



PROJECT TECHNICAL MEMORANDUM

JOB TITLE : Worsley Mill
REF : HT: 31170/PTM1
DATE : 7 December 2023
FROM : Tom Bonnert
ISSUED TO : BTP Architects

Hann Tucker Associates

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RE: PLANNING STATEMENT - ACOUSTIC STANDARDS & ASSESSMENT

1.0 Introduction

Hann Tucker has been instructed to inform on the refurbishment works at Worsley Mill that will be subject to replacement of portions of the external façade as part of external cladding remediation works.

The existing internal building fabric is to be retained and is understood to remain effectively untreated with the exception of new interface details to any new cladding.

Given that remedial works are to comprise the partial removal of elements of the external building fabric, this has the potential to affect external noise intrusion. Consequently, this Project Technical Memorandum provides a summary of the proposed refurbishment works, as well as a comparison of the existing vs. proposed façade elements with regards to acoustic performance.

2.0 Local Authority Requirements

It is understood that the local authority has requested that:

“A statement will be required confirming that there will be no material reduction in the building noise insulation properties. Please outline this in detail in the statement how it will not affect the buildings noise insulation.”

3.0 External Building Fabric Proposals

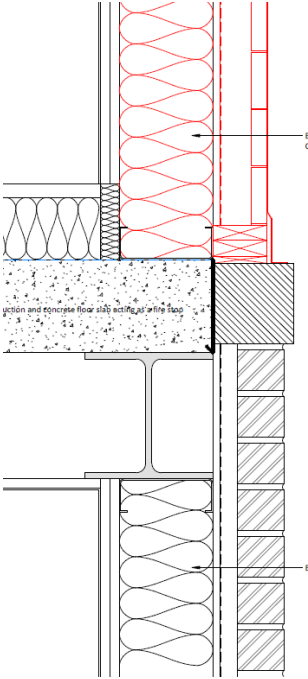
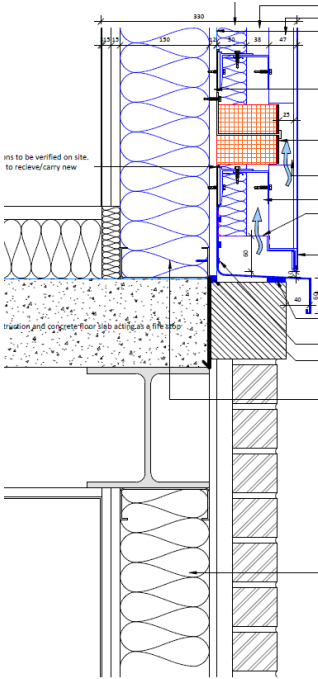
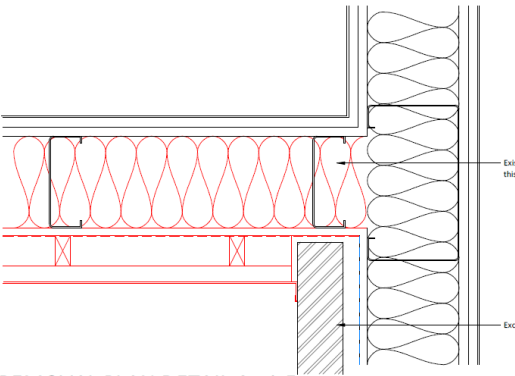
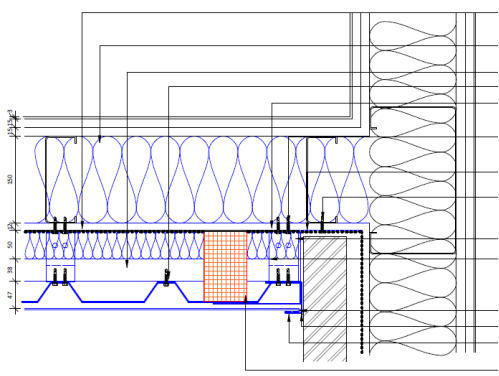
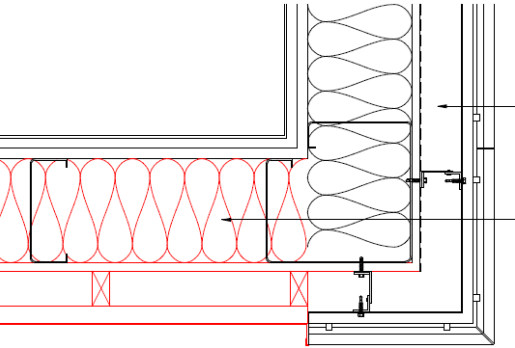
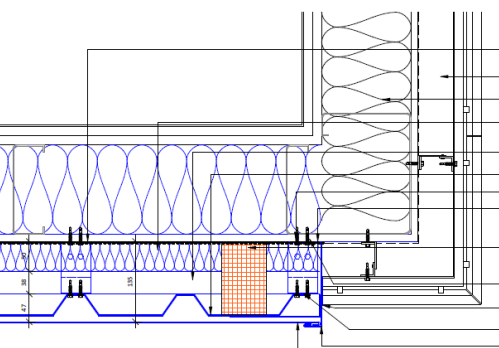
The following sections outline our review of the existing façade build-ups against proposals to inform this planning statement.

