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CORNWALL COUNCIL

Pengersick Castle, Praa Sands, Cornwall

Archaeological watching briefs and historic building recording 2011-12

Historic Environment Projects

Pengersick Castle, Praa Sands, Cornwall:
Archaeological watching briefs
and historic building recording 2011-12

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Copies of measured drawings were kindly provided by Stephen Tucker and Lloyd Richards of SMT Associates.

On site, Matt Bluett helped with the excavation and recording of drainage test pits. Chris Adams carefully stripped the modern plaster from the interior of the castle tower and this work allowed the recording and analysis of the underlying features. Phil Martin provided information regarding the castle gardens and terraces. Jonathan Hodgetts gave much valuable background information regarding the historic development of the castle.

Colleagues and former colleagues at Historic Environment Projects helped with additional information on the castle and past archaeological work including Carl Thorpe, Peter Herring and Charlie Johns. Advice regarding Scheduled Monument Consent applications was provided by Ann Preston-Jones and Phil McMahon of English Heritage.

The views and recommendations expressed in this report are those of Historic Environment Projects and are presented in good faith on the basis of professional judgement and on information currently available.

Freedom of Information Act

As Cornwall Council is a public authority it is subject to the terms of the Freedom of Information Act 2000, which came into effect from 1st January 2005.

Historic Environment, Cornwall Council is a Registered Organisation with the Institute for Archaeologists

Cover illustration

Pengersick Castle gardens, prior to removal of tree stumps in 2011.

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Abbreviations

CRO	Cornwall County Record Office
EH	English Heritage
HER	Cornwall and the Isles of Scilly Historic Environment Record
HE	Historic Environment, Cornwall Council
NGR	National Grid Reference
OS	Ordnance Survey
MCO	Monument number in Cornwall HER
RIC	Royal Institution of Cornwall
SMC	Scheduled Monument Consent
TPO	Tree Preservation Order

1 Summary

The remains of Pengersick Castle (near Praa Sands, Cornwall) are owned by the Pengersick Historic and Education Trust. The castle tower is a Grade I Listed Building and its grounds are also protected as a Scheduled Monument. For several years the building has been in need of renovation works and at the time of writing these are being addressed by the Trust. Proposals to undertake renovation works in advance of re-opening the site to the public have resulted in several applications for Listed Building and Scheduled Monument consents. A series of archaeological investigations have been enacted as part of the agreements for the consents. These have included archaeological test pits during investigation of a failed drainage system and within the floors of the tower, and a watching brief during removal of trees from the grounds to enable restoration of the garden. In addition the building's interior was recorded after removal of modern plaster finishes.

The test pits dug for investigation of the drains revealed that the area of ground between the castle tower and the present southern site entrance had been greatly disturbed in the later 20th century during creation of the previous drainage system and levelling works associated with the driveway. Test pits inside the tower revealed that the floors had been renewed in the later 20th century, with a concrete and tiled floor laid in the kitchen and relaying of the granite paving in the gun room. It is likely, however, that older archaeological deposits survive at depth.

Within the gardens, removal of large tree stumps revealed the sequence of development of the terraces. An earlier garden soil level was revealed below the upper terrace and dumping over this included roofing slates, probably from roof renewal at the adjoining Castle Barn buildings. A slot cut through the lower terrace revealed a remnant of granite paving, likely to be part of a former path leading to the hall range of the castle. This strongly hints that earlier garden features survive below the present terraces.

Temporary removal of finishes inside the tower revealed details of construction. All original openings in the tower rooms are framed by dressed masonry. Putlog holes for the original scaffolding levels are also evident. The upper rooms within the tower were all designed to be residential and have their fireplaces in different walls so that the flues could emerge within the central merlons at the parapet level. The second floor room has evidence of panelling, probably the room containing paintings recorded by William Borlase in the 18th century.

Although floor planking has been replaced the principal supporting beams survive at most levels in the tower. The timbers have been dated by tree-rings to felling dates in the 16th century.

Removal of modern plaster in the early 20th century annexe also shows how the original hall wing related to the tower. Although physically a separate construction, provision of a doorway at first floor level in the tower indicates that the hall wing was designed as an integral part of the original castle complex.

Fig 1 Location map

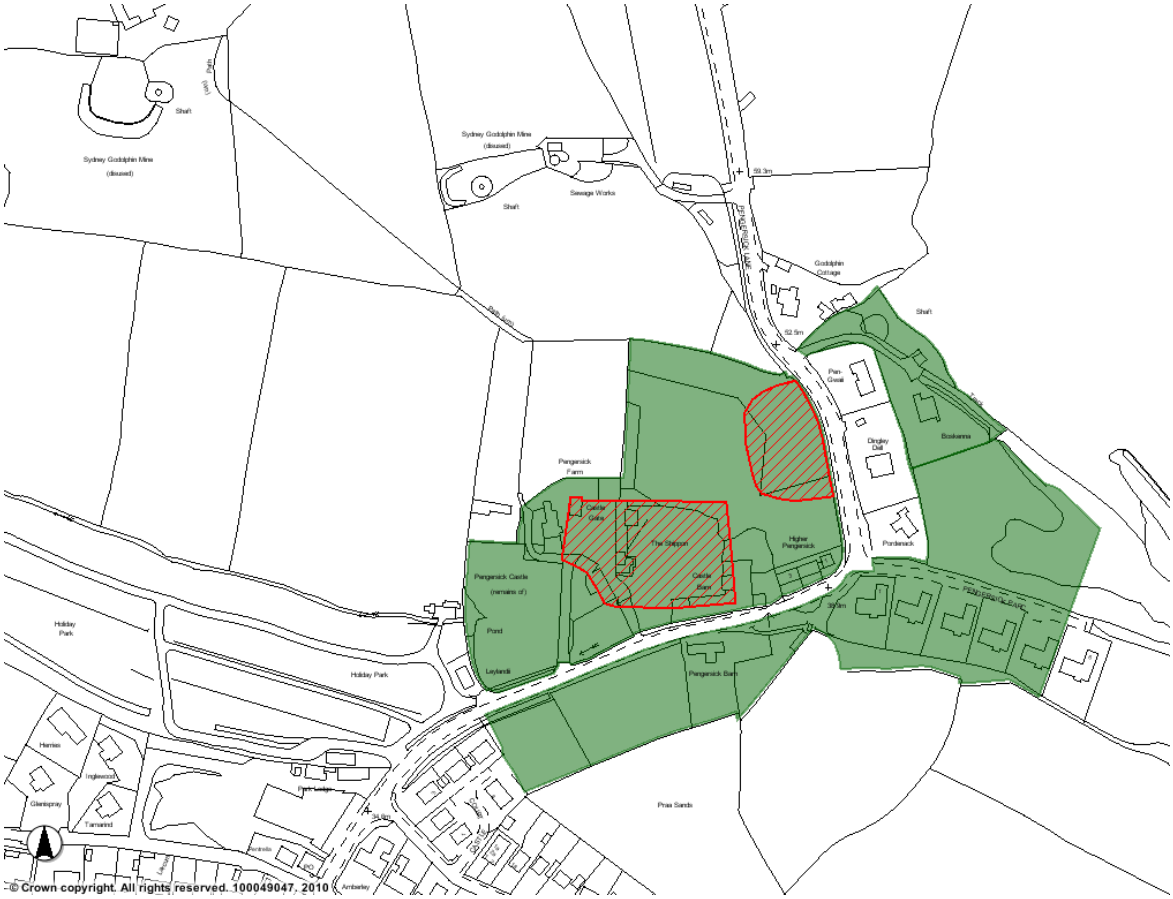

Fig 2 Pengersick Castle showing the extent of the Scheduled Monument (hatched in red) and the Tree Preservation Order area (in green shading)

2 Introduction

Close to the popular holiday resort of Praa Sands stands the granite tower of Pengersick Castle (Fig 1), the most prominent survivor of a fortified manorial complex of 16th century date. The castle complex appears originally to have consisted of a principal tower and associated manor house with two fortified courtyards (to the east and west of the tower). The castle site is currently divided into several different ownerships. The castle tower and gardens (within the former east courtyard) were in the possession of Mrs Angela Evans from 1971. During Mrs Evans' ownership this part of the castle was opened to the public. Upon the death of Mrs Evans in 2008 the castle was bequeathed to the Pengersick Historic and Education Trust, which is in the process of restoring the tower and gardens. Once these works are substantially complete, the Trust will re-open this historic site as a public amenity.

The former extent of the two courtyards (the below-ground element of the castle) is statutorily protected as a Scheduled Monument and the older standing buildings are Listed, the tower being Grade I (Fig 2). This report outlines the results of a series of archaeological investigations which have arisen as part of requirements for Scheduled Monument or Listed Building Consents.

3 Project background

3.1 Drains and floors

The basement of Pengersick Castle has suffered increasingly from damp penetration, caused in part by a failed drainage system which no longer carries rainwater away from the building. A request was made to English Heritage in January 2010 for pre-application advice for proposed drainage works. In response Phil McMahon, English Heritage Inspector of Ancient Monuments (IAM) for Cornwall and Scilly advised that the work would require Scheduled Monument Consent (SMC) and that because it is a nationally important monument English Heritage would need to see an assessment of the potential archaeological impact accompanied by proposals for archaeological supervision, recording and if necessary excavation (letter dated 09/02/2010). Historic Environment Projects, Cornwall Council (HE) were then commissioned by Pengersick Historic & Education Trust to carry out an archaeological assessment to address the work required by English Heritage.

The first stage of the assessment was a rapid review of historical and archaeological information about the site including information held by the Cornwall and Scilly HER, available historic maps and from published sources; this included an initial proposal for archaeological recording of the scheme.

Subsequent discussions between the Trust and English Heritage at a site meeting held on 25th August 2010 highlighted the need for SMC to be sought. This Consent would be required to undertake exploration of the failed surface water drain and soakaway. The meeting also discussed the need for determining the material of the sub-floors in the castle's Kitchen and Gun Room, in order to design damp reduction measures (see Fig 11).

An SMC application for investigation of the rainwater drains and floors was drafted by HE and submitted by the Trust to English Heritage. A Written Scheme of Investigation was included with the application as supporting information (Johns and Thomas 2010). Consent was granted in 2011.

3.2 Tree stump removal

The Trust is also in the process of renovating the gardens and grounds surrounding the castle, including developing a Tudor-style knot garden on the upper terrace within the former castle courtyard. This work entails removal of various trees, stumps and the majority of their root systems so that the ground is available for replanting. This work required Scheduled Monument Consent, which was granted in 2011. Pengersick Castle and its surroundings is also within a Tree Preservation Order area and TPO consent was

sought separately from Cornwall Council. The areas of the Scheduled Monument and TPO are shown in Fig 2.

Historic Environment Projects, Cornwall Council (HE Projects) was commissioned by the Trust to advise on the archaeological implications and recording measures for tree removal and related garden works, and to submit a Scheduled Monument Consent application. A Written Scheme of Investigation was submitted to support the Scheduled Monument Consent application, which was submitted by the Trust to English Heritage. Following the successful granting of SMC, an archaeological watching brief was commissioned by the Trust and carried out in July 2011.

3.3 Castle tower interior recording

During the 20th century many of the castle's main tower interior walls were re-plastered with cement-based mortars and gypsum plasters. These are largely impermeable and have had the damaging effect of holding dampness within the walls. A series of measures to combat the damp problem was therefore proposed within a Listed Building Consent application. As well as exterior pointing and replacement of the lead roof it was proposed on a Listed Building Consent application to remove all modern plasterwork and replace the finishes with lime-based materials. These have the advantages of being breathable and are also more aesthetically accurate for historic buildings. The temporary removal of the finishes would provide opportunity to archaeologically examine elements of the building that are normally hidden. Historic Environment Projects was requested to advise on recording measures before and during works and to provide appropriate input. Listed Building Consent was granted by Cornwall Council in 2012.

4 Aims and objectives

The primary aim of the drain investigation works and examination of the sub-floor materials in the castle was to inform design for replacement (or potential upgrading) of the drainage system, and to design measures to reduce damp penetration within the castle. Test pits for drains and beneath floors would also provide opportunity to examine the archaeological potential (extent and levels of historic remains).

During the tree stump removal the principal aim of the archaeological work was to minimise disturbance to the monument and to gain further understanding of the historic development of the Pengersick courtyard from the archaeology that became temporarily revealed.

Temporary removal of plaster from interior elevations would provide opportunity to examine architectural features, any changes of build, former finishes and other material that would provide information on how the tower was built.

5 Working methods

5.1 Drain investigation

Limited excavation was carried out as a series of test pits, supervised by an archaeologist. These pits were dug on the 23rd and 24th March 2011. Excavation of pits was carried out using hand tools. On the second day of the fieldwork a JCB digger was brought onto the site, to be used to excavate a larger trench to locate the limits of the existing soak-away (Fig 11).

The revealed stratigraphies within the pits were recorded by depth measurements and, in Test pit 2, by a section drawing. The stratigraphy from the pits is recorded in the List of Contexts (Appendix 1).

5.2 Castle floors

On 15th March 2012 two test pits were dug by hand in the castle tower, one pit in the floor of the Gun Room and the other in the 1920s Kitchen extension. The Gun Room pit entailed removing two granite paving slabs to expose the underlying stratigraphy while in the kitchen the cement screed floor and concrete base were first broken through.

Material from the pits was excavated (to a maximum depth of 0.92m in the Kitchen and 0.98 in the Gun Room) and the pits recorded by their sections (see Fig 19).

5.3 Tree stump removal

Tree stumps and roots were dug out by a contractor using a 360 degree excavator. In the case of the larger trees on the upper terrace more substantial pits were needed in order to free the roots. Excavated sections of the sides of root holes were cleaned with a shovel and any revealed stratigraphy was recorded by depth measurements and brief descriptions (see Appendix 2).

5.4 Castle interior recording

The tower walls were initially recorded by a detailed measured survey (carried out by SMT Associates) and the results of the survey output created in AutoCAD (see Figs 9, 10 and 30-35). In February and March 2012 the modern plasters were carefully removed by hand (by Chris Adams who kindly provided his voluntary labour for the Trust). On 15th March 2012 the walls were recorded by the author. This entailed photography of each of the wall faces, carried out using a Canon digital SLR camera (with a resolution of 8 million pixels) mounted on a tripod. Supporting information was annotated onto prints from the SMT measured survey.

Following the on-site work, the photographs were rectified using PhoToPlan software, within AutoCAD, using the SMT survey as a base drawing and creating suitable control points on known features. Information from the rectified images (ortho-photographs) was then traced. The photographs provided much additional and previously hidden detail such as putlog scaffolding holes, relieving arches above openings and the extent of dressed granite masonry around features. The drawings were annotated and the drawings are reproduced in this report as Figs 30-35.

5.5 Post-fieldwork

Site drawings and photographs were collated and indexed for long term storage (see the index to the project archive in Section 12). Results from the investigations were compiled into this report. Lists of contexts for layers and features encountered in the test pits and trenches were finalised, and are reproduced at the end of the report (see Appendices 1 and 2).

6 Location and setting

Pengersick Castle lies close to the popular holiday resort of Praa Sands within the parish of Breage at NGR SW 5816 2841 (Fig 1). The granite tower is the prominent survivor of a fortified manorial complex of 16th century date, originally comprising the tower, manor house and two fortified courtyards to the east and west (Fig 3).

The site lies on the 35m to 40m contour within a shallow valley running ESE towards the old farmstead of Trevurvas. Geologically, the higher ground here comprises granite (part of the Tregonning Intrusion, visible in the cliffs at Rinsey and Trewavas). Pengersick itself lies on bedrock of Late Devonian hornfelsed slate and siltstone but granite moorstone was the favoured building material used in the castle, and was no doubt sourced nearby.

Soils in the area are classified as 541k Denbigh 2, loam over shale.

7 Designations

7.1 National

The former extent of the two courtyards (the below-ground element of the castle) is statutorily protected as a Scheduled Monument (No. 36039) and the standing buildings are Listed, the tower being Grade I (LB 6571). The Listed Building description is reproduced in Appendix 3.

7.2 Regional/county

Pengersick and Praa Sands lie within the Cornwall Area of Outstanding Natural Beauty.

8 Site history

Pengersick is first documented in 1197 and a chapel is recorded there in the 14th century in association with a mansion. Recent tree-ring analysis of original floor beams in the tower indicates that the fortified house was built in the mid 16th century (Bridge 2012). The unusual form of the house may have been built as a response to pirate raids on the south coast. It originally consisted of a complex of buildings ranged around two courtyards. The major tower (equivalent to a keep of a castle) has survived intact but in the 20th century was partly converted into a dwelling. This tower originally had an attached hall on the north side and a major courtyard on the east side surrounded by stables and ancillary structures (see Fig 4). A fine granite moulding from the two-storey porch attached to the hall is now the principal entrance to a farmhouse (Herring 1998). West of the tower was another smaller courtyard which was probably domestic, most likely comprising kitchens, stores, servants' accommodation, etc. This courtyard also contained another smaller fortified tower or gatehouse (Gould, Mossop and Thomas 2005).

The Milliton family occupied Pengersick for a few generations. Upon the death of William Milliton, who had no surviving sons, the property was divided between six daughters. With this complexity of ownership, the house fell into disuse. During the 18th and 19th centuries the surviving structures were extensively robbed to provide materials for nearby farm buildings. Of the fortified house only the three-storey tower survives. This was converted to a house in the early 20th century. A two-storey fortified building to the west was converted to a granary and became incorporated into the 19th century farm complex (Herring 1998). Most of the older outbuildings in this area have more recently been converted to dwellings.

Dr William Borlase's 1734 illustration (Fig 3) is copied from part of a 16th century painted panel then surviving inside the tower. It shows that the area affected by the drainage works includes a path along the front of the tower. Subsequent engravings, maps and photographs show that this space was never built on; although the Buck Brothers' 1734 engraving shows that the eastern side of the path had been defined by a low wall (Herring 1998, fig 14).

Borlase's engraving shows that the entrance to the eastern courtyard was through a gate through range of buildings forming the eastern side of the courtyard. The present southern entrance seems to have formed by the time of the 1787 map (Herring 1998, fig 23) but 19th century maps (see Figs 5 and 6) seem to indicate that the main access from the road led into Pengersick farmyard (within the former west courtyard).

9 Drains investigation

Context numbers in this section are given in brackets and the full context list is reproduced in Appendix 1. The locations of the test pits are shown on Figure 11.

9.1 Test pit 1

A 1000mm by 1000mm (and 250mm deep) test pit, cut through modern slate crazy paving (1) adjoining the NE corner of the castle's stair turret. After removal of a lump of concrete supporting a staddle stone base, the pit was found to contain late 20th century stone rubble and fragments of corrugated asbestos roofing sheet (2). As the latter is a hazardous material, no further excavation was undertaken on this pit and it was backfilled.

The content indicates recent fill, most likely the course of a drain trench running southwards along the east side of the stair turret. The ground level adjacent to the stair turret appears to have been levelled (or terraced) in the 20th century, most likely when the present driveway was created.

9.2 Test pit 2

A 1000mm by 1000mm (and approximately 1380mm deep) test pit (see Fig 12), cut through modern slate crazy paving (1) to the south east of the tower. Below the crazy paving was a layer of clean yellow sand (3). Beneath this was a layer of dark grey gravel (4). Part of the gravel layer (in a corner of the pit) was interrupted by a patch of (probably discarded) cement/concrete (5). Beneath the gravel was a 950mm deep layer of stone rubble in a matrix of dark brown-black loamy soil (6). Finds from this layer included fragments of cast-iron drain pipe, ceramic drain pipe, roofing slate (including one fragment with a nail or peg hole), sherds of modern china and a fragment of a glazed 'buzza' or storage pot. The latter were made and used in Cornwall from the 18th century to the early 20th century and were frequently used for storing salted meat and fish.

Beneath the rubble was a layer of sand, acting as bedding for the drain pipe (7). The top of the pipe was encountered at a depth of *c*1300mm from the surface but the sides of the drain trench were not found in the test pit.

9.3 Test pit 3

Test pit 3 was a 1000mm by 1000mm (and 1800mm deep) pit, excavated through 250mm of topsoil and roots (8), at the edge of a flower bed. The topsoil lay above almost 1500mm of stone rubble and earth (9). This pit was later found to be slightly off-line from the pipe trench, so was abandoned.

