

OPTIONS APPRAISAL

Spire and Tower

St Thomas Musbury

September 2023
Ref. 22073



John Coward Architects Limited

No.3 Unsworth's Yard
Ford Road
Cartmel
Cumbria
LA11 6PG

Telephone: (015395) 36596

Email: info@johncowardarchitects.co.uk

Introduction.

This appraisal is written in consideration of the inspection and reports by Hutton and Rostron (Inspection April 2023) and Clach Conservation Engineering (inspection 13th April 2023). JCA carried out a quinquennial inspection on 11th July 2023 (report pending at the time of writing).

Executive summary.

It is clear that severe water penetration is a major issue at Musbury and the spire and lower tower are suffering concentrated water ingress. Whilst the masonry skeleton currently remains overall generally structurally stable (apart from the spire tip), the penetrating moisture and in several places free water making it to the interior of the spire and tower, is causing decay to the timber structures within the building. If water ingress is allowed to continue unchecked, the stability of the masonry structure may begin to deteriorate. The spire tip requires rebuilding in the short term which will necessitate a full working scaffold. It makes financial and practical sense therefore to use this scaffold to carry out more extensive interventions.

This study has determined that three options are available:

1. **Repair the spire.** Masonry repairs involving re-pointing, deep packing of joints, grouting of masonry cores, improved water shedding, interior masonry work, repair of tower timber floors etc. It should be borne in mind that as with all historic masonry structures, it can never be said that any repair to the masonry can 100% guarantee that the water ingress will be entirely halted, rather, the masonry envelope can be made to better cope with moisture transfer.
2. **Take down the spire.** It is acknowledged that this would be a major change to the appearance of the building and would have to be robustly justified during any approvals process (faculty, planning permission). It is likely to attract local opposition as a drastic change to a landmark building. The tower would then be topped with a new lead flat roof (or slate pitched) and a new masonry parapet wall. A new rainwater pipe system will be required to the tower to drain the new tower roof.
3. **Take down and rebuild the spire.** This ensures that the masonry can be completely rebuilt, restoring the structure to its original conditions however the need to do this can only be justified if site trials confirm that repair intervention will not be substantially successful.

All options require the repair of the tower which could be carried out as a second phase of work subject to funding.

All options require extensive and expensive scaffold access.

Note that all budget costs included in this appraisal document are exclusive of VAT.

Option 1 – Repair.

Phase 1 Repair the spire – re-point / grout all faces. Rebuild the tip. Reinststate the lucarne vents operable (remove glass). Repair the tower intermediate floors (timber repairs). Re-point/grout the stair turret roof.

Order of cost circa £450,000 including scaffold (subject to trials).

Phase 2 repair the tower – re-point/grout the tower. May not be necessary if water ingress issues are addressed by phase 1.

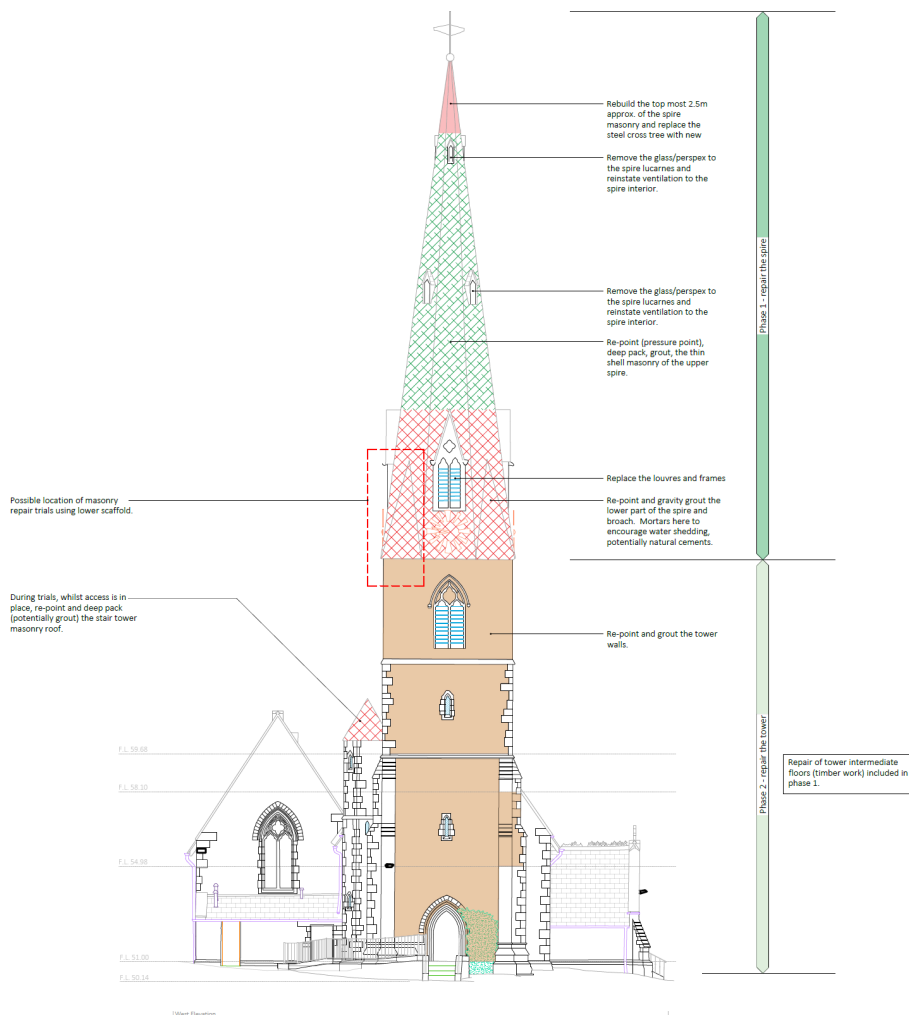
Order of cost circa £200,000 including scaffold.

