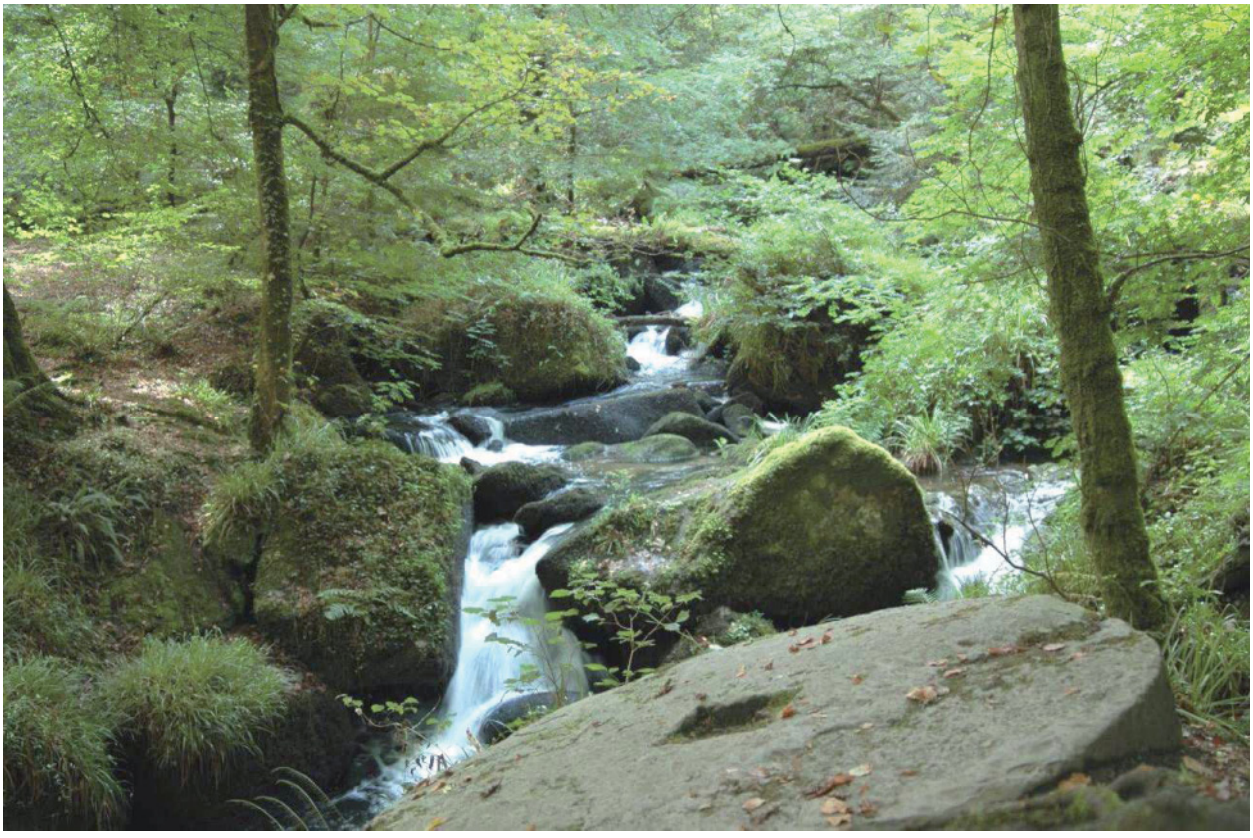
Report No: 2011R021

Kennall Vale, Ponsanooth, Cornwall

Archaeological management and interpretation



Historic Environment Projects

Kennall Vale, Ponsanooth, Cornwall

Archaeological management and interpretation

Client	**Conserving Cornwall's Past**
Report Number	**2011R021**
Date	**May 2011**
Status	**Final**
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Acknowledgements

This report describes work co-ordinated by Historic Environment Projects, Cornwall Council (CC HE: formerly Historic Environment, Cornwall County Council) in partnership with Cornwall Wildlife Trust (CWT).

We would particularly like to acknowledge the support of Nick Marriott of CWT, who has worked extremely hard to make this a success, not to mention the role of Linnea Glynne-Rule in providing the initial motivation.

Conservation work on the structures was undertaken out by Mark Nicholls of Cornish Stone Work. Tree work was by Aldous George of Up-A-Tree.com. Pete Dudley of Crellas Solutions for Archaeology helped with the photo recording and Adam Sharpe of Historic Environment with monitoring the buildings consolidation.

Kennall Vale volunteers played a significant part in this project and continue in active management of the site.

Within Historic Environment, the Project Manager was Ann Preston-Jones.

The work was undertaken as part of 'Conserving Cornwall's Past' project: a project funded jointly by English Heritage, the Heritage Lottery Fund, the Cornwall Heritage Trust, Cornwall Council and other partners.

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

A millstone from nearby incorporating mills overlooks the River Kennall, in a view which epitomises the character of the site.

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Abbreviations

CAU	Cornwall Archaeological Unit
HE CC	Historic Environment, Cornwall Council
CWT	Cornwall Wildlife Trust
EH	English Heritage
FMW	Field Monument Warden
HEFA	Historic Environment Field Advisor
HER	Cornwall and the Isles of Scilly Historic Environment Record
HE	Historic Environment, Cornwall Council
HLS	Higher Level Stewardship
NE	Natural England
NGR	National Grid Reference
OS	Ordnance Survey
PRN	Primary Record Number in Cornwall HER
RIC	Royal Institution of Cornwall

Summary

A partnership between Cornwall Wildlife Trust and Historic Environment, Cornwall Council, resulted in a range of management and interpretative works being carried out in 2009-10 in Kennall Vale: a nature reserve based around the remains of a 19th century gunpowder works and run by Cornwall Wildlife Trust. The work was funded through Conserving Cornwall's Past: a project supported principally by the Heritage Lottery Fund, English Heritage, and Cornwall Heritage Trust.

The work included small-scale consolidation work to three structures: a cask house, a bridge and some steps. Four dangerous trees were felled. A new interpretation board and leaflet were produced for the site and volunteers helped with a photographic survey of the seventy or so structures extant on the site. Kennall Vale is a scheduled Monument, Cornwall 15541, and is number 18356 in Cornwall Council's Historic Environment Record (HER). The site is centred at NGR SW 75010 3744.

The Kennall Vale volunteers discuss repairs to the leats with Peter Trebilcock.

Introduction

At Kennall Vale, Ponsanooth, in a deep wooded valley managed as a nature reserve by the Cornwall Wildlife Trust (CWT), are the well preserved remains of an early 19th century gunpowder works. The site is a remarkable complex of mills, leats, trackways, bridges, blast walls and ancillary buildings, overlain in part by the workings of a late 19th century granite quarry.

This report summarises a varied project undertaken in partnership with CWT in 2009-10 to improve interpretation of the site, carry out some urgently needed conservation work, and work with volunteers on site management and the production of a full photographic record to enable future monitoring of the buildings.

The remains of Kennall Vale Gunpowder Works, located at SW 7501 3744, is number 18356 in Cornwall Council's Historic Environment Record (HER) and is a Scheduled Monument, Cornwall 15541. In addition to its significance as a Scheduled Monument, Kennall Vale is part of the Cornish Mining World Heritage Site because of the importance of gunpowder to the development of this industry.

1 The monument

1.1.1 History of the monument

The following summary of the gunpowder works in Kennall vale is quoted from Smith 1986 (Smith 1986b, 1).

'Established in Kennall Vale in 1812, the Kennall Company was the second gunpowder works to be set up in Cornwall…By this time the use of powder as a blasting medium in the mines and quarries of the County was standard practice, and a ready market existed for good quality gunpowder; the development of Bickford's safety fuse in the 1830s offered the powder makers another market for their products and made blasting safer and more convenient for the user.

'The factory at Kennall Vale was constructed in two stages; the original lower works, running up the valley from Kennall House, was expanded in 1844 by a second self-contained works higher up, known as the Roches section. Thus most of the processing buildings were in fact duplicated on the site.…

'The process used for gunpowder making at Kennall Vale was the standard method of the time. The basic raw ingredients of gunpowder, saltpetre, sulphur and charcoal, were weighed out in the correct proportion and given a preliminary mixing in a rotating wooden barrel in the *Mixing House*. This 'green charge' was then taken to one of the *Incorporating Mills*. Here the powder was spread onto the bed of the mill, dampened, and thoroughly ground and mixed to a fine consistency by the action of two large edge runners rotating on the bed. The time taken for this varied according to the grade of powder being manufactured; blasting grades required about four hours in the mill. From the mill the powder was taken to the *Press House*, where it was compressed by means of a hydraulic ram into a cake about an inch thick. This 'press cake' was then broken down into small pieces with wooden mallets in the *Breaking Down House*. The *Corning House* or *Granulating House* further reduced the lump powder to grains, graded to size by a series of vibratory screens; from here the powder was taken to the *Stove* for drying, and was cycled via the *Dusting House* to the *Glazing Mill*. Here the grain powder was placed into a rotating wooden drum with the addition of a little graphite to round and glaze the finished product. The powder was then packed into wooden barrels in the *Packing House*, ready for sale to local mines and quarries.

'All these processes at Kennall Vale were powered by waterwheels, fed from a complex series of leats which ran on both sides of the river. Transport within the works was by horse and a small enclosed two-wheeled cart. At its peak in the mid 19th century, the works employed upwards of fifty men, but the collapse of Cornish mining in the 1880s

and the invention of high explosives such as dynamite resulted in greatly reduced demand for gunpowder. The Kennall Company sold the works to Curtis's and Harvey in 1898.' Final closure of the works was in c 1914.

The quarry which is now also a feature of the site and whose remains both destroyed and overwhelmed some of the gunpowder works' buildings was a 20th century development. Figs 2 and 3 show the site in 1840, before expansion, and in 1880 after the new Roches Wood section had been built.

