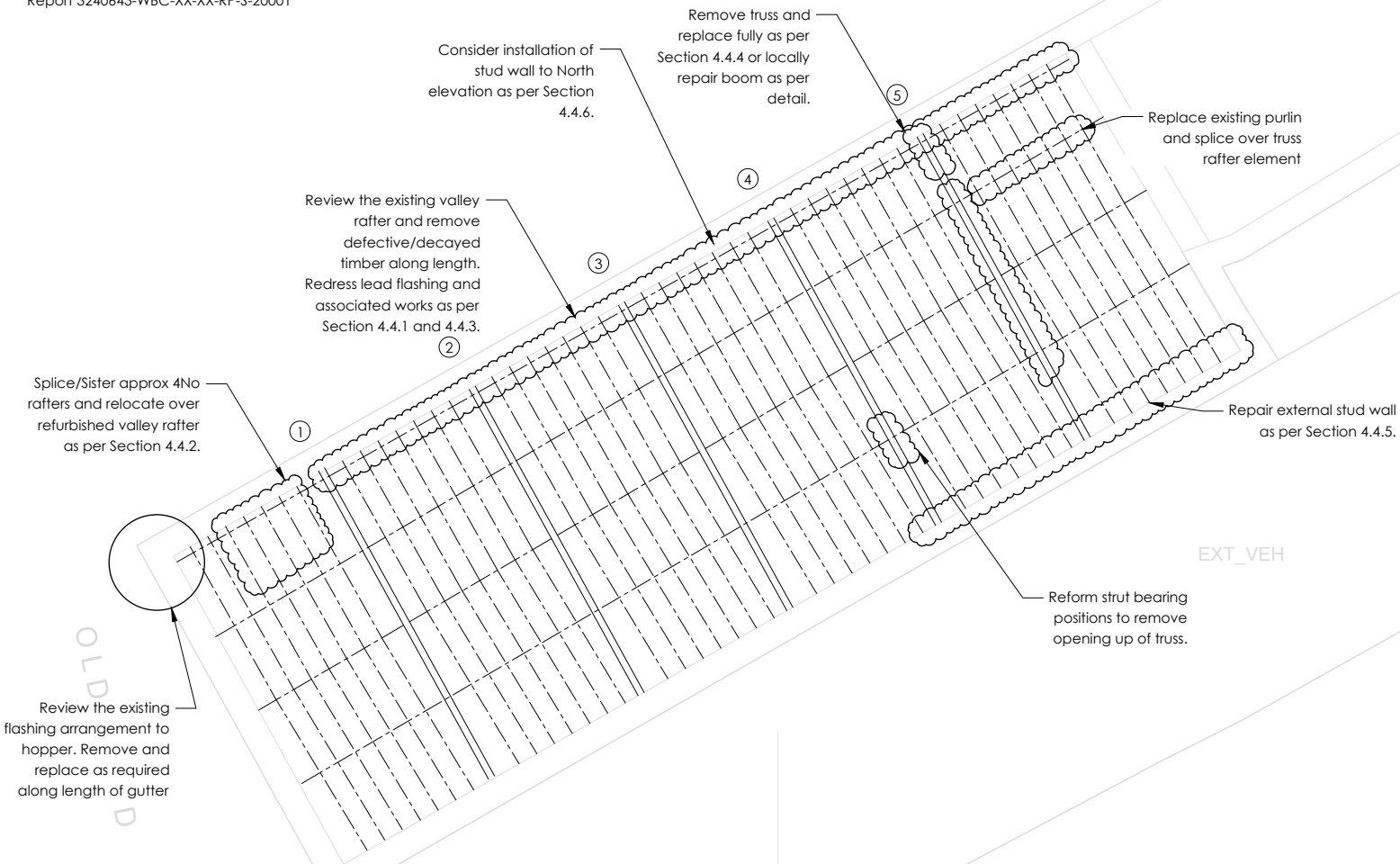


Structural Engineer's Report



Note - Refer to Condition Assessment
Report 3240643-WBC-XX-XX-RP-S-20001

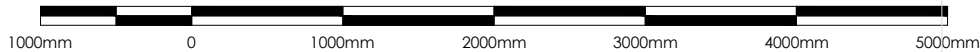


Roof Structure

All levels and dimensions to be checked on site

EXISTING CONDITION & SUGGESTED REMEDIAL WORKS

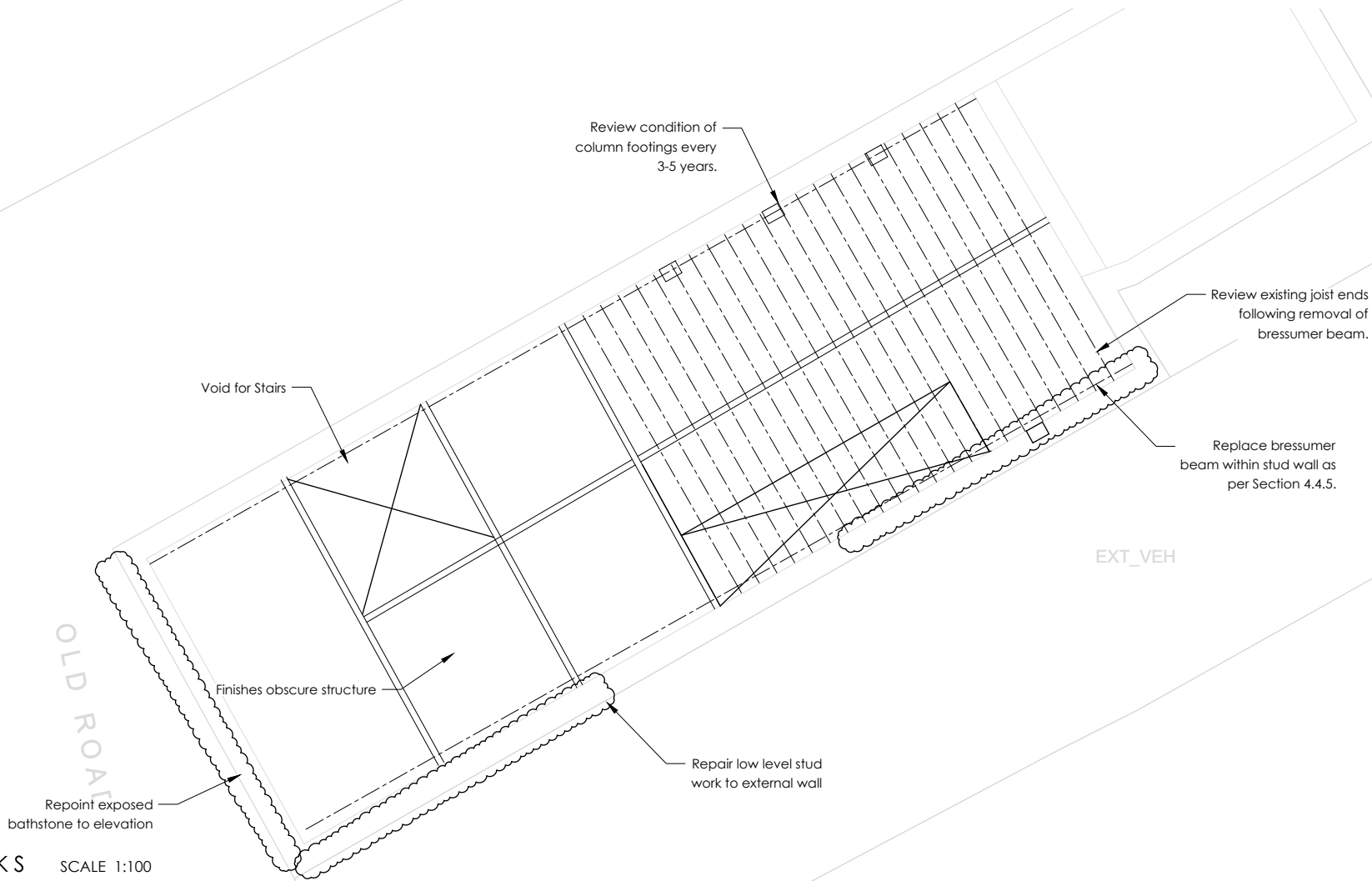
All levels and dimensions to be checked on site



SCALE 1:100

First Floor Structure

All levels and dimensions to be checked on site



Note - Refer to Condition Assessment
Report 3240643-WBC-XX-XX-RP-S-20001

Party Wall Etc Act 1996
The works indicated on these drawings may be within the provisions of the Act. It is the building owner's responsibility to serve the requisite notice(s) to adjoining owners and otherwise comply with the Act.

Responsibility is not accepted for errors made by others scaling from this drawing. All discrepancies should be reported to Western Building Consultants

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P01 Issue 08/01/2025 MW / MW

DRAWING:
Existing Condition & Suggested
Remedial Works

PROJECT:
Former Weighbridge
Chippenham
SN15 1HW

Date : 08 Jan 2025
Scale : 1:100 @ A3 Job No : 3240643
Drawn By : MW Structural Engineer : MW



Western House
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Drawing No: 3240643-WBC-XX-XX-DR-S-20001
Revision : P01



