Scope of Works: Roof Repairs (SCH-REP-011)

Clayton Hall

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1.0 Pre-Construction Information

1.1 PURPOSE OF THE DOCUMENT

The pre-construction information forms part of the tender documentation for the appointment of the Principal Contractor, it describes the project, construction work and timing, identifies hazards and risks, required standards for health, safety and welfare and identifies interfacing activities. Designers and Contractors may use this information in conjunction with other contract documentation to plan their work. It is a responsibility of the Client (or clients' representative) to ensure its preparation and they must provide this document as soon as practicable to each contractor (including Principal Contractor) being considered for appointment.

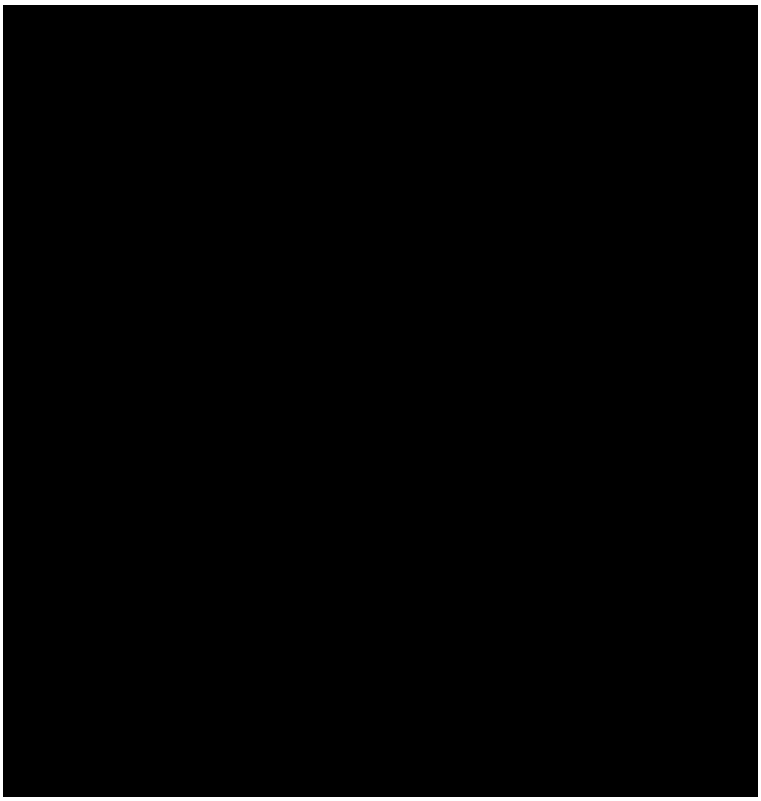
The purpose is to highlight the main health and safety issues in connection with the construction work in the project and to form a basis for tenderers to explain their proposals for managing the risk inherent in the project.

CONSTRUCTION PHASE PLAN

The appointed Principal Contractor will develop the Pre-Construction Information as part of his duties to produce a Construction Phase Plan, in particular taking reasonable steps to ensure co-operation between all Contractors to achieve compliance with the Regulations together with any specific rules and recommendations set down within the Plan.

1.2 PROJECT TEAM (ADD MCC PROJECT EXECUTION PLAN INFO)

Client & Building Owner
Manchester City Council
Contact: XXXX



1.3 THE SITE

Site Address:
Clayton Hall
Clayton Park,
Ashton New Road,
Clayton,
Manchester
M11 4RU

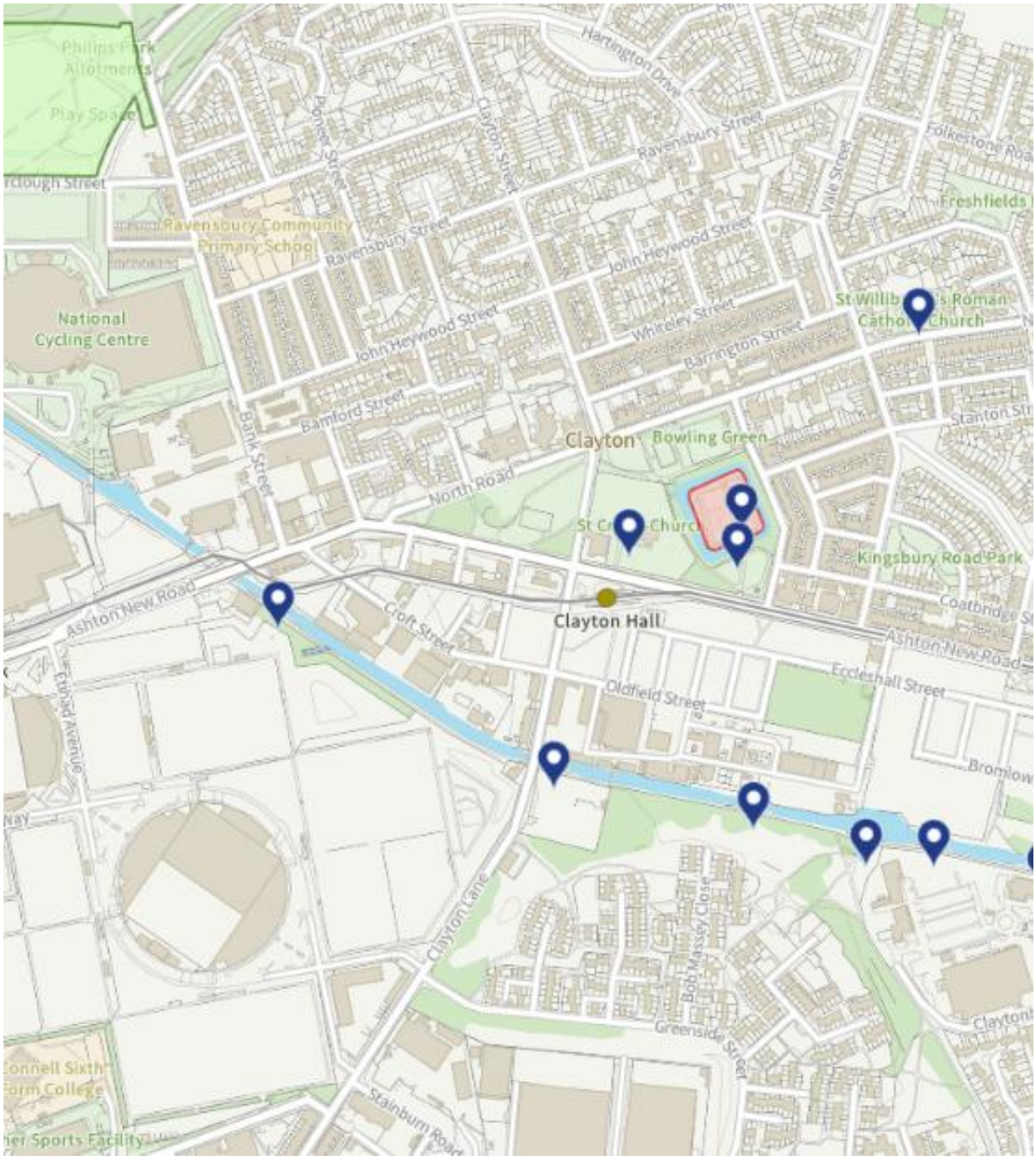


Fig. 01: Site Location Plan

1.4 PROJECT DESCRIPTION

1.4.1 HERITAGE SIGNIFICANCE OF THE SITE

Clayton Hall is a Grade II* listed moated hall whose earliest fabric is thought to have been constructed by the Byron family in the mid 14th Century. It is located on the site of a scheduled ancient monument and accessed via a separately Grade II listed 17th century stone bridge. It is a site of very considerable heritage significance and a rare example of a moated site. The hall and wider park area is owned by Manchester City Council (MCC) and has been run as a Living History Museum by the Trustees of the Charity and Friends of Clayton Park since 2009.

It is important to note that the hall was significantly renovated twice in the C20th, first in the early 1900's and then further significant rebuilding works were undertaken throughout the 1900's.

1.4.2 SUMMARY OF ROOF CONDITION

The roof has been noticeably deteriorating over a number of years. BB Heritage Studio undertook condition surveys in 2014 and 2022 and The Morton Partnership undertook condition surveys in 2015 and 2022, all of which recommended high level inspections of the roof to be carried out to assess the performance and longevity of the roof.

Stone roofing specialist, WJ Conservation, undertook investigatory opening up works in September 2025. These revealed that both the east and west pitches of the northern section of the roof and the western pitch of the southern section are in very poor and deteriorating condition. Deterioration of the stone, as well as the poor fixings to the slates and the battens means that there are a significant number of slates that are known to not be securely fixed and a large number unknown. The report provided by WJ Conservation concludes that there is a risk of falling slates which would pose a significant risk of injury or death.

NORTHERN SECTION
Both the east and west facing pitches of the northern section have been completely re-laid, probably in the 1950's. The stone has been laid onto felt which is significantly deteriorated (particularly to the eaves) and is trapping moisture in the slates. The slates appear to have been laid working from right to left leading to the left-hand side of the west facing pitch in particular having very poor laps. The slates are fixed with nails which are too small for the peg hole and therefore held in place with washers which are failing. The weight of the stone slates is starting to put pressure on and rotate the fixings. In some places these have failed but the extent of this cannot fully be known without stripping the roof. This poses a significant risk.

SOUTHERN SECTION
The east facing pitch of the southern section is thought to have been retained and repaired insitu. It is fully torched and to the majority of the roof the slates are held in place with oak pegs. There have been poor remedial repairs undertaken to this roof, patch repairs generally but also on removal of a chimney (circa 1958) and to the gable end which has seen continued structural movement. Because the full torching is a rare survival it is proposed to retain this pitch insitu and to undertake patch repairs.

The west facing pitch has had significant work undertaken to it and is in poorer condition that the east facing pitch. The extent of stone slates being held in place with wires means that it is not economical to undertake patch repairs. It is therefore proposed that this pitch is stripped and re-laid.

OTHER ANCILLARY WORK

Alongside the stone slate replacement other work is required such as structural repairs to the roof timbers, replacement of other timber work which includes verge boards and timber finials, replacement lead, works to the eaves including masonry repairs and replacement gutters.

1.4.3 SUMMARY SCOPE OF WORKS: ROOF REPAIRS

The proposed works to the roof at Clayton Hall consist of the following;

Stage 1 (S1) Tree survey and isolated tree works to cut back trees directly adjacent to the Hall.
Stage 2 (S2) Building recording of the whole roof prior to scaffold and careful removal.
Stage 3 (S3) Fully tented scaffold.
Stage 4 (S4) Careful removal of the stone slates to the northern section (both pitches) and southern (west facing pitch only) including beneath the bell tower. Sorting and storage of the stone.
Stage 5 (S5) Detailed inspections of roof timbers, further building recording and sourcing of salvaged stone once quantity is known.
Stage 6 (S6) Timber repairs and relaying.
Stage 7 (S7) Ancillary repairs.
Stage 8 (S8) Repairs to the southern east facing pitch with salvaged stone from the existing roof.

1.4.4 TIMESCALES FOR THE CONSTRUCTION WORK

KEY EVENTS	TARGET DATE	WEEKS
(S1) Tree survey and isolated tree works to cut back trees directly adjacent to the Hall.	October 2026	TBC
(S2) Building recording of the whole roof prior to scaffold and careful removal.	October 2026	TBC
(S3) Fully tented scaffold.	October / November 2026	TBC
(S4) Careful removal of the stone slates to the northern section (both pitches) and southern (west facing pitch only) including beneath the bell tower. Sorting and storage of the stone.	November / December 2026	TBC
(S5) Detailed inspections of roof timbers, further building recording and sourcing of salvaged stone once quantity is known.	December 2026 onwards	
(S6) Timber repairs and relaying of stone.		
(S7) Ancillary repairs		
(S8) Repairs to the southern east facing pitch with salvaged stone from the existing roof.		

1.4.5 PERMITTED HOURS OF WORK

The permitted hours during which works may be undertaken on site are:-
- Not before 7.30am or after 18.00pm Monday to Friday.
- At no time on Saturdays, Sundays or Bank Holidays unless agreed by the Client

1.4.6 **SURROUNDING LAND USE**

The site is accessed from Ashton New Road through Clayton Park. The site is a historic moated platform so is surrounded by a moat ditch. This forms a direct boundary to the east with Clayton Hall Road and is then bound by paths within the park to the north, west and south. The wider site is bounded by Ashton New Road to the south, Clayton Street to the west and North Road to the north. Clayton Park is opposite Clayton Hall tram stop and is principally surrounded by residential areas to the west and north and St Cross Church to the immediate west.

1.4.7 **EXTENT AND LOCATION OF ANY EXISTING RECORDS AND PLANS**

DRAWING REF	
0254-al(05)001	Site Location Plan
0254-al(05)003	Existing Plans
0254-al(05)004	Existing Roof Plan
0254-al(05)005	Existing East & West Elevations
0254-al(05)006	Existing North & South Elevations & Sections
0254-al(05)035	Repairs East & West Elevations
0254-al(05)036	Repairs North & South Elevations
0254-al(05)104	Roof Repairs Roof Plan
0254-al(05)105	Existing & Proposed Leadwork Extents
RGR/BBR/16076-Roofsched&spec Rev 2	Structural Specification & Drawings
2407-CWS-XX-GF-DR-L-102	Tree & Hedge Retentions

EXISTING H&S FILE

MCC to confirm re: existing H&S File

EXISTING SERVICES

See O&M Manual following works carried out in May 2017.

The incoming services locations will be clarified by the owner as part of an initial site orientation.

The route of the mains electricity cable from Clayton Hall Road to the Hall is to be confirmed (or may need to be scanned and plotted).

ASBESTOS INFORMATION

An Asbestos Management Survey was carried out in 2023 (refer to Appendix B)

Additional asbestos testing was undertaken during the recent phase of construction works (refer to Appendix C).

1.5 PROJECT REQUIREMENTS / CONSTRAINTS

1.5.1 METHODOLOGY & WORKMANSHIP

Local stone slating traditions evolved from the slater's response to the particular geology and climatic conditions of an area – it is a highly regionalised activity. It requires a specialist approach to ensure that the roof repair works are based on a thorough understanding of the heritage significance of the materials and methodologies used.

The different sections of the roof at Clayton Hall have been altered to varying degrees, as described to section 1.4.2. It is therefore proposed that the southern section east facing pitch is retained insitu and repaired and the other sections are stripped and re-laid. It is proposed that the roof is re-laid with full torching, as seen to the southern section east façade.

The specialist roofing contractor should provide a detailed written methodology for the works with reference to Historic England's 'Stone Slate Roofing: Technical Advice Note' and 3no. case studies of stone roof repairs / reinstatement.

1.5.2 SITE ACCESS

As previously noted the site is accessed from Ashton New Road through Clayton Park. Currently vehicle access is allowed through the park across the Grade II listed bridge to a small compound area to the rear of the site. Vehicles are restricted to 5mph through the park, must use their hazard warning lights and stop immediately for any pedestrians.

1.5.3 SCAFFOLD

Full scaffold access is currently in place to the elevations and eaves level roof.
It is anticipated that this will be in place for stage A of the works (ie repairs to the southern east facing pitch).

1.5.4 PARKING

The parking area on the moated platform is the only parking allocated to the Hall. The residential streets have recently had additional parking restrictions placed on them limiting parking to 2 hours. The contractor should assess options for vehicle access and parking as part of the tender response. Use of the parking on the moated platform will potentially cause disruption to the continued use of the site during the construction works but some access may be possible, this should be agreed in advance with MCC and the Trustees. **Note the advised width and weight limit of vehicles within the Structural Engineers information.**

1.5.5 CONTINUED USE OF CLAYTON HALL LIVING HISTORY MUSEUM

The Hall is in use as a Living History Museum, it is open to volunteers every Tuesday and to the public every Saturday. In addition the Hall hosts adhoc open days for adult groups and school groups. The aim will be to minimise any disruption to the opening of the Hall during the construction works but it is expected that the Hall will need to remain closed to visitors during the works.

1.5.6 HERITAGE DESIGNATIONS & LISTED BUILDING CONSENT

Clayton Hall is a Grade II* listed building on a moated platform which is the site of a Scheduled Ancient Monument. The moated platform is accessed via a separately Grade II listed stone bridge. The site is therefore a significant heritage asset which is designated and protected to a high level under the Planning (Listed Buildings and Conservation Areas) Act 1990.

The requirement for roofing repairs was included within a recent listed building consent application (ref: 135355/LO/2022) and as such the detail of the full scope will be provided as part of discharge of condition to that application.

If any further ground works are required then these would be subject to a separate Scheduled Monument Consent application and additional archaeological advisory services including possible a possible watching brief scope. The principal contractor should ensure that the necessary consents are in place prior to commencing any works.

1.5.7 **ECOLOGY**

Ecological surveys have confirmed that there is an active badger set on the site. Badgers are afforded protection under the Protection of Badgers Act 1992. For the previous phase of works this has required require that a licence is provided by Natural England for the proposed works involving excavation. As no excavation is included in this scope of works then no further licences are needed.

Previous surveys have not found any bats within the roof space. However the methodology for stripping the roof should allow for any discovery of bats to be notified to the contract administrator.

1.5.8 **ARCHAEOLOGY**

The boundary of the scheduled ancient monument designation is shown in red to Fig. 01 and follows the line of the inner moat boundary encompassing the inner moat slope. As a Scheduled Ancient Monument any excavation on the site requires Scheduled Ancient Monument consent and mitigation such as trial pits prior to excavation and a watching brief during excavation. As the current scope does not include any excavation then no further archaeological assessment has been required at this point.

