

## GENERAL HERITAGE MANAGEMENT PRINCIPLES

All significant interventions notified and preceded through documentary research and detailed visual and if necessary, physical investigation.

Works will be planned to ensure minimum intervention and disturbance to the fabric of the building. Proposed works will be evaluated and for their potential impact on the fabric of the building and notified accordingly.

Intervention works have been carefully considered and justified in terms of its necessity as a repair, an adaptation which better reveals it's significance, or an enhancement which extends is sustainable use.

Interventions to the fabric which protect or better reveal the buildings heritage will be encouraged, and change which could cause unmitigated harm to the significance of the building will be avoided.

Every element of the works will be completed sympathetically by competent operatives with a proven track record of working within a Grade II Listed environment. The project culture of care, consideration and preservation of the buildings heritage will be maintained.

This culture will be administered via contractor selection, induction, and relevant toolbox talks throughout the duration of the project.

If required, the heritage consultant will be engaged as works progress to mitigate any detrimental effect on the heritage components of the building.

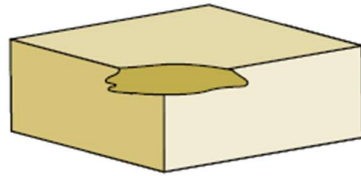
Before any works commence, the management team will carry out a review of the work area to understand the building fabric within and adjacent to the space.

## METHODOLOGY

### 1. Stone Repair with Indent

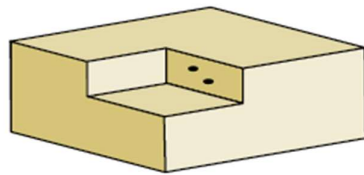
- Assessment and Survey
  - Conduct a detailed inspection of the stonework to identify areas of deterioration or damage.
  - Photograph and record the condition of the stone to be repaired, ensuring that the original structure is well-documented.
- Preparation of the Surface
  - Clean the damaged area using soft brushes and, if necessary, water to remove dirt and debris.
  - Remove any loose or friable material from the damaged stone using chisels and small tools. Care should be taken not to damage the surrounding stone.
  - For large or deep indentations, it may be necessary to cut back into the damaged area to ensure a good bonding surface for the indent.
- Preparation of the Indent Stone

- Cut and shape the indent stone to fit the damaged area precisely. The indent should be slightly larger than the damage to allow for a snug fit.
  - Ensure that the indent stone matches the original in colour, texture, and material properties (e.g., hardness, porosity).
  - Ensure pilot holes drilled to correct diameter and depth to accommodate the S/S dowels.
- Fixing the Indent
  - Match mortar to original mix: Select a lime mortar mix appropriate for the type of masonry and the historical period of the building. The mix should be soft and breathable, such as a hydraulic lime or non-hydraulic lime, depending on the building's needs. All in accordance with petrographic analysis.
  - Pigmentation: If necessary, add compatible pigments to the mortar mix to match the colour and texture of the existing mortar.
  - Mix the lime mortar according to the manufacturer's instructions, ensuring that the correct proportions of lime, sand, and water are used.
  - The mortar should have a smooth, workable consistency, suitable for easy application without excessive water runoff.
  - If required, use an adhesive designed for heritage repairs to further secure the indent stone.
  - S/S dowels installed in accordance with design.
- Pointing and Finishing:
  - Once the indent stone is in place, carefully fill any gaps between the indent and the surrounding stone with the same lime mortar. Ensure the joint is smooth and finished to match the surrounding surface.
  - Allow the mortar to cure slowly and avoid rapid drying, which can cause cracking.
  - If necessary, finish the surface to match the existing texture of the surrounding stone (e.g., tooling, rubbing, or micro-strip).
- Cleaning and Curing
  - Hand clean the surrounding stonework of any excess mortar using soft brushes or water sprays. Avoid using harsh chemicals or abrasives.
  - Keep the repair area moist for to ensure proper curing of the lime mortar.
- Final Inspection
  - Inspect the completed indent repair for stability, alignment, and aesthetic consistency with the original stonework.
  - Photograph and document the completed work for future conservation records.

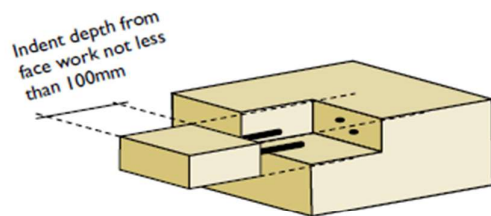


## Indent Detail

Identify area of damaged stone as per drawings, in company with CA.



Cut out damaged section of stone, make good contact surfaces to receive indent. Prepare indent to desired size, dry fit indent, trim and adjust as necessary to ensure an accurate fit (joints to be less than 2mm to face work). Install dowels into stone indent. Dowel holes should be 2mm wider than the dowel diameter; dowel material to be threaded 3-4mm stainless steel dowel lengths up to 80mm approximate quantities min. 2 per indent and secure using polyester resin. Exact number and location of dowels to CA approval. Corresponding holes should be drilled into the receiving holes of same diameter and partially filled with polyester resin to secure indent.