SCALE 1:20
0 250 500 750

SCALE 1:10
0 100 200 300

P01 Issue 08/01/2025 MW / MW

DRAWING:
Details

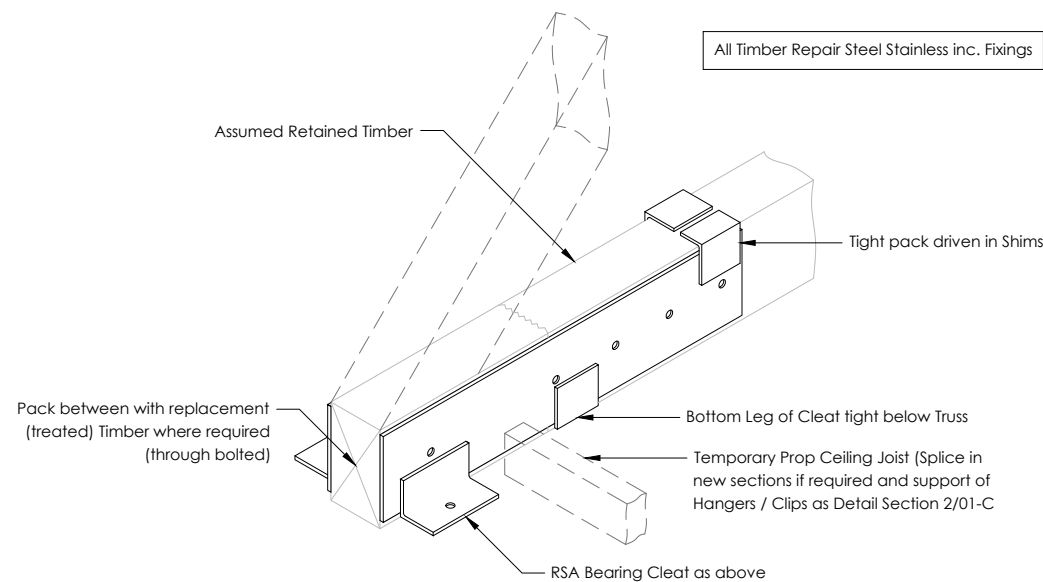
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Former Weighbridge
Chippenham
SN15 1HW

Date : 08 Jan 2025
Scale : varies @ A3 Job No : 3240643
Drawn By : MW Structural Engineer : MW

