



Leaden Well, Restormel Manor, Cornwall
Archaeological assessment

Cornwall Archaeological Unit

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Leaden Well, Restormel Manor, Cornwall

Archaeological assessment

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Carl Thorpe of CAU contributed comments on pottery found near the site; Ann Preston-Jones commented on the report.

The views and recommendations expressed in this report are those of Cornwall Archaeological Unit and are presented in good faith on the basis of professional judgement and on information currently available.

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Cover illustration:

The opening of the well house from the front, north-east side (1m scale)

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Abbreviations

CAU	Cornwall Archaeological Unit
CRO	Cornwall Record Office
GSB	Geophysical Services of Bradford
NGR	National Grid Reference
NMP	National Mapping Programme
OD	Ordnance Datum – height above mean sea level at Newlyn
OS	Ordnance Survey

1 Summary

When a small well house was discovered during forestry operations in Leadenhill Wood on the Duchy of Cornwall's Restormel Manor, Cornwall Archaeological Unit was asked by Geraint Richards, the Duchy's head forester, to undertake an assessment and provide recommendations for the future management of the site.

The well house is a small rectangular stone-built chamber set into a slope; an open channel conducts the water away downhill. The front of the structure, which is semi-ruined, appears to have once had a doorway. Although it has no architectural features to aid dating, documentation and place-name evidence combine to suggest that this humble structure was the source of water that fed a lead conduit, recorded from the 14th century, which carried water into the castle at Restormel. The line of the water pipe within the castle has been established by geophysical survey; unfortunately the precise route of the conduit between the castle and the well remains uncertain.

This report outlines the documentary and cartographic evidence associated with the well and provides a detailed description. Suggestions to guide future management and research are made. Because of its medieval documentation and association with Restormel Castle, this is an unusually important monument whose rarity is increased by the fact that medieval castles were only exceptionally supplied with water from a source arising outside the castle walls. It is therefore thought appropriate for it to be additionally protected through designation.

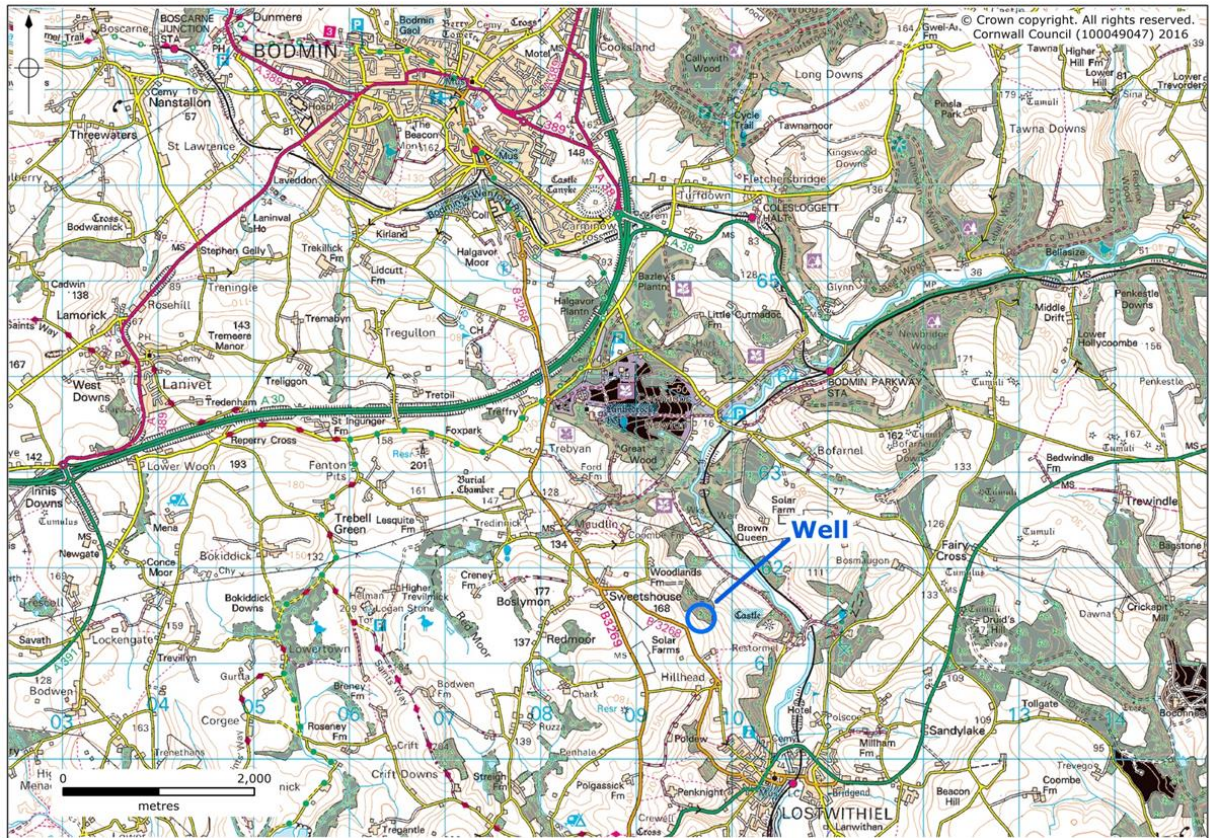


Fig 1 Map showing the location of Leaden Well at Restormel Manor between Lostwithiel and Bodmin, central Cornwall

