

ROCHDALE BOROUGH COOUNCIL

**MILNROW LIBRARY
CONDITION SURVEY & REPAIRS
TO THE ROOF AND WINDOWS
PHOTOGRAPHS**



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INTRODUCTION

Bradshaw Gass and Hope LLP was commissioned in December 2020 to carry out a Condition Survey of Milnrow Library, with specific attention to the roof and window condition but with a general overview of the fabric.

The findings of this initial survey are indicated on the attached drawings, with reference to the photographs contained in this report. The survey was carried out on 4 and 15 December 2020.

The initial survey was carried out from ground floor level and without accessing any roof voids or upper roof areas. The recommendations made on the drawings are from this limited perspective and recommendations are made for further investigation/enabling works to understand more fully the nature and implications of any defects or decay.

During this initial survey a number of issues have become apparent that warrant further investigation and some that may require urgent reactive maintenance. These are indicated on the drawings and summarised at the end of this report.

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2.0	Stonework –	Referenced (ST) on the drawings
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9.0	Summary of additional structural issues requiring further investigation	

1. ISSUES REQUIRING URGENT REACTIVE MAINTENANCE

- 1.1-4 Water ingress at roof level (A-D on the plan below)
- 1.5 A build up of vegetation and soil to the roof valleys of the north elevation (E on the plan below)
- 1.6 Displaced roof pinnacle

2. ISSUES REQUIRING FURTHER INVESTIGATION

- 2.1 Evidence of potentially active boring beetles
- 2.2 Potential movement in the 16th Century Frame and in particular to the north of the building
- 2.3 Potential deflection of masonry to the north of the hall
- 2.4 Deflection of the frame and sole plate of the dairy screen and of a beam above
- 2.5 Longstanding deterioration of the stonework to the east wall of the central Crompton Room
- 2.6 Deterioration of the stonework of the mullioned windows to the Norris Dining and Sitting Rooms
- 2.7 High internal temperatures are drying out the timbers and the panelling leading to shrinkage and cracking.

1. STRUCTURAL

The building generally appears to be structurally sound and maintained to a good standard. However, there are several issues that would warrant detailed investigation by a Structural Engineer.

The first of these relates to the facing stonework of the front, entrance elevation where there is a visible distortion in the line of the oriel window and cracking to both the stonework of the cill and head and in the adjacent facing stonework of the wall.

The second relates to the stone panel above the entrance door which exhibits distortion, with the centre of the panel displaced in an outward direction from the internal structure of the wall.

To the west corner of the library, which was re-built in 2002, there is a diagonal stepped crack where the brickwork appears to have become displaced. The upper section appears to have remained in place, corbelled off the original brickwork, while lower brickwork has settled. This may also be evident in the adjacent side of the stage area but this is not clear from ground level.



STR1- The oriel window cill is split and the surrounding masonry displaced suggesting structural movement.



STR2- The head of the oriel window has been reinforced with steel in the past but the lower section appears to have continued to rotate.



STR3- The displacement of the bay has sheared the cill of the side light in two places and the other in one along with a split in the head.



STR4- There is a visible bow in the line of the lower cill of the oriel window and a fracture line where it has started to pull away from the face of the adjacent walling.



STR5- The external facing of the stone panel over the entrance bows out from the internal structure. This is exaggerated in the photograph above by the wide-angle lens but can be seen in the variation in the width of the joint. The gap has been pointed in the past but has some new hairline cracking.



STR6- There is a crack in the landing of the stairway directly above the entrance area. It is not clear if this is new or progressive but would warrant further structural investigation and monitoring



STR7- Brickwork to the west corner of the library appears to have become vertically displaced along the line of a step dpc. This corner was re-built as part of the 2002 refurbishment. The upper brickwork appears to be corbelled off the existing while the lower section has settled/rotated.



STR8- There is also a stepped joint visible in the west side of the stage area. This is only just visible from ground level and would warrant closer inspection.

2. STONEMWORK

The entrance elevation of the library is dressed in stone, along with dressings to the main windows. This is a buff sandstone with red bedding lines.