1.1.2 Summary description of the monument

The deep wooded valley of the fast-flowing Kennall River, within which the remains of the gunpowder works are set, is the asset which led to the development of the works here in the early 19th century. The trees provided a damp shady atmosphere and helped to contain any explosions. Amongst and beneath the tall trees survive the remains of forty buildings associated with the works: an estimated 70% of the original number. Most prominent amongst these are the substantial and strongly-built pairs of incorporating mills and the leats, spilling and leaking water along their courses. Also extant are the remains of other buildings essential to the complex – the Press House, the Breaking Down House, the Corning House, Stove, Dusting House, Glazing Mill and Packing House, as well as the network of tracks, bridges, embankments and steps which linked the individual buildings, and the tall blast walls, built to protect nearby buildings and properties from accidental explosion. These are identified in Fig 7. The thirty per cent of structures that have been lost were destroyed or buried by the twentieth century quarry, whose water-filled void, concrete buildings and granite tips are now an integral feature of the site (Fig 5).

1.1.3 Assessment of the significance of the monument

The gunpowder works at Kennall Vale is one of very few surviving examples of a large 19th century gunpowder manufacturing complex to retain its overall integrity of layout with an unusually complete range of well preserved features. The surviving remains include a number of especially unusual and rare components. The physical remains are also complemented by a wealth of historical documentation showing the development of the associated company and providing interpretation of the many buildings.

Because of this importance, the entire site is a scheduled monument (Fig 6) and is included within the boundary of the Cornish Mining World Heritage Site.

1.1.4 Amenity value

With its dramatic mixture of natural forces and solidly built structures, combined with easy accessibility, Kennall Vale has great amenity value. Its management as a nature reserve by the Cornwall Wildlife Trust enables this aspect to be enjoyed by many though sadly, its easy access means that it is now almost over-used and suffers from visitor erosion and occasional vandalism.

2 Condition of the monument

Other than natural deterioration, a number of factors threaten the condition of the structures. These include vandalism, tree-throw and tree-root damage, as well as the uncontrolled flow of water along the leats, which coupled with a constant procession of visitors, is causing considerable erosion.

2.1 Trees

The damage caused by mature trees falling has been a feature of the English Heritage Field Monument Warden's (EH FMW's – now the Historic Environment Field Advisor/HEFA) damage reports since the site was scheduled in 1999 (Preston-Jones 2000, 2003, 2006, 2007): in 2003 this led to a previous Scheduled Monument Management project when a section of tree-damaged leat was reconstructed (Cole

2003). When mature trees which are rooted into structures fall they risk taking a large quantity of masonry with them, thereby causing potentially serious damage (see for example Fig 23). This is also a problem in relation to the safety of visitors to the site. Tree seedlings root into the tops of structures all the time and keeping on top of this problem is a nearly impossible task, especially on some of the taller, more inaccessible buildings.

2.2 Vandalism

Vandalism is a continuous problem. EH FMW's reports have highlighted damage to the quarry's smithy, a small privy and the cask house, as well as some of the modern bridges, but on-going, small-scale attrition is a constant feature affecting all aspects of the site.

2.3 Water

Water flowing through the leats is currently entirely uncontrolled, leading to high levels of water in the leats in the winter and almost no water at all in the river in the summer. The leats overflow, leak in many places and where breached allow water to rush down the steep hillsides, stripping soil and vegetation and cutting gullies. Anecdotal evidence suggests that these problems have gradually worsened over the years and that associated erosion of paths and hillsides has increased.

3 Background to the present project

The main inspiration for this project was an approach by a member of Cornwall Archaeological Society to the EH FMW. Linnea Glynne-Rule was concerned about a general deterioration of the structures with time and also the lack of on-site information about the gunpowder works (this despite the existence of plentiful information following a survey in 1985).

A secondary factor was the need to stabilise the cask house, where recent vandalism had left a granite lintel with virtually no support, resulting in a potential threat to both visitors and vandals and the building itself.

The FMW had also wished to explore the possibility of reconstructing a large section of walling retaining a bridge abutment, damaged after the fall of a tree in 2003 (Fig 23), but this had to be ruled out, once discussion with a builder indicated that the expense would be beyond the reach of the present project.

4 Aims

It was therefore the purpose of the project to help improve interpretation and access, enhance community involvement in the site, and to undertake the minimal consolidation and tree work needed for safety reasons. This was to be achieved with appropriate archaeological recording and advice. A final aim was to move towards a more strategic, less reactive approach to management of the site in the future. A first step in this direction was taken with a photographic survey of all structures which will form the basis for a future programme of regular condition monitoring.

5 Methods

Achievement of aims of the project was by the following means.

5.1 Interpretation

Interpretation was improved through a number of means including provision of a leaflet and a new interpretation board. This is described further in section 10.3.

5.2 Access

Access was improved by resurfacing the main track into the reserve with granite chippings to resemble the existing. See section 10.4.

5.3 Community involvement

Working Parties to undertake the easier and safer aspects of work on the site began during the course of the project and are still on-going; these were linked closely to the photographic survey. See sections 10.2.

5.4 Photographic survey of buildings

The starting point for this survey was the general (almost certainly true) perception amongst CWT staff and volunteers that the condition of structures and buildings on the reserve had deteriorated over time. This is clearly demonstrable in cases of vandalism or damage caused by trees falling, when the damage is sudden and obvious, but is less apparent when the deterioration is gradual. Often this is an impression based on nothing more substantial than a feeling that a certain wall used to be more regular, or that a particular leat is leaking more than it did before, or that the trees rooted in a particular building are bigger than before. To support these subjective thoughts, it was considered that a systematic survey would be timely, to provide more accurate data on the condition of the buildings and a baseline from which to start monitoring. Such a survey would also be invaluable when work is needed to reconstruct structures damaged by vandalism or tree-fall, and like the tree survey, could be used to underpin future grant applications.

The survey was carried out by volunteers, working with HE staff. See section 10.2.

5.5 Conservation work

Building work focussed on the cask house, vandalised in 2006, repairs to a gap in the parapet of the causeway leading to a mid nineteenth century bridge and levelling of some steep slippery steps to make them a little safer. This work was preceded by archaeological recording and work was monitored as it proceeded. See sections 7 and 8.

5.6 Tree stability

A number of over-mature trees which threatened structures or public safety were felled.

See section 9.

6 Results of the archaeological recording

Consolidation of the cask house and repair work to the bridge were preceded by archaeological recording involving elevation drawings and a photographic record. In addition, a full photographic record of all buildings and structures was made with the help of volunteers.

6.1 Recording the consolidation work

6.1.1 Photographic recording

A photographic record of the two structures which were consolidated was made before work commenced, during management work and once work was complete.

Photos included colour photographs taken with a digital camera, for illustrative and presentation purposes.

6.1.2 Elevation drawings

Elevation drawings were made at a scale of 1:20 of internal and external faces of all walls being repaired. The drawings were made by pencil (4H) on drafting film; all drawings included standard information: site details, personnel, date, scale. See Fig 8.

6.1.3 Monitoring the management work

An archaeologist visited the site regularly while work was taking place, to ensure that the work proceeded according to agreed methods, to discuss and agree any necessary departures from the guidelines and specifications, record any archaeological features or finds revealed in the process of carrying out the management work, and record any significant stages in the work.

7 Results of the conservation work

Building work focused on the cask house, vandalised in 2006, a gap in the parapet of the causeway leading to a mid 19th century bridge which marks the point between the early and later parts of the gunpowder works, and the levelling of some steep slippery steps to make them a little safer.

7.1 Guiding principles for masonry repairs

The overall aim was to rebuild and secure the affected masonry, while retaining the appearance of the structures as far as possible. To help achieve this, the following principles were used:

- The work was carried out by a contractor with appropriate skills, working under the guidance of an archaeologist from Historic Environment.
- The work carried out was the minimum needed to ensure the safety of the buildings and visitors to the site.
- All mortars used were lime mortar (a hydraulic lime mortar (NHL 3.5 for walls and 5 for wall tops) in a 1:2.5 mix with well-graded sharp sand).
- All walling was rebuilt in the style in which it was originally constructed, using adjoining sections as a guide.
- In the cask house, although the wall may originally have been mortared, all trace of this had washed out, giving it the appearance of dry-stone construction. This appearance was retained, so that although the replaced stones were bedded in mortar, the mortar was kept back from the face of the wall, and then covered in earth to encourage vegetation to re-colonise.
- On the other hand, the bridge's pointing is very evident due to relatively recent cement repairs, and here the pointing was designed to reflect the appearance of that pointing, though not in cement.
- All walling was rebuilt or repaired using only stone retrieved on the site.

7.2 The cask house (HER 18356.4; NGR SW 74849 37252)

This small building, approximately 3.5 by 3 metres externally, with walls 0.65 metres thick, is built of roughly coursed granite rubble with cut granite quoins. Three of the walls stand to perhaps half of their original height and have no obvious features. The fourth, south-west-facing, wall stands to nearly its full original height and contains a granite-lintelled doorway. Pan-tiles found in a leaf mould-covered pile nearby suggests that these had been used for roofing, although the quality of these compared to the humble nature of the building suggest that in this context they were re-used (Fig 12).

7.2.1 Condition

The condition of the building over the years is summarised from the few sources where it is mentioned.

In 1985, upstanding walls stood to approximately half their original height, except at door end which was virtually intact (Smith 1986b). By 1999, however, Herring noted that consolidation of walling was urgently needed on the SE and NW corners, as well as removal of saplings from the walls and the interior (Herring 2000, 11). In September 2006, a FMW's damage report recorded recent vandalism, stones having been pulled from the walls in various places. At that date, the building's walls were bare of vegetation but the tops, where not vandalised, had a thin protective covering of ivy and some bramble (Preston-Jones 2006). On subsequent FMW visits, further robbing of stone from the structure was noted and in October 2008 the internal face of the wall containing the door was found to have been robbed of stone to the extent that the lintel was now supported on a very slender pillar of masonry only.

The following full description was made six months before the repair work took place (Preston-Jones 2009).

SW wall: although masonry had been replaced beneath the internal lintel, this was cosmetic only and not supporting the lintel at all. The masonry of the wall as a whole had very little surviving mortar and light could be seen right through in places. Vegetation (ivy and bramble) had been removed from the wall-top, possibly in a misguided attempt at conservation, but this had only had the result of leaving the wall exposed and vulnerable to further erosion.

NW and SE walls: where masonry adjoins the SW wall and still stands to any height, the stonework was in similar condition to the SW wall. Where it had already been eroded and reduced in height, it was more stable, although the recent removal of vegetation from the tops had exposed the tumbled remains to further erosion.

NE wall: this survived only as an ivy-covered tumble of stone

The condition of the building prior to conservation is illustrated in Figs 9, 10, 11.