Combined cost of phase 1 and 2 concurrently: circa £550,000 including scaffold.

If this option is pursued the recommendation is for an initial trial of repair techniques to the lower parts of the spire internally and externally with a budget of say £10,000 to £20,000 to include scaffold access.

The spire tip almost certainly needs rebuilding imminently due to the current condition of fractured and displaced stones due to the corroded cross tree (steel tensioning structure).

Order of cost for just rebuilding the tip in isolation with new cross tree and all new stone, circa £140,000 including scaffold access.



Option 2 – Take down.

Take down the spire to the level of the square tower. Introduce a new roof over the tower (slate pitched / lead flat). Introduce new rainwater pipes to drain new tower roof.

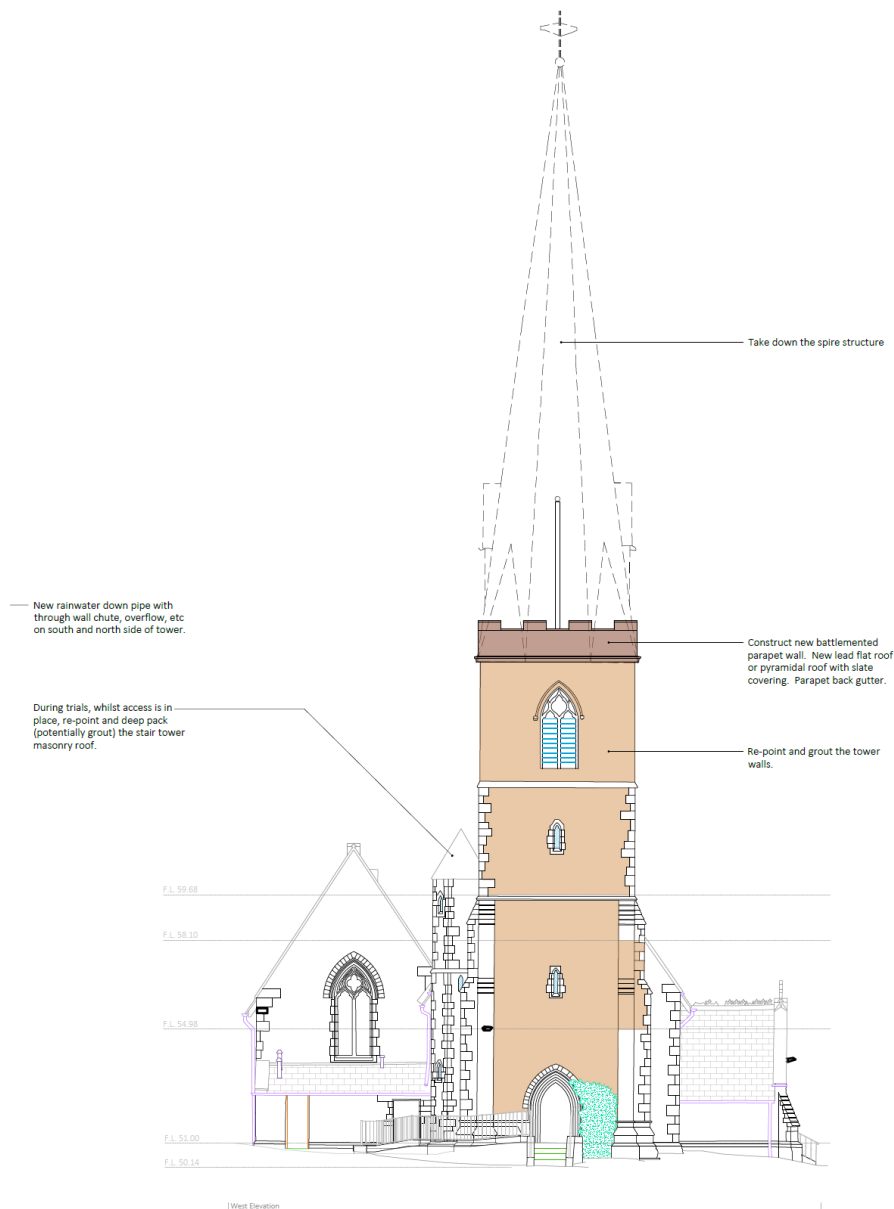
Order of cost circa £350,000 including scaffold.

However – must consider approvals process (Faculty). Planning permission needed. Action would have to be justified as having public benefit as substantial harm would be caused to the heritage asset. Argument is the securing of the optimal viable use of the building (considering finance) in line with planning policy.

Phase 2 repair the tower – re-point/grout the tower. May not be necessary if water ingress issues are addressed by phase 1.

Order of cost circa £200,000 including scaffold.

Combined cost of phase 1 and 2 concurrently: circa £450,000 including scaffold.



Option 3 – Take down and rebuild.

