DESIGN AND ACCESS STATEMENT

AND HERITAGE IMPACT ASSESSMENT

PROPOSED REPAIRS TO PLUNGE POOL , GARDEN WALL REBUILDING

AND WATER CASCADE REPAIRS

AT

CANNON HALL, CAWTHORNE, BARNSLEY

1.0 Introduction

Cannon Hall and associated Park is situated in South Yorkshire, 1.3 km north-west of Cawthorne Village.

Cawthorne lies north of the A635 between Barnsley (6.3 km) and Penistone (5.5 km).
The site encompasses Cannon Hall Museum (Grade II* listed ref:1151805) and the Country Park (grade II listed ref: 1001159).

The area is essentially divided into two broad areas: with the hall, pleasure grounds and walled garden to the north; and the former deer park to the south.

The proposals are for the repair of the plunge pool and partial rebuilding of a section of garden wall that is leaning. Also mentioned in this document is proposed repair of the cascade.

Section 2 below provides the historical context and chronology for the heritage assets referred to in this Statement, while Section 3 details the observations as to condition of the heritage assets and the proposals for repairs or other interventions.

2.0 Historical Context & Chronology

2.1 The earliest records of Cannon Hall are from the 13th century. In the 17th century the estate was purchased by the Spencer family, and in the late 17th century they had the hall rebuilt and had extensive works done to the land around the house. The gardens around Cannon Hall were laid out in the 1760s by Richard Woods. The Park was created during the late 18th and early 19th century.

2.2 The creation of the kitchen garden and adjacent garden walls came about very quickly after the estate was acquired by the Spencer family, with records indicating work was begun in April 1760. There are records predating 1760 that suggest a walled garden was present as early as 1719, but the current appearance of the walls tends to suggest the section that is one of the subjects of this application is a section dating from the 1760's. The garden wall is constructed of red brickwork with areas of stonework to the rear, and the land at the rear of the wall is raised above the garden level such that the bottom of the wall is earth retaining.

2.3 About 450m south of Cannon Hall, there is a series of lakes and cascades. The parkland lakes, bridges and cascades were built to a design by Richard Woods between 1760 and 1764. The final lake towards the east of the parkland lake becomes less wide towards its east end and the water cascades into a serpentine lake with an island; the third cascade extends a short distance from that lake to a final cascade, and the flow then returns to its course as Daking Brook. It is the final cascade that is one of the subjects of this application. Daking Brook and the cascades are a 'Nature Conservation Site' as mentioned in the UDP.

2.4 A 'cold bath and grotto' were included in the 1760's in Richard Woods' remodelling of the park and gardens. Cold bathing was something of a fad at the time. The cold bath and grotto area now comprise the plunge pool that is one of the subjects of this application. The plunge pool was investigated as part of a community archaeology project in 2018 by CFA Archaeology, who established that the base of the pool had been lined with concrete at an unknown date and that the access steps were most likely 19th Century in date. The plunge pool is a large structure measuring at its base about 4m x 6m, which widens out at the top to about 7.2m x 7.7m. The depth of the structure is c.3.3m deep. It has sloping walls of roughly laid and irregular coursed sandstone rocks and slabs of differing sizes, many of which are re-used architectural fragments. The structure is orientated west to east and there is an access bridge to the west overlooking a series of ornamental ponds and traceries windows forming an area of the garden known as 'fairyland'.

2.5 The garden wall, plunge pool and cascade are listed via the curtilage relationship with Cannon Hall (see section 2.6 below) and are within the grade II registered parkland. Accordingly they are heritage assets of some significance. The significance rests in aesthetic

value, historical value (i.e. association with the Spencer family), archaeological interest as recorded in different investigations carried out in recent years, and value to the community.

2.6 The overall designation of Cannon Hall as given on the Historic England entry is as follows. Grade II Registered Park and Garden (NHLE: 1001159); Grade II Listed East West Range Attached At 90 Degrees To South End of Former Coach House At Cannon Hall (NHLE:1151811); Grade II Listed Gardener's Cottage in Cannon Hall Gardens (NHLE: 1287029); Grade II Listed Hot Wall, Hot House and Camellia House East of South Front of Cannon Hall (NHLE: 1151807); Grade II Archway Approximately 10 Metres West of Ornamental Pool to South East of Cannon Hall (NHLE: 1191474); Grade II Listed Window Fragments on Wall At South End of Ornamental Pool to South East of Cannon Hall (NHLE: 1314701); Grade II Archway and Window Fragments Forming Gateway in East Wall of Cannon Hall Gardens Approximately 50 Metres North East of Ornamental Pool (NHLE: 1151809)

