

Repairs should use appropriate techniques, methods of construction and high quality materials proven by tradition. This will normally be the same materials as were used in the original construction. Substitute or artificial materials are ineligible and their use is discouraged on grant-aided projects.

Work must be carried out in line with planning guidance, HES guidance and advice, BS 7913: The Principles of the Conservation of Historic Buildings and current Health and Safety legislation.

Masonry repairs

1. Carefully remove any vegetation while avoiding damage to the masonry.
2. From the scaffolding, brush down loose stone (with bristle brushes, not wire) and tap the existing surface to ensure the face of the stone is sound. Where the stone face is eroded or crumbly but this does not pose a threat to the weathering function (e.g. cills), the structural integrity or the architectural interpretation of the building, it is advisable to leave the stone in place for attention at some time in the future.
3. Where soft, cracked or crumbly stones are identified as a threat to the structure or weathering, or significantly detracting from the architectural composition and integrity of the building, they may be carefully cut out and indented with a matching stone that respects the existing stone joint pattern. Where it is necessary to replace missing, broken, cracked or eroded stones with new stone, ensure that the new stone is a suitable replacement for the original in terms of colour, texture, porosity, crushing strength and weathering properties. Advice on suitable new stone to match existing can be obtained from the British Geological Survey.
4. Remove any redundant fixings, surface-mounted cables, television aerials and extraneous ferramenta - including redundant drainage branch pipework. Where services cables or aerials are required, discreetly route them behind internal finishes. This services-related work is not grant eligible.
5. Exposed surfaces of new stone should be hand dressed to match the original face or tooling. Avoid the use of power tools on any exposed surface of stone. Cut replacement stone on the correct geological bed for the circumstances of its use in different elements of the building. Lay on a full mortar bed, grout behind and point fully to ensure loads are taken by the new stone. Indented face stone should have a minimum bed depth of 150 mm. New stone should not be distressed or toned down to match original.
6. Avoid the use of restoration mortars on face work or margins. Mortar made from lime, sand and graded matching stone, may be acceptable for fine cracks or small "pocket" repairs in otherwise sound stone and where lying water and subsequent frost damage may be considered a risk.

Joints in ashlar masonry

1. Where ashlar masonry is quite tight with few open joints, avoid re-pointing this masonry.
2. Re-point open ashlar joints by raking out loose or crumbly mortar by hand with a hacksaw blade or similar and hose joint clean. Angle grinders and power drills must not be used.
3. Wet joints and re-point using putty lime mortar and fine light coloured sand.
4. Take care to protect the arrises to avoid staining on the ashlar.
5. Brush off any loose mortar. Ensure stones are not stained by water used to sponge off any mortar residue. Protect pointing while it is curing in accordance with best practice.
6. Do not point open joints which were originally dry built, such as some harbour walls or dry-stane dykes.

Removal of cementitious pointing

1. As it can be damaging to the adjacent stone arrises to remove well-adhered cement mortar, it is often better to avoid removing sound cementitious pointing.
2. Where cracked and open or separating from the stone, carefully remove cementitious mortar by the use of fine masonry chisels. Power tools should not be used.
3. When free space has been created, mortar may be freed from the stone by working back into this space. Pointing should be raked out to a minimum depth of 35 mm and the joint flushed clean.

Joints in rubble masonry

1. Where mortar joints in rubble masonry are loose or crumbly, carefully rake out to a minimum of 35 mm using tools narrower than the joint to avoid damaging the stone. Pinning stones should be kept and re-used.
2. Thoroughly flush clean the joint and re-point with the mortar mix informed by analysis (see below). Pointing to be well packed into the joint and finished to match the original and suit the style of masonry construction, including, where appropriate, the correct number of pinning stones to maintain the mortar/stone ratio of the wall indicated in the original build.
3. Stones used for pinning repair in rubble masonry should have the same colour, surface treatment and edge dressing as the surrounding masonry.

Lime mortars for building, pointing and harling.

1. Lime mortars have significantly different working properties to cement mortars. Advice on procedures, techniques, analysis and suitable mixes can be obtained from the Scottish Lime Centre Trust www.scotlime.org
2. All works to be undertaken by fully trained masons with experience of historic building work.
3. Lime mortar mix for indenting or pointing should be informed by careful analysis of original build mortar samples.
4. Where evidence of the original mix does not exist, lime and sand for the mix is to be carefully selected to ensure the mix has a suitable self colour, even if it is to be limewashed.
5. Ensure lime mortar work is undertaken in appropriate weather conditions and protect lime mortar from sun, rain and frost until cured in accordance with best practice.
6. Earth mortar exists in some early or rural buildings. Care should be taken to identify, analyse and carefully reproduce where repair is required.



