Cornbrook, Manchester

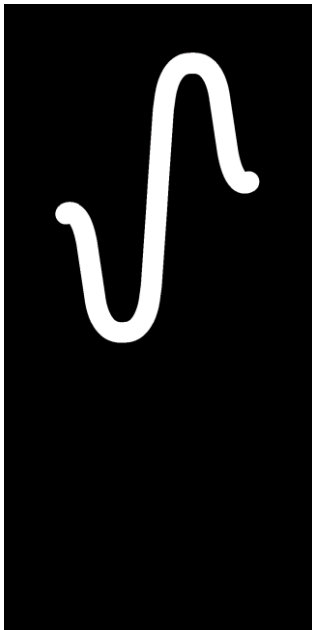
Acoustic Assessment Report -
Planning Condition 14
(Commercial/Amenity Acoustic Insulation)

Client:
Domis Construction Limited
Douglas House, Green Street
Wigan, WN3 4DQ

Date:
5 February 2026

Our Ref:
22101-RP-5-R0

Client Ref:
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Consultants in acoustics,
noise and vibration

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Document Control

Revision	Date	Author	Description
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1.0 Introduction

Jameson Acoustics Limited has been commissioned by Domis Construction Limited to provide acoustic design services to assist in the part-discharge of Planning Condition 14 (Part A) pertaining to the consented residential development at Cornbrook in Manchester. The condition is as follows.

No	Wording
14	(a) Notwithstanding the Noise and Vibration Assessment prepared by Jameson Acoustics (ref. 22101-RP-1-R2); received by the City Council, as Local Planning Authority, on the 30 January 2024, prior to any above ground works, a scheme of acoustic insulation for the commercial units, meeting spaces and gym as shown on drawings 8353-LRW-ZZ-00-DR-A-00-175 P10 and 8353-LRW-ZZ-01-DR-A-00-176 P10 received by the City Council, as Local Planning Authority, on the 24 May 2024, shall be submitted for approval in writing by the City Council, as Local Planning Authority. (b) Prior to the first use of each of the commercial, meeting spaces and gym units, a verification report will be required to validate that the work undertaken conforms to the recommendations and requirements approved as part of part (a) of this planning condition. The verification report shall include post completion testing to confirm the noise criteria has been met. In instances of non conformity, these shall be detailed along with mitigation measures required to ensure compliance with the noise criteria. A verification report and measures shall be agreed until such a time as the development complies with part (a) of this planning condition. Any mitigation measures shall be implemented in accordance with a timescale to be agreed with the City Council, as Local Planning Authority, and thereafter retained and maintained in situ. *Reason - In order to limit the outbreak of noise from the commercial premises pursuant to policies SP1 and DM1 of the Core Strategy (2007) and saved policy DC26 of the Unitary Development Plan for the City of Manchester (1995).*

Full discharge of the condition will require a post-completion verification report (Part B). We propose to conduct a series of pre-completion acoustic testing to inform this and other planning condition verification reports, as below.

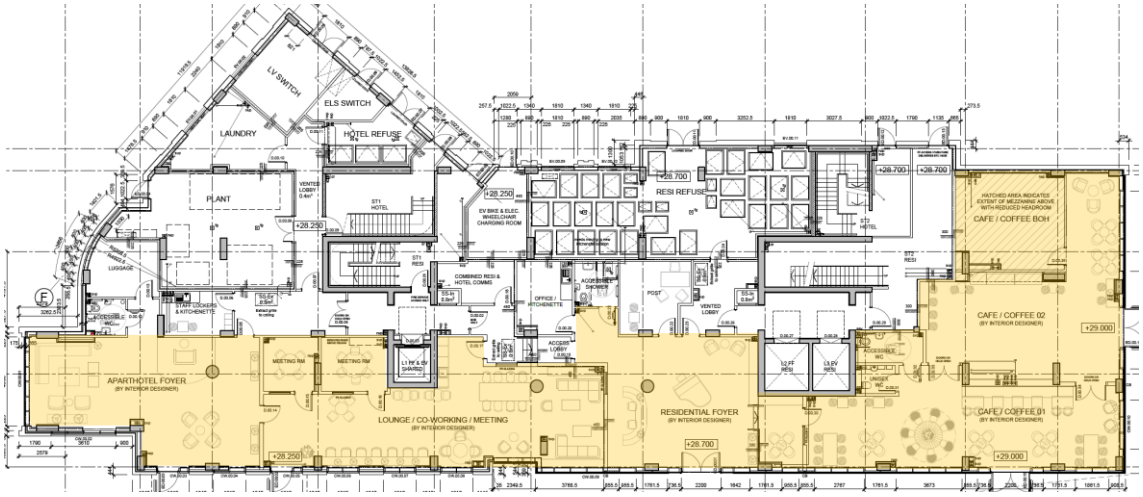
- PC13[B]: To carry out noise level measurements in close proximity to external non-emergency plant compounds in accordance with BS 4142. The measurement results shall inform a BS 4142 assessment to confirm compliance with plant noise rating limits.
- PC14[B]: To carry out airborne sound insulation testing to amenity spaces (and ProPG GAG impact noise testing in the gym), to inform an assessment of amenity/commercial operational noise control.
- PC15[B]: To carry out internal sound level measurements over a 24-hr period in selected rooms. The selection shall include apartments on each major façade elevation. Additional ambient noise level measurements shall be taken in a 10% apartments/hotel rooms with MVHR and other ventilation systems running at normal duty.