3.0 Investigations, Observations & Scope of Works

3.1. Garden wall

Photo of garden wall

3.1.1 Trial holes were dug to the front and rear of the masonry wall and the following were noted.

1. The wall is approximately 500-700mm (tapered at top), standing 3400mm tall above ground on the front, 1800mm at the rear. 1½ bricks with dry stone walling at rear. The two leaves are not considered tied, and simply abut.
2. Large ash tree approx. 2m from rear
3. Wall has inward uniform lean creating 450mm max overhang, placing the centre of the copings outside the footprint of the bottom of the wall. Wall additionally retains material behind to around half its height, plus likely pressures from tree roots.
4. Foundations exposed on front face, 750mm deep, the last 100mm being into very stiff and highly plastic clay. Rear foundations could not be (safely) found, at least 850mm deep, possibly as deep as the inner face.
5. Defects appear roughly uniform, 20m in length, with large tears to adjoining (plumb) masonry.
6. Without prior knowledge of previous rates of movement, wall appears precarious at its current angle. The stonework behind does little in way of preventing distortion to the wall, wall can be considered effectively thinner than first appears.
7. Noting a tree must have mostly grown since the wall was built due to deep depth of stone walling subsequent movement is likely attributed to the tree. For close proximity in highly plastic clay, a recommended foundation depth of 2.25m for ash trees is normal. The wall effectively has around this depth of footing relative to the tree, since the tree is located up on the raised bank behind. However, the retaining wall may simply be causing higher levels of water draw from the under the wall.
8. Movement likely due to combination of tree water demand, direct pressure from the tree itself, and lateral forces from the retained bank behind.

3.1.2 A possible range of remedial measures further to the above are:

a. Piers to be fitted to the front face of the wall, to buttress and restrain the masonry. Approximately 4no. will be needed across the 20m affected stretch, to around 2/3 the height of the wall.
b. Alternative repairs include piles installed to the rear bank, to which stiff piers are built and the leaning wall hung off. This would be hidden from the garden (save for some pattress

plates) but far costlier and invasive in terms of installing steel and concrete in the ground behind the wall.

c. Similar to b. but with inclined steel rods anchored into the ground behind the wall, and also invasive.

d. Take down and rebuild the stretch of damaged wall so that it is vertical and designed to resist lateral pressures from retained bank. This is, we believe, the best way to ensure stability.

3.2 Plunge pool

Photo of part of the plunge pool with loose stones in foreground and the crossing bridge in background

3.2.1 Observations below were made from surface level without disturbing any ground or stones.

1. Water flow was very visibly disappearing into a void on the LHS when looking up the spring. It also emerges into the stream through a hole in the ground on this side. It is likely passing through the bank, taking a route not originally intended!
2. This inevitably will lead to wash out of materials as well as a general softening of the ground. The bank is made of manmade masonry and will not just naturally hang on. Cavitation at the base will potentially cause the material above to drop, and if more

loose material is present at the top than at the bottom, the outer wall will be forced outwards with a bursting action.

3. There was some very slight indication of a drop in level at the top. In any case, a loosening of the material behind will make water ingress from above more prevalent, adding to the flow/washout of fines through the masonry generally.
4. Wall retains 3-4m of fairly large masonry units, has moved out by 0.5m – significant displacement. Max 2m extent appears potential for movement.
5. Opposite bank (stable) – 4.5m width.

3.2.3 Recommendations further to the above are:

a. Divert/repair water flow from within spring down into the plunge pool. This may be done by excavation from above and setting in hydraulic setting mortar to block the leak. Unfortunately it seems unlikely this can be reliably achieved by simply going 'up the spring' headwall.
b. In the temporary case, prop across the entire plunge pool (4.5m width, with say 2.5m of waling boards and suitably braced horizontal struts (e.g. scaffold tubes). Rainfall may make the displacement worse otherwise, even if the spring flow can be stopped.
c. Dismantle the upper masonry of the bank which is displaced. The wall could be repaired in situ with the either tie rods or (lots of) injected grout, but both would appear disproportionate to this historic structure, especially given that the true scope of the problem cannot be ascertained without some level of taking the bank apart. The rebuilt wall face can be rebuilt strong enough to withstand any lateral pressure should the material behind continue to sink downwards in the short term.

