



# St Giles Church, Boundary Walls

## Condition Report

April 2024

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### **Appendix A – William Saunders Structural Report**

## **1. INTRODUCTION**

Soul Architects Limited have been appointed by Balderton Parish Council to undertake a condition survey of the boundary walls to St Giles Parish Church.

The condition report will be supported by William Saunders Structural Engineers.

Carl Andrews of Soul Architects Limited carried out the Quinquennial Inspection of St Giles Balderton on 6<sup>th</sup> February 2024.



## 2. INSPECTION

### Description

#### *Main Street*

The wall to Main Street (north of the church) is constructed in blue lias stone approximately 1200mm high with stone capping. There is an entrance opposite the North Porch with timber gate posts either side. The ground level of the churchyard is higher than the pavement level.

#### *Pinfold Lane*

The wall to Pinfold Lane (west of the church) is constructed in red facing brick laid in Flemish bond with a blue capping. The wall increases in height along the length of Pinfold Lane. To the south there is a short section where the wall is constructed in blue lias. The entrance to the south has a timber gate with gate posts. The ground level of the churchyard is higher than the pavement level.

#### *Church Lane*

The wall to Church Lane (east of the church) is constructed in red facing brick laid in Flemish bond with a blue capping. The wall has a single increase in height just around the corner from Main Street. The ground level of the churchyard is higher than the pavement level.

#### *Trees*

To all boundaries there are mature trees within 900mm of the walls.



Extract from Google maps showing St Giles Church

#### *Residential Boundaries*

The walling to the south is onto residential properties. There is a collapsed section of wall to the east side protected with Heras fencing.

### 3. CONDITION

*Main Street*



- Rake out and repoint the open joints to the walling.
- Replace stone with significant loss of face. (approx..20m<sup>2</sup>)
- Replace deteriorated stone at the junction with the pavement. (approx.15lm)

*Pinfold Lane*



- Rake out and repoint the open joints to the walling.
- Replace stone with significant loss of face. (approx..35m<sup>2</sup>)
- Replace deteriorated stone at the junction with the pavement. (approx.15lm)
- There is a section of the wall that is leaning and is potentially unstable.
- Rebuild sections of walling as identified in the structural report. (approx.10m)

*Church Lane*



- Rake out and repoint the open joints to the walling.
- Replace brick with significant loss of face. (approx. 80no bricks)

*South Boundaries*



- Rake out and repoint the open joints to the walling.
- Rebuild the collapsed section of boundary wall. (approx. 15m<sup>2</sup>)
- Carryout brick repair along the length of the wall. (approx. 35no bricks)

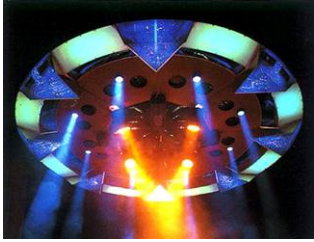
#### **4. RECOMMENDATIONS**

The boundary wall repairs will require permission under the Church of England Faculty process. Planning permission from N&SDC will also be required. Faculty applications are usually submitted by the churchwardens.

Soul Architects Limited will prepare and submit the applications required.

Soul Architects Limited will prepare detailed drawings and specifications for the repairs of the boundary walls as set out above. New foundations required will need to be designed by William Saunders.





**williamsaunders**  
architecture : engineering : building consultancy



**VISUAL STRUCTURAL INSPECTION  
ST GILES CHURCH, BALDERTON  
SOUL ARCHITECTS**

**12783-WMS-XX-XX-T-S-20001-S2-P2**

**MARCH 2024**

**Contract:** St Giles Church, Balderton

**Document Title:** Visual Structural Inspection

**Our Ref:** 12783-WMS-XX-XX-T-S-20001-S2-P2

**Prepared by:** J. Grundy **Date:** April 2024

**RECORD OF AMENDMENTS TO DOCUMENT**

Ref	Description	Date
P1	Initial Issue	March 2024
P2	Amended stone description	April 2024