9.4 Test pit 4

The location of test pit 4 was found to be offline from the line of the pipe as seen in pit 2, so was not excavated. It was replaced by a longer machine cut trench (Test pit 9) cut closer to the hedge.

9.5 Test pit 5

Test pit 5 was intended as a 1000mm by 1000mm pit cut close to the site gateway. This pit was eventually not needed to locate any drains and was therefore not excavated.

9.6 Test pits 6 and 7

These were two very shallow trial pits (dug only to 200mm depth) to locate lines of drains running in gullies alongside footings of the castle tower. Test pit 6 revealed a red ceramic land drain and a yellow plastic gully drain pipe bedded in gravel (30). Test pit 7 contained two land drains and a drain pipe, the latter from the surface drainage to the north of the stair turret. All these drains connected to the inspection cover at the southeast corner of the tower.

The level of the modern drains is approximately equivalent to the medieval ground level, as indicated by more irregular foundation stones at the base of the castle wall, protruding beyond the face of the walling above.

9.7 Test pit 8

Test pit 8 was a 1000mm by 1000mm (and 585mm deep) pit (see Fig 13), cut through modern slate crazy paving (1). The paving was found to be bedded in cement mortar up to 60mm thick (12). Beneath the mortar was a layer of dark grey gravel/chippings, similar to that found in Test pit 2 (4). Below the gravel was a mass of loose stone rubble, mostly lumps of 'fist' to 'head' size granite (13). Some of the rubble had traces of lime mortar and plaster, so was indicative of demolition material. Other material included lumps of cement mortar, occasional roof slate fragments, a fragment of ceramic drain and a piece of cast-iron drain pipe.

All the rubble in this pit was evidently 20th century, and had been deposited to level this area prior to making a paved surface.

9.8 Test pit 9

Test pit 9 was a machine-cut trench (see Fig 14) dug to locate the line of the drainpipe from Test pit 2. The trench was started from just inside the west boundary hedge (Fig 11) and flower bed and was dug eastwards for 4000mm into the side of the driveway. The trench was cut with a 600mm wide toothless bucket through *c*250mm of topsoil and

roots in the flower bed (8), beneath which was a general layer of loose rubble and earth (9) similar to that already seen in Pits 2 and 3. Within this rubble layer was a disused iron water supply pipe *c*0.5m from and running alongside the hedge (this was also found in Test pit 10).

Beneath the rubble layer close to the boundary hedge the natural substrate (orangey-brown decayed shillet and clay) (14) was encountered at 600mm depth from the surface.

The eastern part of Test pit 9 was very different in character and comprised a trench (*c*1500mm wide with its western edge *c*1000mm from the base of the boundary hedge line) [11] infilled with loose stone rubble, loamy dark brown soil and fragments of plastic sheet (10) was cut into the natural. This was traced down with the machine bucket to almost 2m depth. In the bottom of the trench were re-deposited larger pieces of building stone.

It was not possible to accurately record the trench sides due to the depth and the extremely loose nature of the fill, some of which collapsed during excavation of the trench. The material is evidently the soakaway from the rainwater drain; the plastic sheet was presumably originally put over the soakaway fill to prevent excess soil from entering it. The line of the soakaway is due south from the inspection cover and Test pit 2.

9.9 Test pit 10

Test Pit 10 was a machine-cut trench (see Fig 11) cut in the flower bed (on the line of the western arm of the proposed soakaway investigation trenches on the SMC drawing). After removal of c250mm of topsoil (8) a general layer of stony rubble (9) was revealed, similar to that seen in Test pits 2, 3 and 9. The disused water pipe was again encountered in this fill. This material overlay the natural substrate (14) at 0.6m depth.

9.10 Test pit 11

Problems with a leaking water supply in the terraced lawn necessitated excavation to find the damaged pipe. The JCB was used to carefully strip away the turf and topsoil. The leaking pipe was very rapidly revealed as it lay only within the topsoil (250mm deep). It had been disturbed on a joint between lengths of alkathene pipe.

The alkathene water supply pipe is a more modern replacement for the disused main found next to the boundary hedge in Test pits 9 and 10. The course of this modern pipe is not known with certainty; it presumably runs diagonally (north-north-easterly) across the site from a stop valve inside the entrance gateway, and then beneath the drive towards the north side of the castle tower. Its location beneath the lawn suggests it connects with other standpipes as well as supplying the house. Results from Test pit 11 indicate that the pipe has only been laid at shallow depth and is therefore very prone to damage; it will probably be necessary to trace it and re-lay the pipe.

With the exception of Test pit 11 all pits and trenches were backfilled after completion of recording. No finds were retained.

10 Castle floors

The two test pits in the castle's floors were excavated to a maximum depth of 0.5m. Locations of the pits are shown on Fig 18 and the sections on Fig 19.

10.1 Test pit 1 (Gun Room)

(See Figs 18 and 19)

Beneath the granite paving of the Gun Room (20) was a layer of building sand (21) used as bedding for the stones. Beneath this was a layer of dark grey sandy silt containing broken fragments of concrete and painted cement (22). Another thin layer of building sand (23) was revealed beneath. Layer (24) comprised sandy silt with pieces of granite and other building rubble. A third tip of building sand (25) was revealed beneath the rubble.

All the revealed layers are of later 20th century origin, implying that the granite paved floor has been re-laid, most likely in the 1960s.

10.2 Test pit 2 (Kitchen)

Beneath the screed (15) and concrete (16) of the modern kitchen floor were two layers of material, the upper of orangey-brown clayey silt and stones (17), with silty clay below (18). Under these layers was dark grey silty clay containing mortar fragments (19). This appears to be the remains of a former topsoil layer that had built up in the area before the 1920s kitchen extension was built. This implies that all layers above it are modern. No finds were made.

A stone plinth *c*120mm wide indicating the foundations of the tower was revealed in the edge of the pit. It is likely that earlier archaeological deposits survive beneath the lowest revealed layer and the edge of the building.

11 Tree stump removal

(See Fig 20)

11.1 Lower terrace

Stumps of former cherry trees were removed from a flowerbed on the western edge of the lower terrace. These were very shallow rooted and extended only into subsoil. No archaeological remains were encountered.

A narrow slot 300mm wide and approximately 1m deep was dug into the edge of the lower terrace, in order to bury an exposed electrical conduit (Figs 23 and 24). This revealed stratigraphy including two worn granite stones (29) overlain by a build up of topsoil (28) and subsequent material to construct the terrace (27) (see Fig 25). The location, level and nature of the stones suggest they are part of a path that once linked the hall entrance and the eastern courtyard gateway (as shown by William Borlase, see Fig 3).

An *in situ* tree stump within a flowerbed northeast of the castle tower (at the north end of the lower terrace) was removed. This tree had been felled some years previously, probably because it had a pronounced lean and its roots on the west side were already lifted/exposed. Removal of the stump revealed no early stratigraphy. The revetment for the flower bed containing the stump was built of granite and appears to be 20th century.

11.2 Upper terrace

Major work on the upper terrace included removal of three mature *cupressus macrocarpa* stumps (Figs 21 and 22). Extensive machine digging to remove roots revealed some evidence regarding development of the garden terraces. A section approximately 1m east of the upper terrace wall contained the following layers (from top to bottom):

250mm dark brown sandy loam, virtually stone-free (present day topsoil).

150mm light brown sandy loam with occasional small stones (subsoil).

300mm medium brown mixed soil and stones, occasional granite pieces between 'fist' and 'head' size (dumped material used to make up the level of the upper terrace).

Orange-brown sandy shillet and angular stone (undisturbed natural substrate).

The two northern *cupressus* trees had grown into a small area of dumped blue slate fragments (not showing in the section), perhaps waste material dropped here when the present Pengersick Barn range was roofed, or the result of later dumping.

Although occasional worn granite stones were recovered from the trenching around the tree roots, these were isolated and did not appear to represent any structure or paving.

Removal of the sweet chestnut stump on the upper terrace did not reveal any further information as its roots were relatively shallow.

A line of six small tree stumps was removed at the southern end of the upper terrace, close to Pengersick Barn. A section cut at the eastern end revealed the following:

100mm grey gravel and sand, on membrane (modern path).

100mm dark brown sandy loam, relatively stone-free (present day topsoil).

150mm lighter grey sandy soil with occasional small stones (subsoil).

100mm slate and rubble in a medium brown sandy clay (dumped/spread material used to make up the level of the upper terrace).

Orange-brown sandy shillet and angular stone (undisturbed natural substrate).

The higher level of the natural ground indicates that the earlier ground surface in the courtyard was originally a shallow slope downwards from east to west.

11.3 North side of the former castle courtyard

Two palm trees on the north side of the former castle courtyard (noted on Fig 20) were cut down but the stumps left in.

12 Castle interior elevations

(See Figs 30 to 34)

12.1 Ground floor: Gun Room

(See Fig 30)

The basement/ground floor of the tower has exposed (un-plastered) granite masonry and the principal features in the walls are the pairs of gun loops in the west, south and east walls (Fig 30). All gun loops have deep reveals through the thickness of the walls. They have round interior arches built of pairs of dressed granite stones and dressed granite jamb-stones. No other smaller features, such as putlog holes, are visible in this room. Modern intrusions include the doorway and narrow passage connecting to the 1920s kitchen extension. The tops of the walls have been rebuilt to accommodate the modern wooden first-floor floor structure.

The test pit within the floor has revealed conclusively that the granite paving was re-laid in the 20th century, and that bedding materials for the paving extend to at least a metre below the present surface. As no traces of foundations were revealed in the adjacent (south) wall, it can be determined that the tower's wall masonry extends deeper and that archaeological material may survive at greater depth.

12.2 First floor

(See Fig 31)

All the upper rooms in the tower have a principal window, of four lights, facing the eastern courtyard. The first floor room also has two single light windows, one set centrally in the west wall and the other at the west end of the south wall (Fig 31). A fireplace occupies the centre of the south wall. A garderobe with its own small window is built within the thickness of the wall at the southwest corner.

Removal of the modern plaster revealed several construction features. A wide relieving arch is built into the rubble masonry above the fireplace and another narrower arch is incorporated above the garderobe doorway. The single light windows have internal arches built of pairs of dressed curved granite pieces, in similar fashion to the gun-loops downstairs. Putlog holes for wooden scaffolding lifts are clearly visible in all the main walls.

Floor boards and secondary joists above this room have clearly been added to the original masonry as a horizontal joint is visible below the joists. The principal wooden floor joists, retaining their original chamfered detail, are coeval with the build of the tower and are still *in situ*. They are built into lintelled sockets visible in the base of the walls within the room above.

12.3 Second floor

(See Fig 32)

In plan, the room on the second floor has relatively blank north and south walls, as all openings are confined to the west and east. At this level the north wall will once have been abutted by the roofline of the adjacent hall.

The east wall has a four-light window with a window seat beneath. In the west wall is a central moulded granite fireplace, a single light window towards the south, and a garderobe doorway in the northwest corner of the room. The moulded granite garderobe doorway projects forward slightly into the room space; the garderobe also has its own small window.

All the walls have evidence of original putlog scaffolding holes. Up to three 'lifts' of holes are visible in the east wall, most likely used to construct the window opening. All walls also have evidence of wooden pegs above window lintel height. These are likely to have supported panelling.

Unlike the arched examples on the floor below, the west wall window has a flat granite lintel. Interestingly the top of the window corresponds in height with the top of the fireplace. Such evidence also suggests panelling was originally fitted to the room, as it is easier to fit a rectangular window opening into a panelled scheme, and it appears that panelling was designed to fit with the fireplace. It also likely that the 'blank' north and south walls will also have been reserved for panelled decoration.

The original principal chamfered floor beams survive, although the floor itself has been renewed.

12.4 Third floor

(See Fig 33)

In plan the third floor is more unusual in that it has windows in each wall; as well as the principal four-light east window the other three windows are all two-light examples. These were probably sited to enjoy the prospect from this height. The earliest photographs of Pengersick, probably taken in the late 19th century, show the smaller windows crudely blocked off with stonework.

The moulded fireplace in this room is central to the north wall (Fig 26). This would have the shortest flue to the parapet level above. All chimneystacks are built as hollow merlons within the crenellated parapet. Like the fireplaces on the floors below, this one also has a relieving arch built into the masonry above.

There is no garderobe within the room at third floor level, as the narrower wall thickness would not accommodate it. Instead a small windowed space is incorporated within the northeast corner of the stair turret.

A recess or small built-in cupboard is built in the north end of the west wall. Other features revealed after removal of plaster includes putlog scaffold holes (two 'lifts' or levels are visible, and the floor level was probably also used as a building platform during construction of the tower). Lintels covering the floor beam sockets can be seen at the bases of the walls.

Within the south wall (towards the southeast corner of the room) is an area with no openings. A possible patch repair, of slightly darker mortar, may be a remnant of another feature. In the walling above the patch is a line of four holes or wooden plugs. These may once have supported a decorative feature, perhaps a hanging for a tapestry or similar decoration, or perhaps are the result of some later fixing.

A horizontal line is visible in the higher walls for replacement of the ceiling. It is likely that the roofing has been renewed on more than one occasion since the tower was originally built. No original timbers survive at this level.

12.5 Ground floor: kitchen

(See Figs 29 and 34)

The former kitchen occupies the ground floor of an extension, built onto the north side of the tower in the early 20th century. The extension represents a replacement for the original hall and principal living accommodation that once extended further north dividing the east and west courtyards (Fig 3).

The north and west walls of the extension are entirely of 20th century stone masonry, with light provided to the room by two large 3-light windows in the west wall. The windows are separated by narrow mullions and have leaded glazing, intended to match the style of the original windows in the tower.

The north wall has no openings and was originally dominated by a central stove and associated flue; when surveyed the middle part of this wall was infilled with rough concrete blockwork, presumably added when a Rayburn stove was fitted here.

The south wall backs onto the tower and the masonry is mostly part of the 16th century work except where a narrow shallow arched passage has been created to link the kitchen to the Gun Room. The lower part of the wall forms a narrow ledge of dressed granite blocks, originally an external plinth of the tower.

Part of the original tower stair turret forms part of the east kitchen wall. This also has a dressed granite plinth set higher up than that of the tower wall. The remainder of the wall is part of the 20th century extension but represents more than one phase. Within the stone masonry north of the original stair turret is a blocked window. At the north end of the wall the location of the kitchen's external doorway has been modified, the present door accessed by three internal steps.

12.6 First floor above kitchen

(See Fig 35)

The upper floor of the early 20th century extension was occupied by 5 small room-spaces, including a lobby or landing accessed from the tower stairway, a bedroom, bathroom, separate toilet and another narrow stairway to a loft within the roof-space.

The west wall has large windows matching those in the kitchen below; these originally lit the bedroom on this side of the extension. The other spaces were lit by small single light windows.

The stairs from the tower access the upper by an original doorway set at an angle. At least three putlog holes can be seen in the south wall. Large dressed granite quoin-stones mark the limit of the turret masonry in the east wall.

A granite corbel projects from the wall close to the head of the doorway. The substantial nature of the corbel strongly suggests it originally supported a timber of an arch-braced roof structure for the hall, with the timberwork of the roof slope carried on a wall-plate higher up, probably on the granite lintel which is still extant.

13 Conclusions/discussion

13.1 Drain investigation

Test pits 1, 2, 3, 8, 9 and 10 all revealed that there is considerable later 20th century infill beneath the crazy paving and flower bed to the south and east of the castle tower. The existing driveway appears to be terraced adjacent to the castle tower, and its creation may be part of the infilling process.

Gravel filled gullies (for the modern drains adjacent to the tower footings) have been created by insertion of stone revetments supporting the higher ground of the driveway and gardens. The original medieval ground levels beside the tower can be seen by the surviving foundation blocks which project slightly beyond the wall faces above.

The extent of relatively modern infill has unfortunately masked any earlier features which may survive in this area. It had been hoped that the test pits might reveal traces of the early courtyard boundary where it once approached and adjoined the southern side of the tower (as shown on the Tithe map and early OS editions, see Figs 2, 3 and 4). The extent of modern fill in Test pit 8 indicated that if the boundary survives, it will

only be visible at considerable depth. Early photographs of Pengersick show the line of a Cornish hedge at the location of the mapped boundary. The northern part of this boundary has been altered in the 20th century, with the creation of an angled stone wall which cuts towards the southwest corner of the tower. This modern wall has been raised in height at some time, which seems to correspond with the infilling to the south of the tower.

Intriguingly, there is no physical trace of how the original courtyard boundary (as shown by Borlase and others) related to the tower itself. There is no indication of where a wall may have tied in to the tower or any sign of a wall walk connection; indeed the principal feature at lower level on the east tower side and around the south east corner is a chamfered plinth. This stops on the south face just short of the eastern gun loop. The pair of loops on this side would have needed a field of fire to protect the south approach to the castle, so both loops would appear to have been exterior to the courtyard. Another un-chamfered plinth runs beneath the loops and there is again no hint of where any features adjoined. It is therefore suggested that the courtyard boundary at this point was only a slight feature, most likely a wooden palisade. If there was originally a wall walk inside the courtyard boundary, then this may have been achieved by a wooden structure approached by steps.

The test pits were successful in determining the locations of the existing drains and soak-away. It appears feasible to construct a new soak-away in a large trench beneath the flower bed, and provide better drain access into it. On the evidence available, it appears that any archaeological features originally in this area will have been largely destroyed by the insertion of the previous drainage scheme. It is possible, however, that fragmentary evidence survives and might be temporarily revealed in a larger excavation. To that end, an archaeological watching brief should be carried out when drainage works are designed and implemented.

13.2 Tree stump removal

The tree stump removal watching brief revealed little trace of the historic layout of the former castle eastern courtyard. It appears that historically the courtyard gently sloped westwards towards the main building range and tower. The archaeology suggests the existing terraces are 20th century in origin and this is supported by historic map evidence (Figs 5, 6 and 7), which do not indicate these divisions within the garden area (but note that the northwest corner of the gardens was shown as a separate rectangular enclosure *c*1880). Further analysis of historic photographs (as may become available) could help to indicate the date when the present terraced garden layout was initiated.

The evidence of the worn granite stones beneath the lower terrace strongly suggests that parts of old paving within the gardens survive here (and probably elsewhere) in the gardens. It appears that (at least within the revealed section) historic paving became buried by the build up of topsoil before the present terraces were created.

13.3 Castle interior

A more detailed examination of the tower masonry has brought about a greater understanding of the design of the tower rooms and how this part of the castle was originally constructed. Although the ground floor room was clearly designed as a defensive space with its distinctive gun loops (and there are further defensive features in the stair turret), all the upper rooms are residential. Principal windows of each room also faced onto the eastern courtyard, indicating the higher status of this part of the castle. The fireplaces from each of the rooms were positioned in different walls so that their flues could exit in the centre merlons of the tower parapet. Other features such as minor windows and garderobes were fitted into the other available walls. Garderobes were included within the corners of the first and second floor rooms but this was not possible on the third floor due to the narrower wall thickness.

Rooms within the tower appear to have had different functions and status. Removal of modern plaster in the second floor room revealed evidence of older panelling; this is therefore the likely room which originally contained the paintings of Pengersick and Godolphin that were reproduced by William Borlase.

Removal of plaster also revealed the original lintelled sockets for the principal floor joists, with their original and substantial timbers still extant. Dendrochronological analysis of the timbers has indicated felling dates in the 16th century (Bridge 2012).

Removal of modern finishes from the kitchen and the rooms above has revealed more detail of the construction sequence of the castle. The survival of masonry plinths within the 16th century masonry (and now within the kitchen) suggests these were originally designed as outside walls. It is also noticeable that there has been no attempt to tie in the hall wing walls. This would give the impression that the tower was once a free-standing building, with the hall added later. However there is conflicting evidence as on the upper floor the doorway that once connected the turret stairs with the hall wing is an original feature, not a later insertion. This then indicates that the hall and tower were designed as one entity, even if the tower was built first. Some further structural evidence that strengthens this argument is the former hall roofline, which is still visible within the loft. The presence of the corbel beside the doorway and lintel above provides a hint of how the hall roof structure was allowed for within the corner of the turret and tower.