7.2.2 Conservation

The repair work was carried out in July 2009, under the supervision of Adam Sharpe of Historic Environment (Fig 13).

The work involved the following:

SW wall (wall with doorway)

1. The area of vandalised stonework in the doorway was rebuilt, in order to support the internal lintel, using stone retrieved from the foot of the wall, and in a style which matched the adjacent walling. This involved the replacement of one substantial squared granite quoin (shown in red on Fig 8 and labelled on Fig 15)

2. The entire wall was deep pointed, recessing the pointing, and finishing by covering all joints in earth to hide the mortar and encourage recolonisation of moss and lichen.

3. On the top of the wall: the top two courses of stone were removed, reserving stones and any surviving earth/rab mortar. The stones were cleaned and re-bedded in mortar, in exactly the positions from which they had been removed.

4. Reserved rab/earth was replaced on top of the wall, to encourage vegetation to regenerate.

NW and SE walls

1. The SW end adjoining the SW wall was deep pointed, recessing the pointing and finishing by covering all joints in earth to encourage re-colonisation of moss and lichen.

2. Over the remainder of the wall, where the wall is lower, only the wall tops were treated.

The rebuilt SW wall is shown in Figs 14 and 15.

7.3 The bridge (HER 18356.63; NGR 75073 37481)

Dating from the 1844 extension of the gunpowder works, this bridge was built to link the original lower works with the newly-developed complex. It is a two-span bridge constructed of granite lintels laid across stone piers, with a parapet of very roughly coursed granite rubble (Figs 16 and 17).

The bridge and parapets have evidently been repointed in cement at some stage, although the corework retains its original lime mortar. Over its entire length, the parapet wall is thickly covered in moss and ivy.

7.3.1 Condition before repair

Damage to the parapet of the bridge appears to have taken place before 1999 (Herring 2000, 37), but has never been deemed a priority for repair. However, in December 2008, CWT suggested that it should be repaired, since the damage at this point facilitates access to a 1-metre diameter hole in the ground immediately to the west, where the roof of a culverted section of leat has collapsed, leaving exposed a drop of nearly two metres into the leat below (Fig 18).

The damage affects a four-metre length of the parapet on the causeway leading to the bridge, not the bridge itself (see Figs 19, 20). Lumps of moss-covered masonry lie on the ground to either side of the bridge.

7.3.2 Conservation

This section of parapet wall was repaired in July 2009, using stone found at the base of the wall and nearby. Although the wall has been repointed in cement, this section was rebuilt using lime mortar, as indicated in section 8.1. The repair was made in a style which matches that of the masonry in adjoining sections of the wall. See Fig 21.

7.4 The steps (NGR SW 74987 37459)

The steps leading to incorporating mill pair 22/23 from the west are built of blocks of grey limestone, recycled from the millstones used in the incorporating mills. As a result of frequent wear, they are very smooth and slippery, as well as uneven and hazardous, particularly in wet weather. See Fig 22.

7.4.1 Conservation

Some limited work was done to make these steps safer by lifting and re-bedding to ensure that the individual treads were level or sloped back slightly into the slope. No mortar was used. However, as the roots of a large tree are intimately wound around the steps, with one root even forming one of the steps, the work that could be achieved was limited.

8 Tree work

As mentioned above (section 3.1) trees are one of the major threats within Kennall Vale – to public safety as well as to the buildings. Fig 23 (above) illustrates the potential results of tree-fall on a bridge abutment; 23 (below) shows where a tree fallen across a path with, behind it, a dangerously leaning tree. The continuous nature of the threat is demonstrated by the description below, recorded by Adam Sharpe of HE, who was monitoring the repair work to the cask house in July 2009 when a tree fell nearby. Note that this was apparently spontaneous and happened in the summer, not at a time of heavy rain or high winds.

'Just missed by a falling tree at lunchtime… The tree was a whopper – about 15m long. It wasn't too close but it did make me jump – there was no warning – just a crash like overhead thunder as the tree broke off and almost immediately hit the ground. There was a fair amount of rot in the trunk where it broke off, so it could have gone at any time.'

After much debate on the best use of the limited funding available, it was decided that four trees should be felled as a matter of priority. These were chosen by Nick Marriott, the CWT reserve officer, following survey and discussion with local tree surgeon Aldous George of Up-A-Tree.com. The position of these trees is shown in Fig 24; one example is illustrated in Fig 25. The trees are all rooted into walls and structures: one into a bridge abutment, one into a blast wall, and two into the walls of leats. One, growing in a very inaccessible position in a blast wall, was felled and the stump treated with herbicide to prevent re-growth; the others were cut but not treated, to encourage coppicing, thus making them more stable and less likely to fall but avoiding the risk of masonry collapsing as the roots rot away (Fig 26).

9 Interpretation, access and community involvement

9.1 Community involvement

At the planning stage of this project, it had been the intention to help set up a volunteer group to carry out maintenance work in Kennall Vale. However, by the time work started, a group of locals had, through their own initiative, already begun to hold regular working parties; they remain active two years later. The group has at its heart a number of people living in the Ponsanooth area who love the site but are concerned about its condition and vulnerability. The working party meets once a month on a Sunday morning in winter and over two years has had a significant effect on the management and well-being of the site. Volunteers help with safety work such as replacing anti-slip mesh on wooden bridges, improving footpaths, removal of silt from leats, and also carry out scrub clearance and the removal of saplings rooting into structures, where they are accessible.

The prior existence of this group proved fortunate because when photo-recording began, there was a ready-made nucleus of people enthusiastic to become involved. The volunteers' help was fundamental to the successful achievement of the photographic recording, both in helping to clear vegetation before the photos were taken, and in helping with the survey.

9.2 Photographic survey of buildings and structures

A point-in-time photographic survey of all buildings and structures within the reserve was compiled. 'Structures' included all gunpowder works' buildings, all quarry buildings, steps, leats, bridges and blast walls. The survey involved taking digital photos of all elevations, both interior and exterior, as appropriate. It was carried out, with the help of volunteers, in the winter of 2009-10.

9.2.1 Method

A tripod was used to take advantage of natural light and slower exposures. A metric scale and a board with details of the individual structures and elevations was included in all views, except where health and safety considerations made this impractical. The information for each photo was recorded on a pro-forma during fieldwork, to aid subsequent archiving. A sample recording form is included as an appendix to this report (appendix 1).

9.2.2 Timing

It was necessary to carry out the survey in the winter, during the months of November, December, January, February and March, while the trees were leafless. When the trees

are in full leaf it can be almost impossible to see some of the structures in Kennall Vale and while this adds to the romance and beauty of the valley, it can make photography a challenge. This timing meant that photos were often taken in low lighting conditions, necessitating the use of a tripod and long exposures; nonetheless they are for the most part serviceable. The best photos were taken in March when light levels were better, although by then the shadows cast on the buildings by trees and branches caused problems with contrast.

9.2.3 Volunteers

The photo survey was carried out under the supervision of one historic environment professional, with the help of volunteers. The volunteers, who included Chris Wheeler, Birgit Hontschz, Linnea Glynne-Rule, Sheila James, Lewis Meyer, Kathy Hicks and Matt Miciak, helped with initial clearance of scrub and saplings from the structures, to make them clearly visible for the photos, with the photography itself, filling in details on the boards used for naming the photos, and in positioning and holding the ranging rod which was used as a scale in all photos (Fig 27).

9.2.4 Collation of the photos

The basic photos were digitally archived by building/structure number, and then compiled into pages for each structure. One set of these pages has been printed out for use in monitoring by the Kennall Vale volunteers; the remainder are stored digitally at both Historic Environment and the Cornwall Wildlife Trust and can be printed out as and when needed.

All structures photographed are tabulated in Appendix 2: a sample 'page' for one of the structures is illustrated in Appendix 3.

9.3 Interpretation

Improving interpretation of the remains of the gunpowder works was addressed through a number of means including provision of a leaflet and a new interpretation board.

A student, Eric Leyland, had worked with CWT and as part of a degree project had produced an information leaflet for the site. Though amateur, this was to an impressively high standard, with detailed descriptions of how the site worked and an attractive isometric plan of the layout of the entire complex, a reconstruction with cut-away to show how the incorporating mills work and a picture featuring the delivery of the basket of hot potatoes – a workman's lunch – which caused a spark, an explosion and fatality in the 19th century. This was used as the basis for a more professional design for both a leaflet and an interpretation board, by Sciart Solutions.

The production of all interpretive materials was co-ordinated by CWT with input from HE on the text and layout.

9.3.1 Interpretation board

A new interpretation board was installed at the entrance to the reserve as part of the project.

The main feature of the board is a plan of the site, with suggestion for a self-guided trail, brief history and details on some of the main buildings (Fig 28).

9.3.2 Leaflet

Compared to the board, the leaflet has more information and is more closely linked to a tour of the site. It is A3, folded, and is available either from a dispenser at the gate to the reserve, at CWT's headquarters at Allet, or as a download from CWT's website:

http://www.google.co.uk/search?hl=en&source=hp&q=kennall+vale+leaflet+cornwall+wildlife+trust&btnG=Google+Search&aq=f&aqi=&aql=&oq=

The leaflet is included here in appendix 4.

9.4 Access

The main track into the site is levelled into the very steep sloping valley side and appears to have been built in the second half of the 19th century to serve the expanded gunpowder works. It later became the main access for the quarry and the present surface, of compacted rough granite chippings, probably relates to the latter. In places, however, much of the surfacing had either worn away or become buried beneath a deep and boggy layer of leaf-mould, making it muddy and slippery in places.

Access to the reserve was improved through this project, in a partnership between CWT, HE, and the owner of a private house at the main point of access to the reserve. The length of the track was first scraped to remove all leaf litter and humus, of which there was a considerable build-up in places. The edges on the downhill side were revetted where necessary with small branches. The path was then re-surfaced in 40 mm granite chippings, rolled onto the existing surface (Fig 29).

The fresh granite chippings were very bright when first laid but in the damp wooded environment the surface has mellowed rapidly.

10 Conclusions/discussion

This project has been successful in addressing some immediate management concerns in Kennall Vale, but can only be regarded as a temporary respite from the ongoing tide of natural decay and vandalism. The existence of a new volunteer group is of major benefit in helping to keep the site tidy and the condition of the buildings monitored.