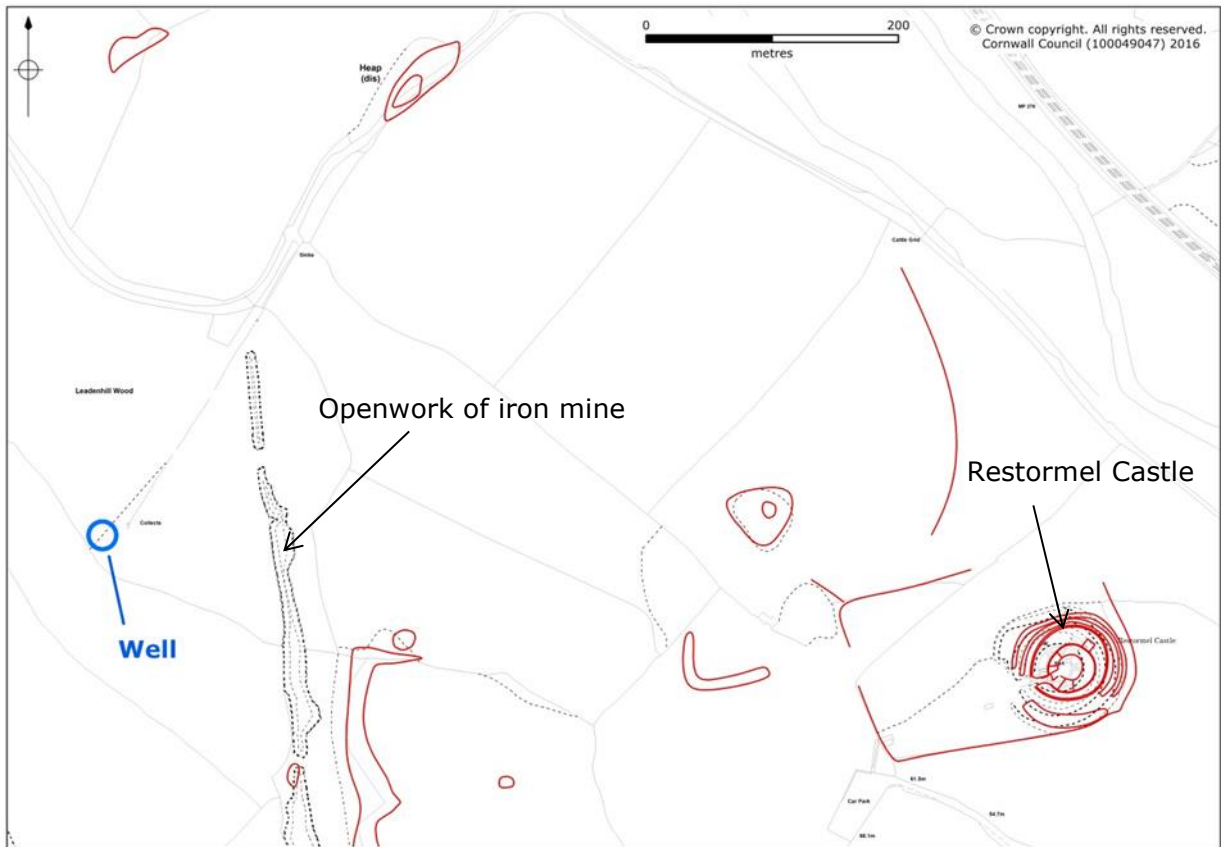


Fig 2 Modern OS map, with the NMP plot of features from aerial photographs (in red)

2 Introduction

2.1 Project background

In 2016, Geraint Richards, Duchy of Cornwall Head Forester, commissioned Cornwall Archaeological Unit, Cornwall Council (CAU, CC) on behalf of the Duchy, to carry out rapid recording and assessment of a well house. The well, in Leadenhill Wood at the Duchy Manor of Restormel, had been encountered during recent forestry work involving felling on and around its site.

The aim of the project, as agreed with the Duchy by CAU Project Manager Ann Preston-Jones (emails of January 5th and 7th, 2016), was to provide the following;

- A concise record of the form, features and character of the well house and associated earthworks at the site.
- Brief assessment of the origin, function and development of the well using readily available documentary evidence.
- An outline statement of significance.
- Recommendations of measures to protect the site and enhance its condition.

2.2 Methods

The principal element of the project was brief recording in the field using description and photography of the site, and a walkover of the surroundings. This was informed by the use of a base map showing the 'layers' of past landscape change indicated by historic maps. The fieldwork was followed by a documentary study using maps and other records available in publications or online. Further analysis was then undertaken to combine these two strands of the project and generate the assessment of significance and recommendations.

