

8.2.1 Structural Engineering Details - On this page are the Structural Engineers Existing and Proposed Information relating to the Drainage running through these Steps and the other Drainage Connections

Project: Merthyr Synagogue
Job No: 9684
Subject: Comments on further investigations
Made by: JB
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General notes:

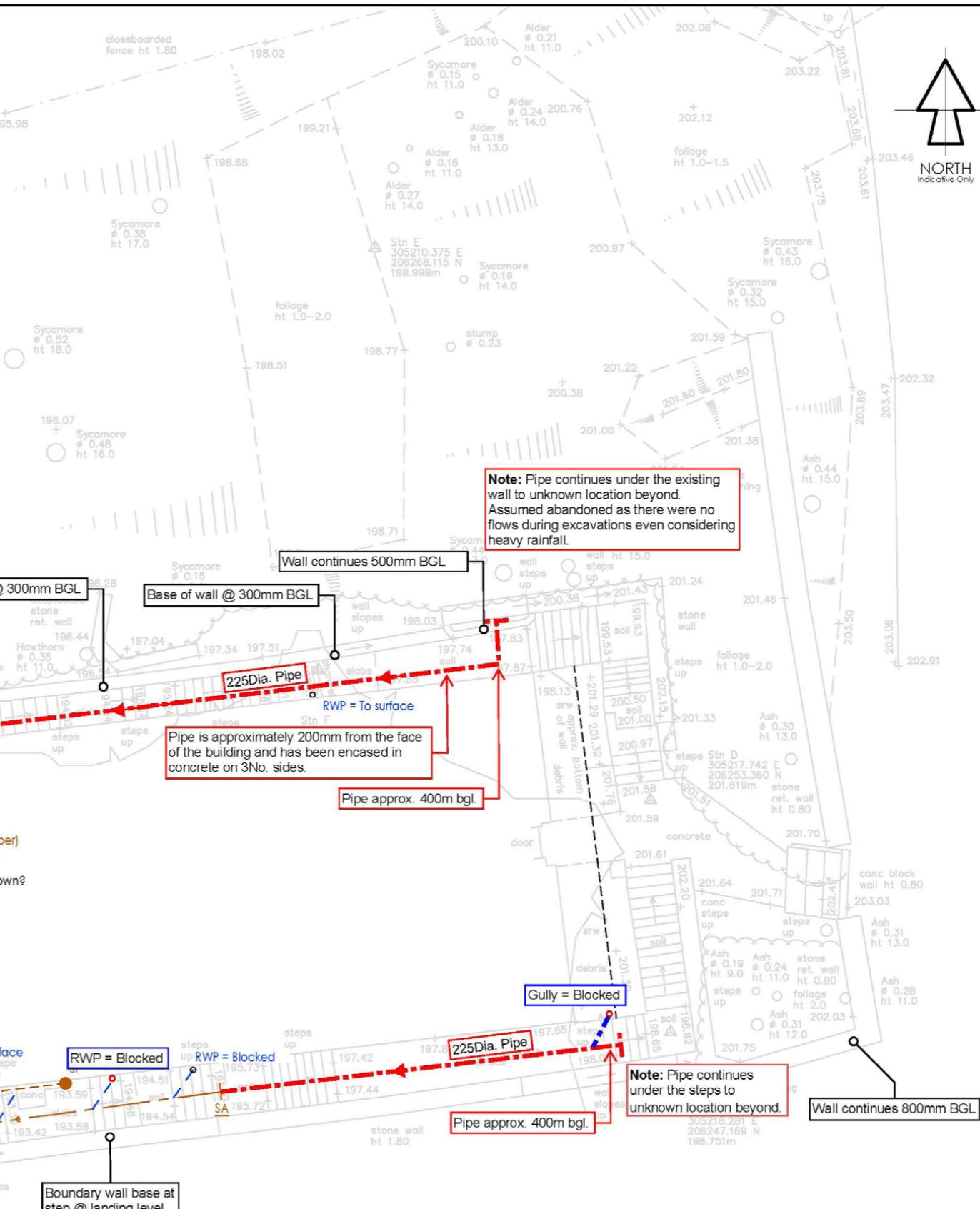
Boundary walls - Apart from 1NO. location on the north wall, we anticipate all walls to be either built up from the step level or have a single course below the steps. Therefore considerations need to be made for how the steps are rebuilt. Following discussions with the Architect a like for like repair is likely to be proposed.

This would likely comprise a step by step repair undertaken from the bottom of the flight to the top. Potential for change of material for treads to be reviewed by Mann Williams in coordination with Architect.

Drainage - As part of the inspections we undertook a quick exercise to try and establish whether the drains still run. This was done by pouring water into holes created in the upper ends of the pipe (on the upper landing) and inspecting whether flow was visible at the bottom.

