

Design and Condition Report
Old Sarum Airfield
Repairs to Hangar 3,
9765 / A05a
September 2025



Document Control

Revision	Description	Originator	Approved	Date
A00	Draft Issue	DF	EB	18 10 2023
A01	Cast Iron Gutters / Windows Omitted	DF	EB	19 12 2023
A02	Post-Storm damage notes added	DF	EB	15 02 2024
A03	Update to hatching as requested by Wiltshire Conservation Officer	RK	EB	01.03.2024
A04	Updated following comment by Wiltshire Conservation Officer	RK	EB	01.03.2024
A05	Additional chapters 9.0 and 10.0 added	EB	EB	01.10.2025
A05a	Minor text updates	EB	EB	15.10.2025
A06	Reference to Appendix E added / update to contents page to include Appendices.	EB	EB	03.11.2025

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Appendix A. Tim Radcliffe. Old Sarum Airfield, Hangar 3, Condition Report, 2023.

Appendix B. James Carroll, Ltd - The Hangar 3 Project: Truss Repair Method

Appendix C. Feilden+Mawson - 9441 110 A04 DAS

Appendix D. Feilden+Mawson - Conservation Management Plan D21

Appendix E. Integral Engineering - Structural Survey Report P01

1.0 Introduction

This Design and Condition Report has been prepared to add detail and confidence to Historic England on how Hangar 3 at Old Sarum Airfield can be repaired as part of the requirement of the Outline Planning Application no: PL/2023/07368 for the masterplan and regeneration of Old Sarum Airfield.

Old Sarum Airfield is located approximately 3km north of the city of Salisbury and is an active aerodrome with a flying field and associated military buildings. It is a Conservation Area with both WWI and WWII buildings, several of which are now Listed.

Old Sarum Airfield is a working airfield and the intent is to store aircraft in Hangar 3 once more.

As outlined in Appendix A, “Old Sarum Airfield, Hangar 3, Condition Report, 2023”:

“The hangars at Old Sarum airfield are of historic interest because they are an early example of large structures built to accommodate aircraft. They are of particular significance because the large spans were achieved using timber lattice trusses (known as Belfast trusses), rather than steel. Their importance is reflected in their Grade II Listing, as relatively unchanged examples of buildings of this type.”*

All three hangars were placed on Historic England’s Heritage at Risk Register in November, 2020. Hangar 3 is in poorest condition, with the roof having now partially collapsed.

It is proposed to repair / replace the damaged or missing trusses and to re-roof the hangar with a standing seam roof.
Repairs / rebuilding will also need carrying out to the walls, doors, floor, clerestory windows and rooflights.

The repairs to the Belfast trusses and roof are to be carried out in strict accordance with Appendix B, “The Hangar 3 Project: Truss Repair Method” prepared by James Carroll, Ltd. who have long experience of repairing and renovating Grade II* Listed historic aircraft hangars.

The renovation of an identical hangar has recently been successfully carried out by them at Hooton Park, Ellesmere Port.

The proposed repairs and renovations to Hangar 3 are intended to make the building wind and watertight, to bring it back into use as one of the last remaining historic hangars on an active airfield and allow it to be removed from HE’s Risk Register.

This Report is to be read as an adjunct to the Old Sarum Masterplan DAS submitted as part of Outline Planning Application Reference PL/2023/07368: Land at Old Sarum Airfield, Salisbury, Wilts, SP4 6DZ (Officer name: Richard Hughes).

This report is a development of the report produced by Tim Ratcliffe Associates, dated June 2023 and includes recommendations from the report produced by Matthew Knight of Historic England, dated 25th July 2023.

Included as Appendix C of this Report.

Appendix D is the Conservation Management Plan prepared for the whole Old Sarum Airfield and contains detailed descriptions of all historic buildings on site and their history for reference.

Appendix E is the Structural Report Rev P01 by Integral Engineering Design dated 03.09.2025

2.0 Wiltshire Core Policy 25

The repairs to Hangar 3 are to be carried out in compliance with Wiltshire Core Policy 25 (below) as part of the Masterplan development of outer areas of the site with the intent of keeping the building in use “for aircraft storage, its original design use and optimum beneficial use.”

Wiltshire Core Policy 25

New development will only be permitted on Old Sarum Airfield if it delivers:

- i. A long-term proactive strategy for the enhancement of the Conservation Area including management plan and public access and visitor/interpretive material on its historic relevance
- ii. A high quality strategic landscape improvement to mitigate impacts of existing intrusive buildings, to soften impacts when viewed both out and into the Conservation Area and from Old Sarum Scheduled Ancient Monument
- iii. The completion of a legal agreement (section 106) to agree reasonable controls over flying activity in the interests of the amenity of local residents
- iv. Submission, agreement and implementation of a development master plan, which delivers a high quality development that takes opportunities to enhance the historic environment and protects the amenity of existing residents
- v. Retains and safeguards flying activity from the airfield
- vi. Provides community benefit for the Old Sarum residents.

In accordance with the requirements of Core policy 25 the proposals deliver the following:

- Implementation of the Conservation Area Management Plan contained in the Atkins Conservation Area Assessment 2006.
- A Development Master Plan, which delivers a high quality development that takes opportunities to enhance the historic environment and protects the amenity of existing residents
- Continued flying activity from the airfield for the foreseeable future.
- Provision of controls over flying activity which would not exist otherwise to mitigate any noise nuisance from flying.
- Control of agricultural activity on the airfield to avoid negative impact on the setting of the hangars and the scheduled ancient monument.
- Enhancement of the setting of the designated hangars by clearing the clutter between them and the flying field and by maintaining the aircraft movements between the hangars and the flying field which are key to their setting and understanding of their cultural value.
- Repair of hangar 3 which is in poor condition.
- Keeping hangar 3 in use for aircraft storage, its original design use and optimum beneficial use.
- Initiating a training programme for historic aircraft repair and conservation skills.
- Enhancing the setting of the Old Sarum Scheduled Monument (and the Stratford sub Castle Conservation Area) by screening the negative visual impact of the existing industrial buildings at the west end of the industrial estate.
- Providing improved public access to the flying field and the rest of the conservation area through the creation of linked footpaths with specific viewing points to show the relationship between the grass flying field and the listed WWI hangars, of key significance as identified in the revised listing descriptions.
- Working with neighbouring owners to link the footways to a wider system leading to the scheduled monument and other destination sites in the area, making them more attractive to visit on foot.
- Highlighting the line of the Portway across area A which enhances the setting of the Scheduled ancient monument by showing more clearly its relationship with the roman road.
- Setting up a site for an airborne forces commemorative centre.
- Continuing a programme of flying historic aircraft which benefit from the use of a grass flying field.
- Establishing flying links with other fields which host historic aircraft.

3.0 Proposed Scope of Works

GENERAL:

The general aim is to prevent any further deterioration of the fabric after the collapse of a large part of the roof, by the careful removal of the old asphalt and timber roof finish, the repair of those trusses deemed fit for repair and the construction of new Belfast trusses all to match existing.

At time of writing, 8 trusses in the northern bay and 8 trusses in the southern bay have failed and are not repairable.

About 4 - 6 trusses, looked, at the time of Tim Ratcliffe Associates' Condition Report in April, 2023, as though they could be repaired in-situ.

There has likely been further deterioration since.

Please refer to Appendices A & B for detailed proposals for the repairs.

The remainder of the trusses are in a relatively poor state. Although they could potentially be repaired, the extent of replacement timbers needed (about 75%) and the cost of in-situ repairs means that this is unlikely to be viable.

The roof would be replaced with a standing seam roof as was the case at Hooton Park. The central timber and bitumen gutter would be best replaced by stainless steel with rubber expansion joints at 20m intervals (as was carried out at Hooton Park).

Substantial brickwork repairs will be necessary - these should be based on a condition report with marked-up drawings to show areas of repair, retained, existing / retained trusses and new; these to be precisely specified after a later survey by a Structural Engineer.

The central rooflight sections that are beyond repair are to be replaced with new all to match.

The surviving rooflights are to be carefully removed and restored and those repaired, reglazed where necessary, with any missing or irreparable windows replaced like for like.

There are profiled asbestos-cement cladding panels to one face above the clerestory windows. These are to be examined by specialist with a view to retaining them if at all possible, but if they are found unsound and in a dangerous condition they are to be safely removed and disposed of by a specialist contractor in accordance with the Control of Asbestos Regulations.

The main hangar doors at each end are on runners and open into large, brick gantry towers. The intent is to overhaul and reinstate the four central leaves at each end of the hangar with the outer leaves remaining fixed. This will enable full, practical use of the hangar. Brickwork repairs will be necessary to at least one of the gantry towers.

There are single-storey, lean-to annexes running either side of the hangar; these are mostly original with some possible later infill.

Localised repointing and repair to the brickwork is proposed, together with making good where possible (and replacement like for like where impracticable) the doors, windows, ceilings and internal decorations.

Replacement of the existing felt roofs is also recommended.

All rainwater goods are to be replaced, together with overhaul of the gullies and below ground drainage.

There are currently three timber-clad and temporary (marquee) buildings adjacent to the south elevation of Hangar 3, one of which (a cafe) actually adjoins Hangar 3.

Two of these buildings (the cafe to the west and the Sky Dive Parachuting office to the east) will be demolished as part of the works and any making good to the fabric of Hangar 3 associated with their removal carried out.

The cafe and Sky Dive Parachuting office are to be relocated into improved facilities as part of Masterplan works.

The small central building of this group of three will be retained, protected and made good as found necessary. This building dates from 1917 and was listed on the RAF site plan of 1939 as the "Flight Commander's Office and gas chamber" and so retaining it contributes positively to the Conservation Area by its historical association with the other surviving WWI airfield buildings.

The current condition of Hangar 3 renders it unsafe for internal survey work to be carried out. A large amount of debris and trapped vehicles needs to be removed before safe access is possible.



Hangar 3 from the south in 1923 with Flight Commander's hut highlighted.

SCHEDULE OF PROPOSED WORKS:

1.0 Condition at start of siteworks: Once planning permission is approved and consent is in place for the repair works and site work is imminent, the appointed Structural engineer will re-inspect the condition of the building and agree the sequence and details of work appropriate at that stage. This will be the first phase of the wider Masterplan.

1.1 The sequence of work will be to stabilise the masonry structure supporting the roof first, followed by the repair / rebuilding of the roof structure and associated works.

1.2 Handling: All work on disengagement and lowering of Belfast trusses (those that cannot be repaired in-situ) will be from long-reach cherry picker working from above while trusses are supported by crane.

1.3 Lifting frame: The Structural Engineer will agree the design and construction of a suitable lifting frame with the general contractor and his craneage subcontractor.