1.5.9 **CONSIDERATE CONTRACTORS / SOCIAL VALUE**

We hope that contractors working on this project will assist us with the following, in particular:

- Using local suppliers, subcontractors and tradesmen.
- Using local shops and facilities while working in the area.
- Respecting neighbours and local traders when planning road or pavement closures and noisy work.

2.0 Client Considerations

2.1 Arrangements for planning and managing the construction works

The works are instructed by the building owner Manchester City Council (MCC).
An outline of the arrangements for planning and managing Health and Safety during the construction phase of the project is listed below:-

- MCC is responsible for the health and safety of any employees at work and any other people not in their employment who are affected by the works.
- The Principal Contractor is responsible for health and safety within the construction site and those that might be affected by construction operations.
- The client and their representative shall have the right to suspend the construction work if they believe that a person's safety is at risk.
- The client shall require that all work is undertaken in accordance with all statutory requirements with respect to health and safety. In addition all relevant approved codes of practice and guidance shall be adhered to.
- The Principal Designer shall review drawings and design changes throughout the project and raise any associated issues with respect to health and safety considerations with the design team.
- The Principal Contractor is responsible for developing the Construction Phase Plan and maintaining it on site throughout the duration of the project. The Client requires the Construction Phase Plan before work commences on site, the client will assess the plan to ensure it is suitable and sufficient.
- The Principal Contractor shall be responsible for the management and implementation of health and safety on site.
- All personnel on site must have received adequate training to undertake their work in a safe and competent manner. Information on the training of personal, refresher training and statutory training certification should be held by the Principal Contractor and must be available for inspection at the site.
- All persons on site should be given a site-specific induction to familiarize themselves with emergency procedures, management requirements and specific site details.
- Any training needs identified as being required during the course of the project shall be undertaken. These may be in the form of toolbox talks or other suitable methods.
- Health and Safety shall be included on the agenda of all site meetings and significant items recorded and minutes distributed to all relevant parties.
- A system of monitoring the construction works to ensure the effective management of safety throughout the project duration shall be implemented by the Principal Contractor.
- Such monitoring shall include:-

    - Workplace inspections – general site safety
    - Statutory inspections – scaffold, plant, equipment etc.
    - Sub-contractors – the monitoring of sub-contractors

- The Principal Contractor is responsible for the production of all required method statements and risk assessments with respect to his undertakings. In addition, the Principal Contractor shall review the method statements and risk assessments of all sub-contractors on site and ensure that their content is suitable and sufficient before permitting any relevant activities to commence.
- Details of all accidents on site and the findings of such investigations shall be forwarded promptly to the Client.

HEALTH & SAFETY GOALS FOR THE PROJECT

2.2 The primary objective of all duty holders is to remove and minimise the risk of injury or incident and ensure that the legal standards for safety and health, guidance and best practice are achieved at all times and that all works are undertaken safely.

"Every person to return home safely every day"

COMMUNICATION AND LIAISON BETWEEN CLIENT AND OTHERS

2.3 All formal communications, instructions, technical queries etc are to be routed via the Contract Administrator, Richard Broadbent, MCC Capital Programmes.

Designers, including those working for the Principal Contractor, have a duty to ensure design detailing is co-ordinated for health and safety.

Design development details, changes, instructions etc are to be copied to the Principal Designer for review and where necessary comment. To facilitate this, the Principal Contractor shall provide designers with all necessary information and issue in good time design information to the Principal Designer.

MCC and the Trustees shall be informed of any requirements for pavement and road closures and kept updated on the programme timescales. We also request that the contractor initiate liaison and proactive updates with neighbours.

SECURITY OF THE SITE

2.4 The Principal Contractor is entirely responsible for the security of the site. The Principal Contractor is to ensure that there is adequate hoarding to prevent access to the site of all un-authorised persons.

Particular account is to be taken of unauthorised persons straying into work areas while construction activities are taking place.

The Principal Contractor is to provide within the Construction Phase plan for the project a marked up site plan showing location of the site compound including proposed locations of skips, parking etc.

HOARDING

2.5 Contractor to confirm requirements for heras fencing / hoarding to the perimeter of the site or site compound area.

WELFARE PROVISION

2.6 There are limited toilet facilities within the Hall and these will need to be available for visitors on open days. Therefore the Principal Contractor should allow for additional site facilities if required. The facilities should comply with the requirements of Schedule 2 of the Construction (Design and Management) Regulations 2015. If the Principal Contractor determines that external welfare facilities are required then the location should be shown on a marked up site plan for agreement. The welfare facilities are to be established before any construction activity commences on site and maintained in a hygienic manner for the duration of the project.

SITE TRANSPORT ARRANGEMENTS OR VEHICLE MOVEMENT RESTRICTIONS

2.7 As previously noted parking is restricted. The Principal Contractor will also need to assess turning circles for large vehicles into adjacent streets which can be restricted by residential parked cars.

The contractor is responsible for anticipating and arranging any required pavement and road closures with prior notification to highways, MCC, the Trustees and the neighbouring properties.

SITE SET UP

2.8 The site area is restricted, as part of the tender returns we request that consideration is given to the preferred arrangements for any compound areas, access, parking, welfare facilities & power supplies.

CONTRACT PARTICULARS TBC BY MCC

2.9 The proposed contract is TBC
The contractor is to price the Schedule of Works and provide a fixed price sum on the form of tender.
Payment terms are to be TBC BY MCC

PERMIT-TO-WORK SYSTEMS

2.10 The Principal Contractor shall implement a permit to work system for higher risk work activities or where the Client has a specific requirement.

FIRE PRECUATIONS

2.11 The Principal Contractor shall carry out a Fire Risk Assessment in respect of the works in accordance with the Regulatory Reform (Fire Safety) Order 2005, which shall be regularly reviewed and updated as necessary.

EMERGENCY PROCEDURES AND MEANS OF ESCAPE

2.12 The Principal Contractor is to ensure that their activities do not compromise any fixed or temporary alarms or the means of escape or any fire smoke detection equipment.

Generally the Principal Contractor shall ensure that emergency procedures and means of escape are maintained throughout the Construction Phase and any additional measures as a result of the works or erection of scaffolding / hoarding, etc. on site are put in place and maintained as required. This includes (but may not be limited to) the physical protection of routes, floors and other types of surfaces, access/egress points, locks and door furniture and emergency and safety lighting and signage for escape routes etc.

The Principal Contractor shall have particular regard to the safety of the public in and around Clayton Park and on the Hall site during open days.

NO-GO AREAS OR OTHER AUTHORISATION REQUIREMENTS FOR THOSE INVOVLED IN THE PROJECT

2.13 The contractor's operatives will not be allowed to venture into areas not defined as their workplace.

ANY AREAS DESIGNATED AS CONFINED SPACES

2.14 All works involving work on or entry into confined spaces shall be carried out in accordance with the requirements of the regulations and shall be subject to a safe system of work and the issue of a confined spaces permit to work, as appropriate.

3.0 Environmental Restrictions and Existing On-Site Risks

3.1 SAFETY HAZARDS

3.1.1 **BOUNDARIES AND ACCESS, ADJACENT LAND USES, INCLUDING MEANS OF ESCAPE**
Access is to be maintained across the moat bridge at all times. If this is not feasible then prior agreement will be needed with MCC and the Trustees as to restriction of their access and use.

3.1.2 **ANY RESTRICTIONS ON DELIVERIES OR WASTE COLLECTION OR STORAGE**
Contractor to confirm arrangements for deliveries to ensure that the adjacent residential streets are maintained as vehicular routes. Waste shall be removed from the site on a regular basis to ensure the site remains clean and clear and hazards are avoided. No waste is to be stored within the building unless specifically agreed with the Principal Designer and Client in writing beforehand.

3.1.3 **EXISTING STORAGE OF HAZARDOUS MATERIALS**
None known.

3.1.4 **LOCATION OF EXISTING SERVICES, PARTICULARLY THOSE THAT ARE CONCEALED – WATER, ELECTRCITY, GAS ETC**
Information on the known location of existing services will be provided by the Client. The Principal Contractor should then ensure that the services can be safely located, exposed, identified and where necessary isolated and protected before commencing any works.

3.1.5 **INFORMATION ABOUT EXISTING STRUCTURES – HAZARDOUS MATERIALS**
See attached Asbestos Management Report (Appendix A).

3.1.6 **ANY DIFFICULTIES RELATING TO PLANT AND EQUIPMENT IN THE PREMISES**
To be reviewed with the Principal Contractor on site.

3.1.7 **HEALTH & SAFETY INFORMATION CONTAINED IN EARLER DESIGN, CONSTRUCTION OR 'AS BUILT' DRAWINGS**
N/A

3.2 HEALTH HAZARDS

3.2.1 **CONTAMINATED LAND**
N/A

3.2.2 **EXISTING STRUCTURES CONTAINING HAZARDOUS MATERIALS**
See attached Asbestos Management Report (Appendix A).

3.2.3 **HEALTH RISKS ARISING FROM CLIENT'S ACTIVITIES**
None known.

3.2.4 **EXISTING ON-SITE RISKS**
There has been considerable drug litter including needles, particularly to the lower moat area. This has been cleared but is reoccurring.

Risks specific to this work relate to the condition of the roof. There are a large number of split and spalled stones slates and also an unknown number which are not adequately fixed to the battens / also loose and damaged battens.

4.0 Significant Design and Construction Hazards

4.1 **SIGNIFICANT DESIGN ASSUMPTIONS**

The Principal Contractor shall address the identified significant hazards associated with the design. It is essential that the Construction Phase Plan properly addresses the issues in the Risk Assessments through the production of method statements which detail the safe systems of work before the specific work actually commences on site.

Refer to Appendix C – Risk Management Register

4.2 **SUGGESTED WORK METHODS / SEQUENCES**

The scope of works provides the required sequence for the works to be carried out. Detailed methodologies for each of the phases of works should be produced and agreed with the required parties (Contract Administrator / Conservation Architect / Structural Engineer and also LPA and Historic England) prior to any of the works commencing to ensure that any unknowns have been adequately mitigated.

4.3 **CO-ORDINATION OF ON-GOING DESIGN WORK**

All ongoing design and design changes shall be co-ordinated through the Principal Designer and Contract Administrator.

4.4 **DESIGN CHANGES THROUGHOUT THE PROJECT**

If, due to unforeseen circumstances, there are aspects of the design which require modification post tender and these significantly affect health and safety the following procedure shall apply.

Designers and / or the Principal Contractor:-

- As soon as it becomes known that a design element is to be modified, the Principal Designer shall be notified and provided with the relevant information.
- Each modification shall be developed on the basis of Regulation 13 and the “principles of prevention” regarding execution, maintenance, repair and subsequent demolition and dismantling.
- Each modification of design shall be submitted in sufficient time to permit proper consideration of health and safety by all parties.
- The Principal Contractor shall be required to update amend and modify as necessary their Construction Phase Plan to address the change.
- Designers are to highlight significant health and safety issues due to change advising the Principal Designer and Principal Contractor

5.0 The Health and Safety File

5.1 The Principal Contractor shall comply with his duties under the CDM Regulations 2015 and obligations set out in the contract documents to ensure that the Principal Contractor receives all the information required to complete the Health and Safety file within four week of issue of the Certificate of Practical Completion by the Contract Administrator. Operation and Maintenance Manuals must be available before the building is handed over to the Client.

Files shall be provided in an electronic document format (including all manufacturers' data, drawings, etc). In addition, separate electronic copied of drawings in CAD and editable word / excel documents shall be provided. Two hard copies in white, four-ring binders should also be provided.

6.0 Schedule of Works

ITEM REF	DESCRIPTION	SPEC REF	COST
STAGE 1	**ISOLATED TREE WORKS**		
S1.1	TREE SURVEY Tree survey to be carried out for the trees to be affected by the works by a specialist arboriculturalist contractor. The survey will need to meet the requirements of BS5837 Trees in relation to design, demolition and construction. The aboriculturalist should be briefed to ensure they understand that the survey is both to assess the health of the trees and the impact of pruning works to facilitate the building recording / roof survey and construction work to the roof.		
S1.2	REDUCE CANOPY TO THE FOLLOWING TREES Refer to drwg 2407-CWS-XX-GF-DR-L-102 Reduce the canopy of the following trees to limit the overhang to the roof (subject to the recommendations of the survey) T56 T12 T58 T59 T60		

ITEM REF	DESCRIPTION	SPEC REF	COST
STAGE 2	**BUILDING RECORDING TO THE WHOLE ROOF PRIOR TO CAREFUL REMOVAL**		
S2.1	PHOTOGRAMMETRY / BUILDING RECORDING TO THE ROOF Prior to the removal of any stone slates ensure that all roof areas have been recorded using high resolution drome photography / photogrammetry. The photos should be carried out to a high resolution that is also scalable as a building record. See draft brief for the work to Appendix A. Suggested contractors: Downland Partnership http://www.exactsurvey.com/contact.php MK Surveys https://mksurveys.com/contact-us Greenhatch [https://www.greenhatch-group.co.uk%0d]https://www.greenhatch-group.co.uk Terra Measurement https://www.terrameasurement.com/contact AHR Building Consultancy https://www.ahr.co.uk/contact 360 Mapping Ltd https://360hq.co.uk/offices/ Provision of initial orthophotographs, CAD files and PDFs as detailed in the attached brief to be shared with the Contract Administrator / Conservation Architect / Structural Engineer and stone roofing specialist prior to any removal of stone is undertaken. Survey also to record other features such as rooflights / verges / timber finial details / gutters etc.	See Appendix A	
S2.2	Further phase of building recording following removal of the slates. Note access for the photogrammetry within the tented scaffold to be discussed and agreed with the specialist contractor. Provision of final orthophotographs, CAD files and PDFs as detailed in the attached brief.	See Appendix A	

ITEM REF	DESCRIPTION	SPEC REF	COST
STAGE 3	**FULLY TENTED SCAFFOLD & INITIAL INSPECTION**		
S3.1	SCAFFOLD To be in accordance with the Schedule and Specification prepared by The Morton Partnership (TMP). See doc ref RGR/BBR/16076-Roofsched&spec Rev 2 dated June 2026. Prior to the erection of the scaffold provide a full scaffold design for agreement with the contract administrator, architect and structural engineer. Scaffold needs to ensure that access is provided to the following areas throughout the construction phase; - 3no. chimneys - Bell tower - All roof areas - All eaves / gutter levels - Windows for repairs - Façade for repairs	See TMP spec	
S3.2	INITIAL INSPECTION Prior to the removal of any slates provide access to allow full inspection of 2no. chimneys and 1no. bell tower. Allow for opening up to junction of chimneys and slates to allow recording of build up prior to removal of slates. SE and conservation architect to be in attendance during opening up. Allow for inspection of masonry wall tops to eaves.	See TMP spec	

ITEM REF	DESCRIPTION	SPEC REF	COST
STAGE 4	**CAREFUL REMOVAL OF STONE SLATES TO THE NORTHERN SECTION AND SOUTHERN WEST FACING PITCH INCLUDING THE BELL TOWER.**		
S4.1	CAREFUL REMOVAL OF STONE SLATES Carefully remove the stone slates to the northern section and southern west facing pitch including the bell tower roof area and all ridge tiles. Stone slates should be carried down to the main scaffold lift and then to the ground. Stone slates to be stacked on end in their sizes or courses ready for inspection. Stone slates to be cleaned and if needed dressed, re-holed with the appropriate size hole for a wooden peg and correct edge dressing. Ridge tiles should be inspected and sorted retaining those suitable for reuse.	H62/200	
S4.2	SORTING AND STORAGE OF STONE SLATES Size stone slates using a traditional marking stick. Sort the stone slates into their size set. Allow for appropriate storage crates and for the stone slates to be stored securely. The outhouse (adjacent single storey building) and the lean to are available areas for storage which should be assessed for suitability including security. If these areas are not adequate then provision should be made for constructing an onsite store. Note that the separate outbuilding is not suitable for use. Confirm the quantity of replacement salvaged stone required.	H62/200 H62/270	
S4.3	PETROGRAPHIC ANALYSIS OF STONE Petrographic analysis of the stone. Allow for testing of 6no. samples.	C20	
S4.4	MORTAR ANALYSIS Analysis of the existing torching to the underside of the south facing pitch. Allow for testing 8no. samples	C20	