2.0 Development Update & Assessment Overview

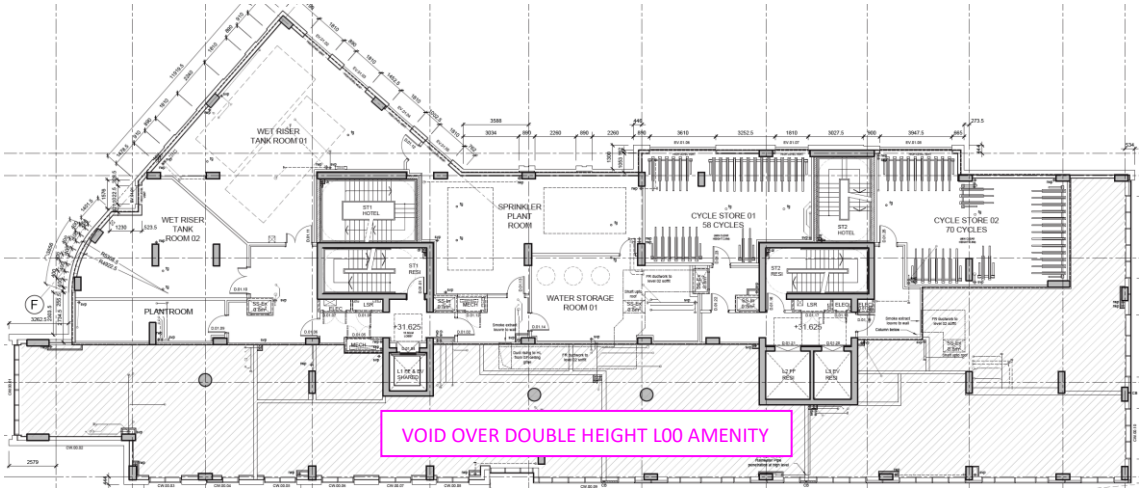
The development no longer contains any third party (tenanted) commercial units. The floor layouts for the lower levels of the scheme have developed since the planning submission (*wrt* the drawings referenced in the condition wording). The lower floors now only contain amenity spaces, all of which fall under the landlord's ownership (i.e. operated by the building management team). The amenity spaces now comprise:-

- L00 – Coffee shop,
- L00 – Entrance Foyers/Lounges for the Residences and for the ApartHotel,
- L00 – Shared Lounge / Co-Working / Meeting facility,
- L02 – Gym,
- L02 – Amenity Space (Lounge),
- L02 – Amenity Space (Screening Room).

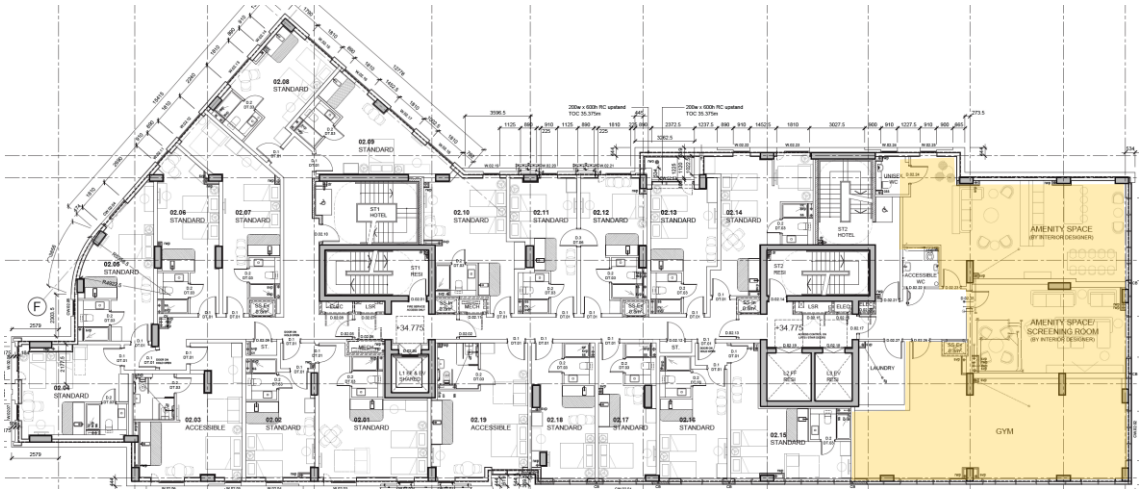
The following Figures show the latest (Stage 4) fixed GA plans for Levels 00, 01, 02 and 03. These are provided to show the arrangement and location of the above amenity spaces, and neighbouring noise sensitive areas.



