Rope Access Condition & Recommendation Report

Rope Access Condition & Recommendation Report for St Mary Magdalene Church, Stockland Bristol – September 2024

Job number: 3535

Client: Marcus Chantrey

Date	Revision	Comments
08/10/2024	JF	Proof read & update
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Quality Assurance Review

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0. Image List

1.0 Overall Condition Summary, Priority & Stability Ratings

Location	Condition Rating	Priority Rating	Stability Rating
Tower & Parapet	Very bad/Poor	Within 12 months/2 years	Very bad/Poor
Stair Turret	Very bad	Within 12 months	Very bad

1.1 Structural Issues in the Tower Overview

- Evidence in the tower suggests that the ground it rests upon is likely suffering from subsidence.
- The parapet is suffering from displacement through a combination of structural movement and 'jacking' due to rusting ring beams in their bases.
- Considerable mortar has been lost from the belfry traceries. They require disassembling and rebuilding to make sure they are secure and safe.
- Parapet and tracery work will require scaffolded access.
- However, rope access should be used to facilitate urgent 'holding repairs' to pack mortar into joints and voids, and to pin masonry fractures to stabilise until a large-scale programme of works can be done from a scaffold.
- The issue types are very similar in all four elevations of the tower but slightly differing in extent.
- The pointing in general is in very poor condition throughout each elevation, exacerbated by the lias masonry swelling and incompatibility of the moisture impermeable cement mortar.

1.1.1 Structural Issues in the Tower North Elevation

- The north elevation parapet is in very poor condition, exacerbated by what is believed to be a rusting ring beam lifting or 'jacking' the masonry.
- This is combined with the upward force of the lias masonry swelling and/or the non-window vertical lines of the building effectively subsiding into the ground.
- The parapet is currently braced with a temporary timber structure, but it still leaves the parapet in a very precarious state and so requires completely rebuilding promptly.
- If a rusting ring beam is present in the parapet, it requires removing and re-fixing with a stainless-steel replacement specified by a structural engineer.
- Considering the ongoing deterioration of the lias masonry and the ground conditions, the structural engineer might wish to specify additional fixings to reinforce the parapet and make it more able to withstand further movement in the future.
- There are numerous masonry fractures and rusting iron fixings in the parapet.
- At least one section of parapet panel will require a piecing-in repair.

- Evidence of a combination of swelling lias masonry and potentially subsiding wall sections is visible in the belfry where the centre of the belfry window mullion and tracery are either jacked or have stayed in position, while the voussoir and hood have dropped.
- The joints above the window header and in the voussoir are open and the tracery masonry severely displaced in relationship to them.
- Fractures resulting from the forces exerted on it are visible throughout the central tracery masonry piece.
- The open joint system that extends through the belfry window sill and all the way down through the 3rd stage window is more open in the top of the joint than the bottom, suggesting that the masonry is being pushed upwards.
- This evidence is supported by the slight upward curve in the string course underneath the window sill, and the associated open joints and masonry fractures in the string course either side of the window sill.
- The same combined issues are causing the belfry level, tower edge quoins to become precariously loose and are in danger of falling to ground level. Some unstable quoins will inevitably require removing and re-bedding in lime mortar.
- In some places the wall lias masonry has fractured where associated with open joint systems.

1.1.2 Structural Issues in the West Elevation

- Although the west elevation parapet is less-affected by jacking and displacement than the north elevation, there is evidence of the parapet bowing outwards to the west and hence it also requires rebuilding.
- There are fewer voids and deep open joints in the walls in general, but they would benefit from prompt, holding repair deep-pack pointing to reinstate some structural integrity.
- There are open joints around the belfry window hood, tracery, sill, string course and tower edge quoins.
- The string course is raised in the centre below the belfry window sill and associated fractures are visible in the string course and reveal bases on either side.
- The open joint system below the belfry string course is less severe but would benefit from prompt attention.
- The cement pointing and associated masonry decay is very poor condition, especially in the 2nd stage around the west window.
- There are masonry fractures and open joints throughout the west window, west door and the 2nd and ground level buttresses to ground level.

- In essence, evidence of structural issues is visible throughout the whole height of the tower in the west elevation.

1.1.3 Structural Issues in the South Elevation

- The south elevation parapet is also less-affected by jacking and displacement than the north elevation, but masonry fracturing and open joints are visible, including at the interface with the stair turret at the east end.
- This parapet should also be disassembled and rebuilt in the same manner as the north.
- The walls are in fair to poor condition with only minor areas of deep-pack pointing required.
- The cement pointing does all however require removing and re-pointing with lime mortar.
- There are open joints around the belfry window hood, tracery, sill, string course and tower edge quoins in a similar fashion to the other elevations.
- The string course is also slightly raised in the centre below the belfry window sill and associated fractures are visible in the string course and reveal bases.
- There does not appear to be an obvious open joint system below the belfry window string course but there are associated masonry fractures in the 3rd stage window header, sill and string course.

1.1.4 Structural Issues in the East Elevation

- The east elevation parapet is less-affected by jacking and displacement than the other elevations, but uneven architectural lines are obvious in the string course, interface with the grotesque and end pieces at the north end.
- There are no obvious fractures but plenty of open joints, so again this elevation parapet should also be disassembled and rebuilt in the same manner as the others.
- The walls are in fair condition compared to the north and west elevations, but the cement pointing does all however require removing and re-pointing with lime mortar.
- Deep-pack pointing is required in the open joints around the belfry window hood, tracery, sill and string course, but the quoins appear generally stable apart from some open joints.
- There is an open joint and fracture system extending below the belfry window string course and through the clock face masonry, just above the ridge roof.
- The tracery and mullions appear to have dropped as opposed to have risen, when compared to other elevations.
- This is likely due to the structural movement interactions of the internal arch with the rest of the tower and nave below.

1.1.5 Structural Issues in the Stair Turret

- The stair turret suffers from the same issues found in the four main elevations of the tower.
- The upper section from the tower roof upwards is in a very precarious state and will require rebuilding from at least the tower roof upwards.
- The turret parapet masonry panels are all displaced with very large open joints between them and at least two of the panels are badly fractured.
- A fracture is also visible in the stair turret door header.
- The displacement in the parapet suggests that a ring beam is also present here and will require removal and replacing with a stainless-steel replacement specified by the structural engineer.
- The same type of replacements will be required for the circular ring beams visible in the parapet-level, 3rd and 2nd stage string courses.
- The loose fractured string course section removed from the former during the survey and the missing fractured string course masonry in the latter, are further evidence of these.
- Many of the quoins at the intersection of each stair turret elevation wall are displaced and/or loose, all the way down to the string courses in the lower 3rd and 2nd stages.
- Open joints are visible as far down as the lower stage kneeler stones in the south east elevation of the stair turret, but the structure appears more stable generally that far down.
- The masonry in the walls is however generally in poor condition throughout.

1.1.6 Stair Turret Weather Vane

- While the stair turret is dismantled and rebuilt, the weather vane should also receive attention.
- Deterioration is visible in the weather cock paint/gilding and rust present in the iron fixing stays.
- The central wooden pole is very rotten and severely compromised.

2. Brief

This survey was conducted at St Mary Magdalene Church in Stockland Bristol by the Sally Strachey Historic Conservation rope access survey team in September 2024. All high-level elements of the tower were inspected by rope access. Any loose and decaying masonry that could cause damage to underlying structures or harm to pedestrians were removed and their locations recorded.

The SSHC ground level survey team were also responsible for a survey on the rest of the church, so these two reports should be used together to gain a full understanding of the issues at the church and in order to formulate a comprehensive conservation approach.

Selected images with associated text are included in this synopsis report with full details of all issues including locations, quantities, priorities and proposed conservation methods recorded in the accompanying Excel spreadsheet. This data can be used for pricing works and for budget estimates. The complete image archive sorted into relevant building areas and elements was sent by WeTransfer, other file sharing software or on a flash drive.

3. Significance

St Mary Magdalene church is a Grade II Listed Building, List Entry Number 1059049. The four-stage tower features pierced parapets with quatrefoil friezes and gargoyles in the string course, traceried belfry windows, traceried west window, external stair turret in the south east corner topped with a weather vane and decorated with grotesques in each elevation intersection string course, clock face in the east elevation and angled corner buttresses in the first and second stages. It is built in local blue lias stone with Bath stone dressings and is considered a 'well-balanced and precise copy of a Decorated building.' It is currently on the Historic England Heritage at Risk Register.

4. Historical Background

The church was constructed in 1865 on the site of an earlier parish church by Arthur of Plymouth for the Daniel family of Stockland Manor. Thomas Daniel was the rector at the time.

5. External Environment and Nature of Materials

St Mary Magdalene Church is located in the village of Stockland Bristol, approximately 2 kilometres from the Somerset coast to the north and 2 kilometres from the River Parret to the east. Although sat on a slight ridge approximately 15 metres above sea level, marsh land at under 10 metres above sea level lies within a couple of hundred metres to the north. Considering the underlying geology of Blue Lias and Charmouth Mudstone Formation, proximate location to the sea and estuary, climate change, rising sea levels and heavier rainfalls, the church and the ground it is built upon would appear to be at a great risk to the influences of changes in environmental conditions in the future. This type of underlying geology is also responsible for approximately 15% of all landslides in the UK and the case at Black Ven near Lyme Regis in May 2008 is a case in point [i]

It is likely that in the near future, if not already apparent, the structure will become greatly affected by structural movement. Considering this, it would seem prudent to seek further advice from a ground surveying specialist to ascertain the risks of future major subsidence and possibilities of securing the ground underneath the church with pilings or similar works. The condition of the ground drainage

systems should also be surveyed by a specialist to ensure they are intact, unblocked and able to handle the rain deluges we now experience as a result of climate change. Recommendations in this report should consider the likely changes in environmental conditions to ensure that scarce funding is not wasted. If expensive work is undertaken, will the church still be at great risk of collapse for instance? It is not unknown, in the case of the Clavell Tower in Dorset for example, for a complete structure located near the sea to be completely moved inland, so the potential effects of climate change in the future should be taken seriously.

