



Tintagel Castle, Cornwall  
Archaeological impact assessment of proposed  
footbridge abutment construction  
Cornwall Archaeological Unit

Report No: 2017R010



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## **Acknowledgements**

This study was commissioned by Reuben Briggs, National Project Manager, Estates Department, English Heritage, and was carried out by Cornwall Archaeological Unit, Cornwall Council.

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.

## **Freedom of Information Act**

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Cover illustration

*A view from the Inner Ward of Tintagel Castle, looking along the sight-line of the proposed footbridge towards the mainland Lower Ward.*

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## Abbreviations

CAU	Cornwall Archaeological Unit
CIfA	Chartered Institute for Archaeologists
CRO	Cornwall Record Office
EH	English Heritage
HE	Historic England
HER	Cornwall and the Isles of Scilly Historic Environment Record
MCO	Monument number in Cornwall HER
NGR	National Grid Reference
OD	Ordnance Datum – height above mean sea level at Newlyn
OS	Ordnance Survey
RIC	Royal Institution of Cornwall

## **1 Summary**

Cornwall Archaeological Unit was contacted by Reuben Briggs, National Project Manager, Estates Department, English Heritage in January 2017 with a request to undertake an assessment of the potential physical impacts on the archaeology of Tintagel Castle which would result from the construction of the abutments for a new footbridge linking the mainland and Island sections of the Castle. An assessment of the vulnerability of the archaeology at these locations to natural erosion was also to be considered.

The assessment concluded that excavation at the northern end of the mainland Lower Ward would have minimal impacts, as it was likely to intersect shallow medieval and post-medieval levelling features. At the southern end of the Island Inner Ward it was concluded that the excavation for the bridge abutment would intersect post-Roman deposits forming part of the high status core of the site. Although the losses to the archaeological resource would be proportionally small, little of this area of the site has been archaeologically investigated to date. As mitigation, it was suggested that each abutment site should be archaeologically investigated in advance of construction.

The potential for the loss of archaeological features due to natural erosion of the areas selected for the bridge abutments was considered low, provided that current rockface and cliffslope stabilisation approaches are continued and that catastrophic erosion of the lower sections of the island cliff or the isthmus joining the two sections of the Castle does not take place.

