



Donald Insall Associates
Chartered Architects and Historic Building Consultants

Wentworth Castle Gardens

Collapsed Battlement Section – Addendum to 2024/019 LBC Application

Prepared by:
Daniel Elkington BArch(Hons) MArch ARB RIBA FHEA AABC
12th April 2024

Job Number: WCG.02/03

Contact Information

Daniel Elkington
Associate

E: [REDACTED]

T: [REDACTED]

York Office

www.insall-architects.co.uk

Donald Insall Associates Ltd
15 High Petergate,
York
YO1 7FJ

This report and all intellectual property rights in it and arising from it are the property of or are under licence to Donald Insall Associates. Neither the whole nor any part of this report, nor any drawing, plan, other document or any information contained within it may be reproduced in any form, including online, without the prior written consent of Donald Insall Associates. All material in which the intellectual property rights have been licensed to Donald Insall Associates, and such rights belong to third parties, may not be published or reproduced at all in any form, and any request for consent to the use of such material for publication or reproduction should be made directly to the owner of the intellectual property rights therein.

Issue date: April 2024

Wentworth Castle Gardens

Rebuilding Works – Collapsed Section of Battlements

1.01 *Background*

A section of battlement wall close to the Sun Monument Bastion catastrophically failed leading to complete collapse of a 20m section of masonry, in October 2023. The cause of the collapse was attributed to extensive amounts of cementitious mortar which failed suddenly following a period of wet weather. The Battlement walls had also been weakened by a series of mature trees.

Following consultation with Donald Insall Associates and Mason Clarke Civil and Structural Engineers a plan for stabilisation and rebuilding works was put together.

This has been subject of an LBC application with Barnsley Metropolitan Borough Council - 2024/0190, submitted in early 2024.

1.02 *Conservation Officer Comments*

As outlined in an email from the planning officer on 21st March 2024 -

“The Conservation Officer has provided comments in relation to this application. Generally, they would have no objection to the proposal. However, further detail over the sandstone wall repair in terms of exact methods and materials, including the mix ratios, detailed methodology of bedding mortar, pointing mortar and how the wall will actually be built would be welcome. They have also suggested a condition regarding the Hot Lime Mortar and pointing which reads:

“The mortar gauging shall include 1 part unslaked powdered quicklime (or 15mm kibble) to 3 parts well graded river sand. The aggregate may require sieving to ensure compatibility with the joint width / height. The mortar shall be as dry as possible before pointing at the top of the wall and working downwards to allow cleaning below. The mortar should be packed as tightly as possible into the back of the joint using and pointing key or spatula and finished to a flush or slightly rebated joint. Thereafter pointing should be mist sprayed to control drying and shall be protected from sun, wind, and rain. Hessian sacking should be used to assist protection and work in temperatures below 5 degrees C should be avoided. Once the pointing has gone off and achieved a green set (resistant to a fingernail), it should be brushed and tamped back to close any fine cracks and consolidate the aggregate. Any final cleaning required can be done at this point.”

This method statement focuses on the methodology for rebuilding the Battlements outer skin, in response to the conservation officer’s comments.

1.03 *Proposed Rebuilding Works*

A detailed drawing of the proposed structural stabilisation has been provided by Mason Clarke ; 20340 – Y – Dr – 001 / P1

Following successful completion of the proposed ground stabilisation (soil nailing) rebuilding of the outer face of the stone walling could be undertaken.

1.04 *Methodology / Rebuilding Works*

The collapsed section of walling currently lies in a pile of masonry. It is proposed to re-site the pile of masonry from the base of the collapsed section of battlement by drawing the material away from the danger zone by use of a long reach mechanical excavator, for health and safety purposes.

Once safely out of harm’s way the rubble can be processed by selecting out any good walling stone by hand, cleaning old mortar from it and then setting it aside on pallets ready for re use. The useable stone will be sorted into size order which will be then re-use to match in with similar sized coursing of the existing Battlements.

It is envisaged that due to damage sustained in the collapse there will be a shortfall of reusable stone, this shortfall can be mitigated by supplementing good quality matching reclaimed stone procured from a trusted salvage merchant, or alternatively newly quarried stone which could be tooled to match the existing battlements.