Some of the functional relationships of the hall and the tower is also revealed by the doorway which once connected the turret stairs to first floor rooms in the hall wing. Upper floor windows at the south end of the hall wing can be seen in the Borlase drawing. There is likelihood that another stairs was located somewhere in the wing, most likely from a room behind the central porch. As Borlase has only shown a single large window at the north end of the hall wing, this is likely to be where the hall itself was situated; this high status room being double height and open to its roof.

14 References

14.1 Primary sources

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Ordnance Survey, *c*1907. *25 Inch Map* Second Edition (licensed digital copy at HE)

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Tithe Map and Apportionment, *1839*. *Parish of Breage* (licensed digital copy at CRO)

14.2 Publications

Bridge, M, 2012. *Pengersick Castle, Pengersick Lane, Praa Sands, Penzance, Cornwall: Tree-ring dating of oak timbers* English Heritage research report

Gould, J, Mossop, M and Thomas, N, 2005. *Pengersick Farm, Breage, Cornwall: Historic Building Recording and Archaeological Watching Brief* Historic Environment Service, Truro

Herring, P, 1998. *Pengersick Castle, Breage: an archaeological and historical assessment*, Cornwall Archaeological Unit, Truro

Johns, C and Thomas, N, 2010. Pengersick Castle, Breage, Cornwall: Archaeological Assessment and Proposal for Archaeological Recording during Drainage and Floor Works

14.3 Websites

http://www.heritagegateway.org.uk/gateway/ English Heritage's online database of Sites and Monuments Records, and Listed Buildings

http://www.pengersickcastle.com/ Pengersick Historic and Education Trust

15 Project archive

The HE project numbers are **2011034** and **2011064**

The project's documentary, photographic and drawn archive is housed at the offices of Historic Environment, Cornwall Council, Fal Building, County Hall, Treyew Road, Truro, TR1 3AY. The contents of this archive are as listed below:

1. A project file containing site records and notes, project correspondence and administration.
2. Field plans stored in an A2-size plastic envelope (GRE 759).
3. Electronic drawings stored in the directory R:\Historic Environment (CAD)\CAD Archive\Sites P-Q\Pengersick Castle
4. Digital photographs stored in the directories: R:\Historic Environment (Images)\SITES.M-P\Pengersick\Pengersick Castle drains test pits 2011034 and R:\Historic Environment (Images)\SITES.M-P\Pengersick\Pengersick tree stump removal 2011064
5. English Heritage/ADS OASIS online reference: cornwall2-160727

This report text is held in digital form as: …\Historic Environment\HE Projects\Sites\Sites P\Pengersick drains WB 2011034\Pengersick Castle 2011-12 report 2013R073.doc

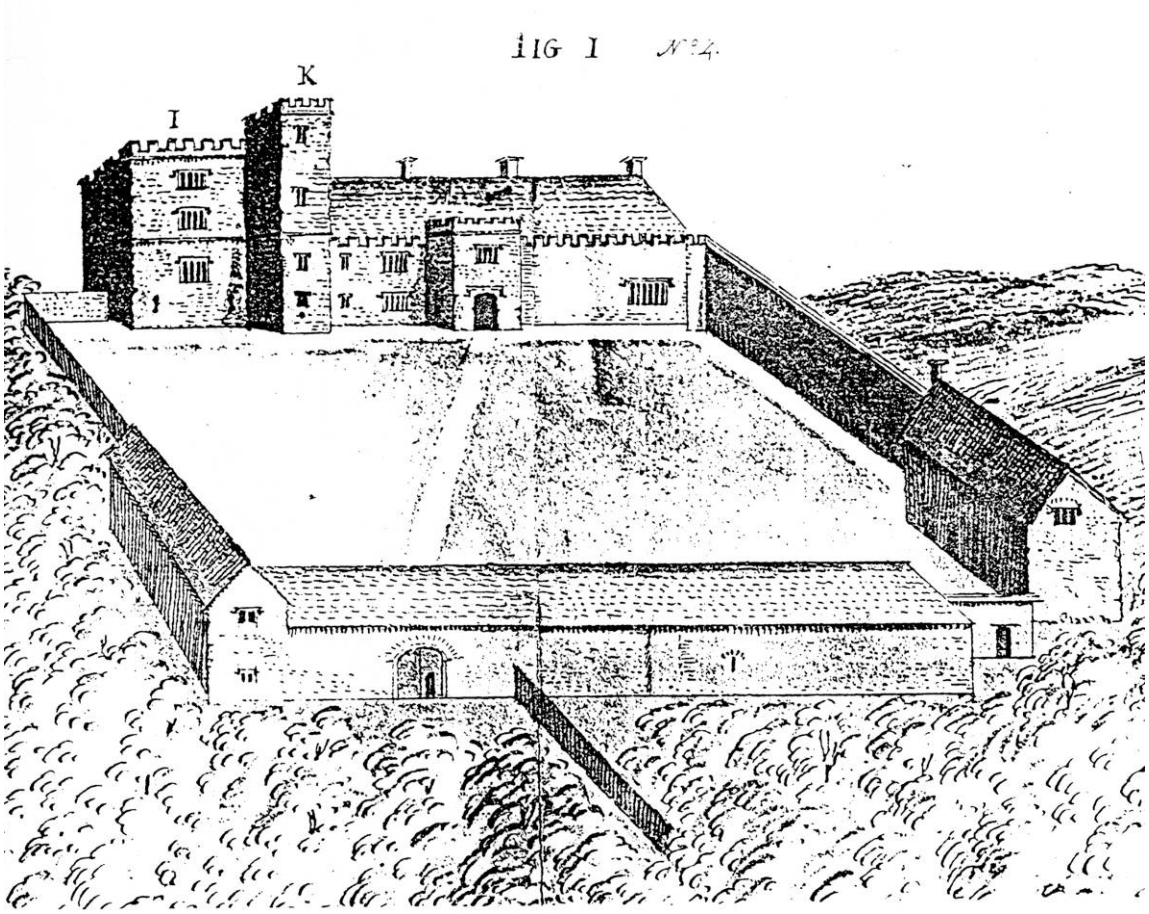


Fig 3 Dr William Borlase's copy of a painting of Pengersick
(the original painting was formerly on the wainscot of the first floor room of the tower; Borlase's copy is now held at the Penzance Library, Morrab Gardens)

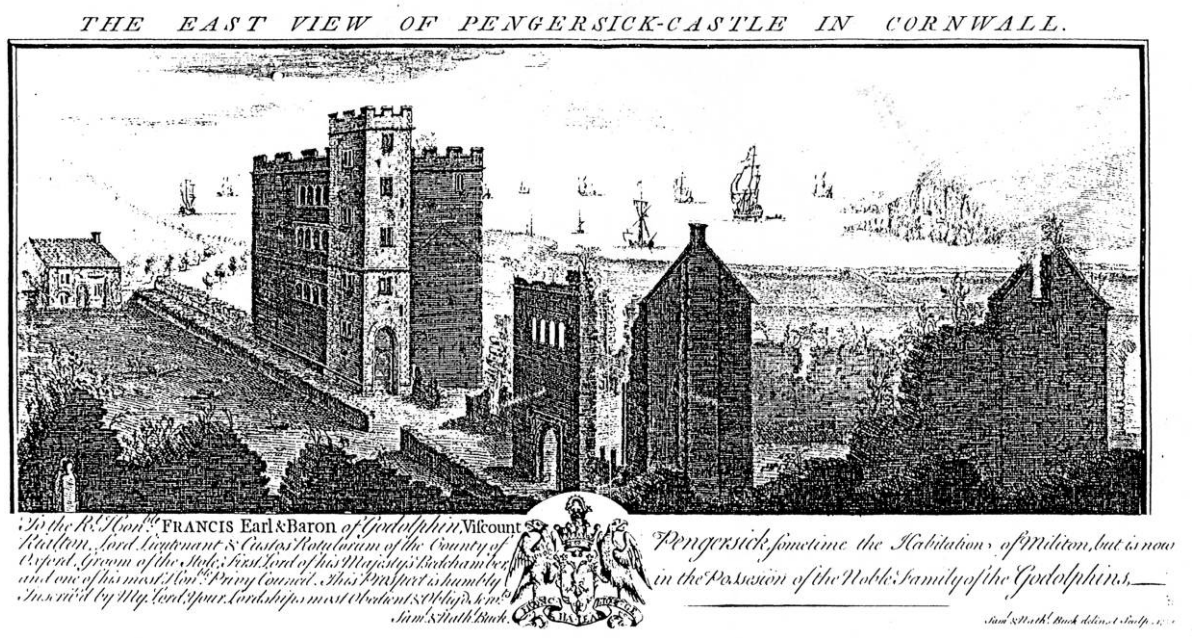


Fig 4 Copy of the engraving made of Pengersick by the Buck brothers in 1734

Fig 5 Tithe Map, 1839

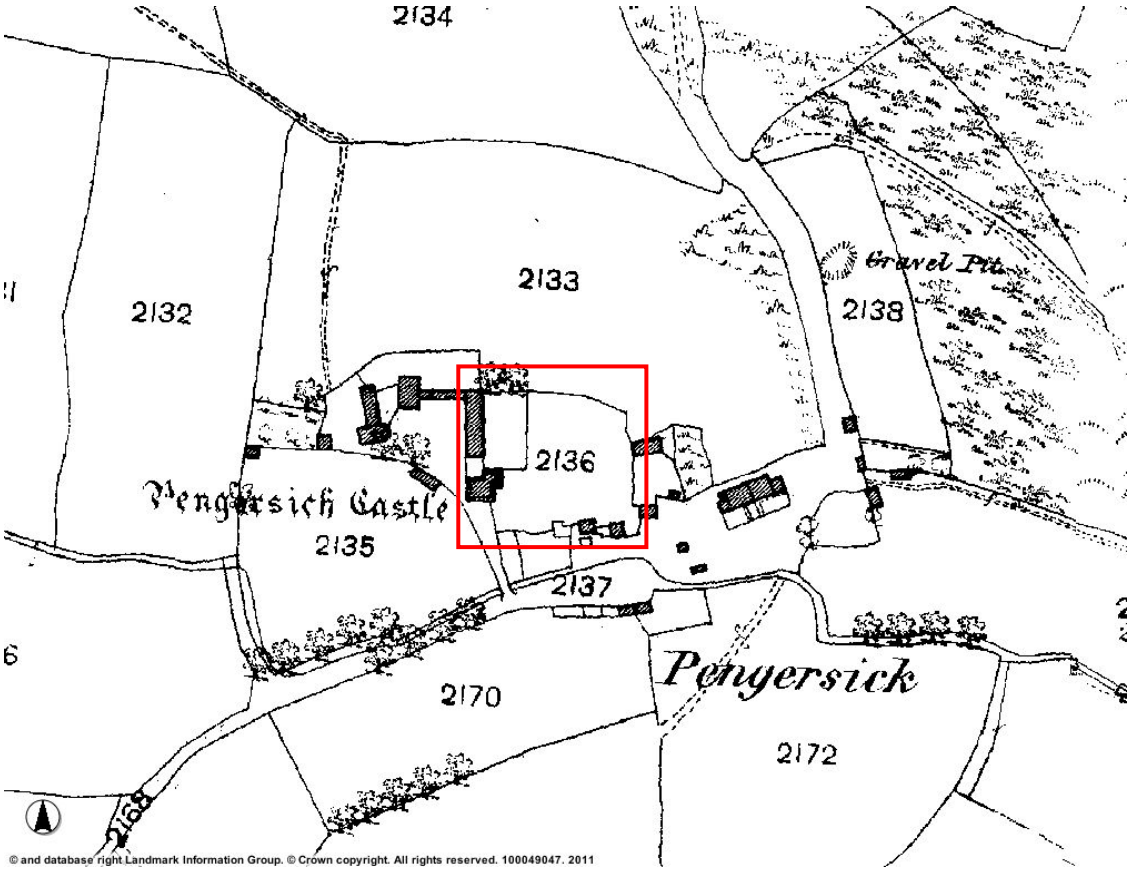


Fig 6 First Edition of the Ordnance Survey 25 Inch Map, c1880

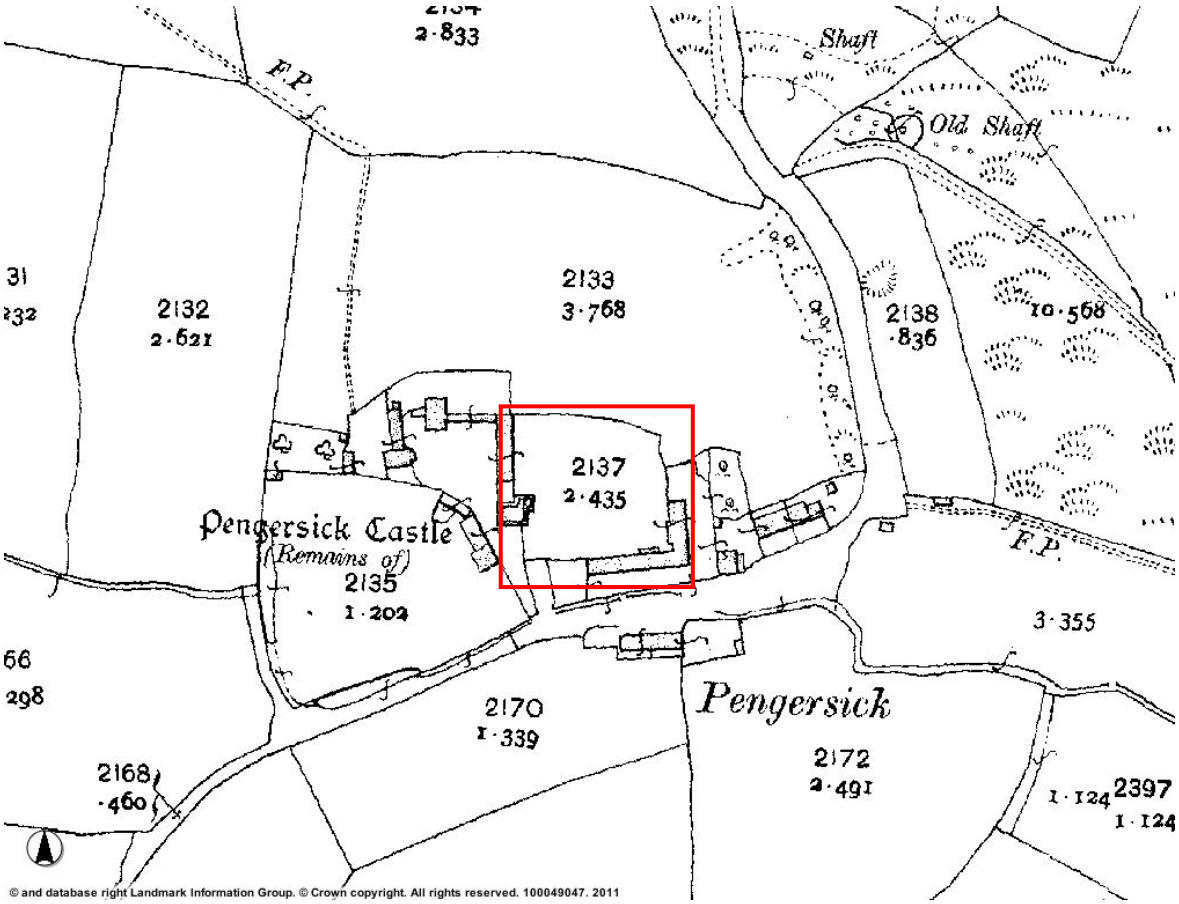


Fig 7 Extract from the OS 25 Inch Map (Second Edition, c 1907)

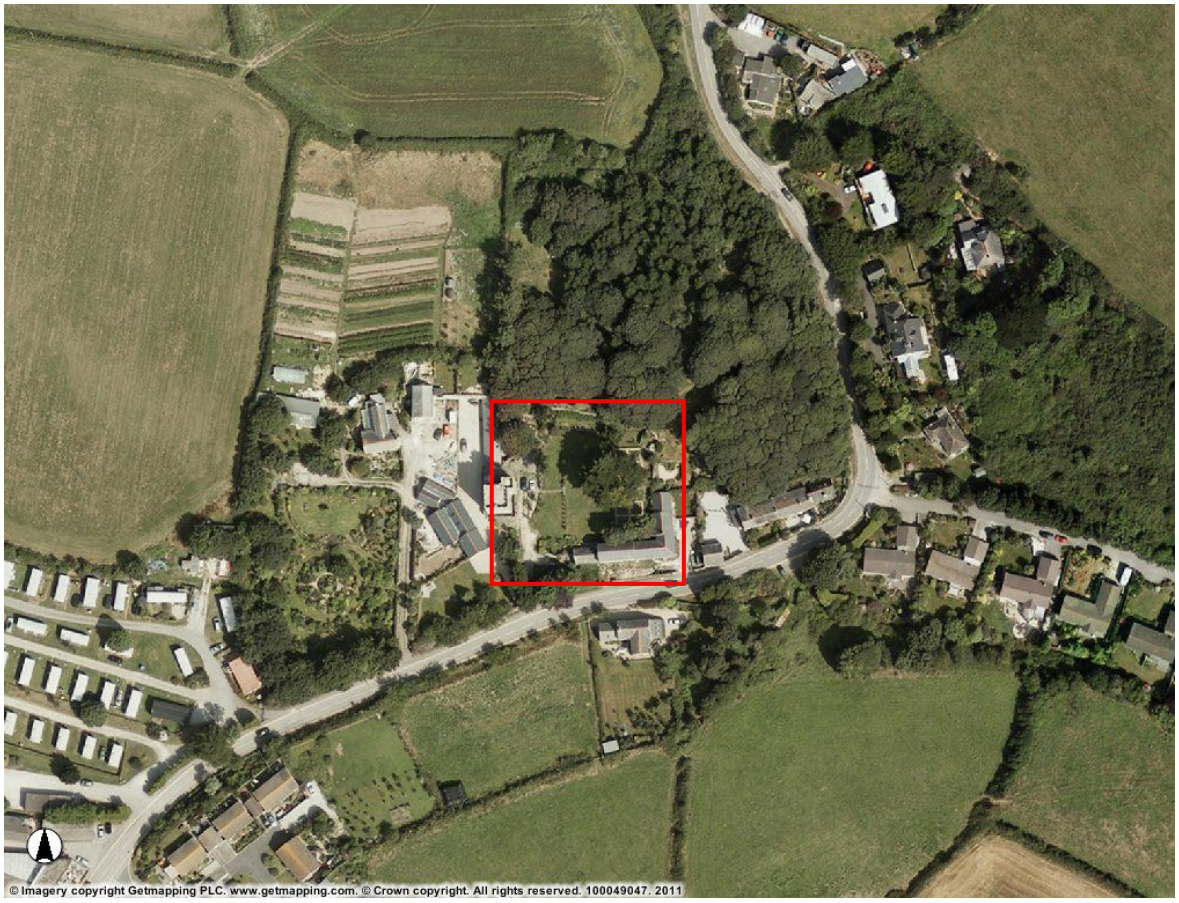
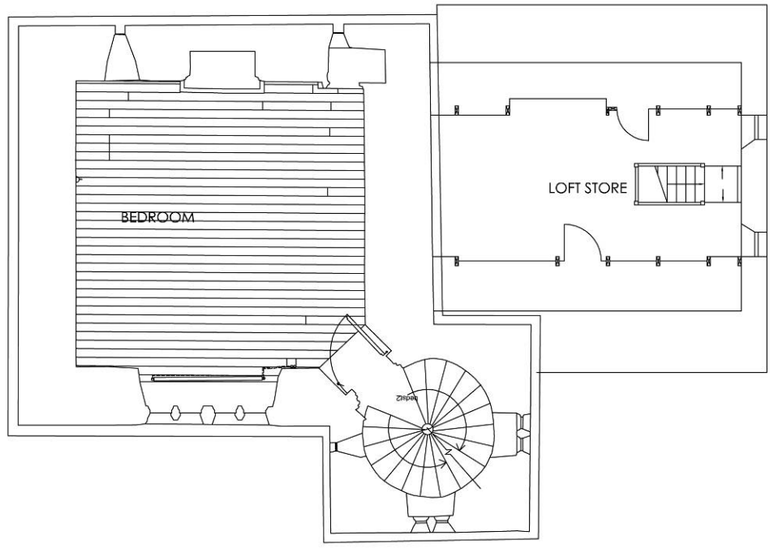
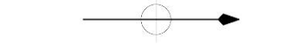