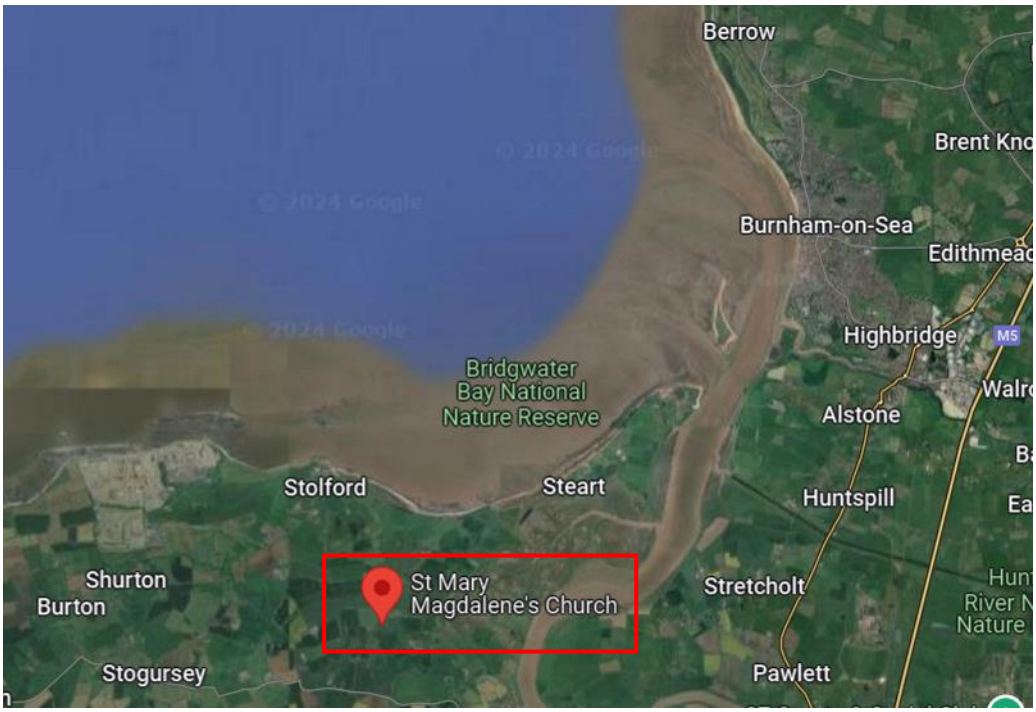

Figure 1 – Location of St Mary Magdalene Church in Relation to Highbridge and Steart [ii]

Figure 2 - Location of St Mary Magdalene Church in Relation to The Coast, River Parrett and Steart Marshes [iii]

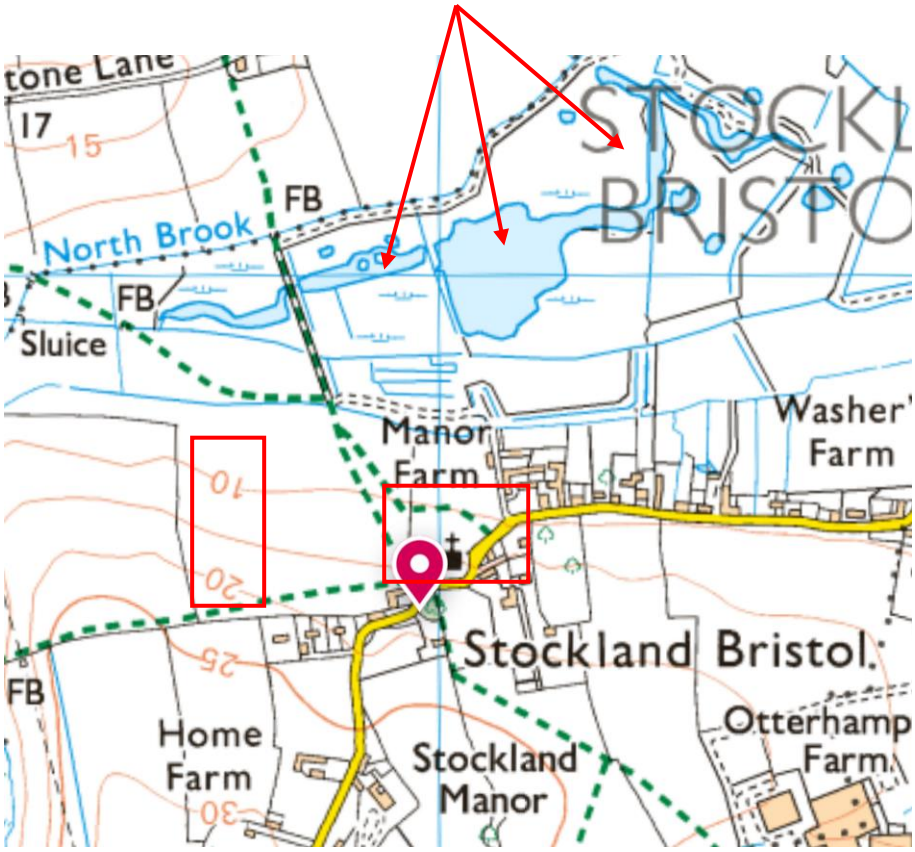

Figure 3 - Location of St Mary Magdalene & Relationship to Sea Level & Marsh Land Shown on Ordnance Survey 1:25000 Map

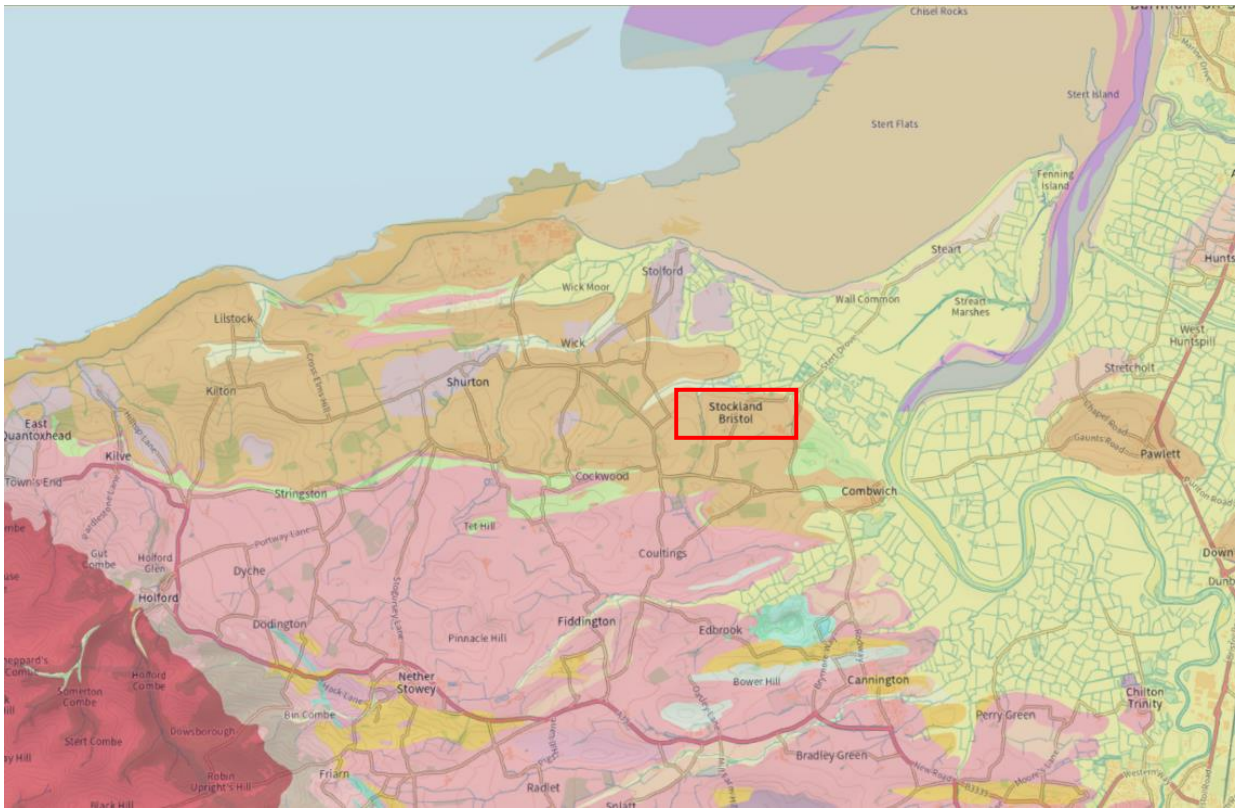

Figure 4 - Location of St Mary Magdalene on Blue Lias and Charmouth Mudstone Formation Geology (Orange) & Proximity to Lower Alluvial Deposits and Marsh Land (Yellow)

With regards to the effects of the weather on the structure and stonework, the lower stages of the tower are quite well-protected from the elements by nearby trees, but the upper levels are however very exposed. The lias stonework is however in very poor condition and instances of swelling and contracting have already been noted in the structural report. The proximity to the sea and the marine environment has exacerbated the issues of stone decay, with airborne sodium chloride causing powdering of the stone surfaces and fragmentation of the stone pieces through repeated wetting and drying cycles.

The result of this decay in isolation results in, at least, a great loss of surface material and the associated increase in rate of decay due to vulnerable softer internal matrices being exposed. In combination with widespread forces exerted through structural movement however, it presents a perfect storm of issues that puts the structure at great risk of partial collapse, especially in the upper section of the stair turret down to around the top of the 2nd stage, and in the tower elevations around the windows.

Figure 5 - P1000458 Example Area of Decaying Masonry Exacerbated by the Marine Environment and Cement Pointing in Tower West Elevation above West Window

6. Survey with Recommendations for Conservation

6.0 Areas Inspected in the Survey

The St Mary Madgalene Church tower was inspected by rope access, abseiling from the parapet to ground level. A drone was also used to obtain aerial and contextual images.

Figure 6 – DJI_0191 St Mary Magdalene Church Tower North Elevation

Figure 7 - DJI_0198 St Mary Magdalene Church Tower West Elevation

Figure 8 – DJI_0196 St Mary Magdalene Church Tower South Elevation

Figure 9 – DJI_0193 St Mary Magdalene Church Tower East Elevation

6.1 Structural Issues in the Tower Overview

Although it has been suggested in the 'Mann Williams report 2020.02.17' structural report that evidence in the nave suggests that ground subsidence is minimal, evidence in the tower suggests that the ground it rests upon is likely suffering from subsidence. The parapet is suffering from displacement through a combination of this structural movement and 'jacking' due to rusting ring beams in their bases. The parapet needs dismantling and rebuilding with stainless steel replacement ring beams specified by the structural engineer in all four elevations.

Because so much mortar has been lost from the belfry traceries, they will likely need disassembling and rebuilding to make sure they are secure and safe. This work will require scaffolded access, but rope access should be used to do urgent 'holding repairs' throughout the tower, to pack mortar into joints and voids and pin masonry fractures to stabilise, until a large-scale programme of works can be done from a scaffold. These repairs are indicated in green text in the Excel spreadsheet.

It could be possible to do the parapet work by rope access, but it would be easier and safer using a full tower scaffold, especially considering the large scope of works required for this project.

The pointing in general is in very poor condition throughout each elevation, exacerbated by the lias swelling and incompatibility of the cement mortar with the lias stone. All cement mortar should be removed and the whole of each elevation re-pointed with lime mortar. Where lias decay has left water traps, lime mortar repairs will aid in water runoff and help avoid the saturation of the stone.

As the issues are very similar in all four elevations, issues in the north elevation have been shown here in detail as examples. Main issues in the other elevations are illustrated generally in an elevation image in subsequent report sections and then any additional issues specific to them shown in detail.

Figure 10 - DJI_0202 Masonry 'Jacking' & Displacement Visible in All Four Elevations of the Tower Parapet

6.1.1 Structural Issues in the Tower North Elevation

The parapet in the north elevation is in very poor condition, exacerbated by what is believed to be a rusting ring beam lifting or 'jacking' the masonry. This is combined with the upward force of the lias masonry swelling and/or the non-window vertical lines of the building effectively subsiding into the ground. The parapet is currently braced with a temporary timber structure, but it still leaves the parapet in a very precarious state and so requires completely rebuilding. If a rusting ring beam is present, it requires removing and re-fixing with a stainless-steel replacement specified by a structural engineer. Considering the ongoing deterioration of the lias masonry and the ground conditions, the structural engineer might wish to specify additional fixings to reinforce the parapet and make it more able to withstand further movement in the future. Numerous masonry fractures require pinning repairs and rusting iron fixings require removing and replacing with stainless steel replacements before reassembling the parapet. At least one section of the parapet panels will require a piecing-in repair.