However, the interim nature of this work was illustrated in 2010 when a party from English Heritage, while visiting the site, was shown the latest problem. Recent vandalism had resulted in a fall of stones from the window opening of a ruined building; the fall had left the opening with no lintel and vulnerable to further stone-fall. Further holes in the walls showed where stones had been pulled out. As this was also a public safety threat the building was fenced off and warning notices put up. Fortunately it has been possible for English Heritage to fund the necessary repair through a Section 17 management agreement.

This example is mentioned to illustrate the problems inherent on a site like this, where resources permit only a low-key approach to management but many of the ruined buildings and structures are potentially vulnerable to collapse, or damage from falling trees. It is obvious that the present reactive approach to management is neither sustainable nor acceptable, particularly on a site of national and international importance where increasing visitor numbers pose an extra level of responsibility. The final section of this report summarises moves currently underway towards this goal.

11 Future management

In the course of the project, the need for a more proactive approach to the management of Kennall Vale was discussed. Initially, English Heritage encouraged the development of a Conservation Management Plan for the site, which it was anticipated might eventually lead to a grant application to the Heritage Lottery Fund. In 2009-10, however, there were unusually good opportunities for funding from Natural England via a Higher Level Stewardship (HLS) agreement, and so this option was actively pursued, with the idea that this might involve the compilation of a management plan in year 1, leading to the inception of a capital works project in the second year.

At the time of writing, however, government cuts have led to a reduction in funding for HLS; nonetheless an application has been submitted and awaits consideration. It is hoped that if only a management plan can be achieved, this will at least be available as

a basis for prioritised action once the funding situation becomes easier. Priorities are likely to include repairs to the leats, paths and most vulnerable buildings, as well as stabilisation or felling of unstable trees and improved habitat management. At any rate, it is important that the present enthusiasm and initiative is not allowed to slip.

12 References

12.1 Primary sources

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12.2 Publications

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Smith, J, 1986a. *The Kennall Gunpowder Company, Kennall Vale, Ponsanooth – Archaeological and Historical Study*, Truro (Cornwall Archaeological Unit)

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Weston, K, 2002. *Kennall Vale, Ponsanooth, Cornwall,* English Heritage – Conservation Engineering Branch memo

13 Project archive

The HE project number is **2008209**

The project's documentary, photographic and drawn archive is housed at the offices of Historic Environment, Cornwall Council, Kennall Building, Old County Hall, Station 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. Digital photographs stored in the directory ..\Images\Sites I-L\Kennall Vale\2009 Project
3. English Heritage/ADS OASIS online reference: cornwall2-101299

This report text is held in digital form as: G:\CAU\HE Projects\Sites\Sites K\Kennall Vale 2009\Report\Kennall Vale report