1.4 A temporary holding area on the external concrete apron shall be prepared to receive the trusses until such a stage is reached when storage inside the hangar is deemed safe. Temporary storage will be in the form of sleeper or similar timber spreaders with provision for raking props to hold trusses vertically and cover by Visqueen sheets.

1.5 For those trusses considered repairable in-situ: Scaffolding support towers to be installed to allow safe access to the work area. Best practice is to scaffold the full length of each truss. The truss should then be secured as specified in Appendix B, Stage 1 and repairs carried out in accordance with Appendix B, (James Carroll Ltd: The Hangar Three Project - Truss Repair Method). Stages 2 through 9.

2.0 Careful removal of all remaining roof structure above Belfast trusses. This includes the central rooflights.

2.1 Specialist checking for any possible asbestos in the existing roof structure to be carried out and if any found, to be safely disposed of by specialist contractor in accordance with the Control of Asbestos Regulation, 2012.

2.2 Rooflight members should be removed carefully, referenced for location and stored for refurbishment. Any replacement rooflights to be galvanised steel T-Sections to match existing with lead flashing / capping to match.

3.0 Repairs to masonry structure: All to be carried out in strict accordance with Structural Engineer's specification, including construction of central arches where collapsed, all to match existing. Repair / stitching of brickwork to all areas of Hangar 3, including the sloping buttresses along each flank wall and the brick gantry towers supporting the main hangar door runners.

3.1 Single storey outshots along each flanking wall: The masonry to be inspected by the Structural Engineer and any necessary repairs made in strict accordance with their specification / drawings.

3.2 A decision must be made at this stage, which of the original single storey outshots are original and thence to be repaired and which - if any - are later and merit demolition. Also, the Structural Engineer should make a decision as to how much - if any - of the single skin brickwork above the clerestory windows can be retained and repaired and how much replaced like for like.

3.3 Modern infill to central brick arcade consisting various heights of blockwork wall and glazing to be removed and brickwork made good all round.

3.4 Windows doors, studwork partitions, ceilings, felt flat roofs and internal / external decorations to the single storey outshots to be carried out as deemed necessary after inspection and survey. Consideration given to insulation and build-up of replacement roofs.

4.0 Repair of existing / construction of new Belfast trusses: all to be in strict accordance with Appendix B: (James Carroll Ltd: The Hangar Three Project - Truss Repair Method). Stages 2 though 9, including lifting into place and securing.

4.1 Once supporting structure is structurally safe, all repaired / replacement Belfast trusses to be lifted into position and secured in place. Rafters, purlins and support struts all replaced like for like and secured to satisfaction of Structural Engineer.

4.2 New roof to be constructed over Belfast trusses, to be standing seam roof on purlins between Belfast trusses. Consideration should be given at Stage 4 as to whether to add insulation to the build-up.

4.3 Rooflights to be reinstalled including any areas where replacements are necessary, waterproofed at junction with new roof and made good all round.

4.4 Specification of timber to be used in new / repaired Belfast trusses: Softwood grading to BS 4978 or BS EN 519 or other national equivalent and so marked. Strength class to BS EN 338: C24. Treated with organic solvent impregnation to NBS section Z12 and British Wood Preserving and Damp-Proofing Association Commodity Specification C8, service life: 40 years. Dimensions indicated on finished working drawings.

5.0 Clerestory windows to flanking walls: These to be inspected and any considered unrepairable to be replaced like for like. All broken glass to be carefully removed and replaced like for like. Clean down metalwork and prepare and paint finish to match existing.

6.0 Asbestos cement profiled cladding to one flanking wall at high level: Prior to commencement of any works these panels are to be inspected by a specialist contractor and their suitability for retention or removal decided. There is an historical argument for their retention and should only be removed if deemed unsafe. If found necessary they should be removed prior to other works and safely disposed of by specialist contractor in accordance with the Control of Asbestos Regulation, 2012.

7.0 Main hangar doors and gable walls over: These to be carefully taken down and stored safely for reinstallation including gable cladding and any structure in unsalvable state, the doors themselves and their top and bottom runners and operating gear.

7.1 Curved gables to be rebuilt like for like and made good all round.

7.2 Main hangar doors to be inspected structurally and any repairs deemed necessary carried out in preparation for reinstallation, including decorative finishes.

7.3 Door runners, cabling and operating gear to be completely refurbished and / or replaced as found necessary on inspection. The four central leaves at each end will be fully functional with the two outer leaves remaining fixed.

7.4 Drainage channels at foot of main hangar doors to be cleaned and made good, including replacement of any cracked grilles.

8.0 Rainwater goods and drainage: All to be replaced and any cracked / blocked gullies replaced or repaired as deemed necessary.

8.1 Central valley gutter to be removed and replaced with new, stainless steel gutter with rubber expansion joints at every 20m. New, standing seam metal roof to drain into central valley gutter in strict accordance with standard details of chosen manufacturer. Hoppers and downpipes to be replaced with new.

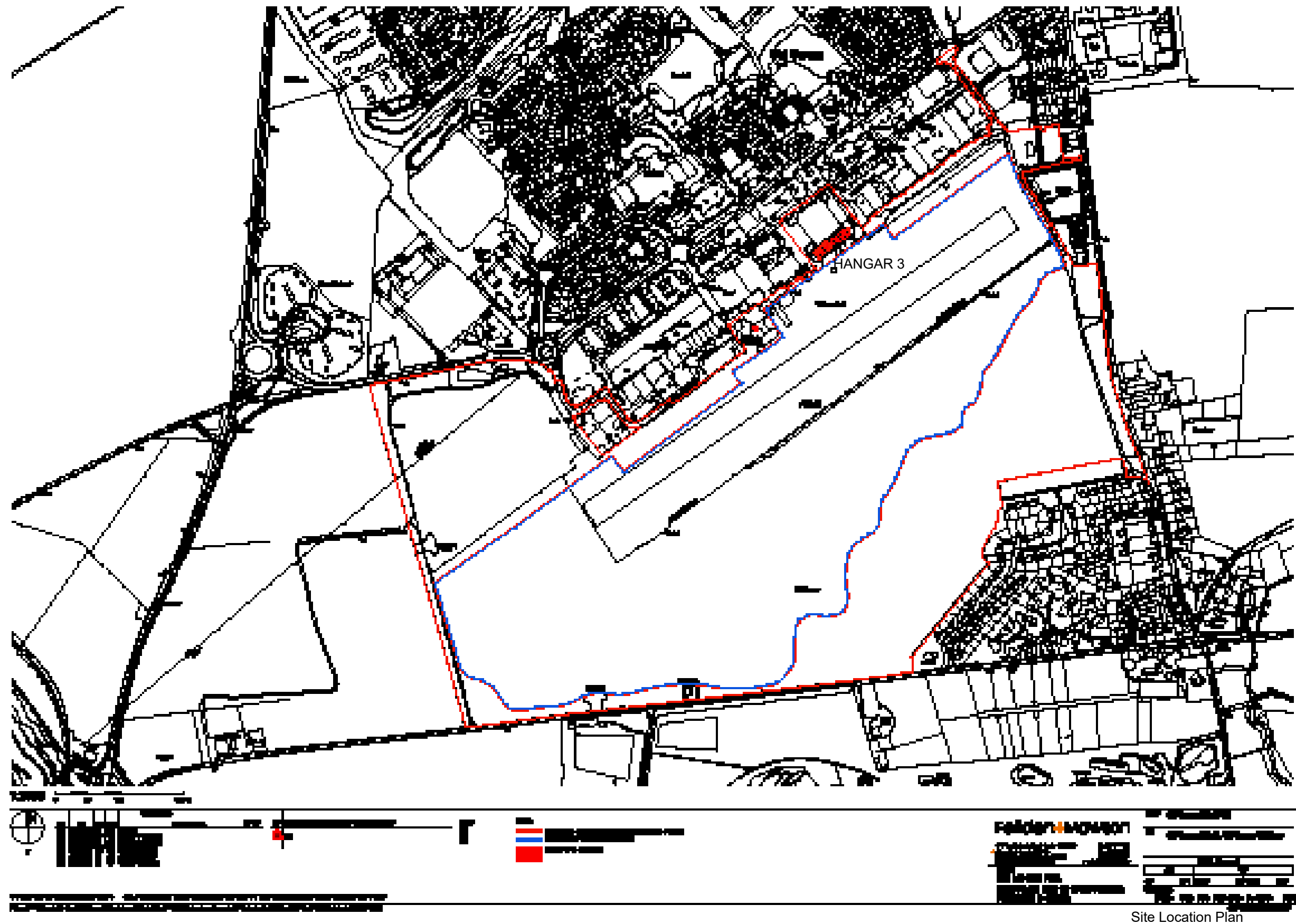
9.0 Generally, all modern infill structures, whether brick, block or timber to be removed and adjacent original structure made good.

9.1 All electrical wiring and fittings to be removed and replaced with new; final spec. and locations of fittings tba.

9.2 Existing surface water drainage from hangar to be inspected and any repairs / replacements made as found necessary.

9.3 All surfaces internally and externally to be cleaned down, prepared and redecorated in colours to match original.

4.0 Context - Location and Setting



Site Location Plan

Site Access Plan



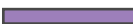
5.0 Supporting Plans, Sections, Elevations and 3D Truss Drawings (Drawings taken from 2017 Report with Annotations Based on April 2023 Report and Photographs).

The following drawings are taken from the 2017 report highlighting the proposed work required to the Hangar 3.