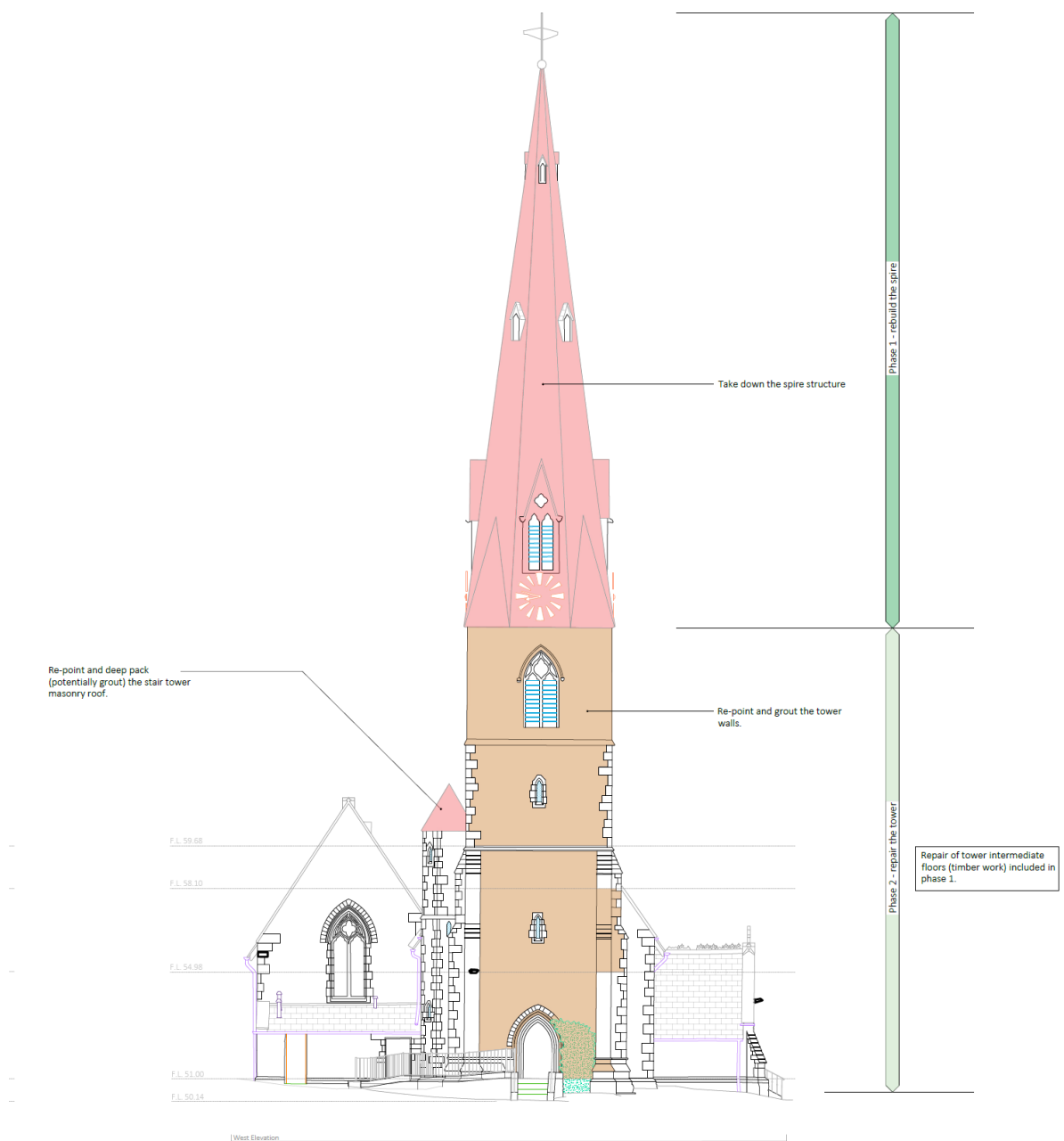
Phase 1 - Take down the spire and rebuild it.

Order of cost circa £650,000.

Phase 2 repair the tower – re-point/grout the tower. May not be necessary if water ingress issues are addressed by phase 1.

Order of cost circa £200,000 including scaffold.

Combined cost of phase 1 and 2 concurrently: circa £750,000 including scaffold.