3.1 Existing vs. Proposed Build-ups

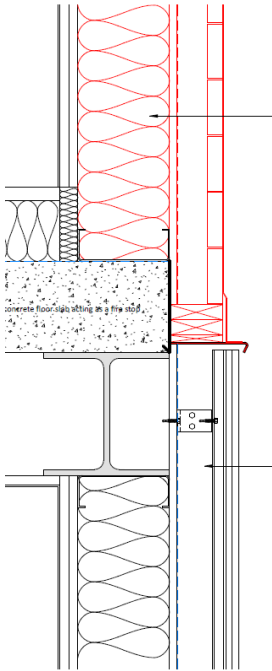
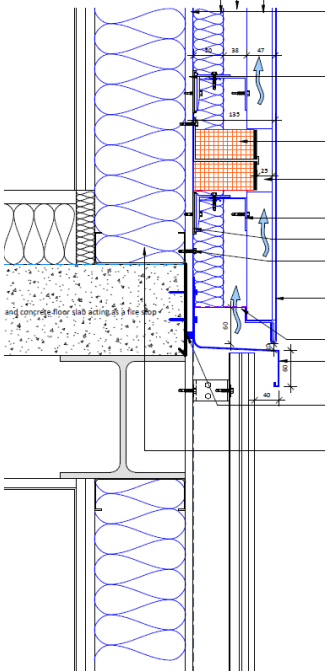
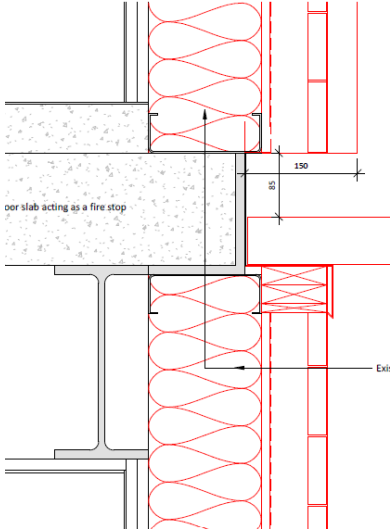
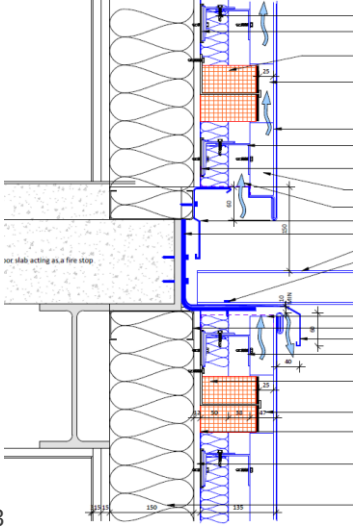
The following table sets out the existing vs. proposed details as provided to us by BTP Architects.

[illegible]