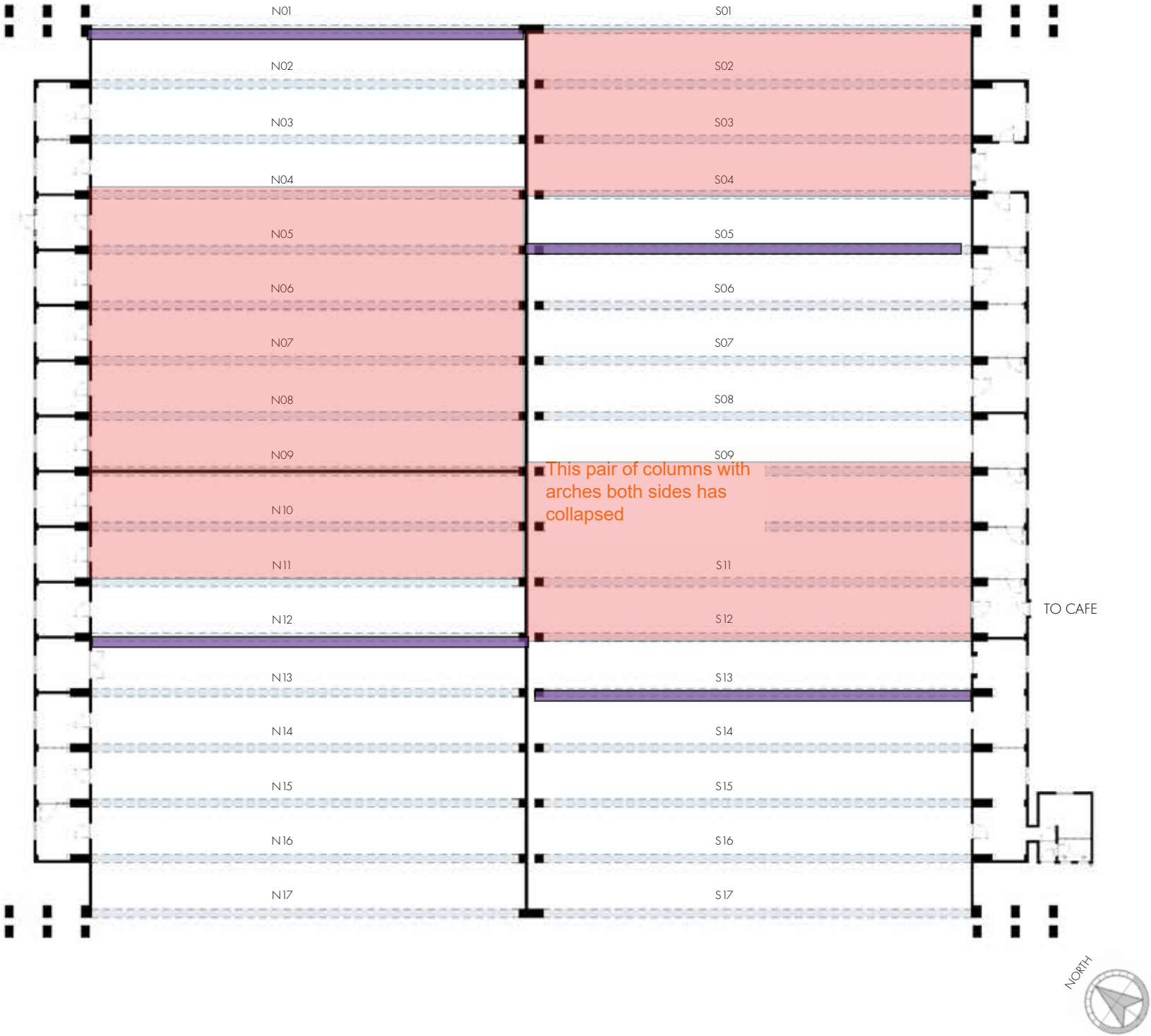
We have added further annotations/hatching to highlight further findings from the April 2023 conditions report & supporting photographs. F+M to review Hangar 3 with Historic England on site to assess the findings and highlight any further deterioration to agree extent of works.

F+M additional annotations and hatches are shown in orange on the following pages.

LEGEND

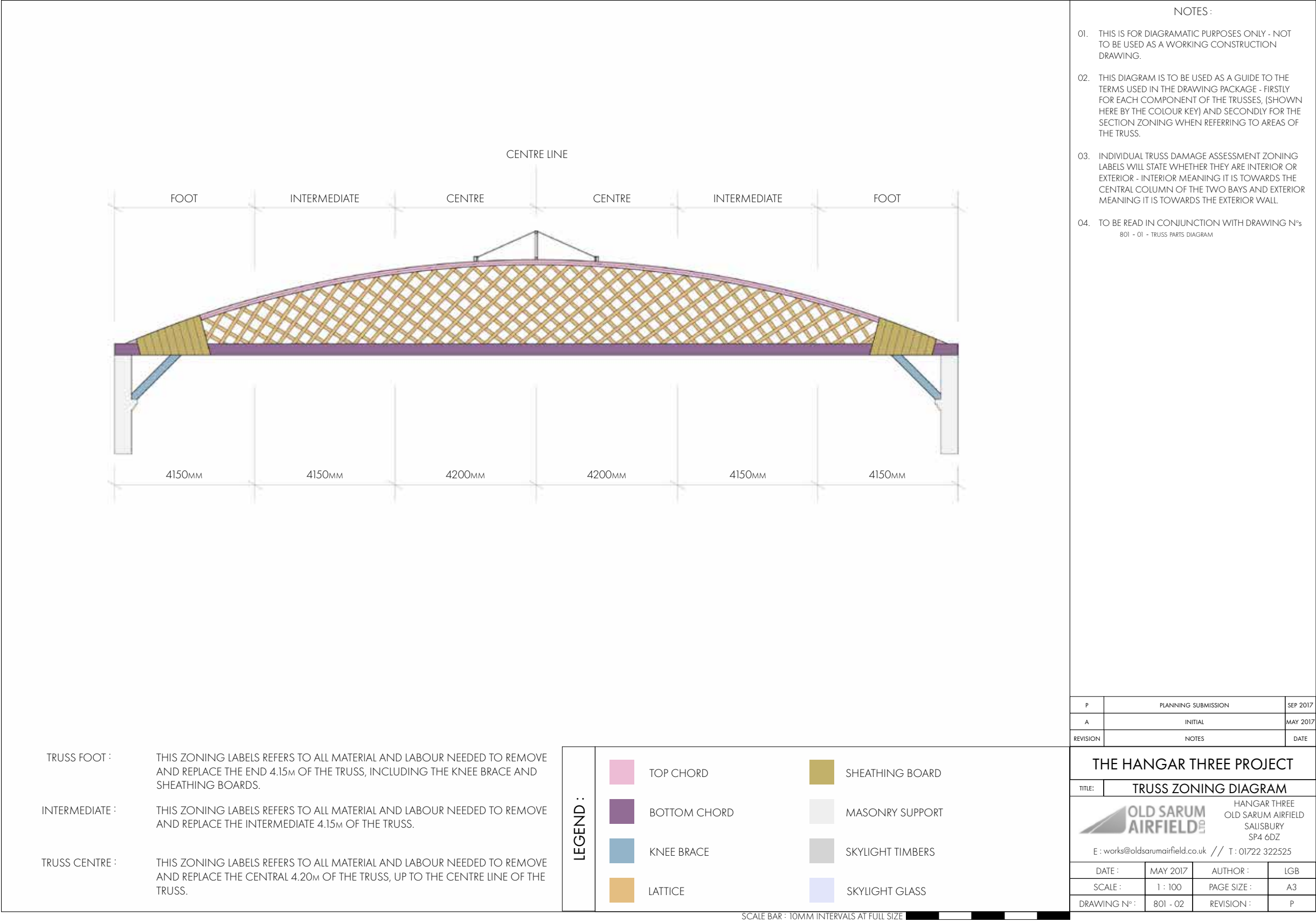
-  Indicates collapsed roof and trusses.
-  Indicates truss identified as potentially repairable by Tim Ratcliffe in April, 2023.
-  Remaining trusses in poor condition unlikely for viable repair.

