

Title: Best Practice Repairs Summary: Gnoll House ruins
Date: 31st August 2023

I. Introduction

This document has been drafted to provide an insight into the workmanship and materials proposed for the proposed works and repairs potentially required to the existing stone walls forming the footprint of the historic Gnoll House (ruins).

This report is to be read in conjunction with all other reports and drawings associated with the Gnoll House ruins.

The following sections describe standards of workmanship and materials.

II. Workmanship

Where a trade or material is not particularly described, and in general, all materials used and workmanship is to comply with the appropriate British/Eurocode standards, or any other standard which is applicable to the work.

All workmanship is to be the best of its respective kind, carried out to the satisfaction of the Client and Cadw, where such standards may be a matter for the opinion of the Client/Cadw, and only tradesmen skilled in the appropriate work are to be used.

Where appropriate, manufacturer's instructions for the application and use of materials must be adhered to strictly.

Suitable local protection of existing stonework is to be provided to ensure that no staining or damage is caused in the course of the works.

i. Pointing:

Preparation for repointing: Remove mortar from joints without causing any damage to arises using toothed masonry, plugging and joining chisels along with hacksaw blades or bent spikes. Never use hacking hammers or cold chisels.

Where strong cement has to be removed drilling techniques may be used to assist with removal, proposals to be submitted for review. Small angle grinders may be used on regular work, but only with extreme caution after fixing steel rules to act as guides. Never cut into masonry or wider width of joint. Rake out to a clean square face 30mm deep or width of joint whichever is the greater.

All pointing is to be carried out in lime mortar in the mix specified.

Replacement of small loose or defective stones (i.e. less than full course height and less than 100mm long) is deemed to be included in the repointing works.

In rubble stonework the mortar is to be finished with a flat rough surface finished flush with the adjoining masonry using a wood tool, after the initial set has taken place, and finished with a brush or sacking to expose the aggregate. The mortar is to follow all irregularities of the stonework.

The contractor shall allow for preparing samples of pointing and workmanship for review and acceptance.

ii. Masonry Consolidation and rebuild:

For all areas of consolidation or rebuild, masonry is to be dismantled by hand. Stone elements to be rebuilt by hand with lime mortar to best match existing, as per material notes below. Masonry to be repositioned back to original location where practicable and achievable in small areas of consolidation. At any large areas of rebuild the same stone elements should be used to be best ability of the mason on site.

Any large areas of missing stone would require consolidation and ideally stone replacement to best match existing, this requires review by local authority and proposals could include reuse of stone from elsewhere on site or to allow missing section of wall to be left in place, surface consolidated with lime mortar and an appropriate coping protection be applied if at the top of the wall.

III. Materials

Due to the fact that most of South Wales is considered a “Very severe” exposure zone in relation to driven rain (see Figure 1 below) it is recommended that an NHL5 lime mortar is used for all areas where the mortar is used as the coping finish.

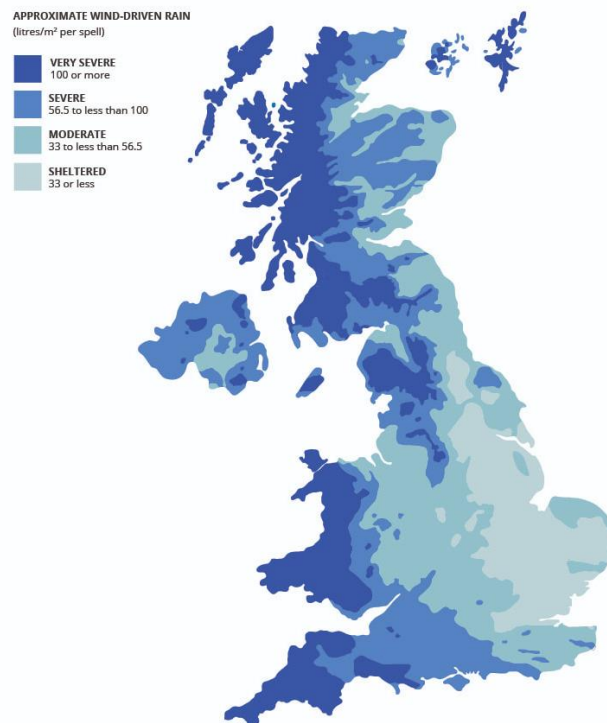


Figure 1. Masonry Exposure (UK), (Conserv, developed from the BRE Map of UK exposure zones)

Based on the level of exposure we would recommend a medium coarse aggregate mix to provide slightly increased strength and durability, along with restricting the mortar layers applied to max 20mm at a time, with curing time provided between layers. These recommendations cannot be quantified but may offer some further improvement to the NHL5 mix, these should be discussed with the appointed mason on site, prior to works commencing.

Lime mortar: NHL3.5 (for general use – rebuilding walls, repointing)

Lime mortar to be as per BS EN 459-1:2001.

Colour to match lime used in original works as closely as possible. Contractor to submit material sourcing for approval.

Temperature variations and protection from weather while lime mortar is curing, is critical, suppliers guidance to be adhered to.

Sands should be chosen to match as closely as possible the sands used in the sample of original work.

Sand is to be clean, sharp, pit fresh-water sand, free from loam, salts, organic matter and other impurities, and in accordance with BS1199 and 1200: "Building Sand from Natural Sources".

Lime mortar will require protection during the curing process.

In areas of wall rebuild it is best to reuse stone from the original site wherever possible. Any rebuild sections are to be removed or reduced by hand and then rebuilt using the same stone. There is no permission for a brick/block replacement and any imported stone material replacement for this wall requires review and confirmation of acceptance by local authority, Hiraeth and Cadw prior to procurement and construction.