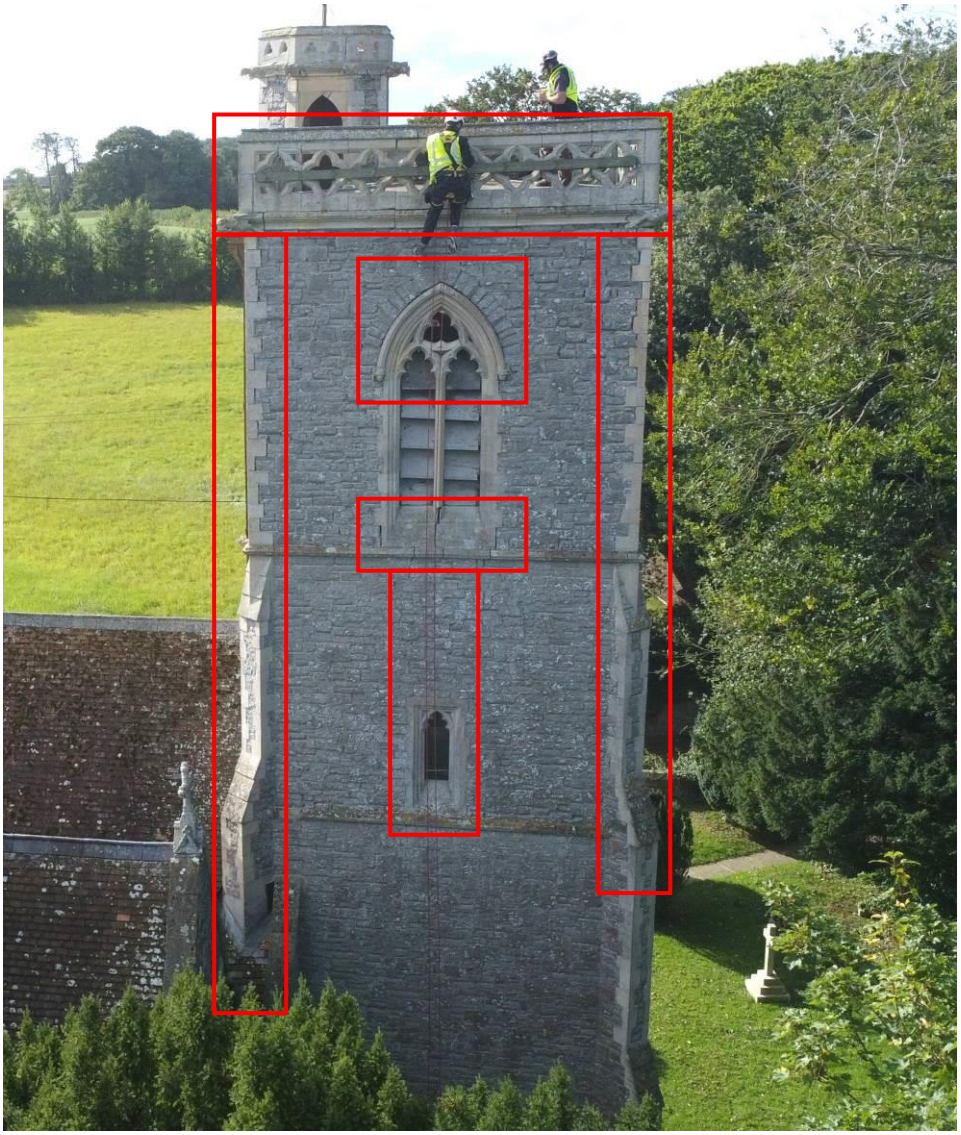

Figure 11 - DJI_0191 Locations of Structural Issues in North Elevation

Figure 12 - DJI_0200a Severe Displacement of Parapet & Open Joints in Walls & Along Quoins

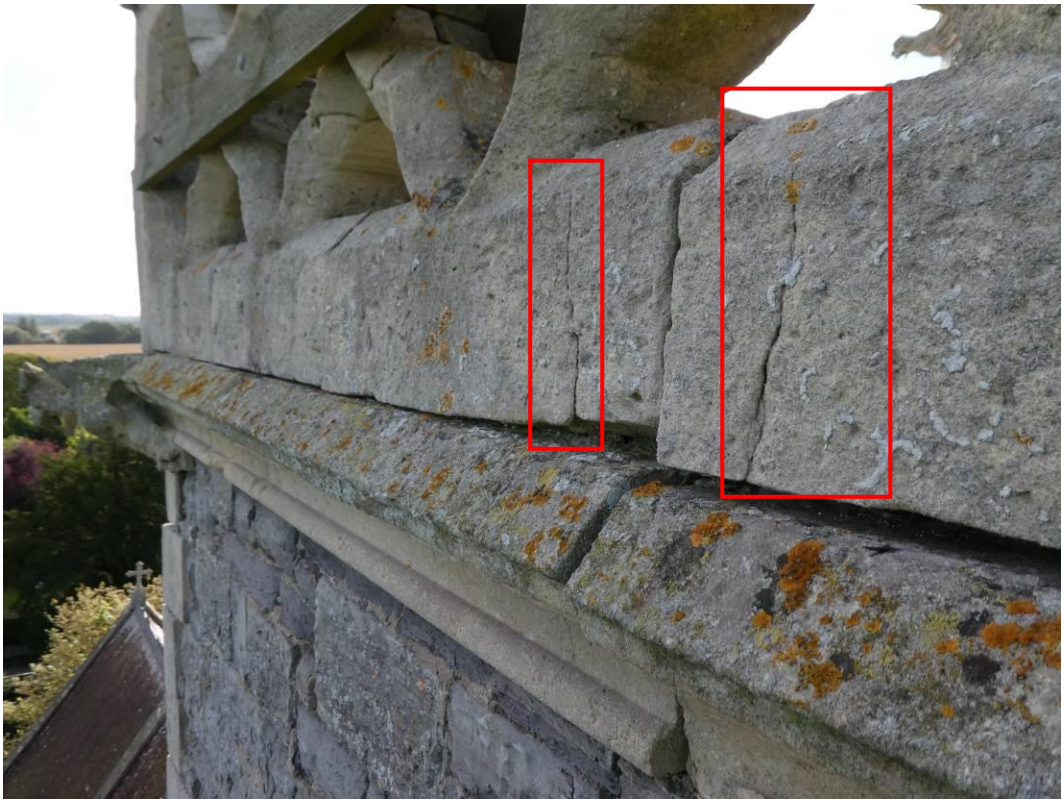

Figure 13 - P1000237 Example Masonry Fractures in North Elevation Parapet

Figure 14 - P1000239 Example Rusting Fixing & Associated Masonry Fractures in North Elevation Parapet

Evidence of a combination of swelling lias masonry and potentially subsiding wall sections is visible in the belfry, where the centre of the belfry window mullion and tracery are either jacked or have stayed correct, while voussoir and hood have dropped. The joints above the window header and in the voussoir are open and the tracery masonry severely displaced in relationship to them. Fractures resulting from the forces exerted on it are visible throughout the central tracery masonry piece.

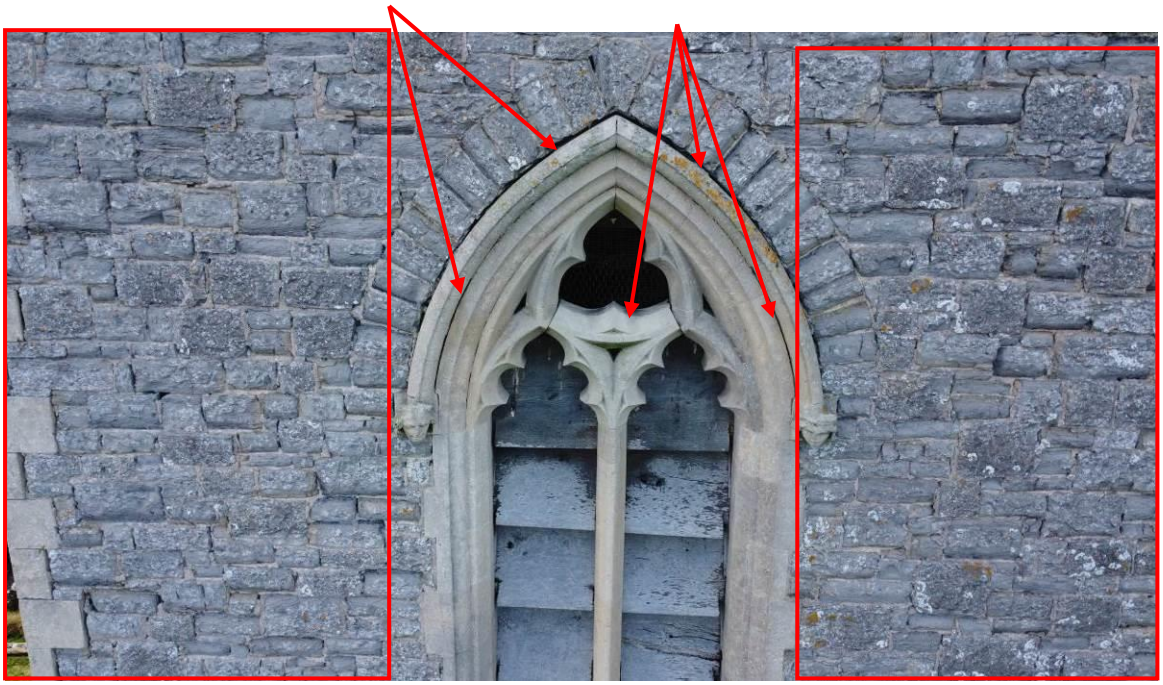

Figure 15 - DJI_0245 Widespread Open Joints & Voids Throughout North Elevation Belfry Level

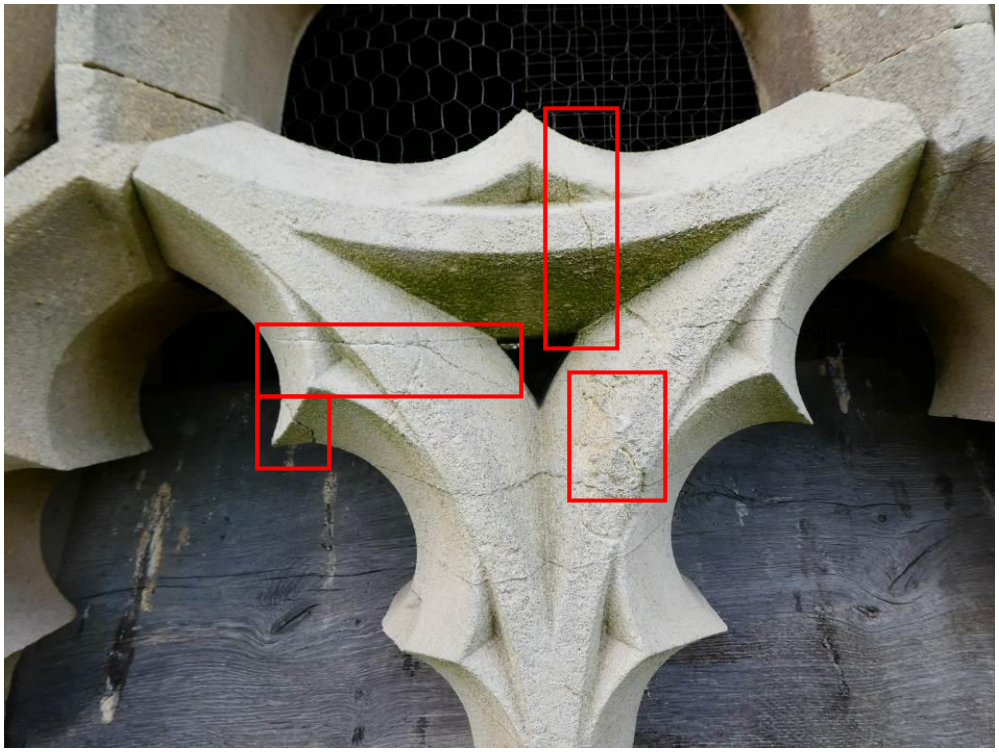

Figure 16 - P1000250 Numerous Fractures in North Belfry Window Central Tracery Piece (Note Displacement)

The open joint system that extends through the belfry window sill and all the way down through the 3rd stage window, is more open in the top of the upper joint than the bottom, suggesting that the masonry is being pushed upwards. This evidence is supported by the slight upward curve in the string course underneath as it passes below the window sill, and the associated open joints and masonry fractures in the string course either side of the window sill. Mitigation would involve dismantling the tracery, mullion and sill, reinstating the string course horizontally and then rebuilding upwards.