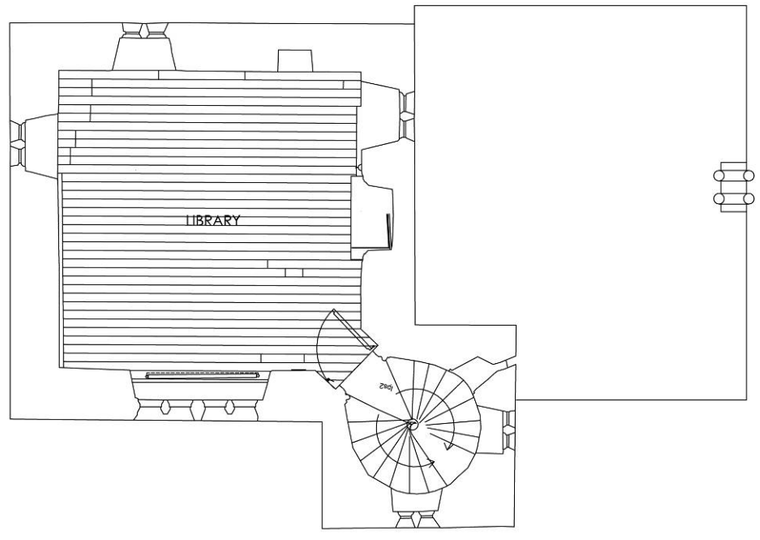
Fig 8 Air photograph, 2005

Fig 9 Elevations of Pengersick Castle tower
(Measured survey by SMT Associates, Truro)

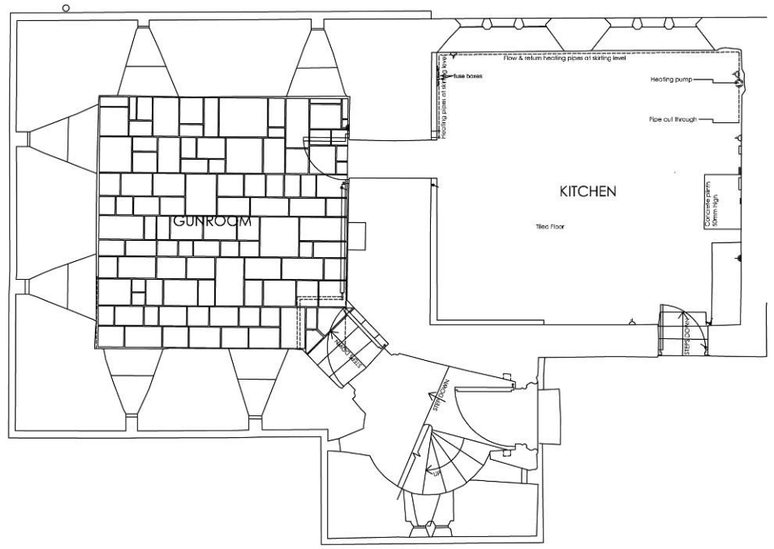


Second floor

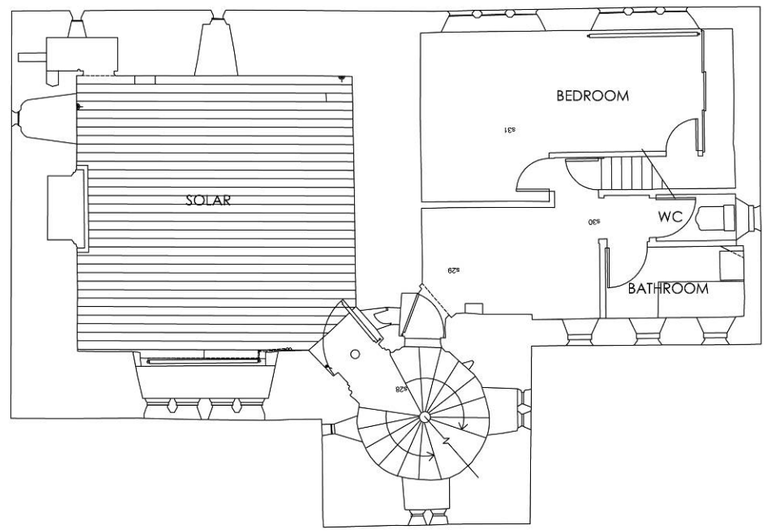




Third floor



Ground floor



First floor

Fig 10 Floor plans of Pengersick Castle tower
(Measured survey by SMT Associates, Truro)

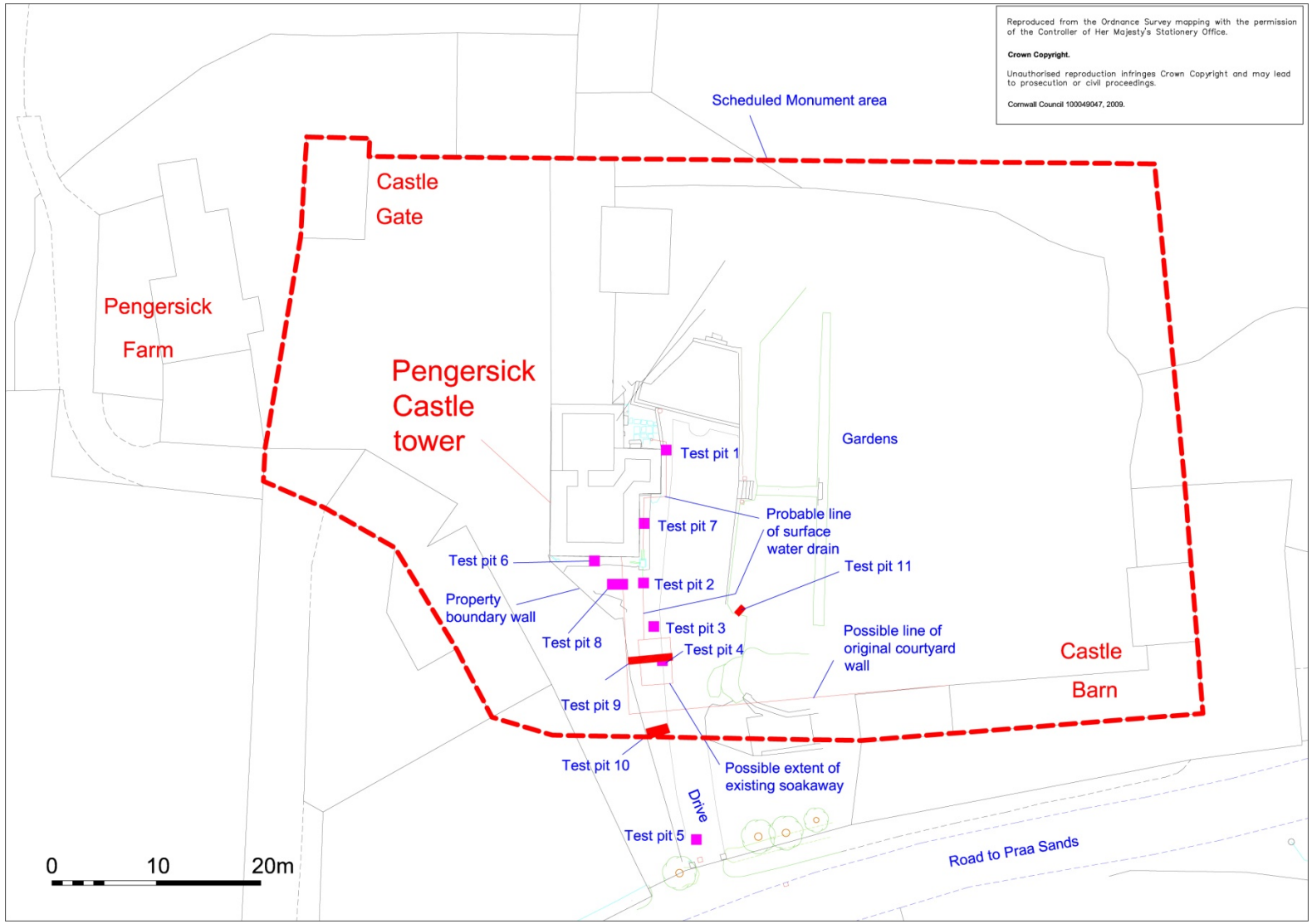


Fig 11 Plan of drain investigation test pits

(Based on a measured survey by SMT Associates. See Fig 18 for locations of interior test pits.)

Fig 12 Drain test pit 2

Fig 13 Drain test pit 8

Fig 14 Drain test pit 9

Fig 15 Drain test pit 10

Fig 16 Southern wall of the tower, showing gun loops and related plinths

Fig 17 Gun Room test pit

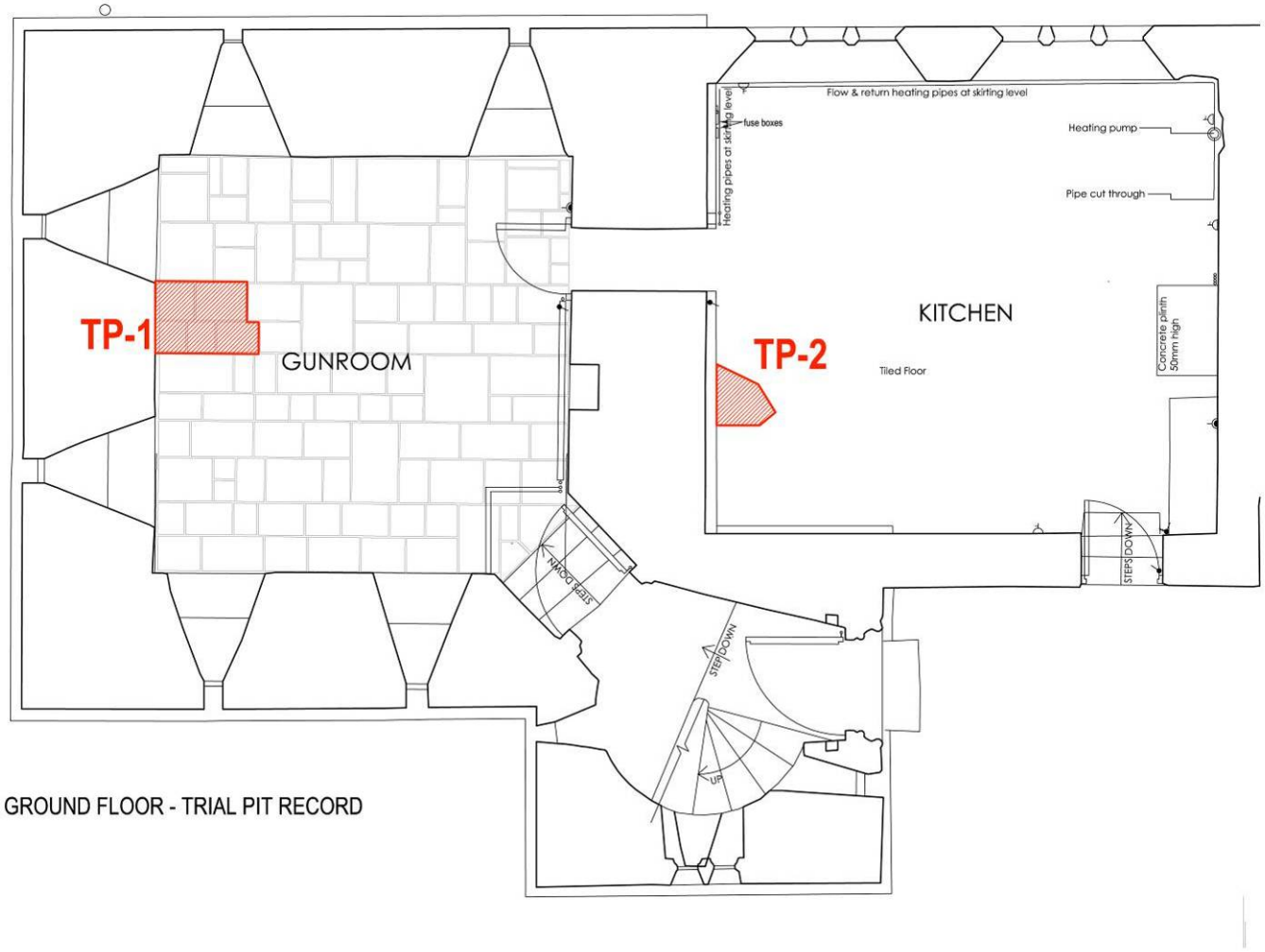


Fig 18 Locations of interior test pits

(Plan supplied by SMT Associates)

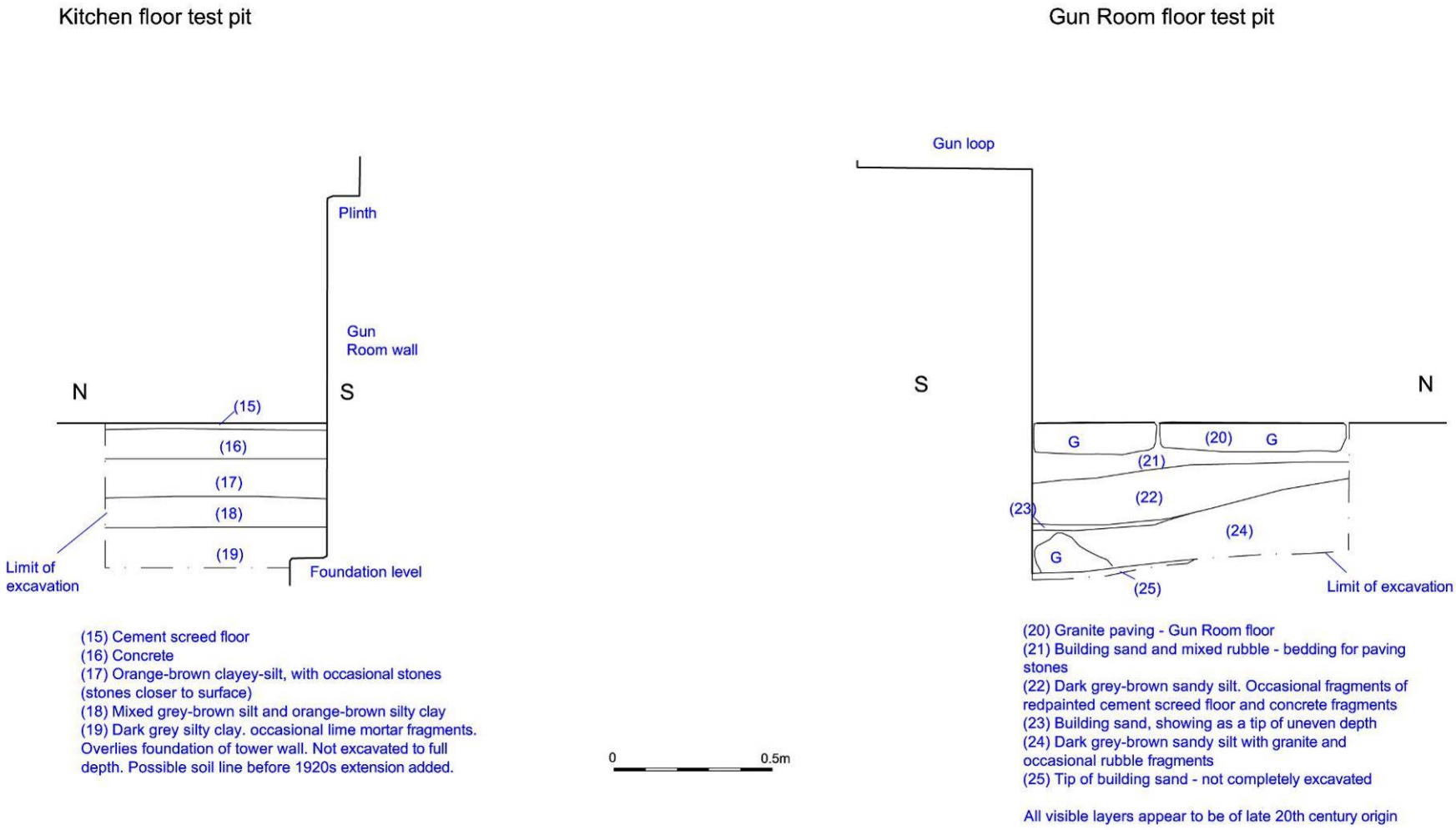


Fig 19 Drawn sections of test pits in the floor of the 20th century kitchen extension and in the Gun Room

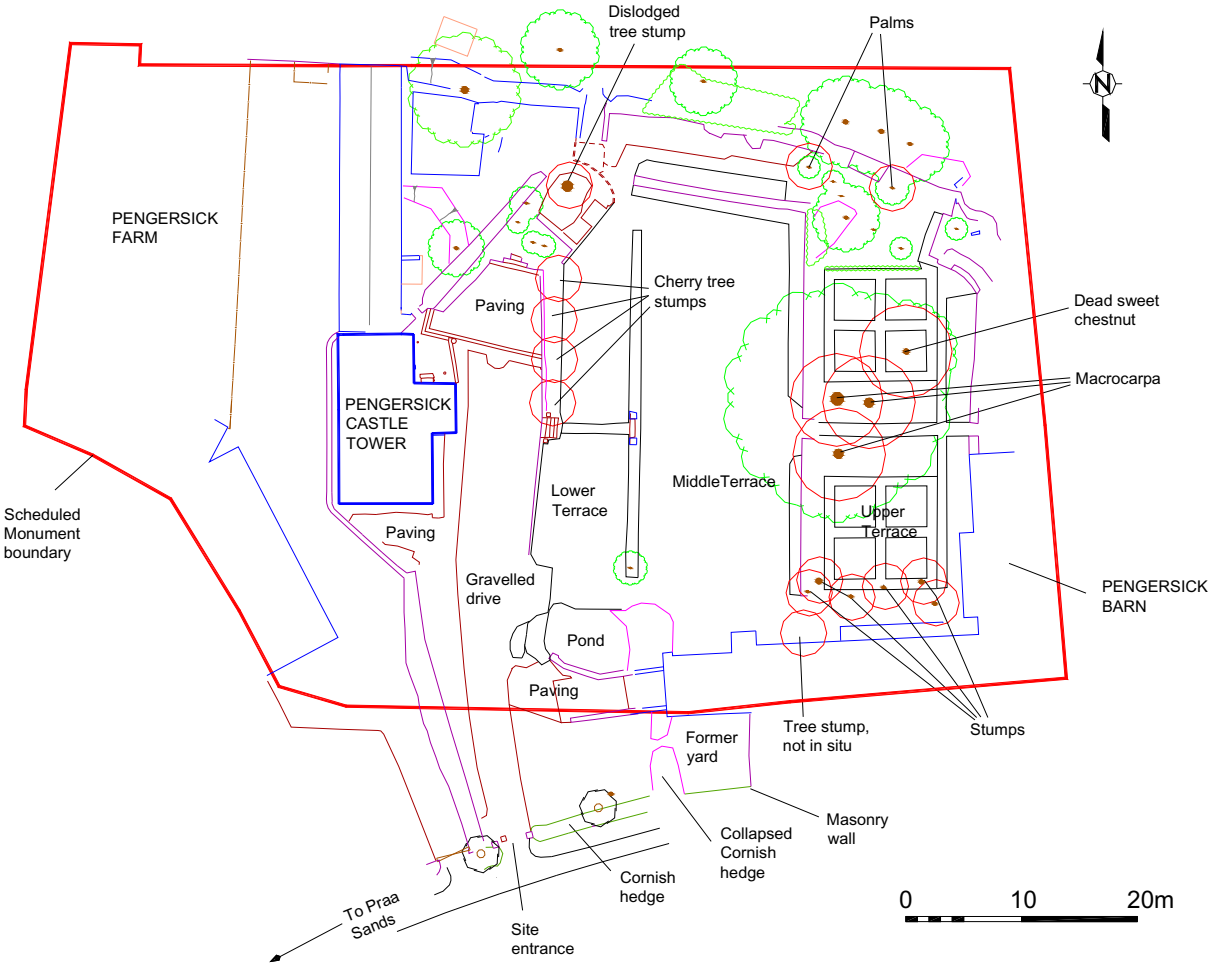


Fig 20 Plan showing tree stumps removed
(based on a measured survey by Stephen Tucker Associates)

Fig 21 Upper terrace, prior to removal of stumps

Fig 22 Stratigraphy/depth of the upper terrace, visible in Root Hole C after removal of cupressus macrocarpa stump

Fig 23 View of lower terrace, after removal of cherry tree stumps

Fig 24 Slot cut into the lower terrace, showing probable paving at base of section

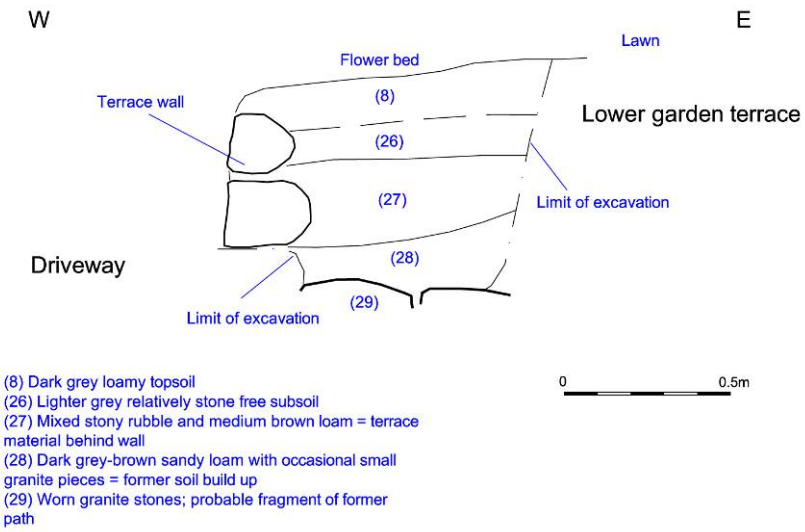


Fig 25 Stratigraphy of slot within lower terrace

Fig 26 View of the third floor fireplace in the tower after modern finishes had been removed

Construction details such as blocked put-log scaffolding holes are clearly visible to the right of the fireplace

Fig 27 View of the doorway and window of the second floor

A granite lintel over an original principal floor beam socket can be seen to the left of the fire extinguisher. Another original principal beam can be seen supporting the floor above

Fig 28 Interior of the first floor room adjoining the tower

Masonry centre and left is of the 1920s domestic extension; the doorway (right) is an original upper floor access from the tower into the former adjoining wing.