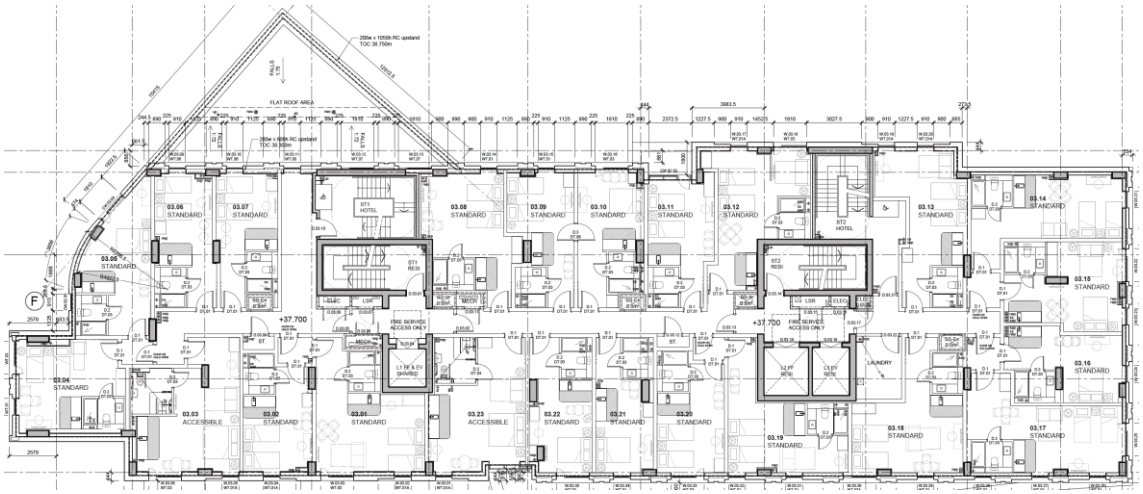
Level 00



Level 01 (Mezzanine)



Level 02



Level 03

The assessment shall consider:

1. Internal airborne operational noise transfer from:
    a. L00 amenity (foyers, co-working, café) to L02 aparthotel rooms – vertical,
    b. L02 amenity (gym, lounge, screening) to L03 aparthotel rooms – vertical,
    c. L02 gym to L02 aparthotel room – horizontal.

2. Internal structure-borne noise transfer from:
    a. L02 gym to all internal areas.

3. External operational noise egress from:
    a. L00 amenity (foyers, co-working, café),
    b. L02 amenity (gym, lounge, screening).

3.0 Internal Airborne Operational Noise Transfer

3.1 Criteria

For separating elements between amenity spaces and residential accommodation appropriate wall/floor/ceiling solutions have been specified based on the following.

1. Reasonable' anticipated maximum operational L_{eq} sound levels in rooms as below.

Room	Operational L_{eq} Noise Level (dB) Octave Band Centre Frequency (Hz)						
	63	125	250	500	1k	2k	4k
L02 Screen Room (daytime only, <23:00hr)	82	83	85	85	85	85	85
L02 Gym (24/7)	78	80	78	80	80	80	80
L02 Amenity lounge	80	80	80	80	80	80	80
L00 Co-working/lounge/meeting/foyer	75	75	75	75	75	75	75
L00 Café	75	75	75	75	75	75	75

2. Maximum L_{max} internal sound levels shall be limited to values 5 dB above those set out above.
3. Walls/floors shall be designed to control operational noise transfer from the source (louder) space so that L_{eq} octave band noise levels are no greater than 5 dB below anticipated background noise levels in the receiver space.