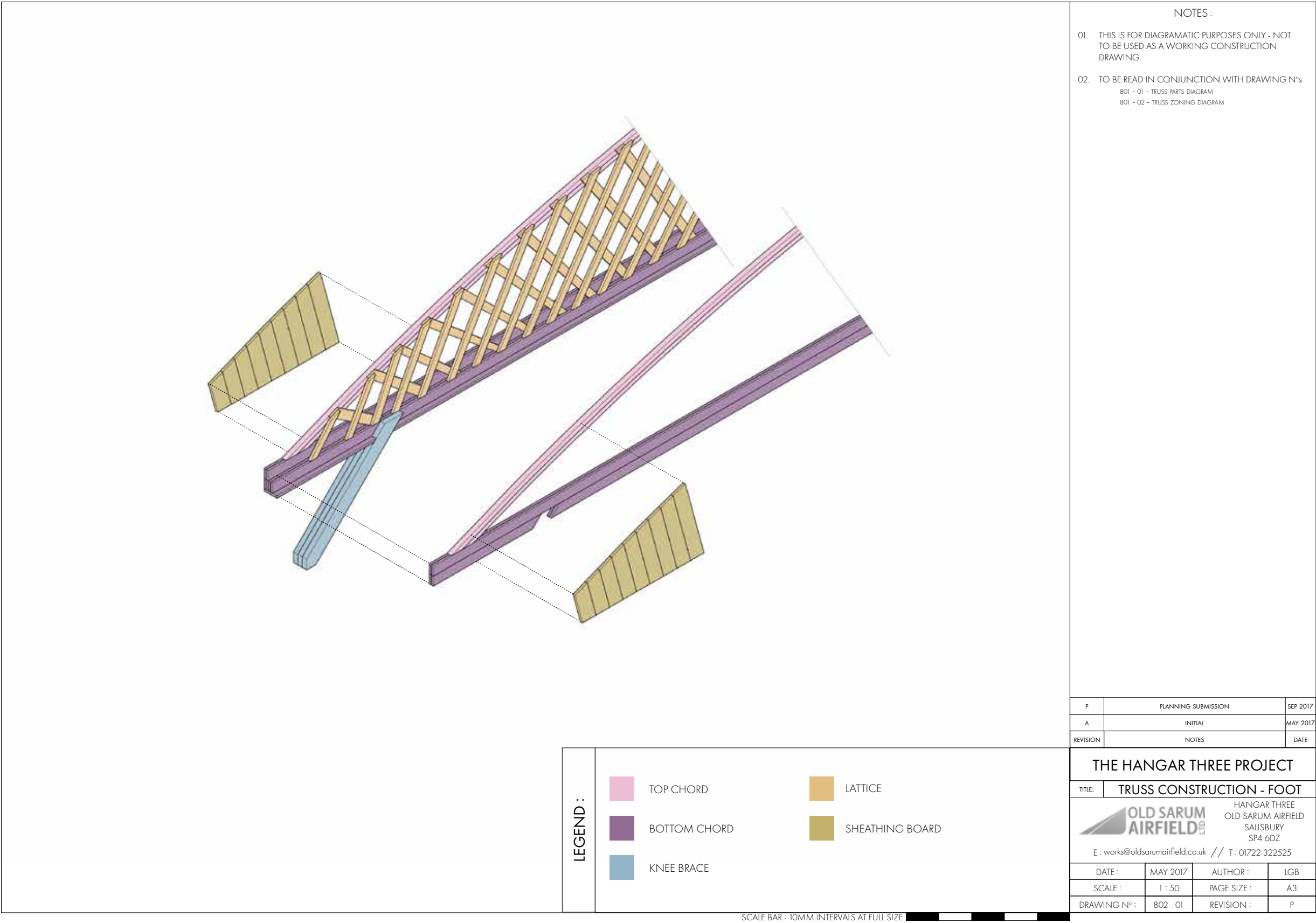
TRUSS

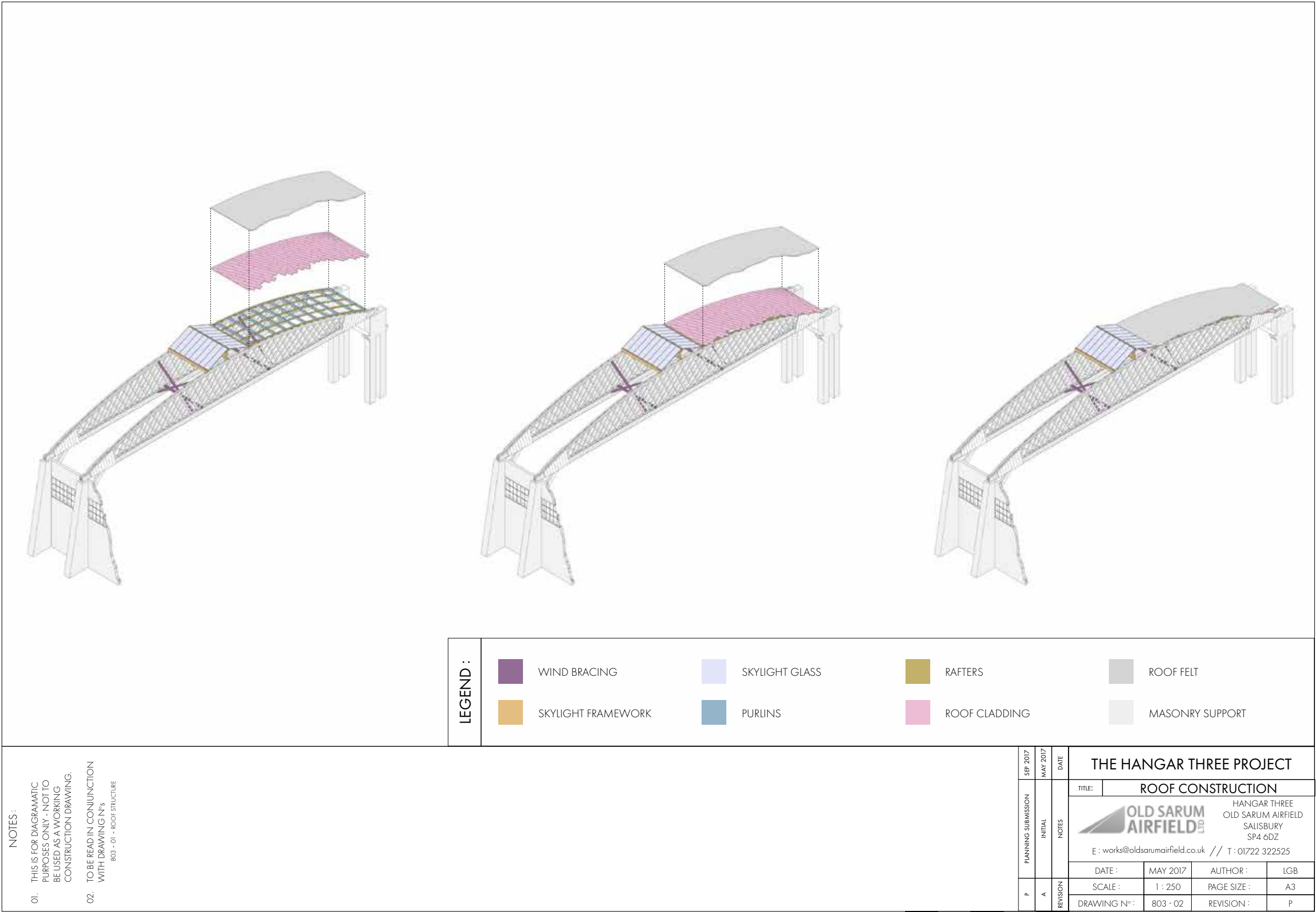


Location of Existing Trusses- Truss Location Plan 2017 Report

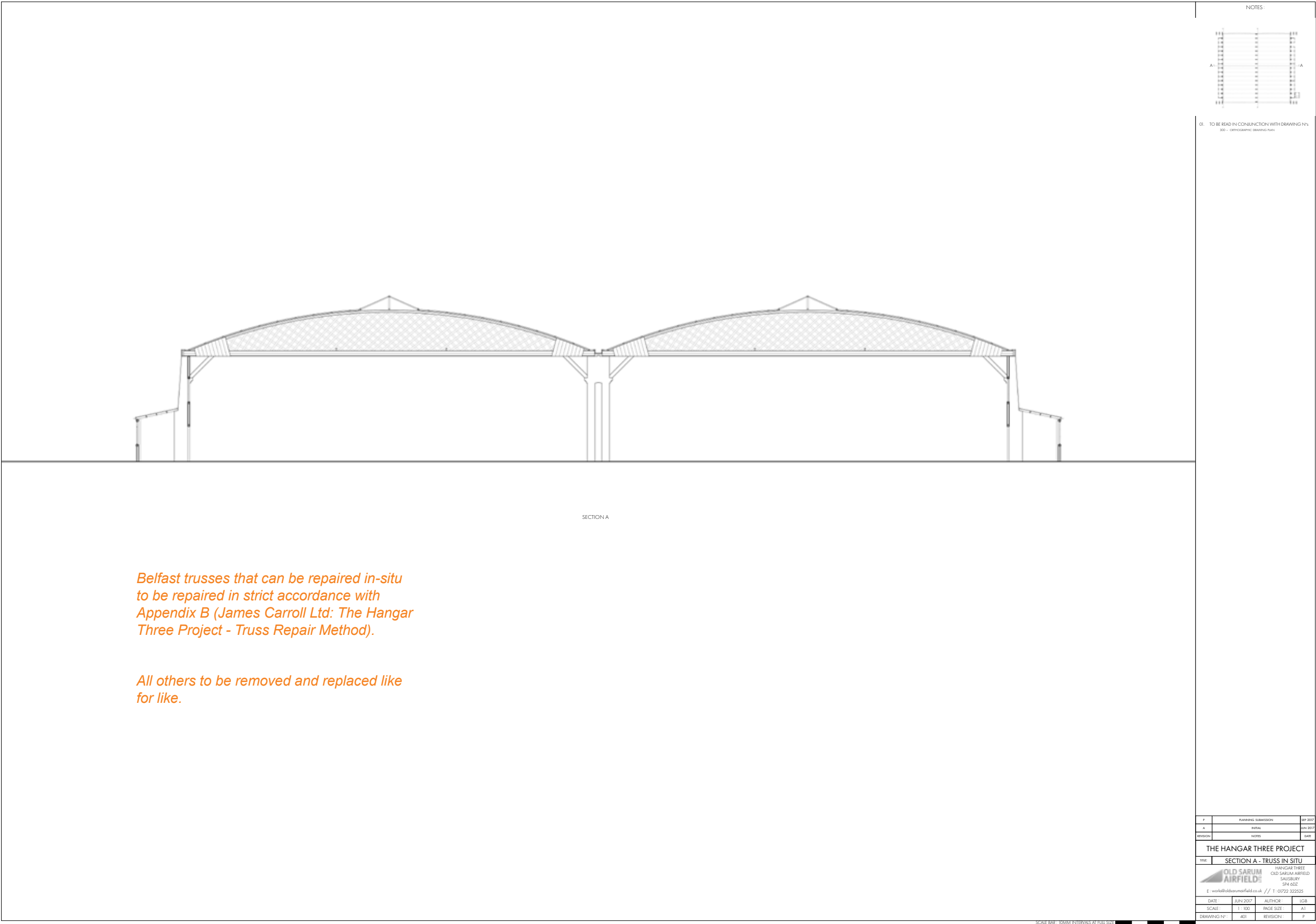


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Existing Sections Showing Those Trusses Still In-Situ

LEGEND

Shading indicates state of central arcade columns / arches.



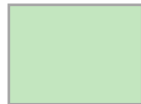
Destroyed.