3 Location and setting

The well is just to the north of Lostwithiel in the parish of Lanlivery in mid Cornwall, at NGR 09643 61503. It lies in Leadenhill Wood, part of the wider estate of the Duchy of Cornwall's Restormel Manor (Figs 1, 2) and is set high on a north-east facing slope of the River Fowey's valley, at around 120m OD. Approximately 600m south-south-east and 50m downhill from the well is Restormel Castle, on a spur further down the valley. Further south-east again, nestling close to the valley bottom, is Restormel Manor, the successor of Restormel Castle since the 16th century.

4 Designations

The well-house is not designated in any way, although it is potentially of national significance, because it appears to be the well-head associated with a recorded medieval water supply to Restormel Castle.

5 Brief description of the well-house

The well is a rectangular chamber set into the hill-slope, its roof part-covered in earth. It measures overall 3.13m south-east to north-west by 3.35m south-west to north-east and up to 2m high. Its long axis lies across the contour, with an arched entrance opening on the downhill, north-east side, where there is slight remaining evidence in the form of a rebated stone that the water supply was once secured with a door (Fig 4). From here the spring water is channelled away downslope in a gully running north-east from the well-house, although the documentary evidence indicates that it may



Fig 3 South-east corner of the well, from the doorway. This shows the roughly coursed, mortared stone of the interior, the vaulted roof, and collapse in the doorway (on the left)



Fig 4 South-east side of the doorway showing a stone at the entrance, rebated for a door, and above it, collapsed stonework

originally have been conducted to the castle in a lead pipe, whose route is currently uncertain.

The walls of the well house and its stone-vaulted roof are constructed in lime-mortared, roughly coursed slatey stone (Fig 3). Inside, the chamber is 1.33m by 1.55m across and the vaulted roof stands up to 1.2m high above the gravel-filled basin. As it is full of mud, stones and gravel, the depth of the well basin and the existence of any associated features (for example steps, or the exit from the basin of a pipe or culvert) are unknown, though may survive beneath the gravel.

The walling at the entrance is crumbly and ruined, and the outermost arch of the vaulted roof has fallen, though the structure is otherwise in reasonable condition.

A more detailed description of the well and its condition is included in Appendix 1.

6 Brief history of the well and its landscape

In the mid-18th century, as recorded in an estate map of 1755, the area in which the well lies was a field named Leaden Well Hill: this was part of the post-medieval field system of the consolidated 'barton' type, laid out at Restormel when the vast deer park surrounding the castle was no longer required. The 1755 map records the well by name, and depicts the well house, showing its rectangular plan with a stream issuing from its front, north-east side (Fig 7).



Fig 5 Well from the north-east, with field lynchet and boundary bank beyond (1m scale)



Fig 6 View over the well house from its rear (marked by the 1m scale) above the Fowey Valley. The castle spur, at a lower level, lies further down the valley (to the right)



Fig 7 Detail of the Leaden Well as it appears on a map made in 1755, before the planting of the area, showing the well house with the stream issuing from it (Reproduced courtesy of Cornwall Record Office; reference CRO ME/2393)

The name of the well indicates it is the source which supplied water to Restormel Castle in medieval times via a lead conduit and piping at the keep. The decline of the castle to a ruin in the 16th century, together with the later 19th century planting of the area (mentioned in Appendix 1) and the change in the name of the place from Leaden Well to Leadenhill Wood, both recorded on the 1881 OS map (Fig 11), have contributed to fading of the tradition of the well and its origins.

A Duchy survey of 1337 records 'And there is a certain conduit of water made of lead through which water is brought into the castle to each house of office of the same castle which needs new repair with lead' (Pounds 1971, 41). Some later accounts (the earliest found in this rapid assessment being that by Grose dating from 1783) state that the water was used to fill the great ditch surrounding the keep. However, archaeological investigation of the ditch found no silts or clay lining there, so it is not thought to have been a water-filled moat (Taylor, Johns *et al* forthcoming, Fig 5).

The identification of the well as the water source implied by the reference of 1337 is consistent with the observation in an early account of the castle that 'Water was conveyed thither, by a conduit, from the higher ground adjoining' (Carew 1602, 138R). Buried linear anomalies in the castle bailey recorded during a magnetometer survey (GSB 1994) may potentially mark the course of the water pipe or 'conduit' and a branch leading off from it (Taylor, Johns *et al*, forthcoming; and see Fig 8 below).

If so, the main conduit line, running to the keep, entered the castle from the west, and this is again consistent with the identification of the rediscovered Leaden Well as the medieval water source (see further comment on the course of the conduit, below). The branch off it might have been made for other offices of the castle such as stables.

The lead conduit was the only individual feature specified in several instructions from the Black Prince for repair of his Duchy estate in the county. An order of May 21st 1354 requires 'all the urgent defects of the houses and bridges of the prince's castles and manors of Cornewaille, as well as the conduit within the castle of Rostormel, to be repaired at the princes costs....' (Anon 1931, 60). Another order of November 8th 1357 refers to 'many defects in the houses, walls, and enclosures of the prince's castles, manors, parks and mills in Cornewaille, and in the conduit of the castle of Rostormel, which urgently need repair' (*op cit*, 128). A reminder of March 14th 1358 demands these works be speeded 'as the summer season is now approaching', (*op cit*, 136).