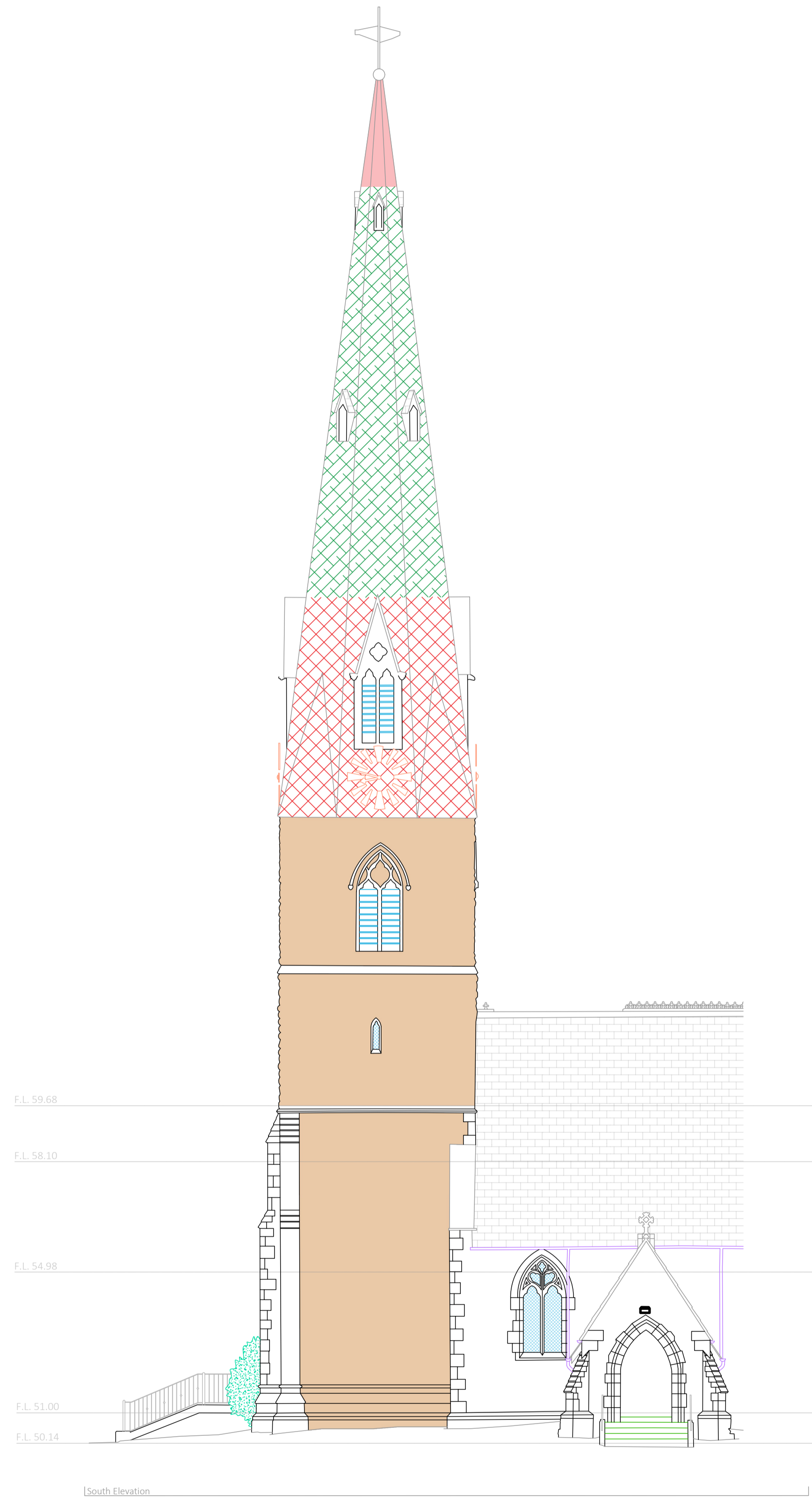
Summary and recommendations

A repair solution does seem viable, subject to site trials if they can be afforded. The approvals process for a repair option will be simplest.

Taking down the spire entirely will be subject to stringent control and approval procedures as well as likely to attract substantial local opposition (landmark building). However, this is the least costly option.

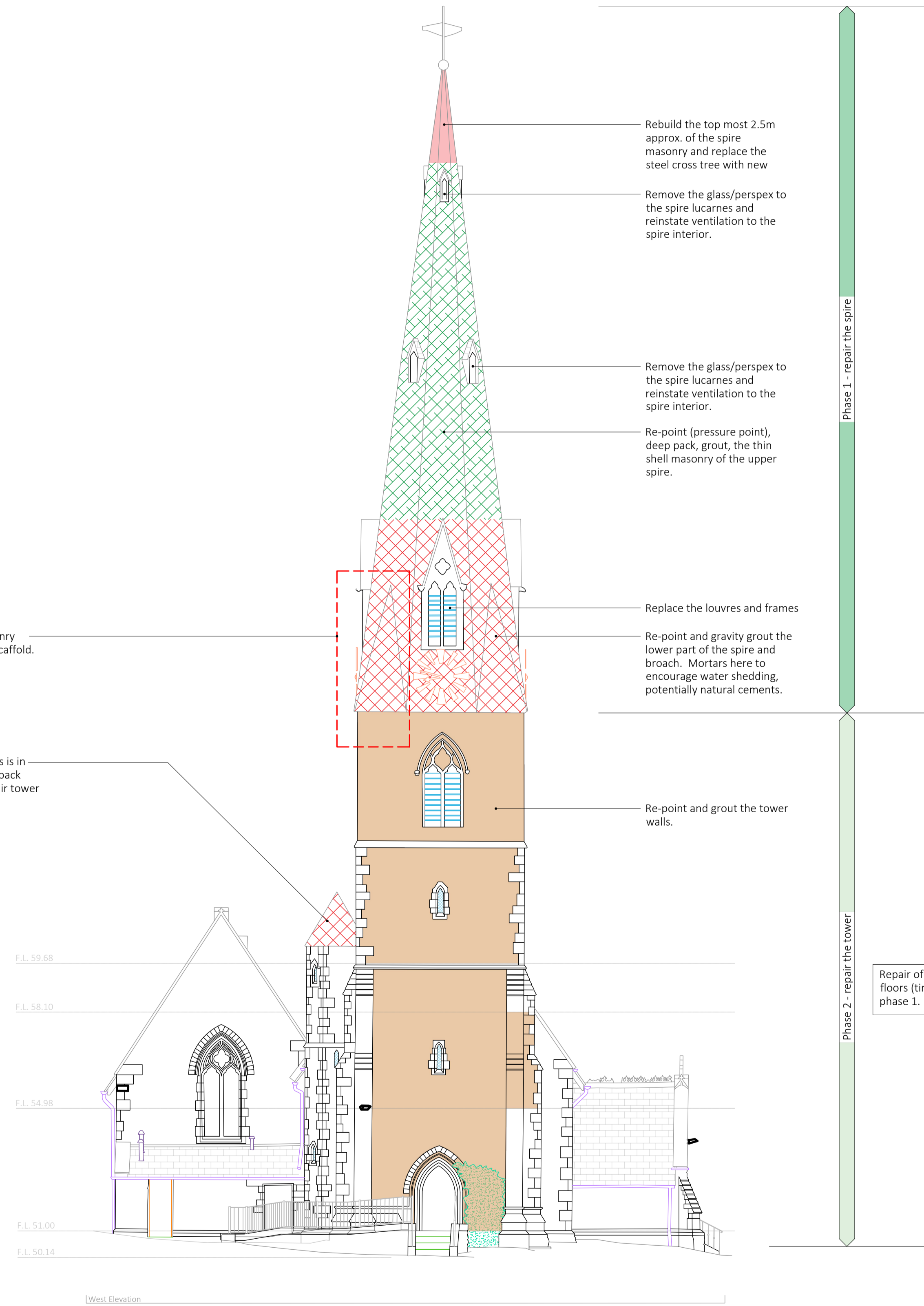
Rebuilding the spire completely could only be justified if site trials prove that repair intervention will unlikely be successful in substantially reducing water ingress.