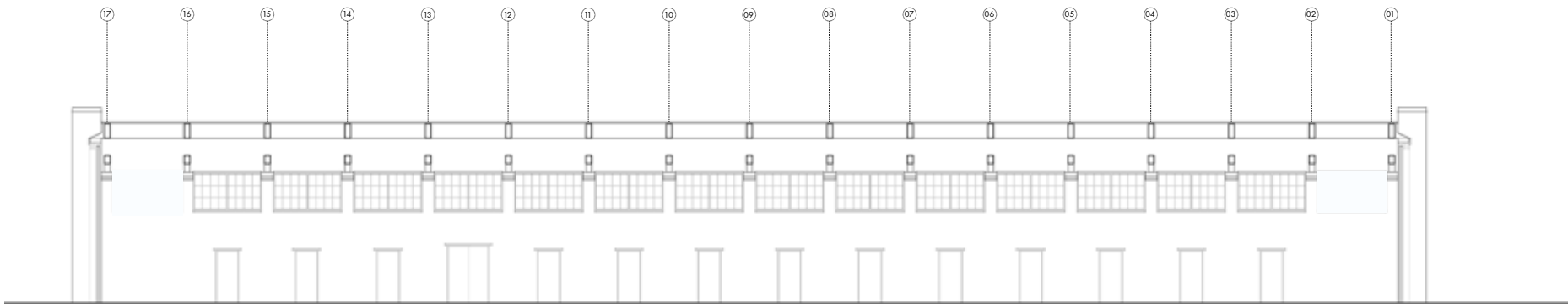
Severely damaged



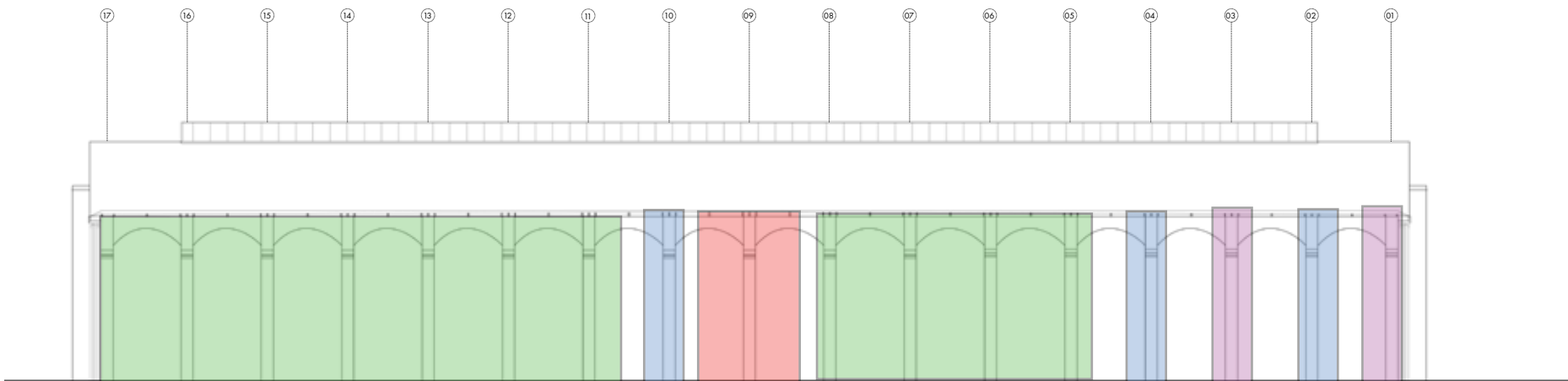
Damaged



No damage



SECTION B - EXTERNAL MASONRY WALL



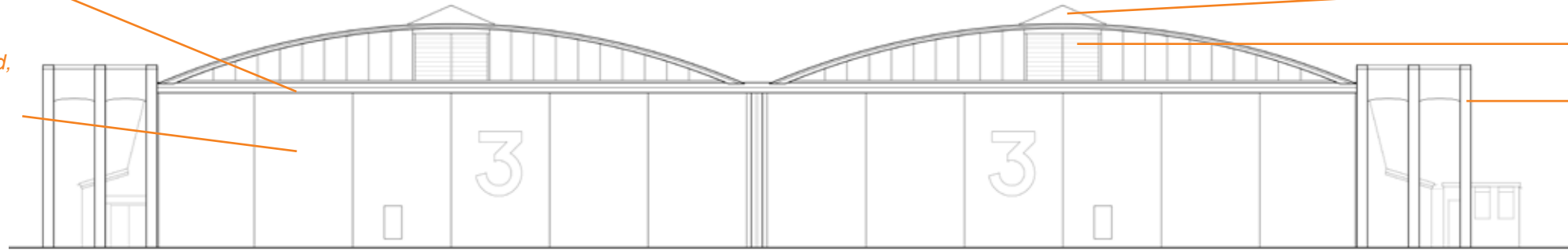
SECTION C - CENTRAL MASONRY COLUMNS

Long Sections from the 2017 report.

SECTION TAKEN ALONG CENTRAL VALLEY GUTTER
LOOKING NORTH, INDICATING LOCATION OF COLLAPSED
COLUMNS & ARCHES

Tracks and running gear repaired / replaced and left in full working order.

Hangar main doors removed, repaired with four central leaves in full working order.



WEST ELEVATION

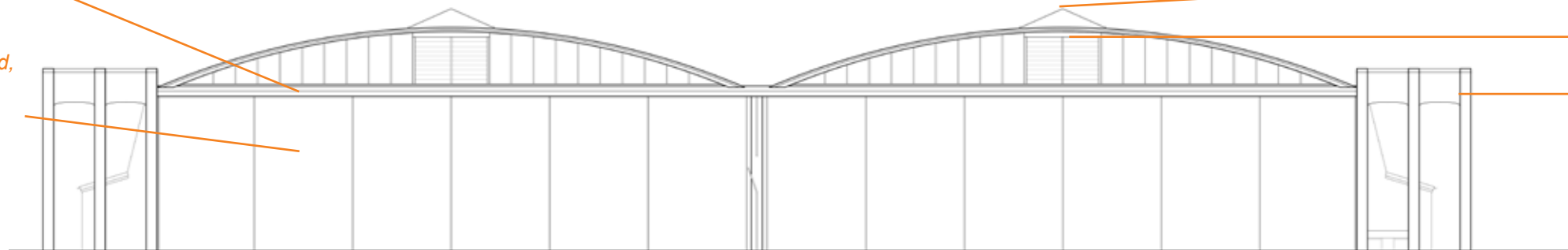
Rooflights repaired / replaced as necessary.

Gable cladding replaced like for like.

Gantry towers repaired / re-stitched.

Tracks and running gear repaired / replaced and left in full working order.

Hangar main doors removed, repaired with four central leaves in full working order.



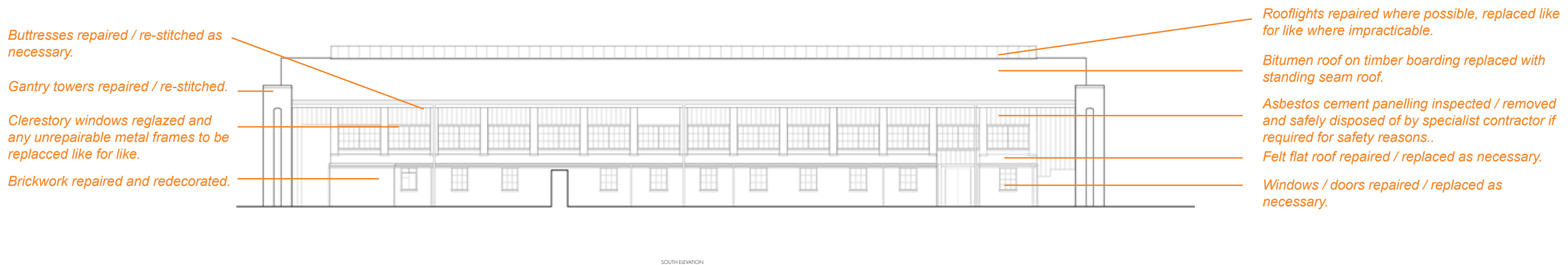
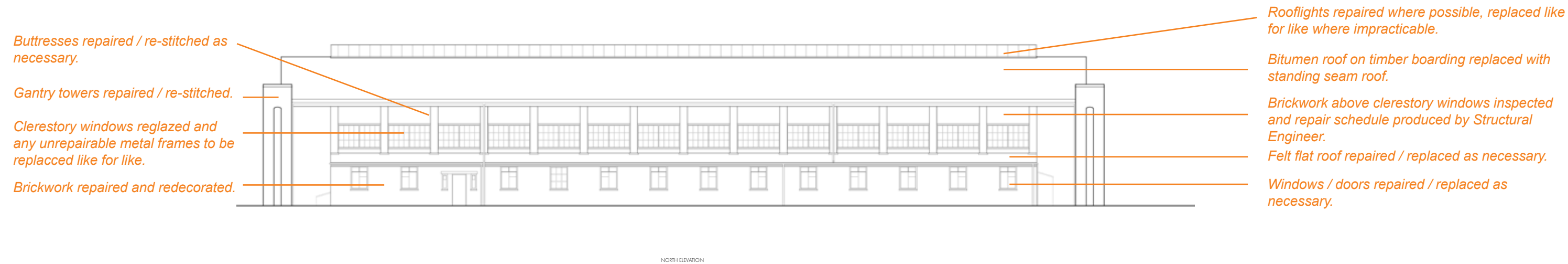
EAST ELEVATION

Rooflights repaired / replaced as necessary.

Gable cladding replaced like for like.

Gantry towers repaired / re-stitched.

Existing Elevations Pre-Collapse from the 2017 report.



Existing Elevations Pre-Collapse from the 2017 report

6.0 Photographs of Hangar 3, Post-Collapse



Hangar 3 showing main hangar doors



Flanking elevation showing single storey outshot and gantry tower



Single storey outshot and clerestory windows



Top of gantry tower showing horizontal cracking



Area of collapsed roof



Area of collapsed roof



Belfast trusses remaining in-situ



Central brick arcading in need of brick repairs



Existing roof build-up from collapsed section



Belfast trusses remaining in-situ



Belfast trusses remaining in-situ



Section of remaining rooflight



Central brick arcading with missing roof



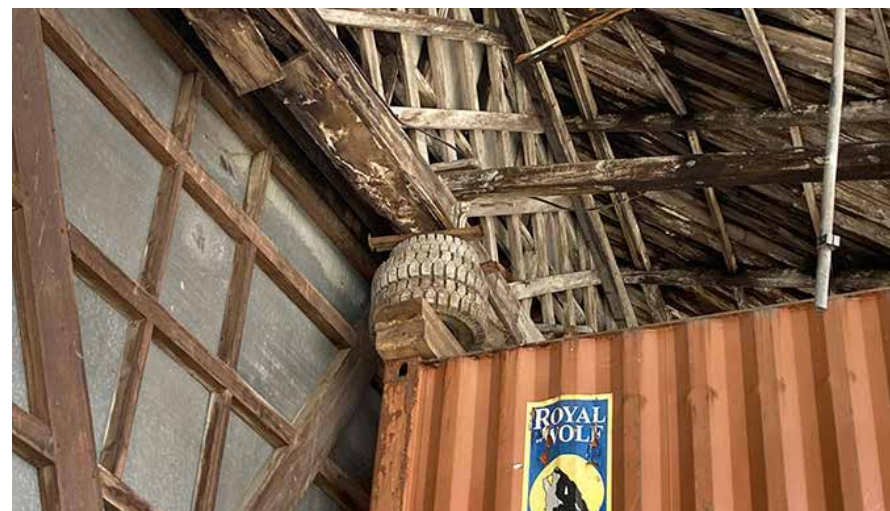
Belfast trusses and hangar doors remaining in-situ



Worst area of collapse



Single storey outshot showing cafe building to left to be demolished



Temporary support to Belfast truss



Collapsed hangar doors.



Brick gantry tower



Area of rooflight remaining in-situ



Gantry tower showing door running gear

7.0 Summary

7.0 In Appendix A: Old Sarum Airfield - Hangar 3 - Condition Report - 2023 by Tim Ratcliffe Associates, a preliminary proposal for a programme of works is presented.

This is summarised and expanded as follows:

7.1 WORK RECOMMENDED WITHIN 6 MONTHS

7.1a Carry out asbestos survey in the hangar and annexes (this will include those minor buildings scheduled for demolition under these proposals). Carefully remove and safely dispose of any asbestos found.

7.1b Seek advice from Structural Engineer and prop central columns, etc. as required.

7.1c Remove all collapsed parts of roof and other debris from inside and around the hangar to make the site safe for works.

7.1d Remove redundant cables and pipes and office pods / boxes.

7.2 WORK RECOMMENDED WITHIN 1 YEAR

7.2a Access the remaining sections of roof and (if possible) remove and retain any surviving rooflights.

7.2b Prop or move the main hangar sliding doors and associated canopies, running gear and cladding to gables above.

7.2c Specialist contractor to carefully remove asbestos cement profiled cladding from south flank wall and safely dispose of it off site.

7.2d Strip the remaining hangar roof coverings and timbers, plus failed Belfast trusses, leaving only those - if any - deemed safe to repair in-situ.

7.2e Repair / stitch brickwork to tops of flanking walls above clerestory windows, central spine columns (rebuild those missing like for like), check and repair all low level brickwork.

7.2f Repair any salvageable Belfast trusses and replace the remainder all to match existing; all in strict accordance with Appendix B, Stages 2 through 9 (James Carroll Ltd: The Hangar Three Project - Truss Repair Method).

7.2g Reinstall roof timbers and install new coverings, including central valley.

7.2h Reinstall the rooflights.