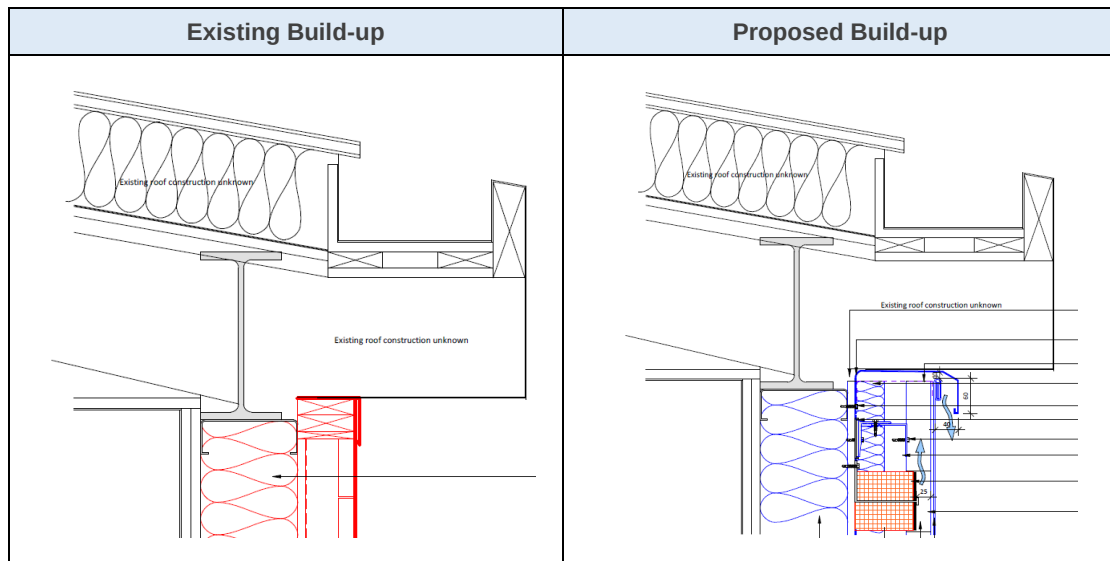
Existing Build-up	Proposed Build-up
 Section and concrete floor slab and rebar, wiring floor	 ins to be verified on site to receive/carry new Insulation and concrete floor slab acting as a fire stop
 Exit this Exch	
	



Existing Build-up	Proposed Build-up
 concrete floor slab acting as a fire stop	 concrete floor slab acting as a fire stop
 door slab acting as a fire stop Exit	 door slab acting as a fire stop 3



Existing Build-up	Proposed Build-up



In all instances, the internal plasterboard linings facing the internal demise is to be retained, along with the 150mm insulation within the SFS cavity of the external wall build-up. As such, this portion of the external wall build-up is considered like-for-like in all instances.

The existing layer of 12mm Cement particle board fixed to the outer side of the SFS is to be replaced with 12mm RCM Y-Wall Calcium silicate sheathing board. The replacement sheathing board has a density of 1200kg/m^3 , and mass per unit area of 14.4kg/m^2 . Comparably, cement particle board typically has a density of ca 1000kg/m^3 , which would equate to a mass per unit area of 12kg/m^2 . As such, the proposed new sheathing board would be expected to provide a slight betterment considering it is slightly denser/heavier.

The outer cavity of the existing external build-up is formed by an uninsulated cavity, with external facing timber backing board with zinc finish fixed on timber studs. The uninsulated cavity appears to be circa 50mm. The proposed replacement cladding is noted to incorporate 50mm Rockwool DuoSlab (or equivalent) within a 135mm total cavity, and Zinc flat lock horizontal cladding with single welded seam @ 525mm centres fixed over breather membrane on galvanised protected decking and aluminium cladding rails to provide 38mm ventilated cavity. We would consider the proposed outer cladding, with insulated external cavity, to provide an equivalent acoustic performance when compared to the timber cladding being replaced.

Based on the above, calculations have been carried out in Insul modelling software (V9.0.24) to predict the existing performance of the external wall, the SFS construction alone (ie not considering any cladding) then an estimation of the proposed with a new insulated cavity and cladding. It should be noted that it was not possible to use zinc as a material so the cladding has been modelled as steel which has a similar density.



The detailed results are shown in Appendix A and are summarised below:

Scenario	Calculated Performance, $R_w + C_{tr}$ (dB)
Existing	46
SFS only	45
Proposed	55*

*Modelled values do not consider the vented cavity so the actual performance may be slightly lower than the stated value when considering the 10mm openings at the top and bottom for the cladding panels.

Based on the above, it can be seen that removing the uninsulated timber cladding would have a minimal impact of the overall acoustic performance of the façade itself. This is likely because the uninsulated cavity is limiting the performance.

By contrast, it can be seen that having an insulated cavity and simple rainscreen cladding could actually provide a betterment in terms of acoustics. However, it should be noted that the modelling software does not allow for the inclusion of a 10mm opening in the cladding panel. As such, it has been modelled as fully solid and, in reality, the performance could be slightly below the modelled performance due to these small openings.

Based on the above the proposed external wall is considered to provide an equal to or better level of acoustic performance with regards to control of noise intrusion.

3.2 External Glazing

The glazing is understood to be being retained as part of the cladding remediation therefore this is considered suitable as no change is occurring. The interface between new cladding and existing glazing shall however be sealed effectively and built to a good level of workmanship.