Regardless of any other works, the spire tip (the topmost 2.5m approx.) needs to be taken down and rebuilt with new stone and a new steel cross tree tensioning system.



Possible location of masonry repair trials using lower scaffold.

During trials, whilst access is in place, re-point and deep pack (potentially grout) the stair tower masonry roof.



Rebuild the top most 2.5m approx. of the spire masonry and replace the steel cross tree with new

Remove the glass/perspex to the spire lucarnes and reinstate ventilation to the spire interior.

Remove the glass/perspex to the spire lucarnes and reinstate ventilation to the spire interior.

Re-point (pressure point), deep pack, grout, the thin shell masonry of the upper spire.

Replace the louvres and frames

Re-point and gravity grout the lower part of the spire and brooch. Mortars here to encourage water shedding, potentially natural cements.

Re-point and grout the tower walls.

Phase 1 - repair the spire

Phase 2 - repair the tower

Repair of tower intermediate floors (timber work) included in phase 1.

REV	COMMENT	BY	DATE

THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS ON THE JOB BEFORE STARTING WORK OR PREPARING SHOP DRAWINGS. ANY DISCREPANCIES MUST BE REFERRED TO THE ARCHITECT. DO NOT SCALE FROM THIS DRAWING.

COPYRIGHT ON ALL DRAWINGS, SPECIFICATION AND DOCUMENTATION REMAINS THE PROPERTY OF JOHN COWARD ARCHITECTS LTD. AND MUST NOT BE COPIED OR REPRODUCED IN WHOLE OR IN PART IN ANY MANNER OR FORM WITHOUT PRIOR CONSENT OF THE COMPANY.