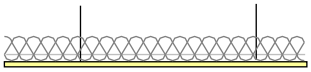
   In lieu of known background noise levels, a reasonable assumption has been made that normal services noise levels could be up to 5 dB below the design NR limits. Hence, for apartments and aparthotel rooms, the design shall be based on operational noise transfer limits of ~NR 15 L_{eq} at night (23:00-07:00) and ~NR 20 L_{eq} during the day (07:00-23:00). Equivalent maximum noise levels would be 5 NR curves higher.

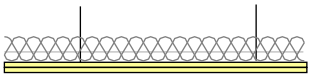
   'Absolute' low-frequency noise transfer limits of 47 dB $L_{eq,5min}$ @ 63 Hz and 41 dB $L_{eq,5min}$ @ 125 Hz shall apply in relation to any entertainment (e.g. music) noise transfer to apartments.

3.2 Design Solutions

3.2.1 Party Floors

The following table presents the design specifications for ceilings to all amenity spaces. Note, the floor slab is 215 mm in-situ solid concrete.

Type	Min. Acoustic Rating	O.S.D (min.)	Construction
Within L00 Amenity, Foyers, Lounge, Meeting, Cafes	-	~165 mm	 • 150 mm (min.) ceiling void, lightweight metal frame. • 25 mm (min.) mineral wool quilt (10-30 kg/m^3). • 1 x 15 mm dense plasterboard ceiling (e.g. SoundBloc).

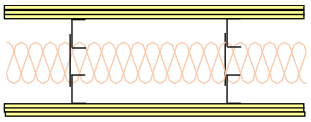
Type	Min. Acoustic Rating	O.S.D (min.)	Construction
Within L02 Amenity Spaces (e.g. Gym, Screen Room, Lounge)	-	~200 mm	 • 170 mm (min.) ceiling void, lightweight metal frame. • 25 mm (min.) mineral wool quilt (10-30 kg/m³). • 2 x 15 mm dense plasterboard ceiling (e.g. SoundBloc). ***Services shall be below the acoustic ceiling. Penetrations for drop rods to support services are acceptable. Second decorative ceiling is optional.***

The conservatively estimated apparent sound reduction performance of these systems is summarised below (determined by use of Insul sound insulation software, with sensible flanking limitations applied).

Floor Element	Est. apparent sound reduction, *R'* (dB) at OBCF (Hz)							R_w (C_{tr}), dB
	63	125	250	500	1k	2k	4k	
L00 Amenity to L02 ApartHotel	32	39	50	57	63	66	70	**59 (-7)**
L02 Amenity to L03 ApartHotel	36	43	55	62	68	70	75	**64 (-8)**

3.2.2 Party Wall

The party wall separating the L02 gym from the adjacent L02 aparthotel room is as follows.

Type	Min. Acoustic Rating	O.S.D (min.)	Construction (ref. British Gypsum)
Party Wall *L02 Gym to Guestroom* **P10**	43 dB $D_{nT,w}$ + C_{tr} (on-site) + 'Enhanced' operational noise transfer control	300 mm	 • 3 x 15 mm dense plasterboard (SoundBloc). • Twin C-studs at 600 mm centres, braced. • 100 mm mineral wool (Isover Cladding Roll 40). • 3 x 15 mm dense plasterboard (SoundBloc).

The conservatively estimated apparent sound reduction performance of this system is summarised below (determined by use of Insul sound insulation software, with sensible flanking limitations applied & with reference to similar tested systems by others).

Floor Element	Est. apparent sound reduction, *R'* (dB) at OBCF (Hz)							R_w (C_{tr}), dB
	63	125	250	500	1k	2k	4k	
L02 Gym to L02 ApartHotel	31	40	52	62	65	70	72	**62 (-9)**

3.3 Calculations

The following tables summarise our calculations to validate the assigned maximum operational noise limits for each amenity space (as tabulated in Section 3.1).

