



Project Number 7690

Revision A: 12-05-16

Revision B: 04-07-16

Kilbride Chapel, Margnaheglish, Lamlash, Isle of Arran

Project Specification



1.00 VEGETATION REMOVAL:-

1.01 General Notes

Where possible and in order to minimise risk of collapse or damage to the historic monument, it is recommended that vegetation removal be carried out in phases over a long term. Following treatment, the vegetation should then be left to die away naturally. It can take up to two years before it has decayed sufficiently to ensure safe removal. The state of the vegetation should be periodically checked as it may require a second treatment during this time, and perhaps again a few weeks prior to removal.

The plant must never be removed from walls while still alive. Once the stems have died, they should be removed with the utmost care by hand, not with a rope or any other means, in order to avoid damage to the monument or possible collapse of loose masonry. On areas of loose masonry, ivy mattes are often keeping masonry sections in place. Therefore it is best to leave the withered ivy on the wall until the conservation work on that respective wall section is being undertaken.

Temporary masonry supports should be installed to affected areas prior to removing vegetation. Do not fix into masonry or mortar and ensure that propping does not come into direct contact with masonry – use timber packers or equal and approved.

Vegetation removal should not commence without attendant consolidation by an experienced stonemason.

It is anticipated that some dismantling of masonry around large roots will be required and this will involve the removal of the root and resetting the original stonework. Prior to any works commencing, the Contractor must carry out a detailed photographic and dimensional survey. Any areas that require to be taken down and re-built should be recorded in detail with the stones numbered in French chalk or lime. It is recommended that no duntaking proceed without the attendance and supervision of an Archaeologist. See section 2.01 'Duntaking' below for further details.

1.02 Ivy & Trees

Cut away or trim any vegetation that can be easily removed from, and around, the monument, including trees, shrubs etc. Ivy should be cut back as close to the face of the masonry as possible, without endangering the structural integrity.

The trimmed face should be sprayed immediately with an appropriate herbicide such as 'Roundup Pro Biactive 360' or equal and approved. Ivy roots and shoots can seal themselves within an hour once damaged, and so must be sprayed as soon as possible.

The main ivy stem(s) should be cut at the base of the root, removing a piece at least 300mm in length. This effectively cuts off the water supply to the plant. The use of power tools including chain saws is not permitted. A handsaw is appropriate, taking care not to let the saw strike the vulnerable masonry. If the root is small, it should then be painted or sprayed immediately after cutting with the chosen herbicide. If the root is of reasonable size, up to 200mm in diameter, drill a hole into the stump 80mm long and fill with the herbicide solution, then plug. Should the root be wider than 200mm, a series of holes can be drilled into the stump, making sure the holes are at least 30mm in from the cambium (the formative layer of cellular tissue that lies between the young wood and the outer surface layer). The herbicide solution should then be poured in and the holes plugged. Once the main root has been cut, secondary roots may attempt to burrow invasively into the weaker areas of wall fabric to access moisture naturally present in the walls. Immediate spraying will prevent this damage occurring.



2.00 MASONRY REPAIRS:-

2.01 Downtaking

Note: Only where absolutely necessary should downtaking occur e.g. to remove deeply embedded roots and only where approved.

Once the vegetation has been allowed to die back the Contractor must photograph and record all areas that may have to be taken down (in agreement with the Structural Engineer) in order to extract the remaining roots. Carefully number all stones using French chalk or lime to facilitate accurate re-building. Remove existing root structures by hand taking care not to destabilise walling as far as possible. Take care not to disrupt or lose any historic features or details such as joist pockets, joints, harling remains, carved stones, window relics etc.

Allow for the careful dismantling of the later built brick chamber within the west end of the Chapel. The existing concrete slab is to be retained in situ. Note: all subject to approval by Historic Environment Scotland.

Note: Contractor to allow for affording access to attending Archaeologist to supervise any areas of downtaking.

2.02 Re-building

All masonry is to be reconstructed to match the original arrangement following removal of all root systems. Re-built sections to match the original in terms of stone type, size, location, pattern of jointing, use of pinnings and mortar type and detail.

Re-building mortar to be to the Scottish Lime Centre Specification:

Note: All mortar mixes are subject to approval by Historic Environment Scotland & the Scottish Lime Centre Trust. Sample panels of each mix must be provided for approval.

1 part St. Astier NHL 3.5 lime: 2 parts sharp concrete sand (Newbigging Quarry)

Sand has been matched by the Scottish Lime Centre (refer to SLC report)

Re-building mortar to be kept back 40mm from the face of the wall.

Note: Contractor to afford access to attending Archaeologist to supervise areas of re-building following root removal to ensure no loss of historic detail occurs.

2.03 Re-building of Existing Collapsed Sections

Existing fallen masonry to be sorted under archaeological supervision for reinstatement where possible. Do not remove stones from site without consent. Areas to be re-built only where the original construction and arrangement can be accurately determined from historical photographs or archaeological investigations.

