

Project name	Port Talbot Plaza		
Design note title	Planning Condition 17 Discharge Assessment		
Document reference	PPT-HYD-ZZ-XX-DN-Y-1005		
Author	Elena de Juan		
Revision	P01		
Date	7 December 2020	Approved	☐

1. INTRODUCTION

Hydrock has prepared this design note in order to discharge planning condition 17 for Port Talbot Plaza, related to the building fabric sound insulation proposed to control noise ingress into internal areas.

2. CONDITION 17

“Prior to the start of construction works on site a detailed scheme demonstrating that the sound insulation performance of the hereby approved development”

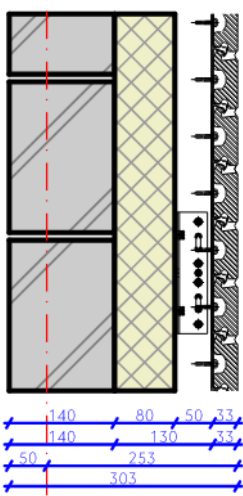
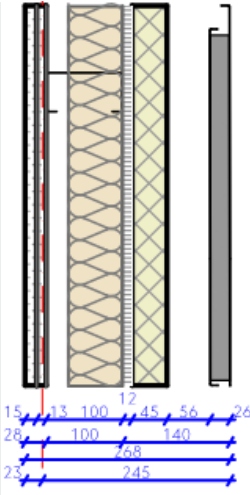
Table 2 below shows the recommended internal noise level limits proposed by Hydrock for the scheme and the sound reduction index dB R_w of the façade construction for each of the key internal spaces.

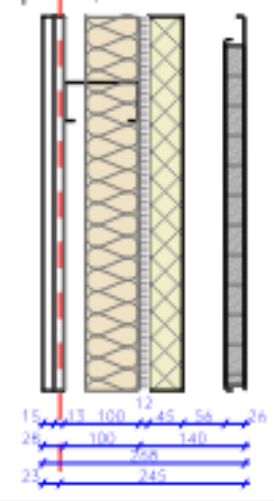
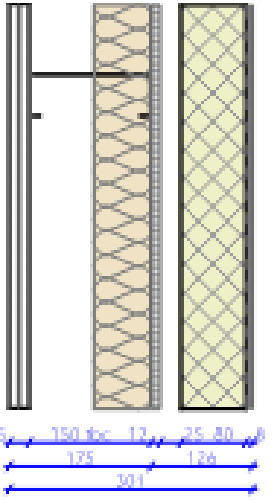
Calculations have been undertaken in accordance with ISO 12354-3 to evaluate the sound insulation performance of the façade elements in situ in the existing acoustic climate of the site.

The findings of this assessment are summarised below for ease of review. Detailed calculation sheets are provided in Appendix 1 to this report.

TECHNICAL DESIGN NOTE

Table 1: Building Insulation Performance

Room	Recommended IANL	External noise levels at façade	External Wall construction	Wall R _w	Window dB R _w	Compliance with IANL
Hall	35	58		49 dB	≥32	Yes
Studio	35	50	Existing wall Brickwork variable thickness approx. 200mm	50 dB R _w		Yes
Café	45	60	Existing wall Brickwork variable thickness approx. 200mm	50 dB R _w		Yes
Control Room	25	52	Existing Wall Brickwork variable thickness approx. 200mm	50 dB R _w		Yes
Meeting Room	40	52		56 dB R _w		Yes

Room	Recommended IANL	External noise levels	External Wall construction	Wall R _w	Window R _w	Compliance with IANL
Gym	40	58		56 dB R _w	At least 32	Yes
Open plan office	40	58		56 dB R _w	At least 32	Yes

3. COMMENTARY-VENTILATION STRATEGY

The building is going to be mechanically ventilated and therefore there will not be open windows for ventilation.

On this basis the sound insulation is largely dictated by the main façade elements and glazing performance.