L02 Screening room to ApartHotel (NR30 - daytime) - Floor

	L		W		H					
Receive room dimensions:	5	m	4	m	2.5	m		*SPL2 = SPL1 + 10log(S/A) - SRI*		
	L		W							
Interface dimensions:	5	m	4	m						

Frequency	63	125	250	500	1k	2k	4k	dBA	NR (Full)	NR (250-4k)
Receive Room Criteria	47	41	31	24	20	17	14	30	22	20
Receive Room RT	0.5	0.5	0.5	0.5	0.5	0.5	0.5			
Wall/Floor SRI	36	43	55	62	68	70	75	*< Floor: 215mm conc. + 2x15mm SB ceiling + MW*		
Limiting Source Room Lp	**82**	**83**	**85**	**85**	**87**	**86**	**88**	**93**		

L02 Gym to ApartHotel (NR25 - Night) - Wall

	L		W		H					
Receive room dimensions:	5	m	3	m	2.5	m		*SPL2 = SPL1 + 10log(S/A) - SRI*		
	L		W							
Interface dimensions:	5	m	2.5	m						

Frequency	63	125	250	500	1k	2k	4k	dBA	NR (Full)	NR (250-4k)
Receive Room Criteria	47	41	26	19	15	12	9	28	22	15
Receive Room RT	0.5	0.5	0.5	0.5	0.5	0.5	0.5			
Wall/Floor SRI	31	40	52	62	65	70	72	*< Wall: 330mm twin-stud, 3x15mm SB + mw*		
Limiting Source Room Lp	**78**	**81**	**78**	**81**	**80**	**82**	**81**	**87**		

L02 Lounge to ApartHotel (NR25 - Night) - Floor

	L		W		H					
Receive room dimensions:	5	m	4	m	2.5	m		*SPL2 = SPL1 + 10log(S/A) - SRI*		
	L		W							
Interface dimensions:	5	m	4	m						

Frequency	63	125	250	500	1k	2k	4k	dBA	NR (Full)	NR (250-4k)
Receive Room Criteria	47	41	26	19	15	12	9	28	22	15
Receive Room RT	0.5	0.5	0.5	0.5	0.5	0.5	0.5			
Wall/Floor SRI	36	43	55	62	68	70	75	*< Floor: 215mm conc. + 2x15mm SB ceiling + MW*		
Limiting Source Room Lp	**82**	**83**	**80**	**80**	**82**	**81**	**83**	**88**		

L00 Amenity (Any) to ApartHotel (NR25 - Night) - Floor

	L		W		H					
Receive room dimensions:	5	m	4	m	2.5	m		*SPL2 = SPL1 + 10log(S/A) - SRI*		
	L		W							
Interface dimensions:	5	m	4	m						

Frequency	63	125	250	500	1k	2k	4k	dBA	NR (Full)	NR (250-4k)
Receive Room Criteria	47	41	26	19	15	12	9	28	22	15
Receive Room RT	0.5	0.5	0.5	0.5	0.5	0.5	0.5			
Wall/Floor SRI	32	39	50	57	63	66	70	*< Floor: 215mm conc. + 1x15mm PB ceiling + MW*		
Limiting Source Room Lp	**78**	**79**	**75**	**75**	**77**	**77**	**78**	**83**		

The assigned maximum operational noise limits are deemed appropriate for the intended usage of each space, as described below:

Screening room: The limiting noise levels should be sufficient for use as a screening room. It would permit film screenings at moderate audio levels (louder than a domestic surrounding sound system, but much quieter than a commercial cinema). If sub-woofers are to be provided, these are likely to be powerful enough to exceed the low frequency noise levels above and thus, an electronic sound limiter (or restricted loudness setting) should be implemented on the AV system. We would recommend AV settings/limiters are set at pre-completion stage by means of acoustic commissioning testing. Some noise spill into the circulation space serving gym/lounge should be expected.

Beyond 23:00hr, the room should revert to a lounge space. Use of the amplified sound system should be prohibited, or controlled with more stringent noise restrictions applied to the limiter (i.e. matching the tabulated limits assigned for the L02 amenity lounge).

Lounge: The lounge spaces are generally expected to be quiet and professional, used primarily for relaxation or study, with some socialising (no noisy games). Again, anti-social behaviour (such as shouting or use of personal amplified sound systems, particularly late at night) would need to be managed. On this basis, the above design noise limits should be appropriate.

Gym: The maximum permissible noise levels are deemed appropriate and commensurate with levels previously measured in busy residential gyms with background/ambient music only. The levels would not be high enough to permit 'highly active' fitness classes (e.g. spin classes with loud music and/or an amplified instructor). On this basis, the gym can operate 24/7. Restrictions will apply to the type of fitness equipment, as detailed herein (gym floor section).

Co-working: Similar to lounges, the co-working/lounge/meeting facility is expected to be a relatively 'quiet zone' with no music (or background music only), and occupants using the space to work, relax, or socialise respectfully (no noisy games). On this basis, the above design noise limits should be appropriate.

Café: Based on historic noise level measurement data from various operational cafés, the above design noise limits are considered commensurate with a typical bustling coffee shop playing background music.

