



Coleshill Estate Maintenance Inspection Report for Cellars & Water Tunnels
JUNE 2011, Subterranea Britannica & CART

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Cellars

The extant house cellar area, as inspected on 4th June, appears to be the original coal storage areas for the house. There are several examples of light apertures from surface level and one example of a coal chute from surface level too. An inclined passageway leading to the surface but now blocked by backfill was noted on the south western side of the cellars. There are quantities of coal dust and dark markings indicative of the presence of coal over several of the walls throughout the cellars. The walls are of brickwork and occasionally stone construction and show almost no evidence of water ingress or general structural deterioration. Openings to other areas and the surface are generally filled with piled rubble and detritus from the time the house was demolished, including bricks and soil. The ceilings tend to be arched brickwork, again with minimal deterioration. The new manhole and the chute areas have a reinforced concrete slab covering, probably added at the time of demolition to reduce the need to infill the cellars before reinstating the ground level above. The light apertures appear to be fairly well capped off from above, however there is some glass still evident at the top of one of them. Within the cellars are piles of empty drinks bottles which date from between 1960 and 1975. Structurally the cellars appear to be in reasonably good condition aside from one or two areas where infill may locally be supporting deliberate breaches in the arched ceiling; however no invasive investigation has taken place to confirm this.

Tunnels & Cistern

Please see the desktop research document by Tom Sykes / CART to compare with the 1980/81 survey carried out by Highworth Historical Society.

Main Cistern:

The main cistern area is reached via a ladder down from a subterranean chamber at a level slightly above the level of the cellar floors. The access chamber is partially floored and there is a large opening into the cistern area. The ceiling to the access chamber has a brick arch construction which appeared to be in good condition. The cistern has a vaulted brickwork ceiling for about two thirds of its size; the remaining third is taken up by the short, wide vertical shaft to the access chamber. The brickwork forming the vaulted roof (floor to the access chamber) appeared to be in good condition. A large number of bottles (similar age to those in cellar) were noted stacked to the right (west) of the opening.

The access ladder is of a modern aluminium type, bolted into place up the wall from the access chamber level down to a brick causeway within the main cistern. The cistern is approximately 3.5m in

diameter with a 0.26m brick walkway around the edge. The brick causeway stretches across the cistern and is formed from two arches reaching down to the base of a reservoir and is about 0.45m wide. The reservoir currently has a water depth of approximately 1.9 to 2.0m.

There are two tunnels from the cistern, each running off from one end of the brick causeway. The North Tunnel is intended to bring water in to the cistern. The South Tunnel is intended to drain off excess water from the cistern. An approximately 0.15m iron pipe joins the north and south tunnels just above water level on the west side of the causeway and apparently provides flow continuity between the two tunnels.

North Tunnel:

Length = 166m from North tunnel portal in cistern

The North Tunnel is composed of several lengths with direction changes and wells, or former wells, along its length. There are also two side tunnels, the first being to the right hand side at 94m along the main tunnel with a length of approximately 25m, the second being to the left hand side at 147m along the main tunnel with a length of approximately 7m. The tunnel dimensions vary along the length between heights of 1m and 1.84m, and between widths of 0.7m and 0.8m.

The tunnel construction is generally of brickwork sides with a semi-circular arched brickwork ceiling along with a floor level water channel to bring water to the cistern. The floor channel is formed between flat, tightly fitted brickwork benching and there are occasional side channels to allow water to collect. There are also occasional candle holes in the walls of the tunnel.

The first clear corner in the tunnel is located at 45m along at the base of a well which has been capped off at the level of the tunnels with a small area of brick vaulting.

There may or may not be a floor channel in the side tunnels or past 142m where the vertical shaft is located to the 'Second Well' or 'Aux Unit OP'. Mud and water obscure the base of the tunnel from this point on, and in the full lengths of both of the side tunnels.

The vertical shaft at approximately 14 metres in depth is capped with a brick dome and lined with what appears to be dried mud, with steel 'rungs' spaced to allow access up and down – these would appear to be from the WW2 Aux Unit use as previously this was a well shaft so would not require access rungs. The stability of the shaft walls and steel rungs is unknown.

Mortar condition, although uneven as expected in service tunnels, is generally solid. There are one or two areas where the keystone bricks are showing degradation and friability at the face, but this does not appear to be a structural issue. Brickwork is in reasonable condition.

Historic graffiti is evident at the junction of the first tunnel in large quantities (94m along) and also to a lesser extent at both the junction with the vertical shaft at 142m and the junction with the second side tunnel at 147m.

South Tunnel:

Length = 140.6m from South tunnel portal in cistern

The tunnel is generally straight apart from a slight turn to the west at 30.7m from the cistern portal and a pronounced kink to the east between 77.3 and 80.2m from the portal. At the start of the kink (77.3m) there is a marked joint in the brickwork suggestive of a join in the tunnel lining.