The two vertical open joint systems require stabilisation so consider fixing 10mm diameter x 1 metre length helifix or stainless-steel threaded pins set into masonry resin horizontally across the vertical open joints down to the 3rd stage window header.

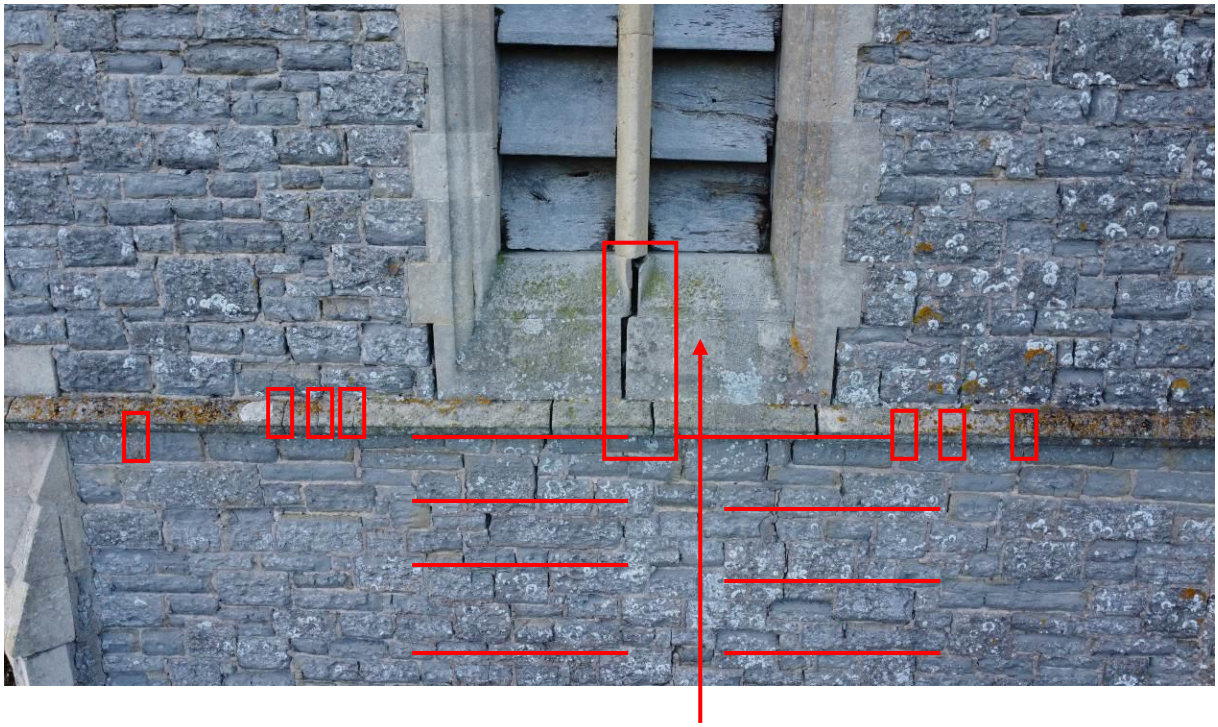

Figure 17 - DJI_0246 Open Joint Systems Extending Through Belfry Window North Elevation

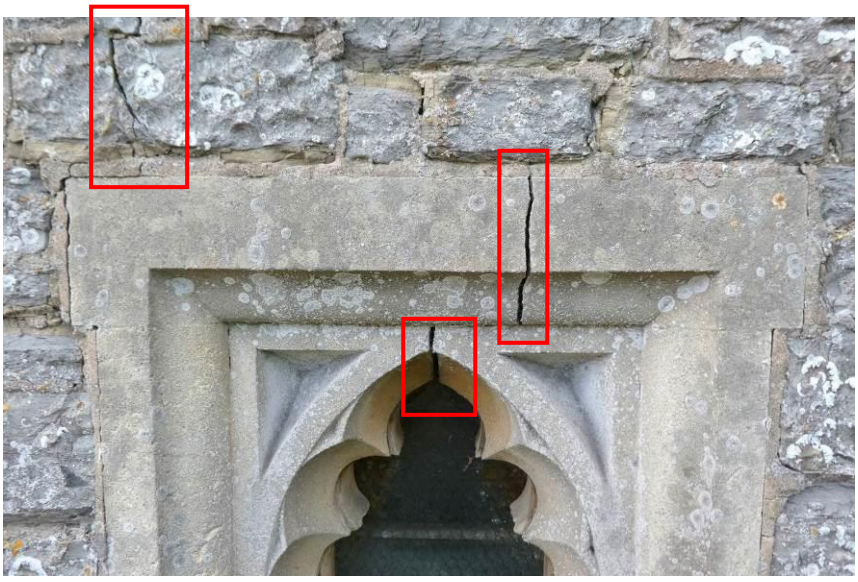

Figure 18 - P1000269 Masonry Fracture & Open Joint in 2nd Stage Window Header North Elevation

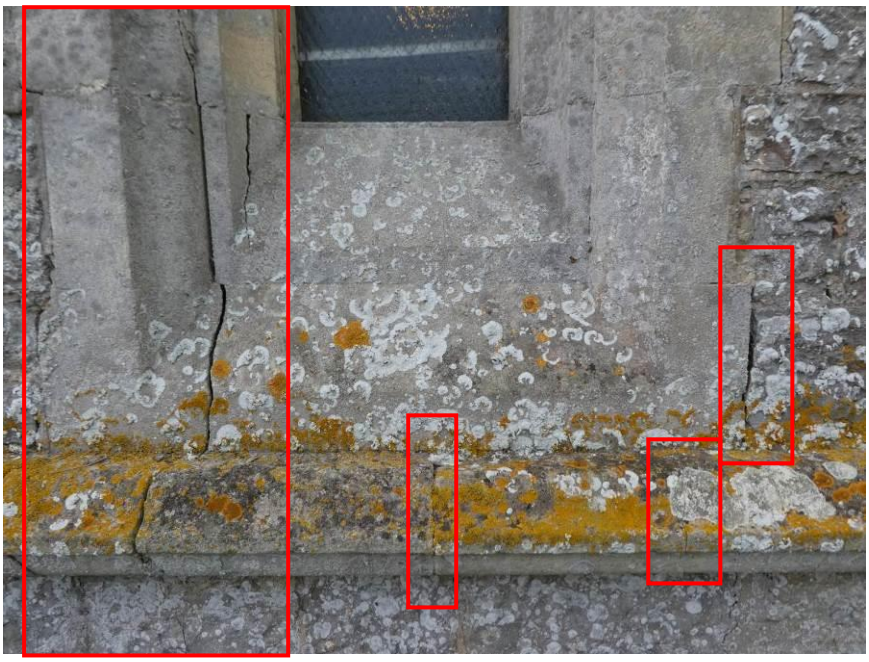

Figure 19 - P1000275 Masonry Fractures & Open Joints in 3rd Stage Window Sill & String Course North Elevation

The same combined issues are causing the belfry level tower edge quoins and a kneeler stone in the 2nd level north east buttress to become precariously loose and in danger of falling to ground level. These should be stabilised with holding repairs by deep-pack re-pointing with lime mortar as a priority and then revisited for thorough re-pointing once the scaffold is erected. Some unstable quoins will inevitably require removing and re-bedding in lime mortar.

Figure 20 - DJI_0201 Displaced & Loose Quoins in North Elevation Belfry Level

Figure 21 - Precarious Kneeler Stone in North East Buttress 2nd Level

In some places the lias masonry has fractured where associated with open joint systems.

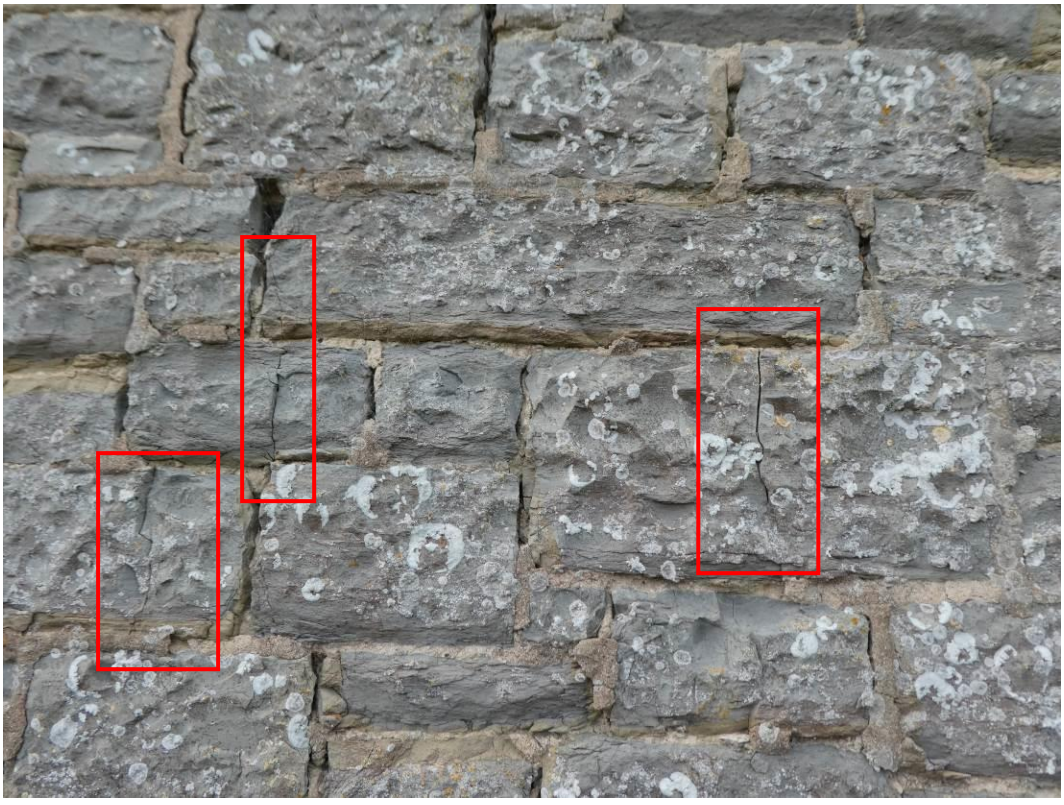

Figure 22 - P1000264 Masonry Fractures Associated with Structural Movement Open Joints in North Elevation 3rd Stage

The pointing is in very poor condition, exacerbated by the lias swelling and incompatibility of the cement mortar with the lias stone. All cement mortar should be removed and the whole elevation re-pointed with lime mortar. Where lias decay has left water traps, lime mortar repairs will aid in water runoff and help avoid the saturation of the stone.