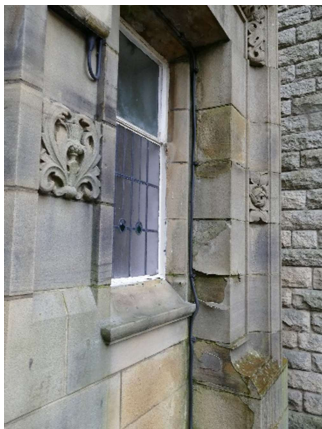
The stone appears to be largely face bedded, possibly as a cost saving during construction, but this and the use of cementitious pointing have led to the face spalling in many areas where water has frozen in the outer part of the stone. This is particularly wide spread around the projecting bay of the main entrance but also to much of this elevation. The spalling loose layers will need to be conservatively removed and the face re-dressed to slow this process and prevent sections falling and when pointing is replaced a lime mortar should be used to allow moisture to escape the stone.



ST1&2- Spalling of face bedded stone around the entrance area. The spalling of the facing to the stone has started at the joints where hard mortar has held water and ice against the outer face of the stone. When this is addressed, a lime mortar should be used to minimise the chance of further spalling.



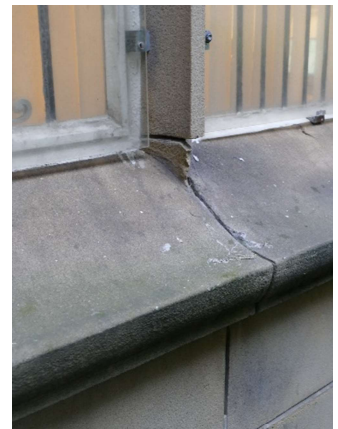
ST3- Spalling of face bedded stone over the doorway and vegetation in the open joints of the label moulding. Loose spall should be removed and the stone re-dressed and pointed in lime mortar.



ST4- Spalling of stone around the reveal of the entrance and to the plinth



ST5- Spalling of the facing following saturation from run off from the roof abutment with the old town hall above.



ST6- Open joint and spalled stooling to the mullion of the Diocletian window. An iron dowel may need to be removed before an indent repair is carried out.



ST7- The stonework to this cill has spalled and fractured and requires an indent repair or replacement once the movement has been arrested.



ST8- Open joints in the label mould over the entrance have led to vegetation taking hold. This should be removed and the joints fully re-pointed.



ST9- Open joints and a displaced capping stone to the coping above the front entrance.



ST10- An open joint to the kneeler on the east corner of the library has allowed moisture to penetrate and mould to take hold. Moisture will penetrate to the interior of the building if this is not addressed..



ST11- Open joints in the coping require re-pointing. The outlet chute requires re-dressing to protect the timber liner.



ST12- Salt staining to the end gable of the upper meeting room may be from a high salt content in mortar used for re-pointing. This will need to be removed and possible raked out and replaced to address the issue.

3. WINDOWS

The windows are detailed to suit their function.

Large, Architectural feature windows open into the principal spaces of the library and are stone mullioned with inset leaded and plate glass panels. Those to the front elevation have art nouveau stained glass designs, some of which have been refurbished and some leaded panels have been replaced with plate glass and false leading. Some panels have W20 style steel horizontal swivel or casement windows.

Functional windows to the office and ancillary rooms are timber sash windows to allow ventilation and many of these now have rot to the lower rails and cills following a delay to their decoration and splitting of perimeter seals.



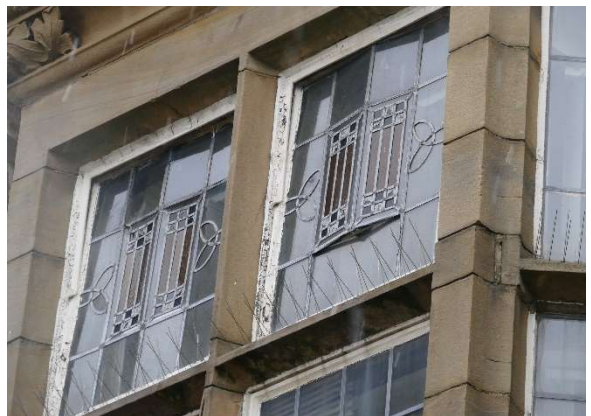
W1- The displacement of the stone to the side of the front oriel window has caused it to split and spall. This has not fractured the glass yet but is allowing moisture to penetrate around the lead glass panel.