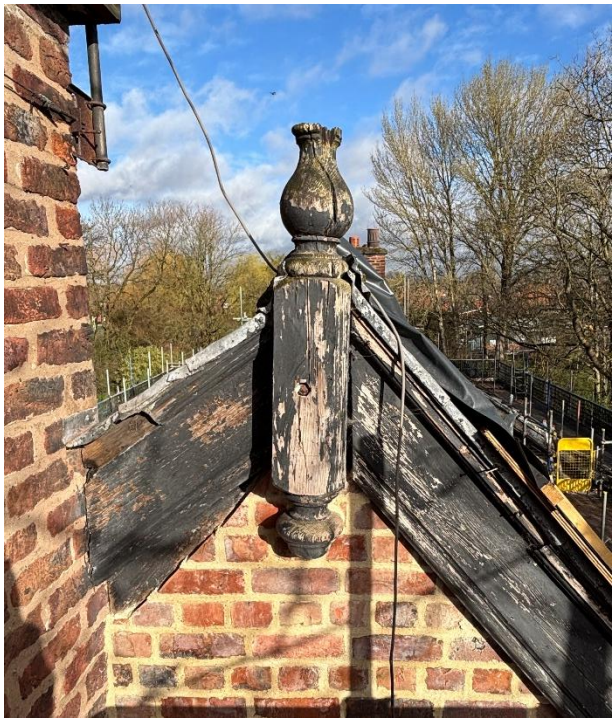
ITEM REF	DESCRIPTION	SPEC REF	COST
STAGE 5	**DETAILED INSPECTIONS OF ROOF TIMBERS**		
S5.1	REMOVE EXISTING BATTENS AND ROOFING FELT Following removal of the existing stone slates remove all battens and felt to the northern section of the roof. Assess the condition of the battens to the southern section west facing pitch and retain where possible. Clear insulation and debris from the ceiling backings.	H62/220 H62/225	
S5.2	SECOND PHASE OF BUILDING RECORDING Further phase of building recording following removal of the slates as item S2.2 and draft brief to Appendix A. Note access for the photogrammetry within the tented scaffold to be discussed and agreed with the specialist contractor. Provision of final orthophotographs, CAD files and PDFs as detailed in the attached brief.	As Appendix A	
S5.3	ASSESSMENT OF TIMBER ROOF STRUCTURE To be in accordance with the Schedule and Specification prepared by The Morton Partnership. See doc ref RGR/BBR/16076-Roofsched&spec dated 02/06/2026. Allow for a timber condition survey which is necessary to assess the final extent of repairs required to rafters / purlins etc. Record and remove any decayed / deteriorated timbers to the verges – including the finials. Store with the stone slates. Remove the lead flashings – salvage in accordance with the specification. Allow for inspection by SE / conservation architect / contract administrator to assess all roof timbers. Allow for sufficient time within the programme for inspections and for the schedule of works to be updated (minimum 5 working days).	As TMP spec & H62/234	
S5.4	EAVES LEVEL MASONRY INSPECTION Following removal of slates and all felt inspect eaves level masonry to establish full extent of required masonry repairs.	C41	

S5.5	SOURCING OF STONE Required quantity of replacement stone to be confirmed on removal and salvage of the existing stone slates. Estimate for the purposes of costing that the salvage rate will be 30%. Specialist contractor to advise on the sourcing of replacement stone slates. Replacement stone slates should match the existing as closely as possible in terms of geological type, colour, texture, size, thickness and edge dressing. The selection of replacement materials should reflect the original mix of sizes, this is recorded in the accompanying report by WJ Conservation dated September 2025. Not sawn, traditional split slates should be used. Confirm the weathering and durability characteristics of the selected stone. Slates should be dressed rather than sawn to size. Slates should be reused with their original orientation (top face up, top edge up). Ridge tiles – stone from the matching quarry to match the stone slates in type, colour and texture of the stone.	H62/270	

ITEM REF	DESCRIPTION	SPEC REF	COST
STAGE 6	**TIMBER REPAIRS AND RELAYING OF THE STONE ROOF**		
S6.1	TIMBER ROOF REPAIRS & ROOF VOID MASONRY REPAIRS To be in accordance with the Schedule and Specification prepared by The Morton Partnership. See doc ref RGR/BBR/16076-Roofsched&spec Rev 2 dated June 2026.	As TMP spec	
S6.2	FIT NEW BATTENS Using a roofing rod and a marking stick mark out the batten spacing to each rafter. Fit new preservative treated sawn softwood battens (size TBC) using stainless steel nails. Once the lathing is complete the size identifier needs to be written on the batten from the marking rod.	H62/245 H62/265 H62/270	
S6.3	PREPARE LIME MORTAR Lime mortar should be mixed a few days before needed for laying slates. Mix TBC after the testing results are received but to include – aggregate and high calcium quicklime mixed with water as one process. Left to cool and mature for a few days. When about to start slating the mortar should be knocked up again and animal hair added.	H62/290	
S6.4	LAYING STONE SLATES Before laying any stone slates ensure that the sorting has been fully concluded. The eaves course should have been measured and confirmation of the diminishing courses and spacing of the laths / battens provided to the CA. Confirm the eaves condition for each pitch and requirement for a double course of slates at the eaves. Start laying stones one course at a time, placing the stones over the middle of the course below. Ensure the required side laps are maintained – minimum side laps should be checked and calculated for each stone length. New oak pegs – green pegs should not be used. Pegs should be roughly square sectioned and dried before use. No membrane or felt. All slates should be fully torched, carefully applied avoiding forcing mortar down between the joints which would draw in moisture. At abutments the stone slates need to be turned up against the wall using mortar to allow for the water to run away from the joint. Code 3 lead soakers to be placed on each course. A mortar fillet should be provided to weather the detail against the wall. Locations: • 3no. chimneys • Junction of northern and southern roof sections	H62	

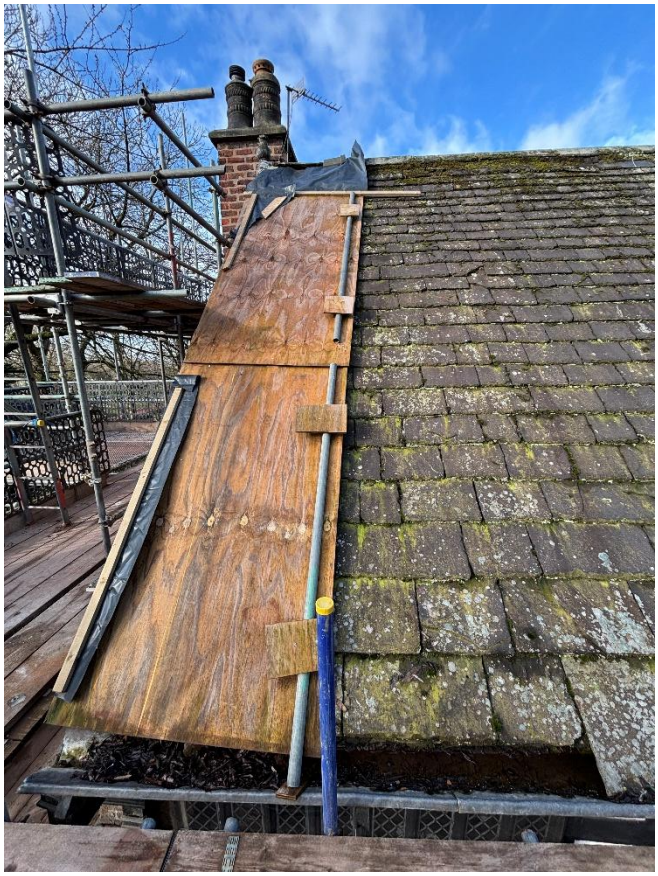
	Verges should be bedded as the stones are laid and a scribed board fixed to the end of the rafter. Locations: • Northern gable end of the northern section. • Oversailing verges to the southern end of the northern section. • Oversailing verges to the southern end of the southern section. • Gable to the bell tower roof. Ridges should be back bedded in an air lime mortar with suitable aggregates. Details at the butt of the ridge to be reviewed on site to retain the existing detailing and improve the weathering.		
S6.5	POSSIBLE FOLLOW ON REPAIRS TO TOP COURSES OF RETAINED PITCH TBC following the removal of the ridge tiles to the south pitch. Allow for full replacement of top 2no. courses of stone to the southern east facing pitch as required due to removal and relaying of the ridge.	H62	
S6.6	ROOFLIGHT TO WEST FACING PITCH OF SOUTHERN SECTION Reinstate rooflight to west pitch of southern section to size and location recorded by the initial survey. New Georgian wired glass fixed in place with copper straps across the tail of the glass. Laths to be rebated to allow the glass to sit flush with the battens and the slates back bedded in lime mortar next to the glass to create a seal against wind driven rain / snow. Allow for small lead flashing to bottom edge of glass. (Also see item S5.2 for replacement roof light to east facing pitch)	H62	
S6.7	LEADWORK Existing lead flashings as marked to drwg al(05)105 to be removed and salvaged. Lead flashings / soakers to be reinstated as marked to drwg al(05)105 to the following locations; • 3no. chimneys to northern section including single storey outhouse. • Abutment of outhouse to northern gable of hall. • To projecting svp to northern section and projecting vent to the southern section. • To abutments where lower southern section meets northern section to east and west pitches and also to face of small projecting gable of southern section. • To valleys formed by the bell tower roof. • To the southern chimney. • To the bell tower timber feet. • To the bell tower roof. • To the southern section eastern façade gutter. • Projecting windows as item S7.6. Areas where there are lead flashings as existing which are not be replaced / replicated are the verges to southern end of the northern section roof where they	H71	

	are higher and the verges to the southern section roof and bell tower roof all of which are to be bedded as the stones are laid and a scribed board fixed to the end of the rafter.		
S6.8	BELL TOWER TIMBER REPAIRS To be in accordance with the Schedule and Specification prepared by The Morton Partnership. See doc ref RGR/BBR/16076-Roofsched&spec Rev 2 dated June 2026.	As TMP spec	
S6.9	VERGE BOARDS Timber verge boards to be provided to the following locations; • Northern gable end of the northern section. • Oversailing verges to the southern end of the northern section. • Oversailing verges to the southern end of the southern section. • Gable to the bell tower roof. Final build up and support from the rafters to be determined following the removal of the slates and felt. Existing condition is a built up of two boards with the final finish being a moulded section. The moulded sections should be retained on site when removed and the profile recorded, replicated and reinstated.	H62/310	
S6.10	TIMBER FINIALS 4no. timber finials to be repaired or replaced. Each finial to be recorded insitu as part of the building recording. Each to be removed and tagged with their location. Condition to be assessed for suitability of repairs. If not suitable to be repaired then the finial should be replaced like for like in air dried heartwood oak. SE to confirm fixing details. 	H62/370	

ITEM REF	DESCRIPTION	SPEC REF	COST
STAGE 7	**ANCILLARY REPAIRS**		
S7.1	EAVES LEVEL MASONRY REPAIRS Final scope to be subject to a high level inspection following removal of the slates and felt. Scope anticipated to be removal of patch render, removal of loose masonry, allow for rebuilding of top two courses of brick to the full length of both the eastern and western facades to the northern section. This will require temporary removal and reinstatement of the gutters.	C41	
S7.2	REINSTATE RENDER BAND TO NORTH GABLE WITH DETAILS RECORDED FROM PREVIOUS PHASE OF WORK Reinstate high level render band to the north gable as shown to elevation drwg al(05)036. Band is nom 250mm deep with 3no. decorative details also formed in render. Templates for the details are to be provided by the conservation architect. Remove and reinstate render band to south gable of north roof (east side).	M20	
S7.3	CLEANING & REPOINTING OF BRICKWORK Remove test patches of masonry paint to north and east elevations using DOFF cleaning method (8no. 1mx1m approx.). Remove external paint to single storey outhouse including to west facing wall within the lean to enclosure using DOFF cleaning method. Allow for full repointing to east elevation of main hall and north east and west elevations of the single storey outhouse. Allow for additional cleaning to all elevations on completion – anticipating debris following roof strip.	C20/300	
S7.4	GUTTERS & RAINWATER GOODS Timber gutter to the eastern elevation of the southern section roof to be replaced. Prior to replacement ensure that the gutter has been fully recorded in terms of profile, size and datumns. Assess the datumns for the drainage fall. Timber profile to be replaced like for like in size and datumns (subject to assessment). Lead lining to use neoprene lead expansion joints. Raked timber struts – size and fixing to façade to be confirmed by SE. Gutters to western elevation of southern section to be retained insitu throughout the works if possible. Gutters to northern section roof to be removed to allow for eaves level masonry repairs. Prior to removal undertake a full photographic survey. Retain gutters and gutter brackets. Fully inspect gutters and undertaken any necessary repairs. Re-check section size is suitable capacity. Redecorate gutter and brackets and reinstate.	R10	

S7.5	EAVES NETTING Replace netting to the full perimeter of the eaves to close off access to the roof void to squirrels / birds etc.	R10	
S7.6	FLAT ROOF AREAS TO PROJECTING WINDOWS Open up bottom 2-3 courses of stone to the southern roof section eastern elevation over the projecting windows to allow a detailed inspection of the roofing felt and timber. Allow for removal of the roofing felt and inspection of the timbers. Allow for timber repairs – scope TBC. Allow for roofing the projecting bay in lead.	H71	
S7.7	WINDOW REPAIRS Site inspection to re-assess condition of timber frames and leaded lights. Minimum scope to include repairs to leaded lights to W1 / W3 / W4 / W5 / E7 and E13.	L10	
S7.8	LIGHTNING PROTECTION Specialist contractor to provide design and specification for lighting protection. (NOTE: possible Scheduled Ancient Monument Consent for lightning protection ground terminus)	TBC by specialist	
S7.9	INSULATION IN CEILING Natural loose lay insulation either sheeps wool or hemp subject to Building Regs confirmation. To both northern and southern sections of the roof.	P10	

ITEM REF	DESCRIPTION	SPEC REF	COST
STAGE 8	**REPAIRS TO THE SOUTHERN EAST FACING PITCH**		
S8.1	PATCH REPLACEMENT OF BROKEN SLATES USING SALVAGED STONE FROM OTHER PITCHES Individual broken and slipped slates should be replaced / refixed insitu using the salvaged stone from the other pitches. Slates to be re-fixed using oak pegs and re-torch from the inside. Provisionally allow for replacement of 15no. individual slates plus contingency / provisional sum for unknowns due to site conditions. Southern verge to be re-laid and a further small section of stones to be removed and relaid to allow sound fixing of new battens. Stone slates then to sweep up over the verge and bedded in lime mortar prior to installing a scribed end board to protect the lime mortar. Battens to terminate 25mm from the mortar to eliminate risk of moisture soaking into the battens. Profile of end board to match existing. 	H62	

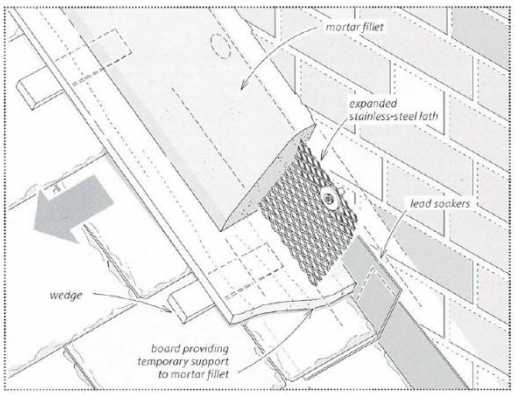
At the north end of the pitch new soakers to be provided and a mortar flaunch made up with 3-4 coats placed over the soaker. Mortar flaunch to join in with lime render band which is to be repaired / replaced.



See drwg XXX and Historic England guidance note & diagram below (extract from English Heritage Practical Building Conservation: Roofing pg46)

MORTAR FILLETS

Mortar used at abutments will always crack, whatever the mix, because of the differential movement between the wall and the tiles or slates. Many roofers apply some form of slip layer on the roof cover before the mortar is placed. This ensures that the mortar fillet is isolated from any movement between the roof and the masonry, thus maintaining a weather-tight seal between the wall and the fillet. Lead soakers improve the durability of mortar fillets. Nowadays, expanded stainless- or galvanised-steel lath is used to help support large areas of exposed mortar fillet and reduce the likelihood of cracking. The traditional solution was tile or slate slips bedded into the mortar to protect it and reduce shrinkage as it dried (see the chapters on **Slates & Stone Slates, Clay Plain Tiles, Pantiles & Other Single-lap Tiles**).



Forming a mortar fillet at an abutment

When the mortar has hardened, the wedges and board are withdrawn, leaving a gap between the mortar fillet and the slates or tiles.

S8.2	REPLACEMENT ROOF LIGHT New Georgian wired glass fixed in place with copper straps across the tail of the glass. Laths to be rebated to allow the glass to sit flush with the battens and the slates back bedded in lime mortar next to the glass to create a seal against wind driven rain / snow. Allow for small lead flashing to bottom edge of glass.	H62	
S8.3	REPAIR / REPLACE INTERNAL TORCHING Inspect all internal torching and remove loose. Repair / replace with new well haired lime mortar – spec of mortar to be informed by the test results as item S4.4	H62	

7.0 Materials, Workmanship & Method

C20 ENABLING WORKS

100 INTRODUCTION

110 DESK STUDY / SURVEY

Before starting any works, the contractor should examine all available information and carry out;

- A review of the scope of works as detailed to this method statement and the drawing package.
- Ensure that the necessary agreements / consents are in place.
- A review of the access requirements / limitations of the site and surrounding area.
- A review of the access arrangements for the works and restrictions due to the existing fabric and maintaining access for occupants and visitors.
- A review of the structural engineers information / ecological / archaeological requirements.
- Ensure a photographic survey of all areas subject to alteration is undertaken by the contractor.
- The contractor should ensure that they are thoroughly familiar with the historical importance of the site and the specific requirements that this places on the methods of working.
- The contractor should ensure that he is familiar with the location of the services, in particular the route of the mains electricity cable from Clayton Hall Road across the moat.
- The contractor should review the form and location of any flammable, toxic or hazardous materials and provide statements on the proposed methods of removal and disposal where required.
- The contractor should review the Asbestos Survey Information.

The contractor should then report and provide method statements describing;

- Proposed programme of work, including sequence and methods of investigations and fabric removal.
- Arrangement for protection of personnel and the general public, including exclusion of unauthorized persons.
- Welfare arrangements.
- Arrangement for control of site transport and traffic.

115 INFORMATION TO BE PROVIDED WITH TENDER

- Construction Programme
- Assessment of access requirements including;
  - Pavement / road closures.
  - Proposed construction access points.
  - Site facilities.
  - Waste removal.

120 ASBESTOS SURVEY

An Asbestos Management Survey was carried out in 2023 (refer to Appendix B)
Additional asbestos testing was undertaken during the recent phase of construction works (refer to Appendix C).

