The Round Tower, Alverton Lodge, Alton Towers Survey and Watching Brief



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Archaeological Research Services Ltd

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Executive Summary

The building recording survey and watching brief reported here provides a record of the state of the Round Tower at Alverton Lodge, Alton Towers (SK 0722 4317) in advance of restoration and consolidation works.

All areas of the tower were recorded in accordance with the brief. The only portions of the stonework which were actually removed and reinstated as part of the renovation were in the upper areas of the circular section of the tower and this was fully recorded prior to any work.

The majority of the stonework and the structural components of the tower at the lower levels were in a reasonable state of repair and survived well, although they will continue to degrade through exposure. There is some preservation of lath and plaster as well as other woodwork internal fittings, though this is generally in a poor state of repair and not considered to be worth preserving other than by the photographic record undertaken for this project. There is degradation of the floor levels and this will continue to a state where none are accessible safely unless this is addressed as part of the renovation programme.

It is most likely that the Round Tower was constructed in a single episode during the major period of building at the Towers in the period 1810-40. This conclusion is drawn due to the lack of any phasing evidence observed during the archaeological recording. The only clear evidence of phasing in the structure are a second phase of work involving blocking some of the windows on the western face, date unknown, and some renovation brickwork in the lower portions of the eastern elevation.

The Round Tower is an interesting part of the Alverton Lodge complex as a whole. It is in a state of disrepair and requires the proposed renovation work to preserve it to avoid it becoming structurally unsafe.

1. Location, Geology and Background

- 1.1 Alton Towers theme park is located in Staffordshire 9km north of Uttoxeter and 1km north of Alton village. The Round Tower is located in the centre of the Alverton Lodge section of the Alton Towers buildings (SK 0722 4317). The Round Tower is an integral part of the fabric of the building and must be contemporary with the initial stages of this construction.
- 1.2 The underlying geology of the area is higher river terrace overlying Sandstone bedrock (BGS 1983).

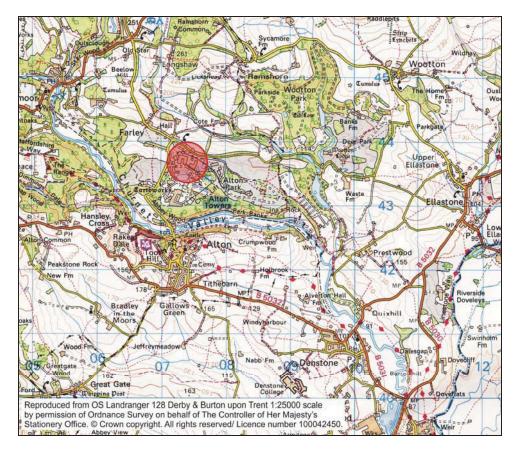


Fig. 1 Location map

- 1.3 The Alton Towers buildings are the centrepiece of the grounds that now house the theme park named after them. The Staffordshire Historic Environment Record (HER) provides a substantial amount of data concerning the Towers as a whole and all the various structures that comprise the site.
- 1.4 The Towers are a Grade II listed building constructed c. 1810-40, for the 15th and 16th Earls of Shrewsbury. They are listed as being built in the Castellated Gothic style with the principal alignment being north-west to south-east.
- 1.5 The house and complex was the home of the Talbot family, and the land now encompassed by the Alton Towers theme park represented the grounds attached to the manor. The Alton Towers buildings were occupied by the Talbot family until 1923. The entire house and park is now under the ownership of Merlin Entertainments.

2. Aims of the Project

- 2.1 The building recording survey and watching brief aimed to provide a permanent, accurate and accessible record of the state of the Round Tower at Alverton Lodge, Alton Towers in advance of restoration and consolidation works. The results of the work (presented in this document and in the photographic and digital archive created as part of the project) are intended to inform suitable and sympathetic conservation strategies. The following specific objectives were laid out at the beginning of the project in the brief supplied by Staffordshire County Council:
 - To produce permanent record of the Round Tower at Alverton Lodge through a series of rectified and annotated survey drawings of the exterior of the Round Tower to be supported by a complete scaled photographic record of the exterior of the structure.
 - To identify any phase changes within the Round Tower through, for example, the presence of changes in construction method, use of materials, stylistic differences, straight joints and blocked openings.
 - To photographically record the interior of the Round Tower in advance of stripping out works.
 - To inform and make recommendations for further work upon the site and identify specific areas of interest.
 - To maintain an archaeological watching brief during groundworks to prepare a stable surface on which to rest the independent scaffolding system. This will record the presence of archaeologically significant features and deposits associated with the tower and the existence of architectural fragments within the collapsed debris.
 - To maintain an archaeological watching brief during the stripping out of the tower interior and to record evidence of phase changes (as identified above) via a written, drawn and photographic record.