Figure 23 - P1000241 Example Area of Deteriorating Lias Masonry & Cement Pointing in North Elevation Belfry Wall

Figure 24 - P1000241 Example Lias Decay Where Mortar Repair Would Aid in Water Runoff

6.1.2 Structural Issues in the West Elevation

Although the west elevation parapet is less-affected by jacking and displacement than the north, there is evidence of the parapet bowing outwards to the west, so the parapet should be disassembled and rebuilt in the same manner as the north. There are fewer voids and deep open joints in the walls in general, but they would benefit from prompt, holding repair deep-pack pointing to reinstate more structural integrity into the tower.

There are similar open joints around the belfry window hood, tracery, sill, string course and tower edge quoins. The string course is raised in the centre below the belfry window sill and associated fractures are visible in the string course and reveal bases. The open joint system below the belfry string course is less severe but would still benefit from some helifix or stainless-steel fixings.

The cement pointing and associated masonry decay is in very poor condition, especially in the 2nd stage around the west window.

There are masonry fractures and open joints throughout the west window, west door and the 2nd and ground level buttresses to ground level. In essence, evidence of structural issues is visible through the whole height of the tower in the west elevation.

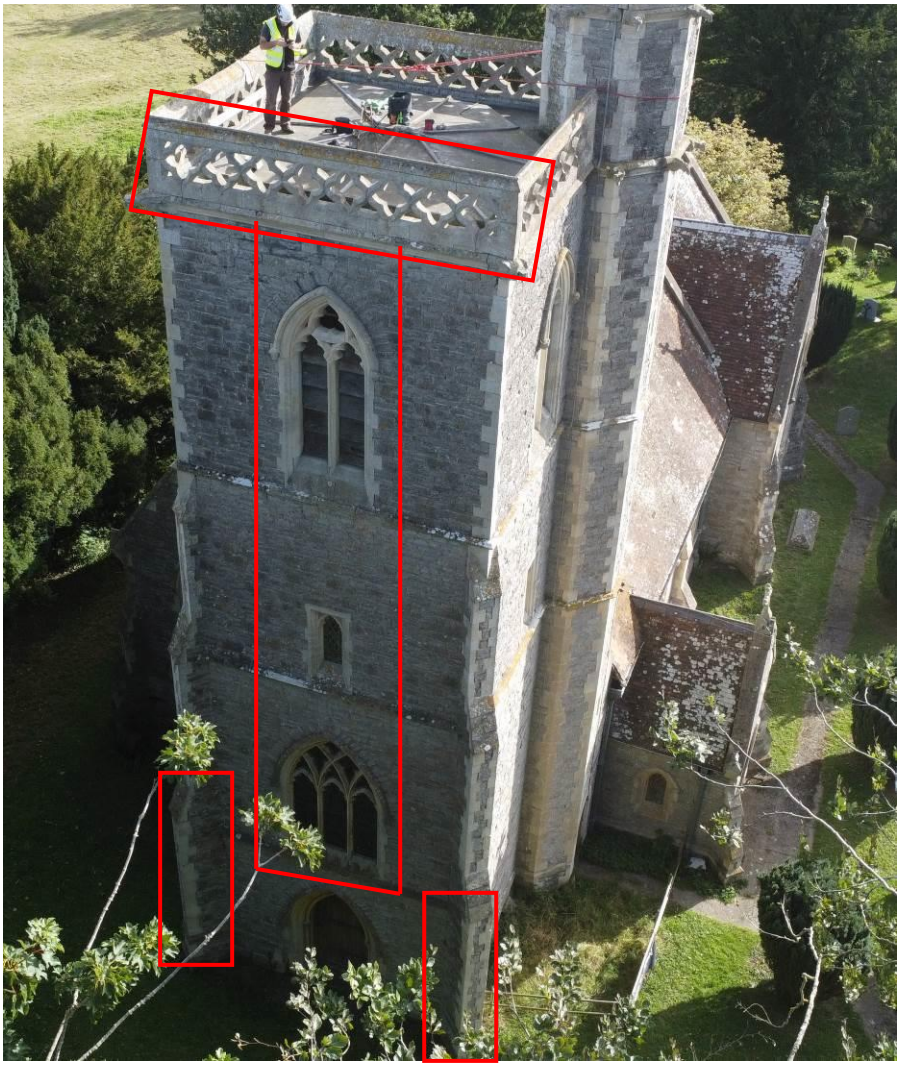

Figure 25 - DJI_0198 Locations of Structural Issues in West Elevation

Figure 26 - P10004263 Open Joints Illustrating West Elevation Parapet Bowing Out to West

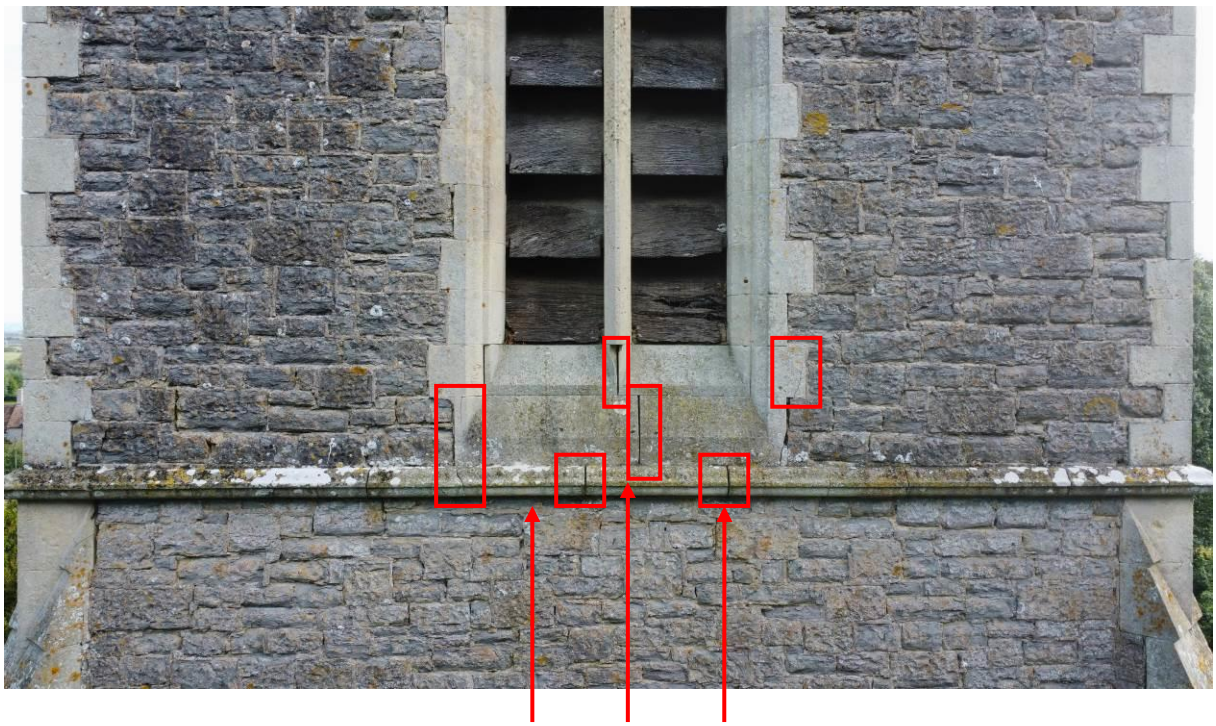

Figure 27 - DJI_0250 Vertically Displaced Belfry String Course, Fractures & Open Joints in West Elevation Belfry Window

Figure 28 - P1000450 Masonry Fractures & Open Joints in 3rd Stage Window Sill & Reveals West Elevation

Figure 29 - P1000455 Example Badly Decayed Masonry Around West Window Cement Pointing in 2nd Stage

Figure 30 - P1000459 Loose & Fractured Quoins in 3rd Stage Buttress West Elevation

Figure 31 - P1000466 Masonry Fractures & Open Joints in West Window Sill & String Course

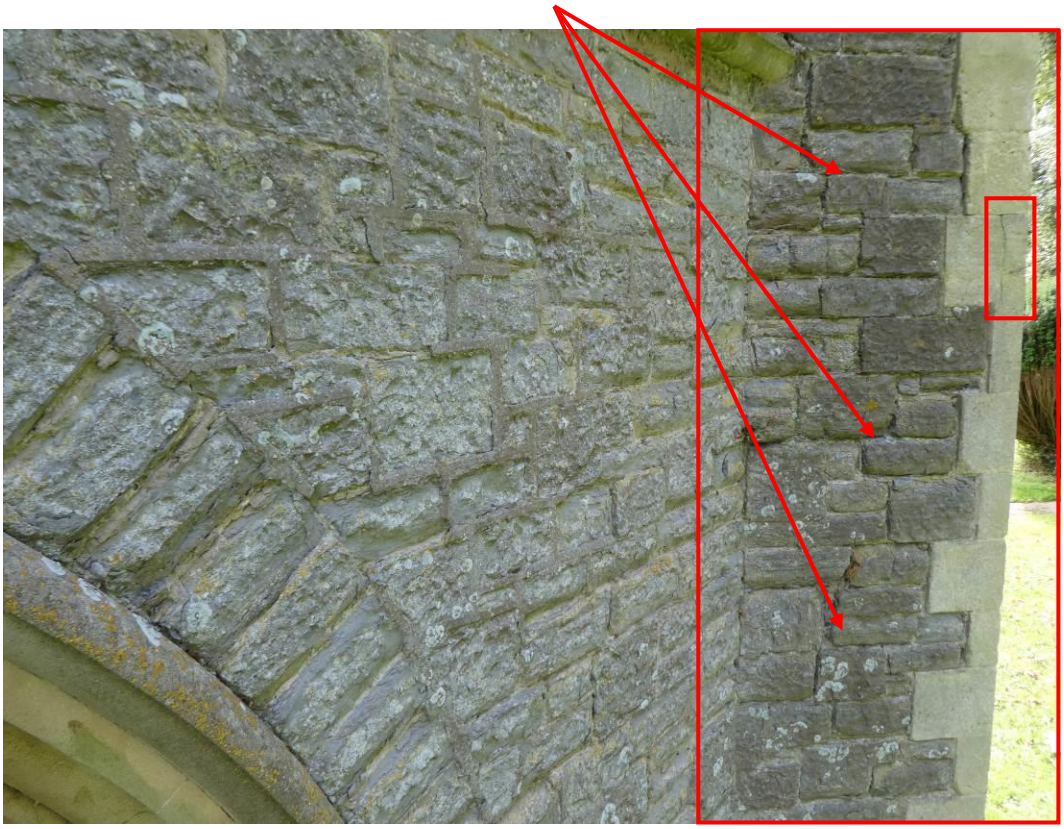

Figure 32 - P1000476 South West Buttress Appears to be Under Great Structural Stress

6.1.3 Structural Issues in the South Elevation

The south elevation parapet is also less-affected by jacking and displacement than the north elevation, but masonry fracturing, and open joints are visible, including at the interface with the stair turret at the east end. This parapet should also be disassembled and rebuilt in the same manner as the north. The walls are in fair condition with only minor areas of deep-pack pointing required. The cement does all however require removing and re-pointing with lime mortar.