Full discharge of the condition will be provided by means of pre-completion sound insulation testing which shall lead to 'actual' room maximum operational noise levels. For the screening room (in particular) but for all amenity areas with in-house amplified loudspeaker systems (e.g. ceiling mounted for background music), commissioning measurements shall be presented to demonstrate the noise limiters have been set to control levels below the defined maximum permissible sound limits.

4.0 Internal Structure-borne Noise Transfer (Gym)

A decision was made early into the design process that the gym (on L02) would not contain any free-weights. This was a client decision to avoid the need for high performance floating concrete floor systems to control impact structure-borne noise in line with ProPG: GAG standards.

The gym will only contain cardio-vascular machinery (e.g. treadmills, fixed bikes, etc.) and fixed weight machines, but excluded high weight machines such as leg presses. All fixed weight machines will be provided with acoustic dampening collars to the plate weights. This, together with the fixed machine being sited on, acoustic isolated gym floor matting, is known to provide sufficient protection.

The risk of impact structure-borne noise transfer, or risk of rhythmic slab excitation from the use of this machinery is a complex subject that cannot be accurately modelled or predicted. It is also not possible to undertake a calibrated/defined set of commissioning tests to ProPG: GAG to demonstrate the risk of impact noise transfer has been sufficiently dealt with, since free-weights will not be provided.

The approach taken here is to provide a gym floor solution that has been successfully implemented on numerous other residential gyms containing only CV and fixed fitness equipment. The complete solution to mitigate the risk of structure-borne noise transfer via the floor of this gym is confirmed below:

Room	Item	Floor Finish Specification
Gym	Floating Floor System	N/A.

	Floor Finishes	• **55 mm overall build-up of gym floor mattings (applied to full room area).**
		• Floor systems shall be:
		  ○ 25 mm Pliteq FF25 (dimpled underlay)
		  +
		  ○ 30 mm Pliteq GenieMat FIT30
		  (or equivalent and equally approved).

	Other/ Restrictions	• Free-weights not permitted (e.g. bar bells, dumbbells, kettlebells). • No Olympic bar to be made available (squat rack to be smithpress type). • All pin-loaded machine weights to have acoustic dampening collars. • Leg press machines not permitted.

If MCC would require some form of testing to demonstrate the above solution will sufficiently protect the apartments, we would suggest a meeting to discuss and agree a bespoke approach to the testing.

5.0 External Operational Noise Egress

5.1 Criteria

The MCC requirement for external noise egress from 'entertainment' sources is to ensure the L_{eq} noise (with entertainment) is controlled to 5 dB below the L_{A90} (without entertainment) in each octave band at the facade of the nearest noise sensitive location.

The nearest noise sensitive receptors (NSR) are:

(A) The development's own apartment & aparthotel windows.
(B) Apartment windows in the adjacent Vox Apartment scheme.

Based on baseline noise survey readings in our *Noise Impact Assessment* Report 22101-RP-1-R2, the typical (i.e. representative) background noise levels at the receptors during daytime and night-time periods are summarised below. These have been taken from survey Position 3 (on the quietest Dinton St side of the site) to inform a worst-case assessment.

Receptor	Period	Representative background, L_{90}, noise level (dB) at Octave Band Centre Frequency (Hz)							Overall, L_{A90} (dB)
		63	125	250	500	1k	2k	4k	
A & B	Daytime	62	54	52	51	50	46	38	**53**
	Night-time	55	50	46	42	41	38	32	**44**

Spectral shape taken from Jameson Acoustics measurements, adjusted to BWB L_{A90} figures

The noise limits to be achieved are therefore:

Receptor	Period	'Entertainment' noise egress limit, $L_{eq,5min}$ (dB) at octave band centre frequency (Hz)							Overall, L_{A90} (dB)
		63	125	250	500	1k	2k	4k	
A & B	Daytime	57	49	47	46	45	41	33	**48**
	Night-time	50	45	41	37	36	33	27	**39**

5.2 Specifications & Assessment

Consideration shall be given to the noisier amenity spaces at L02, namely the screening room (during the daytime) and the lounges/gym (at night-time).

The main building elevation to these rooms is fully glazed (curtain walling) at L02. The glazing has been specified to achieve the following minimum sound reduction performance values.