**Verified by:** P. E. Joyce 

**Date:** April 2024



**C O N T E N T S**

- 1.0 INTRODUCTION**
- 2.0 INSPECTION**
- 3.0 CONCLUSIONS AND RECOMMENDATIONS**
- 4.0 GENERAL**

**APPENDICES**

- APPENDIX A PHOTOGRAPHS**
- APPENDIX B SKETCHES**

**1.0 INTRODUCTION**

- 1.1 William Saunders has been instructed by Soul Architects to undertake a visual structural inspection of the boundary wall at St Giles Church, Balderton.
- 1.2 It is understood that there are several sections of the boundary wall in need of inspection due to structural defects. An additional length of wall within the bounds of the church has also collapsed and is to be inspected.
- 1.3 Our inspection took place on 19 March 2024 and our findings are presented in this report.
- 1.4 Record photographs were taken and these are contained in Appendix A.
- 1.5 Sketches to provide context to the information within the report are contained in Appendix B.

## **2.0 INSPECTION**

### **2.1 Description of Structure**

2.1.1 The boundary wall encapsulates the grounds of St Giles Church; a Grade I listed building (list entry: 1369963) constructed circa 1200 (Photograph 1). The inspected wall is constructed using a variety of materials and techniques with some elements forming retaining structures and other lengths being freestanding walls.

### **2.2 Observations**

2.2.1 General observations:

- a. Trees are located around the perimeter of the site and positioned at approximately 900-1500mm from the internal face of the boundary walls.
- b. An internal retaining structure is present within the grounds of the church abutting the collapsed section of wall on the west elevation. The internal wall is in good condition with no visible defects.

#### West Boundary Wall

2.2.2 Span 1 - 0.0-3.5m (Photograph 2):

- c. The initial 3.5m of wall is of solid 230mm thick brickwork construction with piers at either end measuring 480x350mm.
- d. The wall is partially retaining as indicated by the efflorescence on the lower third of the wall.
- e. In general, the wall is free from significant defects. Nominal masonry spawling is present along with friable mortar, but for a structure of this age the current condition is reasonable.

2.2.3 Span 2 - 3.5-7.3m (Photograph 2):

- a. The brickwork reduces in width slightly to 230mm thick and has a gate positioned at mid span.
- b. The wall is not retaining and is in good condition.



2.2.4 Span 3 – 7.3-10.7m (Photograph 2):

- a. Span 3 is also of brick construction. It steps back out to 380mm thick with a full height of approximately 1.5m and retained height of earth averaging approximately 0.5m.
- b. Again, minimal defects are present although a slight deflection inward can be seen to the end of the panel (starting at approximately 8m) as it meets the Blue Lias section.

2.2.5 Span 4 – 7.3-16.8m (Photograph 3):

- a. Noted as 'A' on the sketch plan. Span 4 is constructed from Blue Lias and steps out further still to approximately 530mm. It measures approximately 1.5m tall with a retained height of 0.5m.
- b. The panel is in poor condition overall, with significant spawling masonry which is friable and crumbled to the touch (Photograph 4).
- c. The bottom third of the wall appeared noticeably discoloured suggesting an accumulation of water behind the structure (Photograph 5). The lack of weepholes will only compound this issue further.
- d. Significant areas of missing masonry/mortar are present along the length of the structure both on the front and rear (Photographs 6).
- e. The wall is also noticeably out of plumb (Photographs 7 - 8), as indicated on the sketch in appendix B, with the wall leaning into the grounds of the church by up to 150mm in places. The coping stone is also significantly misaligned when compared to the previous section of wall (Photograph 9).

2.2.6 Span 5 – 10.7-23.0m (Photograph 10):

- a. The wall steps back in to 380mm thick reverting to a brickwork construction, similar to that of span 3. The full height again measures approximately 1.5m and the retained height averages 0.4m.
- b. The wall is in relatively good condition; however, a noticeable scour is present at ground level running the length of the wall (Photograph 11).
- c. The wall is of new construction when compared with span 4, although it appears as if the new wall has been constructed atop the old footing as can be seen at the base of the wall (Photograph 11).