130 FEATURES TO BE RETAINED & PROTECTED

All existing elements which are not specifically noted to be removed are to remain.
Specific areas known to require protection include (but are not limited to);

- Southern section east facing roof pitch.

150 WASTE REMOVAL

- The contractor is to allow for the removal of waste items from the construction works and to confirm the methodology.

200 ENABLING WORKS

205 ENABLING WORKS

Prior to any roofing works commencing ensure;

- Tree survey to be carried out for the trees to be affected by the works by a specialist arboriculturalist contractor. The survey will need to meet the requirements of BS5837 Trees in relation to design, demolition and construction. The aboriculturalist should be briefed to ensure they understand that the survey is both to assess the health of the trees and the impact of pruning works to facilitate the building recording / roof survey and construction work to the roof.
- Building recording to be carried out in accordance with Appendix A.
- Initial inspections are carried out and programme time allowed for further follow on inspections.

300 CLEANING WORKS

305 MASONRY CLEANING WORKS

To include;

- Removal of paint finishes to the single storey outhouse and the test panels.
- Cleaning down of the elevations generally following the roof works.
- Removal of areas of patch render finishes

306 TIMBER FRAME CLEANING WORKS

To include;

- Cleaning down of the elevations generally following the roof works to remove any dust and debris from the roof works.
- No high pressure water to be used, cleaning to be undertaken with soft bristle brush in dry conditions.

310 RELATED REPAIR / REMEDIAL WORKS

- Principle Contractor to confirm preferred construction sequence.
- Trial sample areas of cleaning to brickwork and stonework will be required to agree the methodology and enable like for like masonry to be sourced.

315 PROTECTION

- Surfaces not designated for cleaning: prevent damage, including marking and staining.
- Openings / vents / grilles: prevent ingress of water, cleaning agents and detritus. Any protection sheets should be fixed using temporary fastenings that are located within masonry joints. For other surfaces seek instructions.

320 CONTROL AND DISPOSAL OF WASH WATER AND DETRITUS

- Control of wash water: collect and divert to prevent ingress and damage to building fabric and adjacent areas. If required seek approvals from the relevant Authority for disposal.
- Above and below ground drainage systems: keep free from detritus and maintain normal operation.

325 COLD WEATHER

- Cleaning procedures using water: do not use when air temperature is at or below 5°C. Protect damp surfaces from frost.
- Chemical cleaning agents: do not use when surface temperatures are below those recommended by the manufacturer.

330 CLEANING GENERALLY

- Operatives are to be appropriately trained and experienced for each type of cleaning work. Evidence of training should be submitted on request.
- Contractor to comply with all Health & safety requirements when working with dust producing appliances.
- Prior to cleaning, all drainage systems in the affected area should be protected. Land drains to be protected using hessian, geotextile sheeting or other dust barriers to prevent infection of the drainage system. All vulnerable areas, openings, areas not to be cleaned and potential dust traps must be protected prior to carrying out any works. Ensure adequate protection to pedestrian / vehicular traffic using the areas around the building and park and to the neighbouring buildings.
- Control of cleaning: confine cleaning processes and materials to designated areas. Prevent wind drift.
- Removal of detritus: Dispose of regularly and safely in accordance with the required legislation.
- Monitoring: frequently check results of cleaning compared to approved trial samples. If results established by trials are not achieved seek instructions. For any modifications to the cleaning methods and materials after approval of the trial samples then seek instructions.

335 RECORD OF CLEANING WORKS

- Written report: Maintain for cleaning methods and procedures used for each type of surface and deposit. Purpose – for building maintenance and to inform future cleaning operations.
- Report content: relevant attributes of cleaning methods used including:
  - Equipment and settings
  - Dwell times
  - Numbers of applications and any specific preparation required
  - Ambient temperatures

- Other documentation: provision will be required to allow for archaeological and architectural advisors to visit the site and make records prior to and during the cleaning works taking place.
- Submission: submit record of trials prior to seeking instruction to proceed with full scope, submit full report at completion of the cleaning works.

340 TRIAL SAMPLES

- The aim of the trial sample areas is to find the appropriate cleaning methods for the different background materials / different locations of the building / different types of deposits whilst minimizing any resulting effect on the background historic fabric. The sample areas should therefore start with the lowest pressure and least amount of cleaning product / abrasive action. The aim will be to remove the surface deposits whilst retaining

the natural patina of the material and avoiding surface damage. There may be ingrained deposits that are not possible to remove without causing irreparable damage to the fabric and in these situations the works should stop. Damage to the fabric is to be avoided in all situations.

- Trial samples of each of the different cleaning methods will be required. The trials should start with DOFF and only proceed to other methods if the DOFF is not achieving the required results.
  - Location / Size:
    Location 01: Ground level outbuilding. Size 1m2.

- Records: maintain written records for each trial area, including cleaning methods, conditions, equipment and settings, dwell times, number of applications and any specific preparation required. The report of the trials should be submitted before proceeding with the full scope of cleaning.

PRODUCTS / EQUIPMENT

345 ABRASIVE CLEANING EQUIPMENT

- Manufacturer / supplier: to contractors / specialists choice subject to site trials.
- Nozzle types: Subject to site trials.
- Abrasives: Subject to site trials.
- Other requirements: apply abrasive at the lowest pressure that will remove deposits whilst causing the minimum of abrasion to the surface(s). Where deposits are ingrained seeks instructions. For each surface establish the optimum settings (pressure and abrasive volume), nozzle type and distance of nozzle from the surface. Keep a written records of these variables.
  Remove and collect dust and debris from each completed surface as work proceeds and finish by rinsing off thoroughly with clean water using suitable low pressure spray equipment.
  Allow for the mixing of water and abrasive within the vessel.
  Allow for the requirement to vary the working pressure on the machine.

350 DOFF / THERMATECH CLEANING SYSTEM FOR REMOVAL OF MOSS, ALGAE AND PAINT TO MASONRY
For removal of paint to brickwork and stonework. Trial areas to be undertaken first.

- Manufacturer / supplier: to contractors / specialists choice subject to site trials.
- Cautionary trial samples of different cleaning techniques to be undertaken, starting with DOFF as the least intrusive and preferred cleaning method. If in doubt that a successful result can be achieved without damaging the masonry or adjacent materials then the option not to clean may be adopted. The most appropriate cleaning technique is to be selected which follows the suggested criteria;
  - Causes minimum abrasion to the surface.
  - Does not remove the surface patina and any surface tooling.
  - Is compatible with adjacent materials.
  - Or the methodology ensures that no damage will be caused to adjacent materials of differing properties.
  - Successfully removes any damaging soiling.

355 JOS/TORC CLEANING SYSTEM
For removal of paint to brickwork and stonework. Only to be trialed is the DOFF cleaning system is not successful.

- Manufacturer / supplier: to contractors / specialists choice subject to site trials.
- Cautionary trial samples of different cleaning techniques to be undertaken, starting with DOFF as the least intrusive and preferred cleaning method then moving on to JOS / TORC using the least abrasive settings and medium. If in doubt that a successful result can be achieved without damaging the masonry or adjacent materials then the option not to clean may be adopted. The most appropriate cleaning technique is to be selected which follows the suggested criteria;
  - Causes minimum abrasion to the surface.
  - Does not remove the surface patina and any surface tooling.
  - Is compatible with adjacent materials.
  - Or the methodology ensures that no damage will be caused to adjacent materials of differing properties.

- Successfully removes any damaging soiling.

220 LABORATORY TESTING: STONE SLATES & MORTAR ANALYSIS OF TORCHING

- Stone analysis is required to finalise the specification for replacement slates.

- Stone analysis is to allow for the verification of typology and geology of the existing stonework to enable geological matching stones to be sourced. Stone samples can be dust or friable section, do not cut out sections of stone. Allow for testing of 6no. samples. This allows for the possibility of different types of stone to the roof. The stone for testing should be agreed with the conservation architect and contract administrator and the locations from which the stone taken agreed and documented.

- The laboratory testing of the stonework should provide a full petrographic assessment of the characteristics of the material to enable suitable matching stone to be specified. The test regime for the stonework should include the following;
  - A petrographic test regime which will provide an analysis of the typology and geology of the stonework including identification of possible open quarries for stone matching. It will include analysis of microcracking and pore sizes.
  - Existing soluble salt content.

- Prior to taking any samples the methodology for sample removal and provision to the laboratory should be confirmed with the laboratory. Spalled fragments and dust samples may be sufficient. Stone samples should be accompanied by good documentation, prior to the removal the location of the sample should be photographed and marked on a plan and elevation. The condition of the masonry on removal should be noted (eg is it waterlogged / frost damaged etc.). If fragments or dust samples cannot be taken and cores are required then prior approval should be sought on locations and methodology. Immediately following the removal of the sample it should be placed in a double zip locked bag to retain the moisture content as removed.

- Mortar analysis is required to the existing torching to establish the original mix constituents, aggregate sizes and mix proportions. Allow for mortar analysis to 8no. locations as follows;
  - 2no. to the northern roof section east pitch.
  - 2no. to the northern roof section west pitch.
  - 2no. to the southern section east pitch.
  - 2no. to the southern section west pitch.

- The laboratory testing of the mortar can be organized through Womersley's, Ravensthorpe Industrial Estate, Low Mill Lane, Ravenshtorpe, Dewsbury, WF13 3LMJ. It should provide a full assessment of the characteristics of both the bedding and facing (pointing) mortar. The test regime for the mortar should include a full analysis of the characteristics of the mortar that will characterize;
  - Sands and aggregates including type and size
  - Full analysis of the binder constituents
  - The mix proportions

C41 REPAIRING / RENOVATING / CONSERVING MASONRY & TIMBER

100 INTRODUCTION

110 SCOPE OF WORK

- To include masonry repairs to the outhouse following removal of the paint, eaves level masonry repairs and possible chimney repairs.
- To be confirmed following the removal of the paint as section C20/300 and the high level inspections before and following removal of the slates.

120 REVIEWING SCOPE OF THE WORK

- General Inspection: Undertake an initial joint inspection prior to the commencement of any works. Undertake trial samples of paint removal in accordance with clauses C20/340 for agreement of the methodology. Following the removal of the paint arrange a further joint inspection with the principal contractor, architect and structural engineer to confirm type and extent of work required.
- High Level & Roof Inspection / Survey: Allow for a high level inspection of the chimneys prior to the roof works commencing. Confirm extent of any chimney repairs required.
  Allow for high level access for inspection to eaves / gutters and then further survey of eaves level masonry following removal of the slates.
- Records of masonry to be repaired: Before starting work, use measurements and photographs as appropriate to record bonding patterns, joint widths, special features, etc.

125 REMOVAL OF VEGETATION / PLANT GROWTH FROM MASONRY

- Plants, root systems and associated soil / debris: carefully remove from joints, voids and facework.
- Removal of roots: use dampened temporary wood wedges or other approved method to assist removal. Where growths cannot be removed completely without disturbing masonry seek instructions.
- Where removal of root system is not possible, cut through stem as close as possible to the face of the masonry and apply herbicide paste in accordance with the product requirements. Leave stump to wither and re-assess further removal. Note: to be undertaken sufficiently in advance of the main masonry repair works to allow for the stumps to wither.

130 REMOVAL OF VEGETATION / PLANT GROWTH FROM GUTTERS AND DRAINAGE

- Plants, root systems and associated soil / debris: carefully remove from all gutters, downpipes and drains.
- Following removal of vegetation and completion of the drainage survey confirm condition of all above ground and below ground drainage systems.
- Scope of repair works to above ground and below ground drainage systems to be confirmed following vegetation removal, survey and inspections.

135 REDUNDANT FITTINGS / FIXINGS

- **I**tems to be removed prior to the paint removal:
  - TBC following high level inspection

- Removal: Minimize disturbance to surfaces.

140 RECORD DRAWINGS / PHOTOGRAPHS

- General: Maintain accurate records of work carried out to masonry
  Note - Provision will be made to allow for Archaeological / Architectural advisors to visit the site and make records prior to the works taking place. Requirement for additional recording to be confirmed.
- Submission: At completion.
  - Copies: 2 no. copies.

WORKMANSHIP GENERALLY

150 POWER TOOLS FOR REMOVAL OF MORTAR
- Usage: only permitted where approved by CA.

155 PUTLOG SCAFFOLDING
- Usage: Not permitted.

160 PROTECTION
- Handling of masonry units: Prevent overstressing during transit, storage and fixing. Lift units at designed lifting points where provided.
- Storage of masonry units: On level bearers clear of the ground, separated with resilient spacers. Protect from adverse weather and keep dry. Prevent soiling, chipping and contamination by salts and other deleterious substances.
- Protection of masonry: Suitable nonstaining slats, boards, etc. Remove at completion.
  - Prevent damage, particularly to arises, projecting features and delicate, friable surfaces.
  - Prevent mortar/ grout splashes and other staining and marking.

165 STRUCTURAL STABILITY
- General: Maintain stability of masonry. Report defects, including signs of movement that are exposed or become apparent during the removal of masonry units.

170 DISTURBANCE TO RETAINED MASONRY
- Retained masonry in the vicinity of repair works: Disturb as little as possible.
- Existing retained masonry: Do not cut or adjust to accommodate new or reused units.
- Retained loose masonry units and those vulnerable to movement during repair works: Prop or wedge so as to be firmly and correctly positioned.

180 OPERATIVES
- General: Skilled and experienced with the materials and procedures required.
  - Evidence of training and previous experience: Provide on request.

185 ADVERSE WEATHER
- Frozen materials: Do not use. Do not lay masonry units on frozen surfaces.
- Air temperature: Do not bed masonry units or repoint.
  - In cement gauged mortars when at or below 3°C and falling or unless it is at least 1°C and rising (unless mortar has a temperature of not less than 4°C when laid and the masonry is thoroughly protected).
  - In hydraulic lime:sand mortars when at or below 5°C and falling or unless it is at least 3°C and rising.
  - In nonhydraulic lime:sand mortars in cold weather without approval.
- Temperature of the work: Maintain above freezing until mortar has fully set.
- Rain and snow: Protect masonry by covering during precipitation and at all times when work is not proceeding.
- Hot conditions and drying winds: Prevent masonry from drying out too rapidly.
- New mortar damaged by frost: Rake out and replace.

190 CONTROL SAMPLES
- General: Obtain approval of the following before proceeding with the remainder:
  - paint removal to brickwork as section C20/300
  - paint removal to stonework as section C20/300
  - removal of mortar to brickwork as section C41
  - removal of mortar to stonework as section C41
  - repointing of brickwork as section C41
  - repointing of stonework as section C41
- Protection: Protect from adverse weather and damage.

195 MATERIAL SAMPLES

- Approval: Before placing order, submit for approval representative samples of:
  - sands for bedding and pointing
  - stone for repairs
  - bricks for patch repairs
  - stone for indent repairs

MATERIALS/ PRODUCTION/ ACCESSORIES

220 RECORDING PROFILES

- Profiles: Take measurements from existing masonry units, as instructed, to allow replacements to be matched accurately.
- Recording in situ: If there are no suitable joints for inserts, seek instructions.
- Drawings and templates: Prepare as necessary, clearly and indelibly marked to identify use and location.

230 INSPECTION OF DRAWINGS/ TEMPLATES

- Give notice: Before commencing production of the following replacement masonry units: shop drawings and templates for brickwork and stonework where applicable .
  - Period of notice (minimum): 10 working days.

235 INSPECTION OF MASONRY UNITS

- General: Before dispatch to site, inspect and check completed units for:
  - Match with approved samples.
  - Compliance with drawings and specification.
- Give notice: At appropriate stages in production to allow inspection of masonry units before delivery to site.

240 STONE

- Type: sandstone to match existing - exact type to be confirmed following analysis and on approval of samples
- Requirements: Free from vents, cracks, fissures, discolouration, or other defects which may adversely affect strength, durability or appearance. Thoroughly seasoned, dressed and worked in accordance with shop drawings prepared by the supplier.
  - Finish: tooled and ashlar to match existing.
  - Supplier: to contractors choice.

245 REPLACEMENT STONE UNITS

- Minimum bed depths and agreed face lines in relation to existing work: Maintain. Make suitable allowances for any final finishing carried out in situ.
- Sizes and profiles: To match existing masonry; existing joint widths maintained.
- Sinkings for fixings and joggles: Accurately aligned and positioned in relation to existing masonry. Provide sinkings for lifting devices.
- Marking: Each block/ dressing clearly marked on a concealed face to indicate the natural bed and position in the finished work.

250 ORIENTATION OF STONE

- Natural bed:
  - In plain walling: Horizontal
  - In projecting stones and copings: Vertical and at right angles to wall face.
  - In arches: At right angles to line of thrust.

255 ASHLAR BLOCKS/ DRESSINGS

- Cutting and dressing stone: To true and regular surfaces, free from hollow or rough areas.

260 BRICKS

- Brick: Wherever brick repairs are required, bricks are to match those adjacent to the location where the repairs are located, in terms of colour, size and profile. This may require more than one type of brick to be sourced. This will be confirmed following the cleaning of the brickwork. Bricks to be sourced from second hand supplies, stock supplies and / or order handmade specials as may be required to ensure a like for like match. Sample panels (nominally 1m x 1m in size) of each different brick type with the specified mortar to be viewed against the existing such that the match can be agreed. Again to be confirmed at the inspection following the cleaning.

DISMANTLING/ REBUILDING

315 REBUILDING FOR BRICKWORK WALLS / SKINS

Areas of rebuilding as specified by the SE and as agreed following the paint removal and inspections.
Where areas of brickwork walling are to be taken down and rebuilt contractor to carry out photographic survey with a scaled reference as a record of the openings, level coursing and submit to the CA for approval.
Contractor to submit a method statement confirming process which is to be copied to the CA and Structural Engineer.