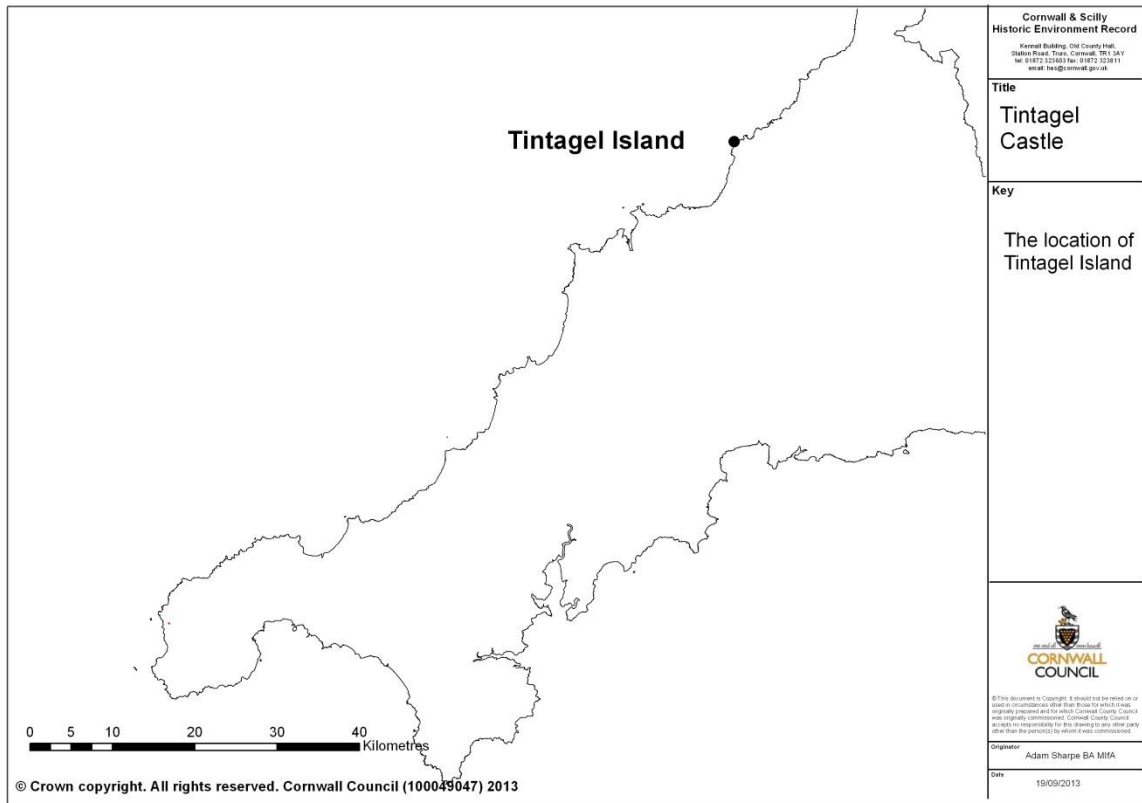


Fig 1. The location of Tintagel Castle, Cornwall.

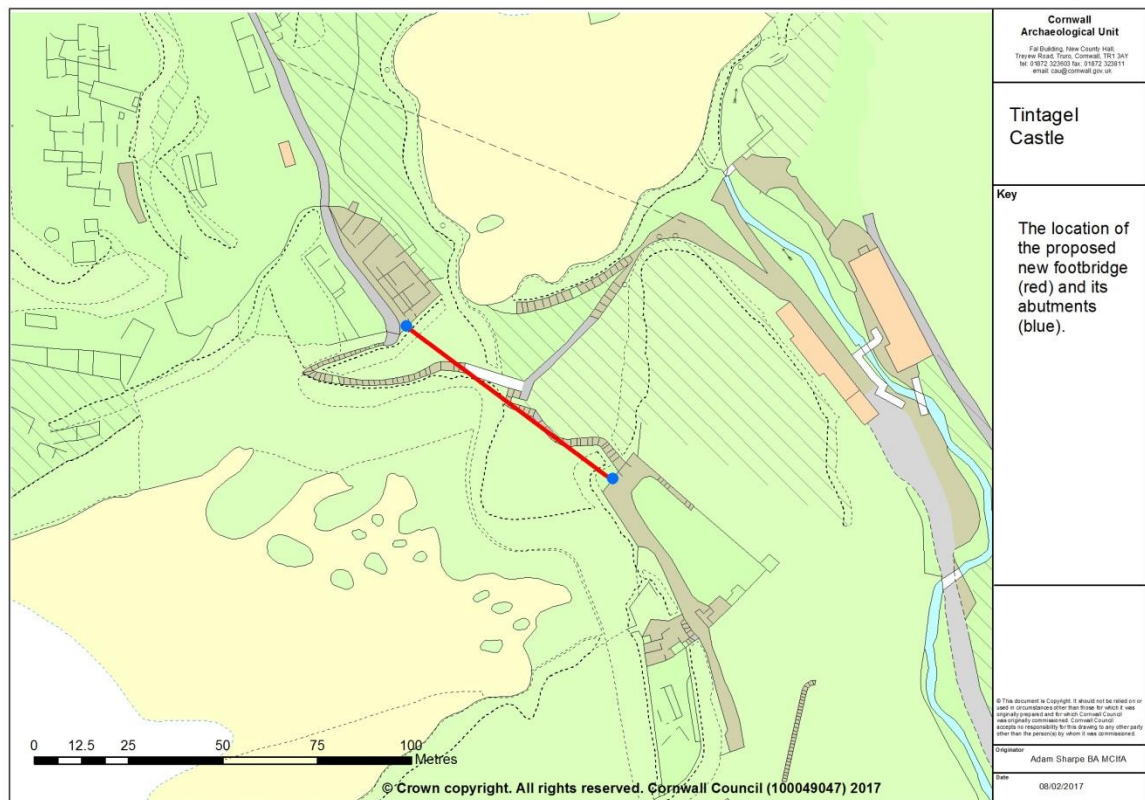


Fig 2. The location of the proposed footbridge linking the two areas of Tintagel Castle, and the locations of its abutments.



## 2 Introduction

### 2.1 Project background

Cornwall Archaeological Unit was contacted by Reuben Briggs, National Project Manager, Estates Department, English Heritage on 24 January 2017 with a request for a method statement and cost schedule for undertaking an assessment of the physical impacts which would result from the construction of a new footbridge linking the mainland and Island sections of Tintagel Castle, specifically *'to quantify the overall harm of the loss of the archaeological deposits at the sites of the abutments. The assessment is to assess the level of harm which would result from their loss against the volume of potentially similar deposits likely to remain in situ, and the potential vulnerability of these deposits (given their cliff edge location) to a continuation of known erosion processes'*.