Fig 29 The ground floor 20th century kitchen

Plinths of the original masonry toward the right might suggest this space was originally intended to be exterior, but the evidence from the room above conflicts with this

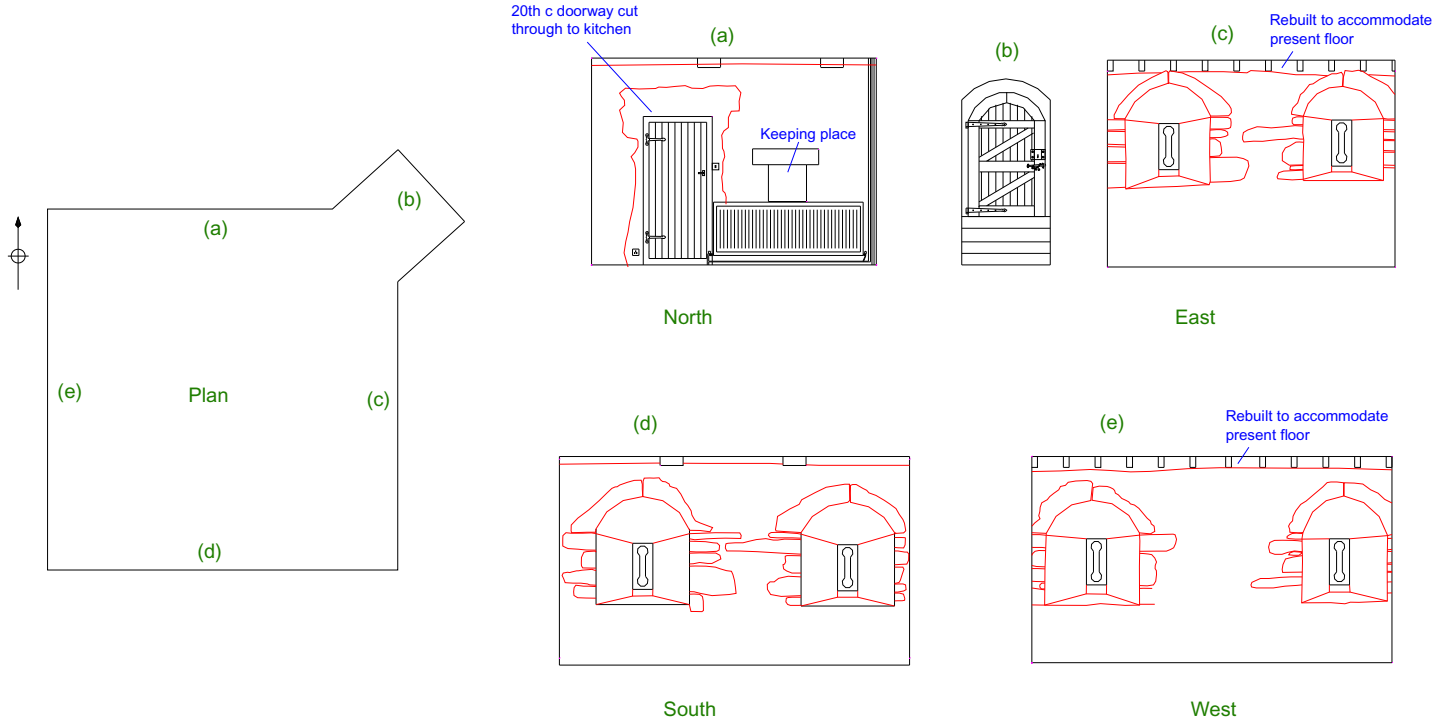


Fig 30 Annotated elevations of the tower interior: Gun Room

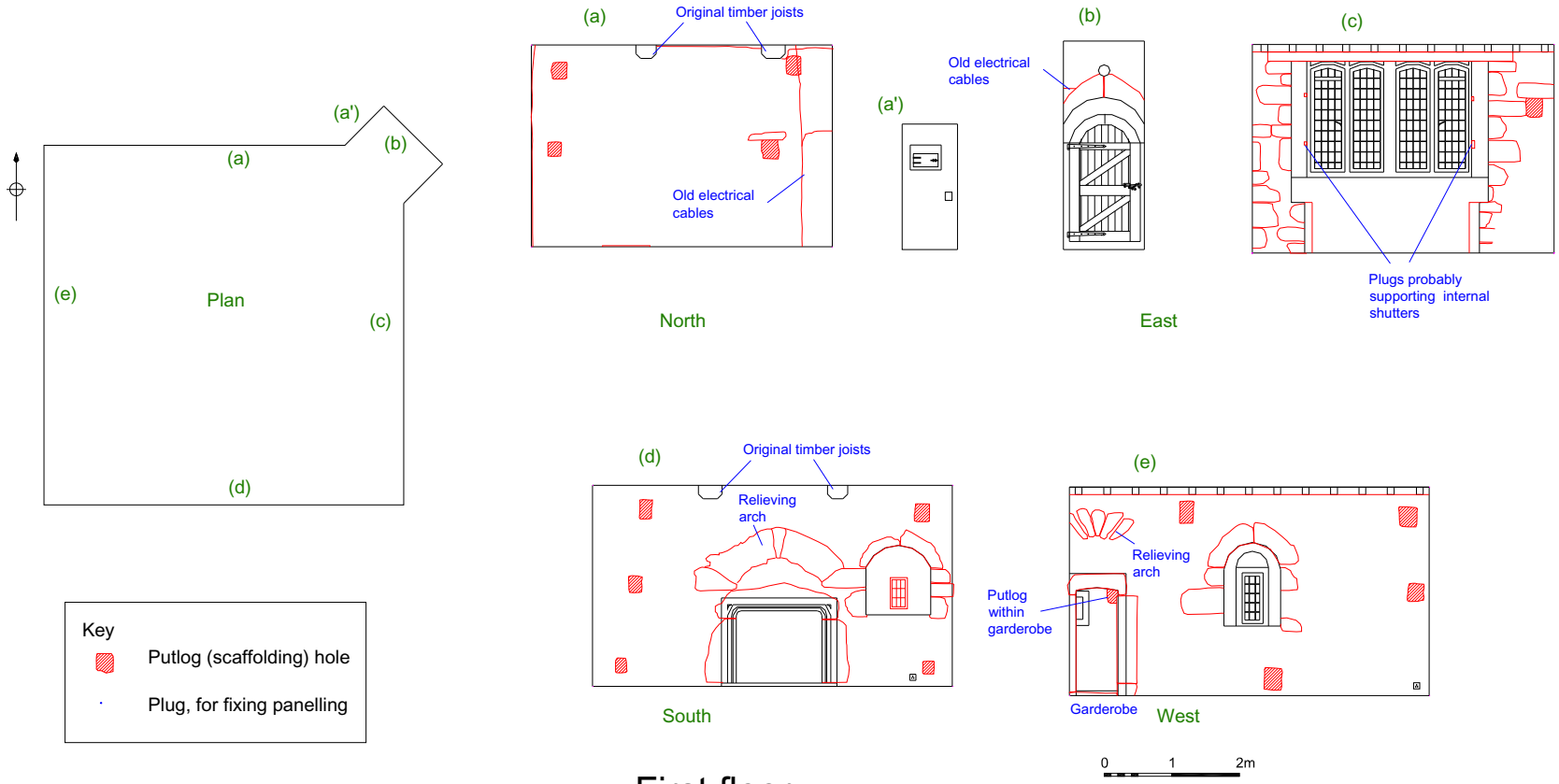


Fig 31 Annotated elevations of the tower interior: First floor

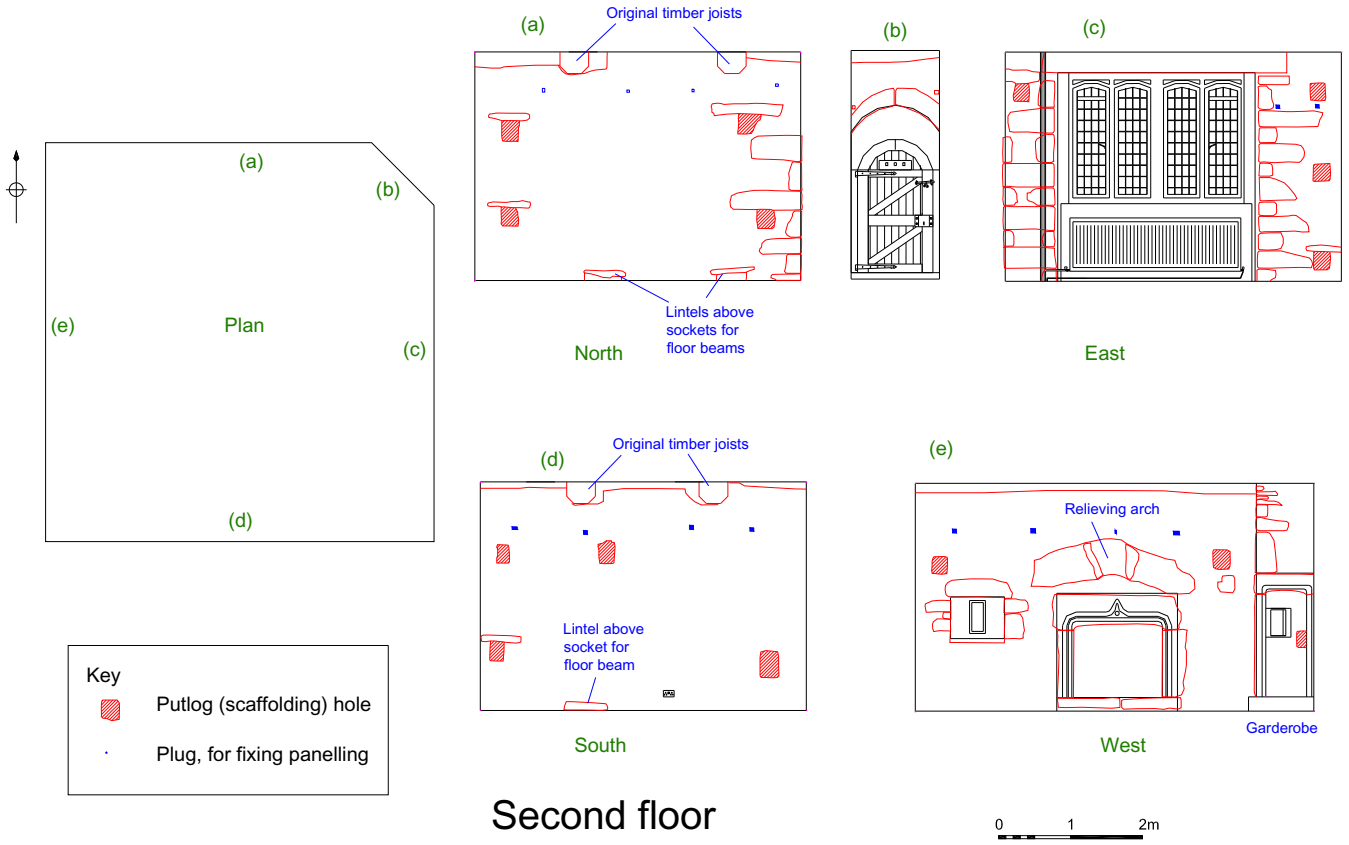


Fig 32 Annotated elevations of the tower interior: Second floor

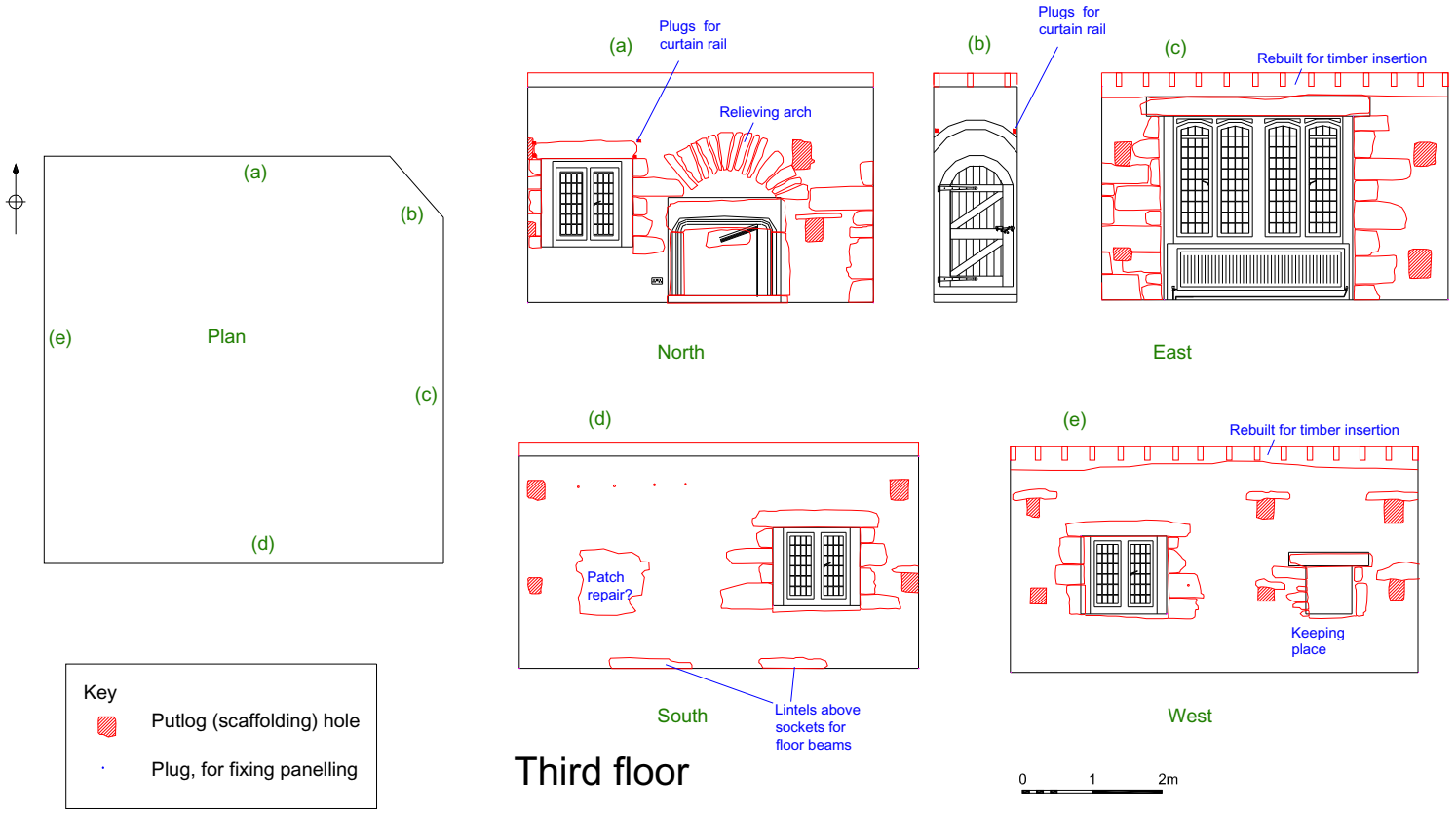


Fig 33 Annotated elevations of the tower interior: Third floor

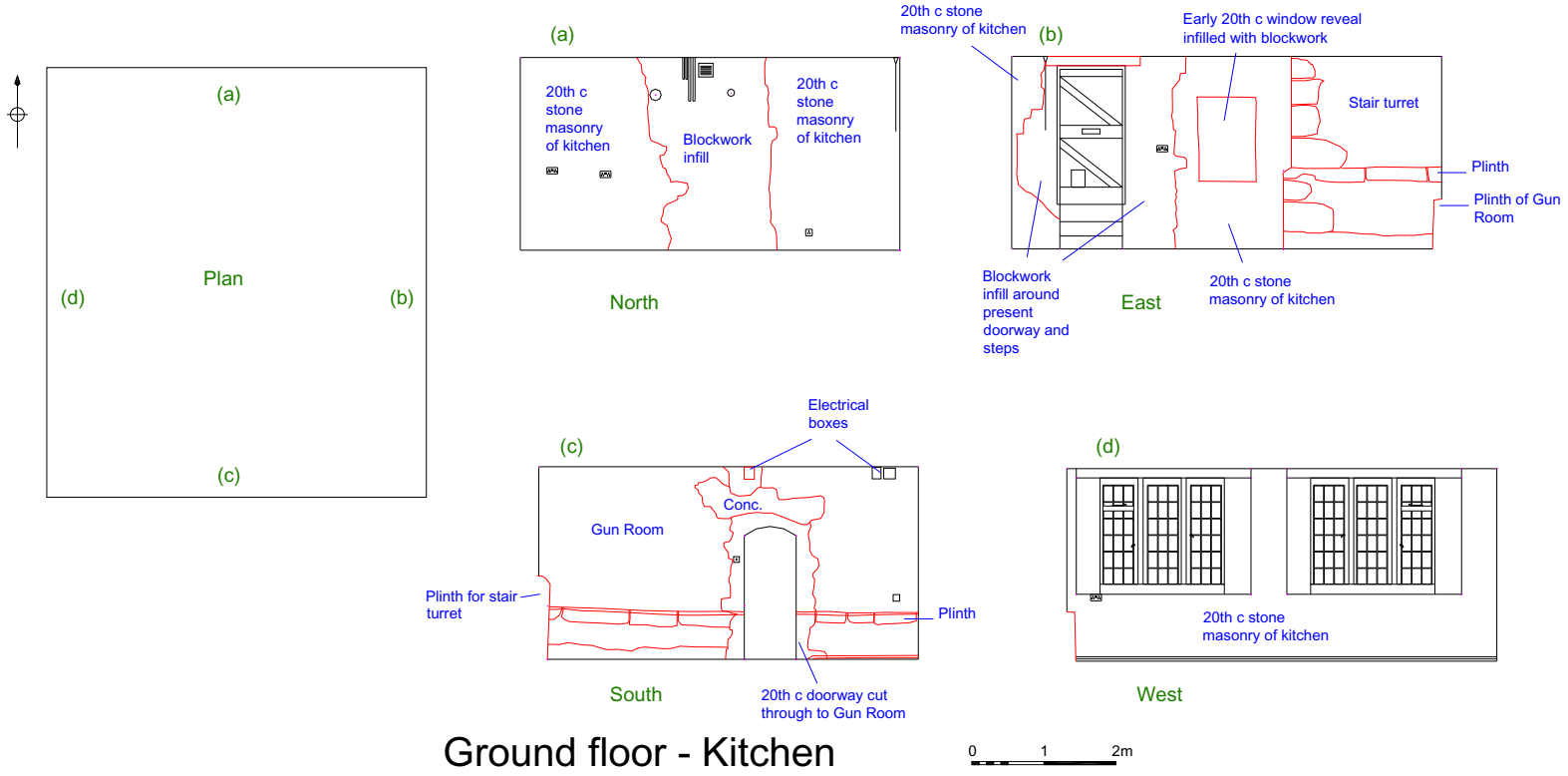
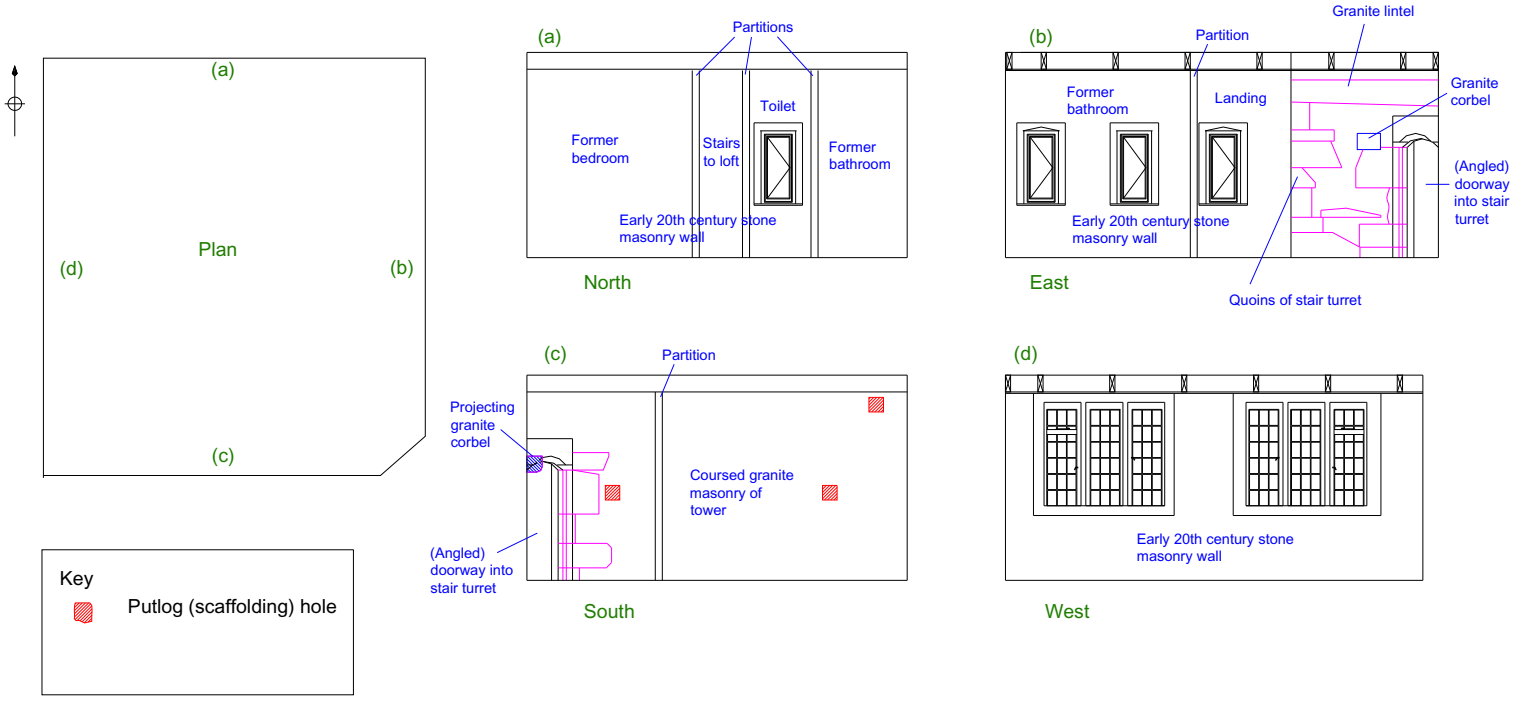


Fig 34 Annotated elevations of the tower interior: Ground floor Kitchen



First floor - rooms above Kitchen

Fig 35 Annotated elevations of the tower interior: rooms above Kitchen

Appendix 1: List of contexts for drain and castle interior test pits

Context Number	Cut/Build /Deposit	Description	Depth	Date	Comments
Drain test pit 1					
(1)	Build	Modern slate crazy paving, set in white to light grey cement mortar.	*c*25mm thick	Late 20th c	Above (2).
(2)	Deposit	Sandy stone rubble. Fragments of corrugated asbestos sheet	Unknown	Late 20th c	Not fully excavated. Infill of pipe trench E of stair turret.
Drain test pit 2					
(1)	Build	Modern slate crazy paving, set in grey cement mortar.	*c*25mm	Late 20th c	Above (3).
(3)	Deposit	Yellow sand	160mm	Late 20th c	Above (4) and (5)
(4)	Deposit	Dark grey gravel/chippings	max 100mm	Late 20th c	
(5)	Deposit	Patch of concrete/cement mortar within (4)	max 100mm	Late 20th c	Visible in one corner of the test pit
(6)	Deposit	Stone rubble in loose dark brown to black loam	c950mm	Late 20th c	Below (4) and (5), above (7).
(7)	Deposit	Yellow sand. Base of pipe trench containing plastic drainpipe running S towards former soakaway.	Not fully excavated and depth unknown	Late 20th c	Edges of pipe trench not revealed in test pit

Context Number	**Cut/Build /Deposit**	**Description**	**Depth**	**Date**	**Comments**
Drain test pit 3					
(8)	Deposit	Topsoil and roots	250–300mm	Late 20th c	Part of existing flower bed
(9)	Deposit	Stone rubble in loose dark brown to black loam	>1500mm Not fully excavated	Late 20th c	
Drain test pits 6 & 7					
(30)	Deposit	Dark grey gravel/chippings	c200mm	Late 20th c	Bedding for rainwater drains around tower
Drain test pit 8					
(1)	Build	Modern slate crazy paving, set in grey cement mortar	*c*25mm	Late 20th c	Above (12).
(12)	Build	White cement mortar	60mm	Late 20th c	Bedding for paving. Above (4).
(4)	Deposit	Dark grey gravel/chippings.	max 100mm	Late 20th c	Above (13)

Context Number	**Cut/Build /Deposit**	**Description**	**Depth**	**Date**	**Comments**
(13)	Deposit	Loose stone rubble, mostly lumps of 'fist' to 'head' size granite. Hardly any earth bonding. Some rubble has traces of lime mortar and plaster. 20th century finds.	Excavated to 0.4m but of considerably greater depth, perhaps a metre or more.	Late 20th c	Evidently demolition material. The granite suggests the material is from local buildings but given the late date of the deposit it need not be from the castle itself.
Drain test pit 9					
(8)	Deposit	Topsoil and roots.	250–300mm	Late 20th c	Part of existing flower bed. Above (9).
(9)	Deposit	Stone rubble in loose dark brown to black loam.	200mm	Late 20th c	Above cut [11] and fill (10).
(10)	Deposit	Very loose stone rubble in loose dark brown to black loam. Fragments of plastic bag/sheet. Larger stones in base of cut.	c2m	Late 20th c	Infill of former soakaway trench [11].
[11]	Cut	Former soakaway trench, cut into natural.		Late 20th c	Northern and southern limits not found, but does not extend southwards as far as Test pit 10
(14)	Natural	Orangey-brown decayed shillet and clay			Located at 600mm deep at west end of trench, but not found within/below excavated depth of soak-away

Context Number	**Cut/Build /Deposit**	**Description**	**Depth**	**Date**	**Comments**
Drain test pit 10					
(8)	Deposit	Topsoil and roots.	250–300mm	Late 20th c	Part of existing flower bed. Above (9).
(9)	Deposit	Stone rubble in loose dark brown to black loam.	c350mm	Late 20th c	
(14)	Natural	Orangey-brown decayed shillet and clay			
Drain test pit 11					
(8)	Deposit	Dark loamy topsoil and roots	250mm	Late 20th c	Part of lower terrace lawn
Kitchen floor					
(15)	Build	Cement screed floor	20mm	Late 20th c	1960s floor structure
(16)	Build	Concrete	90mm	Late 20th c	1960s floor structure
(17)	Deposit	Orange-brown clayey silt, with occasional stones	120mm	Late 20th c	Stones closer to surface. Rubble layer/make up for flooring
(18)	Deposit	Mixed grey-brown silt and orange-brown silty clay	100mm	Late 20th c	
(19)	Deposit	Dark grey silty clay, occasional lime mortar fragments	>130mm Not excavated to full depth	Early 20th c	Overlies foundation of tower wall. Probable soil line before 1920s extension was added

Context Number	Cut/Build /Deposit	Description	Depth	Date	Comments
Gun Room floor					
(20)	Build	Granite paving	Max 100mm	Late 20th c	Granite paving, re-laid in 1960s
(21)	Deposit	Building sand and mixed rubble	30-100mm	Late 20th c	Bedding for paving stones
(22)	Deposit	Dark grey-brown sandy silt. Occasional fragments of red painted cement screed floor and concrete fragments	50-150mm	Late 20th c	
(23)	Deposit	Building sand, showing as a tip of uneven depth	Max 20mm	Late 20th c	
(24)	Deposit	Dark grey-brown sandy silt with granite and occasional rubble fragments	120-230mm	Late 20th c	
(25)	Deposit	Tip of building sand	>20mm Not excavated to full depth	Late 20th c	Modern building sand deposit beneath all other recorded layers – confirms that entire recorded sequence above is late 20th century. Base of adjacent gun room wall not visible.
Lower terrace slot					
(8)	Deposit	Dark grey loamy topsoil	150mm	Late 20th c	Flower bed
(26)	Deposit	Lighter grey relatively stone-free subsoil	100mm	Late 20th c	Subsoil
(27)	Deposit	Mixed stony rubble and medium brown loam	Max 220mm	Mid to late 20th c	Terrace build up behind garden wall

Context Number	Cut/Build /Deposit	Description	Depth	Date	Comments
(28)	Deposit	Dark grey sandy loam with occasional small granite pieces	100-210mm	18th/19th c?	Earlier soil level, built up over paving
(29)	Build	Worn granite stones, laid to a level		18th c or earlier?	Paving, possible fragment of path visible in William Borlase's illustration

Appendix 2: Depths recorded from tree root holes

Location	Tree type	Depth	Cut/Build/ Deposit	Description	Comments
Root Hole A, Upper terrace	*Cupressus macrocarpa*	200mm	Deposit	Dark brown sandy loam. Occasional fragments of roof slate	Topsoil. Slate may be residual from earlier Castle Barn roof replacement
		300mm	Deposit	Light brown sandy soil, much disturbed by tree roots	Subsoil and tree roots
		500mm from surface	Natural	Light orange-brown sandy clay and broken slate	
Root Hole B, Upper terrace	*Cupressus macrocarpa*	150mm (varying depth around stump)	Deposit	Dark brown sandy loam.	Topsoil.
		400mm	Deposit	Light brown sandy soil, much disturbed by tree roots. Occasional water-worn granite pieces	Subsoil and tree roots. Granite appears to be redeposited paving stones
		Within subsoil	Deposit	Dump of broken blue slate to E side of root hole	Slate likely to be residual from earlier Castle Barn roof replacement

Location	**Tree type**	**Depth**	**Cut/Build/ Deposit**	**Description**	**Comments**
		550mm from surface	Natural	Light orange-brown sandy clay and broken slate	
Root Hole C, Upper terrace	*Cupressus macrocarpa*	200mm	Deposit	Dark brown sandy loam, virtually stone -free.	Topsoil
		200mm	Deposit	Light brown sandy soil, occasional small stones	Subsoil, heavily disturbed by tree roots
		300mm	Deposit	Medium brown mixed soil and stones, occasional granite pieces	Levelling/build up to create terrace behind wall
		700mm from surface	Natural	Light orange-brown sandy clay and broken slate	
Root Hole D, Upper terrace	Unidentified	150mm	Deposit	Relatively stone-free dark brown sandy loam	Topsoil
		150mm	Deposit	Light brown sandy soil with occasional small stones	Subsoil
		100mm	Deposit	Slate and rubble in a medium brown clayey soil	Levelling/build up to create terrace
		400mm from surface	Natural	Light orange-brown sandy clay and broken slate	

Appendix 3: Listed building description

The (slightly edited) entry for Pengersick on the Heritage Gateway website reads:

> Pengersick is first mentioned in 1197 and a chapel is recorded there in the C14 in association with a mansion. The surviving structures mostly relate to a fortified house built in 1510 by either Thomas Worth or one of the Milliton family. A letter 'W' worked into the moulding around a window in the tower suggests the former. The house was probably built as a response to pirate raids on the south coast. It originally consisted of a complex of buildings ranged around two courtyards. The major tower (equivalent to a keep of a castle) survives intact but is now converted into a dwelling. This originally had an attached hall on the north side and there was a courtyard on the east side which consisted of stables and ancillary structures. To the west of the tower was another courtyard which was probably domestic, consisting of kitchens, stores, servant accommodation etc. This rear yard is now a farmyard. A fine granite moulding from the two storey porch attached to the hall is now the principal entrance to a farmhouse. The Milliton family occupied Pengersick for a few generations. Upon the death of William Milliton, who had no surviving sons, the property was divided between six daughters. With this complexity of ownership, the house fell into disuse. During the C18 and C19 the surviving structures were extensively robbed to provide the materials for the farm buildings which now cover the site. Of the fortified house only the three-storey tower survives. This was converted to a house in the early C20. A two-storey fortified building to the west was converted to a granary and became incorporated into the C19 farm complex. The whole site including the farm complex is a Scheduled Monument and the buildings are Listed, the tower being Grade I.

Appendix 4: Proposal for recording work – drains and floors

Historic Environment Projects, Cornwall Council

Pengersick Castle, Breage, Cornwall: Archaeological Assessment and Proposal for Archaeological Recording during Drainage and Floor Works

Client: Pengersick Historic & Education Trust

Client contact:

Client tel:

Client email:

Background

Site location and description

Close to the popular holiday resort of Praa Sands stands the granite tower of Pengersick Castle, the most prominent survivor of a fortified manorial complex of late 15th/16th century date (NGR SW 5816 2841). The complex, which appears originally to have consisted of tower, manor house and two fortified courtyards to the east and west of the tower, is presently in multiple ownership. The former extent of the two courtyards (i.e. the below-ground element of the castle) is statutorily protected as a Scheduled Monument, while all the historic structures are listed buildings.

Archaeological and historical background

Pengersick is first mentioned in 1197 and a chapel is recorded there in the 14th century in association with a mansion. The surviving structures mostly relate to a fortified house built in 1510 by either Thomas Worth or one of the Milliton family. A letter 'W' worked into the moulding around a window in the tower suggests the former. The house was probably built as a response to pirate raids on the south coast. It originally consisted of a complex of buildings ranged around two courtyards. The major tower (equivalent to a keep of a castle) survives intact but is now converted into a dwelling. This originally had an attached hall on the north side and there was a courtyard on the east side which consisted of stables and ancillary structures. To the west of the tower was another courtyard which was probably domestic, consisting of kitchens, stores, servants' accommodation etc. This rear yard is now a farmyard. A fine granite moulding from the two storey porch attached to the hall is now the principal entrance to a farmhouse (Herring 1998).

The Milliton family occupied Pengersick for a few generations. Upon the death of William Milliton, who had no surviving sons, the property was divided between six daughters. With this complexity of ownership, the house fell into disuse. During the 18th and 19th centuries the surviving structures were extensively robbed to provide the materials for the farm buildings which now cover the site. Of the fortified house only the three-storey tower survives. This was converted to a house in the early 20th century. A two-storey fortified building to the west was converted to a granary and became incorporated into the 19th century farm complex (Herring 1998). The whole site including the farm complex is a Scheduled Monument (SM No. 36039) and the buildings are Listed, the tower being Grade I (Listed Building 6571).

Project Background

In January 2010 Pamela Whitrow of ansa utilities ltd made a request to English Heritage for pre-application advice for proposed drainage works affecting Scheduled Monument No. 36039 Pengersick Castle. In response Phil McMahon, English Heritage Inspector of Ancient Monuments (IAM) for Cornwall and Scilly advised that the work would require Scheduled Monument Consent and that because it is a nationally important monument English Heritage would need to see an assessment of the potential archaeological impact accompanied by proposals for archaeological supervision, recording and if necessary excavation (letter dated 09/02/2010).

Consequently Historic Environment Projects (HE Projects), Cornwall Council were commissioned by Pengersick Historic & Education Trust to carry out an archaeological assessment to address the work required by English Heritage.

The first stage of the work was an initial rapid desk-based assessment to draw together historical and

archaeological information about the site including information held by the Cornwall and Scilly HER, available historic maps and from published sources; this included an initial proposal for archaeological recording of the scheme based on information supplied by ansa utilities (Johns 2010).

Subsequent discussions between the Trust and English Heritage at a site meeting held at Pengersick on 25th August 2010 highlighted the need for Scheduled Monument Consent to be sought and granted. This Consent would be required to undertake exploration of the failed surface water drain and soak-away. The meeting also discussed the need for determining the material of the sub-floors in the castle's Kitchen and Gun Room.

These exploration works are intended to inform design for replacement (or potential upgrading) of the drainage system, and for designing measures against rising damp penetration within the castle. The design works for both drains and flooring (and their related archaeological requirements) will be the subject of future SMC application(s).

Fig 1 Pengersick Castle showing the extent of the Scheduled Monument (hatched in red)

Project aims

The following aims were set out in the letter from the IAM dated 09/02/2010:

- Review and analyse historic map evidence for the site.
- Assess the potential archaeological impact of the proposed drainage works.
- Prepare proposals for archaeological supervision, recording and if necessary excavation.

Scope of the proposed works

Drainage

The proposed work is to locate a collapsed surface rain water drain, soak-away and related drainage. The work will require excavation of a test pit measuring a maximum of 1m by 1m and up to 1.5m deep to locate the drain adjacent to the castle (marked as Test Pit 1 on the plan). This drain is known to emerge at an inspection cover (at the SE corner of the castle). Drain tracing and probing from the

inspection hole will be used to locate the area of the soak-away. The drain tracing will be carried out either by method of sonar device; a probe inserted down the drain and then traced above ground with a detector device, this will not disturb the ground at all.

Three further excavations 1m by 1m and up to 1.5m deep (marked as Test Pits 2, 3 and 4) will be carried out to determine the course of the second part of the drain (and, if possible, establish the cause of the drain failure). It is not known exactly where the test pits will be required at this stage but are likely to be within the grass verge/flower bed on the west side of the drive, or in the line of the drive. These test pits will be used to determine the relationship between the modern drain and the former courtyard wall. Borlase's illustration of Pengersick shows a path parallel to the front of the castle tower and historic surfacing may also be revealed in the test pits.

Another test pit 1m by 1m in extent and up to 1.5m deep (marked as Test Pit 5) will be excavated to determine the soil stratigraphy within the drive and the course of a probable drain associated with an iron slotted cover in the entrance gateway to the castle.

Test pits 6 and 7, each 1m by 1m and up to 0.5m deep, will be excavated in the drainage gully surrounding the castle tower. These will be used to determine the courses of multiple drains running in the base of the gully.

Test pit 8 will be a slot 2m by 1m in area and up to 1.5m deep. This will be dug through the present crazy paving and designed to examine the stratigraphy and soil levels immediately south of the castle. This pit will also help determine the course of the courtyard wall where it once approached the south side of the tower.

All excavation work for the test pits will be carried out using hand tools.