- Replacement materials: rebuild with salvaged bricks and / or alternatively sourced bricks to match.
- Mortar:
  Mix: hot lime mix as used on the main hall. 1 hot lime (Calbux CL90) : 2.5 local sand (60% sharp 4mm and well washed / 40% fine 1.5mm) : 5% crushed limestone. mix to be confirmed following lab analysis of existing mortar and site trials.
  - Sand source/ type: Mix to include both coarse and fine sands to enable a like for like match to the existing, colour and type of sands will vary dependent on location - to be confirmed following site trials.
  - Suggested supplier: Womersley's, Ravensthorpe Industrial Estate, Low Mill Lane, Ravenshtorpe, Dewsbury, WF13 3LMJ
- Fixings: as SE requirements.
- Rebuilding: Carefully cut out mortar. Take care to avoid damage to arises and surfaces of adjacent brickwork. Ease out bricks and brush out void to remove any loose dust. Rake out and clean joint. Rebuild to follow the original coursing, bonding and joint profile as recorded but using snap headers.
  Wet brickwork thoroughly before repointing and rebedding. In dry conditions keep it damp as work proceeds to prevent dewatering of the mortar. Bed in approved mortar mix. Keep bedding mortar back from face of brickwork 25mm to allow for subsequent pointing. Ensure that the joints are kept full, especially the last joint which may be underpinning existing work.
  NB When brick is reversed ensure that any cavity behind the brick is well packed with mortar and that the brick face is brought out to align with the face of the brick wall. Great care to be taken to maintain gauge, irregularities of bond and character of mortar as recorded.
- Joint surfaces: Dampen to control suction as necessary.
- Laying: On a full bed of mortar, and all joints filled.
- Exposed faces: Keep clear of mortar and grout.
- Joints: To match existing.
- Other requirements: Allow for all necessary temporary propping.

REPLACEMENTS AND INSERTIONS

330 PREPARATION FOR REPLACEMENT MASONRY

- Defective material: Carefully remove to the extent agreed. Do not disturb, damage or mark adjacent retained masonry.
- Existing metal fixings, frame members, etc: Report when exposed.
- Redundant metal fixings: Remove completely.
- Recesses: Thoroughly clean to remove loose material and leave joint surfaces in a suitable condition to receive replacement units. Protect from adverse weather.

370 LAYING REPLACEMENT MASONRY

- Exposed faces of new material: Keep to approved face lines.
- Faces, angles and features: Accurately align. Set out carefully to ensure satisfactory junctions with existing masonry and maintain existing joint widths.
- Joint surfaces: Dampen to control suction as necessary.
- Laying: On a full bed of mortar, all joints filled.
- Exposed faces: Keep clear of mortar and grout.

375 GROUTING JOINTS

- Grout mix: hydraulic lime based grout to specialist suppliers specification, mix subject to site trials.
- Joints that cannot be fully filled with bedding mortar:
- Grout thoroughly around replacement masonry units
- Grouting: Keep grout back from exposed face to allow for the depth of pointing, using an approved temporary sealing material. Prevent grout staining exposed face.

380 STONE INSERTS

- Pockets to receive inserts
  - Cut out accurately. Undercut sides of pocket where necessary to provide space for bonding material.
  - Adjust depth so that insert stands proud of existing stone for finishing insitu.
  - Clean out thoroughly.

- Inserts: cut to the smallest rectangular shape necessary to replace the defective area and provide a firm seating. Install accurately and securely.
- Exposed faces: Keep clear of bonding material.
- Existing joint widths: maintain, do not bridge.

385 CORRODED FIXINGS

- Removal: cut out carefully, causing the least possible disturbance to surrounding masonry. Remove associated rust debris.
- Replacement: Assess requirement for replacement fixings during site inspection.

TOOLING / DRESSING STONE INSITU

410 WEATHERING LEDGES AT JOINTS

- Locations: to be assessed during site inspection.
- Requirement: Carefully weather the ledge to approval.
- Method: Suitably graded carborundum blocks or tooling as appropriate

415 REDRESSING STONE

- Locations: to be assessed during site inspection.
- Requirement: Carefully dress back stones to the extent agreed.
- Method: Suitably graded carborundum blocks or tooling as appropriate

POINTING/ REPOINTING

810J PREPARATION FOR REPOINTING

- Removing mortar:
  - Work from the top of the wall downwards.
  - Carefully cut out mortar - the method for the mortar removal should be submitted for approval by CA, preference is for all of the mortar to be removed by hand. Take care to avoid damage to arises and surfaces of adjacent brickwork or widening joints.
- Recess for repointing: Form a neat recess of depth not less than 2 times the joint width. When mortar beyond this depth is loose and friable and/ or cavities are found seek instructions.
- Dust and loose debris. Remove. Dampen joints to control suction as necessary.

820 POINTING brickwork and stonework generally

- Preparation of joints: Rake out all joints to a depth not less than 25mm. Rake out to leave a square face at the back of the joint. Clean joints of raking debris. .
- Mortar:
  - Mix: provisionally 1:3 NHL3.5 hydraulic lime : sand. Mix to include one or a number of coloured aggregates to match existing, coloured aggregates will vary dependent on location - final mix to be confirmed following lab analysis of existing mortar and site trials.
  - Sand source/ type: Mix to include both coarse and fine sands to enable a like for like match to the existing, colour and type of sands will vary dependent on location - to be confirmed following site trials.
- Joints: subject to approval of control samples as clause 190, provisionally flush with brushed finish as clause 860.

840 POINTING WITH TOOLS/ IRONS

- General: Press mortar well into joints using pointing tools/ irons that fit into the joints, so that they are fully filled.
- Face of masonry: Keep clear of mortar. Use suitable temporary adhesive tape on each side of joints where necessary. Finish joints neatly.

860 BRUSHED FINISH TO JOINTS

- General: After the initial set has taken place, brush joints to remove laitance/ excess fines and give a coarse texture. Do not compact mortar.

H62 NATURAL SLATING

100 TYPES OF SLATING

110 ROOF STONE SLATING To northern section of roof
Reference drawing: to follow

- Substrate: Repaired purlins and rafters, replaced battens.
- Pitch: 32° / 34°
- Underlay: n/a – stone slates to be fully torched
- Battens: As clause 245
  - Size: TBC on removal of existing stone slates
  - Fixing: As clause 265 galvanised round plain shank nails
- Stone slates: salvaged to match existing
  - Supplier: TBC
  - Size: diminishing courses to ridge
  - Headlap (minimum): as BS5534 and to be confirmed for the diminishing courses prior to laying
  - Fixing: Oak pegs as clause 275
- Other requirements: TBC following the slate removal and full inspections

115 ROOF STONE SLATING To southern section of roof west facing pitch
Reference drawing: to follow

- Substrate: Repaired purlins and rafters, replaced battens.
- Pitch: 38°
- Underlay: n/a – stone slates to be torched
- Battens: As clause 245
  - Size: TBC on removal of existing stone slates, nominal 50 x 25mm
  - Fixing: As clause 265 galvanised round plain shank nails
- Stone slates: salvaged to match existing
  - Supplier: TBC
  - Size: diminishing courses to ridge
  - Headlap (minimum): as BS5534 and to be confirmed for the diminishing courses prior to laying
  - Fixing: Oak pegs as clause 275
- Other requirements: TBC following the slate removal and full inspections

120 ROOF STONE SLATING To southern section of roof east facing pitch
Reference drawing: to follow

- Substrate: Repaired purlins and rafters.
- Pitch: 46°
- Underlay: n/a – stone slates to be torched
- Battens: Existing retained and repaired
- Stone slates: salvaged from the other areas of the existing roof
  - Supplier: n/a
  - Size: diminishing courses to ridge
  - Headlap (minimum): as BS5534 and to be confirmed for the diminishing courses prior to laying
  - Fixing: Oak pegs as clause 275
- Other requirements: TBC following the slate removal and full inspections

SLATING GENERALLY

210 WORKMANSHIP GENERALLY

- To be in accordance with the Historic England Stone Slate Roofing Technical Advice Note and BS5534.
- Operatives: Trained and specialist in the laying of stone roofing.

220 REMOVE EXISTING STONE SLATES: NORTHERN ROOF (BOTH PITCHES) AND SOUTHERN ROOF WESTERN FACING PITCH ONLY (INCLUDING BELL TOWER ROOF)

- Before any stripping commences ensure that the full recording has been undertaken and documentation provided in accordance with Appendix A. Ensure that the number of courses on each roof slope have been counted and recorded, the slate length of each course (ie. from peg hole to tail), plus any special details. As the stripping progresses note and record the specific details to the different areas of the roof, which will include (but may not be limited to); profile and material of bedding stones, type of bedding of ridge tiles (eg note if dry bedded / bedded with broken slate), use of oak pegs / nailed to rafters, slate length and laps to each course, under-eaves slates, stone wedges etc.
- Carefully remove slate battens and underlay / roofing felt to northern roof etc with minimum disturbance to adjacent fabric. Areas for full removal are northern section of roof (both pitches) and the western facing pitch of the southern section only (see drwg al(050104) including the bell tower roof. The eastern facing pitch of the southern section is to remain insitu for repairs. There may however be the requirement to removal and relay the top two courses of the southern east facing pitch following removal of the ridge – to be assessed on site.
  If any oak laths are extant to the southern facing pitch then leave these insitu for recording and further instruction.
- Slates should be carefully carried to ground. Set aside all sound materials for re-use, including those which can be dressed down in size. All slates which are laminating are to be rejected, unless they can be redressed. Stone slates should be stacked on end in their sizes or courses ready for inspection. Stone slates to be cleaned of all loose debris and if needed dressed, re-holed with the appropriate size hole for a wooden peg and correct edge dressing. Undertake a test sample of re-dressed and re-holed stone slates for approval by the conservation architect and contract administrator.
  Ridge tiles should be inspected and sorted retaining those suitable for reuse.
- Size stone slates using a traditional marking stick. Sort the stone slates into their size set. Allow for appropriate storage crates for the stone slates to be stored securely. The outhouse and lean-to are available areas for storage which should be assessed for suitability and security prior to removing the slates from the roof. If these areas are not adequate then provision should be made for constructing an onsite store in the compound area. Note that the separate outbuilding is not suitable for use.
- Once all removed stone has been sorted confirm the quantity that is suitable for reuse and the quantity of replacement salvaged stone that will be required. It is estimated that circa 30% will be able to be reused from the existing roof.

225 PREP FOR FURTHER RECORDING AND INSPECTION

- Confirm any oak laths, carefully removal all other slate laths, clean down all timbers and remove all loose debris from roof spaces including the now failing roof insulation.
- Undertake further phase of building recording in accordance with Appendix A and including any historic laths. Then allow for careful removal and possible retention of these laths (to be confirmed once set out of stone slates confirmed).

234 TIMBERWORK

- To be read in conjunction with The Morton Partnership Specification.
- Following removal of the slates and underlay allow a period of time within the programme for further building recording as Appendix A and detailed timber inspections by the contract administrator, structural engineer and conservation architect
- Record and carefully remove any non-structural timbers that are decayed / deteriorated to the verges / ridges such as verge boards and finials. Do not dispose – assess suitability for repair and store with the slates until completion of the works.
- Remove the lead flashings and salvage in accordance with clause H71.
- Existing / original timbers are to be retained if at all possible. Defrassing of affected timbers is to be kept to a minimum to avoid unnecessary loss of original fabric.
- Replacement timber is to be dried to a moisture content of between 15-20% and be of matching size and species to that being replaced unless otherwise specified.

- Softwood is to be pressure-impregnated with preservative before being brought onto site and any cut ends or bored holes are to be liberally treated with insecticide / fungicide (not harmful to bats) before being built in.

245 BATTENS

- Timber: cost option 01: sawn softwood / cost option 02: riven oak laths
  - Standard: To BS 5534
  - Permissible characteristics and defects: Not to exceed limits in BS 5534
  - Moisture content at time of fixing and covering (maximum): 22%
- Preservation treatment: As section Z12 and Wood Protection Association Commodity Specification C8.

265 BATTEN FIXING

- Setting out: In straight horizontal lines. Align on adjacent areas.
  Spacing for diminishing courses to be confirmed following the sorting of the existing and reclaimed stone slates as clause H62/270.
- Batten length (minimum): Sufficient to span over three supports.
- Joints in length: Square cut, butt centrally on supports. Joints must not occur more than once in any group of four battens on one support.
- Additional battens: TBC after inspection of roof.
- Fixing: Each batten to each support. Splay fix at joints in length.

270 SOURCING OF STONE SLATES / SORTING PRIOR TO RE-SLATING

- Assessment of the quantity and sizes of stone slates alongside the results of the petrographic and visual analysis of the stone are to be concluded prior to sourcing the additional replacement stone.
- Great care must be taken in the selection of replacement reclaimed slates as they should match those existing where possible, for there are considerable variations in size, texture, weathering properties and it is not practicable to mix stones of widely differing characteristics on the same roof pitch.
- Contractor to provide information on stocks of stone slate at the time for consideration by the contract administrator.
- Sawn slabs are not suitable as this has a fundamentally different character.
- Once the necessary amount of replacement slates have been sourced then the contractor should further sort, grade and lay out the stone slates in courses on the ground. The importance of this operation cannot be overstressed because it will determine the courses and graduations of the roof covering. Do not begin the recovering of the roof until this has been done as it will not be possible to confirm if there is sufficient supply of suitable sizes with which to work. At this point an assessment of suitability of mixing the slate salvaged from the roof and the reclaimed should be undertaken and confirmation of which slates are to be used to which slopes. Allow time for correspondence with the local planning authority conservation officers to confirm the approach to be taken.
- First sort the slates to length using a slater's rule and standing the slates vertically on their heads (ie pegholes to the floor). When using a second-hand slate, slates are measured from the peghole to the tail of the slate. When this sorting operation has been carried out the slater will measure the length of the eaves course required on the slope which can be done with a tape or a knotted line. Then assess the stack of the largest slates and measure each slate for width using the tape or string to determine that there are sufficient number of the largest slates to cover the length of the eaves course. If there are insufficient slates of the largest size alternative additional sources of stone slates are to be reviewed or consider agreeing that all the slates are dressed down or re-holed to the next size.
- When the slates have been graded for size they should then be graded for thickness, a process which is facilitated if the slates are standing on their heads. The thickness of slate can then be observed and sorting into thick, medium and thin can take place, so that the slater works along the length of a course using the thicks then the mediums then the thins to prevent unevenness throughout the course.
- The importance of thorough and careful sorting of slate on the ground cannot be overstated. It is not possible to sort properly on a scaffold as there is insufficient room to stack the material safely.
- Once the size of the eaves course has been confirmed then the diminishing courses can be determined and therefore the spacing of the laths / battens.

275 STONE SLATE FIXING (NORTHERN ROOF AND WESTERN PITCH OF SOUTHERN ROOF)

Northern Roof / West Facing Pitch is approx. 32° and made up of 30 courses of stone slates.
Northern Roof / East Facing Pitch is approx. 34° and made up of 32- 35 courses of stone slates.
Southern Roof / West Facing Pitch is approx. 38° and made up of 30 courses of stone slates.
Southern Roof / East Facing Pitch is approx. 46° and made up of 25 courses of stone slates.

- The roof is to be reslated using the salvaged sound slates previously removed, with deficiencies made up with reclaimed sound slates to match in type colour and thickness.
- The reslating is to use as nearly as is practicable the same number of courses as came off and be evenly graded from the largest at the eaves to the smallest at the ridge.
- Slates should be reused with their original orientation (top face up, top edge up). This is because the underside and the head of the slate deteriorate most rapidly and may not be as weather resistant as the originally exposed surface.
- Trimming of slates for valleys, etc and redressing is to be done with hand-tools to ensure a cropped, not sawn finish.
- Each course of stone slates is to have a minimum head and side lap that is complaint with BS5534:2014+A2:2018 to ensure the roof covering will be waterproof. The gauge is to be reduced where a course of shorter slates is introduced to ensure the minimum head lap.
- Lay a double course of slates at the eaves, with a minimum 75mm* overhang (*dimensions TBC on site dependent on different eaves conditions), the undereaves course being fixed or bedded solidly in mortar on the wall-head to the northern section and set to induce sufficient tilt in the first few courses that only the tails of the slates rest on the course below. Eaves condition to the southern section to replicate the existing.
- Setting out: Lay stone slates with an even overall appearance with slightly open (maximum 5mm) butt joints with courses reducing to ridge. Align tails.
- Slates are to lie evenly without rocking and be graded in thickness from one side of the roof to the other, avoiding sudden changes in thickness and gaps between courses.
- Setting out: Lay stone slates with an even overall appearance with slightly open (maximum 5mm) butt joints with courses reducing to ridge. Align tails.
- Slate thickness: Consistent in any one course or graduate the difference as determined by the sorting process. Lay with thicker end as tail.
- Ends of courses: Use extra wide slates to maintain bond and to ensure that cut slates are as large as possible. Provisionally do not use slates less than 250mm wide (this may be assessed to be larger - TBC after sorting process).
- Top course: size and fixing of top course(s) to be reviewed on site after removal of the existing stone slates, sorting and setting out.
- Fixing: Oak pegs / counter sunk holes 20-25mm from side edges TBC following review of salvaged stone Slates are to be hung with tapered oak pegs lightly hammered into pegholes to give a tight fit and with the heads cut down to avoid rocking of the next course unless the hole is countersunk. Green pegs should not be used as they are likely to shrink and slip from the peg holes. Pegs should be roughly square section so that after fixing absorbed moisture makes them swell, locking them into the holes. Fixing holes to be tapered or hourglass shape to help grip the pegs.
  Where pegs cannot be used large headed non-corroding metal, preferably copper, pegs 38-63mm long. If the existing peg holes are large, pegs with large heads will lock in position and prevent the slates slipping. Where the stone slates are to be drilled or re-drilled, for nailing or peg hanging, the holes should be parallel sided at a slightly larger diameter than the peg shank and countersunk to receive the head. Electric drills without hammer action are suitable and each slate, properly supported, should be drilled individually. Attempting to drill through a pile of slates will inevitably damage them.