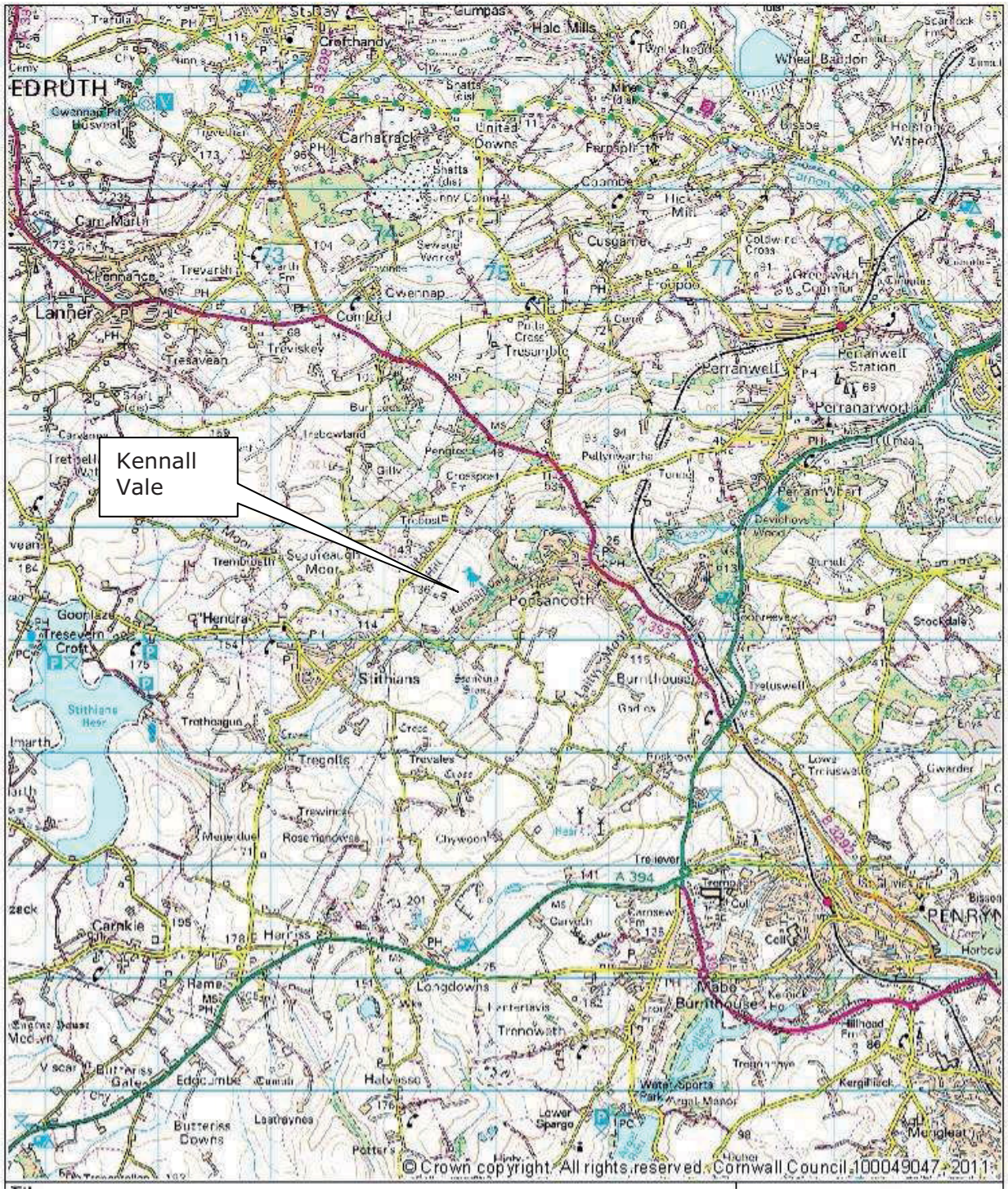


Fig 1 Location map

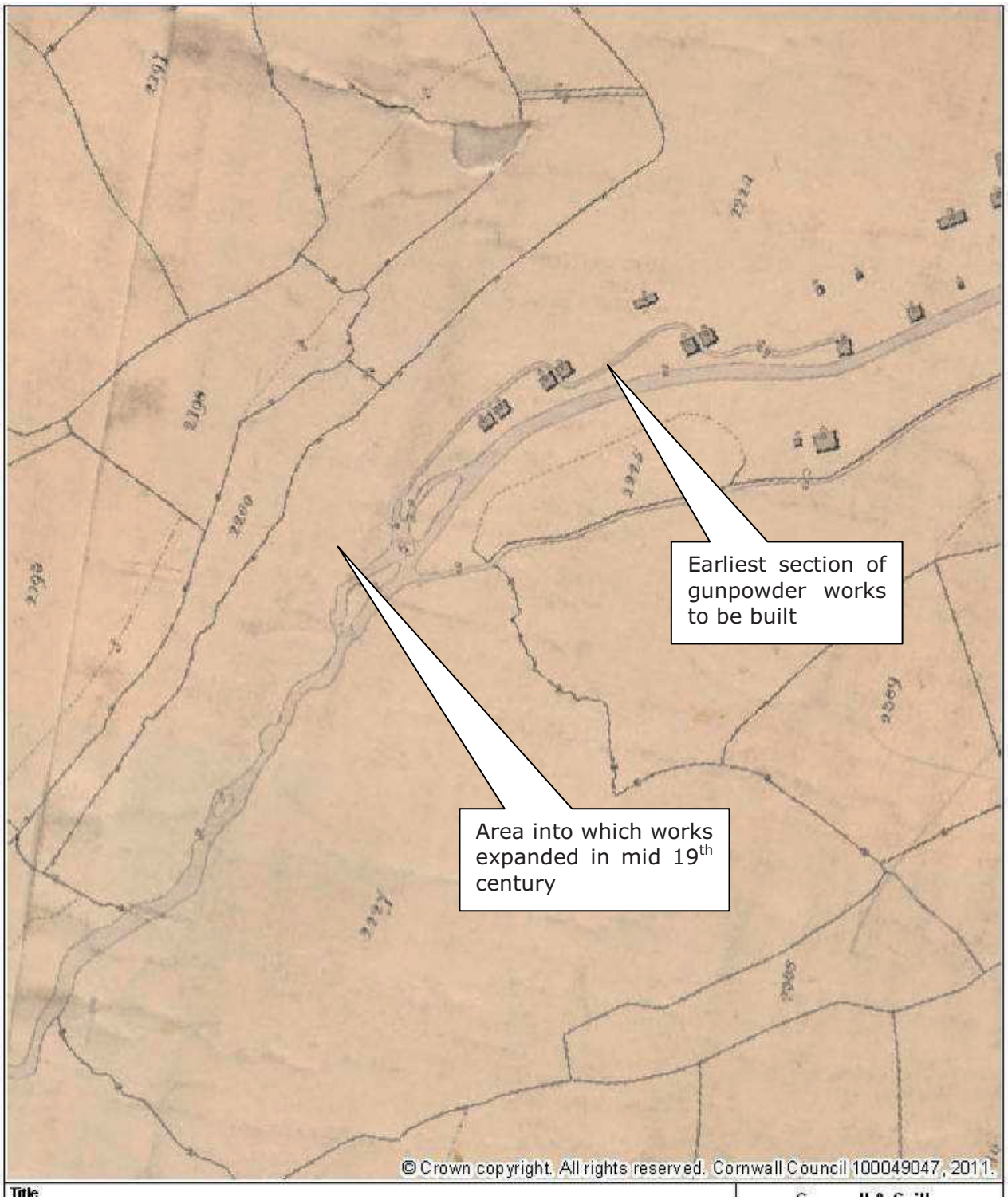


Fig 2 Tithe Map, 1840

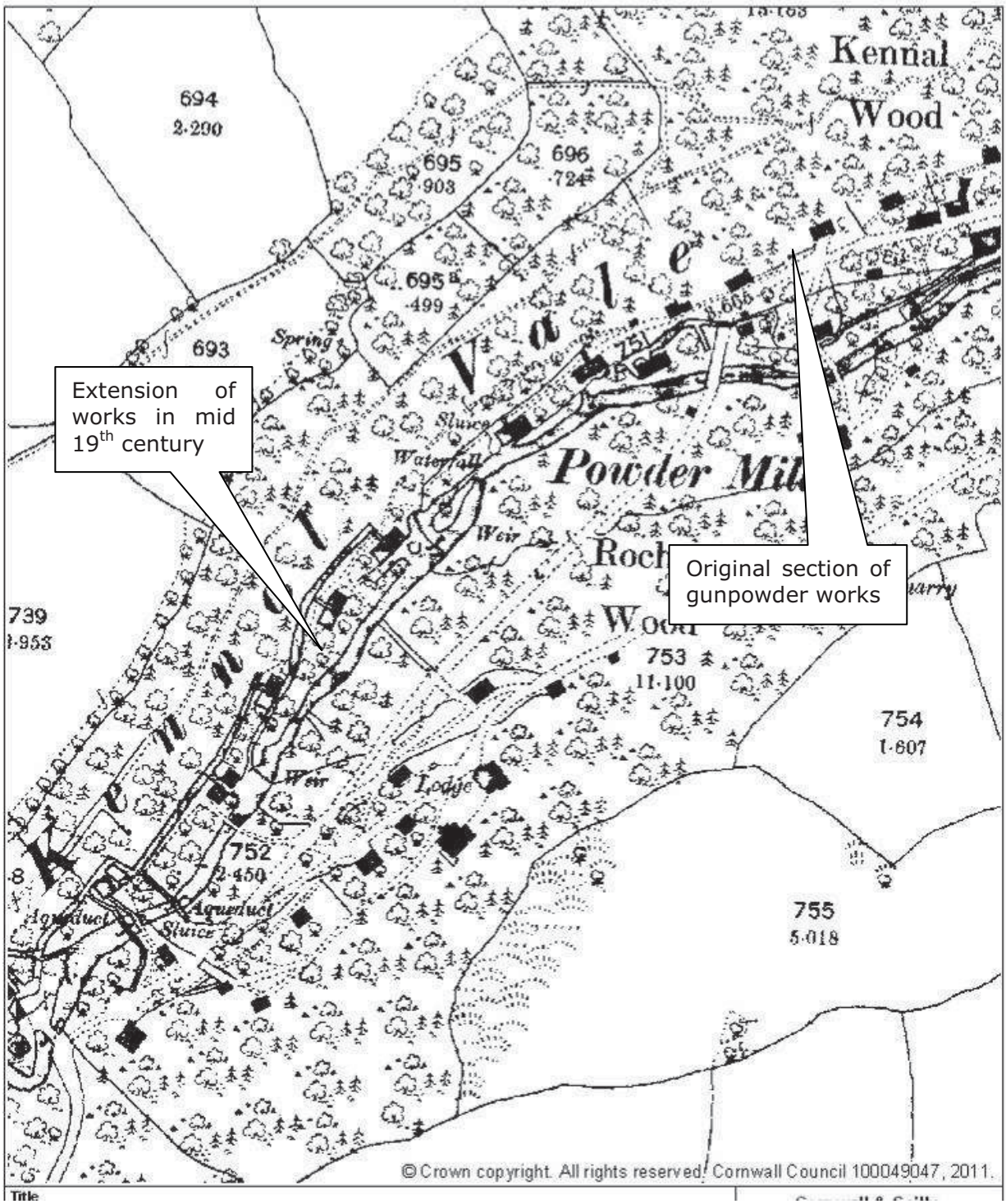


Fig 3 First Edition of the Ordnance Survey 25 Inch Map, c1880

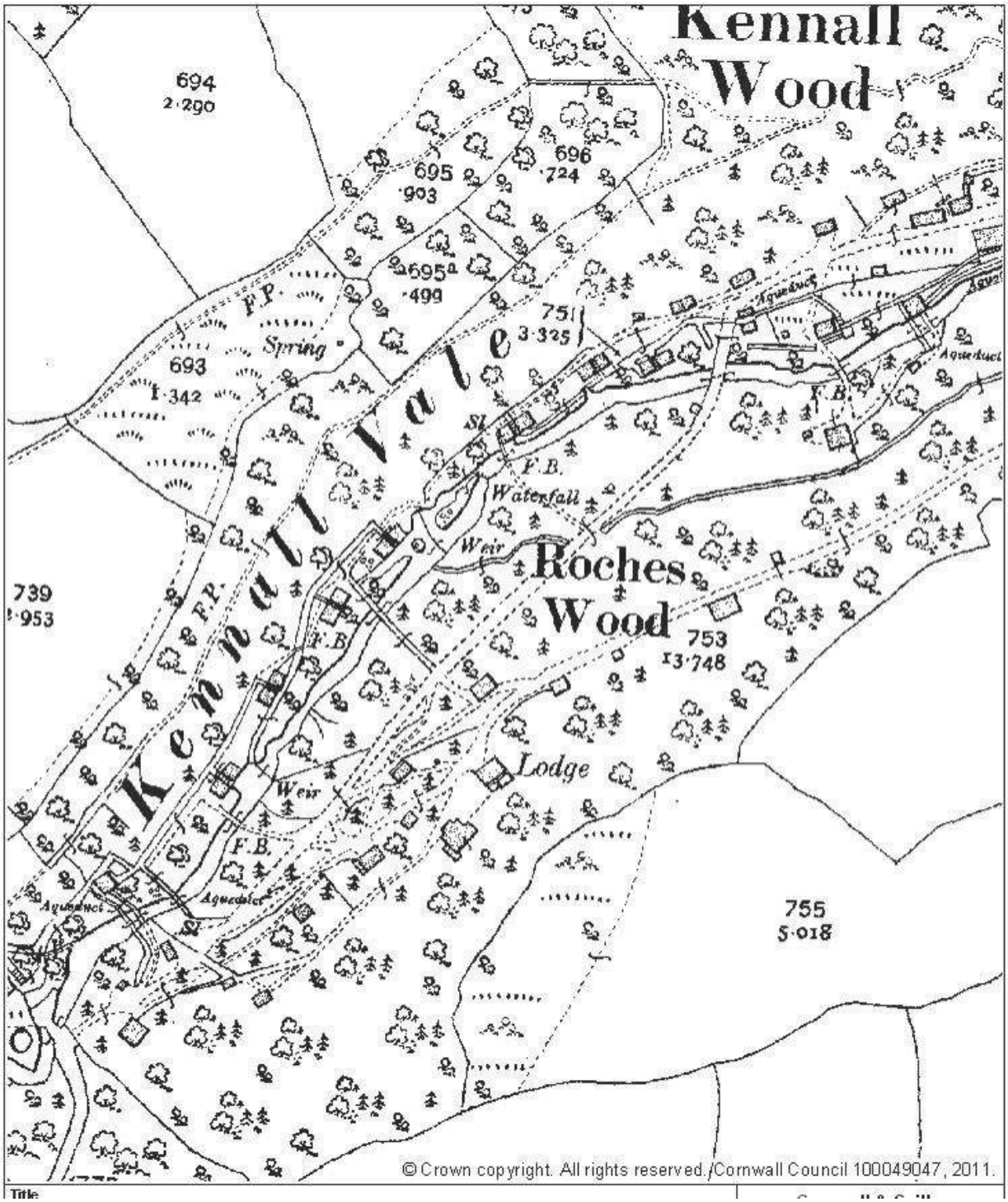


Fig 4 Second Edition of the Ordnance Survey 25 Inch Map, c1907

Fig 5 Ordnance Survey digital mapping showing the site and its environs (2009). The location of structures which were conserved is indicated

