Chimney & Gable End Repair Report: 66-68 High Street, Earith, PE28 3PN

1. Property & Project Overview

- **Address:** 66-68 High Street, Earith, PE28 3PN
- **Subject:** Urgent chimney and gable end masonry repairs
- **Context:** Triggered by structural survey recommendations during the property purchase process, followed by ground-level visual inspections.

2. Identified Defects & Urgency

- **Left-Hand Gable End Chimney:** Requires immediate intervention due to its proximity and shared boundary with the public highway, presenting a safety hazard.
- **Crown & Brickwork Issues:**
  - Partially missing haunching to the chimney crown.
  - Loose bricks located within the oversailing courses of the crown.
  - Severe decay across the mortar joints of the entire chimney stack.
- **Gable End Wall:** Additional areas of severe mortar decay identified across isolated sections of the gable end.

3. Proposed Scope of Works

- **Access:** Erect a temporary, independent scaffolding system to safely reach the high-level work areas.
- **Chimney & Crown Repairs:**
  - Rebuild the missing haunching to secure the chimney crown, using Natural Hydraulic Lime (NHL 3.5) mortar.
  - Carefully remove, clean, and set aside loose bricks for direct reuse.
  - Re-lay and secure the salvaged bricks into the oversailing courses.
- **Repointing Works:**
  - Fully repoint the entire chimney stack.
  - Carry out additional isolated repointing to the gable end wall where mortar is severely decayed.
  - Execute all repointing works in accordance with the specified heritage brickwork repointing guidelines.

4. Confirmation of Works

The works described above have been completed. The haunching to the chimney crown was rebuilt, and all repointing to the chimney stack and gable end was carried out, in Natural Hydraulic Lime (NHL 3.5) mortar. The works were carried out in accordance with the recommendations of the RICS Level 3 Building Survey (24 July 2024), which identified significant wear to the pointing of the left-hand chimney stack and recommended that it be repointed in lime mortar.

Method Statement & Specification: Heritage Brickwork Repointing

Repointing historic brickwork on a listed building requires a sympathetic, craft-led approach to preserve the building's breathability, structural integrity, and architectural character. Using a Natural Hydraulic Lime (NHL 3.5) mortar provides the necessary flexibility and vapor permeability for traditional masonry.

1. Materials & Mix Specification

- **Binder:** Natural Hydraulic Lime (NHL 3.5) conforming to BS EN 459-1. (Avoid ordinary Portland cement, which is too rigid and impermeable).
- **Aggregate:** Well-graded sharp sand or building sand matched to the original mortar's color, texture, and particle size distribution (typically a 0–2mm or 0–3mm sharp sand with a proportion of soft sand for workability if required).
- **Mix Ratio:** Typically **1 part NHL 3.5 to 2.5 or 3 parts sand** (by volume), depending on aggregate grading and suction of the brickwork.
- **Water:** Clean, potable water. Add sparingly; the mix should be "semi-dry" or "friable" (earth-damp)—holding its shape when squeezed in the hand without slumping or releasing excess water.

2. Preparation & Raking Out

- **Hand Tools Only:** Rake out old mortar using non-powered hand tools (chisels, narrow masonry hooks, and joint rakes). The use of angle grinders or mechanical saws is strictly prohibited, as they cause irreparable edge-spalling (arrissing) to historic bricks.
- **Depth of Removal:** Rake out to a minimum depth of **twice the width of the joint** (typically 20mm to 25mm), or until sound, clean mortar is reached. Never feather-edge new mortar over old.
- **Cleaning:** Flush out the raked joints and brick faces using low-pressure water or clean brushes to remove all dust, loose debris, and organic growth.

3. Damping Down

- **Suction Control:** Thoroughly mist the masonry with clean water prior to application. Brickwork should be damp to the touch but free of standing surface water ("mat damp").
- *Reasoning:* This prevents the dry historic bricks from aggressively sucking moisture out of the lime mortar, which would otherwise "burn" the lime, causing shrinkage, cracking, and loss of bond strength.

4. Mortar Application

- **Placement:** Pack the mortar firmly into the joints in thin layers (lifts) using a narrow pointing iron or churn brush to ensure complete compaction and eliminate voids behind the joint.
- **Profile:** Finish the joint to match the historic precedent of the building—typically a **recessed ribbon, slightly flush, or weathered joint**. Avoid modern, highly protruding styles such as "bucket handle" or extruded tuck pointing unless historically accurate for the specific elevation. Avoid smearing mortar onto the brick faces.

5. Curing & Protection

- **Moisture Retention:** Lime mortar does not "dry" to set; it cures through a chemical reaction with carbon dioxide (carbonation), which requires controlled moisture.
- **Protection Schedule:** Hang damp hessian sheeting or polythene screens over the newly pointed areas to protect the mortar from direct sunlight, driving rain, frost, and rapid drying for at least **4 to 7 days**.
- **Cleaning:** Once the mortar has reached initial set (firm to the thumb-nail), brush off any light lime haze or stray crumbs using a dry, stiff-bristled churn brush. Avoid wet washing fresh joints.

Re-instatement of original fireplace.

The existing fireplace in the front reception room has been sealed up & plastered over. This, along with the external issues detailed above, has contributed to damp issues in this area of the house as it impedes the natural stack ventilation effect that is critical to maintaining appropriate air flow within older buildings.

It is proposed that the original fireplace in the front reception room is brought back into use as follows:

- Fit a suitable stainless steel flexible flue liner into the existing flue. This will be done from the top of the chimney stack by inserting the liner into the chimney pot and lowering it down to fireplace level. The existing pot will support the liner so no invasive work is required to the top of the chimney stack.

- The fireplace is currently blocked off & plastered over. It is proposed that the plaster is removed to identify the outline of the original fireplace then all in-fill materials are removed to expose the original brick fireplace chamber.

- Once this work is complete it is proposed that a small, free standing woodburning stove is fitted into the chamber and connected to the previously installed flue liner. (see details below)