2.2.7 Span 6 – 23.0-68.0m (Photograph 12):

- a. Span 6 maintains the brickwork construction and measures 230mm thick. It steps down at various locations to average an approximate height of 1.35m. Piers are located at approximately 7m c/c.
- b. The interface between Span 5 and 6 is poor (Photograph 13). There is no evidence of toothed masonry. It is likely the two sections are simply abutting one another and can be considered a point of weakness. It should be noted that the above is present to most sections where a change in construction/material occurs.
- c. The wall is of newer construction than the previous and appears to be founded on an independent footing, not built off the old wall construction, as per the previous section.
- d. Similar efflorescence to that observed on other sections of the wall is present at low level, and bar localised pockets of moss growth on the surface of the wall, the overall condition is reasonable (Photograph 14).

2.2.8 Span 7 – 68.0-76.0m (Photograph 15):

- a. Noted as B on the sketch plan, span 7 appears heavily deflected with a lean of up to 200mm in places (Photograph 16 + 17). The wall itself is relatively low, with a height of only 1100mm. It is non-retaining and of brick construction. See the sketch in Appendix B for details.
- b. The wall construction is the same as that of the previous sections and maintains regular piers, several of which appear to have sheared at the base (Photograph 18).

North Boundary Wall

2.2.9 The brick boundary continues around the northwest corner of the site abutting another section of Blue Lias retaining wall which continues along the length of the northern boundary (Photograph 19). The wall is generally free from significant defects; however, there are still areas of undulation, but relatively minor when compared to that of previous sections (Photograph 20). Foliage growth is also present along the length of the structure as well as general areas of deterioration and weathering due to age (Photographs 21 - 22).

East Boundary Wall

2.2.10 Much like the northern wall the east wall is in reasonable condition. The wall is of brick construction and is generally plumb along its length. Piers are positioned at approximately 3m centres. Notable defects as below:

## VISUAL STRUCTURAL INSPECTION

ST GILES CHURCH, BALDERTON

- a. A significant area of deteriorated masonry (noted as 'C' on the sketch plan) is present, located approximately 20m from the northeast corner, as well as smaller pockets of deteriorated brickwork along the wall's length (Photograph 24).
- b. The wall appears to have sheared at low level along a length of 1m, located approximately 21m from the northeast corner (noted as 'C' on the sketch plan) (Photograph 25).
- c. A slight concave appearance is present to the wall near the southeast corner of the site with a mortar infill to hide the step (Photograph 26).

### South Boundary Wall

2.2.10 The inspection of the southern boundary wall was limited due to the presence of significant foliage along its length. The length of wall running perpendicular to the eastern boundary is of brickwork construction. The wall then turns running perpendicular to the previous length of wall and is constructed predominately of Blue Lias. The far southern boundary is of brick construction and comprises of the boundary wall to the neighbouring property. Notable defects as below:

- a. Noted as 'D' on the sketch plan. Significant foliage growth is present to roughly the first 20m of the wall when measured from the southeast corner (Photograph 27). Additional areas of deteriorated masonry are present beneath the foliage (Photograph 28).
- b. A collapsed section of wall is present at approximately 40m from the southeast corner of the site (Photograph 29, noted as section 'E' on the sketch plan). The remainder of the boundary wall continues south at this location with an additional stretch of wall progressing into the site and forming a further retaining structure.
- c. Further pockets of missing masonry and mortar can be seen along the boundary wall running between the near and far south boundary of the site (Photograph 30).