There are similar open joints around the belfry window hood, tracery, sill, string course and tower edge quoins. The string course is also slightly raised in the centre below the belfry window sill and associated fractures are visible in the string course and reveal bases. There does not appear to be an obvious open joint system below the belfry window string course but there are associated masonry fractures in the 3rd stage window header, sill and string course.

The cement pointing and associated masonry decay are in fair to poor condition throughout, but better than the north and west elevations.

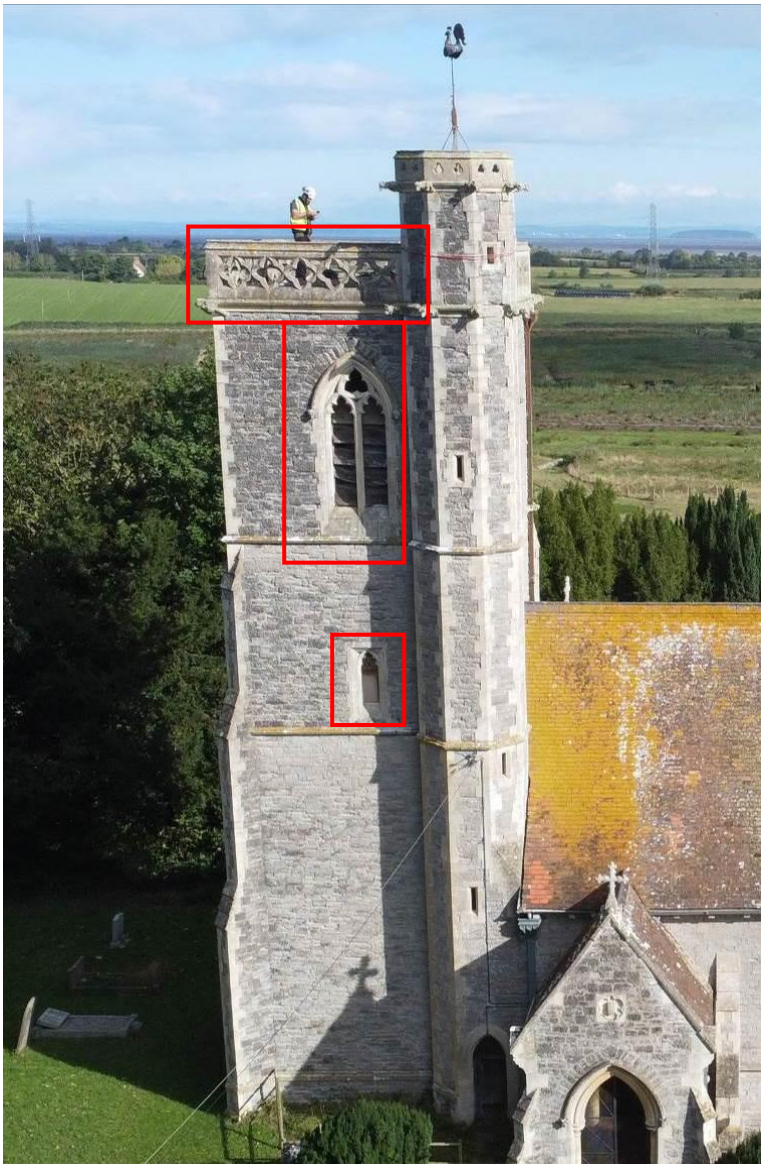

Figure 33 - DJI_0196 Locations of Structural Issues in South Elevation

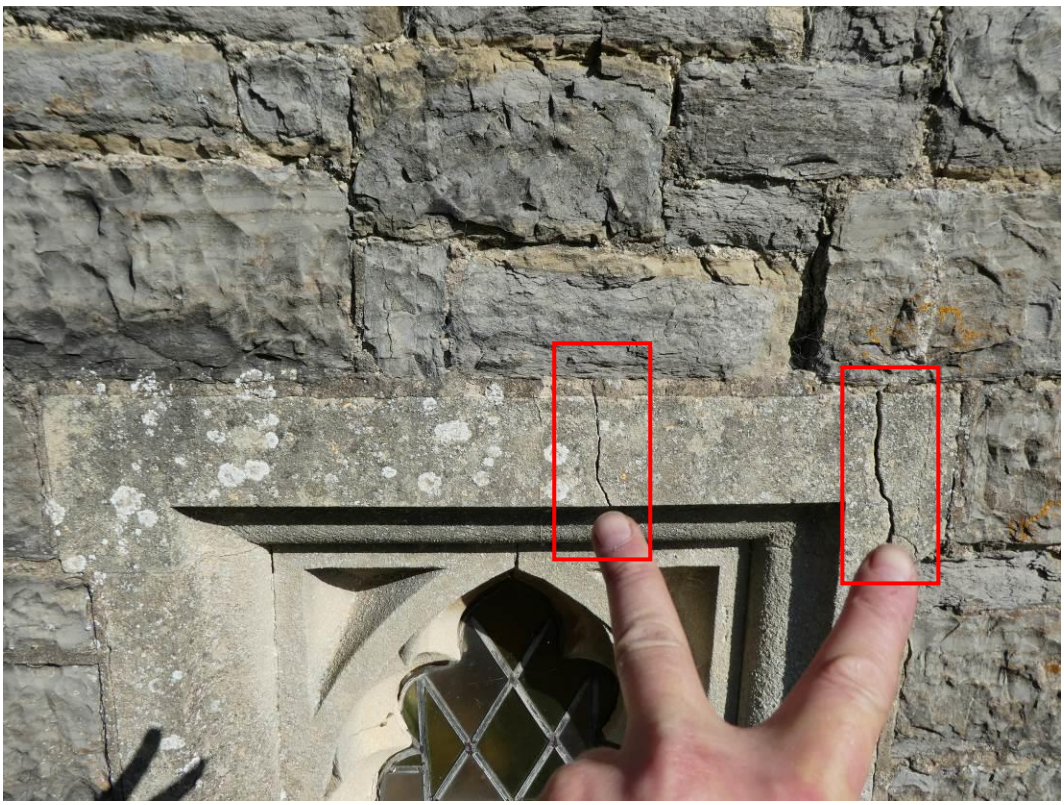

Figure 34 - P1000364 Masonry Fractures in 3rd Stage Window Header South Elevation

Figure 35 - P1000368 Masonry Fractures & Open Joints in 3rd Stage Window Sill South Elevation

6.1.4 Structural Issues in the East Elevation

The east elevation parapet is less-affected by jacking and displacement than the other elevations, but uneven architectural lines are obvious in the string course, interface with the grotesque and end pieces at the north end. There are no obvious fractures but plenty of open joints, so again the parapet in this elevation parapet should also be disassembled and rebuilt in the same manner as the others.

The walls are in fair condition compared to the north and west elevations, but the cement pointing does all however require removing and re-pointing with lime mortar. Deep-pack pointing is required in the open joints around the belfry window hood, tracery, sill and string course, but the quoins appear generally stable apart from isolated pieces and some open joints. There is an open joint and fracture system extending below the belfry window string course and through the clock face masonry, just above the ridge roof.

The tracery and mullions appear to have dropped as opposed to have risen when compared to other elevations. This is likely due to the structural movement interactions of the internal arch with the rest of the tower and nave below.