W2- Leaded glass panels to the upper front oriel window have buckled and require careful specialist conservation and re-leading. The swivel hopper vents also require repair.



W3- Leaded lights over the main entrance retain their original glass and leading. Comes are oxidised and some welds split and conservative specialist repair is now required. The left hand panel has five broken quarries. In-situ repair might limit the loss of historic glass. The sealed protective sheet should be replaced with polycarbonate with a ventilated perimeter and non ferrous fixings.



W4- The quality and character of the leaded panels is visible above but the level of buckling and the open joint are visible in this image. The central panel is vulnerable to wind damage as the lead came is completely displaced.



W5- laylights below the library skylight are timber framed with textured glass panels to a geometric design. These appear to be in reasonable condition but consideration could be given to installing safety film to prevent shards falling if they break.



W6- The sash windows show signs of rot within the cills and bottom rails where decoration and seals have failed. Some cutting out and replacement will be required.



W7- The sashes are seated on stone cills and open joints around the frame have allowed water to lodge in the timber.



W8- The windows to the library east side are fixed and exhibit the same deterioration of the cill and some open joints to the transom.



W9- Saturation of the window stonework, through open joints and exposure has led to extensive deterioration in the matrix of the stone and to spalling as seen here in the oriel window to the upper reception/meeting room. Corroding dowels are also likely to have contributed

4. ROOF

The library is comprised of two main pitched roofed elements linked by a lower, flat roofed area.

The pitched roofs of the western block, containing the current computer suite, entrance hall, children's library and upper meeting room, are faced with Cumberland green slate in regular courses and varying widths with red clay ridge tiles and mitred hips.

The smaller library block is slated with, what appears to be, welsh blue slate in regular courses and widths and capped with a blue concrete ridge. The hips to the south west end have matching hip tiles.

The flat roof was originally asphalt covered and no access was gained to inspect as part of this initial survey.

The roofs were re-laid as part of a major refurbishment in 2002 and new battens and felt were installed at that time. The flat roof area was also refurbished and all flashings and ridges were made good.



R1- Mitred hips are a little uneven following wind uplift and warrant closer inspection and possible re-laying to prevent against slips. The finial is painted to look like copper but is showing signs of rust and spalling. A central pin to the lead clad base of the turret has lost its weld.



R2- The ventilation turret at the apex of the roof is mild steel, painted to look like lead. The decoration has now failed and the flue is corroded and possibly in danger of collapse in high winds. Repair and probable replacement are now necessary.



R3-A lead lined gutter to the perimeter of the oriel window bay has lifted to one end and should be inspected and repaired/re-dressed. An increased drip overhang may help to prevent green algae staining.



R4- The painted turret is seated on a lead flashed and clad base which is showing signs of oxidation and some of the welded corner seams appear to have parted. Closer inspection is recommended and of the underlying timbers.



R5- The corner seam of the turret base cladding appears to have opened at the top. Red clay ridge tiles have open joints.



R6- The abutment of the old town hall roof to the library has a very shallow upstand and an open end. Overflow from this detail has significantly damaged the stonework below, to the front of the library.



R7- The joints and bedding of the ridge tiles have weathered and they are now allow in need of re-pointing and bedding. A slate is missing below this section.



R8- The line of the ridge is uneven and some levelling is required in the bedding when it is replaced and the tiles re-pointed.



R9- A chimney to the east corner of the library exhibits a number of issues that may be contributing to moisture staining in the ceiling below



R10- The flaunching to the chimney is split and lifting and the pot appears to have a slight lean. Open joints may be allowing water ingress. There is also a significant gap between the brickwork and the stone slabs that face the east face.



R11- Copings to the library are set on lead flashings and these are dressed over the joints. Recesses for cramps are open and likely hold water



R12- There is no outlet to the gutter of the roof over the meeting room and this washes over in heavy rain.



R13 The ridge detail to the corner of the roof is weathered and uneven and will not be protecting the head of the mitred hip flashings.



R14- The flashings to this coping, to the lower library roof, are not clipped and may be loose where they dress under the copings. Closer inspection is required.



R15- The bedding to the concrete ridge tiles of the lower library roof require re-bedding and pointing.



R16- Flashings to the coping of the east corner of the lower library roof have lifted and require to be re-dressed and clipped. The coping joints are open and should be re-pointed and the gutter outlet and dropper into the hopper are missing.



