) Distance correction calculated for hard ground. 2) Calculated using equation F5 in section F2.4.2 of BS5228										

Static Construction Plant Calculations – AL04

Plant Item	BS5228 Reference	Noise Level at 10m, dB	Assumed Distance, m	Distance Correction, dB	On-time	On-time Correction, dB	Resultant L _{Aeq} , dB
Excavator	Table C.2 Ref 24	73	88	-18.9	75%	-1.2	52.9
Concrete Pump	Table C.4 Ref 29	80	88	-18.9	75%	-1.2	59.9
Cement Mixer	Table C.4 Ref 29	61	88	-18.9	75%	-1.2	40.9
Mobile Crane	Table C.4 Ref 29	77	88	-18.9	75%	-1.2	56.9
Diesel Genset	Table C.4 Ref 29	74	88	-18.9	75%	-1.2	53.9

Car Park Movements – Golf Academy

Receptor	SEL at 1m	Distance, m	Distance Attenuation, dB	SEL at Receptor, dB	No. of Movements	Assessment Period, sec	Specific Level at Receptor L _{Aeq} , dB
AL04	78.0	35	-15.4	62.6	49	3600	43.9