7.2i Repair and rebuild eaves boxing on both sides in preparation for fixing of replacement guttering.

7.2j Reinstall high-level gutters and downpipes to both sides of the hangar in cast iron.

7.2k Replace the large downpipes at both ends of the hangar's central valley gutter with cast iron.

7.2l Check and clear all drainage gullies and trench drains (instigate regularly).

7.2m Replace broken / damaged drainage gullies and overhaul trench drains.

7.2n Survey and relay any blocked or failing rainwater drains.

7.3 WORK RECOMMENDED WITHIN 2 YEARS

7.3a Carry out brick and render repairs to hangar external flank walls and buttresses.

7.3b Overhaul, repair and redecorate clerestory windows to hangar (consideration is to be given as to the feasibility of using ultra-violet-resisting glazing to protect the fabric of the historic aircraft to be housed in the hangar).

7.3c Carry out localised brick repairs to all four corner gantry towers.

7.3d Repair flaunching and remove redundant metal fixings from gantry towers.

7.4e Repair or replace main hangar door runners, rails and running gear.

7.4f Repair and reinstate main sliding hangar doors, plus canopies above.

7.4g Reinstall cladding and louvers to gable ends.

7.4h Strip and relay roof coverings and repair roof structures to annexes along both flank walls.

7.4i Reinstall gutters and downpipes to roofs of annexes, ideally in cast iron.

7.5 WORK RECOMMENDED WITHIN 3 YEARS*

7.5a Carry out pointing and brick repairs to annexes.

7.5b Make good openings after removal of ancillary buildings from south side.

7.5c Repair and repaint metal and timber framed windows to both annexes.

7.5d Repair / replace external doors to both annexes.

* Timings are indicative and repairs will be undertaken as soon as possible in line with expert recommendation.

8.0 POST-STORM DAMAGE AMENDMENTS 16/02/2024

SCHEDULE OF PROPOSED WORKS:

1.0 Condition at start of siteworks: Once planning permission is approved and consent is in place for the repair works and site work is imminent, the appointed Structural engineer will re-inspect the condition of the building and agree the sequence and details of work appropriate at that stage. This will be the first phase of the wider Masterplan.

1.1 The sequence of work will be to stabilise the masonry structure supporting the roof first, followed by the repair / rebuilding of the roof structure and associated works.

1.2 Handling: All work on disengagement and lowering of Belfast trusses (those that cannot be repaired in-situ) will be from long-reach cherry picker working from above while trusses are supported by crane.

1.3 Lifting frame: The Structural Engineer will agree the design and construction of a suitable lifting frame with the general contractor and his craneage subcontractor.

1.4 A temporary holding area on the external concrete apron shall be prepared to receive the trusses until such a stage is reached when storage inside the hangar is deemed safe. Temporary storage will be in the form of sleeper or similar timber spreaders with provision for raking props to hold trusses vertically and cover by Visqueen sheets. Trusses to be lifted to longer term, secure storage as soon as possible.

1.5 For those trusses considered repairable in-situ: Scaffolding support towers to be installed to allow safe access to the work area. Best practice is to scaffold the full length of each truss. The truss should then be secured as specified in Appendix B, Stage 1 and repairs carried out in accordance with Appendix B, (James Carroll Ltd: The Hangar Three Project - Truss Repair Method). Stages 2 through 9.

2.0 Careful removal of all remaining roof structure above Belfast trusses. This includes the central rooflights.

2.1 Specialist checking for any possible asbestos in the existing roof structure to be carried out and if any found, to be safely disposed of by specialist contractor in accordance with the Control of Asbestos Regulation, 2012.

2.2 Rooflight members should be removed carefully, referenced for location and stored for refurbishment. Any replacement rooflights to be galvanised steel T-Sections to match existing with lead flashing / capping to match.

3.0 Repairs to masonry structure: All to be carried out in strict accordance with Structural Engineer's specification, including construction of central arches where collapsed (**including north central arches damaged in storm of 21st. Jan. 2024**), all to match existing. Repair / stitching of brickwork to all areas of Hangar 3, including the sloping buttresses along each flank wall and the brick gantry towers supporting the main hangar door runners. **North-west gantry tower damaged in storm of 21st. Jan. 2024 to be rebuilt like for like.**

3.1 Single storey outshots along each flanking wall: The masonry to be inspected by the Structural Engineer and any necessary repairs made in strict accordance with their specification / drawings.

3.2 A decision must be made at this stage, which of the original single storey outshots are original and thence to be repaired and which - if any - are later and merit demolition. Also, the Structural Engineer should make a decision as to how much - if any - of the single skin brickwork above the clerestory windows can be retained and repaired and how much replaced like for like.

3.3 Modern infill to central brick arcade consisting various heights of blockwork wall and glazing to be removed and brickwork made good all round.

3.4 Windows doors, studwork partitions, ceilings, felt flat roofs and internal / external decorations to the single storey outshots to be carried out as deemed necessary after inspection and survey. Consideration given to insulation and build-up of replacement roofs.

4.0 Repair of existing / construction of new Belfast trusses: all to be in strict accordance with Appendix B: (James Carroll Ltd: The Hangar Three Project - Truss Repair Method). Stages 2 though 9, including lifting into place and securing.

4.1 Once supporting structure is structurally safe, all repaired / replacement Belfast trusses to be lifted into position and secured in place. Rafters, purlins and support struts all replaced like for like and secured to satisfaction of Structural Engineer.

4.2 New roof to be constructed over Belfast trusses, to be standing seam roof on purlins between Belfast trusses. Consideration should be given at Stage 4 as to whether to add insulation to the build-up.

4.3 Rooflights to be reinstalled including any areas where replacements are necessary, waterproofed at junction with new roof and made good all round.

4.4 Specification of timber to be used in new / repaired Belfast trusses: Softwood grading to BS 4978 or BS EN 519 or other national equivalent and so marked. Strength class to BS EN 338: C24. Treated with organic solvent impregnation to NBS section Z12 and British Wood Preserving and Damp-Proofing Association Commodity Specification C8, service life: 40 years. Dimensions indicated on finished working drawings.

5.0 Clerestory windows to flanking walls: These to be inspected and any considered unrepairable to be replaced like for like. All broken glass to be carefully removed and replaced like for like. Clean down metalwork and prepare and paint finish to match existing.

6.0 Asbestos cement profiled cladding to one flanking wall at high level: Prior to commencement of any works these panels are to be inspected by a specialist contractor and their suitability for retention or removal decided. There is an historical argument for their retention and should only be removed if deemed unsafe. If found necessary they should be removed prior to other

works and safely disposed of by specialist contractor in accordance with the Control of Asbestos Regulation, 2012.

7.0 Main (south) hangar doors and gable walls over: These to be carefully taken down and stored safely for reinstallation including gable cladding and any structure in unsalvageable state, the doors themselves and their top and bottom runners and operating gear.

7.1 Curved gables to be rebuilt like for like and made good all round.

7.2 Main hangar doors to be inspected structurally and any repairs deemed necessary carried out in preparation for reinstallation, including decorative finishes.

7.3 Door runners, cabling and operating gear to be completely refurbished and / or replaced as found necessary on inspection. The four central leaves at each end will be fully functional with the two outer leaves remaining fixed.

7.4 Drainage channels at foot of main hangar doors to be cleaned and made good, including replacement of any cracked grilles.

7.5 North hangar doors (damaged in storm of 21st. Jan. 2024): New fixed door sections to be used in outer positions of each hangar end to allow relocation of moving door parts to north hangar door set. Fixed panels to be made up from proprietary cladding materials to look the same as existing doors, including Metsec (or equal and approved) lightweight steel framing.

8.0 Rainwater goods and drainage: All to be replaced and any cracked / blocked gullies replaced or repaired as deemed necessary.

8.1 Central valley gutter to be removed and replaced with new, stainless steel gutter with rubber expansion joints at every 20m. New, standing seam metal roof to drain into central valley gutter in strict accordance with standard details of chosen manufacturer. Hoppers and downpipes to be replaced with new.

9.0 Generally, all modern infill structures, whether brick, block or timber to be removed and adjacent original structure made good.

9.1 All electrical wiring and fittings to be removed and replaced with new; final spec. and locations of fittings tba.

9.2 Existing surface water drainage from hangar to be inspected and any repairs / replacements made as found necessary.

9.3 All surfaces internally and externally to be cleaned down, prepared and redecorated in colours to match original.

POST-STORM ISHA (21/01/2024) DAMAGE AMENDMENTS:

North hangar doors, north-central arches and north-west brick gantry pier damaged in storm to be re-built as highlighted in blue, as revision to F+M Design and Condition Report of Oct. 2023 and as per revised Stage 3 Cost Plan from Jonathan Kiely, QS for Simon Hickman at Historic England.

5.0 Supporting Plans, Sections, Elevations and 3D Truss Drawings (Drawings taken from 2017 Report with Annotations Based on April 2023 Report and Photographs).

The following drawings are taken from the 2017 report highlighting the proposed work required to the Hangar 3.

We have added further annotations/hatching to highlight further findings from the April 2023 conditions report & supporting photographs. F+M to review Hangar 3 with Historic England on site to assess the findings and highlight any further deterioration to agree extent of works.

F+M additional annotations and hatches are shown in orange on the following pages.

POST-STORM ISHA (21/01/2024) DAMAGE AMENDMENTS:

Trusses N01, N02 and N03 and adjacent brickwork damaged to be replaced as Stage 3 Cost Plan.