The course of the conduit between Leaden Well and the west front of the castle bailey is not clear from the historic maps consulted, or from the plot of archaeological features visible on aerial photographs made by the National Mapping Programme or NMP (Figs 2, 9-11). The well water may have run down the stream bed mapped in 1755 until it reached a height from which it could be piped on a line close to the contour down to the castle spur (perhaps via a holding reservoir or conduit house), or may have been piped directly from the well to ensure its security. The reference to lead in the name of the well suggests the latter is perhaps more likely.

As noted in Appendix 1, a platform curving around the slope to the east, below a dry channel running down from the well, could possibly represent the line of the conduit, being respected by the openworks on the Restormel iron lode between the well and the castle, but seems more likely from its width and from the known presence of a branching mine track terminus nearby, to be part of the mine's transport system (see Figs 2, 10, 11). Anecdotal evidence recorded in 1881 tends to support this interpretation, suggesting that the miners did not respect the line of the conduit, but cut through it; a visitor to the castle was informed by an old man 'who [had] been in H.R.H. service....nearly 70 years....that recently, in sinking the shaft of a mine on the Restormel estate, some considerable distance from the Castle, a rough lead pipe was passed, which would convey water from a well to the ruin' (*Cornishman* newspaper, 23rd June 1881).

Later use of the well's water at Restormel Manor is outlined below (appendix, page 18). In the 19th century the area became the focus for woodland plantation, with Leadenhill Wood established on the slope around and below the well-house (Fig 11).

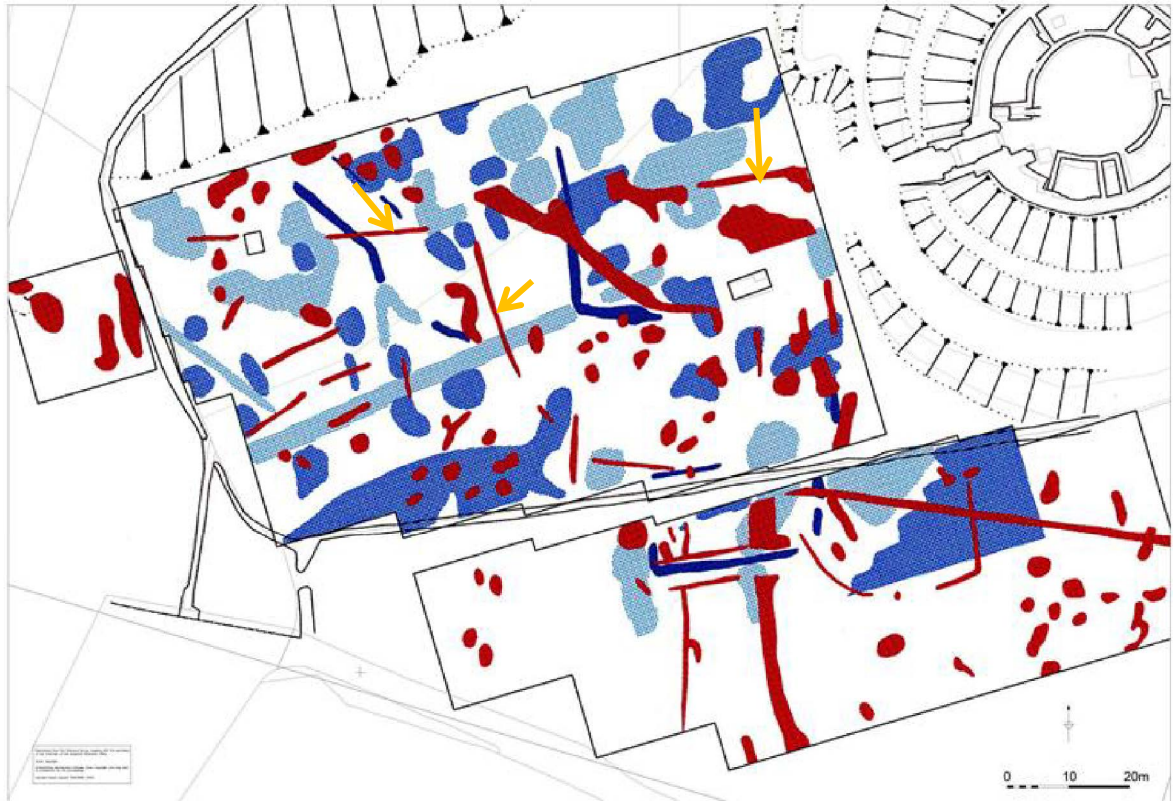


Fig 8 Geophysical survey of the bailey of Restormel Castle, showing the likely lines of potential lead water pipes (indicated with orange arrows) (after Geophysical Services of Bradford 1994: from Taylor, Johns, et al forthcoming, Fig 5)



Fig 9 Well and landscape in 1755 (courtesy Cornwall Record Office; ref CRO ME/2393)