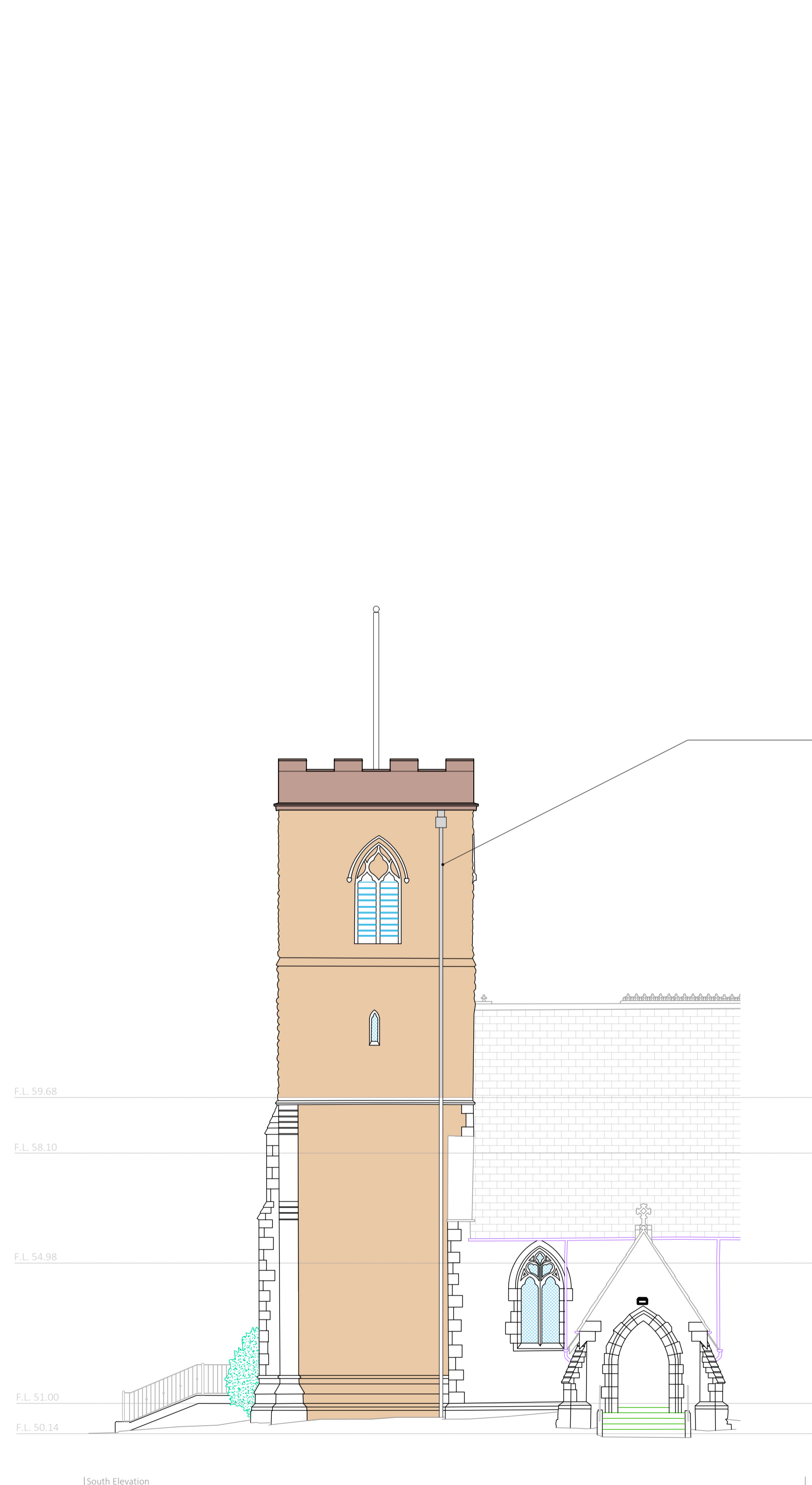
PROJECT

**Options Appraisal
Spire and Tower water ingress issues**

CLIENT
PCC of St Thomas Musbury

TITLE
Option 1 - repair the spire and tower

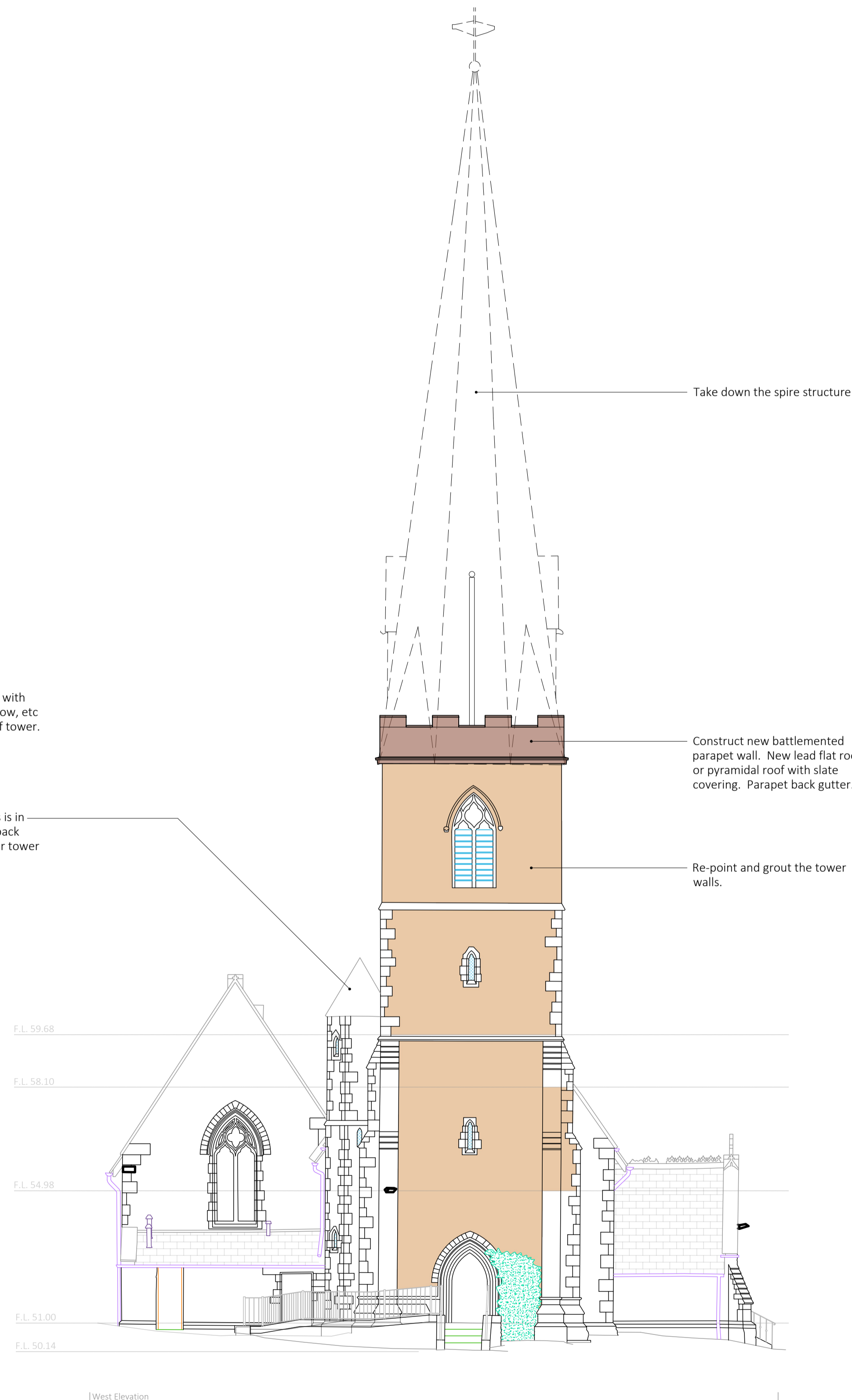
SCALE/ A1	DRAWN	CHECKED	DATE
1:100	mjd	-	21-09-2023
JOB NO	DRAWING NO	REVISION	
22073	01	-	



South Elevation
 Note: omitted spire not shown

New rainwater down pipe with through wall chute, overflow, etc on south and north side of tower.