Minimum Sound Reduction, *R* (dB) at OBCF (Hz)							Weighted R_w + C_{tr} (dB)
63	125	250	500	1k	2k	4k	
26	28	34	40	43	46	46	**38**

The windows/CW will be provided by Lancashire Double Glazing (LDG), who have confirmed the following specification of glass for the amenity elevations:

Frequency, Hz / dB*						Rw
125	250	500	1000	2000	4000	43
30	34	42	44	49	61	

Spec GL01: -

Glass Specification –
Outer – 10.8mm Acoustic Laminate
Cavity - 16mm Argon filled black thermal spacer.
Inner – 10mm Toughened + HST – Climagaurd 1.0#5.
U-Value - 1.0 W/m2k
G-Value - 0.47
RW + Ctr = 39Db

With consideration for framing (aluminium curtain walling frames) we have carried out the following calculation to determine the in-situ apparent R' sound reduction performance of the complete window system to the L02 amenity spaces:

	Element	Config	63	125	250	500	1k	2k	4k	Sample Test Area m2
1	Glass, R	10.8-16-10	27	30	34	42	44	49	61	1.875

	Correction	Reference	63	125	250	500	1k	2k	4k
1	Panel size / rigidity	Sewells Correction	-1	-1	0	0	0	0	0

	Element	Config	63	125	250	500	1k	2k	4k	Project Panel Area m2	A0
1	Glass, R	As above	26	29	34	42	44	49	61	4.312	10
2	Frame, Dne	Technal frame - Alu. (typical est)	47	53	58	57	61	68	70	0.688	10
3	Timber suround, R	N/A	99	99	99	99	99	99	99	0	10

Dn,k (inc change in glass size)

	63	125	250	500	1k	2k	4k	
Dn (comp)	27	31	36	42	44	50	57	
R'	24	28	33	39	41	47	54	38 R'w+Ctr
Change in R	-3	-2	-1	-3	-3	-2	-7	

	63	125	250	500	1k	2k	4k	
A0	10	28	31	36	44	46	51	63 86% % glass
A0	10	35	41	46	45	49	56	58
A0	10	99	99	99	99	99	99	99

Based on the above sound reduction performance of the façade, and the 'in-room' maximum permissible operational noise levels tabulated in Section 3.1, the following tables present our calculations of noise egress to Receptors A (own aparthotel windows directly above, circa 4m mean distance, 90 degrees off-axis) & B (Vox Apt windows, circa .10m distance, on-axis).

The calculations adopt the industry standard equation for calculating noise breakout:

$$SPL_{out} = SPL_{in} - SRI + 10\log_{10}\left(\frac{S}{r^2}\right) - 14$$

, where SPL_{out} in the resultant noise level outside, SPL_{in} is the reverberant noise level inside the venue, SRI is the composite sound reduction of the façade, S is the area of the façade (m^2), and r is the distance.

Screening room daytime - to NSR A

Desc.	dB, at Octave Band Centre Frequency, Hz							A-weighted, dB(A)
	63	125	250	500	1k	2k	4k	
SPL_{in}, $L_{eq,5min}$	**82**	**83**	**85**	**85**	**85**	**85**	**85**	-
SRI, façade	-24	-28	-33	-39	-41	-47	-54	-
10log(S/r^2), S=15m^2, r=4m	0	0	0	0	0	0	0	-
-14	-14	-14	-14	-14	-14	-14	-14	-
Directionality (90 degrees off)	-4	-4	-4	-4	-4	-4	-4	
SPL_{out}	**40**	**41**	**38**	**32**	**30**	**24**	**17**	**35**
Daytime Limit	*57*	*49*	*47*	*46*	*45*	*41*	*33*	***48***
Compliance	✓	✓	✓	✓	✓	✓	✓	✓

Screening room daytime - to NSR B

Desc.	dB, at Octave Band Centre Frequency, Hz							A-weighted, dB(A)
	63	125	250	500	1k	2k	4k	
SPL_{in}, $L_{eq,5min}$	**82**	**83**	**85**	**85**	**85**	**85**	**85**	-
SRI, façade	-24	-28	-33	-39	-41	-47	-54	-
10log(S/r^2), S=15m^2, r=10m	-8	-8	-8	-8	-8	-8	-8	-
-14	-14	-14	-14	-14	-14	-14	-14	-
Directionality (on axis)	0	0	0	0	0	0	0	
SPL_{out}	**36**	**33**	**30**	**24**	**22**	**16**	**9**	**27**
Daytime Limit	*57*	*49*	*47*	*46*	*45*	*41*	*33*	***48***
Compliance	✓	✓	✓	✓	✓	✓	✓	✓