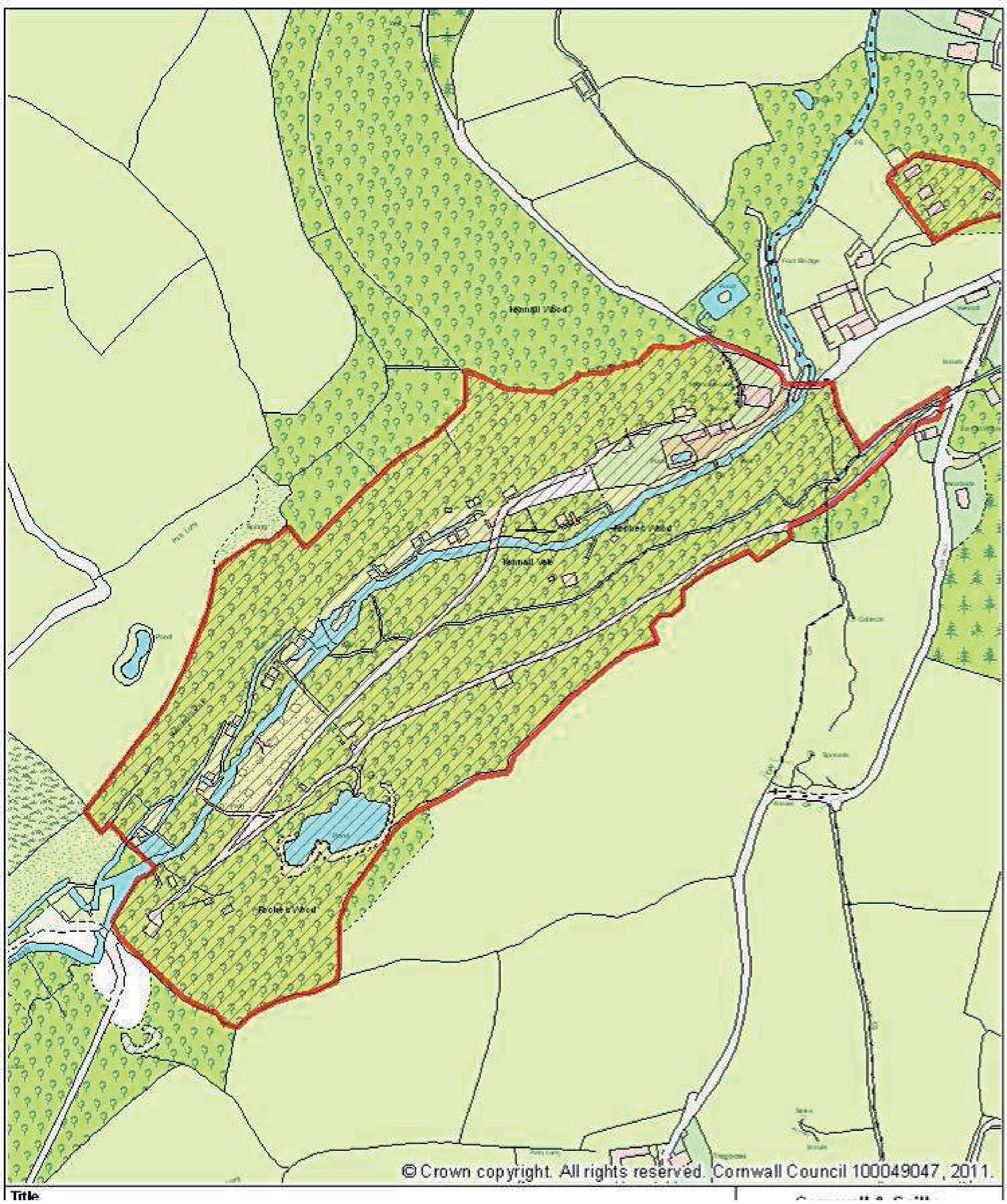


Fig 6 Scheduled area at Kennall Vale (the scheduled area is shown in red cross hatching)

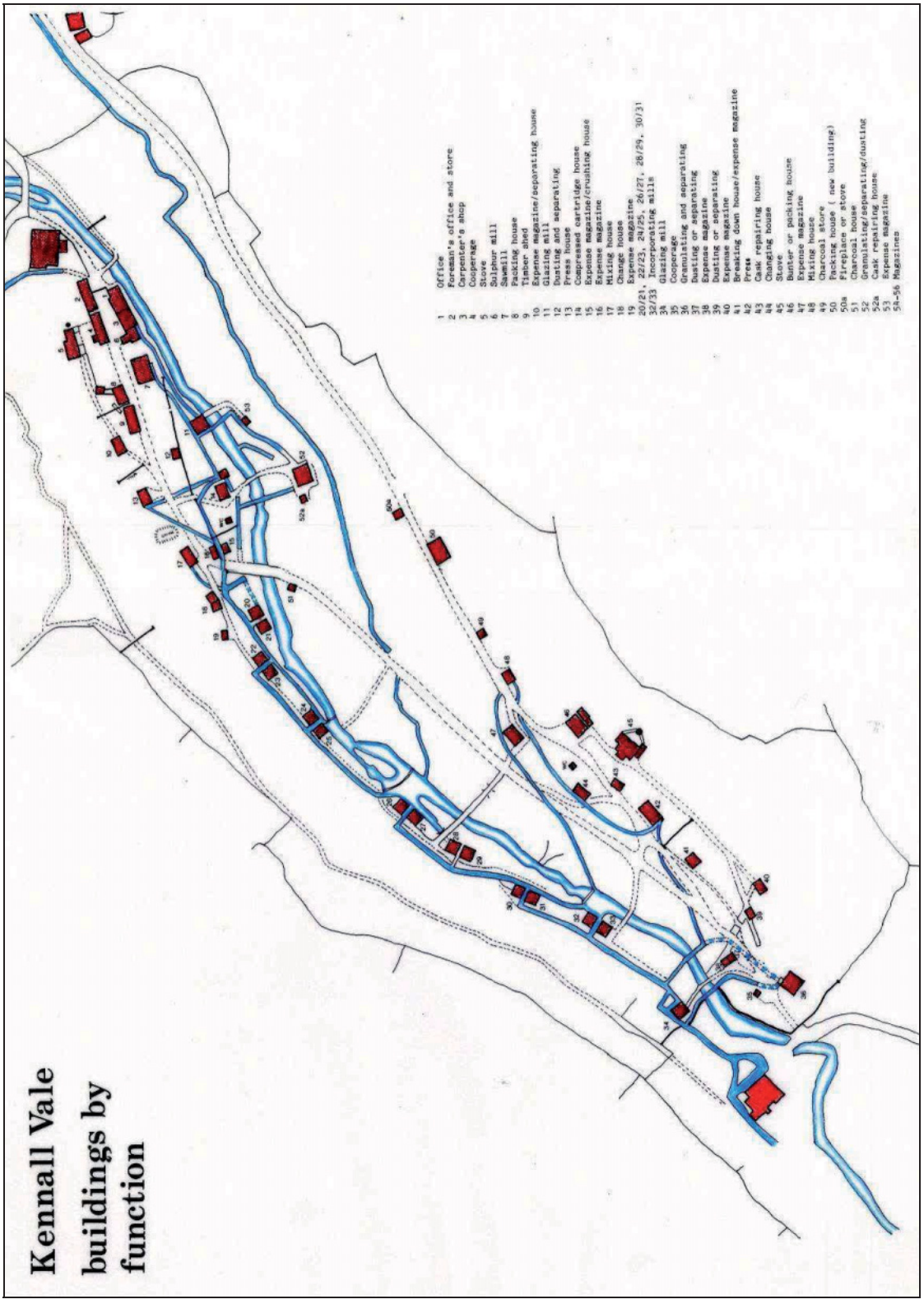
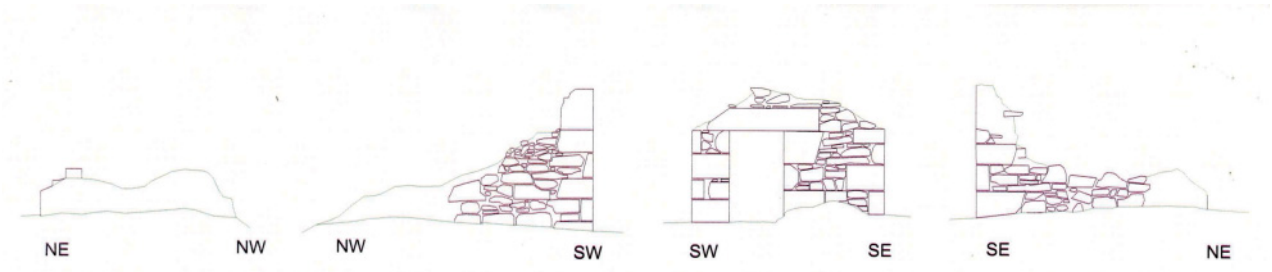
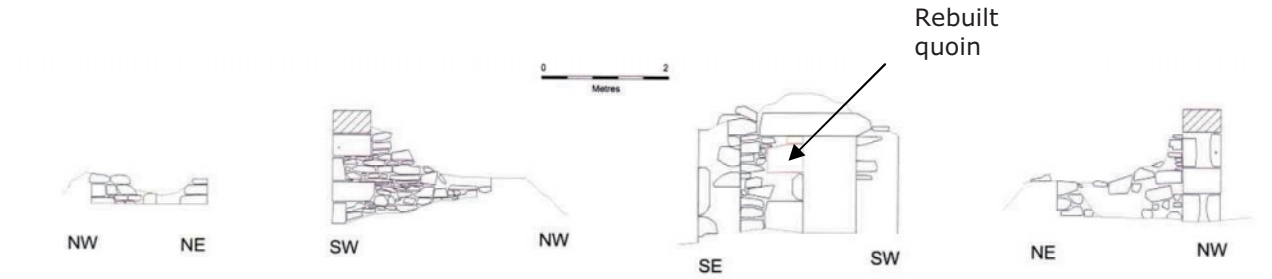


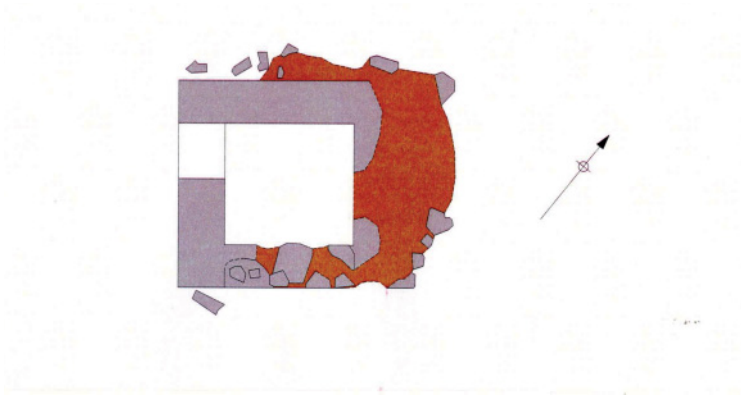
Fig 7 Leats and buildings at Kennall Vale: the buildings being identified by function. From the 1985 survey of Kennall Vale by John Smith of Cornwall Archaeological Unit (Smith 1986a)



External elevations



Internal elevations



Ground plan (grey = upstanding masonry; orange = tumbled stone)

Fig 8 Elevation drawings and plan of cask house by Adam Sharpe.