290 FULL TORCHING / LIME MORTAR BEDDING / POINTING

Torching is traditionally a mix of lime and aggregate (sand and/or crushed stone), usually with animal hair added, applied to the underside of the roof either as half or full torching. Half, or single torching is applied at the upper edge of the laths, full torching fills the space between the laths.
Full torching is rare and is existence at Clayton Hall on the southern roof is of heritage significance.
Torching helps secure the oak pegs and prevent wind driven rain. Full torching also acts as a buffer to absorb water vapour produced within the building reducing the risk of condensation on the underside of the roof. However care should be taken to ensure that it applied such that mortar is not forced down between the joints which would serve to draw moisture in

- Mortar as section Z21 and subject to the lab analysis of the existing, provisional mix 1:3 mature lime putty: aggregate (sharp sand) with approx. one handful of clean hair, well teased out, added to one bucket of the mortar and evenly mixed.
- Bond strength providing resistance to uplift to BS 5534
- Weather: do not use in wet or frosty conditions or when imminent
- Sample areas:
  Test 01- undertake a sample area to the southern roof section east facing pitch to determine if additional torching can be applied without removing the existing.
  Test 02 – undertake a sample area to the northern roof to assess workability of the mix and methodology and workmanship.

ROOF SLATING EDGES / JUNCTIONS / FEATURES

305 GENERALLY

- Fittings and accessories: As specified or agreed with the CA only, do not improvise.
- Cut slates: Cut only where necessary.
- Flashings: Fix with or immediately after slating. Form neatly.

310 VERGES

- Verges should be bedded as the stones are laid and a scribed board fixed to the end of the rafter.
  NOTE: battens at verges should terminate about 25mm from the mortar to eliminate the risk of moisture soaking into the battens.
  Mortar to be used sparingly and struck off as work progresses. Bedding should be raked well back and adequately protected until it is cured.
- Locations
  - northern gable end of the northern section
  - oversailing verges to the southern end of the northern section
  - oversailing verges to the southern end of the southern section
  - gable to the bell tower
- Final build up and support from the rafters to be determined following the removal of the slates and felt. Existing condition is a built up of two boards with the final finish being a moulded section. The moulded sections should be retained on site when removed and the profile recorded, replicated and reinstated.
- Bedding: lime based mortar
- Size & mouldings: to be like for like with extant verge boards on site.
- Material: Oak
- Finish: Black stain to match existing timbers

320 VALLEYS

- Valleys between adjacent roof slopes are to be renewed/ formed with preservative treated softwood valley boards overlaid with non-bituminous underlay or building paper, with milled lead sheet laid in accordance with the recommendations of the Lead Sheet Association and the trimmed (not sawn) edges of the slates pointed in mortar.
- See section H71 for lead clauses.

330 ABUTMENTS

- At abutments the stone slated need to be turned up against the wall using a mortar fillet to allow for the water to run away from the joint. Code 3 lead soakers to be placed on each course. A mortar fillet should be provided to weather the detail against the wall reinforced with stainless steel expanded mesh to reduce the likelihood of cracking.
- Locations: 3no. chimneys and junction of northern and southern roof sections.

340 RIDGES

- Ridge tiles should be inspected and sorted retaining those suitable for reuse. Ridge tiles to be assessed to determine different types and suitability for reuse and copying on a like for like basis. Replacement ridge tiles to be sourced.
- Ridges should be back bedded in an air lime mortar with suitable aggregates.
- Ridge-stones to be relayed on a bed of 1 part lime to 2.5 parts well-graded sharp and soft sand. Joints should be finishes carefully with a minimum of exposed mortar.
- Details at the butt of the ridge to be reviewed on site to retain the existing detailing whilst improving the weathering.

350 EAVES

- Undertake initial high level inspection of all eaves levels to include assessment of condition of gutters and eaves level masonry and timbers. Carry out further inspection on removal of slates to confirm extent and methodology of eaves level repairs.

360 ROOF WINDOWS

- Replace 2no. rooflights to southern roof section (1no. to west pitch / 1no. to east pitch)
- Replace to size and location of existing as recorded by the initial survey.
- New Georgian wired glass fixed in place with copper straps across the tail of the glass. Laths to be rebated to allow the glass to sit flush with the battens. The slates back bedded in lime mortar next to the glass to create a seal against wind driven rain / snow.
- Allow for small code 4 lead flashing to bottom edge of glass.

370 TIMBER FINIALS

- 4no. existing timber finials to be repaired or replaced.
- Each finial to be recorded insitu as part of the building recording.
- Each to be carefully removed and tagged with their location. Condition of the finial and the substrate to be assessed for suitability of repairs.
- If not suitable to be repaired then the finial should be replaced like for like in air dried heartwood oak.

H71 LEAD SHEET FLASHINGS

100 TYPES OF LEADWORK

105 NEW LEAD FLASHINGS AS REQURIED FOLLOWING ROOF INSPECTION

Full extent of leadwork to be assessed following high level inspections but expected to include (see drwg al(05)105);

1) 3no. chimneys to northern section including single storey outhouse (as H71/120).
2) Abutment of outhouse to northern gable of hall (as H71/120).
3) Lead slate to projecting svp to northern section and projecting vent to the southern section (as H71/480).
4) To abutments where lower southern section meets northern section to east and west pitches and also to face of small projecting gable of southern section (as H71/120).
5) To valleys formed by the bell tower roof.
6) To the southern chimney (as H71/120).
7) To the bell tower timber feet (as H71/480).
8) To the bell tower roof (as H71/110).
9) To the southern section eastern façade gutter (as H71/200).
10) Projecting windows to east elevation as item S7.6 (as H71/110).

- Substrate: Plywood and underlay where applicable.
- Type of lead: varies

110 ROOFING

- To bell tower roof and projecting windows to east elevation. All details to be confirmed after initial site inspection of these areas and opening up works to confirm extent of timber decay.
  Existing defective leadwork to be removed and salvaged as 510.
- Substrate: plywood onto repaired existing timber structure.
- Underlay: 220g/m2 needle punched non-woven geotextile polyester felt.
- Type of lead: rolled
  - Thickness: 3.55mm th (code 8).
- Pretreatment: apply thin coating of patination oil to underside of lead and allow to dry before laying.
- Joints in direction of fall: wood cored rolls with splashlap
  - Spacing: nom 700mm subject to site inspection
- Eaves detail: bossed ends to wood cored rolls with lead dressed down over contentious tinned copper or stainless steel clip, lead dressed round end.
- Cross joints: drips with splash lap
  - Spacing: TBC on site
  - Alignment: TBC on site
- Intermediate fixings: TBC on site
- Ridge / hip detail: to bell tower roof ridge to be finished with repaired timber finial, hips to be formed in wood cored rolls
- Other requirements: TBC following initial site inspection

120 SOAKERS AND STEP FLASHINGS / FLASHINGS TO CHIMNEYS & ABUTMENTS

- Prior to confirming extent of replacement of existing lead flashings undertake high level inspection to chimneys and abutments.
  Existing defective flashings to be removed and salvaged as 510.
- Lead soakers:
  - Thickness 1.75 to 2.00 mm (code 4).
  - Dimensions:
  Length: Slate/ tile gauge + lap + 25 mm. Upstand: Not less than 75 mm. Underlay: Not less than 100 mm.
  - Fixing: TBC by roofer.
- Lead step flashings:

- Thickness: 2.00-2.50 mm (code 5).
- Dimensions:

Lengths: Not more than 1500 mm.
End to end joints: Laps of not less than 100 mm.
Cover: Overlap to soaker upstands of not less than 65 mm.

- Fixing: Lead wedges at every course.

200 GUTTER LINING

- To southern section roof / eastern elevation (length & width TBC following site inspection)
- Substrate: 18mm WBP plywood onto repaired existing timber structure including raked timber struts to structural engineers details.
- Underlay: 220g/m2 needle punched non-woven geotextile polyester felt.
- Type of lead: rolled
  - Thickness: 3.0-3.5mm th (code 7).
- Pretreatment: apply thin coating of patination oil to underside of lead and allow to dry before laying.
- Joints in direction of fall: neoprene expansion joints, neoprene strip bonded to code 5 lead wings.
  - Spacing: nom 675mm subject to site inspection
- Cross joints: TBC
  - Spacing: TBC on site
  - Alignment: TBC on site
- Intermediate fixings: TBC on site
- Other requirements: TBC following initial site inspection

480 LEAD SLATE

- To 2no. service pipes and bell tower timber feet
  Existing defective flashings to be removed and salvaged as 510.
- Lead soakers:
  - Thickness Code 6 (2.65mm)
  - Dimensions: TBC on site to ensure head and side laps to adjacent stone slates,
  - Upstand: not less than 150mm to fit pipe and at angle to suit roof pitch.

GENERAL REQUIREMENTS/ PREPARATORY WORK

500 WORKMANSHIP GENERALLY

- Standard: To BS 6915 and latest edition of 'Rolled lead sheet. The complete manual' published by the Lead Sheet Association.
- Fabrication and fixing: To provide a secure, free draining and weathertight installation.
- Operatives: Trained in the application of lead coverings/ flashings. Submit records of experience on request.
- Measuring, marking, cutting and forming: Prior to assembly wherever possible.
- Marking out: With pencil, chalk of crayon. Do no use scribers or other sharp instruments without approval.
- Bossing and forming: Straight and regular bends, leaving sheets free from ripples, kinks, buckling and cracks.
- Solder: Use only where specified.
- Sharp metal edges: Fold under or remove as work proceeds.
- Finished work: Fully supported, adequately fixed to resist wind uplift but also able to accommodate thermal movement without distortion or stress.
  - Protection: Prevent staining, discolouration and damage by subsequent works.

510 SALVAGING EXISTING LEADWORK

- Following high level inspections, carefully detach and remove existing lead sheet components identified for removal from the substrate. Avoid tearing, puncturing or excessively creasing the lead.
- Due to the hazardous nature of lead, adhere to HSE Guidelines. Operatives must wear appropriate PPE and methodologies should be approved.
- Gently remove accumulated mortar, fixings, dirt and debris from the salvaged lead. Do not use abrasive cleaning or hammering methods that may damage the metal.
- Due to the hazardous nature of lead, adhere to HSE Guidelines. Operatives must wear appropriate PPE Stack and store salvaged lead sheet flat or on properly sizes timber battens off the ground in a designated dry and secure storage area. Protect the lead from mechanical damage, theft and contact with cement, lime or acidic timber.
- Label all salvaged lead clearly as “property of the client” and arrange for recycling where appropriate.

516 LEADWELDING

- In situ leadwelding: Is permitted, subject to completion of a 'hot work permit' form and compliance with its requirements.

520 LEAD SHEET

- Production method:
  - Rolled, to BS EN 12588, or
  - Machine cast, Agrément certified and to code thicknesses with a tolerance (by weight) of ±5%, or
  - Sand cast, from lead free from bitumen, solder, other impurities, inclusions, laminations, cracks, air, pinholes and blowholes; to code thicknesses but with a tolerance (by weight) of ±10%.
- Identification: Labelled to show thickness/ code, weight and type.

550 LIGHTNING PROTECTION

- Lead coverings: Attach the following to a lightning protection system: TBC.
  - Electrical continuity: Provide between lead sheets. Discontinuous sections must be separately bonded.

555 LAYOUT

- Setting out of longitudinal and cross joints: Submit proposals.

560 CONTROL SAMPLES

- General: Complete areas of the finished work, and obtain approval of appearance before proceeding:
- Size: not less than 5 m2.
- Location: drip with one complete wood cored roll.

610 SUITABILITY OF SUBSTRATES

- Condition: Dry and free of dust, debris, grease and other deleterious matter.

620 PREPARATION OF EXISTING TIMBER SUBSTRATES

- Remedial work: Adjust boards to level and securely fix. Punch in protruding fasteners and plane or sand to achieve an even surface.
- Defective boards: Give notice.
- Moisture content: Not more than 22% at time of covering. Give notice if greater than 16%.

630 PLYWOOD UNDERLAY

- Standard: Manufactured to an approved national standard and to BS EN 636, section 7 (plywood for use in humid conditions).
- Sheet size: 2400 or 1200 x 1200 mm and 6 mm thick.
- Moisture content: Not more than 22% at time of covering. Give notice if greater than 16%.
- Laying: Cross joints staggered and a 0.5 to 1 mm gap between boards.

- Fixing: With 25 mm annular ringed shank copper or stainless steel nails, at 300 mm grid centres over the area of each sheet and at 150 mm centres along edges, set in 10 mm from perimeter edges.
  - Nail heads: Set flush or just below the surface.

650 UNDERLAY

- Handling: Prevent tears and punctures.
- Laying: Butt or overlap jointed onto a dry substrate.
  - Fixing edges: With copper or stainless steel staples or clout nails.
  - Do not lay over roof edges but do turn up at abutments.
- Wood core rolls: Fixed over underlay.
- Protection: Keep dry and cover with lead at the earliest opportunity.

FIXING LEAD

705 HEAD FIXING LEAD SHEET

- Top edge: Secured with two rows of fixings, 25 mm and 50 mm from top edge of sheet, at 75 mm centres in each row, evenly spaced and staggered.
- Sheets less than 500 mm deep: May be secured with one row of fixings, 25 mm from top edge of sheet and evenly spaced at 50 mm centres.

710 FIXINGS

- Nails to timber substrates: Copper clout nails to BS 1202-2, or stainless steel (austenitic) clout nails to BS 1202-1.
  - Shank type: Annular ringed, helical threaded or serrated.
  - Shank diameter: Not less than 2.65 mm for light duty or 3.35 mm for heavy duty.
  - Length: Not less than 20 mm or equal to substrate thickness.
- Screws to concrete or masonry substrates: Brass or stainless steel to BS 1210, tables 3 or 4.
  - Diameter: Not less than 3.35 mm.
  - Length: Not less than 19 mm.
  - Washers and plastic plugs: Compatible with screws.
- Screws to composite metal decks: Self tapping as recommended by the deck and lead manufacturer/ supplier for clips.

715 CLIPS

- Material:
  - Lead clips: Cut from sheets of same thickness/ code as sheet being secured.
  - Copper clips: Thickness: 0.6 mm.

  Temper: BS EN 1172, designation R220 in welts, seams and rolls, R240 elsewhere; dipped in solder if exposed to view.
  - Stainless steel clips: Thickness: 0.46 mm.

  Grade: BS EN 10088, 1.4301(304) terne coated if exposed to view.
- Dimensions:
  - Width: 50 mm where not continuous.
  - Length: To suit detail.
- Fixing clips: Secure each to substrate with two fixings not more than 50 mm from edge of lead sheet.
- Fixing lead sheet: Welt clips around edges and turn over 25 mm.

760 CONTINUOUS CLIPS

- Material:
  - Lead continuous clips:

  Thickness: 2 codes more than sheet.
  - Copper continuous clips: Thickness: 0.70 mm.

  Temper: BS EN 1172, designation R220 in welts, seams and rolls, R240 elsewhere.
  - Stainless steel continuous clips: Thickness: 0.46 mm. Grade: BS EN 10088, 1.4301(304).

- Dimensions:
  - Width: To suit detail.
- Fixing clips: Secure at 200 mm centres.
- Fixing lead sheet: Welt edge around continuous clip and dress down.

770 WEDGE FIXING INTO JOINTS/ CHASES

- Joint/ chase: Rake out to a depth of not less than 25 mm.
- Lead: Dress into joint/chase.
  - Fixing: Lead wedges at not more than 450 mm centres, at every change of direction and with at least two for each piece of lead.
- Sealant: TBC

780 WEDGE FIXING INTO DAMP PROOF COURSE JOINTS

- Joint: Rake/ cut out under damp proof course to a depth of not less than 25 mm.
- Lead: Dress lead into joint.
  - Fixing: Lead wedges at not more than 450 mm centres, at every change of direction and with at least two for each piece of lead.
- Sealant: TBC

790 SCREW FIXING INTO JOINTS/ CHASES

- Joint/ chase: Rake out to a depth of not less than 25 mm.
- Lead: Dress into joint/ chase and up back face.
  - Fixing: Into back face with stainless steel screws and washers and plastics plugs at not more than 450 mm centres, at every change of direction, and with at least two fixings for each piece of lead.
- Sealant: TBC.

JOINTING LEAD

810 FORMING DETAILS

- Method: Bossing or leadwelding except where bossing is specifically required.
- Leadwelded seams: Neatly and consistently formed.
  - Seams: Do not undercut or reduce sheet thickness.
  - Filler strips: Of the same composition as the sheets being joined.
  - Butt joints: Formed to a thickness one third more than the sheets being joined.
  - Lap joints: Formed with 25 mm laps and two loadings to the edge of the overlap.
- Bossing: Carried out without thinning, cutting or otherwise splitting the lead sheet.
  - Details where bossing must be used: TBC

845 WOOD CORED ROLL JOINTS WITH SPLASH LAP

- Core: Timber.
  - Size: 45 x 45 mm round tapering to a flat base 25 mm wide.
  - Fixing to substrate: Brass or stainless steel countersunk screws at not more than 300 mm centres.
- Undercloak: Dress three quarters around core.
  - Fixing: Nail to core at 150 mm centres for one third length of the sheet starting from the head.
- Overcloak: Dress around core and extend on to main surface to form a 40 mm splash lap.