3. Methodology

3.1 Metric Survey

A full digital metric survey of the building was undertaken as follows:

3.1.1 Instrumentation

Survey was undertaken using a Leica TCR 307 (TPS 300 series) Reflectorless Total Station (RTS). This instrument has an angular measuring precision of 5", well within the required tolerances for a 1:100 scale survey.

3.1.2 Scale and Accuracy

A nominal scale of 1:100 was adopted for the survey. This scale provides the best compromise between the need to show outline building detail clearly and accurately, and considerations of time. At this scale, measurement inaccuracies of 1 cm would be represented as a deviation of 0.01 mm on the plot, invisible to the eye. The rigorous control traverse procedure (outlined below) ensured that millimetric tolerances were obtained and that no deviations are visible when viewing the survey at the specified scale.

3.1.3 Procedure

Metric survey of the building was undertaken as a four stage process:

- Survey Control
- Outline detail framework

- Rectified Photography
- Survey processing

3.1.4 Survey control

Survey control was established by closed loop traverse observed using the three tripod method. (Uren and Price, 1994: 231). Angles between traverse legs were well-conditioned where possible. Face right and face left angles were measured at each station in order to minimise collimation and dislevelment errors. Final adjustments to control station coordinates were made by the technique of equal adjustment (*ibid*: 243).

3.1.5 Outline detail framework

The principal components of the structure were established as outline detail using the technique of REDM trace (Andrews, *et al*, 1995). Measurements were directly logged in real-time onto a portable computer running survey software TPS-CAD over the industry-standard AutoCAD drafting program. In this way inaccessible parts of the structure such as the east elevation were directly surveyed without the need to approach the building. The ground plan, individual elevation extents and major elevation components such as piers and arcades, in addition to any other necessary architectural components were surveyed. REDM was also used to provide a control framework for rectified photography.

3.1.6 Rectified Photography

Rectified photographic survey was used to fill in further details of each elevation. Photographs were taken on a Fujifilm Finepix s6 500. Using this format images can be produced at the necessary scale size and within the vertical angle toleration stipulated by English Heritage. Control points for each image were recorded using RTS.

3.1.7 Survey Processing

Survey data was processed using AutoCAD software, though the use of the realtime REDM trace method obviated much of the need for post-processing. A 3D wireframe model was built from outline detail survey to which digital images were accurately fixed in an elevation mosaic using polynomial rectification. Each external elevation was digitised within AutoCAD.

3.2 **Photographic Survey of the Tower Interior**

Prior to the stripping out of the interior of the tower, a full photographic survey was made. The photographic survey was made in black and white print and digital formats and was undertaken as the floors of scaffolding were put into place allowing for complete recording of each level.

3.3 Watching Brief during ground preparation

An archaeological watching brief was maintained during excavation works associated with the formation of a stable level upon which to erect the independent scaffold system necessary to complete the subsequent works. The watching brief was maintained both inside and out the footprint of the Round Tower. A written, drawn and photographic record was maintained throughout the watching brief and all significant architectural fragments were photographed *in situ* and their locations were recorded.

3.4 **Watching Brief on the stripping out of the Tower interior**

An intensive archaeological watching brief was maintained during the stripping out of the tower interior due to the extensive elements of timber, lath and plaster surviving. Any significant archaeological and historical elements present in the surviving lath, plaster and timberwork, a more detailed scaled photographic record was made. Any features revealed during the watching brief were to be recorded in the written and photographic record which was maintained throughout.

4. Results of the Project

4.1 **Building Survey - General Description**

The area of the Round Tower surveyed comprises an approximately rectangular area of the internal walls of a larger building surviving to three storeys high, which are surmounted by a cylindrical tower, also of three storeys. The lower three storeys are predominantly sandstone built, although there are areas of brickwork used as infill on all elevations. Areas of timber laths covered with plaster still survive on the east and west elevations. The upper three storeys are also sandstone built



Fig. 2 Northern elevation of tower showing it's location within larger Alverton Lodge structure. Photograph taken from storey below that at which recording started and lower section obscured by wall in foreground at base of illustration.