R17- Where the abutment detail of the entrance gable dresses around the rear piers the upstand and laps appear to be minimal and may be being inundated in heavy rainfall conditions.



R18- When viewed from the back of the library, the ventilation turret can be seen to be heavily compromised by the corrosion. This will be allowing water into the ductwork below



R19- The slate is showing signs of spalling and of splitting and those most compromised will need to be replaced to extend the life of the roof.



R20- There are significant gaps between the red clay ridge tiles and some could soon be displaced in windy conditions.



R21- Open joints are also visible in the line of the grey ridge tiles to the lower library wing.

5. Skylight

The entrance and reception area of the library are illuminated by a single strip skylight at roof level with glass and timber framed laylights at ceiling level.

The skylight is a modern installation in double glazed aluminium sections and mounted on a timber wall plate off the original concrete and brick upstand to the asphalt roof.

The lead flashings to this skylight have, at some time, been removed and a felt replacement installed. This may account for the streak staining of the rear wall and water stains and damage below. Water cascading from the open end of the gutter above the north east end may also be contributing.

The timber framing and panels of the laylights below are dried and split from the heating of this void and it is not clear if the cill is ventilated to allow condensation and hot air to escape, although there is what appears to be a condensation tray around the perimeter.



SK1- Staining is visible to the wall plate and may be run off from the end of the condensation tray above or from past water ingress at the head of the skylight.



SK2- The dried timber frame spans between the beamed structure of the library and supports the timber laylights. Putty to the lay lights has cracked and spalled and consideration should be given to removing the putty and installing safety film before re-puttying the textured glass panels.



SK3. The frame and glazing of the skylight and the laylights below all require to be cleaned. It is not clear if the drip tray around the perimeter has outlets or is sealed..



SK4- Where visible from ground level, the top flashing of the skylight can be seen to be a felt or artificial flashing. Cover flashings to the end profile can also be seen to be missing. This and condensation are likely to be possible sources of water ingress.

6. Decoration

This report considers the decoration in the context of defects, leaks and incompatibility rather than general wear and tear.

Staining was noted to a number of areas where water ingress is suspected and where the inspection of adjacent timbers is strongly recommended.

Cracking in plaster and paintwork was noted in areas where there has been movement and where plaster has failed. Spalling of paintwork was noted where impervious paint finishes have trapped moisture in stonework and where successive over-coating of finishes has caused the underlying layers to separate or where incompatible paints have been applied.



D1- Spalling paint to the ceiling of the porch is likely to be from successive overpainting curling the paint below or from incompatible paint finishes. Re-decoration is required.



D2- Cracking to the west corner of the lower library maybe from movement of the roof structure above or from moisture behind the underlying plaster. There is a hipped roof and parapet gutter above.



D3. Spalling paint to the ceiling of the oriel window bay may be from incompatible paint finishes or successive overpainting. Access into the void above would identify if there is a water ingress issue. Cracking on the side wall could be drying out cracking of the plaster or may relate to movement visible on the external wall.



D4- There is widespread condensation staining to the barrel vault ceiling of the lower library. Improved insulation, along with an assessment of condensation risk, would help to reduce this in future but re-decoration is now required.



D5- There is an area of the rear wall of the office that appears to have been re-plastered in the past and that has a surface staining, possibly from dampness. This may be condensation staining from the radiator below.



D6- The wall between the reception and the staff room is blistered and there is a line where something has been removed. Blistering may be from dampness penetrating from the chimney flue behind.



D7- Staining around the coffered reveal of the lay lights is focussed against the back wall of the meeting room above and is likely to be from water ingress where flashings have been removed. Further investigation is required.



D8- Water ingress above the stair window, over the entrance, may be from the abutment flashing to the coping or through the facing stonework. The roof void above to be inspected for any signs of rot and flashings and stonework checked.



D9- Stonework and paint to the oriel window have spalled heavily. Gloss oil paint will have trapped moisture in the stone and the matrix has weakened and the paint blistered. Stonework should be uncoated or coated in a vapour open paint.



D10- Displaced external masonry to the side of the Oriel window, has created a route for water to penetrate to the interior of the reveal and the paint and plaster have blistered. External repair is required before re-plastering and decoration.