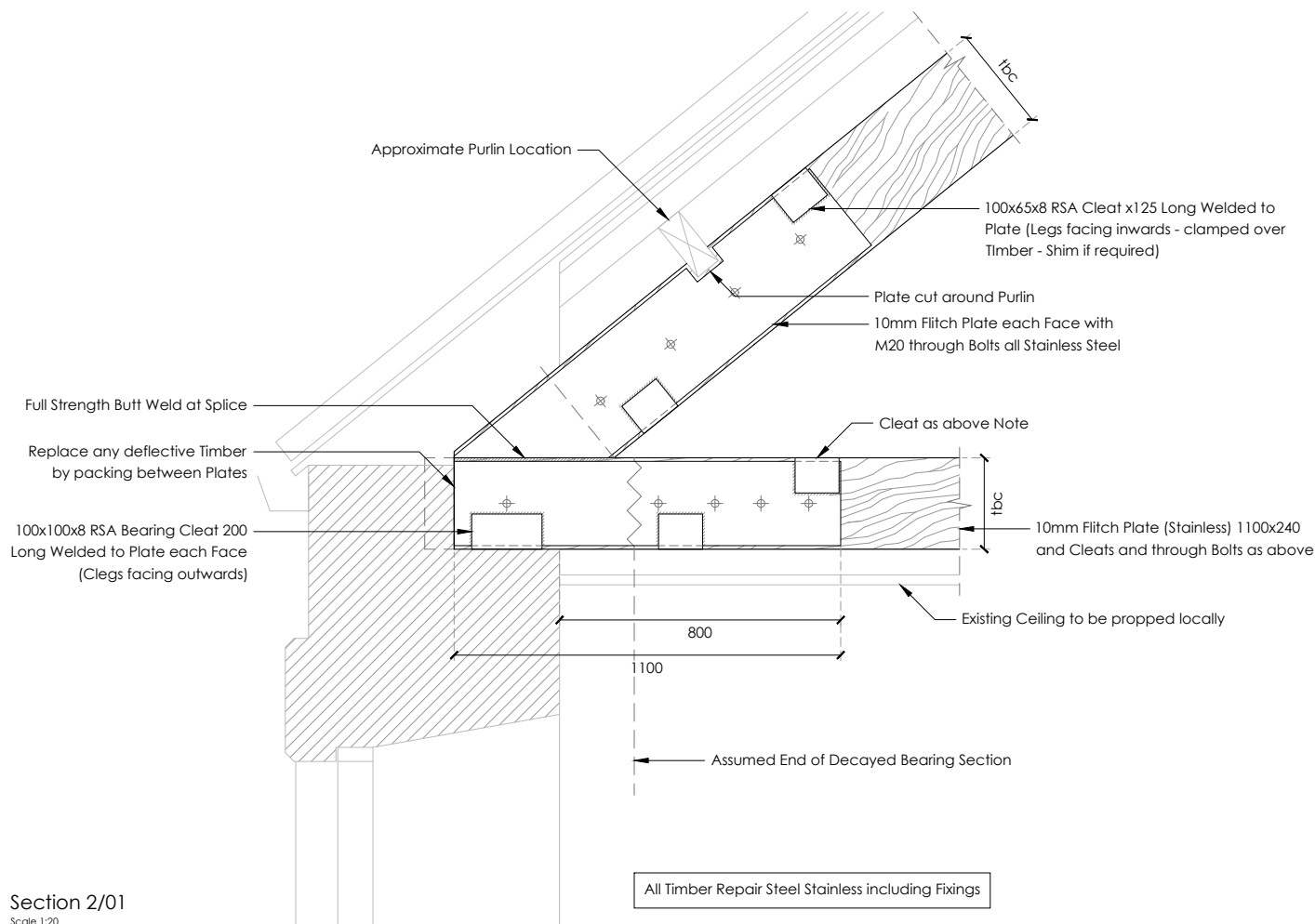


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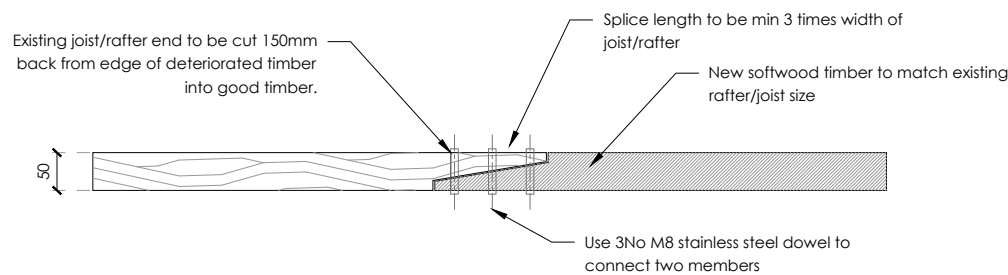
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Revision : P01



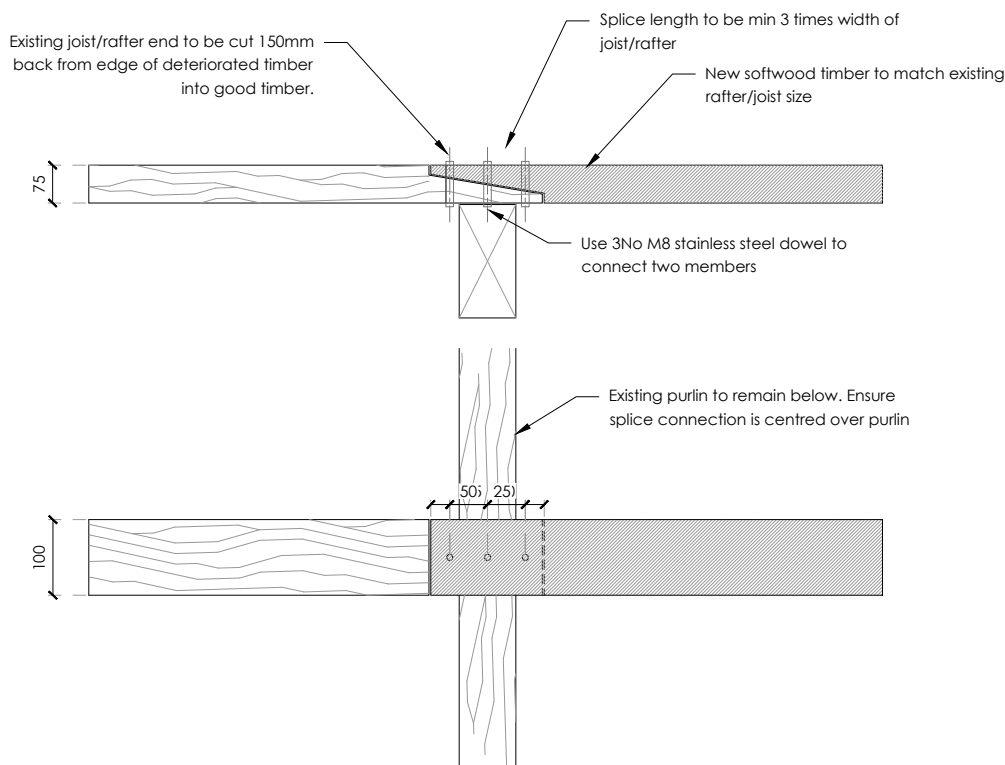
Detail 2/01-B
Isometric Detail at Truss Bearing
Scale 1:20