4.1.1 A total of four elevations were recorded. These are: East Elevation (Fig. 23) North Elevation (Fig. 24) West Elevation (Fig. 25) South Elevation (Fig. 26) Access to the South Elevation was restricted to a narrow corridor at its lower three storeys and no detailed recording was undertaken in this area. The South Elevation of the Round Tower was recorded however.



Fig. 3 Restricted recording conditions on the south side of the Tower

4.1.2 Additionally variations in internal floor levels as well as extensive collapse of internal floors made establishing a "ground" floor level difficult. All the elevations are described from the lowest floor surveyed and this lowest floor level corresponds to the probable first floor level of the structures as originally built.

4.2 East Elevation

The east elevation can be divided into six storeys, the lower three comprising the elevation of the internal walls of the larger structure and the upper three comprising the cylinder of the Round Tower itself.

4.2.1 Lower Three Storeys

The lower three storeys of this elevation were predominantly built of finely tooled sandstone blocks which had been rendered with a plaster, most of which has subsequently eroded. Brick infills of window and door frames were visible on all three floors. The lower storeys measured at least 8.3m high, although debris and vegetation on the lowest floor made an accurate measurement impossible, and 4.66m north to south. The lowest storey measured at least 3.39m high, whilst the central storey measured 2.36m high and the upper storey measured 2.55m high.

On the lowest floor two doorways survived, that to the south (Fig. 23; A) giving access to the interior of the Round Tower with the surviving opening measuring at least 2.14m high and 1.27m wide, and that to the north (Fig. 23; B) opening into a large room on the north of the Round Tower with the opening measuring at least 2.33m high and 0.94m wide. Timber lintels survived in both doorways, but the jambs only survived in the northern door. The northern door had also been extensively rebuilt on its southern side with brickwork of no discernible bonding pattern (Fig. 23; C). A small area of plaster still survived on the north side of the northern door frame (Fig. 23; D). Mortice holes to support the joists were visible between the lowest and central floor levels (Fig. 23; E).



Fig. 4 Lowest storey on east elevation showing doorways to Round Tower on left, mortice holes for original joists and brickwork infilling/repair

The central floor level featured a doorway to its south (Fig. 23; F), which gave access to the Round Tower interior and, as with the doorway at the lowest floor level, only the lintel survived. The opening measured 2.22m high and 1.00m wide. In the centre of this floor level an infilled, arched brick window measuring 0.96m high by 0.66m wide and comprising two distinct phases of brickwork (Fig. 23; G). Too little of the first phase of brickwork survived to be able to discern the bonding style, however the second phase of brickwork was of an English Bond. Both phases were partly obscured by and area of lath-and-plaster/tiles (Fig. 23; H), and indicates that at least three phases of remodelling of the structure have occurred in this area. This comprises: Phase 1 – original sandstone construction; Phase 2 – outer brickwork construction of window; Phase 3 – infilling of window and plastering. Above and to the north of this window was a second larger window, also infilled with brick in an English Bond, measuring 1.1m high and 1.3m wide (Fig. 23X; I).



Fig. 5 Central storey of east elevation showing doorway to Round Tower and phases of brickwork infilling and remodelling

The upper floor level featured a doorway at its southern side which corresponded with those on the lower storeys, measuring 1.77m high by 1.14m wide and comprised a lintel but no jambs and gave access to the interior of the Round Tower. The northern side of the elevation had a small, window measuring 1m high by 0.82m wide (Fig. 23; J), bricked-up with an English Bond.

4.2.2 Upper Three Storeys

The upper three storeys of this elevation comprise the cylinder of the Round Tower itself which is built throughout of finely tooled sandstone blocks and measures 6.7m from base to the top of the battlements and the main body of the tower is 3.8m in diameter.



Fig. 6 Upper storeys of east elevation

The lowest level contains a high, narrow doorway (Fig. 23; K) measuring 1.9m high by 0.55m wide surmounted by a large arched lintel cut from one sandstone block. A low wall measuring 0.57m high (Fig. 23; L) is situated above the northern side of the lower three storeys and continues in a straight line as it runs from north to south, before curving to the west at point L on Fig. 23 to abut the Round Tower 0.32m to the north of the doorway to the Tower. The central level contains one window, a badly eroded "arrow slit", (Fig. 23; M) of which better examples survive on the north and south sides. The slit measures 1.24m high but has eroded out to 0.35m wide and is constructed of carved sandstone jambs, a lintel and a sill. The uppermost level consists of a slightly projecting decorative battlement 1.14m high with narrow crenellations measuring 0.5m high and 0.2m wide (Fig. 23; N), surmounted by two octagonal chimneys measuring 2.05m high at the south-east quadrant (Fig. 23; O).