On the basis glazing is specified to a minimum sound reduction index of 32 dB R_w . It is calculated the development will be in compliance with the propose internal ambient noise level design criteria for the scheme form Hydrock Design Review Ref: "PPT-HYD-ZZ-XX-RP-Y-1003-Stage 3 Report-P03".

4. CONDITION 17-CONCLUSION

The proposed building insulation performance is therefore sufficient for each of proposed room types and end uses, and on this basis, having been confirmed that glazing with minimum insulation index of 32dB R_w will be provided, it is submitted that condition 17 should be discharged.

TECHNICAL DESIGN NOTE

5. APPENDIX 1-ISO 12354-3 CALCULATIONS EXAMPLE

Building Envelope Sound Insulation Calculation According to EN 12354-3

HbyH	24/11/2020
Port Talbot, Plaza	Café

Incident noise levels

	Term	Label	Octave band centre frequency (Hz)							dB(A)
			63	125	250	500	1 k	2 k	4 k	
Leq,ff	Measured Leq	Spectrum Adjustment Terms (Leq)	4.5	1.1	0.5	-4.2	-3.4	-10.3	-15.6	60
	Measured spectrum	Adjusted Spectrum (Leq)	64.5	61.1	60.5	55.8	56.6	49.7	44.4	60.0
		K	3	3	3	3	3	3	3	
Lmax,ff	Measured Lmax	Spectrum Adjustment Terms (Lmax)	5.3	2.2	0.5	-2.4	-5	-11.4	-10.3	55
		Adjusted Spectrum (Lmax)	60.3	57.2	55.5	52.6	50	43.6	44.7	55.0
		K	6	6	6	6	6	6	6	

Room Details

Term	Derivation	Value	Term	Derivation	Value
V	Volume (m3)	159.6	Sew	Sf - Swi	11.0
RT	RT (secs)	1.0	Srr	Area of ceiling (m2)	38.0
Sf	Facade area (inc. window) (m2)	22.3	S	Sf + Srr	60.3
Sr	Roof Area	38.0	Ao	Ref Area for Dnew	10.0
Swi	Window area (m2)	11.3	Attenuation to roof		0.0

Sound Insulation Calculation elements

	Term	Label/element	Octave band centre frequency (Hz)							Rw
			63	125	250	500	1 k	2 k	4 k	
vent openings	Dn,e	Mech Vent	100	100	100	100	100	100	100	101
	A0/S x 10-Dn/10	B	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
		Leq Internal SPL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Lmax Internal SPL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
window	Rwi	6mm single glazing	14	20	24	31	35	29	36	32
	Swi/S x 10-Rwi/10	C	0.007	0.002	0.001	0.000	0.000	0.000	0.000	
		Leq Internal SPL	50.0	40.6	36.0	24.3	21.1	20.2	7.9	35
		Lmax Internal SPL	48.8	39.7	34.0	24.1	17.5	17.1	11.2	31
Primary wall	Rew	140mm Concrete Block	39	39	39	46	54	61	66	51
	Sew/S x 10-Rew/10	D	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
		Leq Internal SPL	29.1	25.7	25.1	13.4	6.2	-7.7	-18.0	22
		Lmax Internal SPL	27.9	24.8	23.1	13.2	2.6	-10.8	-14.7	17
Louvre area	Rrr	None/Infinite	100	100	100	100	100	100	100	101
	Sr/S x 10-Rrr/10	E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
		Leq Internal SPL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		Lmax Internal SPL	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Calculated Internal Noise Levels

Leq	10 Log (B+C+D+E)	F	-21.2	-27.1	-30.9	-37.9	-42.1	-36.3	-43.3	
	A (furnished)	Room Absorption	26	26	26	26	26	26	26	
	10 log (S/A)	G	3.7	3.7	3.7	3.7	3.7	3.7	3.7	
	Calc Tolerance	T								
	Internal Leq,2	L+F+G+K+T	50.0	40.7	36.3	24.6	21.2	20.2	7.9	25.3
Lmax	Calc Tolerance	T								
	Internal Lmax,2	M+F+G+K+T	48.8	39.8	34.3	24.4	17.6	17.1	11.2	30.3