3.3 Cascade

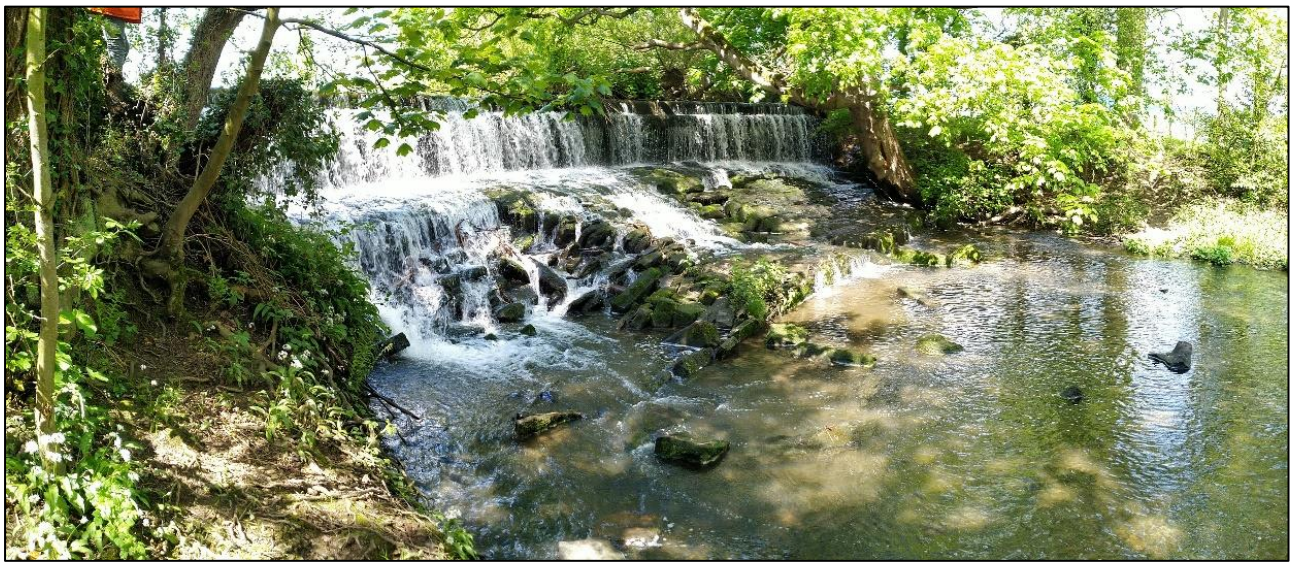

Photo of the cascade

3.3.1 Nothing could be seen as water levels were still high. Interim observations and recommendations are as below

1. Displaced masonry to one side of cascade, in area of significantly higher flow compared to rest of river width.
2. No visible sign of deflection or missing stones to either weir wall – so far, only apron of masonry at bottom the fall has evidently been washed away (area in bottom left of the photo above).
3. Around 50% of river flow above weir is blocked by debris. This is evidently focussing flow to the disturbed area.

3.3.2 Recommendations:

a. Remove broken tree/debris from river above weir
b. Create short dam (does not need to be fully waterproof) for approx. 3m out from bank over affected masonry. Inspect the masonry again.
c. Allow for nominal repairs to weir steps and reinstate apron of cobbles with hydraulic setting mortar.

d. We anticipate that the above would be viewed as repairs and would not require Listed Building Consent, subject to discovering further information when water levels are low enough for a better inspection to be made.

4.0 Summary and Notes on the effect of the proposals on the heritage assets

4.1 It is believed all of the proposed works are essential to conserve the historic assets and preserve them for the future.

4.2 The proposals for repair of the plunge pool are considered to be minimalist and are intended to be the least invasive methods of repair and stabilisation. Initial consideration was given to in-situ lime mortar grouting of the loose and tumbling stones around the plunge pool, but this method was discounted because, in all likelihood, it only serve to slow down the rate of deterioration and would not provide the longer term solution needed to save this structure. The other potential solutions, involving piling behind the plunge pool walls, would be invasive and an "over engineered" way of stabilising the walls.

4.3 While the proposed partial rebuilding of the garden wall may appear a little disproportionate to the nature of the problems, the stability of the wall is in question and mere buttressing with new brick piers would be a short term measure and may not, in the medium to long term, impart sufficient stability to the wall.

4.4 The work to the cascade will be very simple in nature, involving just clearance of debris above the cascade to allow water to pass more evenly over the cascade, and replacing the washed out stones along the bottom of the cascade.

4.5 In terms of impact on heritage significance, the proposed works will be honest in their nature and not intended to deceive the viewer into thinking that the structures are older or have different architectural or historical importance. The proposed works will not introduce anything new into the historic landscape around Cannon Hall and the structures will retain their original form and will only undergo almost imperceptible changes in mortar colour or contrast against their original backgrounds. It is considered that the works will have a negligible impact upon the landscape surrounding Cannon Hall.

4.6 The need for repair work on these structures is clear when considering the significance of these assets as discussed in Section 2.5 above. Further justification lies in safety concern for

safety of visitors, and the need to consider how to best conserve the assets to reduce the likelihood of more damaging deterioration if no action was taken. Taking no action at all is rarely an option with deterioration of heritage assets, and in the case of these three structures some intervention is needed sooner rather than later.

Issue register for 19365-Y Design, Access & Heritage Statement				
Rev No	Date	Description	Author	Checked
0	29/09/2021	First issue	DS	MA
1	14/12/2021	Second issue amended to include further heritage information	DS	GFP