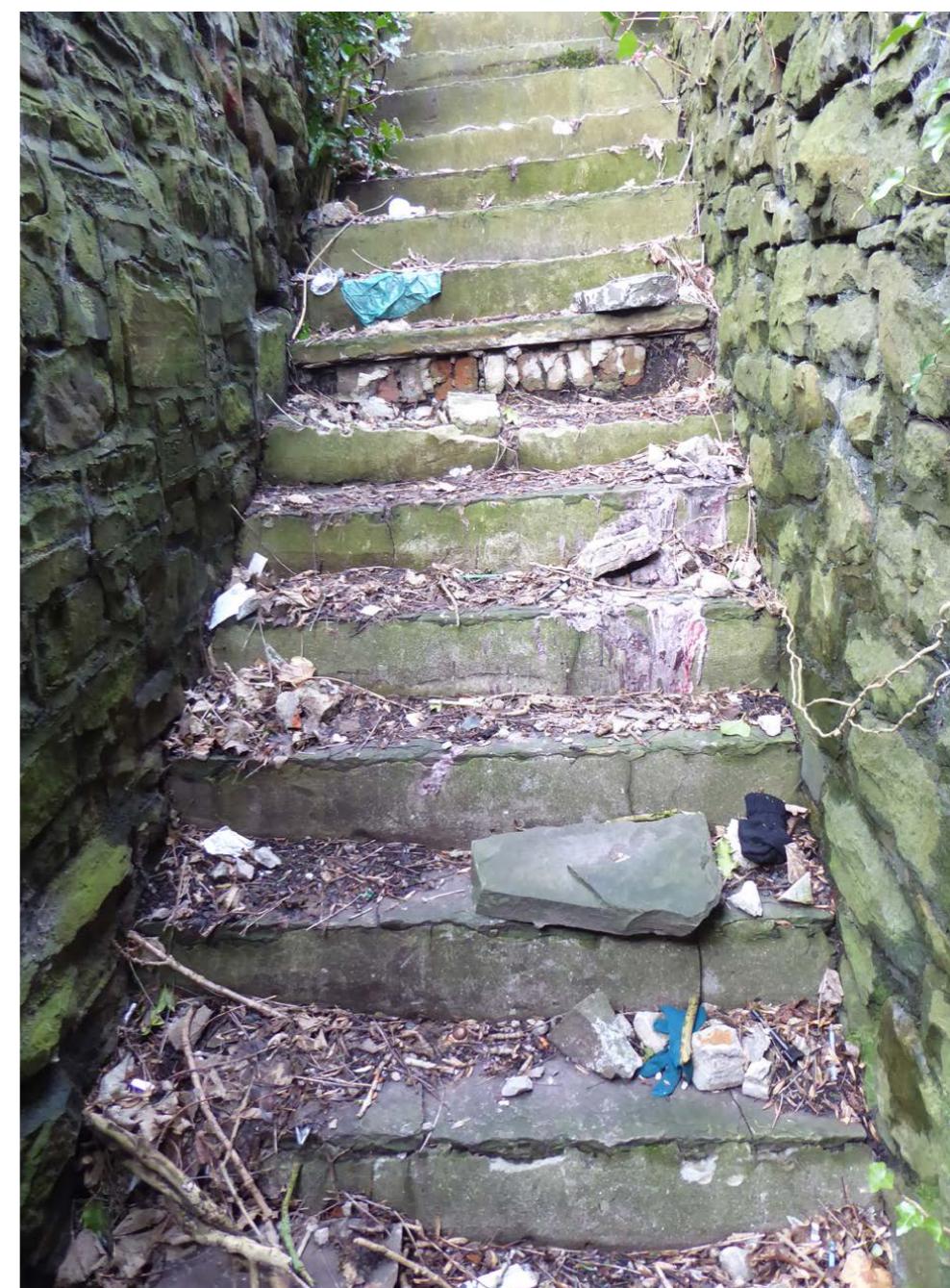
The North pipe is notably flowing well however there was some evidence of silts within the pipe which may have restricted the flow.

The South pipe flows however at a noticeably slower rate therefore we suspect there may be some localised trapped materials / vegetation which may be restricting the flow.



8.3 Existing Steps at the Rear

The site rises steeply from front to rear (west to east); and to the rear (east) of the Synagogue a set of symmetrical stone and brick steps rises from the interior's first floor to its second floor. The steps are separated from the gable wall of the Synagogue by a tall stone retaining wall. A steel and concrete bridge links the top of the steps with the second floor of the interior. This bridge is not an original structure, and was added in after the Synagogue closed for worship, along with the door inserted in the gable wall. On this page are photos taken of those steps in 2019. During an investigation in 2019, Heritage Structural Engineers, Mann Williams, determined that the retaining wall (which had already partially collapsed - see hole in photos below) was at serious risk of complete collapse, along with the stone and brick steps which the wall retains. Following discussions with the Cadw Historic Buildings Inspector, in 2020 the retaining wall was temporarily shored up and the wall's top courses taken down, with the stones stored on site. In retrospect, this LBC application also seeks to formalise agreement for that localised down-taking.