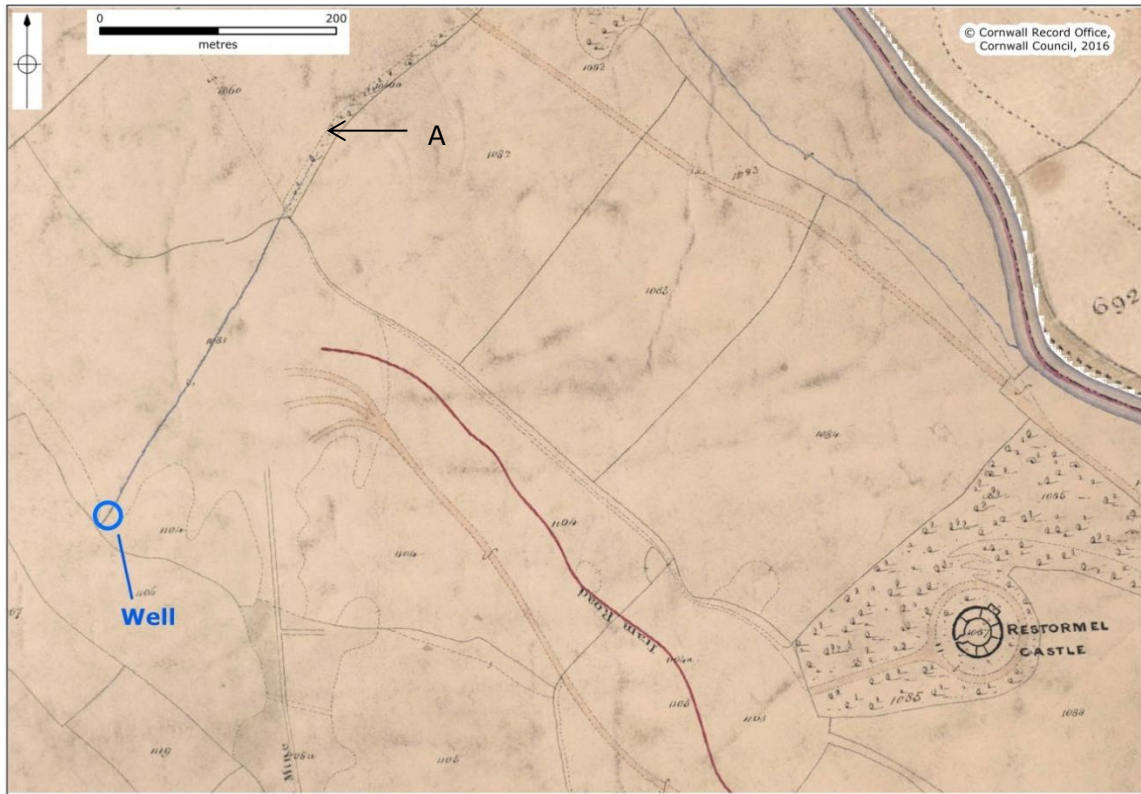


Fig 10 Tithe map, 1839, with the well stream, running to the Trinity leat (not shown but joining at approximately point A; compare Fig 11 below). Note the tramroad and branching tracks associated with the iron mine, clearly active at that date