**3.0 CONCLUSIONS AND RECOMMENDATIONS**

- 3.1 The length of wall identified as Span 4 is currently structural stable although the extent of lean should be visually monitored to ensure it does not reach a point that could pose a risk to the public or users of the church grounds. The retained earth to the rear is likely acting as a prop preventing significant lean, furthermore the significant mass of the section is likely adding to the stability. Strengthening works would likely have minimal impact on the stability of the structure due to the general deteriorated nature of the facing brickwork and mortar.
- 3.2 Span 8 is subject to significant structural movement. In its current state, it is deemed structurally unstable and should be replaced. The exact cause of the movement is unknown but could likely be attributed to several factors as below:
- a. **Lack of footing/foundation:** It is possible the wall is simply bearing on to the ground with no footing or brickwork below ground level (or minimal - one/two courses for example). This would result in poor structural performance as a suitable footing provides additional resistance to lateral forces such as wind.
  - b. **Inadequate piers:** The piers are positioned at approximately 7m centres and are only a single brick thick, it is possible, for a wall of this span and height, that more robust piers are needed to resist the lateral forces.
  - c. **Inconsistent ground conditions:** The panel in question appears to span a length over which a tree may have been previously removed. The removal of a tree directly adjacent to the midspan of the wall is likely to create varied ground conditions or possibly cause the remaining trees to act as 'props' reducing movement to the sections either side of the heavily deflected area.
  - d. **Inadequate construction:** It is possible there were deficiencies in the original construction which have compounded over time i.e. a combination of the above points.
- 3.3 In addition to the above, the collapsed section of wall on the southern side of the site will require replacement. Any areas of reconstruction will have to be in keeping with the special historic nature of the site. Bricks should be reused wherever possible and where not, reclaimed bricks, to match the existing, should be used. Furthermore, a suitable lime mortar mix should be used to bed all masonry units. Any feature units should also be retained and reused, coping stones for example.

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ST GILES CHURCH, BALDERTON

- 3.4 Areas of heavily deteriorated masonry, such as that identified on the east boundary wall, should be replaced/repared. This can be done on a brick-by-brick basis with individual units being removed and replaced. Where the wall is retaining, it would be unadvisable to remove several bricks at a given time, as the overall integrity of the section will need to be retained throughout any repairs.
- 3.5 Whilst there is no mention of the boundary wall in the official listing it would be advisable to seek confirmation as to whether the wall is covered under the listing. As part of any repairs, it may be necessary to consult with the local conservation officer and obtain approval for the type and method of the repairs.
- 3.6 It would be advisable to retrofit wall ties / restraint at the junction between the various wall sections. HeliFix (or other) bars can be installed across the junction to strengthen the joint causing it to act as one homogenous structure as opposed to various independent sections of wall. Any provided solution should be installed as per the manufacturer's guidance.

**4.0 GENERAL**

- 4.1 In preparing this report, we have not conducted any intrusive inspections and are, therefore, unable to report that any areas, such as footings/wall bases are free from defect.
- 4.3 Nothing in this report confers or purports to confer on any third party any benefit or any right under the Contracts (Rights of Third Parties) Act 1999.

Prepared by:

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**APPENDIX A**

**PHOTOGRAPHS**

PHOTOGRAPHS  
ST GILES CHURCH, BALDERTON



Photograph No. 1 – General View of Site with Boundary Wall to Far Left and Right



Photograph No. 2 – West – Spans 1-4 with Blue Lias Section in Foreground



PHOTOGRAPHS  
ST GILES CHURCH, BALDERTON



Photograph No. 3 – West – Span 4



Photograph No. 4 – West – Heavily Deteriorated Masonry and Mortar



PHOTOGRAPHS  
ST GILES CHURCH, BALDERTON



Photograph No. 5 – West – Noticeable Change in Colour at Low Level



Photograph No. 6 – West – Areas of Missing Masonry and Mortar



PHOTOGRAPHS  
ST GILES CHURCH, BALDERTON



Photograph No. 7 – West – Lean to Rear Face of Wall



Photograph No. 8 – West – General View of Lean to Front Face of Wall



PHOTOGRAPHS  
ST GILES CHURCH, BALDERTON



Photograph No. 9 – West – Misaligned Coping Stone Between Span 4 and 5



Photograph No. 10 – West – Span 5, Highlighted Foliage Growth



PHOTOGRAPHS  
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Photograph No. 11 – West – Scour at Base of Wall and Blue Lias Used as Base



Photograph No. 12 – West – General View of Span 6



PHOTOGRAPHS  
ST GILES CHURCH, BALDERTON



Photograph No. 13 – West – Interface Between Span 5 and 6



Photograph No. 14 – West – General Condition of Wall Section and Efflorescence to Lower Half