The dimensions of the tunnel decrease in four increments from approximately 1.0m high x 0.7m wide at the cistern portal to approximately 0.5m x 0.7m at its end (140.6m from the portal). The end of the tunnel is of brick construction, but includes an approximately 0.25m circular opening that presumably

provides drainage continuity to the surface. There are no side tunnels, but an access shaft is located on the east side of the tunnel at 110.6m.

The South Tunnel appears to be constructed in a far more uniform manner generally, also with brickwork sides and a semi-circular arched brickwork ceiling. At floor level there is a central water channel which is constructed with angled brickwork benching with standard sized bricks, in contrast to the more level benching in the North tunnel. The channel was partly filled with water to a distance of 47.2m from the portal at the time of inspection. However, the presence of limescale and crystals of calcite (calcium carbonate) formed from evaporation of water along the full length of the tunnel is evidence that at periods of high rainfall water has historically flowed along the full length of the tunnel.

Between approximately 30m and 60m from the portal, the brickwork benching, particularly on the west side has moved and appears to be splitting from, and lifting, next to the wall. The side wall and ceiling arch are in good condition and show no cracking. This suggests that settlement of the tunnel is unlikely to be the reason for the damage. It is suspected that the movement may be at the capillary fringe where overflow water seeps into the surrounding ground and may be related to calcite precipitation in the mortar between the brick and excavated rock floor. This is believed to have resulted in the lifting and movement of the benched brickwork. Tree roots were also noted within the section which may also be a contributory factor and have certainly exploited the cracks. In structural terms the damage is cosmetic and is considered to be of limited significance.

No side channels or soakaways were noted. Between 5.6 and 72.1m from the portal entrance are a series of small approximately rectangular or arch shaped openings which appear to have been constructed to hold candles (These feature are referred to as channels in the 1980-81 report and were recorded at similar distances from the portal as those recorded by the old survey). These candle holders are typically located approximately 0.25m above the floor and are approximately 0.23m high by 0.15m wide by 0.2m deep. In several of the candle holders, the edges of the bricks have been chamfered to give the arch shape. A number of these candle holders have brick or tile backs, while some have no backs. Those without backs provide an opportunity to inspect the rock behind the tunnel lining. The rock appears to be weak, pale greenish grey weathered clayey sandstone which shows numerous original pick marks in a few locations. Towards the cistern the material appears more clayey, but is less well observed.

An access shaft is located 110m from the portal entrance. This 0.9m deep by 0.8m feature lies immediately to the east of the tunnel and has been capped at a level of approximately 1.85m above floor level. The brickwork for the shaft and capping slabs appear in good order and show no evidence of distress.

Mortar condition throughout the tunnel, although uneven, is generally solid. Brickwork is in reasonable to good condition.

The change in character of the tunnel section, presence of a distinctive joint in the brickwork, notable kink between 77.2 and 80.2m, existence of an access shaft at 110m and presence of candle holders over a limited section of the tunnel suggests that the tunnel may have been constructed simultaneously from two or three points. It is possible that the far end of the tunnel may have been excavated as a cut and cover structure from 140.6m to say the shaft at 110m (or somewhere between 110 and 138m). From the shaft the tunnel appears to have been progressed northwards from 110m to 80.2m and the orientation then adjusted to intercept a second tunnel driven south from the cistern portal to 77.3m.

The large amount of material removed to form the cistern, the north tunnel and the first part of the south tunnel would suggest that much of the material may have been removed from a large diameter

open shaft now occupied by the cistern and access chamber and that the access chamber roof may have been constructed on completion of the works and backfilled to the surface.

General Summary

The cellars and water tunnels appear to be in a satisfactory condition at present with no major maintenance needs identified. The mortar appears to be generally hard and not particularly friable. Generally cracking in the tunnels appears not to be significant. It is however recommended that regular inspections are undertaken to monitor for deterioration in structure which could be caused by ground movement and excessive water ingress in future.

During the 1980/81 inspection it was noted that water was still running from the North tunnel into the cistern. It was also stated the water was crystal clear and tasted good. In contrast the water flow appears to be quite low at present, the water appears grimy on the surface of the cistern reservoir (believed to be calcite precipitation from evaporation at the water surface) and there are calcite deposits evident along the surfaces of water channels in the tunnels. This could indicate a reduced water flow, possibly as a result of modern water extraction in the area impacting upon the local water table or silting up of the fractures feeding groundwater into the collection tunnels.

Ten or so bottles were noted floating in the west side of the cistern and a few on the east side which have presumably fallen or been dropped into the cistern from the store of bottles adjacent to the ladder in the access chamber above.

There is evidence of a currently used water pumping installation coming up from the main cistern area running through the cellars to surface level. This appears to be electrically powered with an accumulator vessel at the top of the access ladder into the cistern. Blue pipes run from the pump in the cistern, up through the cellar and out to ground level.

The gas check within the cellars and tunnels did not identify hazardous gases and oxygen levels appeared to be above 20% at all times which would indicate a fairly free flow of ventilation. This is likely to be due to air permeability at shaft locations and possibly at the ends of the tunnels too.

The manhole cover to access the cellars and water tunnels is currently not locked and is not of a lockable type.