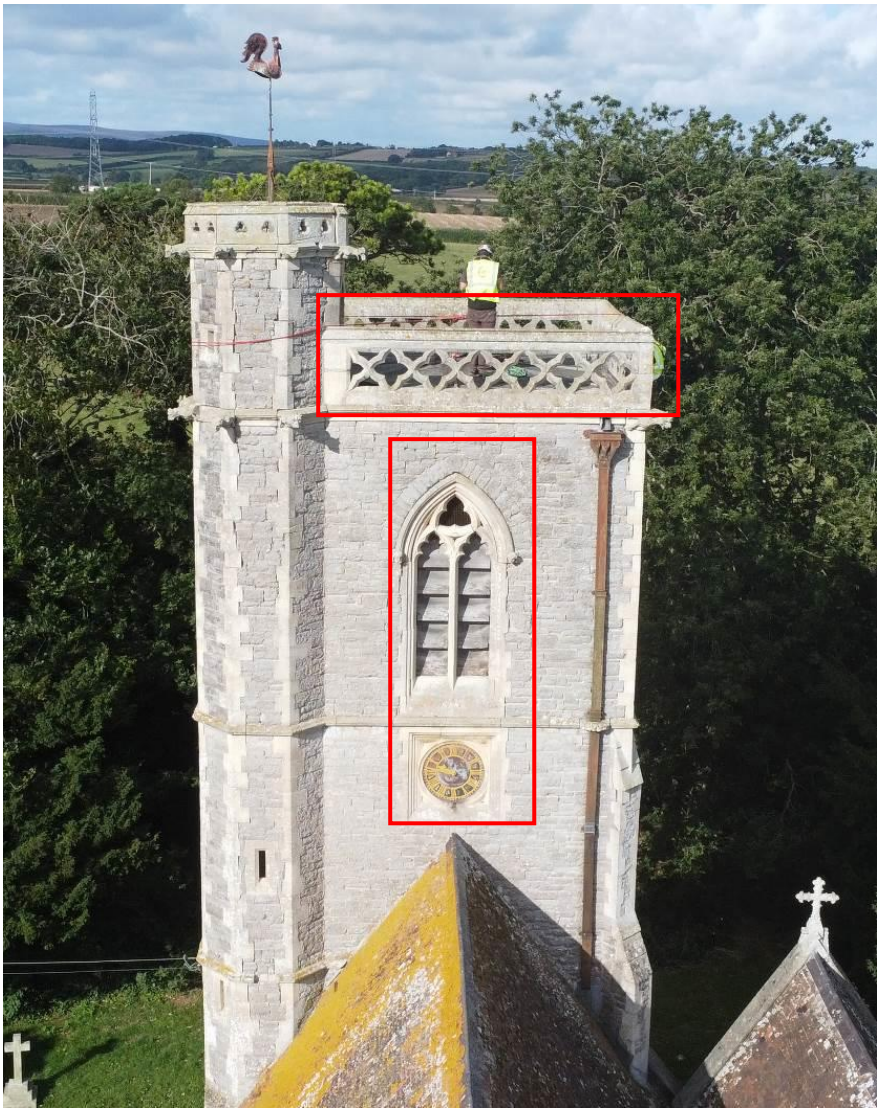

Figure 36 - DJI_0193 Locations of Structural Issues in East Elevation

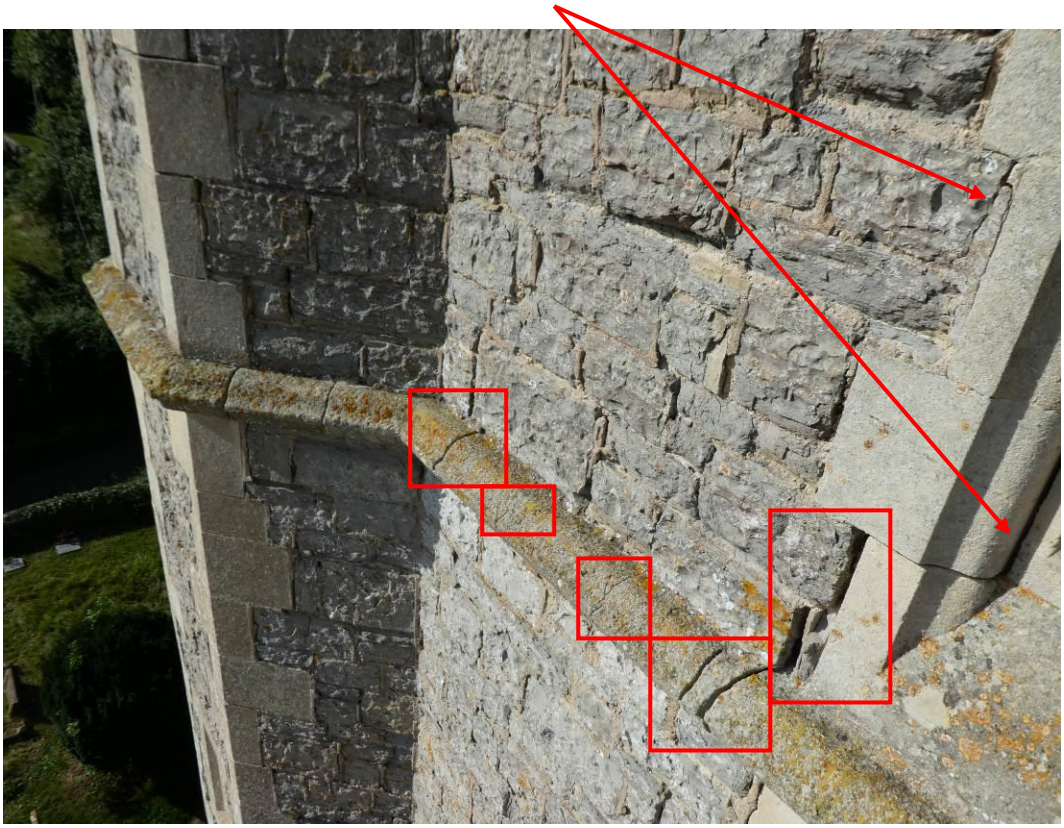

Figure 37 - P1000319 Masonry Fractures & Open Joints Below & Around Belfry Window East Elevation

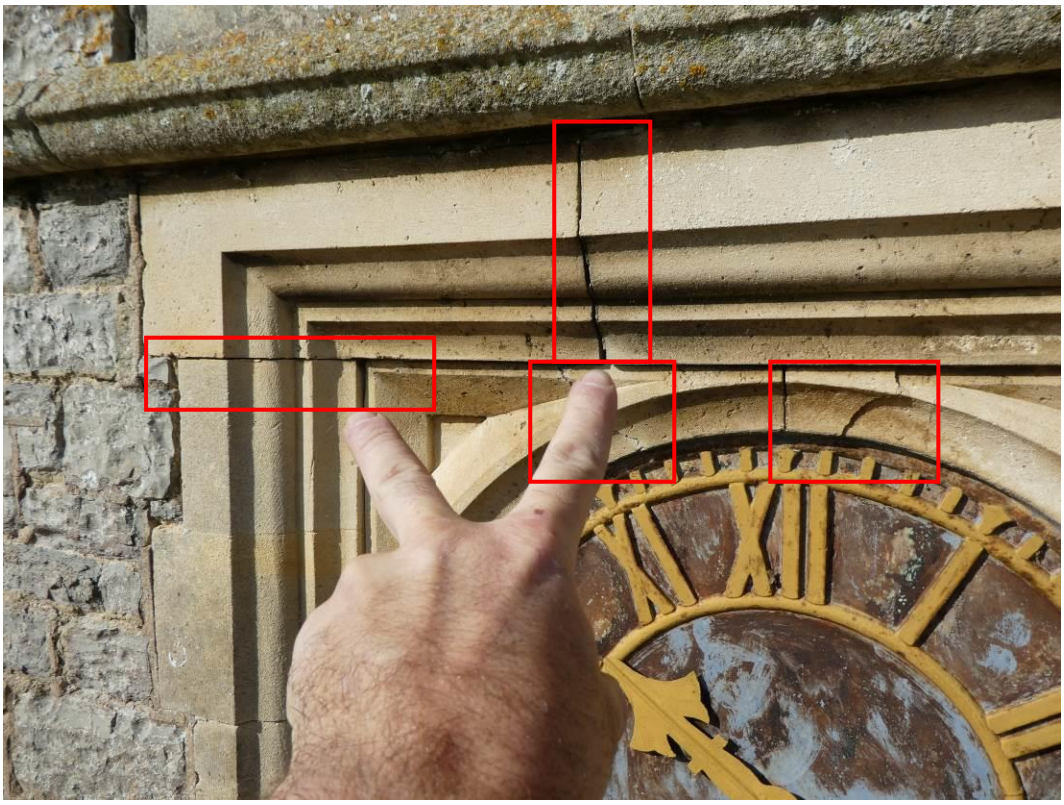

Figure 38 - P1000325 Fractures & Open Joints in East Elevation Clock Surround

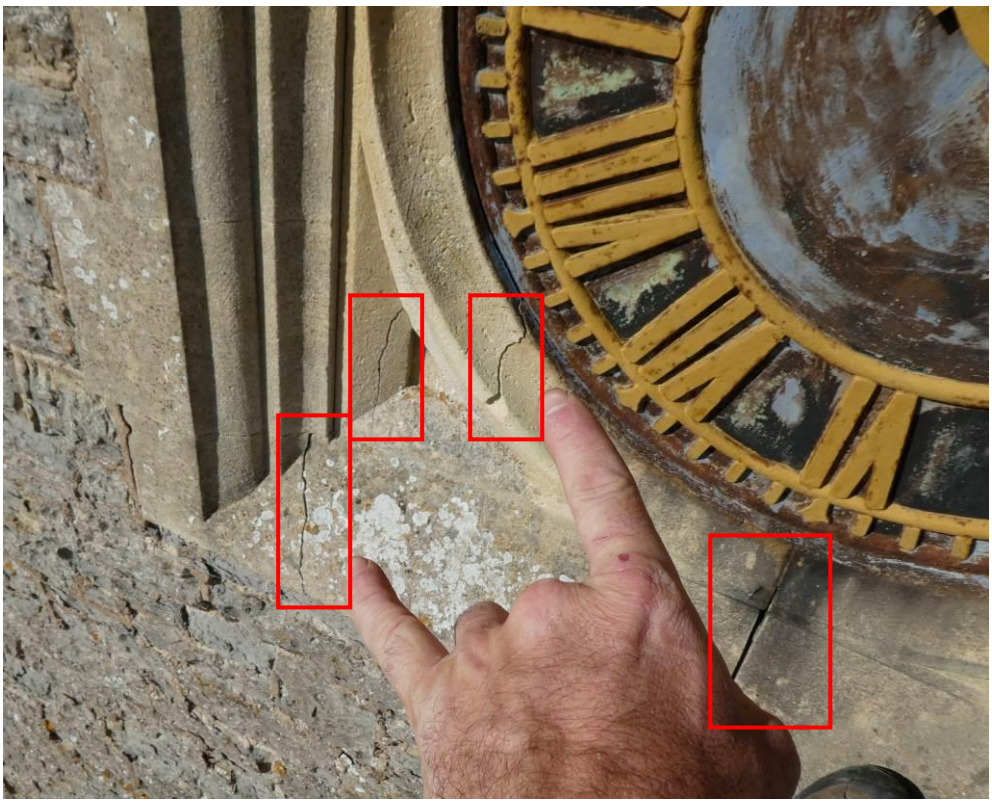

Figure 39 - P1000329 Fractures & Open Joints in East Elevation Clock Surround

Figure 40 - P1000327 Unstable Quoin in East Elevation North East Buttress

6.1.5 Structural Issues in the Stair Turret

The stair turret suffers from the same issues found in the four main elevations of the tower. The upper section from the tower roof upwards is in a very precarious state and will require rebuilding from at least the tower roof upwards. The stair turret parapet masonry panels are all displaced with very large open joints between them and at least two panels are badly fractured and require pinning back together. A fracture is also visible in the stair turret door header. The displacement in the stair turret parapet suggests that a ring beam is also present here and will require removal and replacing with a stainless-steel replacement specified by the structural engineer. The same type of replacements will be required for the circular ring beams visible in the parapet-level, 3rd stage and 2nd stage string courses. The loose fractured string course section removed from the former during the survey and the missing fractured string course masonry in the latter are further evidence of these ring beams.

Many of the quoins at the intersection of each stair turret elevation wall are displaced and/or loose, all the way down to the string courses in the 3rd and 2nd stages. Open joints are visible as far down as the lower stage kneeler stones in the south east elevation of the stair turret, but the structure appears more stable generally that far down.

The walls are generally in poor condition throughout and will require the same approach of removing all cement pointing before re-pointing with lime mortar and adding lime mortar flaunchings to decayed masonry to encourage water runoff.

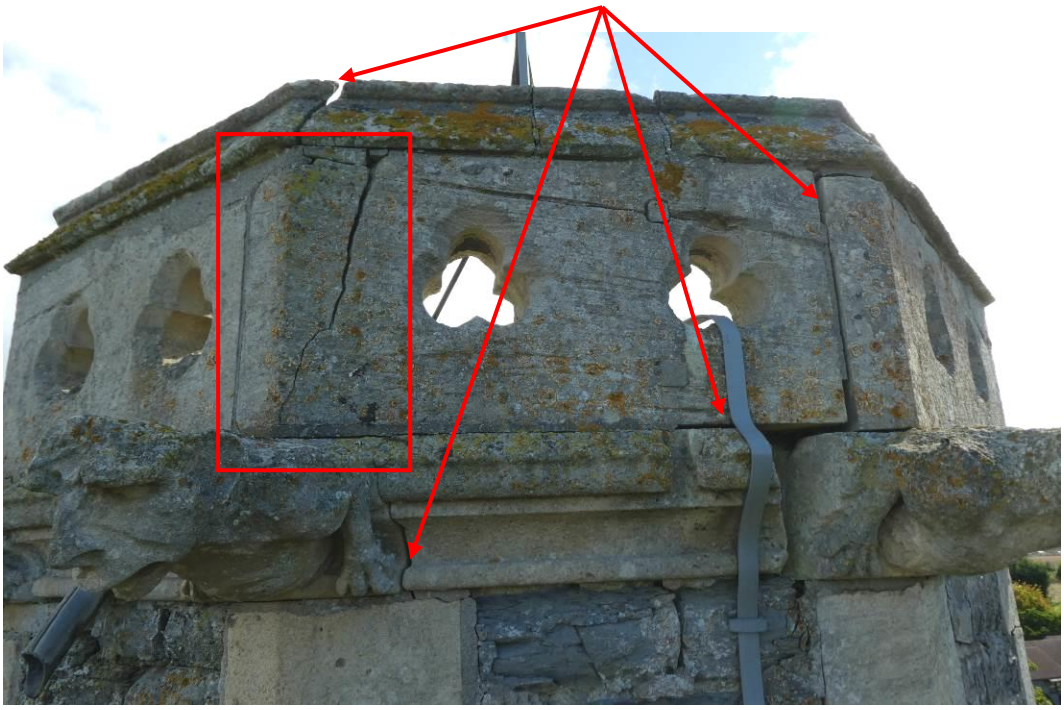

Figure 41 - P1000396 Masonry Fracture & Open Joints in Stair Turret Parapet Panel West Elevation