4.3 North Elevation

The north elevation can be divided into three sections, the lower storeys comprising the internal wall elevation of the larger surrounding building, the upper storeys comprising the Round Tower and the central section formed by the complex joining of the two.

4.3.1 Lower Storeys

The lowest floor level, measuring at least 5.9m high and 6m wide was dominated by a large, badly eroded archway to its centre (Fig. 24; A) which measured at least 4.35m high by 1.78m wide. The lowest parts of this elevation were covered with vegetation and the floor had collapsed in this area making access impossible



Fig 7 Lower of north elevation showing large central archway

The remnants of a flight of wooden stairs could be seen ascending into the archway however. The sandstone blocks on the lowest and central levels were very finely tooled on the far western side (Fig. 24; B), but much less fine around the centre of the elevation and around the arch (Fig. 24; C). Whether this is due to different levels of erosion is unclear, however it is thought possible that these could represent to separate phases of construction. To the west of the arch two

large, vertical, planed timbers (Fig. 24; D), would have formed part of the lath-and-plaster render.

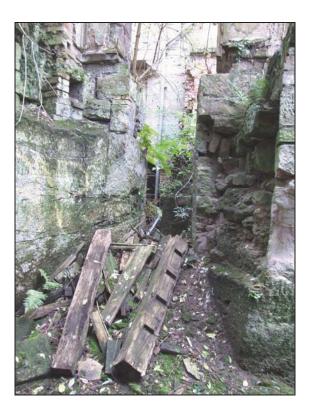


Fig. 8 Collapsed floor causing restricted access to north elevation



Fig. 9 Central section of north elevation

4.3.2 Central Section

The central section of this elevation is the most complex and measured 2.9m high and 3.95m wide. To the west of the Round Tower the wall face from the

lower level continues (Fig. 24; E). In the centre, a small buttress (Fig. 24; F) ascends to abut the Round Tower, below a steel handrail that curves around and down the tower to the east (Fig. 24; G). To the west of the buttress a recessed window covered with a steel grille (Fig. 24; H) measuring 1.25m high by 0.85m wide is located with two mortice holes for joists immediately above it. Immediately west of this window an area of lath-and-plaster 2.26m high by 0.65m wide is still fixed to the sandstone (Fig. 24; I). A second window (Fig. 24; J) measuring 1.19m high by 0.62m wide is situated at the western edge of this elevation. The window is overgrown with vegetation.

4.3.3 Upper Storeys

The upper level of this elevation consists of the cylinder of the Round Tower with a protruding chimney to the west (Fig. 24; K). It measures 5.7m from base to top of crenellations and the diameter of the Tower is 3.8m in diameter with the chimney projecting a further 0.4m out from the side of the Tower and 2.25m above the top of the battlements. The elevation contains one window, an "arrow slit", (Fig. 24; L). The slit measures 1.24m high and 0.22m wide and is constructed of carved sandstone jambs, a lintel and a sill. The uppermost level consists of a slightly projecting decorative battlement 1.14m high with narrow crenellations measuring 0.5m high and 0.2m wide (Fig. 24; M).

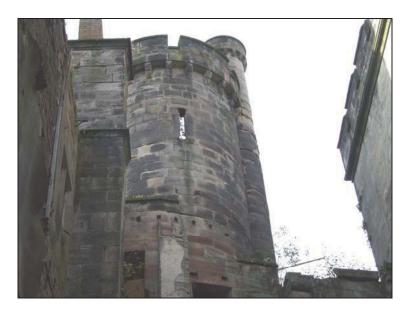


Fig. 10 Upper section of north elevation showing protruding chimney to west

4.4 West Elevation

The west elevation can divided into two sections, the lower two storeys comprising the internal wall elevation of the larger surrounding building and the upper storeys comprising the Round Tower itself.

4.4.1 Lower Storeys

The lower part of the elevation can be divided into two storeys. The lower storey was heavily obscured by vegetation at its base but measured at least 3.22m high and 5.33m wide. A large fireplace (Fig. 25; A) is situated in the centre of the elevation, built of sandstone, and measuring at least 1.58m high and 1.35m wide. To the north of the fireplace an alcove (Fig. 25; B) measuring at least 2.05m high

and 0.70m wide is situated, and to the south a doorway (Fig. 25; C) measuring at least 2.05m high and 1.10m wide survives with timber lintel and jambs. Lath-and plaster (Fig. 25; D) covers much of the elevation on this storey and, above the fireplace, a turquoise paint can still be seen.



