MANCHESTER 1824

The University of Manchester

The Whitworth Art Gallery 031AA

Proposal to divert rainwater away from the north and south gallery roofs.

FMC Building Surveying

Issue 1

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Title of Report	Proposal to divert rainwater away from the north and south gallery roofs. The Whitworth Art Gallery Date: 24/08/2023

Issue No	Date	Originating Persons	Approved & Signed by building surveyor	Comments
1	24/08/2023		Abdul Hafeez	

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1 Introduction

1.1 An initial assessment of the box gutters to the North and South gallery roofs was undertaken on the 3rd of April 2023. The report covers the issue of excessive rainwater discharge to single sump gutters to the North and South gallery roofs with a 75mm diameter horizontal rainwater outlet and ways in which the volume of surface water can be diverted away from the gutters into other drainage outlet.

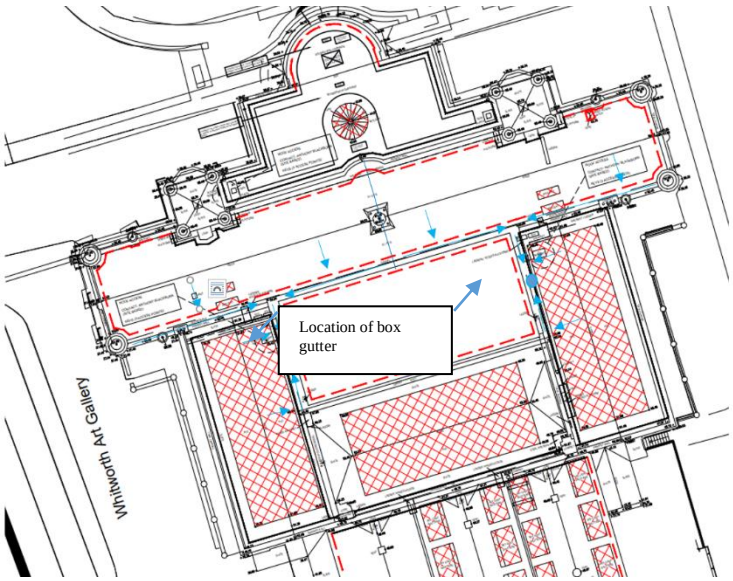


Figure 1 Rainwater surface discharge

2 Observations

2.1 The extent of surface water discharge to the above box gutters as shown in figure 1, indicated in blue directional arrows totals an area of circa 528m2. Using rainwater discharge calculations, it is evident that the 75mm outlet size is inadequate. Please see appended document or rainwater calculations. Rain water calculations undertaken by TB&A

2.2 On review of the roof areas as indicated on the attached plan it is evident that the only way to reduce the flow into the sump gutters is to divert surface water drainage to alternative outlets and to increase the sump gutter size to accommodate the flow.

2.3 In order to accommodate the main pitched slate roof, consideration was given to diverting the flow of rainwater to the North and South sides of the building. To achieve this, the fall of the lead gutters will need to be adjusted accordingly. This is to maximise the efficiency of the rainwater dispersal and minimise the risk of water damage to the building. This adjustment will ensure that the rainwater is dispersed in an effective manner, reducing the chances of potential water damage to the building. Moreover, this adjustment will also help to prevent any potential blockages in the gutters that could further contribute to the risk of water damage. See figure 2

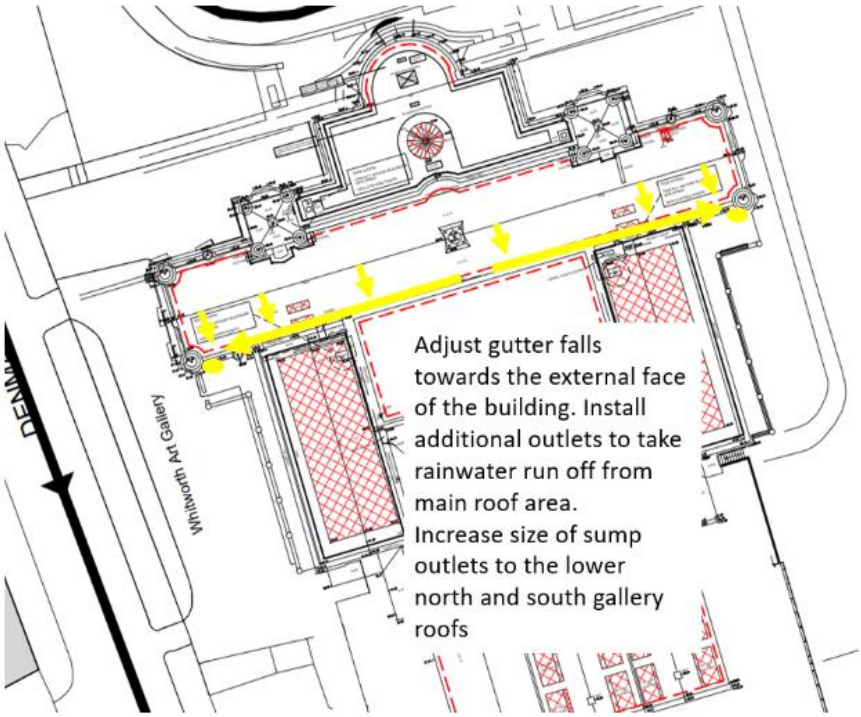


Figure 2 Proposal to divert rainwater

3 Conclusion

3.1 On review of the surface water, run-off and existing available outlets the following is recommend

3.2

3.3 Divert surface water from the main pitched roof by adjusting the falls of the gutter towards the outlets located on the north and south elevation of the building. This will require adjustment to the roof rafter to accommodate the new falls. An adjustment is required for approximately 4 meters of the box gutter on both the north and south elevations.

3.4

3.5 Increase the size of the existing box gutter to the North and South gallery roof; this would also involve trimming of the rafter feet below to accommodate the increased box gutter size.

3.6

3.7 Adjust falls to the infill roof to fall in both towards the north and south so the burden is shared between two outlets.

3.8

3.9 The costs are for budgetary purposes only and are based on rates obtained from the Coupland 3 gutter adjustment project and SPONS price books. No competitive quotations have been obtained from contractors.

3.10 It is estimated that the cost of completing the works described above will be between £80,000 and £100,000

4 Appendix 1