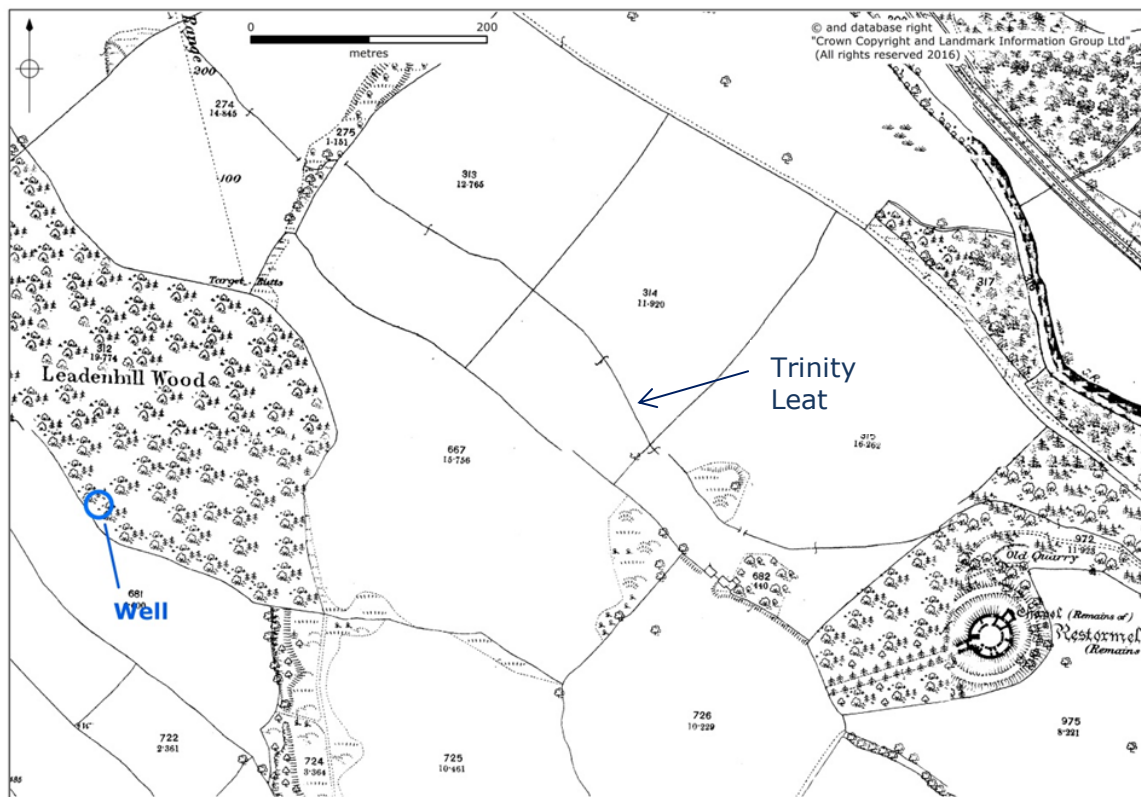


Fig 11 OS map of 1881, showing the plantation of Leadenhill Wood. The well is not marked. In the fields below the well is the Trinity leat, taking water to Restormel Manor (off the map, south-east of Restormel Castle). Water from the well may have contributed to this leat

7 Note on archaeological potential

The 1881 newspaper article, above, indicates that in the Barton field system made in the former Duchy deerpark, the lead cistern was not systematically removed between the castle and the well, even though there was some robbing of conduit and pipes at the castle end following the dis-parking. Antiquarians Carew and Norden sadly noted; 'the Parke is disparked, the timber rooted vp, the conduit pipes taken away, the roof made sale of, the planchings rotten, the wals fallen downe....' (Carew 1602, 138R). However a later newspaper account, highly reliable since it was written by eminent Cornish historian and archaeologist Charles Henderson, refers to a similar survival to that of 1881, though it does not give a precise location for it; 'The castle has an excellent water supply brought from an abundant spring in the hill-side. Some pieces of these pipes have been recently discovered' (*West Briton* newspaper, 18th October 1928; article reproduced in Buck, 1993). Some of the lead piping may then survive below ground.

At Leaden Well, besides the well house itself, remains relating to its construction, maintenance and use will survive below ground. The planting of the area has meant it has not been uniformly reduced by modern ploughing, though the forestry operations have had a considerable impact in places. A small sherd of pottery, found 6m south west of the well in 2016, is part of the 'sagging' base of a cistern of Lostwithiel-type ware dating from the period around the early 1300s (Carl Thorpe, CAU, pers comm). While not from a stratified context (being exposed in forestry vehicle tracking) the find illustrates how buried deposits at the site could contribute to the story of Restormel - it is possible, for example, that the sherd is from a vessel used to dip water from the well, perhaps for deer park workers or for hunters or their mounts.

8 Statement of significance

The well in Leadenhill Wood can be identified with a high level of confidence as the well, implied by documents of the early 14th century, supplying water to the nationally important Restormel Castle, a Scheduled Monument (ref 1017574). The survival of the well house structure and earth topping is good overall, despite partial loss of its front. The roof is substantially intact behind its collapsed front and has high technical interest and aesthetic appeal, displaying accomplished vaulting achieved in irregular local stone. With its name evoking associated lead pipework, Leaden Well shows how water was supplied from a distance to Restormel's medieval keep. Provision of a water supply to a castle from outside its fortifications is rare nationally (Creighton 2002, 54; as quoted by Taylor, Johns *et al*, forthcoming). Here it illustrates the extraordinarily high level of services provided for the castle, reflecting the status of Restormel as the head manor within the principal deer park of the Duchy of Cornwall. Unusual contemporary evidence of the value of the water supply survives, in the form of orders from the Black Prince specifying that it be secured for the hunting season.

Re-routing of the water from the well at a later date, into Trinity Leat, to help supply water to Trinity (Restormel Manor), shows the continued value of this water source once its original function had been abandoned.

There is high potential for survival of buried remains further demonstrating the significance of the well. Architectural features including detailing to the doorway and steps into the well chamber, and artefacts or other traces of its early use, may survive in the material choking the base of the interior. Recent evidence from geophysical survey indicates part of the possible route of the associated conduit, which could conceivably retain some of its leadwork in places. Future geophysical survey has the potential to reveal even more of the 600m route.

9 Recommendations

9.1 Protection of Leaden Well and its setting

- **Evaluation of the well house for protection as a Scheduled Monument** is recommended, in view of the importance, survival and vulnerability of the site.
- **Repair and reconstruction of the well house** should be considered to address the demonstrable high risk of further collapse, which could result in loss of the roof. This would require archaeological work to inform restoration, ensure the protection of the site and appropriate treatment and recording of any new discoveries (see comment on this in Section 9.2, below).
- **Adaptation of the management of the site** would be ideal both to contribute to the protection of the structure, and to enhance its setting. In particular, planting of any trees in the vicinity of the well house, and movement of forestry or other vehicles across it, should be avoided to prevent root damage or collapse. Ideally, any re-planting east of the well might be designed to respect the line of the buried conduit, should this be established by further archaeological investigation (again see under Section 9.2, below). The site would ideally be managed in a small fenced clearing, with regular cutting or strimming to prevent the growth of saplings on or near the stonework.
- **Maintain access** to the well for future maintenance and inspection.