Fig. 11 Lower storey of west elevation showing fireplace, surviving plaster and turquoise paint

The second storey is very similar to the lowest storey measures 4.88m high and 5.33m wide, although the southern part is partly obscured by vegetation. A central fireplace (Fig. 25; E), built of sandstone with brickwork interior, measures 1.05m wide and 1.10m high with an alcove to the north (Fig. 26; F) measuring 2.23m high and 0.91m wide and partly infilled with brick work at its base (Fig. 25; G). To the south of the fireplace a door way (Fig. 25; H) measuring 2.4m high and 1.06m wide still retains its wooden lintel and jambs. A large area of plaster (Fig. 25; I) still survives across most of this elevation, although it does not reach to the full height of the wall. This suggests that originally the room was around 3.9m high. Above the plasterwork the elevation appears to have been built of brick on its south side (Fig. 25; J), which could represent a rebuilding episode.

4.4.2 Upper Storeys

The upper storeys of this elevation consist of the Round Tower with projecting chimney (Fig. 25; K) and a flying buttress (Fig. 25; L). The Round Tower measures 6.68m high and 3.8m in diameter, with the projecting chimney located centrally to the western face. The decorative battlement at the top of the tower measures 1.14m high with narrow crenellations measuring 0.5m high and 0.2m wide (Fig. 25; M). The chimney measures 1.23m wide and 8.92m high and is built of sandstone blocks and surmounted by a small projecting decorative battlement measuring 0.56m high (Fig. 25; N). The flying buttress, built of sandstone blocks springs from the south side of the tops of the lower storeys of the elevation and abuts the chimney stack on its southern side, midway up the Tower.



Fig.12 Second storey of west elevation



Fig. 13 Upper storeys of west elevation showing protruding chimney and flying buttress

4.5 South Elevation

The lower storeys of the south elevation were inaccessible for survey and photography given the overgrown and narrow nature of the surrounding rooms and the extremely poor condition of the floor in these areas. The only survey work was undertaken on the upper storeys of the Round Tower itself. In brief, the lower storeys were similar in nature to those of the east and west elevations with lath-and-plaster still surviving in large areas over sandstone and brickwork.

4.5.1 The upper level of this elevation consists of the cylinder of the Round Tower with a protruding chimney to the east (Fig. 26; A). It measures 6.71m from base to top of crenellations and the diameter of the Tower is 3.8m in diameter with the chimney projecting a further 0.4m out from the side of the Tower and 2.25m above the top of the battlements. The elevation contains one window, an "arrow

slit", (Fig. 26; B). The slit measures 1.28m high and 0.22m wide and is constructed of carved sandstone jambs, a lintel and a sill. The uppermost level consists of a slightly projecting decorative battlement 1.14m high with narrow crenellations measuring 0.5m high and 0.2m wide (Fig. 26; C). The crenellations are surmounted on the south-east quadrant by two octagonal chimneys measuring 2.05m high (Fig. 26; D).

4.6 **Photographic Survey and Watching Brief of the Tower Interior**

The photographic recording of the tower interior was made in stages as the progressive levels of scaffolding were erected, allowing for access to each stage of the tower. The principal recording was undertaken with black and white print film and was duplicated and supplemented with digital photography. There were few features of note within the tower interior that were not apparent from the photography and survey of the exterior. As with the exterior it is evident from the parts of the interior which were already stripped, that the tower is constructed of a mixture of stone blocks and redbrick in a combination of English and English Garden Wall bond.

4.6.1 The key observation evident from the interior photography is that parts of the upper portion of the tower (the lower parts towards the centre and base of the barrel) are brick construction with exterior stone cladding (Fig. 14). This occurs at the interface between the two construction materials, directly below a diagonal brick-constructed flue that 'snakes' up the tower in a similar direction to the spiral staircase evident in the walls in the floor below (Fig. 14).



Fig. 14 Interior brick construction with stone cladding visible through the window. The diagonal brick flue can be seen in the top right of shot with a row of heat-retardant bricks at its base.