The soak-away appears to be located in a slightly sunken area of the drive. This is mostly outside the line of the historic courtyard limit and appears to also partly lie outside the Scheduled Monument area. The drain to the soak-away presumably passes through the footings of the courtyard wall, and may breach the wall or make use of an existing opening.

It is proposed to accurately locate the soak-away by means of two excavated trenches at right angles to one another. These should locate the edges of the soak-away, record the nature of the fill and determine if the soak-away is still working. Knowledge of the extent of the soak-away should indicate whether it will be suitable for predicted needs or whether a new pit will eventually be required (subject to a further SMC application).

Excavation for the soak-away may be carried out using hand tools or more efficiently using a mini-digger fitted with a toothless bucket. Excavated depth is expected to be 1m maximum.

Floors

Problems of rising damp have been evident in the ground floor rooms of the castle for several years and the Trust wishes to design a method to remedy this. An initial exploration is needed to determine the nature of the sub-floor deposits. The castle's 20th century kitchen has a concrete floor covered with ceramic tiles. It is proposed to cut and temporarily remove a linear section of this floor (maximum 1m wide) to determine the presence/absence of archaeological deposits beneath, potentially to a maximum depth of 0.5m including the floor itself. Within the Gun Room of the tower, research suggests that the current floor (of granite flagstones) was re-laid in the late 1960s. It is proposed to temporarily lift one of the granite flagstones (approximately 0.6 x 0.6m in area, the exact stone to be chosen by an archaeologist), to determine the bedding material beneath and presence/absence of archaeological deposits. Depending on results (if material turns out to be late 20th century) it is proposed to extend the exploration by temporarily lifting a line of flagstones across the length of the room. The proposed maximum exploratory depth is 0.5m including the depth of the flagstones.

Assessment of the potential archaeological impact of scheme

The area of the proposed external drainage work lies in the eastern courtyard. The first excavation area lies approximately 2m from the base of the tower, partly on some modern paving and partly on the gravel drive. The suspected area of excavations for the soak-away is approximately 25m to the south.

The 16th century hall or mansion was situated to the north and west of the tower so that the proposed drainage works will not affect any buried remains associated with the site of these buildings.

Dr William Borlase's 1734 copy of part of a 16th century oil painting the first floor room of the tower showing the house and tower at Pengersick that survived until the 19th century shows that the area affected by the proposed drainage works was a path along the front of the tower (Herring 1998, 30, fig 61). Subsequent engravings, maps and photographs show that this was never built on; although the Buck Brothers' 1734 engraving shows that the eastern side of the path had been defined by a low wall (Herring 1998, fig 14).

Borlase's engraving shows that the entrance to the eastern courtyard was through a gate through range of buildings forming the eastern side of the courtyard. The present southern entrance seems to have formed by the time of the 1787 map (Herring 1998, fig 23) but later maps seem to indicate that this was not always open.

In conclusion the proposed drainage work has the potential to cut through former external path surfaces in the eastern courtyard and to uncover artefacts and loose masonry but will not impact upon the *in situ* remains of any buried buildings. It is possible that earlier drains may be revealed or that previous excavations associated with drainage has destroyed any archaeological material.

There is also the potential that archaeological features, deposits or finds from the prehistoric or medieval periods might be revealed, although none has so far been recorded at this particular location.

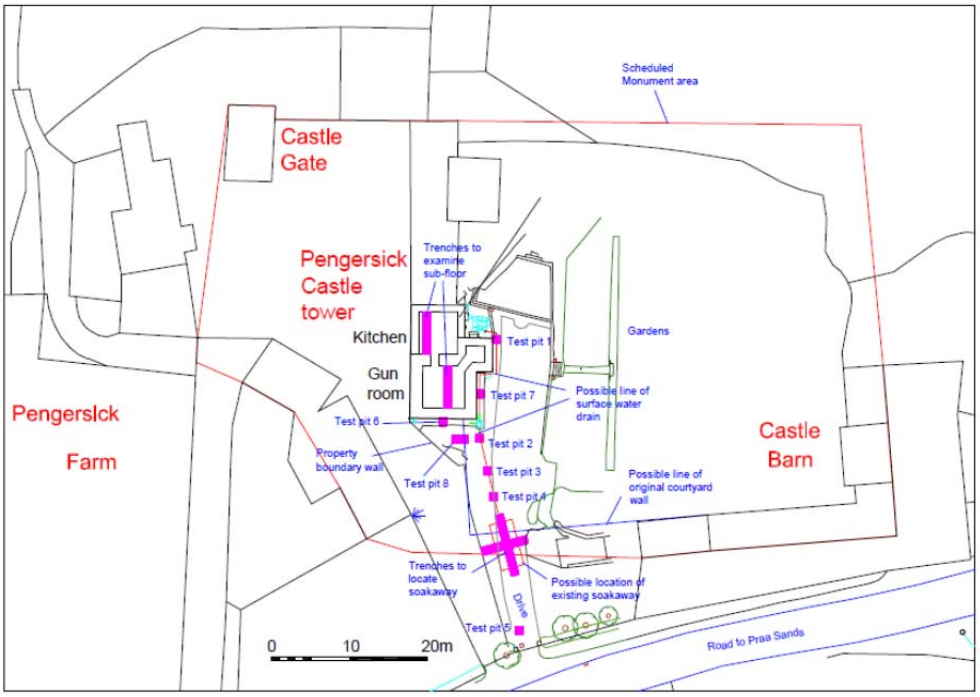


Fig 2 The proposed test pits and exploratory excavations in relation to the castle tower and related features

Working Methods

All recording work will be undertaken according to the IFA's Standards and Guidance for Archaeological Watching Briefs (IFA 2001a). Staff will follow the IFA Code of Conduct and Code of Approved Practice for the Regulation of Contractual Arrangements in Archaeology. The Institute of field Archaeologists is the professional body for archaeologists working in the UK.

Archaeological recording

An archaeologist will be present during all ground works associated with the development. All excavation work will be carried out using hand tools. The first revealed substratum will then be hand cleaned to test for the presence of archaeological features, deposits and finds with resulting evidence being recorded as appropriate.

Any surviving remains which will be disturbed or destroyed by the development will be archaeologically excavated and recorded.

If significant archaeological deposits are exposed, all works will cease and a meeting convened with the client and English Heritage's Inspector of Ancient Monuments (IAM) to discuss the most appropriate way forwards.

Recording

- A location plan will be made, plotting the areas of ground works onto the Ordnance Survey Mastermap at 1:200.
- The heights of all features identified will be tied into the Ordnance Datum if appropriate.
- The location of features recorded during the watching brief will be plotted onto a drafting film overlay to the prepared location plan.
- All finds from significant stratified contexts will be accurately located on the location plan at an appropriate scale.
- All archaeological contexts will be described to a standard format linked to a continuous numbering sequence. All contexts recorded will be recorded via the medium of HE pro forma context recording sheets.
- Registers of drawings, photographs, finds and contexts, samples will be maintained during the fieldwork.
- The excavated spoil will be carefully inspected for finds.

Site planning policy

- Site drawings (plans, sections, locations of finds) will be made by pencil (4H) on drafting film; all plans will be linked to the prepared location map and to the national grid; all drawings will include standard information: site details, personnel, date, scale and north-point.
- Site plans will be drawn at 1:20 and sections at 1:10, unless circumstances indicate that other scales would be more appropriate.
- Site drawings (plans and sections) will be digitised and converted into AutoCAD drawings.

Photographic record

- The photographic record will consist of prints in both black and white and colour together with the negatives. Digital photography will be used for report illustration.
- For both general and specific photographs, a photographic scale will be included.
- In the case of detailed photographs a north arrow will be included if appropriate.
- The photographic record will be accompanied by a photographic register detailing as a minimum, feature number, location and direction of shot.

Finds

- All finds will be retained from each archaeological context excavated.

- All retained finds, where appropriate, will be washed.
- All pottery, and other finds where appropriate, will be marked with the site code and context number.
- This proposal includes a list of specialist consultants, who might be required to conserve and/or report on finds, and advise or report on other aspects of the project including environmental sampling.
- The requirements for conservation and storage will be agreed with the appropriate museum prior to the start of work, and confirmed in writing to the IAM.
- Finds work will be to accepted professional standards and adhere to the Institute for Archaeologists' *Guidelines* (IFA 2001b).

Human remains

Any human remains which are encountered will initially be left *in situ* and reported to the IAM and the appropriate authorities. If removal is necessary this will comply with the relevant Government regulations. If burials are encountered their legal status will be ascertained and recording and/or removal will comply with the legal guidelines.

If human remains are not to be removed their physical security will be ensured, if possible by back filling as soon as possible after recording.

If human remains are to be removed this will be done with due reverence and in accordance to current best practice and legal requirements. The site will be adequately screened from public view. Once excavated human remains will not be exposed to public view.

Archiving

During this phase the results of the fieldwork will be collated for archiving. This will involve the following tasks.

- Indexing of site drawings and photographs.
- Processing and analysis of artefacts and environmental samples, if appropriate.

Note: The requirements for Archiving and Reporting will be reviewed in the light of the fieldwork results

Report production

A report will be produced which will describe the results of the desk-based study and the nature of the fieldwork undertaken, the circumstance and conditions under which it occurred and the results that were obtained. Production of the report will involve:

- Producing a descriptive text.
- Producing maps, scaled plans and section drawings.
- Selecting photographs.
- Report design.
- Report editing.
- Dissemination of the finished report.

The report will have the following contents:

- Summary
- Introduction - Background, aims, methods
- Results - A concise non-technical summary of the results
- Discussion - A discussion of archaeological findings in terms of both the site specific aims and the desk based research
- Specialists' reports - Specialists' reports or assessments as appropriate

- Archive - A summary of archive contents and date of deposition
- Appendices Copies of the Archaeological assessment and Proposal, context register
- Illustrations
  - Location map
  - Site location plan
  - A drawing showing those areas examined as part of the archaeological watching
  - Copies of relevant historical cartography & plans
  - Plan and section drawings resulting from the archaeological recording.
  - Finds drawings (if appropriate)
  - Illustrative photographs
  - Note: All plans will be tied to the national grid.

Contingency for analysis and publication

A contingency will be made for assessment for specialist analysis and full publication in an appropriate journal. If this is required it will be raised as an issue by HE Projects and discussed with the EH Inspector of Ancient Monuments and the Regional Science Adviser.

Report dissemination

The full assessment report will be submitted within a length of time (but not exceeding six months) to be agreed between the client and HE Projects, with copies supplied to the client (two), English Heritage, Cornwall Council Historic Environment Record, the Courtenay Library of the Royal Institution of Cornwall, River Street, Truro and national archive centres. A further digital copy shall be supplied on CD-ROM in 'Adobe Acrobat' PDF format. A draft will initially be submitted to the IAM for comment, and paper and digital copies of the final report will be supplied to the IAM.

OASIS entry

HE Projects will undertake the English Heritage/ads online access to the index of archaeological investigations (OASIS).

Archive deposition

- An ordered and integrated site archive will be prepared in accordance with *The Management of Archaeological Projects* (English Heritage 1991 2nd edition) upon completion of the project.
- The documentary archive including a copy of the written report will be deposited for the medium term at CC's archive repository at Pound and Co, Penryn, for deposition in due course at the Cornwall Record Office.
- A summary of the contents of the archive shall be supplied to the IAM.

Monitoring

Monitoring of the project will be carried out by the IAM. Notification of the start of work will be given in writing to the IAM at least four weeks in advance of commencement.

Monitoring points during the study will include:

- Approval of the Proposal
- Completion of the fieldwork
- Completion of archive report
- Deposition of the archive

Project team

The project will be managed by Senior Archaeologist **Charlie Johns (BA, MIfA)**, who has experience of working at Pengersick Castle (eg Johns 2003) and carried out by a suitably qualified member of the HE Projects team.

Specialists

John Allan MPhil – Medieval/post-medieval pottery specialist: John works for Exeter Archaeology. He is the leading authority on medieval and post-medieval pottery in south-west England and author of many publications. He will carry out the pottery assessment and analysis in the event of medieval or post-medieval pottery being recovered

Henrietta Quinnell BA, MIfA, FSA – Prehistoric, Roman, post-Roman pottery: Henrietta is a freelance pottery specialist and the leading authority on prehistoric pottery in the south-west. She will carry out the pottery assessment and analysis in the event of prehistoric pottery being recovered.

Julie Jones BA – Archaeobotanist: An experienced freelance archaeobotanical specialist based in Bristol, Julie has carried out palaeoenvironmental assessments and analyses for numerous HE projects.

Dana Challinor MA, MSc – Freelance Charcoal Specialist: Dana's main area of expertise is charcoal analysis and wood species identification, but she also has experience with charred plant remains. For her Masters degree she specialised in Archaeobotany and received a distinction for her dissertation on charcoal in Bronze Age cremation burials. She has produced numerous assessment and evaluation reports, as well as reports for publication in journal and monograph formats and was formerly Head of the Environmental Department at Oxford Archaeology. She will undertake assessment and analysis of any suitable charcoal samples, including identification of samples suitable for radiocarbon dating.

Ralph Fyfe, PhD, Palynologist: Ralph is lecturer in environmental change in the School of Geography at the University of Plymouth. He has carried out numerous archaeological evaluations for a variety of organisations, including English Heritage, County Councils, National Parks and Archaeological Consultancies and will undertake assessment and analysis pf pollen samples if required.

Laura Ratcliffe-Conservationist, BSc, The Royal Cornwall Museum, Truro: Laura graduated In Archeological Conservation from Cardiff University in 2001. Since then she has gained a wide variety of experience both on excavations and in a lab working on a wide variety of archaeological and historical material. She is currently based at the Royal Cornwall Museum where she is the museum's Collections Manager. Laura will carry out the assessment and conservation of pottery and metalwork on a free lance basis if required.

Radiocarbon Dating Laboratory, University of Waikato, New Zealand: Samples for radiocarbon dating will be sent the University of Waikato.

Historic Environment Projects

Historic Environment Projects is the contracting arm of Historic Environment, Cornwall Council (HE). HE Projects employs some 20 project staff with a broad range of expertise, undertaking around 80 projects each year.

HE Projects is committed to conserving and enhancing the distinctiveness of the historic environment and heritage of Cornwall and the Isles of Scilly by providing clients with a number of services including:

- Conservation works to sites and monuments
- Conservation surveys and management plans
- Historic landscape characterisation
- Town surveys for conservation and regeneration
- Historic building surveys and analysis
- Maritime and coastal zone assessments

- Air photo mapping
- Excavations and watching briefs
- Assessments and evaluations
- Post-excavation analysis and publication
- Outreach: exhibitions, publication, presentations

Standards

HE Projects follows the Institute for Archaeologists' Standards and Code of Conduct and is a Registered Organisation.

As part of Environment, Planning and Economy, Cornwall Council, HE has certification in BS9001 (Quality Management), BS14001 (Environmental Management), OHSAS18001 (Health, Safety and Welfare), Investors in People and Charter Mark.

Terms and conditions

Contract

HE Projects is part of the Historic Environment, Cornwall Council. If accepted, the contract for this work will be between the client and Cornwall Council.

The views and recommendations expressed will be those of the HE Projects and will be presented in good faith on the basis of professional judgement and on information currently available.

Copyright

Copyright of all material gathered as a result of the project will be reserved to Historic Environment, Cornwall Council. Existing copyrights of external sources will be acknowledged where required.

Use of the material will be granted to the client.

Freedom of Information Act

As Cornwall Council is a public authority it is subject to the terms of the Freedom of Information Act 2000, which came into effect from 1st January 2005.

HE Projects will ensure that all information arising from the project shall be held in strict confidence to the extent permitted under the Act. However, the Act permits information to be released under a public right of access (a "Request"). If such a Request is received HE Projects may need to disclose any information it holds, unless it is excluded from disclosure under the Act.

Health and safety statement

HE Projects follows Cornwall Council's *Statement of Safety Policy*. For more specific policy and guidelines the Unit uses the manual *Health and Safety in Field Archaeology* (2002) endorsed by the Standing Conference of Archaeological Unit Managers and also the Council for British Archaeology's Handbook No. 6 *Safety in Archaeological Field Work* (1989).

Prior to carrying out on-site work HE Projects will carry out a Risk Assessment.

Insurance

As part of Cornwall Council, HE Projects is covered by Public and Employers Liability Insurance.

References

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Charles Johns and Nigel Thomas

Senior Archaeologists

28th September 2010

Historic Environment Projects

Cornwall Council

Appendix 5: Written Scheme of Investigation for tree and stump removal

Pengersick Castle, Breage, Cornwall: Written Scheme of Investigation for archaeological recording during removal of trees

Client:	Pengersick Historic & Education Trust
Client contact:	
Client tel:	
Client email:	

Site location and description

Close to the popular holiday resort of Praa Sands stands the granite tower of Pengersick Castle, the most prominent survivor of a fortified manorial complex of late 15th/16th century date (NGR SW 5816 2841). The complex, which appears originally to have consisted of a tower, manor house and two fortified courtyards to the east and west of the tower, is presently in multiple ownership. The former extent of the two courtyards (i.e. the below-ground element of the castle) is statutorily protected as a Scheduled Monument, while all the historic structures are listed buildings.

Archaeological and historical background

Pengersick is first mentioned in 1197 and a chapel is recorded there in the 14th century in association with a mansion. The surviving structures mostly relate to a fortified house built in 1510 by either Thomas Worth or one of the Milliton family. A letter 'W' worked into the moulding around a window in the tower suggests the former. The house was probably built as a response to pirate raids on the south coast. It originally consisted of a complex of buildings ranged around two courtyards. The major tower (equivalent to a keep of a castle) survives intact but is now converted into a dwelling. This originally had an attached hall on the north side and there was a courtyard on the east side which consisted of stables and ancillary structures. To the west of the tower was another courtyard which was probably domestic, consisting of kitchens, stores, servants' accommodation etc. This rear yard is now a farmyard. A fine granite moulding from the two storey porch attached to the hall is now the principal entrance to a farmhouse (Herring 1998).

The Milliton family occupied Pengersick for a few generations. Upon the death of William Milliton, who had no surviving sons, the property was divided between six daughters. With this complexity of ownership, the house fell into disuse. During the 18th and 19th centuries the surviving structures were extensively robbed to provide the materials for the farm buildings which now cover the site. Of the fortified house only the three-storey tower survives. This was converted to a house in the early 20th century. A two-storey fortified building to the west was converted to a granary and became incorporated into the 19th century farm complex (Herring 1998). The whole site including the farm complex is a Scheduled Monument (SM No. 36039) and the buildings are Listed, the castle tower being Grade I (Listed Building 6571).

Project background

Pengersick Castle is managed as a visitor attraction by the Pengersick Historic & Education Trust (see the Trust's website http://www.pengersickcastle.com/. At the time of writing the castle tower is in need of extensive repair due to damp penetration and the site is temporarily closed to the public. A separate SMC application has been made to explore a failed drainage system. To maintain revenue the Trust needs to reopen the castle to visitors in 2012.