4.0 Ongoing Acoustic Design

This memo serves as a planning statement to confirm the current refurbishment proposals are as a minimum, like-for-like to the existing. Ongoing acoustic design advice regarding the proposed façades may be necessary as the design progresses should any products be amended during procurement.

Notwithstanding, the proposals as reviewed within this document are considered to provide an equivalent (or better) acoustic performance to that of the existing facade performance, where being replaced.



Yours sincerely

Tom Bonnert

for HANN TUCKER ASSOCIATES

Appendix A

Modelled Façade Sound Insulation

Sponsor Member of The Institute of Acoustics; Members of UKELA & IEMA, The Association of Noise Consultants,
A UKAS Accredited testing laboratory No.4083 for Sound Insulation and Air Tightness Testing; ISO 9001 Accredited
Registered & Head Office: Duke House, 1-2 Duke Street, Woking, Surrey GU21 5BA (t) +44 (0) 1483 770595
Manchester Office: First Floor, 346 Deansgate, Manchester M3 4LY (t) +44 (0) 161 832 7041

Registered in England Company No.2037683 Hann Tucker Associates is the trading name of Hann Tucker Associates Limited

Sound Insulation Prediction (v9.0.24)

Program copyright Marshall Day Acoustics 2017

Margin of error is generally within $R_w \pm 3$ dB

- Key No. 2533

Job Name:

Job No.:

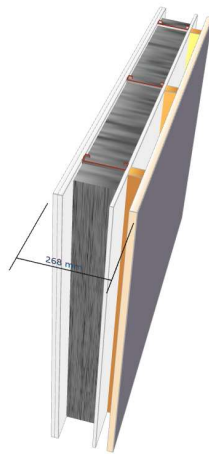
Initials: JakeHowarth

Date: 07/12/2023

File Name: Insul - Worsley Mill Existing.ixl



Notes:



R_w 51 dB

C -2 dB

Ctr -5 dB

Mass-air-mass resonant frequency = 43 Hz, 122 Hz

Panel Size = 2.7 m x 4.0 m

Partition surface mass = 56.3 kg/m²

System description

Panel 1 : 2 x 15 mm Gyproc Wallboard 15mm

Frame: Steel Stud (1.0-1.6mm) (1.5E2 mm x 38 mm), Stud spacing 600 mm ; Cavity Width 150 mm , 1 x Rockwool (33kg/m³) Thickness 150 mm

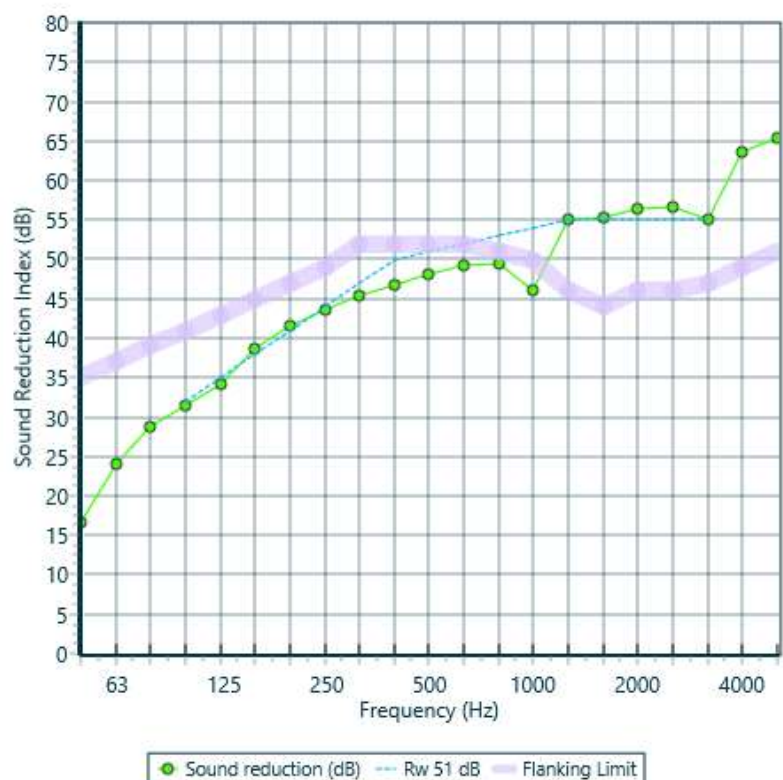
Panel 2 : 1 x 12.5 mm Fermacell 12.5

Frame: Timber stud (50 mm x 45 mm), Stud spacing 600 mm ; Cavity Width 50 mm

Panel 3 : 1 x 25 mm Plywood

+ 1 x 0.6 mm Steel

freq.(Hz)	R(dB)	R(dB)
50	17	
63	24	20
80	29	
100	31	
125	34	34
160	39	
200	42	
250	44	43
315	45	
400	47	
500	48	48
630	49	
800	49	
1000	46	49
1250	55	
1600	55	
2000	56	56
2500	57	
3150	55	
4000	64	59
5000	65	