- 4.6.2 The principal reason for the recording in the tower's interior was to record the lath and plaster rendering which is visible across the Alverton Lodge site in patches. It was noted that this was in a poor state of repair and could communicate little further information concerning the original interior decoration.
- 4.6.3 The other major feature of note evident on the interior of the tower was the 'ghost' of the spiral staircase in the lower levels (Fig. 15) As shown in the figure below, the staircase ran upwards anticlockwise, different to that of medieval defensive spiral staircases which ran upwards clockwise in order to hinder the sword arm of a potential attacker. The (Fig. 15 below) also shows that the staircase was an original feature which predated the lath and plaster rendering, as the rendering fits around the 'ghost' of the staircase.



Fig. 15 Detail of the 'ghost' of the original interior spiral staircase showing the exposed brickwork behind the lath and plaster rendering.

4.6.3 During the watching brief on the stripping out of the tower interior, no further features of note were encountered beyond those already observed during the photographic recording.

4.7 Watching Brief during Ground Preparation A watching brief was requested on removal of debris from the lower stairwell of the Round Tower at Alverton Lodge, Alton Towers.

4.7.1 Sandstone blocks that were situated around the foot of the stairwell had been removed previously and stored as seen in Fig 16.



Fig. 16 Sandstone blocks

- 4.7.2 The stairwell had a deep fill as can be seen in Fig 17 . This mainly consisted of a wind and rain deposited sediment. Intermingled in this sediment were pieces of decaying wood, fallen plaster and building rubble in the form of fragmented breeze blocks.
- 4.7.3 The debris was removed by hand, firstly with a shovel then by trowel and brush which revealed the staircase rising upwards and spiralling to the left at the top, as seen in Fig 19. Pieces of wood were collected from within the debris as seen in Fig 20 and can be identified as material used to fabricate a wooden tread plate at the nose of the step (Fig 21).
- 4.7.4 No other archaeological features, deposits or small finds were located within the sediment deposit.



Fig. 17 Stairwell fill viewed from the bottom of the stairs



Fig. 18 Stairwell partly cleaned



Fig. 19 Cleaned stairwell spiralling to the left.



Fig. 20 Pieces of wooden stair tread plates



Fig. 21 View of wooden tread plate in situ



Fig. 22 Cleaned stairwell

5 Conclusions

- 5.1 All areas of the tower were recorded in accordance with the brief. The only portions of the stonework which were actually removed and reinstated as part of the renovation were in the upper areas of the circular section of the tower and this area was fully recorded prior to any work.
- 5.2 The majority of the stonework and the structural components of the lower levels of the tower are in reasonable state of repair, although they will continue to degrade through exposure. As noted above there is some preservation of lath and plaster as well as other woodwork internal fittings, across the site and within the interior of the Round Tower, though this is generally in a poor state of repair and not considered to be worth preserving other than by photographic record undertaken for this project. There is degradation of the floor levels and this will

continue to a state where none are accessible in a few years unless this forms part of the renovation programme.

- 5.3 While there are noticeable changes in building fabric notably between brick and stonework it is most likely that the Round Tower was constructed in a single episode. This conclusion is drawn due to the lack of any phasing evidence observed during the archaeological recording. The only clear evidence of phasing in the structure are a second phase of work involving blocking some of the windows on the western face, date unknown, and a portion of renovation and reconstruction in the lower portions of the eastern elevation, again date unknown.
- 5.4 The Round Tower is an interesting part of the Alverton Lodge complex as a whole. It is in a state of disrepair and requires the proposed renovation works to preserve it to avoid it becoming structurally unsafe.

6 Publicity, Confidentiality and Copyright

- 6.1 Any publicity will be handled by the client.
- 6.2 Archaeological Research Services Ltd will retain the copyright of all documentary and photographic material under the Copyright, Designs and Patent Act (1988).

7 Statement of Indemnity

7.1 All statements and opinions contained within this report arising from the works undertaken are offered in good faith and compiled according to professional standards. No responsibility can be accepted by the author/s of the report for any errors of fact or opinion resulting from data supplied by any third party, or for loss or other consequence arising from decisions or actions made upon the basis of facts or opinions expressed in any such report(s), howsoever such facts and opinions may have been derived.

8 Acknowledgements

8.1 ARS Ltd would like to thank all those involved with the smooth running of this project. In particular we would like to thank Dave Shaw of APB, Stephen Dean of Staffordshire County Council, and all the staff of Alton Towers who assisted us, especially those dressed in Halloween costumes who showed great forbearance when a number of archaeologists with survey equipment walked right through the middle of their haunted house.

References

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Appendix I

Side elevation drawings of the Round Tower