Section 2/01
Scale 1:20



Joist/Rafter/Stud Splice Detail
Scale 1:10



Joist/Rafter/Stud Splice Detail over Purlin
Scale 1:10



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The Weighbridge, Union Road, Chippenham SN15 1HW

Condition Assessment Report

WBC Document Ref: 3240643-WBC-XX-XX-RP-S-20001
Revision: P01

Issue Date: 08 January 2025

Client Name: Mr Jack Hussey
Client Address: Rapleys, Prince Street, Bristol BS1 4PH, UK
Site Address: Former Weighbridge and office, Union Road,
Chippenham, SN15 1HW



Rev	Description	Issued by	Checked	Date
P01	For Review	MW	SG	08/01/2025

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Reviewed	Signature	Date
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0. EXECUTIVE SUMMARY

0.1 ASSESSMENT SCOPE AND KEY FINDINGS:

- 0.1.1 WBC conducted a structural appraisal of the former weighbridge and office building at Chippenham Train Station, focusing on primary structural elements. Observations were non-intrusive, identifying significant structural concerns, particularly in the South elevation and roof formation.
- 0.1.2 Key issues include severe deflection and failure of Truss 5, deterioration of timber cladding and structural elements, and water ingress causing section loss to critical members.

0.2 IMMEDIATE AND FUTURE REMEDIAL ACTIONS:

- 0.2.1 Critical repairs include replacing Truss 5, stabilizing the South elevation wall, and addressing water ingress by improving gutter systems and flashing details. Local repairs to timber elements and masonry are also necessary to ensure structural integrity.
- 0.2.2 The roof formation requires significant refurbishment, including tile removal, truss and rafter repairs, and strengthening of eaves beams.

0.3 STRATEGIC RECOMMENDATIONS:

- 0.3.1 A phased approach is advised: first, stabilize and repair urgent structural issues, then focus on cladding refurbishment and improved watertightness to prevent further degradation. Long-term solutions include addressing internal column bases and reforming timber stud walls to enhance durability and alignment with master planning objectives.

1. INTRODUCTION

1.1 DESCRIPTION OF WORKS

- 1.1.1 WBC were instructed by Mr Jack Hussey, Rapleys, the client, to provide a visual structural appraisal of the existing primary structural members of the former Weighbridge and office to the entrance of Chippenham Train Station.
- 1.1.2 The works will identify the condition of the existing primary elements and identify any immediate or future repair works that may be required to ensure the stability of the property whilst funding and master planning studies are developed.
- 1.1.3 A Chartered Structural Engineer registered with MStructE representing WBC undertook the appraisal 16th December 2024.
- 1.1.4 No intrusive opening up has been undertaken. All observations were either made from ground level externally or from floor level internally, and all observations were made with the naked eye.
- 1.1.5 Non-structural matters such as finishes, drainage, services, damp/water penetration, mould, pollution, contamination, or asbestos, etc. are not addressed unless they have a direct effect on the structure.

1.2 GENERAL PLAN OF CONFIGURATION

Plan view of building layout from Google Maps.



Weighbridge Structure

2. OBSERVATIONS

2.1 GENERAL

- 2.1.1 The office and weighbridge consisted of a timber duo pitch roof bearing onto a combination of timber and rubble stone masonry walls. The South elevation wall was approximately 4-5m in height, with the gable end wall arexing at around 5-6m, with the North elevation wall consisting of a random rubble boundary wall approx. 5m in height.
- 2.1.2 The structure had been neglected and had resulted in failure of some principal members of the structure.

2.2 EXTERNAL

2.2.1 North Elevation

- 2.2.1.1 The north elevation wall consisted of a rubble stone formation, which was assumed to be the original boundary wall to the station. The wall is the party wall to the neighbouring property.
- 2.2.1.2 The neighbouring elevation wall was reviewed and was partially obscured by storage racking. The elevation was generally in good condition with some areas of mortar loss between the stone units.
- 2.2.1.3 At the junction between the wall and the roof, a hidden valley gutter detail was apparent, with the gutter discharging into a hopper to the West elevation.
- 2.2.1.4 Where observed, the flashing detail to the hidden gutter was poor and coming away from the masonry wall. Flash band

adhesive was noted to the east end elevation indicating that there have been historic repairs undertaken.



2.2.2 West Elevation

2.2.2.1 The first-floor area to the elevation was finished in horizontal timber cladding boarding.

2.2.2.2 There were 3No openings to the elevation which had been boarded over prior to inspection.

Bath stone masonry was evident to the external face of the ground floor. The exposed masonry had some delamination and section loss in close proximity of the timber cladding.