860 DRIPS WITH SPLASH LAPS

- Underlap: Dress into rebate along top edge of drip.
  - Fixing: One row of nails at 50 mm centres on centre line of rebate.
- Overlap: Dress over drip and form a 40 mm splash lap.

880 WELTED JOINTS

- Joint allowance: 50 mm overlap and 25 mm underlap.

- Copper or stainless steel clips: Fix to substrate at not more than 450 mm centres.
- Overlap: Welt around underlap and clips and lightly dress down.

970 FINISHING

- Finishing agent: Patination oil.
- Location: TBC
- Application: As soon as practical, apply a smear coating evenly in one direction and in dry conditions.

L10 WINDOWS / DOORS

100 INTRODUCTION

110 EVIDENCE OF PERFORMANCE

- Certification: Provide independently certified evidence that all incorporated components comply with specified performance requirements.

120 SITE DIMENSIONS

- Procedure: Before starting work on designated items take site dimensions, record on shop drawings and use to ensure accurate fabrication.
- Designated items:
  It is the Contractors responsibility to manufacture windows and subframes to suit the existing and proposed openings, to take all necessary site dimensions and to allow for all required tolerances as indicated to the drawings and specifications.

140 CONTROL SAMPLES

- Procedure:
  - Finalise component details.
  - Fabricate one of each of the following designated items as part of the quantity required for the project.
  - Obtain approval of appearance and quality before proceeding with manufacturer of the remaining quantity.
- Designated items:
  Nom 500 x 500 samples of new timber windows showing all types of glazing bars, mullion's, transomes, frames, cills etc.

200 WINDOWS

205 ALL TIMBER WINDOWS AND TIMBER SURROUNDS

Timber repairs were undertaken to some of the timber windows as part of the recent phase of works. Some works remain to be carried out and glazing repairs are also required.
Some glazing repairs can be undertaken insitu but some casements will need to be fully removed.
As such a further detailed site inspection should be carried out with the specialist contractor at the outset to confirm the full and final scope of works.

- Standard: To BS 644.
- Manufacturer: Joinery specialist to contractors choice
- Exposure category to BS 6375-1/ Design wind pressure: To suit location and elevation and to CA approval.
- Operation and strength characteristics: To BS 6375-2.
- Timber: Generally to BS EN 942.
  - Species: Hardwood to CA approval and to match the species of the existing timber.
  - Appearance class: J10 for glazing beads, drip mouldings and the like. J40 or better for all other members.
  - Moisture content on delivery: 12-19%.
- Preservative treatment: Organic solvent as section Z12 and BWPDA Commodity Specification C5; Desired service life 60 years.
- Finish as delivered: Primer and undercoat (tbc with the joinery specialist)
- Glazing details: to be reviewed with the specialist contractor
  - Glass type: toughened and laminated to meet the performance requirements stipulated by the relevant regulations.
- Glass manifestation: n/a
- Ironmongery/ Accessories: tbc with the joinery specialist
- Fixing: TBC – Bolted to masonry reveal / plugged and screwed to existing masonry/ brick openings.
- Sealant: TBC – Suggested - Burnt sand mastic

WORKMANSHIP GENERALLY

600 OPERATIVES
• General: Skilled and experienced with the materials and procedures required.
- Evidence of training and previous experience: Provide on request.

610 SCAFFOLDING
• Usage: ensure that no damage is caused to adjacent fabric.

620 STABILITY
• General: Immediately report defects, including signs of movement that are exposed or become apparent during the works.

630 ASBESTOS CONTAINING MATERIALS
• Discovery: Give notice immediately of suspected asbestos containing materials discovered during demolition work. Avoid disturbing such materials.
• Methods for safe removal. Submit details.

640 UNFORESEEN HAZARDS
• Unrecorded voids, tanks, chemicals, etc. discovered during demolition: Give notice.
• Methods for safe removal: Submit details.

650 CONTROL SAMPLES
• General: The following control samples are required to confirm the methodology for the proposed repairs.
• Obtain approval of the following trial samples before proceeding with the remainder;

a) Trial sample of timber repair using flexible epoxy resin
- Location / Size: Location and size to be confirmed.
- Type of sample: Flexible epoxy resin repair to timber window / pilaster. Staged approval: first stage after removal of area of decayed timber, second stage after application of the epoxy resin and third stage after the resin has dried the area is to be sanded.
- Method: as clause 660

b) Trial sample of timber repair using timber
- Location / Size: Location and size to be confirmed.
- Type of sample: Timber repair. Staged approval: first stage after removal of area of decayed timber, second stage after the insertion of new timber and third stage after the resin has dried the area is to be sanded. The species of the timber is to be determined following the provision of the material analysis as clause 2.2
- Method: as clause 660

660 REPAIR OF DECAYED TIMBER ELEMENTS
• General: The repair of decayed timber, contractor to provide a detailed method statement indicating the proposed sequence of the repair works for approval by CA. Suggested method;
• Carefully remove the paint finishes in the area of repair, a method statement for the removal of any paint should be submitted by the contractor prior to any works commencing.
• Following the removal of paint finishes the area is to be assessed to establish the extent of repair required.
• Where glazed panes are adjacent to the repair area these are to be carefully removed to avoid damage to the glass and the adjacent frame, removal of the putty / beads as preferred methodology. Any glass panes that are removed are to be clearly labelled and marked on a window elevation drawings to ensure their location in the window configuration and situation within the building is clearly identifiable.
• Carefully remove the area of decayed timber cutting back to sound wood, limiting the extent of fabric removal to the minimum required, remove all dust and dirt from the area and dispose of decayed timber.

• The moisture content of the timber is to be checked prior to the works commencing further, ensuring the moisture content is below 18% prior to proceeding.
• Following the removal of decayed timber the area is to be assessed to establish the size of repair required. Repairs are to be carried out following the agreement of the trial samples as the preferred methodology.
• Where the decay is limited in area repair using a flexible epoxy resin - two part elastic repair compound, contractor to provide data sheet of proposed product as preferred methodology. Once dry the repair is to be sanded to a smooth finish with dust and dirt removed from the area to receive decoration.
• For larger areas a like for like timber repair will be required as the preferred methodology. Timber species to match existing, contractor to confirm timber species prior to works commencing.
- New timber sections are to be fixed in place using glue and pegs - pegs of the same timber species as the timber used in the repair, adhesive to be suitable exterior grade.
- Splicing in the new timber for larger areas of repair using a scarf joint method.
- Any replacement timber is to match the profile / mouldings of the existing timber
• New timber is to be decorated as specification M60.

M20 PLASTERED / RENDERED COATINGS

200 TYPES OF COATING

310 LIME/ SAND RENDER - EXTERNALLY AS INDICATED TO THE DRAWING

- Reinstate the high level render bands to the north gable as shown to drwg al(05)036. Band is nom 250mm deep with 3no. decorative details also to be formed in render. Templates for the details are to be provided by the conservation architect.
  Also remove and reinstate render band to south gable and form continuous weathering with the abutment detail.
- Substrate: Existing brickwork, existing render removed, cleaned of salts, lichen, dust & dirt.
  - Preparation: Brush clean & dampen lightly as needed.
- Lime manufacturer: Lime Green Natural Finish, suggested supplier: Womersleys Ltd, Ravensthorpe Indust Est, Low Mill Lane, Ravensthorpe, West Yorkshire, WF13 3LN tel: 01924 400 651 or equivalent.
  - Product reference/ Type:Hydraulic NHL3.5.
- Colour: Chalk
- Suggested build up - final details to be confirmed by specialist supplier:
  1st coat: slurry coat, comprising 1 part lime 2 parts grit sand
  2nd coat: base coat, comprising 1 part lime 1.5 grit 1 river sand
  3rd coat: scratch coat
  4th coat: top finishing coat coat as approved sample

Suggested method: ensure the walls are brushed down and free of loose fragments of brick / mortar. Commence by wetting the wall with clean water and then applying a stipple / slurry coat by brush. Apply the 2nd and 3rd coats by trowel and float (again, after wetting the wall), key the surface of each coat before setting. Apply the final finish coat by trowel and float, suggested finish - sponge finish or as approved sample. Allow 3 to 4 days between coats.
Contractor to confirm extent of final coat that can be achieved in a single application and agree locations of day work joints with CA.
Other requirements: Decorative details as shown to drwg XXXX and to follow the 1:1 templates provided by the conservation architect,

GENERAL

418 SAMPLE

- Complete sample areas, being part of the finished work, in locations TBC.

495 MIXING

- Plasters / render mortars (site prepared as manufacturers details):
  - Batching: By volume. Use clean and accurate gauge boxes or buckets.
  - Mix proportions: Based on damp sand. Adjust for dry sand.
  - Lime:sand: Mix thoroughly. Allow to stand, without drying out, for at least 16 hours before using.
- Mixes: Of uniform consistence and free from lumps. Do not retemper or reconstitute mixes.
- Contamination: Prevent intermixing with other materials.

497 COLD WEATHER

- General: Do not use frozen materials or apply coatings on frozen or frost bound substratres.
- External work: Avoid when air temperature is at or below 5°C and falling or below 3°C and rising. Maintain temperature of work above freezing until coatings have fully hardened.
- Internal work: Take precautions to enable internal coating work to proceed without detriment when air temperature is below 3°C.

PREPARING SUBSTRATES

510 UITABILITY OF SUBSTRATES

- Soundness: Free from loose areas and significant cracks and gaps.
- Cutting, chasing, making good, fixing of conduits and services outlets and the like: Completed.
- Tolerances: Permitting specified flatness/ regularity of finished coatings.
- Cleanliness: Free from dirt, dust, efflorescence and mould, and other contaminants incompatible with coatings.

531 ROUGHENING FOR KEY

- Substrates: Roughen thoroughly and evenly.
  - Depth of surface removal: Minimum necessary to provide an effective key and as manufacturers details.

BACKINGS/ BEADS/ JOINTS

636 BEADS/ STOPS FOR EXTERNAL USE

- Stainless steel: To BS EN 10088-1, grade 1.4301.

646 CRACK CONTROL AT JUNCTIONS BETWEEN DISSIMILAR SOLID SUBSTRATES

- Locations: Where defined movement joints are not required. Where dissimilar solid substrate materials are in same plane and rigidly bonded or tied together.
- Crack control materials:
  - Isolating layer: Building paper to BS 1521.
  - Metal lathing: Internally: Externally: stainless steel ribbed expanded metal .
- Installation: Fix metal lathing over isolating layer. Stagger fixings along both edges of lathing.
- Width of installation over single junctions:
  - Isolating layer: 150 mm.
  - Lathing: 300 mm.
- Width of installation across face of dissimilar substrate material (column, beam, etc. with face width not greater than 450 mm):
  - Isolating layer: 25 mm (minimum) beyond junctions with adjacent substrate.
  - Lathing: 100 mm (minimum) beyond edges of isolating layer.

EXTERNAL RENDERING

810 APPLICATION GENERALLY

- Application of coatings: Firmly and in one continuous operation between angles and joints. Achieve good adhesion.
- Appearance of finished surfaces: Even and consistent. Free from rippling, hollows, ridges, cracks and crazing.
  - Accuracy: Finish to a true plane, to correct line and level, with angles and corners to a right angle unless specified otherwise, and with walls and reveals plumb and square.
- Drying: Prevent excessively rapid or localized drying out.

820 DUBBING OUT FOR RENDERING

- General: Correct substrate inaccuracies.
- Thickness of any one coat (maximum): 16 mm.
  - Total thickness (maximum): 25 mm, otherwise obtain instructions.
- Mix: As undercoat.
- Application: Achieve firm bond. Allow each coat to set sufficiently before the next is applied. Comb surface of each coat.

830 ANCHORED MESH REINFORCEMENT

- Application of first undercoat: Through and round mesh to fully bond with solid substrate.

840 UNDERCOATS GENERALLY

- General: Rule to an even surface. Comb to provide a key for the next coat. Do not penetrate the coat.
- Undercoats on metal lathing: Work well into interstices to obtain maximum key.

856 FINAL COAT - PLAIN FLOATED FINISH

- Finish: Even, open texture free from laitance.

880 CURING AND DRYING

- General: Prevent premature setting and uneven drying of each coat.
- Curing coatings: Keep each coat damp by covering with polyethylene sheet and/ or spraying with water.
  - Curing period (minimum): As the lime manufacturer's recommendations .
  - Final coat: Hang sheeting clear of the final coat.
- Drying: Allow each coat to dry thoroughly, with drying shrinkage substantially complete before applying next coat.
- Protection: Protect from frost and rain.

M60 PAINTING / CLEAR FINISHING

100 COATINGS

110 BREATHABLE / CLAYPAINT TO INTERNAL PLASTERED SURFACES

- Manufacturer: earthBorn Paints or other to Contractors choice and CA approval
  - Product reference: claypaint.
- Surfaces: internal plastered surfaces.
  - Preparation: as described below .
- Initial coats:
  - Type: 10% thinned mist coat of claypaint .
  - Number of coats: 1no. coat .
- Finishing coats:
  - Type: claypaint .
  - Number of coats: 1 - 2 no. coats .

180 EXTERNAL BLACK PAINT FINISH TO TIMBER GUTTERS

- Manufacturer: to Contractors choice and CA approval
  - Product reference: external paint onto timber finishes
  - Colour: Black
- Surfaces: all surfaces of the timber
- Preparation & finishing: as manufacturers and product requirements

185 EXTERNAL BLACK PAINT FINISH TO CAST IRON GUTTERS & DOWNPIPES

- Manufacturer: to Contractors choice and CA approval
  - Product reference: external paint onto cast iron finishes
  - Colour: Black
- Surfaces: all surfaces of the cast iron gutters, downpipes and fixings
- Preparation & finishing: as manufacturers and product requirements

GENERALLY

205 PAINT ANALYSIS

- TBC if required.

215 HANDLING AND STORAGE

- Coating materials: Deliver in sealed containers, labelled clearly with brand name, type of material and manufacturer's batch number.
- Materials from more than one batch: Store separately. Allocate to distinct parts or areas of the work.

220 COMPATIBILITY

- Coating materials selected by contractor:
  - Recommended by their manufacturers for the particular surface and conditions of exposure.
  - Compatible with the selected timber type.
  - Compatible with each other.
  - Compatible with and not inhibiting performance of preservative/fire retardant pre-treatments.

280 PROTECTION

- 'Wet paint' signs and barriers: Provide where necessary to protect other operatives and general public, and to prevent damage to freshly applied coatings.

300 CONTROL SAMPLES

- Approval of appearance: Obtain before commencement of general coating work.

PREPARATION

400 PREPARATION GENERALLY

- Standard: To BS 6150, Section 4.
- Preparation materials: Types recommended by their manufacturers and the coating manufacturer for the situation and surfaces being prepared.
- Substrates: Sufficiently dry in depth to suit coating.
- Efflorescence salts: Remove.
- Dirt, grease and oil: Remove.
  - Give notice if contamination of surfaces/ substrates has occurred.
- Joints, cracks, holes and other depressions:
  - Fill with stoppers/ fillers. Work well in and finish off flush with surface.
  - Abrade to a smooth finish.
- Water based stoppers and fillers:
  - Apply before priming unless recommended otherwise by manufacturer.
  - If applied after priming: Patch prime.
- Oil based stoppers and fillers: Apply after priming.
- Surface irregularities: Abrade to a smooth finish.
- Dust, particles and residues from abrasion: Remove.
- Doors, opening windows and other moving parts:
  - Ease before coating.
  - Prime resulting bare areas.

420J FIXTURES AND FITTINGS

- Before commencing work: Remove: any surface mounted fixtures and fittings.
- On completion of coating work: Refix.

425 IRONMONGERY

- Before commencing work: Remove ironmongery from surfaces to be coated.
- Hinges: Do not remove.
- On completion of coating work: Refix.

430 EXISTING IRONMONGERY

- General: Remove old coating marks. Clean and polish.

481 UNCOATED TIMBER

- General: Abrade to a smooth, even finish with arrises and moulding edges lightly rounded or eased.
- Heads of fasteners: Countersink sufficient to hold stoppers/fillers.
- Resinous areas and knots: Apply two coats of knotting.

570 UNCOATED MASONRY/ RENDERING

- Loose and flaking material: remove.

580 UNCOATED PLASTER

- Nibs, trowel marks and plaster splashes: Scrape off.
- Overtrowelled 'polished' areas: Abrade lightly.

590 UNCOATED PLASTERBOARD

- Depressions around fixings: Fill with stoppers/ fillers

APPLICATION

711 COATING GENERALLY

- Application standard: To BS 6150, Section 5.
- Conditions: Maintain suitable temperature, humidity and air quality during application and drying.
- Surfaces: Clean and dry at time of application.
- Thinning and intermixing of coatings: Not permitted unless recommended by manufacturer.
- Overpainting: Do not paint over intumescent strips or silicone mastics.
- Priming coats:
  - Thickness: To suit surface porosity.
  - Application: As soon as possible on same day as preparation is completed.
- Finish:
  - Even, smooth and of uniform colour.
  - Free from brush marks, sags, runs and other defects.
  - Cut in neatly.