9.2 Further archaeological work

- **Archaeological guidance and watching brief** for any structural or ground-disturbing works at the site and in its immediate surroundings is strongly recommended, to provide for protection or recording at an appropriate level of the known features of high significance and sensitivity, and any others which might be revealed. This is especially important since the line of the water supply route from the well to the castle is currently uncertain.
- **Investigation of the water supply route** is highly desirable to contribute to understanding of the medieval water supply system as a whole. Geophysical survey may not be feasible within Leadenhill Wood with its areas of tree cover and of ground disturbed by forestry. However, geophysical survey on other parts of the potential conduit line might be considered – notably outside the castle bailey with its possible existing geophysical evidence for the conduit, and in the field east of Leadenhill Wood on a line between this and the well.
- **Study of the well house in the light of any comparable structures** both in the keep at Restormel and at wells of similar date and status elsewhere could potentially contribute to understanding of its character, origins and importance.

10 References

Original sources (in chronological order)

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1839. Tithe apportionment survey and schedule Parish of Lanlivery Digital copy at CAU
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11 Project archive

The CAU project number is **146550**

The project's documentary, digital, photographic and drawn archive is maintained by Cornwall Archaeological Unit, Cornwall Council, Fal Building, County Hall, Treyew Road, Truro, TR1 3AY.

Electronic data is stored in the following locations:

Report and project admin: G:\TWE\Waste & Env\Strat Waste & Land\Historic Environment\Projects\Sites\Sites R\Restormel Leaden Well 146550

Digital photographs: R:\Historic Environment (Images)\SITES.Q-T\Sites R\Restormel Leaden Well 146550

Historic England/ADS OASIS online reference: cornwall2-246350

12 Appendix: Detailed description of the site and its condition

The Leaden Well of Restormel Manor supplied water to Restormel Castle in the later medieval period, as indicated by place-name and documentary evidence (Section 6). It lies in an area wooded since the later 19th century when Restormel was leased by the Robartes of the neighbouring estate of Lanhydrock, appearing as mixed woodland on the OS map of 1881 (Fig 14). The plantation has been regenerated in several phases of forestry work, the most recent of which led to the rediscovery of the well. The site is quite close to, but separate from, the field boundary to the south west on the shoulder of the slope; its rear side is around 13.8m from the stone-faced earth boundary bank, and 8m from the base of the associated massive lynchet - an earthwork running along the slope, resulting from plough sculpting on the boundary in the deep past, potentially both before and after the area served as part of the castle's deer park (Fig 12).



Fig 12 Well from the north- east, with field lynchet and boundary bank beyond (1m scale)

The well house is rectangular in plan and is built of mortared stone with a vaulted roof. It is set with its longer axis running across the contour, built into the steep slope and covered with earth or sub-soil above so that it is effectively underground. The front, north-east wall, part tumbled along with the vaulting which had rested on it, has a narrow doorway north-west of its centre, with a stream flowing through it from the pool of water (0.1m deep at the time of the visit in 2016) covering the gravel- and mud-filled base of the house (of unknown depth).

Overall the well house measures approximately 3.13m south-east to north-west by 3.35m south-west to north-east; the exact thickness of its walls is not evident since only the front one is exposed, and this has lost its outer face. Its full height from the gravelly mud inside is c2m - the well chamber rises from this material covering its base by 0.92m at the side walls and by 1.14m in the centre of the vault; the height of the

slabs forming the vault adds c0.4m to that of the structure; and the earthy topping above the vault is some 0.45m thick. The internal measurements of the chamber are approximately 1.33m by south-east to north-west by 1.55m south-west to north-east.

Walls have facing of laid local slatey stones mostly of similar size, c0.2m long by 0.1m high, with some thinner triggering stones, and lime mortar, in neat rough courses; the exposure of the top of the front wall reveals that its core fabric is clayey sub-soil. The roof is vaulted with slate in lime mortar, using irregular slabs selected for size or perhaps roughly trimmed, rather than cut or dressed voussoirs. These slabs are 0.3m to 0.4m high, 2cm-4cm wide, and some 0.3m long north-east to south-west so that, from front to back, the chamber is covered by a series of 5 or more interlinked arches each 0.3m thick (Figs 13, 17).



Fig 13 South corner of the well house, with its rear wall rising to the right with the arch of the vaulted roof of rough slate slabs (scale divisions are 0.5m)

To the left (south-east) of the doorway, the inner face (some 0.3m thick) of the front wall survives to a greater height (0.9m) than the outer part of this wall which has slumped so that its face is no longer evident. The door opening is well-defined on its left (south-east) side. The walling to the other side of the opening, relatively poorly preserved, may incorporate browner local stone and appears to have come away from the north-west wall of the chamber in such a way as to indicate it may have been built up against it, so is potentially secondary, though this is not clear.