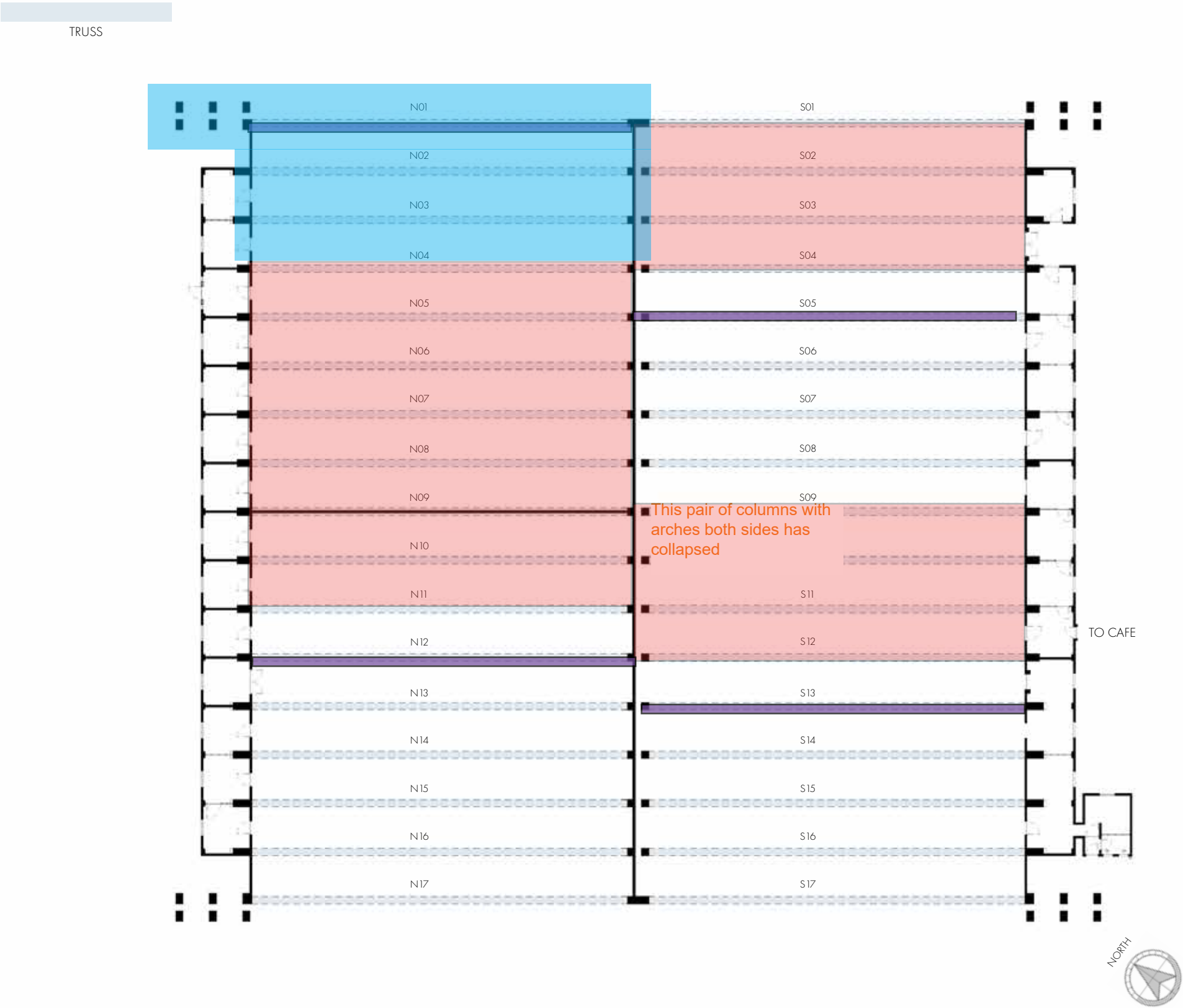
North doors damaged, to be replaced as described on page 24, para 7.5.

North-west brick gantry pier damaged. To be rebuilt like for like.

North central arches damaged. To be rebuilt like for like.

LEGEND

- Indicates collapsed roof and trusses.
- Indicates truss identified as potentially repairable by Tim Ratcliffe in April, 2023.
- Remaining trusses in poor condition unlikely for viable repair.
- Truss N01, N02, N03 damaged in storm of 21st. Jan. 2024, together with north-west brick gantry pier and damage to central arches where indicated in blue.



Location of Existing Trusses- Truss Location Plan 2017 Report

9.0 Post Fire Updates 30/09/2025

Context

This addendum has been prepared to set out the impact of the April 2025 fire on the scope of works required to restore Hangar 3. It should be read in the context of the original Design and Condition Report (Feilden + Mawson, March 2024).

The intention is to give clarity to all stakeholders that, despite the visual impact of the fire, the overall scale of works to restore the hangar has not significantly increased.

For clarity any text to be removed has been strike through and comments relating to the current position and amendments are shown in orange.

SCHEDULE OF PROPOSED WORKS INDICATING PROGRESS AND AMENDMENTS POST APRIL 2025 FIRE:

1.0 Condition at start of site works: Once planning permission is approved and consent is in place for the repair works and site work is imminent, the appointed Structural engineer will re-inspect the condition of the building and agree the sequence and details of work appropriate at that stage. This will be the first phase of the wider Masterplan.

An initial site visit by Integral Structural Engineering Design was carried out in June 2025 and a subsequent Structural Survey and Report in September 2025. Full Report included in Appendix E

1.1 The sequence of work will be to stabilise the masonry structure, supporting the roof, followed by the repair / rebuilding of the roof structure and associated works.

Masonry structure has been stabilised as recommended by engineer to enable detailed survey of masonry to be undertaken. Clearance of debris and temporary scaffolding has allowed detailed masonry survey to take place.

1.2 Handling: All work on disengagement and lowering of Belfast trusses (those that cannot be repaired in-situ) will be from long-reach cherry picker working from above while trusses are supported by crane.

1.3 Lifting frame: The Structural Engineer will agree the design and construction of a suitable lifting frame with the general contractor and his craneage subcontractor.

1.4 A temporary holding area on the external concrete apron shall be prepared to receive the trusses until such a stage is reached when storage inside the hangar is deemed safe. Temporary storage will be in the form of sleeper or similar timber spreaders with provision for raking props to hold trusses vertically and cover by Visqueen sheets. Trusses to be lifted to longer term, secure storage as soon as possible.

1.5 For those trusses considered repairable in-situ: Scaffolding support towers to be installed to allow safe access to the work area. Best practice is to scaffold the full length of each truss. The truss should then be secured as specified in Appendix B, Stage 1 and repairs carried out in accordance with Appendix B, (James Carroll Ltd: The Hangar Three Project – Truss Repair Method). Stages 2 through 9.

Three no. Trusses S05, N13 and S13 previously identified as potentially

repairable, now require complete replacement. Methodology for the construction of new Belfast trusses (4.0) will be in accordance with Appendix B.

2.0 Careful removal of all remaining roof structure above Belfast trusses. This includes the central rooflights.

Remaining roof structure collapsed due to fire this however was due for removal as above.

2.1 Specialist checking for any possible asbestos in the existing roof structure to be carried out and if any found, to be safely disposed of by specialist contractor in accordance with the Control of Asbestos Regulation, 2012.

Associated debris from the roof cleared and safely disposed of in line with control of asbestos regulations.

2.2 Rooflight members should be removed carefully, referenced for location and stored for refurbishment. Any replacement rooflights to be galvanised steel T-Sections to match existing with lead flashing / capping to match.

Replacement roof lights as above.

3.0 Repairs to masonry structure: All to be carried out in strict accordance with Structural Engineer's specification, including construction of central arches where collapsed (including north central arches damaged in storm of 21st. Jan. 2024), all to match existing. Repair / stitching of brickwork to all areas of Hangar 3, including the sloping buttresses along each flank wall and the brick gantry towers supporting the main hangar door runners. North-west gantry tower damaged in storm of 21st. Jan. 2024 to be rebuilt like for like.

Appendix E Structural Survey concludes although the recent fire has caused some addition damage, including collapse of south eastern door support masonry piers and the upper part of the southern end of the western elevation, the extent of work required is not significantly different to the situation before the fire. Hence brickwork should be repaired in accordance with the Integral structural report and to structural engineers specification and collapsed areas rebuilt like for like.

Additional areas of collapse shown on central piers page 27 & plan page 28.

Timber Lintels over window and doors to be removed and replaced like for like.

3.1 Single storey outshots along each flanking wall: The masonry to be inspected by the Structural Engineer and any necessary repairs made in strict accordance with their specification / drawings.

3.2 A decision must be made at this stage, which of the original single storey outshots are original and thence to be repaired and which - if any - are later and merit demolition. Also, the Structural Engineer should make a decision as to how much - if any - of the single skin brickwork above the clerestory windows can be retained and repaired and how much replaced like for like.

3.3 Modern infill to central brick arcade consisting various heights of blockwork wall and glazing to be removed and brickwork made good all round.

3.4 Windows doors, studwork partitions, ceilings, felt flat roofs and internal /

external decorations to the single storey outshots to be carried out as deemed necessary after inspection and survey. Consideration given to insulation and build-up of replacement roofs.

4.0 Repair of existing / construction of new Belfast trusses: all to be in strict accordance with Appendix B: (James Carroll Ltd: The Hangar Three Project - Truss Repair Method). Stages 2 though 9, including lifting into place and securing.

4.1 Once supporting structure is structurally safe, all repaired / replacement Belfast trusses to be lifted into position and secured in place. Rafters, purlins and support struts all replaced like for like and secured to satisfaction of Structural Engineer.

4.2 New roof to be constructed over Belfast trusses, to be standing seam roof on purlins between Belfast trusses. Consideration should be given at Stage 4 as to whether to add insulation to the build-up.

4.3 New Rooflights to be reinstalled including any areas where replacements are necessary, waterproofed at junction with new roof and made good all round.

4.4 Specification of timber to be used in new / repaired Belfast trusses: Softwood grading to BS 4978 or BS EN 519 or other national equivalent and so marked. Strength class to BS EN 338: C24. Treated with organic solvent impregnation to NBS section Z12 and British Wood Preserving and Damp-Proofing Association Commodity Specification C8, service life: 40 years. Dimensions indicated on finished working drawings.

5.0 Clerestory windows to flanking walls: These to be inspected and any considered unrepairable To be replaced like for like. All broken glass to be carefully removed and replaced like for like. Clean down metalwork and prepare and paint finish to match existing.

6.0 Asbestos cement profiled cladding to one flanking wall at high level: Prior to commencement of any works these panels are to be inspected by a specialist contractor and their suitability for retention or removal decided. There is an historical argument for their retention and should only be removed if deemed unsafe. If found necessary they should be removed prior to other works and safely disposed of by specialist contractor in accordance with the Control of Asbestos Regulation, 2012.

Asbestos Demolition Survey and clearance undertaken by licensed contractor.

7.0 Main (south) hangar doors and gable walls over: These to be carefully taken down and stored safely for reinstallation including gable cladding and any structure in unsalvageable state, the doors themselves and their top and bottom runners and operating gear.

South hangar doors and tracks to be replaced like for like as far as possible. Doors to be constructed as 7.3 and 7.5 below with fixed outer door sections.

7.1 Curved gables to be rebuilt like for like and made good all round.

7.2 Main hangar doors to be inspected structurally and any repairs deemed necessary carried out in preparation for reinstallation, including decorative finishes Replaced like for like as 7.0 and 7.5

7.3 Door runners, cabling and operating gear to be completely refurbished and / or replaced as found necessary on inspection. The four central leaves at either end will be fully functional with the two outer leaves remaining fixed.

7.4 Drainage channels at foot of main hangar doors to be cleaned and made good, including replacement of any cracked grilles.

7.5 North hangar doors: New fixed door sections to be used in outer positions of each hangar end ~~to allow relocation of moving door parts to north hangar door set.~~ **New central door sections to be constructed like for like.**

All door Fixed panels to be made up from proprietary cladding materials to look the same as existing doors, including Metsec (or equal and approved) lightweight steel framing.