The Trust also intends to renovate the gardens and grounds surrounding the castle, including developing a Tudor-style knot garden on the upper terrace within the former castle courtyard. This work will entail removal of various old trees and the majority of their root systems so that the ground becomes available for replanting. This work will require Scheduled Monument Consent. Pengersick

Castle and its surroundings is also within a Tree Preservation Order area and TPO consent is therefore also being sought separately from Cornwall Council. The areas of the Scheduled Monument and TPO are shown below:

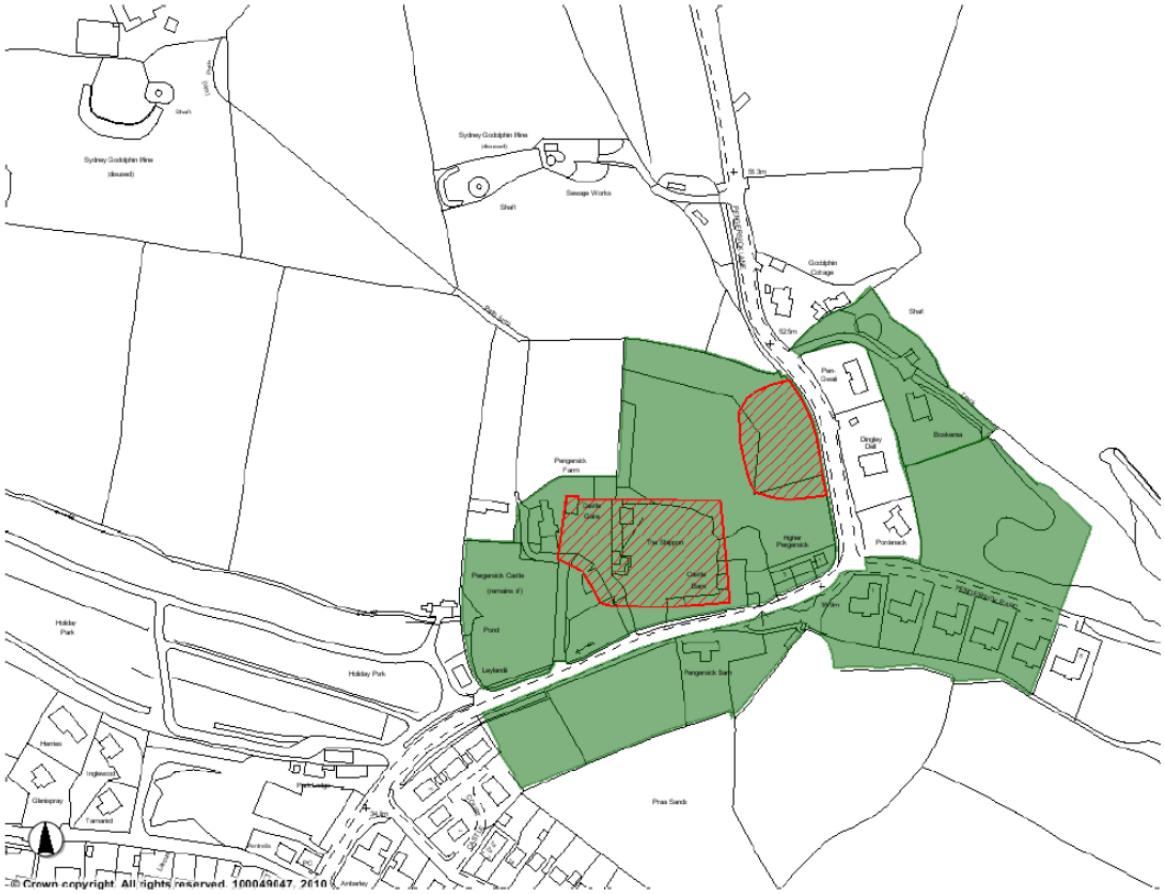


Fig 1 Pengersick Castle showing the extent of the Scheduled Monument (hatched in red) and the TPO (in green shading)

Historic Environment Projects, Cornwall Council (HE Projects) were commissioned by the Trust to advise on the archaeological implications for tree removal and related garden works, and to submit a Scheduled Monument Consent application. This Written Scheme of Investigation sets out the archaeological methodology to be used for the garden works and should be read in conjunction with the SMC application itself.

Project aims

The principal aim is to minimise disturbance to the monument and to gain further understanding of the historic development of Pengersick from the archaeology that is temporarily revealed.

Scope of the proposed works

Trees

A list of trees proposed for removal is set out in a letter dated 5th Nov 2010 from Phil Martin (Trust gardener) to Oliver Bennett (Cornwall Council). A site meeting held on 25th Nov 2010 clarified the situation and proposals for many of the trees.

1. Dead elm trees along SW boundary (on Cornish hedge). The majority of these lie outside the SM boundary. These will be cut down but the stumps left in to avoid damaging the wall (and therefore no ground disturbance is anticipated).

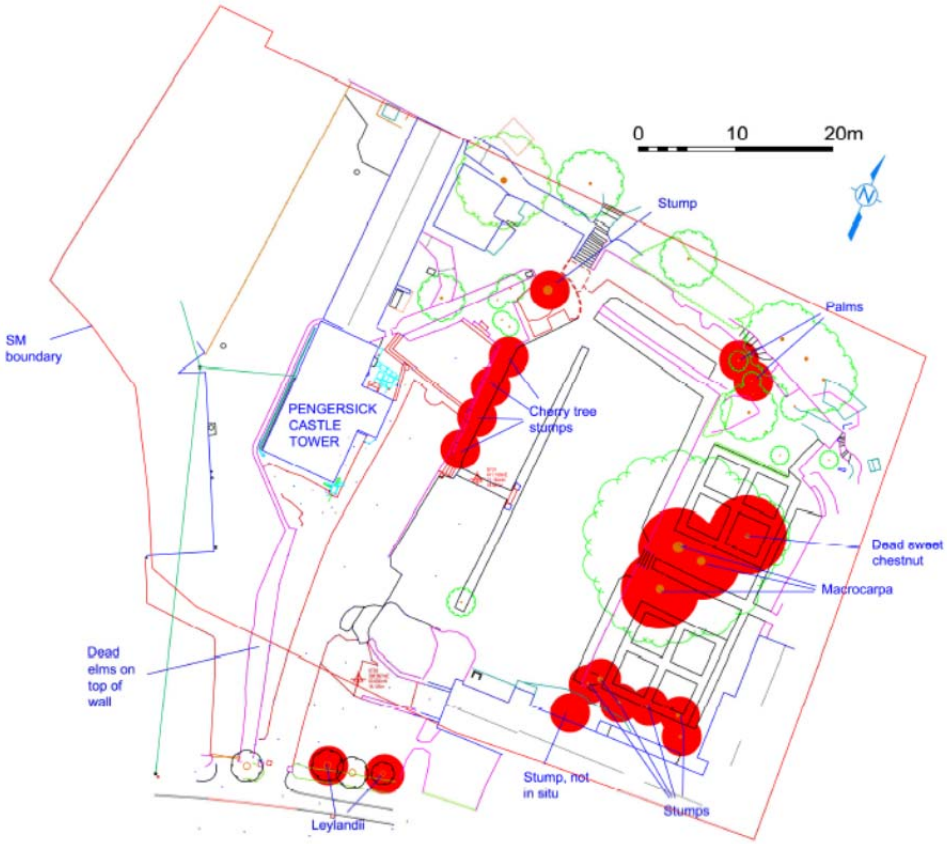
2. Two large leylandii, plus a small beech tree between, growing immediately adjacent to the S property boundary close to the site entrance (outside the SM boundary). Rather than damage the wall, the preferred option is to cut down the two leylandii and grind off the stumps just below ground level. It is intended to leave the beech tree *in situ* and repair the face of the Cornish hedge. The area of ground inside the entrance has been used for many years as a garden tip but this will be cleared and the available space redeveloped for visitor parking.
3. Four cherry tree stumps in a flower bed parallel to the front of the castle tower (between the driveway and the lawn). These are within the SM area.
4. Three mature cupressus macrocarpa and one dead sweet chestnut, located on the upper terrace within the former castle courtyard. One cupressus tree has decay in its trunk and permission to fell it was given in 2005. One of the others has a heavy lean. These trees are in the area to be restored as a Tudor knot garden and it is proposed to replace them with avenues of yews, which would be more befitting to the period. All are in the SM area so removal of roots will entail ground disturbance and archaeological recording. Removal is expected to require machine digging up to 4m radius from the tree trunk to remove the roots.
5. Tree stumps within the gardens. An *in situ* dead tree stump within the gardens NE of the castle tower appears to have been felled because it had a heavy lean. It is situated within a raised, relatively recent flower bed and its roots have lifted on one side. Although this is stump within the SM, the archaeological implications appear slight. Six tree stumps at the southern end of the upper terrace are within the SM and require removal of roots before restoration of the space can begin. These will need to be dug out by machine and then the subsequent pits cleaned up and archaeologically recorded.
6. Two palm trees currently within the castle courtyard garden (and therefore within the SM area) do not fit into the garden restoration plans. It is proposed to remove these whole and offer them for replanting elsewhere (off-site). Removal will require machine digging up to 2m radius from the tree trunk to remove the roots.
7. Woodland area N of and extending upslope from the castle courtyard. It is proposed to thin some of the sycamore trees from above the garden, in order to provide more sunlight to a young orchard. There are also elms growing further upslope and some of these are diseased. As these trees are in woodland rather than garden there is no requirement to remove stumps and roots, therefore there appear to be no archaeological implications in this area.

Assessment of the potential archaeological impacts of scheme

The 16th century hall or mansion was situated to the north and west of the tower so the proposed garden works will not affect any buried remains associated with the site of these buildings.

The upper terrace on the eastern side of the courtyard gardens is not shown on early OS maps. The date of this terrace is not therefore known and may be relatively modern. Archaeological excavation in tree root holes is expected to reveal information regarding former garden levels, layout and perhaps features.

There is also the potential that archaeological features, deposits or finds from the prehistoric or medieval periods might be revealed, although none has so far been recorded at Pengersick.


0
10
20m
Stump
Palms
SM
boundary
PENGERSICK
CASTLE
TOWER
Cherry tree
stumps
Dead sweet
chestnut
Macrocarpa
Dead
elms on
top of
wall
Stump, not
in situ
Stumps
Leylandii

Working Methods

All recording work will be undertaken according to the IfA's Standards and Guidance for Archaeological Watching Briefs (IfA 2001a). Staff will follow the IfA Code of Conduct and Code of Approved Practice for the Regulation of Contractual Arrangements in Archaeology. The Institute for Archaeologists is the professional body for archaeologists working in the UK.

Archaeological recording

An archaeologist will be present during all ground works associated with the development. Removal of tree stumps and roots will be carried out by mechanical excavator. Following removal of stumps, the holes will be cleaned up by the machine fitted with a toothless bucket. Any revealed substrata will then be hand cleaned with resulting archaeological evidence recorded in accordance with the standards set out below.

If significant archaeological deposits are exposed, all works will cease and a meeting convened with the client and English Heritage's Inspector of Ancient Monuments (IAM) to discuss the most appropriate way forwards.

Recording

- A location plan will be made, plotting the areas of ground works onto the Ordnance Survey Mastermap at 1:200.
- The heights of all features identified will be tied into the Ordnance Datum if appropriate.
- The location of features recorded during the watching brief will be plotted onto a drafting film overlay to the prepared location plan.
- All finds from significant stratified contexts will be accurately located on the location plan at an appropriate scale.
- All archaeological contexts will be described to a standard format linked to a continuous numbering sequence. All contexts recorded will be recorded via the medium of HE pro forma context recording sheets.
- Registers of drawings, photographs, finds and contexts, samples will be maintained during the fieldwork.
- The excavated spoil will be carefully inspected for finds.

Site planning policy

- Site drawings (plans, sections, locations of finds) will be made by pencil (4H) on drafting film; all plans will be linked to the prepared location map and to the national grid; all drawings will include standard information: site details, personnel, date, scale and north-point.
- Site plans will be drawn at 1:20 and sections at 1:10, unless circumstances indicate that other scales would be more appropriate.
- Site drawings (plans and sections) will be digitised and converted into AutoCAD drawings.

Photographic record

- The photographic record will consist of prints in both black and white and colour together with the negatives. Digital photography will be used for report illustration.
- For both general and specific photographs, a photographic scale will be included.
- In the case of detailed photographs a north arrow will be included if appropriate.
- The photographic record will be accompanied by a photographic register detailing as a minimum, feature number, location and direction of shot.

Finds

- All finds will be retained from each archaeological context excavated.
- All retained finds, where appropriate, will be washed.

- All pottery, and other finds where appropriate, will be marked with the site code and context number.
- This proposal includes a list of specialist consultants, who might be required to conserve and/or report on finds, and advise or report on other aspects of the project including environmental sampling.
- The requirements for conservation and storage will be agreed with the appropriate museum prior to the start of work, and confirmed in writing to the IAM.
- Finds work will be to accepted professional standards and adhere to the Institute for Archaeologists' *Guidelines* (IFA 2001b).

Human remains

- Any human remains which are encountered will initially be left *in situ* and reported to the IAM and the appropriate authorities. If removal is necessary this will comply with the relevant Government regulations. If burials are encountered their legal status will be ascertained and recording and/or removal will comply with the legal guidelines.
- If human remains are not to be removed their physical security will be ensured, if possible by back filling as soon as possible after recording.
- If human remains are to be removed this will be done with due reverence and in accordance to current best practice and legal requirements. The site will be adequately screened from public view. Once excavated human remains will not be exposed to public view.

Archiving

During this phase the results of the fieldwork will be collated for archiving. This will involve the following tasks.

- Indexing of site drawings and photographs.
- Processing and analysis of artefacts and environmental samples, if appropriate.

Note: Requirements for archiving and reporting will be reviewed in the light of the fieldwork results

Report production

A report will be produced which will describe the results of the desk-based study and the nature of the fieldwork undertaken, the circumstance and conditions under which it occurred and the results that were obtained. Production of the report will involve:

- Producing a descriptive text.
- Producing maps, scaled plans and section drawings.
- Selecting photographs.
- Report design.
- Report editing.
- Dissemination of the finished report.

The report will have the following contents:

- Summary
- Introduction - Background, aims, methods
- Results - A concise non-technical summary of the results
- Discussion - A discussion of archaeological findings in terms of both the site specific aims and the desk based research
- Specialists' reports - Specialists' reports or assessments as appropriate
- Archive - A summary of archive contents and date of deposition

- Appendices — Copies of the Archaeological assessment and Proposal, context register
- Illustrations
  - Location map
  - Site location plan
  - A drawing showing those areas examined as part of the archaeological watching
  - Copies of relevant historical cartography & plans
  - Plan and section drawings resulting from the archaeological recording.
  - Finds drawings (if appropriate)
  - Illustrative photographs
  - Note: All plans will be tied to the national grid.

Contingency for analysis and publication

A contingency will be made for assessment for specialist analysis and full publication in an appropriate journal. If this is required it will be raised as an issue by HE Projects and discussed with the EH Inspector of Ancient Monuments and the Regional Science Adviser.

Report dissemination

The full assessment report will be submitted within a length of time (but not exceeding six months) to be agreed between the client and HE Projects, with copies supplied to the client (two), English Heritage, Cornwall Council Historic Environment Record, the Courtenay Library of the Royal Institution of Cornwall, River Street, Truro and national archive centres. A further digital copy shall be supplied on CD-ROM in 'Adobe Acrobat' PDF format. A draft will initially be submitted to the IAM for comment, and paper and digital copies of the final report will be supplied to the IAM.

OASIS entry

HE Projects will undertake the English Heritage/ads online access to the index of archaeological investigations (OASIS).

Archive deposition

- An ordered and integrated site archive will be prepared in accordance with *The Management of Archaeological Projects* (English Heritage 1991 2nd edition) upon completion of the project.
- The documentary archive including a copy of the written report will be deposited for the medium term at CC's archive repository at Pound and Co, Penryn, for deposition in due course at the Cornwall Record Office.
- A summary of the contents of the archive shall be supplied to the IAM.

Monitoring

Monitoring of the project will be carried out by the IAM. Notification of the start of work will be given in writing to the IAM at least four weeks in advance of commencement.

Monitoring points during the study will include:

- Approval of the Proposal
- Monitoring visit by the IAM during fieldwork
- Completion of the fieldwork
- Completion of archive report
- Deposition of the archive

Project team

The project will be managed by Senior Archaeologist **Nigel Thomas (BA, MIfA)** and carried out by a suitably qualified member of the HE Projects team.

Specialists

The following specialists are generally engaged by HE Projects for fieldwork projects and, if necessary, will be notified for dealing with particular finds or ecofacts from Pengersick:

John Allan MPhil – Medieval/post-medieval pottery specialist: John works for Exeter Archaeology. He is the leading authority on medieval and post-medieval pottery in south-west England and author of many publications. He will carry out the pottery assessment and analysis in the event of medieval or post-medieval pottery being recovered

Henrietta Quinnell BA, MIfA, FSA – Prehistoric, Roman, post-Roman pottery: Henrietta is a freelance pottery specialist and the leading authority on prehistoric pottery in the south-west. She will carry out the pottery assessment and analysis in the event of prehistoric pottery being recovered.

Julie Jones BA – Archaeobotanist: An experienced freelance archaeobotanical specialist based in Bristol, Julie has carried out palaeoenvironmental assessments and analyses for numerous HE projects.

Dana Challinor MA, MSc – Freelance Charcoal Specialist: Dana's main area of expertise is charcoal analysis and wood species identification, but she also has experience with charred plant remains. For her Masters degree she specialised in Archaeobotany and received a distinction for her dissertation on charcoal in Bronze Age cremation burials. She has produced numerous assessment and evaluation reports, as well as reports for publication in journal and monograph formats and was formerly Head of the Environmental Department at Oxford Archaeology. She will undertake assessment and analysis of any suitable charcoal samples, including identification of samples suitable for radiocarbon dating.

Ralph Fyfe, PhD, Palynologist: Ralph is lecturer in environmental change in the School of Geography at the University of Plymouth. He has carried out numerous archaeological evaluations for a variety of organisations, including English Heritage, County Councils, National Parks and Archaeological Consultancies and will undertake assessment and analysis pf pollen samples if required.

Laura Ratcliffe-Conservationist, BSc, The Royal Cornwall Museum, Truro: Laura graduated In Archeological Conservation from Cardiff University in 2001. Since then she has gained a wide variety of experience both on excavations and in a lab working on a wide variety of archaeological and historical material. She is currently based at the Royal Cornwall Museum where she is the museum's Collections Manager. Laura will carry out the assessment and conservation of pottery and metalwork on a free lance basis if required.

Historic Environment Projects

Historic Environment Projects is the contracting arm of Historic Environment, Cornwall Council (HE). HE Projects employs some 20 project staff with a broad range of expertise, undertaking around 100 projects each year.

HE Projects is committed to conserving and enhancing the distinctiveness of the historic environment and heritage of Cornwall and the Isles of Scilly by providing clients with a number of services including:

- Conservation works to sites and monuments
- Conservation surveys and management plans
- Historic landscape characterisation
- Town surveys for conservation and regeneration
- Historic building surveys and analysis
- Maritime and coastal zone assessments

- Air photo mapping
- Excavations and watching briefs
- Assessments and evaluations
- Post-excavation analysis and publication
- Outreach: exhibitions, publication, presentations

Standards

HE Projects follows the Institute for Archaeologists' Standards and Code of Conduct and is a Registered Organisation.

As part of Environment, Planning and Economy, Cornwall Council, HE has certification in BS9001 (Quality Management), BS14001 (Environmental Management), OHSAS18001 (Health, Safety and Welfare), Investors in People and Charter Mark.

Terms and conditions

Contract

HE Projects is part of the Historic Environment, Cornwall Council. Any contract for works arising from this WSI will be between the client and Cornwall Council.

The views and recommendations expressed will be those of HE Projects and will be presented in good faith on the basis of professional judgement and on information currently available.

Copyright

Copyright of all material gathered as a result of the project will be reserved to Historic Environment, Cornwall Council. Existing copyrights of external sources will be acknowledged where required.

Use of the material will be granted to the client.

Freedom of Information Act

As Cornwall Council is a public authority it is subject to the terms of the Freedom of Information Act 2000, which came into effect from 1st January 2005.

HE Projects will ensure that all information arising from the project shall be held in strict confidence to the extent permitted under the Act. However, the Act permits information to be released under a public right of access (a "Request"). If such a Request is received HE Projects may need to disclose any information it holds, unless it is excluded from disclosure under the Act.

Health and safety statement

HE Projects follows Cornwall Council's *Statement of Safety Policy*. For more specific policy and guidelines the Unit uses the manual *Health and Safety in Field Archaeology* (2002) endorsed by the Standing Conference of Archaeological Unit Managers and also the Council for British Archaeology's Handbook No. 6 *Safety in Archaeological Field Work* (1989).

Prior to carrying out on-site work HE Projects will carry out a Risk Assessment.

Insurance

As part of Cornwall Council, HE Projects is covered by Public and Employers Liability Insurance.

References

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Johns, C, 2001. *Pengersick Castle, Breage, Cornwall: archaeological recording, February to May 2001,* Cornwall Archaeological Unit, Truro

Johns, C, 2010. *Pengersick Castle: proposal for archaeological recording during drainage works*, HE, Truro

Nigel Thomas

Senior Archaeologist

10th March 2011

Historic Environment Projects

Cornwall Council