During trials, whilst access is in place, re-point and deep pack (potentially grout) the stair tower masonry roof.



Take down the spire structure

Construct new battlemented parapet wall. New lead flat roof or pyramidal roof with slate covering. Parapet back gutter.

Re-point and grout the tower walls.

Repair of tower intermediate floors (timber work) included in phase 1.

West Elevation

REV	COMMENT	BY	DATE

THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS ON THE JOB BEFORE STARTING WORK OR PREPARING SHOP DRAWINGS. ANY DISCREPANCIES MUST BE REFERRED TO THE ARCHITECT. DO NOT SCALE FROM THIS DRAWING.

COPYRIGHT ON ALL DRAWINGS, SPECIFICATION AND DOCUMENTATION REMAINS THE PROPERTY OF JOHN COWARD ARCHITECTS LTD. AND MUST NOT BE COPIED OR REPRODUCED IN WHOLE OR IN PART IN ANY MANNER OR FORM WITHOUT PRIOR CONSENT OF THE COMPANY.

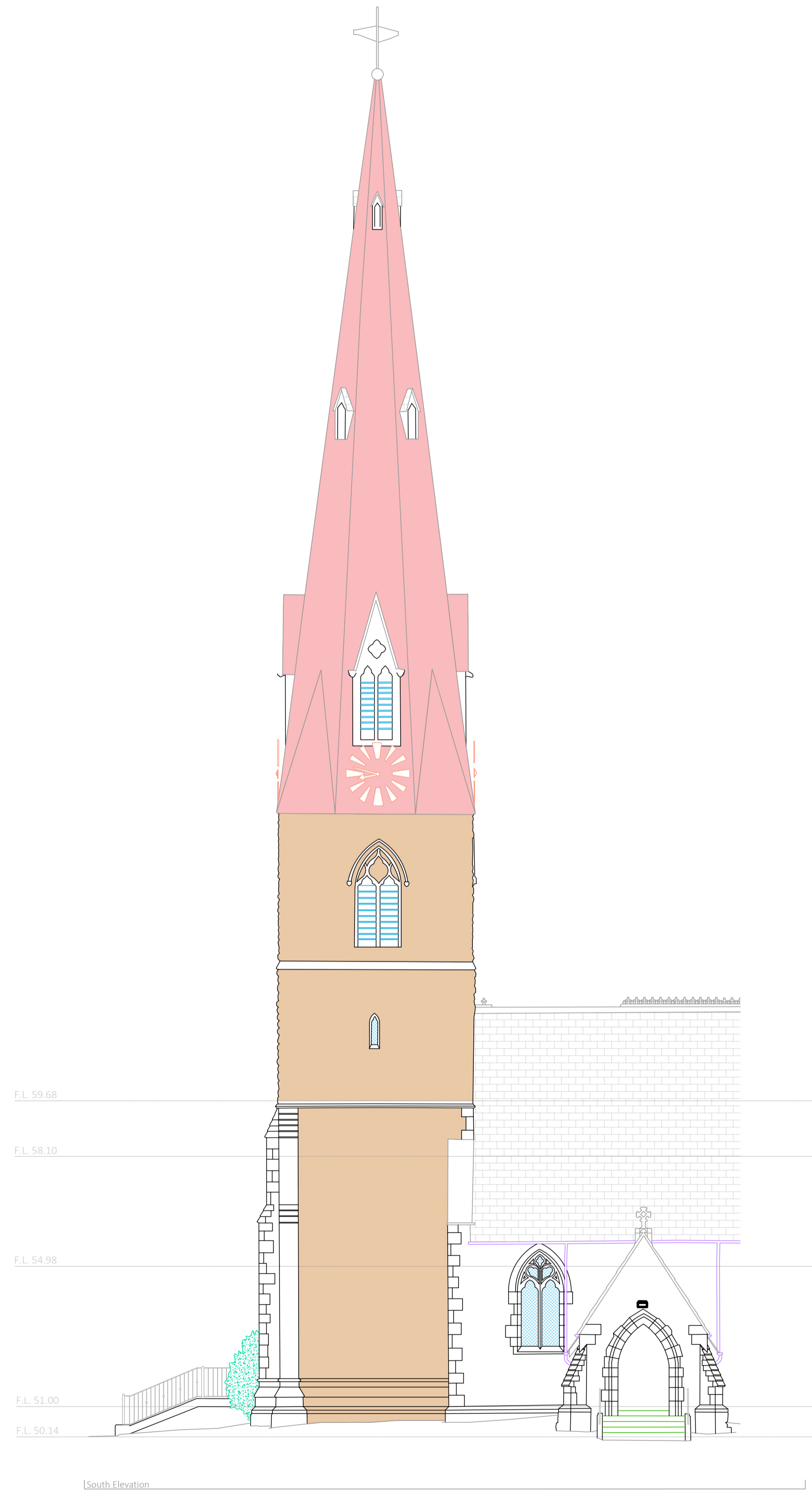
PROJECT

**Options Appraisal
 Spire and Tower water ingress issues**

CLIENT
 PCC of St Thomas Musbury

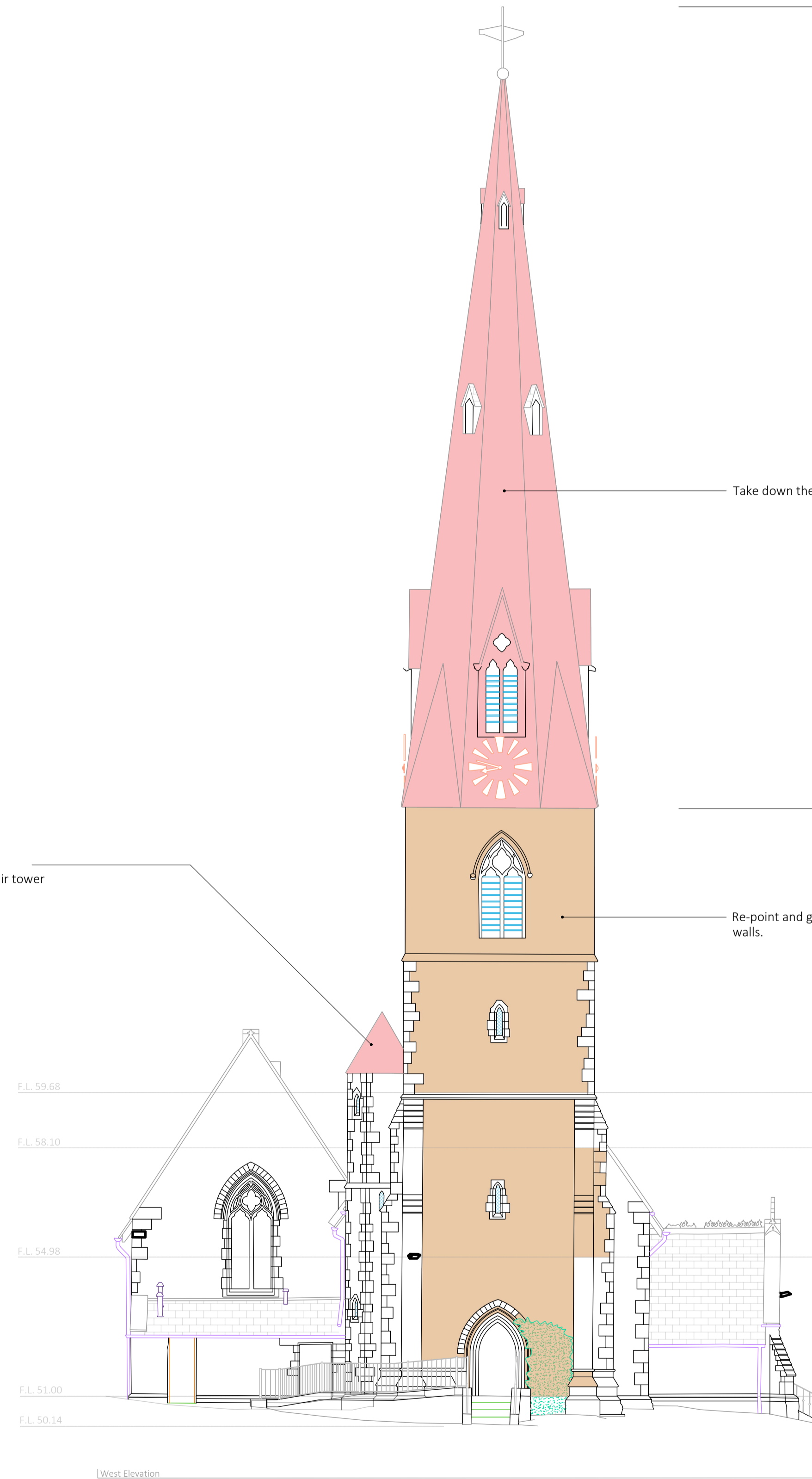
TITLE
 Option 2 - take down the spire