2.2.2.3 The timber cladding had some areas of slipped / broken timber, with finishes perished and severely weathered.

2.2.2.4 Where exposed, the timber frame around the window openings had perished.



2.2.3 South Elevation

2.2.3.1 There was horizontal timber cladding to first and ground floor to this elevation, with several areas of slipped and broken timber exposing the structural arrangement behind.



2.2.3.2 The remaining timber members had painted finishes which had perished and was in severely weathered condition, which may be close to end of working life.

2.2.3.3 Timber windows to the upper floor had been boarded with the exposed timber frame to window openings perished.

2.2.3.4 The original guttering arrangement was missing from the eaves.

2.2.3.5 The timber cladding to the lower level of the west elevation was missing with timber studs exposed at the junction with the ground floor of the elevation.

2.2.3.6 The timber stud wall to the first floor or the east end of the elevation had been severely deflected outwards away from the footprint of the building.

2.2.3.7 Towards the east end of the elevation the eaves level was deflecting downwards towards the ground.



2.2.4 East Elevation

2.2.4.1 The east elevation was obscured by a neighbouring building with the upper and south end of the elevation exposed. The elevation was clad with horizontal timber boarding to the first floor and vertical corrugated metal sheeting to ground level.

The neighbouring building was providing buttressing to the elevation.



2.2.5 Roof Formation

2.2.5.1 The exposed south elevation was observed only. The roof was finished with slate tiles and a series of ridge tiles to the apex.

2.2.5.2 Minor tile loss was noted to the elevation with tiles slipping in several areas locally.

2.2.5.3 Towards the east end of the elevation, the ridge line deviates with deformation aligning with the approximate location of Truss 5. The deformation of ridge line rotates about the neighbouring truss with a slight apex about Truss 4 support point.

2.3 INTERNAL GROUND FLOOR

2.3.1 West Elevation Rooms

2.3.1.1 Finishes remain locally with no significant areas of visible structure

2.3.1.2 No significant structural issues noted to finishes.

2.3.2 Central Stair Area

2.3.2.1 Finishes remain locally with no significant areas of visible structure

2.3.2.2 No significant structural issues noted to finishes.

2.3.3 East Elevation Room

2.3.3.1 Exposed timber elements, post supporting beams to North elevation and centre of room. Columns supporting beams with some minor section loss at base of columns

2.3.3.2 South elevation beam has minor section loss at corner and deflection above window openings





2.4 INTERNAL UPPER / FIRST FLOOR

2.4.1 North Elevation

2.4.1.1 The elevation consisted of exposed rubble stone masonry wall with timber columns supporting a beam at ground floor ceiling level supporting the incoming timber joists. Columns continued up supporting a beam below the hidden gutter at eaves level, with incoming rafters fixed to the head of the beam.

2.4.1.2 The eaves beam supporting the incoming roof rafters and gutter had severe deflection in places, with rotation prevalent about the splice locations. The beam had been subject to modern repairs with softwood propping located about the centre of the elevation.



2.4.1.3 The exposed rubble stone masonry wall behind has mortar loss to joints over entire area, specifically to west end of the elevation and below the springing point of the truss 5 location

2.4.2 West Elevation

2.4.2.1 Timber studwork exposed internally supporting timber purlin and ridge members. A masonry chimney protruded from ground

floor to first floor arrangement with the roof and wall timbers trimming the formation.

2.4.2.2 No evidence of significant deviation to the internal structure.

2.4.2.3 Minor evidence of historic water ingress located around jambs of window openings.

2.4.3 South Elevation

2.4.3.1 There were significant finishes prevalent to West end of internal elevation restricting observation of the primary timber studwork.

2.4.3.2 There was no significant evidence of water ingress or deviation to the local area behind finishes.

2.4.3.3 The East end of the elevation had been thrust outwards from its original position following the failure to Truss 5 bearing position. The flooring to this area deflects significantly towards the South East corner of the building.



2.4.3.4 Openings to the first floor are boarded but daylight was visible, and these were not water tight during the inspection.

2.4.4 East Elevation

2.4.4.1 Timber studwork exposed internally supporting timber purlin and ridge members with studs located approximately 600mm centres bearing onto a beam at eaves level.

2.4.4.2 No evidence of significant deviation to the internal face of the members.



2.4.5 Truss /Roof Formations

2.4.5.1 Roof formation supported by timber rafters, with intermediate purlins supported by a series of 5No trusses. The timber had been subject to water ingress, with staining evident to the rafters, purlins and truss members. Significant staining and water ingress was noted to the gutter formation above the North eaves beam.

2.4.5.2 Trusses were recorded from West to East, with 5NO in position through the footprint of the building. The truss consisted of a large 10inch deep bottom chord and 3No 5inch x 3inch struts supporting purlins and a ridge board. There was no significant

timber inclined member, just a continuation of the common rafters over.