PHOTOGRAPHS  
ST GILES CHURCH, BALDERTON



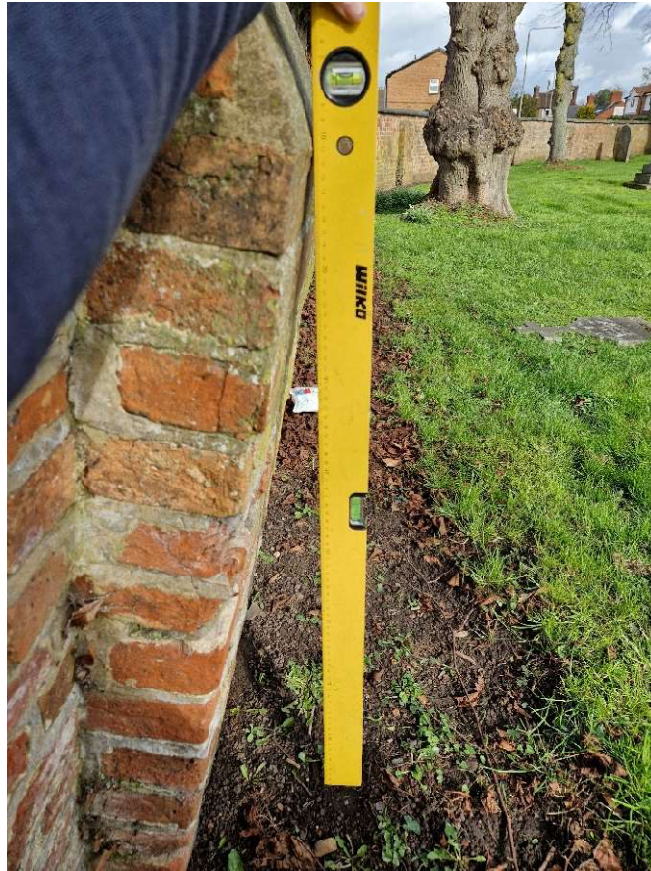
Photograph No. 15 – West – Span 7



Photograph No. 16 – West – Deflection to Span 7



PHOTOGRAPHS  
ST GILES CHURCH, BALDERTON



Photograph No. 17 – West – Lean to Rear Face of Span 7



Photograph No. 18 – West – Deteriorated Pier with Lateral Movement at Base



PHOTOGRAPHS  
ST GILES CHURCH, BALDERTON



Photograph No. 19 – North – Continuation of Boundary Wall to Northern Edge of Site



Photograph No. 20 – North – Observed Undulations and Minor Lean



PHOTOGRAPHS  
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Photograph No. 21 – North – Scour at Base of Wall



Photograph No. 22 – North – Foliage Growth on Wall



PHOTOGRAPHS  
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Photograph No. 23 – North – General Areas of Deterioration Due to Age



Photograph No. 24 – East – Deteriorated Masonry at Low Level



PHOTOGRAPHS  
ST GILES CHURCH, BALDERTON



Photograph No. 25 – East – Sheared Wall at Low Level



Photograph No. 26 – East – Minor Concave Shape to Wall at Southeast Corner



PHOTOGRAPHS  
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Photograph No. 27 – South – Foliage Growth Along Wall



Photograph No. 28 – South – Deteriorated Masonry Throughout Wall



PHOTOGRAPHS  
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Photograph No. 29 – South – Collapsed Section of Wall