SCALE/ A1	DRAWN	CHECKED	DATE
1:100	mjd	-	21-09-2023
JOB NO	DRAWING NO	REVISION	
22073	02	-	



South Elevation

Re-point and deep pack (potentially grout) the stair tower masonry roof.



West Elevation

Take down the spire structure

Re-point and grout the tower walls.

Phase 1 - rebuild the spire

Phase 2 - repair the tower

Repair of tower intermediate floors (timber work) included in phase 1.

REV	COMMENT	BY	DATE

THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS ON THE JOB BEFORE STARTING WORK OR PREPARING SHOP DRAWINGS. ANY DISCREPANCIES MUST BE REFERRED TO THE ARCHITECT. DO NOT SCALE FROM THIS DRAWING.

COPYRIGHT ON ALL DRAWINGS, SPECIFICATION AND DOCUMENTATION REMAINS THE PROPERTY OF JOHN COWARD ARCHITECTS LTD. AND MUST NOT BE COPIED OR REPRODUCED IN WHOLE OR IN PART IN ANY MANNER OR FORM WITHOUT PRIOR CONSENT OF THE COMPANY.

PROJECT

**Options Appraisal
Spire and Tower water ingress issues**

CLIENT
PCC of St Thomas Musbury

TITLE
Option 3 - rebuild the spire

SCALE/ A1	DRAWN	CHECKED	DATE
1:100	mjd	-	21-09-2023
JOB NO	DRAWING NO	REVISION	
22073	03	-	