Reclaimed stonework can be subject to a LBC condition, whereby it is approved by the architect and conservation officer on site; to ensure that it is an appropriate match.

When rebuilding work is undertaken the course dimensions and bonding pattern should be faithfully replicated by referencing existing original sections of the walling along the line.

The use of hot lime mortar mix is proposed for all of the rebuilding and pointing works. The inner and outer leaves of the wall should be tied together using header courses set into the wall at the appropriate course spacing this should add structural stability as well as maintaining the integrity of the build pattern.

Weep holes should be introduced at the base of the wall as a precaution against the build up of ground water to the retaining infill this can be achieved by inserting 110mm clay drain pipes laterally along the length of the new section of wall, similarly undertake elsewhere on site.

Any infill to the core of the wall should be in the form of rubble work, this should be consolidated with hot lime mortar used as a binder.

1.05 *Extracts from our Specification*

Rebuilding

Description: Rebuild areas as identified on the drawings.

Replacement materials: New stone/brickwork to match existing

Mortar: Hot mix lime mortar –1 part Calbux 90 quicklime with 20% brick dust (pozzolan). 1 part sharp well graded sand 2 part local yellow sand. Mixed 1:1:2. Mixed with water obtained from mains supply and to be stored in clean containers not used for any other purpose. Brick dust: freshly ground brick dust, particle sizes between 38 and 600 microns well graded. Bricks must be low fired (below 950C)”

Protection: Thereafter pointing should be mist sprayed to control drying and shall be protected from sun, wind, and rain. Hessian sacking should be used to assist protection and work in temperatures below 5 degrees C should be avoided.

Rebuilding: To match previous face and joint lines, joint widths and bonding. Adequately bonded to retained work/ backing masonry, as appropriate.

Joint surfaces: Dampen, as necessary, to control suction.

Laying masonry units: On a full bed of mortar; perpend joints filled.

Exposed faces: Remove mortar and grout splashes immediately.

Joints: To match existing

Sample panels

Allow for providing four different sample panels of re-pointing, each approximately 900mm square, to be carried out successively, in agreed locations, for each type of joint/colour required. Allow for altering the mortar mix for each sample and for each panel to dry out completely. Submit panels first raked out and prepared for re-pointing. When this stage is approved then re-point panels and obtain further approval before proceeding generally. Obtain approval of sample areas before ordering bulk materials. Retain and protect samples until Practical Completion and ensure executed work match.

Repointing process

Begin from top of wall. Immediately before re-pointing flush out joints with water to remove all dust and to control suction. Wet surface until it remains wet. While damp fill joint with specified mortar. Thoroughly compact mortar to fill all voids and to ensure it adheres firmly to each side of joint. Iron mortar in with appropriate pointing tool (not trowel) of width to suit joint width, keeping finished mortar face back from damaged and weathered arrises and to width of original joint. Allow sufficient time for the re-pointing to be done without hurry.

Pointing with tools/ Irons

General: Press mortar well into joints using pointing tools/ irons that fit into the joints, so that they are fully filled.

Face of masonry: Keep clear of mortar. Use suitable temporary adhesive tape on each side of joints where necessary. Finish joints neatly.

Cleanliness

Keep face of brickwork/stonework clean during pointing. Wash and brush down surface to remove light staining as soon as it occurs. Turn back scaffold boards at night and during heavy rain to prevent splashing.

Brushed finish to joints

Timing: After initial mortar set has taken place remove laitance and excess fines by brushing, to give a coarse texture. Do not compact mortar.

Finish to stonework pointing

Ensure that all new pointing to stonework harmonises in pattern, width, style, colour and texture with the old and surrounding work. Finish joints slightly recessed from the stone face. Rub mortar as it 'goes off' with a stiff bristle brush to pull forward grit and give the mortar a roughened but weathering surface. Take care to ensure that no mortar is smudged over the surfaces of the stones and that no mortar is left covering stone arrises.

Washdown

Completed sections of wall from top to bottom after pointing has hardened.

Donald Insall Associates
Chartered Architects and Historic Building Consultants