Gym/lounge night - to NSR A

Desc.	dB, at Octave Band Centre Frequency, Hz							A-weighted, dB(A)
	63	125	250	500	1k	2k	4k	
SPL_{in}, $L_{eq,5min}$	**80**	**80**	**80**	**80**	**80**	**80**	**80**	-
SRI, façade	-24	-28	-33	-39	-41	-47	-54	-
10log(S/r^2), S=15m^2, r=4m	0	0	0	0	0	0	0	-
-14	-14	-14	-14	-14	-14	-14	-14	-
Directionality (90 degrees off)	-4	-4	-4	-4	-4	-4	-4	
SPL_{out}	**38**	**38**	**33**	**27**	**25**	**19**	**12**	**30**
Night-time Limit	*50*	*45*	*41*	*37*	*36*	*33*	*27*	***39***
Compliance	✓	✓	✓	✓	✓	✓	✓	✓

Gym/lounge night - to NSR B

Desc.	dB, at Octave Band Centre Frequency, Hz							A-weighted, dB(A)
	63	125	250	500	1k	2k	4k	
SPL_{in}, $L_{eq,5min}$	**80**	**80**	**80**	**80**	**80**	**80**	**80**	-
SRI, façade	-24	-28	-33	-39	-41	-47	-54	-
10log(S/r^2), S=15m^2, r=10m	-8	-8	-8	-8	-8	-8	-8	-
-14	-14	-14	-14	-14	-14	-14	-14	-
Directionality (on axis)	0	0	0	0	0	0	0	
SPL_{out}	**34**	**30**	**25**	**19**	**17**	**11**	**4**	**22**
Night-time Limit	*50*	*45*	*41*	*37*	*36*	*33*	*27*	***39***
Compliance	✓	✓	✓	✓	✓	✓	✓	✓

The results show that noise egress from the amenity spaces is expected to comfortably satisfy MCC external noise egress requirements. There is plenty of 'headroom' should maximum permissible noise levels in rooms increase following the pre-completion (Part B) acoustic commissioning testing.

6.0 Conclusion

Jameson Acoustics Limited has been commissioned by Domis Construction Limited to provide acoustic design services to assist in the part-discharge of Planning Condition 14 pertaining to the consented residential development at Cornbrook in Manchester.

The report confirms the design intent/specifications to achieve an acoustic criteria in line with MCC requirements. Full discharge of the condition shall be subject to pre-completion commissioning acoustic testing, as outlined herein.

Appendix A – Acoustic Terminology

dB Decibel - Used as a measurement of sound level. Decibels are not an absolute unit of measurement but an expression of ratio between two quantities expressed in logarithmic form.

dB(A) The human ear is more susceptible to mid-frequency noise than the high and low frequencies. The 'A'-weighting scale approximates this response and allows sound levels to be expressed as an overall single figure value in dBA. The $_A$ subscript is applied to an acoustical parameter to indicate the stated noise level is A-weighted (e.g. $L_{Aeq,T}$ in dB). Noise levels in dBA do not have a linear relationship to each other; for similar noises, a change in noise level of 10dBA represents a doubling or halving of subjective loudness. A change of 3dBA is only just perceptible.

$L_{Aeq,T}$ $L_{Aeq,T}$ is the equivalent continuous sound pressure level. It is an average of the total sound energy measured over a specified time measurement period, *T*.

$L_{10,T}$ L_{10} is the noise level exceeded for 10% of the measurement period *T* (i.e. the quietest 10% of the measurement) and has, for many years, been used in the assessment of road traffic noise.

$L_{90,T}$ L_{90} is the noise level exceeded for 90% of the measurement period *T* (i.e. the quietest 10% of the measurement) and is often used to describe the 'background' noise level.

L_{max} L_{max} is the maximum sound pressure level recorded over the measurement period, *T*. L_{max} is often used in assessing scheduled environmental noise 'events' (such as train passbys), particularly at night where such events may cause sleep disturbance.

R_w The weighted sound reduction index, R_w, is a single figure description of sound reduction as defined in BS EN ISO 717-1. It is single-number quantity which characterizes the airborne sound insulating properties of a material or building element over a range of frequencies. The R_w is calculated from sound insulation measurements taken in an acoustic laboratory. Sound insulation ratings derived from site measurements are invariably lower than the laboratory figures and are referred to as the apparent weighted sound reduction index, R'_w.

$D_{n,e,w}$ The weighted element-normalised level difference, $D_{n,e,w}$, is a single figure description of the sound insulation performance of small building elements, such as a trickle ventilator.

C_{tr} C_{tr} is correction term applied against the sound insulation single-number values (e.g. R_w) to provide a weighting against low frequency performance. The reference values used within the C_{tr} calculation are based on urban traffic noise.