Fig 9 Cask house, SW wall, from west (above) and east (below)

Fig 10 North-west (above) and south-east (below) walls of cask house

Fig 11 Barely supported lintel of cask house

Fig 12 Pan tile from ground adjacent to cask house

Fig 13 Work in progress on cask house

Fig 14 Cask house SW wall after consolidation

Fig 15 Cask house SW wall after rebuilding of door jamb

Fig 16 East face of bridge at west end of reserve

Fig 17 West face of bridge

Fig 18 Hole above culvert adjacent to bridge

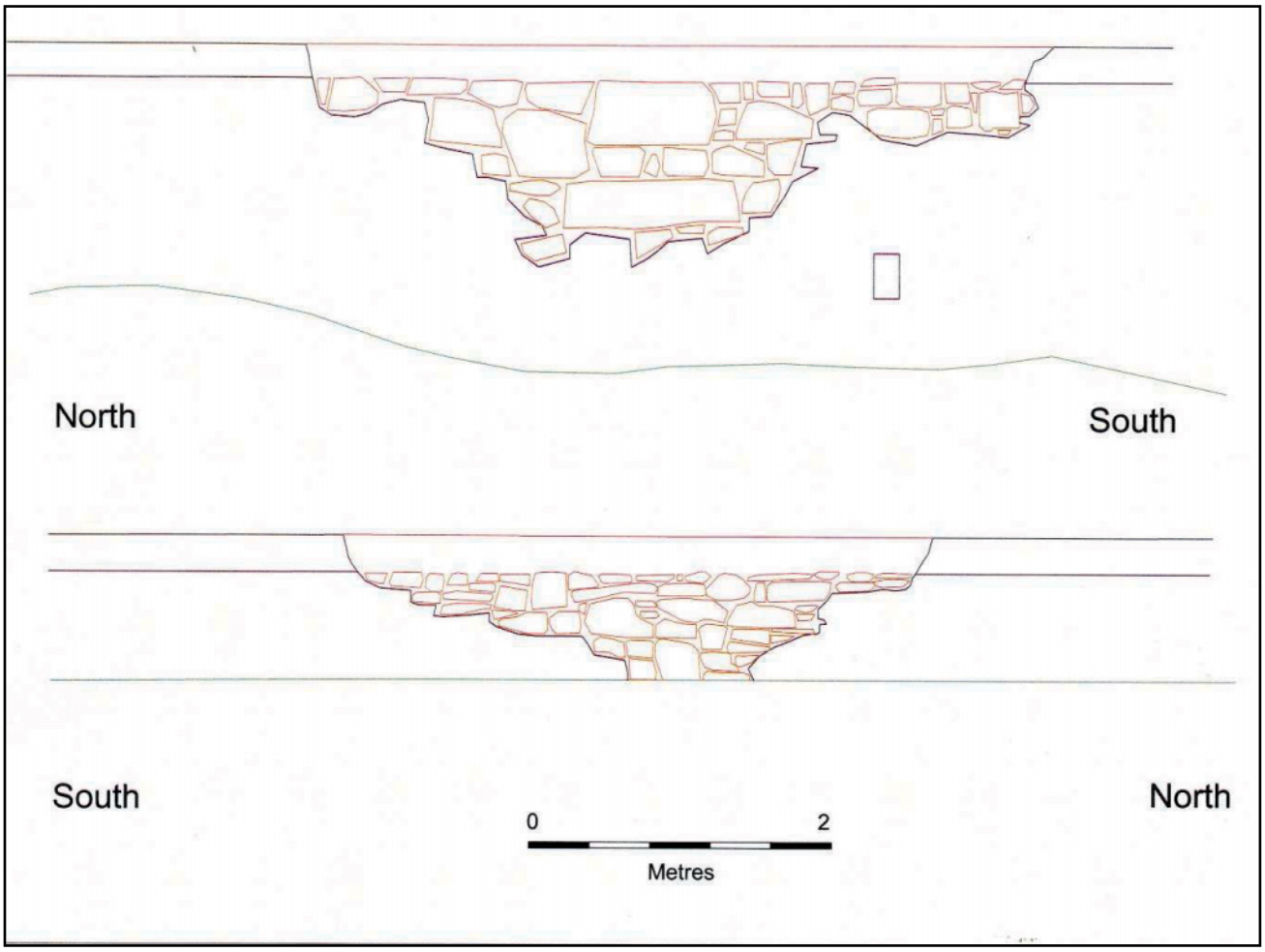


Fig 19 Elevations of the western parapet of the bridge, drawn by Adam Sharpe: above, the exterior face and below, the interior

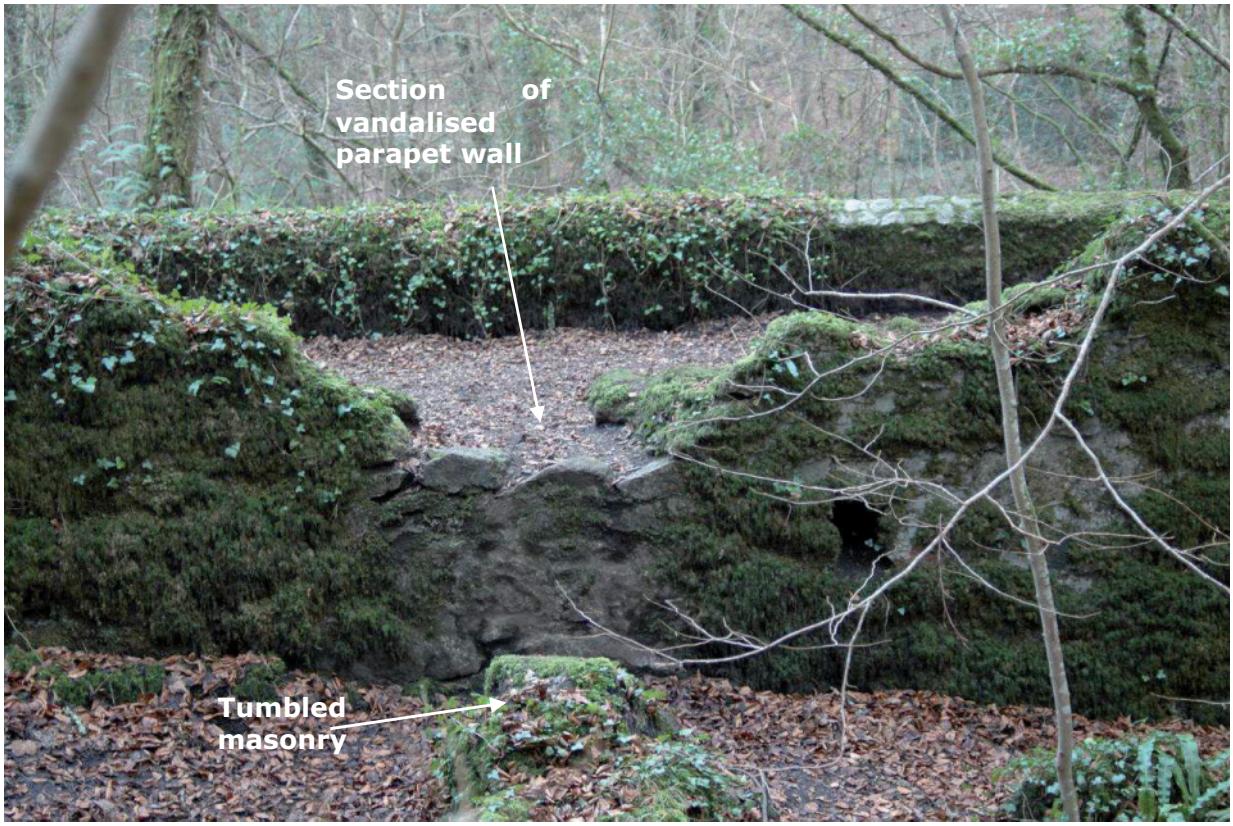


Fig 20 Damaged parapet of causeway leading to bridge, from the east (above) and from the south (below)

Fig 21 The rebuilt parapet

Fig 22 Limestone steps adjacent to mills 22/23

Fig 23 Examples of tree damage at Kennall Vale: the top picture shows where a tree rooted into a bridge abutment has fallen and taken a large quantity of stone with it; the lower shows where a tree has fallen onto the path which runs beside the leats, linking the incorporating mills. This path is used by most visitors

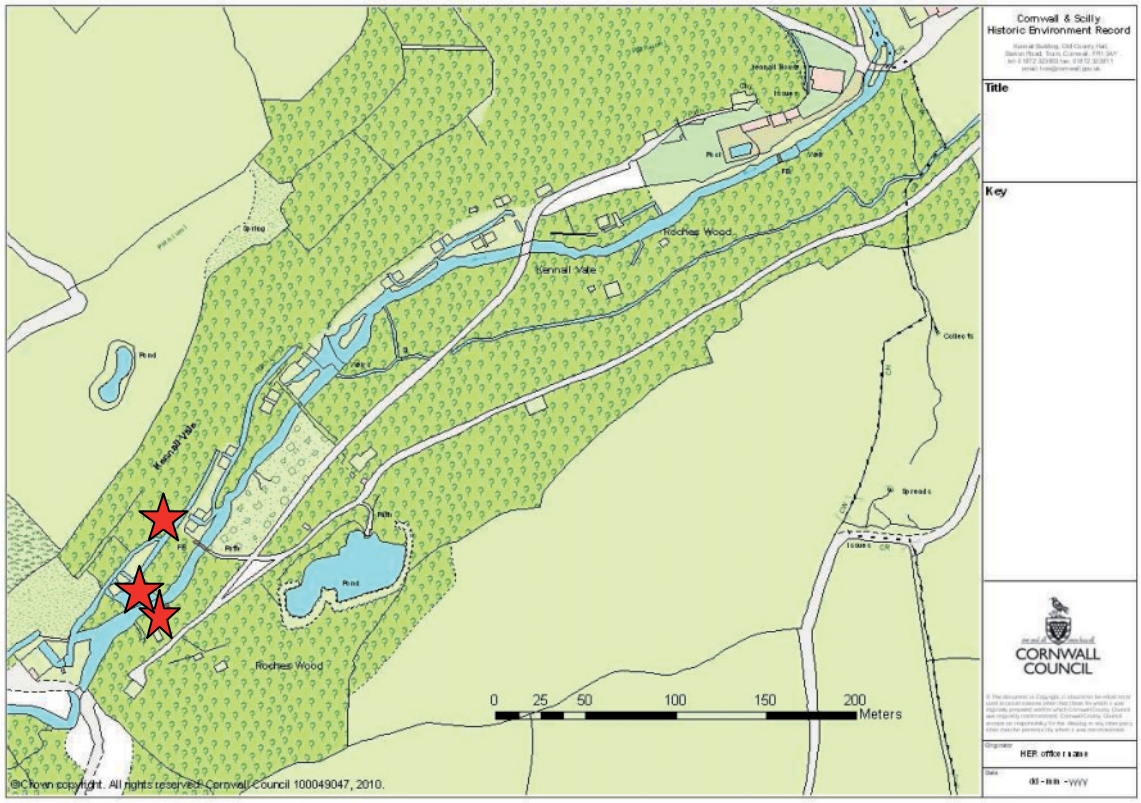


Fig 24 Location of felled trees

Fig 25 One of the trees which has now been felled, seen leaning out over leat, mill and and a bridge used by visitors

Fig 26 Tree work in progress: one tree has been felled and the other leaning tree is about to go