Photograph No. 30 – South – Deteriorated Masonry/Mortar Along Wall Length

## **APPENDIX B**

### **SKETCHES**

# CALCULATION SHEET

**Project:** St Giles Church, Balderton **Our Ref:** 12783

**Calculations for:** Sketches

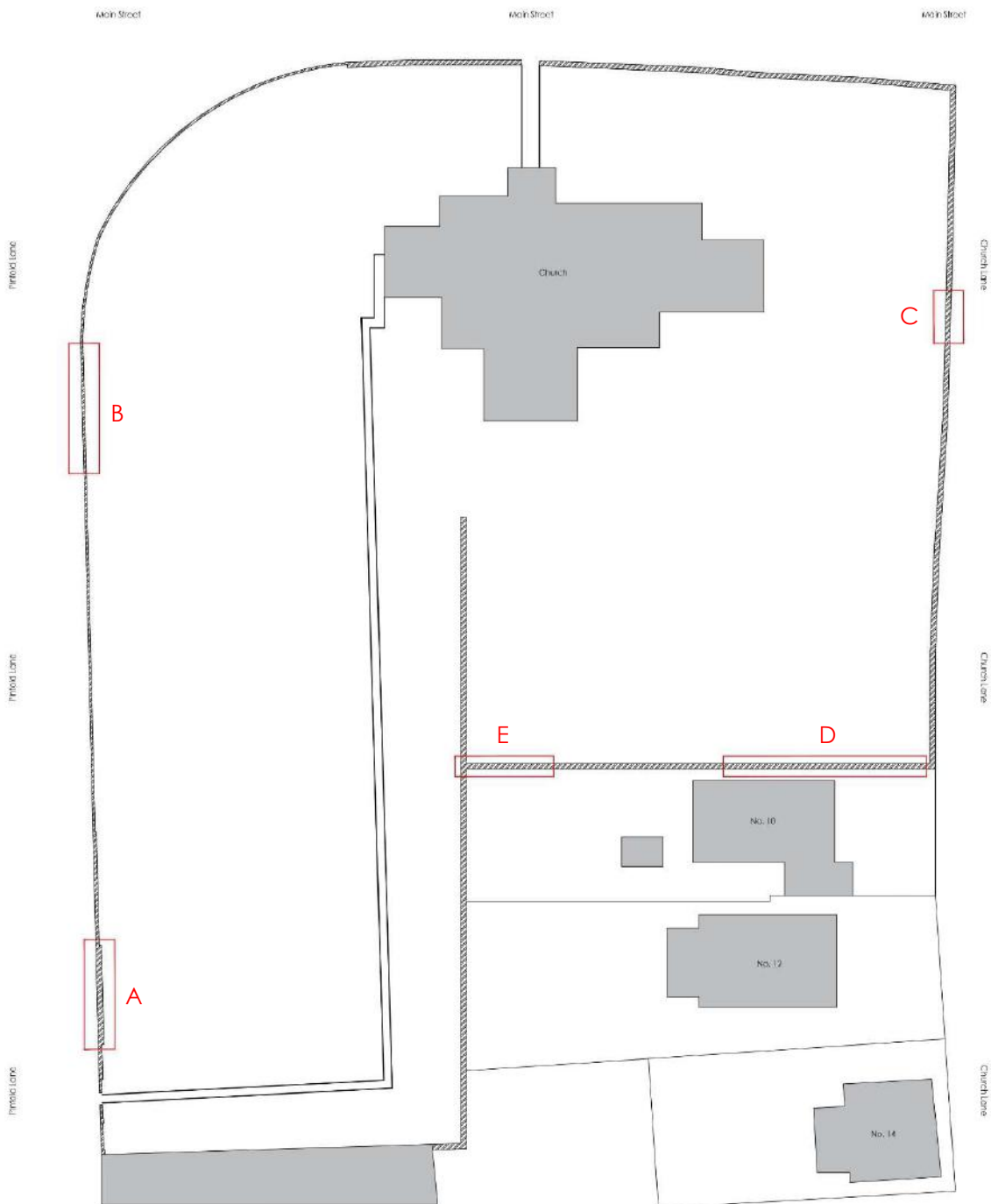
**Volume:** - **Section:** - **Revision:** -

**Calc by:** JG **Date:** Mar' 24 **Checked by:**  **Date:**

**Sheet 1 of 3**

## Sketch Location Plan

NTS





# CALCULATION SHEET

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**Project:** St Giles Church, Balderton **Our Ref:** 12783