8.0 Rainwater goods and drainage: All to be replaced and any cracked / blocked gullies replaced or repaired as deemed necessary.

8.1 Central valley gutter to be removed and replaced with new, stainless steel gutter with rubber expansion joints at every 20m. New, standing seam metal roof to drain into central valley gutter in strict accordance with standard details of chosen manufacturer. Hoppers and downpipes to be replaced with new.

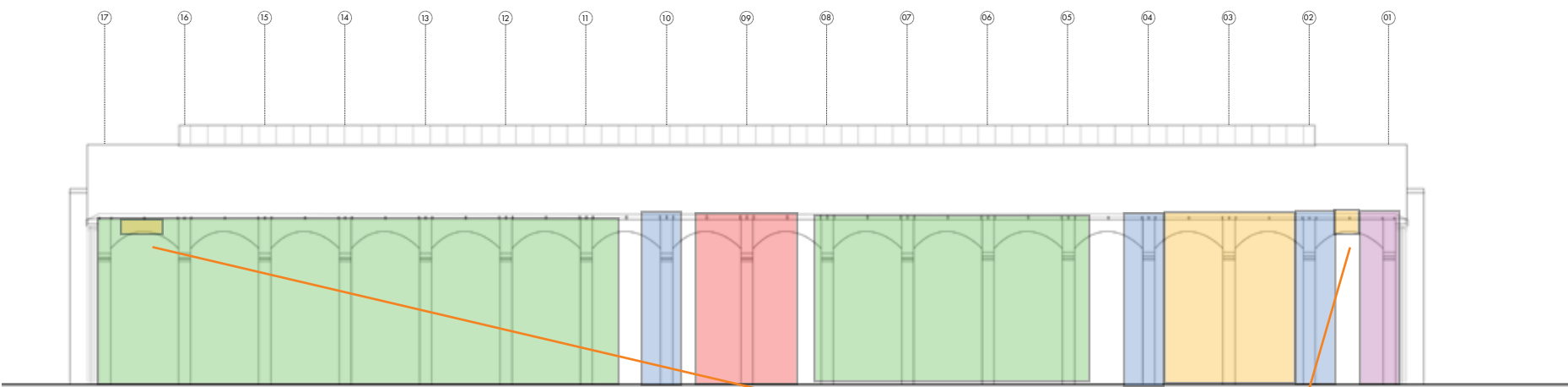
9.0 Generally, all modern infill structures, whether brick, block or timber to be removed and adjacent original structure made good.

9.1 All electrical wiring and fittings to be removed and replaced with new; final spec. and locations of fittings tba.

9.2 Existing surface water drainage from hangar to be inspected and any repairs / replacements made as found necessary.

9.3 All surfaces internally and externally to be cleaned down, prepared and redecorated in colours to match original.

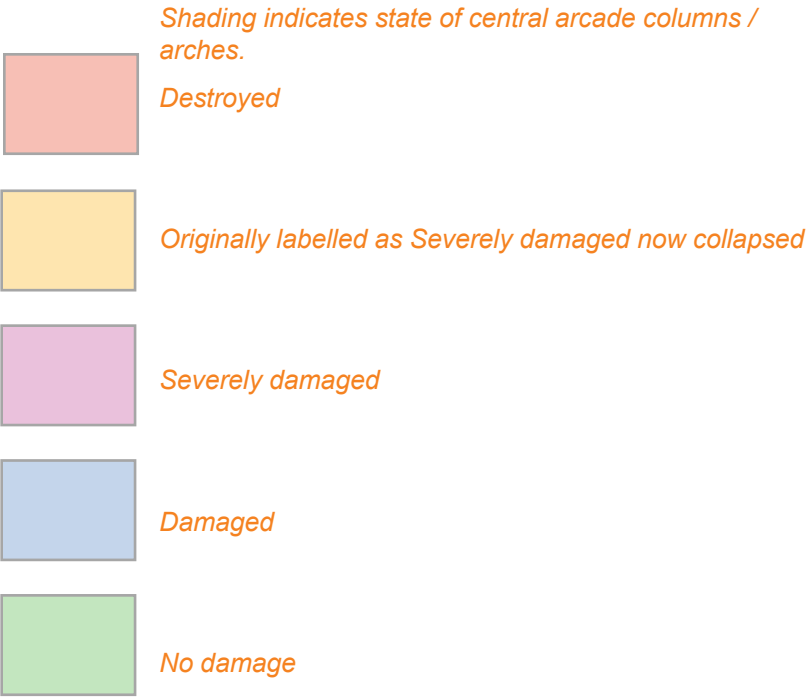
SECTION TAKEN ALONG CENTRAL VALLEY GUTTER LOOKING NORTH, INDICATING LOCATION OF COLLAPSED COLUMNS & ARCHES



SECTION C - CENTRAL MASONRY COLUMNS

Long Sections from 2017.

LEGEND

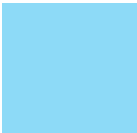


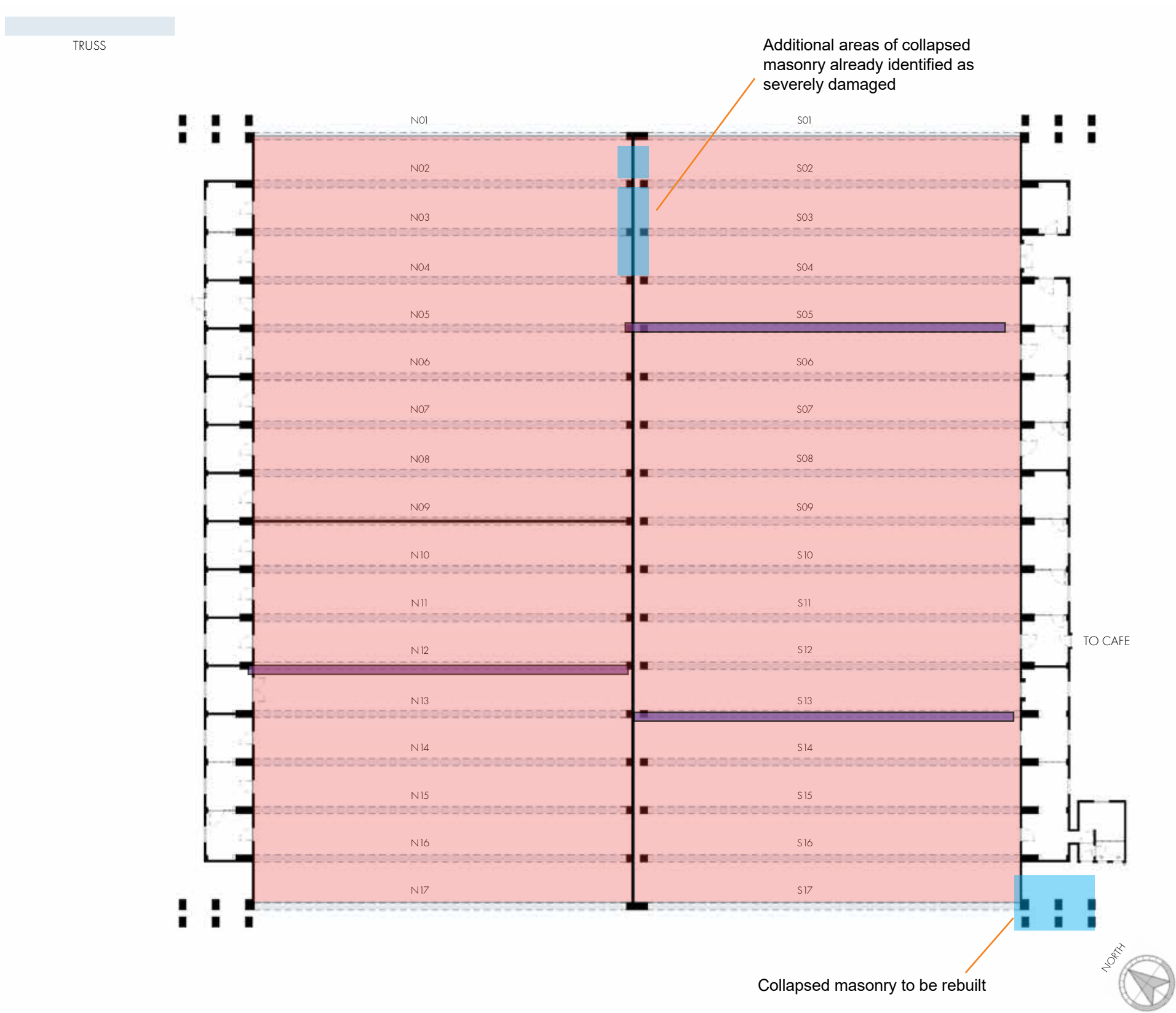
Additional areas of collapsed masonry already identified as severely damaged

5.0 Supporting Plans, Sections, Elevations and 3D Truss Drawings (Drawings taken from 2017 Report with Annotations Based on April 2023 Report and Photographs).

The following drawings are taken from the 2017 report highlighting the proposed work required to the Hangar 3.
Annotations/hatching identify further work required due to fire damage post April 2025.

LEGEND

-  Indicates collapsed roof and trusses now cleared.
-  Indicates truss originally highlighted as potential for repair in situ now reconstructed.
-  Remaining trusses for reconstruction.
-  Additional extent of collapsed brickwork



Location of Existing Trusses- Truss Location Plan 2017 Report

10.0 Conclusion.

The overall scope of works required to restore Hangar 3 following the April 2025 fire remains broadly unchanged from that identified prior to the fire. The majority of the structural defects are long-standing and would have required repair irrespective of the fire.

The principal additional items resulting directly from the fire are:

Southern hangar doors and support piers – collapse of the doors and tracks caused the loss of the southern support piers on the south-eastern elevation, damage to the southern piers on the north-western elevation, and associated cracking to adjacent masonry.

Roof trusses – three trusses that were previously considered capable of in-situ repair must now be fully replaced, in addition to the 31 already identified for replacement.

Other key points from the structural survey include:

Masonry walls: The main structural walls have not suffered heat damage. Most defects are historic and can be addressed through the previously identified repair methodology.

Foundations: The original foundations of the collapsed piers remain intact and can be reused for reconstruction.

Central piers and single-storey side rooms: Localised collapses and instability are present, but these reflect pre-fire deterioration and poor historic alterations rather than new fire damage.

Roof and timber lintels: Complete replacement is required, as was already the case prior to the fire.

Temporary support: Propping will be required until the roof is reinstated, though this was also anticipated in the pre-fire repair programme.

In conclusion, the fire has not fundamentally altered the scale or methodology of the restoration. The differences are limited to the reconstruction of one additional set of door support piers, the confirmed need to rebuild the hangar doors in line with the approach already planned and the replacement of three further roof trusses.