Fig 27 Volunteers clearing ahead of and assisting with the photo survey

Fig 28 New interpretation board in place

Fig 29 New granite chippings being laid to surface track

Appendix 1 Photo recording form

KENNALL VALE PHOTO RECORDING FORM

HES PRN/ Structure number (from supplied plan)

Description / structure type

NGR

Photo no	Internal/ External	Wall (N, S, E, W etc)	View from	Notes

Name(s) Date

Kennall Vale

Appendix 2: Table of structures on Cornwall Wildlife Trust land, photographed in 2009-10, with plan

On the following table and on the map, all structures are identified by their Historic Environment Record number (HER number)

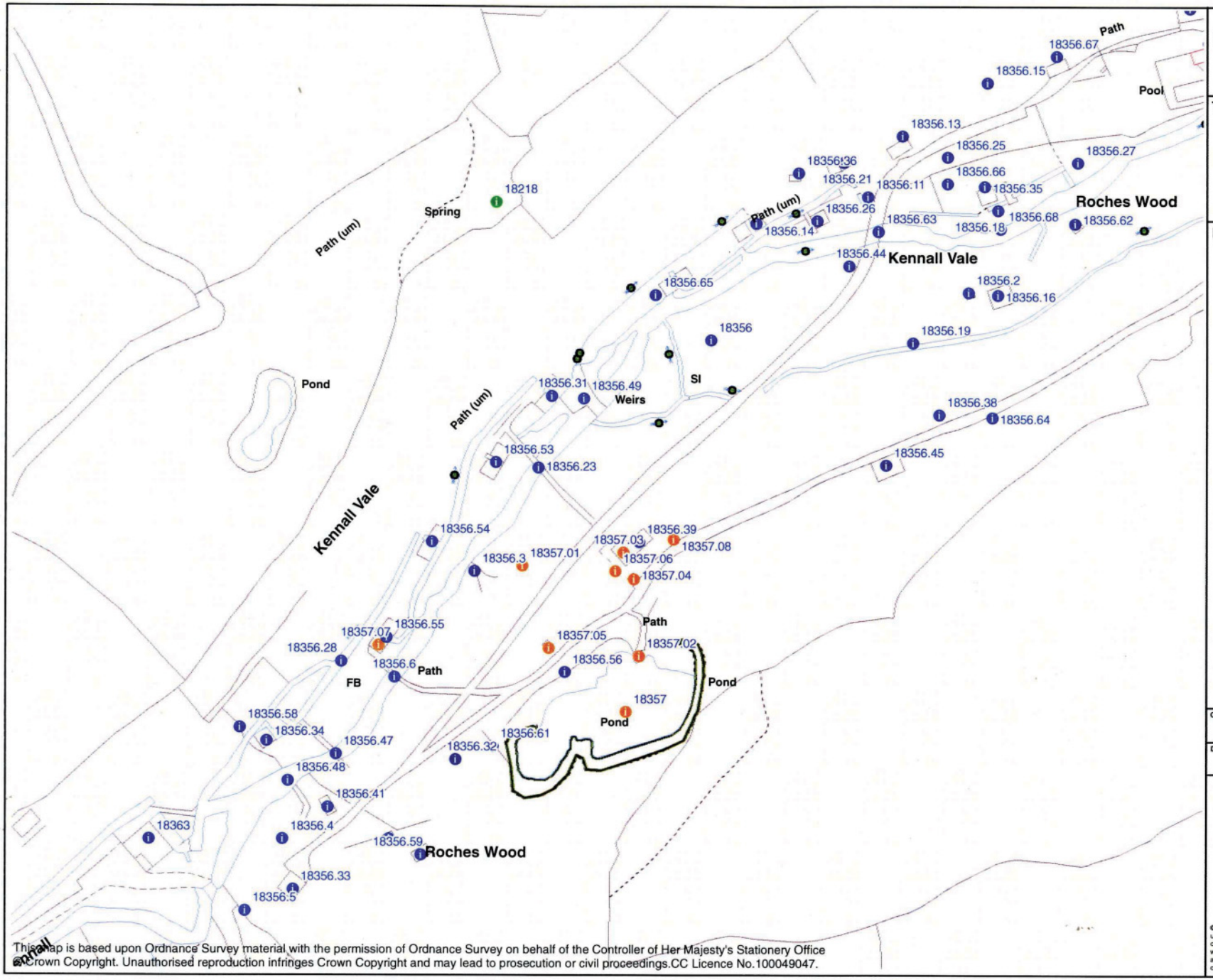
On the table, please note:

'JRS number' refers to the plan in Smith 1986a, Fig 3: Kennall Vale: buildings by function

PD = Pete Dudley; LGR = Linea Glynne Rule; SJ = Sheila James; KH = Kathy Hicks; LM = Lewis Meyer; MM = Matt Miciak; APJ = Ann Preston-Jones

HER number	JRS number	Building/structure type	NGR	Date	By whom; notes
18356.11		Incorporating mill remains	SW 75069 37494	9.3.10	APJ
18356.12		Incorporating mill	SW 74996 37462	7.2.10	LM, SW
18356.13	17	Mixing house	SW 75082 37517	6.12.09	PD, LGR
18356.14	22/23	Incorporating mill	SW 7502 37484	3.01.09	LGR APJ,
18356.16	52	Corning house	SW 751187457 3	3.01.10	LGR, APJ
18356.2	52a	Cask repair house	SW 75107 37458	3.01.10	APJ, LGR
18356.21	18	Change house	SW 75060 37507	6.12.09	SJ, APJ
18356.23	A/S	Bridge/causeway	SW 74945 37392	7.2.10	LGR, APJ
18356.25	12	Blast wall	SW 75009 37509	6.12.09	PD, LGR, SJ, APJ
18356.26	20/21	Incorporating mill	SW 75050 37485	3.1.10	PD, LGR, APJ
18356.27	11	Glaze and reel house	SW 75148 37507		Not recorded: inaccessible and overgrown
18356.28		Leats	SW 7 3	9.3.10	APJ some. Comprehensive survey needed
18356.3		Bridge abutment	SW 74921 37353	08.2.10	Incomplete record
18356.31	26/27	Incorporating mill	SW 74950 37419	6.2.10	LGR APJ
18356.32	41	Breaking Down house	SW 74914 37282		Footings only?
18356.33	36	Corning house	SW 74853 37233	6.12.09	KH, MM, PD, LGR, APJ
18356.34	34	Glazing mill	SW 74843 37289	9.3.10	APJ
18356.35	14	Compressed cartridge house	SW 75113 3498		Not recorded
18356.36	19	Powder magazine	SW 75043 37503	6.2.10	LM, LGR, APJ
18356.37		Dust separating house	SW 74889 37252	6.12.09	KH, MM, PD
18356.38	N	Building	SW 75096 37412		Not recorded: platform only
18356.39	47	Powder magazine	SW 74983 37364	7.3.10	APJ
18356.4	35	Cooperage	SW 74849 37252	6.12.09	SJ, LGR, APJ
18356.41		Powder magazine	SW 74866 37264	6.12.09	SJ, LGR, APJ
18356.41 (adjacent)		Ramp/causeway	SW 7 3	6.12.09	SJ, LGR, APJ

HER number	JRS number	Building/structure type	NGR	Date	By whom; notes
18356.44		Charcoal house	SW 75062 37468		Not recorded: slight platform only
18356.45	50	Packing house	SW 75076 37393	24.11.09	PD, APJ
18356.47	E/F	Bridge abutment	SW 74851 37274	6.12.09	SJ, LGR, APJ
18356.48		Bridge abutment	SW 74851 37274	6.12.09	SJ, LGR, APJ
18356.49	H	Weir	SW 74962 37418	7.2.10	LGR, APJ Needs recording when water levels low
18356.50		Blast wall	SW 74835 37225	6.12.09	SJ, LGR, APJ
18356.53	28/29	Incorporating mill pair	SW 74929 37394	7.2.10	SL, LM
18356.54	30/31	Incorporating mill pair	SW 74905 37364	8.12.10	APJ, LGR
18356.55	32/33	Incorporating mill	SW 74888 37328	7.3.10	APJ
19356.56		Cooperage	SW 74955 37315		Not recorded: base only
18356.58		Blast wall	SW 74833 37294	7.3.10	APJ
18356.59	40	Powder magazine	SW 74901 37246	6.12.09	PD, KH, MM
18356.6		Bridge	SW 74891 37313	7.3.10	APJ, LGR
18356.62	53	Powder magazine	SW 75147 37484	3.01.10	PD, APJ, LGR
18356.63		Bridge	SW 75073 37481	3.01.10	PD, LGR, APJ
18356.64		Privy	SW 75116 37411	24.11.09	PD, APJ
18356.65		Millstone	SW 74989 37457	7.2.10	LM, SJ
18356.66		Powder magazine	SW 75099 37499	6.12.09	SJ, LGR, APJ
18356.68		Bridge abutment	SW 75111 37482		Not recorded
18357.01	W	Quarry dumps	SW 74939 37355	7.3.10	APJ
18357.02		Crane base	SW 74983 37321		Not recorded
18357.03		Quarry buildings	SW 74977 37360	7.3.10	APJ
18357.04		Quarry building	SW 74981 37350	6.12.09	PD, KH, MM
18357.05		Smithy	SW 74949 37324	6.12.09	PD, KH, MM, CW
18357.06		Tank	SW 74974 37353	6.12.09	PD, KH, MM
18357.07		Machinery in incorporating mill	SW 74885 37325	7.3.10	APJ LGR
18357.08		Machine base	SW 74996 37365	9.3.10	APJ
18357.		Quarry loading wall	SW 7500 3735	24.11.09	PD, APJ



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Cornwall & Scilly Historic Environment Record

Kennall Building, Old County Hall, Station Road, Truro, Cornwall, TR1 3AY
tel: 01872 323603 fax: 01872 323811
email: hes@cornwall.gov.uk

Title

Key

Kennall Vale:

Locations of structures and features with HER number

Originator

Date

CORNWALL COUNCIL

Appendix 3 2009-10 photographic record of corning house, 18356.16

KENNALL VALE
PHOTO SURVEY OF STRUCTURES 2009-10

18356.16: Corning house elevations 3rd January 2010

North wall

General view from the west

View along south wall, from the south-west

General view from the SE

East wall

Shaft at centre of building

Appendix 4 Interpretation leaflet