720 PRIMING JOINERY

- Preservative treated timber: Retreat cut surfaces before priming.
- End grain: Liberally coat, allow to soak in and then recoat.

730 WORKSHOP COATING OF CONCEALED JOINERY SURFACES

- General: Apply coatings to all surfaces of components.

731 SITE COATING OF CONCEALED JOINERY SURFACES

- General: After priming, apply additional coatings to surfaces that will be concealed when fixed in place.
  - Additional coatings: One undercoat.
  - Components:
  - sash windows
  - V jointed boards.

770 EXTERNAL DOORS

- Bottom edges: Prime and coat before hanging doors.

780 BEAD GLAZING TO COATED TIMBER

- Before glazing: Apply first two coats to rebates and beads.

R10 DRAINAGE SYSTEMS

100 GENERAL

110 GRAVITY RAINWATER DRAINAGE SYSTEM

- The existing rainwater goods vary in material and condition around the building as follows;
  - northern section east elevation: metal ogee profile, fair condition
  - northern section west elevation: metal ogee profile, fair condition
  - southern section east elevation: lead lined timber 'trough' supported on raked struts, very poor condition
  - southern section west elevation: metal ogee profile, fair condition
  - cast iron hoppers and downpipes all elevations, generally fair condition
- The timber gutter to the eastern elevation of the southern section is to be fully replaced.
- Gutters to the western elevation of the southern section to be retained insitu throughout the works if possible.
- Gutters to northern section roof to be removed to allow for eaves level masonry repairs.

GRAVITY RAINWATER DRAINAGE SYSTEM PERFORMANCE

210 DESIGN

- Design: High level roof inspection required to confirm condition, defects, sizing & detailing of existing gutters.
- Following inspection confirm details of replacements.
  Standard: To BS EN 12056-3, clauses 3-7 and National Annexes.

221 COLLECTION AND DISTRIBUTION OF RAINWATER

- General: Complete, and without leakage or noise nuisance.

230 DESIGN PARAMETERS - GENERAL

- Roof and gutter construction and finish: Sand - cast, cast iron gutters with round, cast iron rainwater pipes. All gutters and pipework to be painted as M60.
- Design rate of rainfall: As BS EN 12056-3, National Annex NB.2.
- Category: TBC
- Design life of building: 60 years.
- Available capacity of existing below ground drainage (maximum): TBC

ABOVE GROUND FOUL DRAINAGE SYSTEM PERFORMANCE

210 DESIGN

- Design: Complete the design of the above ground foul drainage system.
- Standards: To BS EN 12056-1 and BS EN 12056-2, and in accordance with BS EN 12056 -2 National Annexes NA-NG.
  - System type to BS EN 12056-2: System III.
- Proposals: Submit drawings, technical information, calculations and manufacturers' literature.

220 COLLECTION AND DISTRIBUTION OF FOUL WATER

- General: Quick, quiet and complete, self-cleansing in normal use, without blockage, crossflow, backfall, leakage, odours, noise nuisance or risk to health.
- Pressure fluctuations in pipework (maximum): ±38 mm water gauge. Water seal retained in traps (minimum): 25 mm.

PRODUCTS

315 CAST IRON GUTTERS

- Undertake a detailed inspection of condition of all gutters as part of initial high level inspection.
- To southern roof western elevation – retain insitu throughout the works if possible. Allow for repair to joints and redecoration.
  To northern roof – carefully remove existing gutters and brackets to enable eaves level masonry repairs. Prior to removal undertake a full photographic survey, note locations of brackets and datumns. Remove slowly and carefully, tagging each part with a reference of the original location for reinstatement. Retain on site carefully stored. Undertake further inspections and repair where necessary. Redecorate gutter and brackets and reinstate.

  For new if required;
- Standard: To BS 460, except for shape.
- Manufacturer: J+JW Longbottom Ltd, Bridge Foundry, Holmfirth, Nr Huddersfield HD9 7AW Tel: 01484 682141.
- Product reference: TBC following inspection
- Profile: TBC following inspection
- Jointing type: TBC following inspection
- Nominal size: TBC following inspection
- Finish as supplied: Anti rust primer, to receive paint finish as section M60.
- Brackets: As existing.
- Fixings: Stainless steel screws.

Size: Refer to Manufacturer's Specification.

- Accessories: Stop ends.

316 TIMBER GUTTER TO SOUTHERN SECTION ROOF EAST ELEVATION

- Manufacturer: Contractor's choice.
- Product reference: Contractor's choice.
- Profile: Timber trough, profile to match existing.
- Nominal size: TBC on site
- Species: Heartwood from dense & slow movement class, such as Sweet Chestnut
- Treatment: [CCA impregnation to NBS section Z12 and British Wood Preserving and Damp- proofing Association Commodity Specification C2, Service life: 40 years
- Jointing: TBC on site
- Finish as supplied: Natural.
- Brackets: Timber struts fixed back to timber frame as SE details
- Fixings: As SE details
- Lining: Lead with neoprene expansion joints as section H71 and stop end to be continuous with the abutment flashing.
- Finish: Black paint TBC

380 CAST IRON PIPEWORK - SPIGOT AND SOCKET EXTERNALLY

- Standard: To BS 460.
- Manufacturer: J+JW Longbottom Ltd, Bridge Foundry, Holmfirth, Nr Huddersfield HD9 7AW Tel: 01484 682141

- Product reference: TBC
- Type: With projecting ears.
- Nominal size: TBC
- Finish as supplied: Water based primer, to receive paint finish as section M60.
- Brackets: Cast iron two legged type.
- Fixings: Stainless steel screws.

Size: Refer to Manufacturer's Specification.

- Accessories: TBC

450 INSULATION TO INTERNAL PIPELINES

- Material: Preformed flexible mineral fibre split tube.
- Thermal conductivity (maximum): 0.045 W/m·K.
- Manufacturer: Contractor's choice.
- Product reference: Submit proposals.
- Thickness: 50 mm.
- Fire performance: Class 1 spread of flame when tested to BS 476-7 or Class C to BS EN 13501.

460 EAVES NETTING

- Material: Lightweight polypropylene net mesh
- Manufacturer: Contractor's choice.
- Product reference: Submit proposals.
- Hole size: 20mm
- Colour: black
- Fixings: non-ferrous fixings into rafter ends

EXECUTION

600 PREPARATION

- Work to be completed before commencing work specified in this section:
- Below ground drainage. Any works confirmed to be required following the survey.
- Painting of surfaces which will be concealed or inaccessible.

605 INSTALLATION GENERALLY

- Electrolytic corrosion: Avoid contact between dissimilar metals where corrosion may occur.
- Plastics and galvanized steel pipes: Do not bend.
- Allowance for thermal and building movement: Provide and maintain clearance as fixing and jointing proceeds.
- Protection:
- Fit purpose made temporary caps to prevent ingress of debris.
- Fit access covers, cleaning eyes and blanking plates as the work proceeds.

610 FIXING AND JOINTING GUTTERS

- Joints: Watertight.
- Brackets: Securely fixed.
- Fixings: Plugged and screwed into masonry. Fixing centres: To manufacturer's specification.
- Additional brackets: Where necessary to maintain support and stability, provide at joints in gutters and near angles and outlets.
- Roofing underlay: Dressed into gutter.

615 SETTING OUT EAVES GUTTERS - TO FALLS

- Setting out: To true line and even gradient to prevent ponding or backfall. Position high points of gutters as close as practical to the roof and low points not more than 50 mm below the roof.
- Outlets: Align with connections to below ground drainage.

616 SETTING OUT EAVES GUTTERS - LEVEL

- Setting out: Level and as close as practical to the roof.
- Outlets: Aligned with connections to below ground drainage.

635 FIXING PIPEWORK

- Pipework: Fix securely, plumb and/ or true to line.
- Branches and low gradient sections: Fix with uniform and adequate falls to drain efficiently.
- Externally socketed pipes and fittings: Fix with sockets facing upstream.
- Additional supports: Provide as necessary to support junctions and changes in direction.
- Vertical pipes:
- Provide a loadbearing support at least at every storey level.
- Tighten fixings as work proceeds so that every storey is self supporting.
- Wedge joints in unsealed metal pipes to prevent rattling.
- Wall and floor penetrations: Isolate pipework from structure.
- Pipe sleeves: As section P31.
- Masking plates: Fix at penetrations if visible in the finished work.
- Expansion joint pipe sockets: Fix rigidly to buildings. Elsewhere, provide brackets and fixings that allow pipes to slide.

640 FIXING VERTICAL PIPEWORK

- Bracket fixings: Plugged and screwed into masonry - bracket to be mounted on proprietary bobbins.
- Distance between bracket fixing centres (maximum): To manufacturer's specification.

650 JOINTING PIPEWORK AND GUTTERS

- General: Joint with materials and fittings that will make effective and durable connections.
- Jointing differing pipework and gutter systems: Use adaptors intended for the purpose.
- Cut ends of pipes and gutters: Clean and square. Remove burrs and swarf. Chamfer pipe ends before inserting into ring seal sockets.
- Jointing or mating surfaces: Clean and, where necessary, lubricate immediately before assembly.
- Junctions: Form with fittings intended for the purpose.
- Jointing material: Strike off flush. Do not allow it to project into bore of pipes and fittings.
- Surplus flux, solvent jointing materials and cement: Remove.

660 JOINTING EXTERNAL PIPEWORK

- Jointing: Cold caulking compound.

675 CUTTING COATED PIPEWORK AND GUTTERS

- Cutting: Recoat bare metal.

690 ELECTRICAL CONTINUITY - PIPEWORK

- Joints in metal pipes with flexible couplings: Clips (or suitable standard pipe couplings) supplied for earth bonding by pipework manufacturer to ensure electrical continuity.

700 ACCESS FOR TESTING AND MAINTENANCE

- General: Install pipework and gutters with adequate clearance to permit testing, cleaning and maintenance, including painting where necessary.
- Access fittings and rodding eyes: Position so that they are not obstructed.

800 ABOVE GROUND FOUL PIPE ROUTES

- General: The shortest practical, with as few bends as possible.
  - Bends in wet portion of soil stacks: Not permitted.

Routes not shown on drawings: Submit proposals before commencing work.

810 FIXING ABOVE GROUND FOUL PIPEWORK

- Pipework: Fix securely plumb and/ or true to line. Fix discharge stack pipes at or close below socket collar or coupling.
- Branches and low gradient sections: Fix with uniform and adequate falls to drain efficiently.
- Externally socketed pipes and fittings: Fix with sockets facing upstream.
- Additional supports: Provide as necessary to support junctions and changes in direction.
- Vertical pipes: Provide a load bearing support not less than every storey level. Tighten fixings as work proceeds so that every storey is self supporting.
- Wall and floor penetrations: Isolate pipework from structure, e.g. with pipe sleeves.
  - Masking plates: Fix at penetrations if visible in the finished work.

Expansion joint sockets: Fix rigidly to the building.

COMPLETION

900 TESTING GENERALLY

- Dates for testing: Give notice.
- Period of notice (minimum): Min 7 days.
- Preparation:
- Pipework: Complete, securely fixed, free from defects, obstruction and debris before testing.
- Testing:
- Supply clean water, assistance and apparatus.
- Do not use smoke to trace leaks.
- Records: Submit a record of tests.

905 INTERNAL PIPEWORK TEST - ENGLAND, WALES, IRELAND AND NORTHERN IRELAND

- Preparation: Temporarily seal open ends of pipework with plugs.
- Test apparatus: Connect a 'U' tube water gauge and air pump to pipework via a plug.
- Testing: Pump air into pipework until gauge registers 38 mm.
- Required performance:
- Allow a period for temperature stabilization, after which the pressure of 38 mm is to be maintained without loss for at least 3 minutes.

910 GUTTER TEST

- Preparation: Temporarily block all outlets.

- Testing: Fill gutters to overflow level and after 5 minutes closely inspect for leakage.

915 MAINTENANCE INSTRUCTIONS

- General: At completion, submit printed instructions recommending procedures for maintenance of the rainwater installation, including full details of recommended inspection, cleaning and repair procedures.

920 IMMEDIATELY BEFORE HANDOVER

- Construction rubbish, debris, swarf, temporary caps and fine dust which may enter the rainwater system: Remove. Do not sweep or flush into the rainwater system.
- Access covers, rodding eyes, outlet gratings and the like: Secure complete with fixings.

Appendix A: Draft Brief for Photographic Recording to Roof

Geospatial Survey Specifications for Cultural Heritage

Clayton Hall Roof Survey - Project Brief

The following project brief is to be read in conjunction with the fourth edition of the Historic England guidance *Geospatial Survey Specifications for Cultural Heritage.*

1 Project information

1.1 Name of project Clayton Hall Roof Survey

1.2 Reference number 25/125/1P

1.3 Purpose of project

Orthophotographs of the roof are required to inform a conservation and repair project.

1.4 Location

- **Address** Clayton Hall, Clayton Park, Ashton New Rd, Clayton, Manchester M11 4RU
- **Directions** Off Clayton Hall Road
- **National Grid Reference** SJ 88141 98568

1.5 Access arrangements

Access for the purposes of estimation or actually undertaking the survey must be arranged well in advance by contacting **[insert contact details]**

1.6 Health and safety statement

Refer to any specific health and safety requirements/documents for the site.

1.7 Risk assessment (known hazards)

The contractor is to provide a risk assessment. Known hazards include but are not limited to

- Travel to site
- Slips and trips
- Possible anti-social behaviour
- Use of drone

1.8 Copyright

Copyright is to be assigned to **[insert details]**

1.9 Contract

Refer to contract document.

1.10 Site clearance

There are various trees adjacent to the building but they do not obscure the aerial view.

1.11 Completeness of survey

The orthophotographs are to be as complete as possible.

1.12 Extent and type of survey

The planned works include the removal of some or all of the stone slates to facilitate conservation work to the roof structure.

1. Photogrammetric orthophotographs are required as follows

- All roof slopes before work to remove the slates commences.
- A second phase, again covering all roof slopes and to include any remaining slates although the primary purpose is to record the revealed roof structure.
- As well as top-down views, each roof slope is to be treated as a separate plane i.e there is to be an individual orthophoto with the projection orthogonal to the main plane of each slope, including those of the dormer roof to the stair tower.

2. As well as the orthophotographs all the original photography used to produce them is to be supplied.

1.13 Scales

The orthophotographs are to be provided at 1:50 scale.

1.14 Delivery schedule

The survey will be undertaken in two phases to allow for the removal of slates and subsequent capture of the revealed roof structure.

The orthophotographs pre-slate removal are to be delivered by **[insert date]**.

It is anticipated that the un-covered roof structure will be available for survey from **[insert date]**. The second phase should be completed as soon as possible after this date so as to not adversely affect the works programme.

1.15 Distribution

Please supply PDF preliminary files for approval to

David Andrews, Senior Geospatial Surveyor, Historic England

email: david.andrews@historicengland.org.uk

And

Bernadette Bone, Specialist Conservation Architect, BB Heritage Studio

email: bb@bbheritagestudio.com

On approval, please supply;

- All original photographs
- Orthophotographs attached to CAD files
- PDF files derived from the CAD files – one for each layout

to David Andrews, Bernadette Bone and the following

Insert details and delivery requirements for all other recipients.

1.16 Means of delivery

Transfer service, flash drive or external hard disk.

2 Control of survey

2.1 Control network

A new control network is to be established.

2.2 Level datum

The level datum is to be Ordnance Datum Newlyn (ODN).

2.3 Vertical control

Spirit levelling will not be required.

2.4 Horizontal control

Horizontal control is to be acquired as stated in section 2.2.6 of the specification.

2.5 GNSS observation requirements

The third order of GNSS observation will be sufficient.

2.6 Survey marks

Survey marks are to take the form of small nails driven into modern surfaces.

3 Laser scanning

Laser scanning may be used to control the photogrammetric survey but is not required.

4 Photogrammetric survey

4.1 Accuracy of control

The accuracy of control points is to be as stated in section 4.2.1 of the specification.

4.2 Use of detail points

Control targets are to be used.

4.3 Cameras

The use of a calibrated camera will not be required but images must be captured in RAW format and supplied in TIFF format.

4.4 GSD

The required ground sample distance (GSD) is to be an average of 1mm.

4.5 High-level coverage

The use of a drone will be required to achieve appropriate coverage of the roof.

4.6 Completeness of survey

Sufficient photography is to be acquired so as to ensure complete coverage.

4.7 Orthophotograph output resolution

The orthophotographs are to be presented at 1:50 scale with a maximum GSD of 2mm.

4.8 Presentation of orthophotographs

The orthophotographs are to be supplied attached to AutoCAD files. The top-down views are to be correctly geo-referenced to the site coordinate network.

5 Measured building survey

NA

6 Topographic survey

NA

7 Format, presentation and provision of survey data

7.1 File naming convention

CAD files are to be named using the convention described in section 7.1.1 of the specification. The site name acronym is **CHM**

7.2 CAD data format

The orthophotographs are to be attached to AutoCAD .DWG files.

7.3 Digital image format

The original photographs and the orthophotographs are to be supplied in TIFF format.

7.4 CAD drawing unit

The CAD drawing unit is to be 1m as per the specification.

7.5 Use of paper space

The use of paper space for the drawing sheet formats is required.

7.6 Drawing sheets

A template drawing sheet will be supplied on request or contractors may provide their own.

7.7 Standard sheet views

- If an orthophotograph extends across more than one sheet there is to be an overlap and small registration crosses are to be used to indicate where this occurs.
- The top-down views are to be aligned with the drawing sheet edges with a suitable arrow indication north.

7.8 Imagery metadata

Give list entry number, etc.

7.9 Samples

Samples will not be required.