Harl/render

1. Harl or render coats should be applied in accordance with traditional harling (or throwing) techniques. Samples of the original harl should be analysed to clearly identify the various constituents e.g. shell, aggregate, lime proportions etc. The new harl should have a wide range of aggregate grading and replicate any local mix or application traditions.
2. Quality and appearance of work to be determined by sample panels.
3. Harling/rendering to be applied using a lime mortar mix in 2 or 3 coats.
4. Site operations should ensure that flashings, rainwater goods and external joinery are fitted at the appropriate time in order to ensure a good finish to the harl/render.
5. Where a lined out "ashlar" appearance is to be made, the surface should be pressed flat and the lining out undertaken to a pre-determined pattern of joints. The ruling tool is to be appropriately shaped in order to provide lines of the correct depth, consistency and cross-section.

Limewash

1. Historic limewash can have several constituents ranging from natural pigments, tallow and other organic additives. As with mortars, analysis and sample panels should be carried out before the specification is finalised.
2. Limewash should be applied to a pre-wetted surface. Multiple coats will be required as it should be applied in sufficiently thin coats (the consistency of skimmed milk) to allow carbonation.
3. Limewash should be screened from rapid drying in accordance with best practice. Where the limewash is exposed to drying winds or temperature, repeated wetting of the screens will be necessary.
4. Layers of limewash should not be applied if the appropriate attendance to control rapid drying is not possible.
5. Regular maintenance coats will be required over subsequent years.

Brick

1. All brickwork repairs to accurately follow the original build, using brick of accurately matching colour, size, hardness and porosity.
2. Following brickwork repair, re-point using a pointing tool and application technique similar to that used originally with a mortar specification suiting the age of the building and the strength of the brick.

Flue terminals

1. Chimney pots to be replaced to match the original form indicated by documentary or site evidence. Where there is no evidence of the original, use pots that are in use on buildings of similar period in the vicinity.
2. Ensure that the number of pots accurately reflects the number of flues.
3. Chimneys not in use should be cleared of debris and then terminated with a vented weathered top to match the pot and a vent at the bottom of the flue to allow free air circulation.



Removal of algae from masonry

1. Where water has caused moss and algal growth on masonry, the area is to be scraped clean with wooden spatulas and cleaned down to remove all organic debris and soil prior to re-pointing. The source of moisture encouraging such growth must be addressed in order to prevent regrowth.
2. The use of a biocide is acceptable within a grant aided scheme but is not eligible for grant assistance. It should be recognised however, that biocide is unlikely to have a long-lasting effect and may damage the masonry. Consequently, the use of biocide should not form part of a regular maintenance regime.

Removal of paint and graffiti from masonry

1. The use of a paint remover is acceptable in a grant aided scheme but is not eligible for grant assistance.
2. It is necessary to analyse the paint type to establish the least damaging paint removal method. Paint and graffiti removal should be tested and approved for use on that particular stone type before approval to proceed is given.
3. Chemicals used on stone are to be neutralised immediately after use as recommended in the manufacturer's written instructions.

Removal of invasive vegetation from masonry

1. The main vegetation trunks are to be cut and roots treated with suitable systemic weed killer in accordance with the manufacturer's instructions. Larger growths of surface vegetation may be cut into smaller areas (creating a grid) prior to treatment. This will identify areas where growth persists and allow subsequent treatment to be more selective. More than one treatment may be necessary over a period of time.
2. The vegetation adhering to the masonry is to be left until dead, and then carefully removed by gently teasing the mat away from the building taking care to sever roots that penetrate the masonry. Larger vegetation should be removed by hand weeding ensuring that all roots are removed to avoid leaving potential open paths for water ingress as they decay.
3. Stones that are found to be loose are to be held in place by wooden wedges until consolidation work is undertaken.

Damp Proof Courses

1. Installation of new chemical DPCs are not considered grant eligible and should not feature in a grant eligible scheme as the long term effect of chemicals on the masonry is not known.
2. Appropriate DPCs may be considered for situations such as under copes etc. Lead-cored sanded bitumen DPC's may be preferable to avoid slip planes

Further information: A wide range of information is available to help you plan your works. HES's guidance publications are available on 'The Engine Shed' website
<https://www.engineshed.org/publications/>