Sound Insulation Prediction (v9.0.24)

Program copyright Marshall Day Acoustics 2017

Margin of error is generally within $R_w \pm 3$ dB

- Key No. 2533

Job Name:

Job No.:

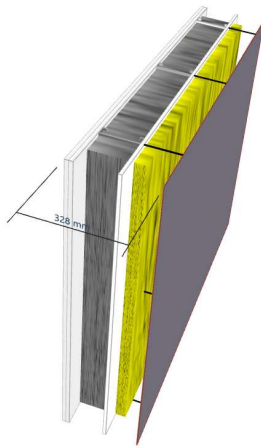
Initials: JakeHowarth

Date: 07/12/2023

File Name: Insul - Worsley Mill proposed.ixl



Notes:



R_w 59 dB

C -1 dB

Ctr -4 dB

Mass-air-mass resonant frequency = 43 Hz, 76 Hz

Panel Size = 2.7 m x 4.0 m

Partition surface mass = 51.3 kg/m²

System description

Panel 1 : 2 x 15 mm Gyproc Wallboard 15mm

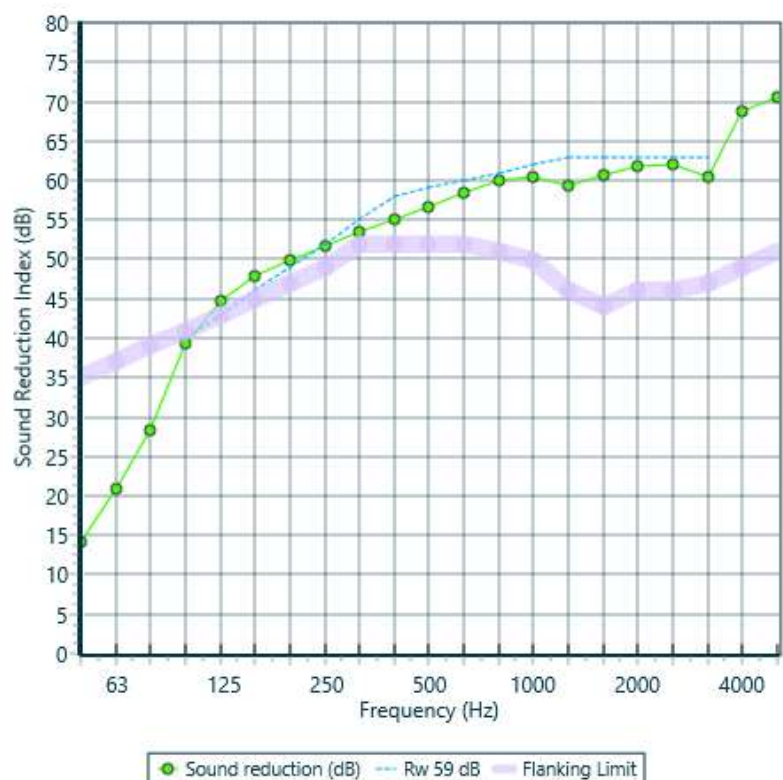
Frame: Steel Stud (1.0-1.6mm) (1.5E2 mm x 38 mm), Stud spacing 600 mm; Cavity Width 150 mm, 1 x Rockwool (33kg/m³) Thickness 150 mm

Panel 2 : 1 x 12 mm BluClad (calcium silicate)

Frame: Point Connection (1.4E2 mm x 45 mm), Stud spacing 600 mm; Cavity Width 135 mm, 1 x Rockwool (60kg/m³) Thickness 50 mm

Panel 3 : 1 x 0.6 mm Steel + 1 x 0.6 mm Steel

freq.(Hz)	R(dB)	R(dB)
50	14	
63	21	18
80	28	
100	39	
125	45	43
160	48	
200	50	
250	52	51
315	53	
400	55	
500	57	56
630	58	
800	60	
1000	60	60
1250	59	
1600	61	
2000	62	61
2500	62	
3150	60	
4000	69	64
5000	71	



● Sound reduction (dB) --- R_w 59 dB --- Flanking Limit