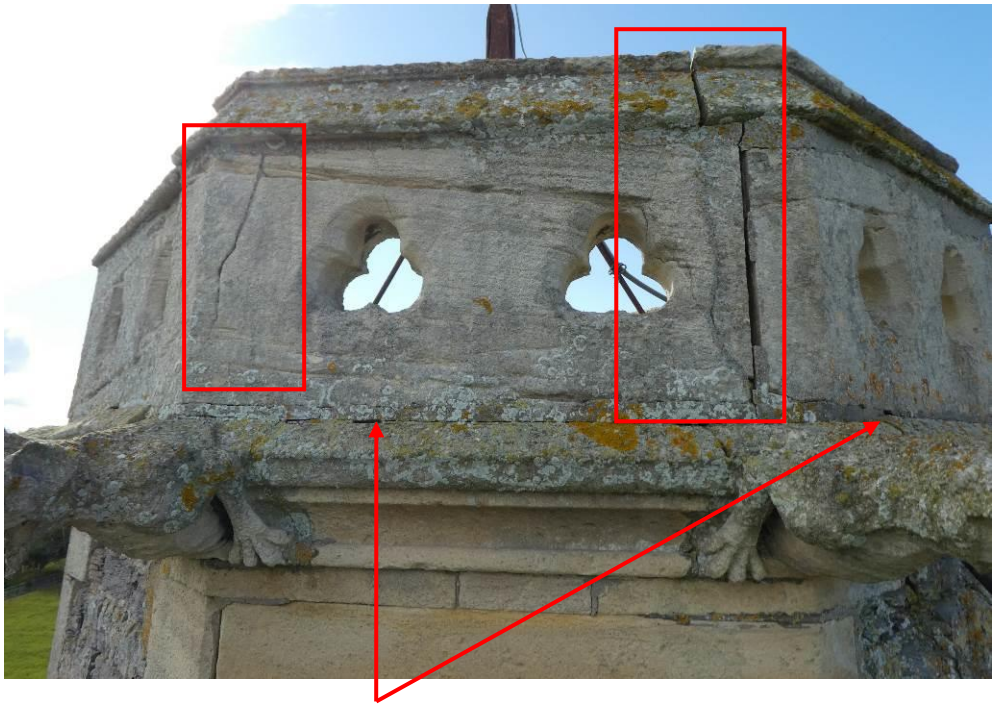

Figure 42 - P1000401 Masonry Fracture & Open Joints in Stair Turret Parapet Panel North Elevation

Figure 43 - P1000481 Masonry Fracture & Missing String Course Section in Stair Turret Tower East & South East Elevations

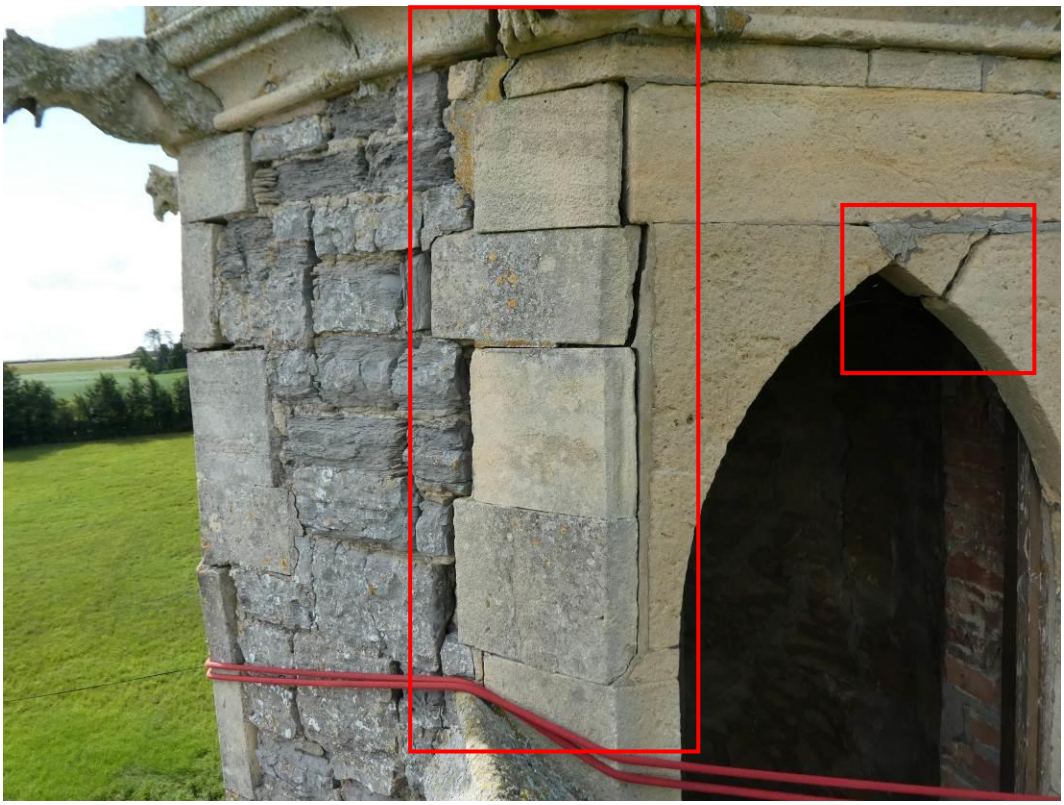

Figure 44 - P1000403 Advanced Open Joints & Masonry Fracturing in Stair Turret Doorway

Figure 45 - P1000416 Example Open Joint Systems Inside Stair Turret Tower

Figure 46 - DJI_0236 Rusting Ring Beam, Fracture & Open Joints in Stair Turret South East Elevation

Figure 47 - P1000376SW Fractured Masonry Removed from Stair Turret South West Elevation 3rd Stage String Course During Survey

Figure 48 - P10000205 Missing 2nd Stage String Course Likely Resulting from Rusting Ring Beam in Stair Turret East Elevation

6.1.6 Stair Turret Weather Vane

While the stair turret is dismantled and rebuilt, the weather vane can also be dismantled and repaired. The weather cock requires cleaning and regilding or re-painting while the iron fixings require cleaning, treating and re-painting. Although the metal frame stays appear structurally reusable, the central wooden pole is very rotten, severely compromised and requires replacing.

Figure 49 - DJI_0218 Weather Vane Right Side

Figure 50 - DJI_0220 Weather Vane Left Side

Figure 51 - Weather Vane Base in Stair Turret Roof

Figure 52 - P1000489 Rusting Weather Vane Stays & Severely Compromised Wooden Central Pole

7. Further Investigations & Trials

- Further advice should be sought from a structural engineer regarding the following:
    - If a rusting ring beam is present in the parapet, it requires removal and replacing with a stainless-steel replacement specified by the structural engineer.
    - Additional fixings in the parapet might be specified by the structural engineer to help it withstand further structural movement and deterioration of the tower lias masonry.
    - The rusting ring beams require removing from the stair turret tower parapet and 3rd and 2nd stage string courses. They also need replacing with stainless-steel replacements specified by the structural engineer.
    - Considering fixing helifix or stainless-steel threaded bar lengths across open joint and fracture systems in the tower walls below belfry windows.
    - The general very poor structural integrity of the tower.
    - Whether a ground survey is required to consider piling or similar ground stabilisation works.
- Further advice should be sought from a specialist regarding the condition of the ground drainage systems.
- Determine by trials suitable lime mortar re-pointing and repair mixes.

8. Key recommendations

- Consider closing off access to the base of the tower.
- Seek further advice on the ground condition, any stabilisation works required and the condition of ground drainage before embarking on major repairs to structural issues in the tower.
- Masonry fractures and open joints resulting from structural movement in the tower parapet, belfries, walls and stair turret, are the most pressing issues at St Mary Magdalene.
- Deterioration in the lias stonework is also a very pressing issue.
- Holding repairs such as deep-pack pointing and masonry pinning should be undertaken using rope access within 12 months to attempt to stabilise the structure until major works can be made from a scaffold.
- The rebuilding of the parapet and belfry windows, replacement of iron ring beams with stainless steel replacements, and other less-pressing issues such as mortar repairs to decayed masonry, can be done from a scaffold at a later date.
- These should however also be considered urgent.

- Although every effort has been made to ensure that a detailed account of issues has been provided in this report, the conservation team should be aware of any other issues that might have been missed or have become apparent since the survey.

9. Recommended Routine

- Checks should be made for fallen masonry on a regular basis. The locations of any fallen material should be reported, recorded and actioned promptly.
- Consider closing off any affected areas until further investigations and/or mitigations have been undertaken.
- After major works have been completed, annual maintenance should be scheduled to spread the costs of repairs and monitor the condition of ongoing known issues.
- This is especially pertinent to issues such as open joints and fractured masonry resulting from structural movement that can result in pieces becoming detached.
- This maintenance schedule should also include the clearing of water goods such as water hoppers and downpipes, and the removal of any plant growth.
- Regular comprehensive surveys should be commissioned every 3 to 5 years to ensure the building is kept in a structurally sound condition, is safe for close passage of pedestrians and to ascertain rates of decay.

10. Future Conservation Strategy

The investigations and recommendations in this report can be used to inform a future conservation strategy:

- The holding repairs to the tower and stair turret should be resolved as soon as possible, definitely within 12 months.
- The other issues requiring a scaffold should also be done as soon as possible afterwards.
- By scheduling annual maintenance, a close eye can be kept on ongoing structural issues that could damage the roofs or compromise the safety of pedestrians.
- Any new issues can also be investigated and actioned.
- Comprehensive surveys every 3 to 5 years will aid in establishing rates and patterns of further deterioration, help with budget forecasting and the fine-tuning of the conservation strategy.

11. Lime or Cement Mortar Mixes

Mortar mixes can be determined in trials but an example lime pointing mix might be as follows:

1 part lime

2.5 parts coarse sharp aggregate

0.5 parts stone dust for colour & additional matrix strength

12. Access Methods

- Urgent holding repairs can be completed using rope access.
- Major works such as rebuilding the parapet and belfry windows require scaffolded access.

John Fowler MSc AEES - Sally Strachey Historic Conservation

[i] Black Ven landslide from https://twitter.com/intent/tweet?text=Black%20Ven,%20Lyme%20Regis,%20Dorset&url=https://www.bgs.ac.uk/case-studies/black-ven-lyme-regis-dorset-landslide-case-study/

[ii] Location of St Mary Magdalene Church in Relation to Highbridge and Steart from Google Maps 19/09/24

[iii] Location of St Gregory's Church Within Village of Weare from Google Maps 19/09/24