8.3 Existing Steps at the Rear

Pursuant to that essential shoring up of the retaining wall and the localised taking down of the tops of the wall, the photos on this page show the steps and wall as they are in 2025.

Discussions ensued, and investigations undertaken, to determine how to treat the steps, retaining wall and the area to the rear of the Synagogue.

Despite some stabilisation work (which was only temporary), the steps and retaining wall remains at significant risk of collapse. There is no options for doing nothing. However, the first questions were:

- Should the steps be repaired and re-built; or
- Should they be shored up for the long term and built over; or
- Should they be removed?

To repair and re-build would involve them all being taken down completely, and a new retaining structure constructed. Most of the steps would need replacing, due to very poor condition. This approach would involve so much intervention and new fabric, that it would not be true conservation. On top of this, the steps are difficult to access and, with no opportunity to use the space behind, this area would be barely used. As it is not overlooked, there would be concern that anti-social behaviour would continue.

Much consideration was given to the removal of the steps and retaining wall and providing a useful flat external space at first floor level, accessible from the main floor of the restored building. A series of investigations, led by Heritage Structural Engineers, Mann Williams, determined that the wall behind the steps was not retaining the land behind it, but that the steps were working with the front wall in retaining the ground. As a result, removing the steps and walls would require a large amount of ground removal and the installation of a significant new retaining structure. This would be expensive and would provide minimal real benefit. It would also result in the loss of a lot of historic fabric. However, even more of a driver was the fact that any such work would be incredibly difficult to do, with poor access, and would constitute a safety risk.

The only viable option was, therefore, the one which keeps the steps and the retaining wall as they are (with the top courses of stone already removed) and encapsulates them with a new retaining structure in front and a new slab on top. This would then allow for a lightweight structure to be built at the equivalent to second floor level. It would also preserve the walls and steps as they are, and avoid further loss of fabric. One final benefit with this approach is the opportunity to use the voids between the steps and the slab over the top as a compensatory hibernation roost, in the form of a cellar type construction, to account for the loss of the lower ground floor as a potential hibernation roost. Access for bats would be provided (through louvres, letter box style opening or hopper) along with an access 'locked door' for a bat worker to carry out maintenance. This 'hibernaculum' would include features for crevice-dwelling bat species, as enhancements, as well as fly-in access for brown long-eared bats.

On the next 4no. pages is Mann Williams' assessment of these options.



8.3.1 Existing Steps at the Rear - Options Assessment

 53 Mount Stuart Square, Cardiff CF10 5LR
 T: 02920 480333 www.mannwilliams.co.uk

 Project No: **Merthyr Synagogue**
Potential Approaches to Rear Area
Project: **9684**Engineer: **Joshua Bird**Date of Issue: **15/01/2024**Revision: **A**

1.0 Introduction

- 1.1 Mann Williams were appointed by Neil Richardson from the Foundation for Jewish Heritage to provide structural engineering services for the proposed regeneration of the Merthyr Synagogue.
- 1.2 Merthyr Synagogue is a Grade II listed building (Cadw Ref: Merthyr Christian Centre, 11426)
- 1.3 Part of the proposed development at the synagogue comprises a new landscaping scheme at the rear of the site which aims to improve current access around the rear of the site, provide space for plant (Air source heat pumps) and potentially provide improved external space which can be used by visitors.
- 1.4 However due to the condition of the existing site (steps and retaining walls), the steep gradient and very limited access undertaking any works to create a usable space are difficult therefore the client has requested that Mann Williams explores 4No. options which are described in the later sections.
- 1.5 The purpose of this report is to provide a summary of how each option could be facilitated, and the pros and cons of each option which may help the client decide which option should be taken forward.

Design Note

 53 Mount Stuart Square, Cardiff CF10 5LR
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Project No: **Merthyr Synagogue**Project: **9684**Report No: **9684_DN_01**Page: **2 of 8**

2.0 Condition summary of the rear landscaping

Note: This section will summarise the condition of the rear of the site and the steps based however for a detailed description of the condition of the rear of the site, refer to Mann Williams report 9684_R_JB_03.

- 2.1 The steps and landings generally are in very poor condition, with most of the original treads either significantly damaged, missing or improperly supported.
- 2.2 The rear wall is generally in reasonable condition and sound, with no obvious evidence of distress or significant deterioration. However, trial pits have revealed that it is not founded at depth; the base of the wall is just below the level of the adjacent steps. The newer concrete slab and bridge are also in reasonable condition currently with no evidence of spalling or exposed reinforcement observed during the inspection.
- 2.3 The inner masonry wall is in very poor condition and has a large collapsed area in the centre. A scheme of temporary propping was undertaken in 2020 to stabilise the wall and mitigate further collapses which could have compromised the remaining integrity of the wall.
- 2.4 Any proposals for the rear of the site will need to make considerations for how works can be undertaken safely while mitigating risk of further collapses of the masonry.
- 2.5 The existing alley between the gable and the front wall is approximately 1.2m wide therefore any works within this area are likely to be constrained and difficult.