Note: Contractor to afford access to attending Archaeologist to supervise areas of re-building following root removal to ensure no loss of historic detail occurs.

2.04 Existing Inappropriate Cementitious Repairs

Carefully remove all cementitious mortar and resin only where this can be undertaken without damaging the surrounding stone. Re-point with lime mortar to specification in order to minimise voids in stonework.

Carefully break out the cementitious mortar on the surface and pick out as follows:

- Carefully chisel out with a small bladed chisel (take care not to damage surrounding arises)



- Carefully tap centre of hard point to invoke cracking.
- Remove pointing with a narrow bladed chisel.
- Drill a series of holes along centre of the joint, ensuring the drill bit does not damage the stone, then remove pointing with a small bladed chisel.

2.05 Re-Pointing

Allow for 100% re-pointing throughout. The depths of new pointing will vary and the Contractor must carry out a survey prior to submitting costs.

Rake out all loose, friable and defective mortar to a minimum depth of approximately twice the width of the joint or until a sound mortar face is reached. Do not remove any sound original lime mortar. Use only hand tools such as plasterers' small tools, half hacksaw blades etc to avoid damage to stone arises and widening of joints.

Thoroughly clean out all beds and joints, dampen the wall and allow excess moisture to dry off.

Re-pointing mortar to be to Scottish Lime Centres Specification. At this stage allow for the following:

Note: All mortar mixes are subject to approval by Historic Environment Scotland & the Scottish Lime Centre Trust. Sample panels of each mix must be provided for approval.

1 part St. Astier NHL 3.5 lime: 2.5 parts sharp concrete sand (Newbigging Quarry)

Sand has been matched by the Scottish Lime Centre Trust (refer to SLC report)

Ensure that all new lime mortar is suitably protected against exposure either from rapid drying or from rain and frost for the first ten days. Do not expose to freezing conditions for 6-8 weeks after the last application of mortar work has been placed. Supply and install temporary hessian protection with insulated panels to protect from frost if required.

2.06 Grouting

Note: Grouting only to proceed as a last resort to consolidation and only where agreed with CA & Historic Environment Scotland

Where investigation of the walls reveals voids in the core which will be the case in many areas, apply a gravity lime grout to specification provided by the SLC. This should be introduced through existing voids (and not by drilling through masonry). Remove any spillage from the stone faces immediately.

Grouting mortar to be to the following Scottish Lime Centre Specification:

Note: All mortar mixes are subject to approval by Historic Environment Scotland & the Scottish Lime Centre Trust. Sample panels of each mix must be provided for approval.

Masons Mortar consolidation grout, code MM SA31 easy flow NHL



3.00 WALL HEAD CONSOLIDATION:-

Note: the sequence of consolidation operations should be planned so that wallheads and other potential sources of water penetration are dealt with before pointing. Lime mortars cannot withstand the action of water running through the masonry structure.

3.01 Cornices

Remove all vegetation using methods previously described.

Sort areas of fallen masonry under archaeological supervision and carry out detailed, non-intrusive survey of ground level in order to determine whether any missing cornice stones can be reinstated. Note: stones only to be reinstated where their original position can be accurately determined.

Allow for lifting and re-bedding all cornice stones.

Cornice bedding and pointing mortar to be to the following Scottish Lime Centre Specification:

Note: All mortar mixes are subject to approval by Historic Environment Scotland & the Scottish Lime Centre Trust. Sample panels of each mix must be provided for approval.

1 part St. Astier NHL 5 lime: 2.5 parts sharp concrete sand (Newbigging Quarry).

Sand has been matched by the Scottish Lime Centre (refer to SLC report).

3.02 Soft Topping

Remove existing turf and sedum setting aside for re-use. Supplement with local turf (taken from outside monument area) if required. Fill voids and cap wall head using lime mortar to specification provided by the Scottish Lime Centre. Install bentonite clay/ sand layer (minimum depth of 100mm) to create concave profile, and two layers of turf (the bottom layer turned upside down) secured with timber pegs or stainless steel pins fixed into masonry joints together with a pitch biodegradable mesh (50mm mesh size) to secure turf whilst this establishes. Plant sedum plug plants set into upper layer of turf. Ensure that turf is doubled up and returned at edges to prevent die back. The top layer of turf and sedum plugs should be installed within the growing season.

Ensure that the turf is suitably watered at all times until fully established. Note: Aftercare will be required beyond contract works into defect liability period.

3.03 Rough Racking

Check wall heads for voiding and grout where necessary using lime mortar to specification provided by the Scottish Lime Centre. Wall head to be shaped to assist the shedding of rainwater with the core built up with local fallen stonework taken from the immediate vicinity. IMPORTANT: Use only undressed random rubble to build up wall heads where required. Rough rack all sloping and horizontal wall head surfaces using lime mortar to specification. Alternatively, use imported compatible sandstone to specification provided by the British Geological Survey.