D11- The movement within the oriel window is exhibited in fractures in the stone cill and to the external head.



D12- Glass paint forms a barrier to the evaporation of moisture in the stonework and should be removed completely.



D13 The surrounds to the rear arch headed windows has been re-plastered in gypsum plaster and painted with vinyl paint. Moisture in the fabric has been trapped leading to spalling.



D14- Successive overcoating of paint has concealed the detail of the corbels in the meeting room and have led to the paint curling and spalling. Careful removal will uncover the original detailing.



D15- The sides of the laylight that abut the continuing walls above show signs of staining where water has penetrated the flashings or over run the drip tray above. Condensation may also be forming on the underside of the uninsulated flashings.



D16- Condensation staining to the ribbed ceiling structure of the library. A boarded lining to the window reveal and impervious finishes has led to spalling..

7. Rainwater Pipes, gutters and hoppers

Rainwater goods around the building are a mixture of cast iron and plastic pipes, pressed metal and original iron hoppers and plastic and lead lined gutters. The plastic goods detract from the quality and significance of the building and paint has not adhered well to their surface.

The cast iron hopper and pipe to the front elevation require some repair and full re-decoration and the drain run appears to be blocked, leading to water running over the joints. Fixings to this and the cast iron vent pipe to the north west elevation require renewal.

Plastic gutters are mounted on timber fascias that are now in need of repair and re-decoration.



RWP1a&b- The cast iron pipe, to the side of the main entrance, is heavily corroded and leaks, saturating the adjacent wall. Water appears to back up within the pipe and the surface is encrusted with algae and rust.



RWP2- The cast iron hopper to the head is corroded and requires de-rusting and re-decoration..



RWP3- The gutter to the back of the stairwell has no fall pipe and expels onto the roof below.



RWP4- Staining from open coping joints and exposed timber liner to the spitter. Pointing of the coping and re-dressing of the lead spitter tray are required.



RWP5- Fixings to the cast iron foul pipe outside the children's library, are corroded and will eventually fail if not replaced.

8.0 SUMMARY OF ROOF AND WINDOW ISSUES REQUIRING FURTHER INVESTIGATION

In order to more fully understand and define the scope of repairs required to the roof and windows the following actions are recommended:

Further roof investigations:

Provide access for closer inspection of the following:

- To the flat roof area to inspect the roof and adjacent roofs, flashings and copings etc.
- To the copings to inspect the bedding, jointing, stonework and fixings
- To assess the condition, hardness and likely life expectancy of the slates to the various roof planes
- To inspect the flashings and leadwork generally for condition and integrity
- To open up a section of roof adjacent to the chimney to inspect the underlying timber
- To the internal roof hatches to allow inspection of the roof and ceiling timbers and ceiling integrity and to identify any routes of moisture ingress.
- To access the steel ventilation turret to assess stability and integrity
- To inspect the abutment flashing detail where the adjacent building abuts the west corner of the library.
- To inspect the stability of the chimney facing stones where they have separated from the brickwork and of the pot.
- To allow a timber preservation specialist to assess timbers uncovered above and within the accessible roof voids.

During this investigation work the opportunity should be taken to re-wedge and dress loose flashings, to replace slipped and missing slates and to check all gutters and outlets etc are clear and free flowing.

Further window investigations:

- Provide access to allow the closer inspection of the windows to inspect the integrity of mullions, transoms and surrounding masonry.
- Detailed inspection of the leaded and stained glass lights by a leaded glass specialist to agree the scope of repairs and conservation with minimal loss of original glass.
- Access to inspect the timber frames and cills of the upper windows in detail to quantify repairs.

9.0 SUMMARY OF ADDITIONAL STRUCTURAL ISSUES REQUIRING FURTHER INVESTIGATION

The following issues have been identified and it is recommended that a Structural Engineer is appointed to carry out a detailed inspection to assess what further action may be required. This could be co-ordinated with the access listed in section 8 above:

- Close inspection of the oriel window and its structural integrity and to assess the level of displacement of the external stonework and internal alignment. Ensure the integrity of the fractured lintol.
- Closer inspection of the cracking to the west corner of the building and the reason for the lower brickwork being displaced.
- Closer inspection to ensure the continued integrity of the external stone panel above the main entrance.

08.02.21