2.4.5.3 Between the West elevation wall and Truss No1, 4No rafters had slipped away from the Eaves to the North elevation. There was minor section loss to the end of the rafters.

2.4.5.4 The primary bottom chord and inclined struts to Truss No 1 were in good condition. The eaves beam at the North elevation bearing point was deflecting. Finishes obscured observation to the South elevation.

2.4.5.5 The rafters between Truss No1 and Truss No2 had minor section loss at the foot of the roof below the eaves beam. The eaves beam had suffered from historic water ingress and was deviating along its span.

2.4.5.6 The primary bottom chord and inclined struts to Truss No 2 were in good condition. The eaves beam at the North elevation bearing point was deflecting. Finishes obscured observation to the South elevation.



2.4.5.7 The rafters between Truss No2 and Truss No3 had minor section loss at the foot of the roof below the eaves beam. The eaves

beam had suffered from historic water ingress and had been subject to local repairs



2.4.5.8 The primary bottom chord and inclined struts to Truss No 3 were in good condition. The eaves beam at the North elevation bearing point was deflecting. Finishes obscured observation to the South elevation. The bottom chord was supported along its length by an intermediate stud wall.

2.4.5.9 The rafters between Truss No3 and Truss No4 had finishes obscuring the observation of the members. The eaves beam had suffered from historic water ingress and was deviating along its span.

2.4.5.10 The truss bottom chord to Truss No 4 had slipped away from the timber eaves beam. There was minor separation of the supporting trusses over



2.4.5.11 The timber eaves beam to the base of the North elevation rafters was deflected and suffered from water ingress. The rafters had suffered from deflection from the movement of the purlins and ridge caused by Truss 5 springing failure.

2.4.5.12 The bottom chord of the Truss No 5 had failed at the springing point from the North elevation eaves beam. The member was completely away from the support position and was propped prior to the visit. The supporting struts had pulled away from their position, resulting in the movement of the purlins, ridge board and local rafters downwards. The failure had also

caused thrust outwards to the timber stud wall to the South elevation.



2.4.5.13 The rafters between the Truss No 5 and East elevation wall were supported by two purlins which had failed under deflection. The purlin to North elevation had failed at the splice position, which was poorly located at the centre of the span.



3. INTERPRETATION / DISCUSSION

3.1 EXTERNAL

3.1.1 North Elevation

3.1.1.1 The boundary wall did not show significant signs of movement or cracking to the observed areas, however there was large sections un-observed due to the nature of the storage to the neighbouring side.

3.1.1.2 We would expect that works would be required to ensure pointing is complete and stone units are not loose, this is not urgent when compared to other areas and may be delayed until full refurbishment of the building.

3.1.1.3 It is imperative to repair and consolidate the hidden gutter system to reduce further ingress to the structural system below.

3.1.2 East and West Elevation

3.1.2.1 The gable ends are suffering from a lack of maintenance and as such the cladding finishes are deteriorating, with the rate of deterioration exponentially increasing as time passes.

3.1.2.2 It would be prudent to refurbish the cladding arrangement to the upper wall to reduce risk of further water ingress to the structural system internally.

3.1.3 South Elevation

3.1.3.1 The South elevation is suffering from a lack of maintenance and as such the cladding finishes are deteriorating, with the rate of deterioration exponentially increasing as time passes. This is already evident to the ground floor junction where exposed

timber studs are suffering from section loss and require strengthening.

3.1.3.2 The push out from Truss 5 has weakened the east end of the elevation. It would be prudent to unload the wall and repair the formation locally where possible.

3.1.3.3 It would be prudent to refurbish the cladding arrangement to the wall to reduce risk of further water ingress to the structural system internally.

3.1.4 Roof Formation

3.1.4.1 Generally, across the footprint of the building the roof formation is satisfactory. Minor issues to the Western end are apparent and require local repair of tiles.

3.1.4.2 The failure of Truss 5 and the subsequent push out of the roof eaves to the South elevation requires significant works to repair. The tiles should be removed, and the truss system be replaced with a like for like arrangement and located onto reformed eaves beams to North and South elevation.

3.1.4.3 Additionally, the valley gutter system should be addressed, with appropriately increased flashing levels to the underside

3.1.4.4 To enable these works we would suggest the removal of approximately half the roof finishes to the East end of the footprint and in proximity to the valley gutter.

3.2 INTERNAL GROUND FLOOR

3.2.1 Works are required within the East Elevation room. The existing bressummer beam over the window openings has section loss and requires splicing a new section into the formation to ensure suitable support for the floor above.

3.2.2 The existing timber posts bear directly onto the flagstone floor formation. Where section loss has been apparent on approx. 4No posts, it would

be prudent to install a new splice column section, with treated finishes to the bottom 150mm of the column.