Rough racking mortar to be to the following Scottish Lime Centre Specification:

Note: All mortar mixes are subject to approval by Historic Environment Scotland & the Scottish Lime Centre Trust. Sample panels of each mix must be provided for approval.

1 part St. Astier NHL 5 lime: 2 parts sharp concrete sand with Magnesium Stearate (ligophob) (supplied in pre-weighed sachets to dose per bag of lime). Sand to be from Newbigging quarry.

Sand has been matched by the Scottish Lime Centre (refer to SLC report).



4.00 EXISTING FERROUS FIXINGS & FIXTURES:-

Remove all existing ferrous fixings and ferrous gate.

5.00 STRUCTURAL WORKS:-

Carry out structural works in accordance with Structural Engineer's recommendations.

6.00 SCAFFOLDING:-

Due to the relative instability of the structure throughout, under no circumstance should the scaffolding come into contact with the existing masonry or be fixed into existing masonry/ mortar. The scaffolding must be self-supporting, buttressed as required. Ground excavation will not be permitted therefore scaffolding may have to rest on timber sole boards laid on sand bags or other approved methods.

Care must be taken to ensure no damage occurs to the surrounding memorials and gravestones.

Contractor to submit full scaffold design and specification for approval prior to proceeding.

Note: A temporary propping scaffold will be required at localised areas where vegetation is to be removed. Refer to structural engineers details.

7.00 PROTECTION OF MEMORIALS AND GRAVESTONES:-

Install protection to all memorials and gravestones within the immediate vicinity where these are adjacent to any anticipated down taking. Where memorial stones require to be removed to facilitate the works, ensure the position is accurately recorded for reinstatement.

The protective frames are to be self-supporting and not fixed into the item to be protected. Allow for external grade wbp plywood on treated sw frames or equal and approved at this stage.

It is likely that the scaffolding will extend around the surrounding gravestones. Ensure that all gravestones within the vicinity of the scaffolding are suitably protected.

Arrange for the inspection of memorial stones in the immediate vicinity of the Chapel by a Structural Engineer for signs of failure or collapse. Where required, and subject to the approval of Historic Environment Scotland, install stainless steel or phosphor bronze fixings to ensure stability.

Note: The standing stones M11-M14 (and Memorial M14 in particular) are extremely significant. Contractor to afford all care and attention when working around this area.

The following works are proposed to M14 subject to approval by Historic Environment Scotland:

Existing ferrous restraints to M14 to be carefully removed and stone rotated 180° to correct orientation under archaeological supervision. New stainless steel restraints installed to Structural Engineer's details.

Protection of Memorial M14 **must** be in place prior to works proceeding in this area. Contractor to submit proposals.

8.00 MASONRY CLEANING:-

Note: Minor herbaceous plants, lichens etc can often be left in place if they are causing no immediate damage to masonry or joints however some damage can occur through moisture retention and the secretion of acids. All masonry cleaning is therefore provisional and subject to further detailed inspection once all leafy vegetation has been removed and approval from Historic Environment Scotland has been obtained.



Allow for two applications of a suitable biocide containing glyphosate such as Roundup ProBio 360 (or equal and approved) to remove areas of biological growths such as moss, lichen and algae.

Use only a surface biocide bearing a current Health and Safety Executive number and approved specifically for the purpose.

To be applied in accordance with all COSHH regulations.

Avoid application during or shortly before rain.

Avoid over-application as run-off can harm adjacent vegetation.

Avoid biocide containing Ammonium Sulphamate as this will affect lime mortar producing a nitrogenous fertiliser.

Care must be taken not to spray any surrounding vegetation (including soft topping) that is to be retained.

All masonry cleaning to be carried out in strict accordance with manufacturers instructions.

9.00 SAMPLE PANELS:-

Contractor to provide 1m² sample panels of all mortar mixes (including re-pointing and re-bedding) for approval prior to proceeding with remaining sections. In addition, a 1m linear sample of rough racking and soft topping is to be provided for approval prior to proceeding.

Allow for two further comparison pointing samples as follows:

Alternative 1: Otterbein lime with mix as before.

Alternative 2: Otterbein lime with shell inclusions and mix as before.

Sample panels to be carried out on surrounding cemetery walls and not the Scheduled Monument subject to approval from North Ayrshire Council.

Contractor to provide sample panels immediately upon commencement of phase one (vegetation removal) in order that these can be inspected by the CA and Historic Environment Scotland.

10.00 INTERPRETATION PANELS:-

Supply and install interpretation panels where required by Client.

Allow for 2no. free standing interpretive boards with geotextile material at base.

11.00 ADDITIONAL NOTES:-

Allow for downtime in the event of archaeological finds.

Allow for the downtime resulting from the attendance of an Archaeologist during dismantling and re-building of masonry.

Allow provisional sum for protection of additional memorials/ gravestones.

Allow provisional sum for structural stabilisation of memorials built into or adjacent to Chapel using phosphor bronze or stainless steel ties.

The use of power tools is prohibited.