Partially fill holes in stone with polyester resin. Ensure no resin applied to faces of indent or socket. Spread hydraulic lime mortar around the indent (mix to be agreed) and slide into place, ensuring face is kept clean, and excess mortar is removed. Dress face / tool indent to match facework of parent stone.

Structures Group  
132-134 Chapel Street  
Leigh  
WN7 2DB  
Lancashire

  
**Structures**  
Restoring the past. Building the future.

## 2. Raking out/repointing stonework in lime mortar

### • Inspection and Assessment

- Carry out a detailed inspection of the masonry to identify areas of mortar that need repair. Document the extent of deterioration (e.g., cracking, erosion, or detachment).
- Prioritize areas where the mortar is severely degraded or missing.

- Cleaning the Brickwork
  - Clean the masonry surface to remove dirt, dust, and loose mortar. Use non-abrasive methods such as soft brushes and low-pressure water. Avoid power washing as this can damage the brick and surrounding mortar.
  - If necessary, use gentle solvents (compatible with the stone) to remove oil, grease, or stubborn dirt.
- Protection of Surrounding Areas
  - Protect adjacent surfaces (e.g., windows, doors, and other features) from accidental damage during the raking and repointing process.
  - Cover areas where dust and debris may fall during raking with dust sheets or protective covers.
- Health and Safety
  - PPE: Ensure all operatives are equipped with appropriate personal protective equipment (PPE), including safety goggles, gloves, dust masks, and hearing protection if necessary.
  - Dust Control: Use dust suppression methods (e.g., water spraying or dust extraction) during raking to minimize exposure to harmful dust.
  - HAVs Management: If mechanical tools such as grinders or impact drills are used, ensure operatives record trigger times on the HAVs Register as per health and safety requirements.
- Raking Out Mortar
  - Remove old mortar from between the masonry using hand tools where possible, such as a mortar rake or chisel.

PRIOR APPROVAL REQUIRED, If necessary, mechanical tools (e.g., angle grinders or pneumatic tools) may be used for stubborn mortar, but these should be used with caution in the presence of the local conservation officer. Should the local conservation officer be happy that the Skilled tradesman is adequately skilled he/she may sign off mason to undertake raking out with heritage blades and pneumatic tools when they cannot attend site.

- Depth of Removal: Ensure that at least 20mm of mortar is removed to provide a solid base for the new mortar. The depth should not exceed the width of the joint to avoid damaging the masonry edges.
  - Clean Joints: Once mortar has been raked out, clean the joints to remove any remaining dust or debris. This ensures a good bond between the old and new mortar.
- Damage Prevention
  - Take care to avoid damaging the masonry faces while raking out mortar. Ensure surrounding masonry is not disturbed.
  - If mechanical tools are used, check the setting of the grinder to limit damage to surrounding masonry.
- Preparing and Mixing Lime Mortar
  - Match mortar to original mix: Select a lime mortar mix appropriate for the type of masonry and the historical period of the building. The mix should be soft and

breathable, such as a hydraulic lime or non-hydraulic lime, depending on the building's needs. All in accordance with petrographic analysis.

- Pigmentation: If necessary, add compatible pigments to the mortar mix to match the colour and texture of the existing mortar.
- Mix the lime mortar according to the manufacturer's instructions, ensuring that the correct proportions of lime, sand, and water are used.
- The mortar should have a smooth, workable consistency, suitable for easy application without excessive water runoff.

- Application of New Lime Mortar

- Before applying the mortar, lightly dampen the raked-out joints with water to prevent the masonry from drawing moisture out of the new mortar too quickly. This will improve adhesion and allow for proper curing.
- Apply mortar to the prepared joints using a pointing trowel. Ensure that the mortar is pressed firmly into the joint to ensure good adhesion.
- For deep joints, apply the mortar in layers, ensuring that each layer sets partially before applying the next to prevent shrinkage.
- Once the mortar has started to set, use a jointing tool or trowel to smooth and shape the mortar, replicating the original joint profiles (e.g., flush, recessed, or weather-struck).
- After tooling, use a soft brush to remove any excess mortar from the brickwork surface.
- Ensure the repair is flush with the surrounding mortar and aligns with the original aesthetic of the building.

- Curing and Protection

- Allow the new mortar to cure slowly. Mortar should be kept damp for 24-48 hours to allow it to set properly, particularly in hot or dry conditions.
- Cover the joints with damp hessian or protective sheeting if needed, ensuring that the mortar is not exposed to excessive moisture or harsh sunlight during the curing period.
- During the curing process, ensure that the mortar is protected from mechanical damage, frost, and excessive moisture.
- Visual inspection will be undertaken to ensure the newly repointed areas have fully dried.