3.3 INTERNAL UPPER / FIRST FLOOR

- 3.3.1 It would be prudent to ensure the stability of the eaves beam below the hidden guttering to reduce movement of the lead lining. We would suggest improving the detail by utilising a pole plate fixed into the side of the rubble stone wall using a resin anchor system. If this is not amenable to the historic nature of the structure, it should be suggested that timber stud wall should be located directly below the beam, this will allow for a zone for insulation and finishes to ensure the internal areas are more habitable following refurbishment.
- 3.3.2 Following removal of Truss 5, the South elevation wall should be reviewed fully, we anticipate that the timber stud wall will be removed fully and replaced with a similar system.
- 3.3.3 As noted previously, some timber rafters will require sistering and relocation on the support structure to North and South elevations. The failed truss bottom boom to be removed and replaced with similar member size.

4. CONCLUSIONS AND RECOMMENDATIONS

4.1 EXTERNAL

- 4.1.1 Remove roof finishes over area and replace felt, battens and reuse tiles where possible.
- 4.1.2 Remove wall finishes to East end of South Elevation to enable the reformation of the timber stud wall which has been thrust outwards from Truss 5 failure.
- 4.1.3 Locally repair the horizontal timber cladding finishes
- 4.1.4 Ensure the openings to all elevations are protected and water tight.
- 4.1.5 Repair exposed vertical studs to ground floor junction of South elevation

4.2 INTERNAL GROUND FLOOR

- 4.2.1 Repair bressummer beam to East end of South elevation.
- 4.2.2 Enhance protection to the base of timber columns install timber splice formation with painted bituthene protection to the bottom of the columns.

4.3 INTERNAL UPPER / FIRST FLOOR

4.3.1 North Elevation

4.3.1.1 Remove defective timber to guttering including sarking board and defective timber rafters

4.3.1.2 Install consistent support to the North elevation eaves beam.

4.3.1.3 Relocate displaced timber rafters onto supported eaves beam

4.3.1.4 Sister new timber rafters to rafters with section loss

4.3.2 Truss / Roof

4.3.2.1 Replace Truss 5 and supported deflected purlins either side.

4.3.2.2 Relocate slipped trusses and inclined support struts on neighbouring trusses.

4.3.2.3 Remove timber stud wall below Truss 5 and reform with timber studwork.

4.4 REMEDIAL WORKS

Suggested remedial works method statements are noted below. The locations of these works are noted on subsequent drawings and sketches.

4.4.1 Repair Valley Gutter

4.4.1.1 4.4.1 Preparation

4.4.1.2 Removal of Existing Materials

4.4.1.3 Reforming Structural Supports

4.4.1.4 Re-laying Sarking Boards

4.4.1.5 Installing New Lead Flashing

4.4.1.6 Integration and Finishing

4.4.1.7 Quality Assurance

4.4.1.8 Health and Safety

4.4.2 Sister Rafters

4.4.2.1 Timber Selection and Preparation:

4.4.2.2 Alignment and Placement:

4.4.2.3 Fixing with Coach Bolts:

4.4.2.4 Quality Assurance

4.4.3 Support eaves beam to North elevation.

4.4.3.1 Preparation

4.4.3.2 Installation of the Stud Wall

4.4.3.3 Quality Assurance

4.4.3.4 Health and Safety

4.4.4 Replace Truss 5

4.4.4.1 Temporary Support Installation

4.4.4.2 Removal of the Bottom Boom

4.4.4.3 Installation of the New Bottom Boom

4.4.4.4 Removal of Temporary Supports and Bracing

4.4.4.5 Quality Assurance

4.4.4.6 Health and Safety

4.4.5 Repair South elevation stud wall.

4.4.5.1 Temporary Bracing and Stabilization

4.4.5.2 Removal of the Deflected Wall

4.4.5.3 Replacement of the Bottom Boom (Coordinated Task)

4.4.6 Installation of the New Timber Stud Wall

- Sole Plate Installation:
 - Install the new sole plate along the base of the wall, ensuring it is level and properly fixed to the foundation.
- Install Timber Studs:
 - Measure, cut, and install timber studs at specified centres (e.g., 400 mm or 600 mm).
 - Fix studs to the sole plate and temporarily clamp in place.
- Install Head Plate:
 - Align the head plate with the truss above, ensuring it matches the original configuration.
 - Fix the studs to the head plate using screws or nails.
- Incorporate Insulation and Vapor Barrier:
 - If required, install insulation between studs and apply a vapor barrier before cladding.
- Cladding Installation:

- Reinstall internal and external cladding, ensuring proper weatherproofing and alignment.

4.4.6.1 Quality Assurance

4.4.6.2 Health and Safety