**Calculations for:** Sketches

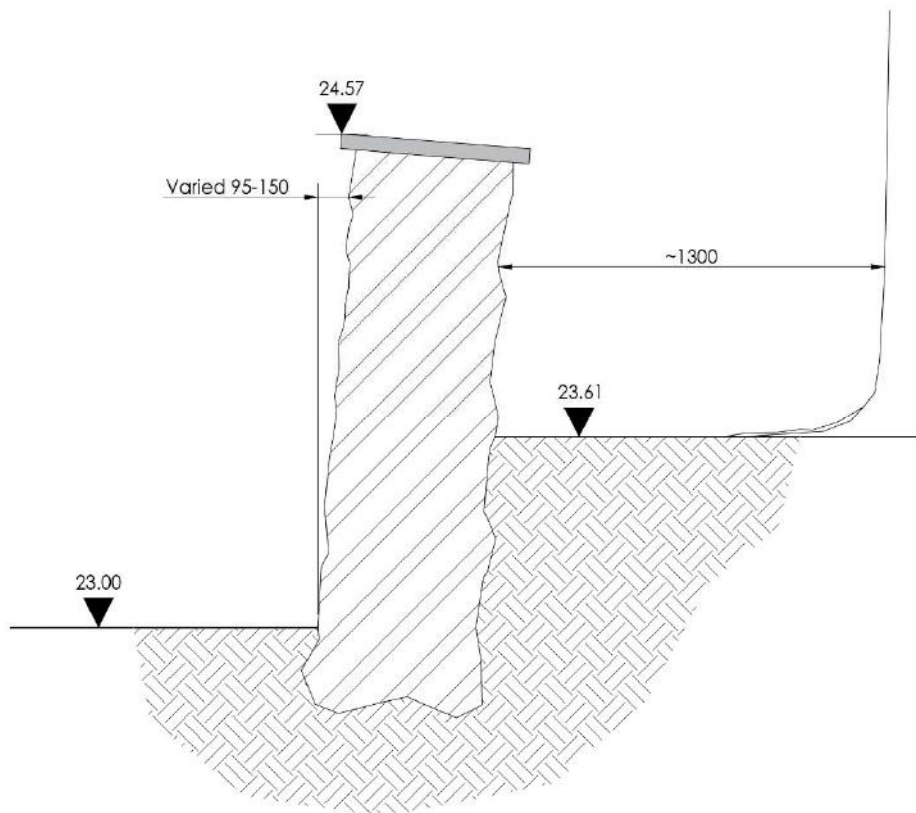
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**Calc by:** JG **Date:** Mar' 24 **Checked by:**  **Date:**

**Sheet 2 of 3**

## Indicative Section of Leaning Blue Lias Wall

NTS



*Noted as section A on the sketch plan.*

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**Project:** St Giles Church, Balderton **Our Ref:** 12783

**Calculations for:** Sketches

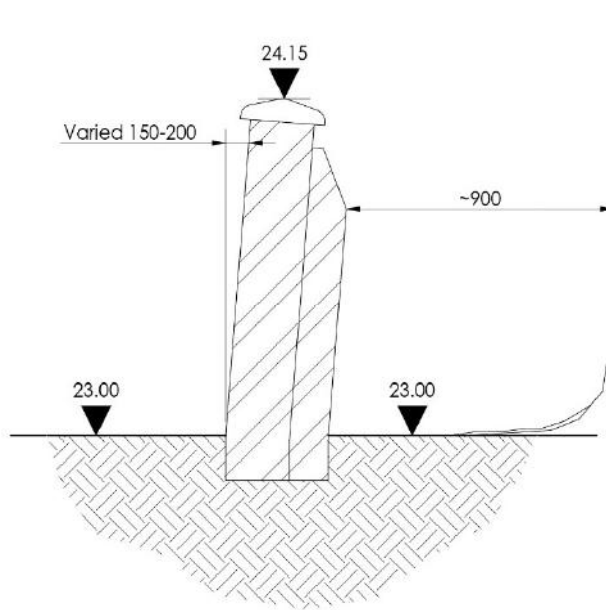
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**Calc by:** JG **Date:** Mar' 24 **Checked by:**  **Date:**

**Sheet 3 of 3**

## Indicative Section of Leaning Masonry Wall

NTS



*Noted as section B on the sketch plan.*

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