Returning to the better-defined side of the front opening, this has indications of an architectural finish for the lost door (Fig 14). A darker stone with a cut surface showing chisel marks appears to be a worked freestone laid in the frame of the doorway in such a way that it forms part of a rebate 8cm wide to take the edge of a door closing against it from the outside, 0.55m out from the chamber (so roughly in the middle of the apparent original thickness of the wall).



Fig 14 Detail of the lower part of the south east side of the doorway, looking south

The top of the worked stone with evidence of the rebate protrudes from the present stony and silty ground surface in the opening to the well which may be choking the lower part of a deeper doorway, along with any steps leading down inside it. A displaced piece of granite from the structure, 0.4m long and 0.2m wide and protruding 0.1m from the mud, lies on the opposite, north-west side of the stream opening. This is not evidently a worked stone from the door arch or other architectural feature, but it is not possible to determine its character from the portion visible which may be its back.

Within the well chamber, the silt and tumble from the front wall, filling the interior below the water level, obscure the base of the walls and any features there such as steps descending from the door. The walls other than the front one are generally near intact. However, some facing slabs in the tops of the walls have slipped forward (Fig 13), and at the rear of the chamber, to the right (north-west) of centre, a dozen or more have fallen away around the present water level leaving an irregular hole (Fig 15). This may be the result of damage from water flow/tree growth above the well (no roots are visible in the hole). The area which has lost its facing is 0.57m wide and rises

to 0.29m high above the gravelly fill, and extends at least 0.5m back into the wall fabric.



Fig 15 Rear wall inside the well house, with damage to stonework in its centre (1m scale)

As already mentioned, the front of the well house has partly fallen, and the roof is in an unstable condition, at risk of collapse (Fig 16). The damage is worst in the front right (north) corner of the house, so that, of the 5 or so slate slab arches one behind the other forming the vault spanning the chamber, only the innermost (south-western) 3 are intact on the right hand side (north-west), while 4 remain left of the doorway, and all survive only above the 0.2m furthest to the left (south-east).

At either side of the front of the well house, where the vaulting has fallen, one can see how its slabs continue into the ground above the side walls of the chamber (Figs 16, 17).

The surface of the ground covering the well house is c0.5m above the top of the vaulted roof (Figs 12, 18). This ground is higher than that of the surroundings particularly to the west, though it does not form a well-defined mound. It has been shaped by tree growth and felling, having a hazel growing on its south west side, a substantial tree stump on the east, and tracking and scraping by forestry machinery movements.



Fig 16 Well house from the north, showing decay of front wall and loss of roof above



Fig 17 Outer part of the surviving roofing on the north-west side of the well house, with remains of the collapsed vaulting in front (the mossier slabs, right of photo)

To the front of the well a watercourse c1m wide runs away. This has been altered by machinery, and further down the sharp slope the water is diverted out of it into a buried pipe and its course is overlain by a forestry track slanting across the slope. From a point some 18m north-east of the well, a large trench around 2m wide and deep extends downhill; the lower end of this respects the forestry track already mentioned and it appears to be a modern drain dug by machine.

The dried-up course of the old stream continues from below the slanting forestry track, to end at a linear platform running across its line at the base of the steepest slopes, beyond which it was probably levelled during tree planting (the associated drainage works having taken the water underground). The 1755 map shows the well water flowing on from here to White Marsh in the valley bottom (Fig 9; the wavy line marking the stream runs by the north-west side of the field named Inner North Park).

The tithe survey of 1839, in contrast, shows the stream stopping in the field upslope of the marsh, at the point where the 1881 OS map shows a leat running past to supply Trinity Barton, later named Restormel Manor, below the castle (Figs 13, 14). This means that while the survey of 1839 (concerned with land values) does not record the Trinity leat, it was already in existence by then, as indicated also by evidence for a possible pond fed by the leat in Trinity's walled gardens represented on the OS drawing of 1805, noted in the forthcoming study of the gardens. Provided that the feature drawn in 1805 is a pond, the leat therefore dates to the period after 1755, before 1805.

As mentioned above, at the lower end of the surviving dried-up stream course, where the very steep slope in front of the well becomes more moderate, is a platform running on a line close to the contour, 2m or more in width and levelled c0.7m into the slope. This earthwork curves around the slope to the east, from just west of the stream course (Fig 18). It runs across a mine on an iron lode, on a passage left between two deep openworks (the lower of the two gaps visible in Fig 2). Its general course might suggest it represents the line of the conduit. However, it is probably part of the mine's transport system of branching cart track and tramway, recorded east of the openwork, on the 1839 map (Fig 10). It is likely to be a route left through the mine to allow for access to the outer, west side of the deep openworks. Further, historical evidence for the course of the lead pipe which gave the well its name is included in Section 6, above.



Fig 18 Dry stream course from the well (by the sapling, right) overlain by a linear platform running east across the line of the openworks by the trees beyond



Fig 19 A slight earthwork on the castle side of Leadenhill Wood (centre) marks a more easterly part of the linear feature overlying the stream course, probably a mine track

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