### 2.2 Aims

The principal aim of the study is to provide a better understanding of the potential impacts which would result from excavation to install concrete thrust block abutments for the proposed new footbridge linking Tintagel Island to the mainland and to quantify the potential for the physical loss of archaeological deposits; the study also considers the vulnerability of these archaeological deposits to natural erosional processes.

The primary objective is to produce a written and illustrated report meeting these aims. A second objective is to produce an entry to the Historic England OASIS/ADS-Online national database of archaeological projects.

## 3 Location and setting

See Figures 1 and 2.

Tintagel Castle occupies a coastal site on the rugged and exposed north Cornish cliffs, its structures being located both on the Mainland (the Upper and Lower Wards) and on a headland attached to it by a slender and eroding isthmus (the Inner Ward). Tintagel Island is centred at SX 04927 89115, its highest point being at 83m OD. The new footbridge abutments are proposed at SX 05144 88963 at the northern end of the Lower Ward of Tintagel Castle on the mainland (to the west of the steps down to the Neck) and SX 05090 89004 at the southern end of the Inner Ward on the Island, this being immediately adjacent to the south-western corner of the remains of the medieval Great Hall.

As currently designed, both abutments will measure 3m x 1.5m in plan and will be excavated down to bedrock. CAU have also been asked to consider the impacts of a scenario where the abutments will need to be enlarged to 3m x 3m in plan.

## 4 Designations

### 4.1 National

Tintagel Castle passed into the Guardianship of the State, being cared for by the Office of Works (and its successors, now the English Heritage Trust) from 1929 and was Scheduled in 1981 (Monument N<sup>o</sup> 1014793).

Tintagel Island and the adjoining coast is a Site of Special Scientific Interest (SSSI).

Tintagel Island and the adjoining coast fall within the Cornwall Area of Outstanding Natural Beauty (AONB).

## 4.2 Regional/county

Tintagel Castle was identified in the now-superseded Cornwall Structure Plan as falling within areas identified as an Area of Great Historic Value (AGHV) and an Area of Great Scientific Value (AGSV).

## 5 Summary site history

There is currently very little evidence for pre-Roman occupation on the headland of Tintagel though occurrences of prehistoric flints and Neolithic/Bronze Age cup-marked stones do provide evidence for some activity at this time.

There is evidence that Tintagel was a relatively important place by the Roman period. Within the neighbourhood there are two inscribed Roman milestones that suggest a route passing near to Tintagel while Roman coins and pottery (Oxford Colour-coated Wares and native flanged bowls) have been found on the Island, suggesting a date *circa* AD 300 – 400. Radiocarbon dates obtained from the 1990s excavation of structures on the Lower Terrace, Site C, give a range *cal* AD 395-460 (Harry and Morris 1997; Barrowman *et al* 2007). It has been suggested that Tintagel was possibly the "*Durocornovio*" (fort of the Cornovii) of the *Ravenna Cosmography* (Thomas 1993, 84).

During the post-Roman period (from the 5<sup>th</sup> to early 7<sup>th</sup> centuries AD) the headland of Tintagel developed into a major fortified citadel (the neck of the headland being separated from the Mainland by the excavation of the "Great Ditch"). It is suggested that this may point to the origin of the place-name, in Cornish '*dyn tagell*' means the fortress of the constriction or throat (Padel 1988).

The survey of the Island undertaken by RCHM(E) two years after the extensive fire there in 1983, together with excavations undertaken since the 1950s have revealed numerous buildings and structures related to the post-Roman period, the density of settlement being such as to apparently covering almost every available space on the headland, including on artificial terraces that had been cut into the precipitous slopes above the sea cliffs that surround most of the site. Associated with these buildings are artefacts, especially pottery, that reflect the importance of this site at this time. Very large quantities of imported pottery (both fine table wares and coarsewares) originating from North Africa and the eastern Mediterranean have been found along with Merovingian glass traded from the Atlantic seaboard. This suggests that at Tintagel there was a degree of control, organisation and power to trade directly with the Byzantine Empire and subsequently with the Atlantic seaboard of Europe. The nature of the return trade is not known though there is some evidence from other sites that the distribution of tin was an important element (Thomas 1993; Harry and Morris 1997; Barrowman *et al* 2007).

Subsequently the Island was abandoned (apparently apart from a small chapel being built on the peak of the Island c 1100) until the present castle was constructed by Richard, Earl of Cornwall during the mid-13<sup>th</sup> century. Though the more substantial buildings on the Island, along with the garden and the tunnel, date from this period and may have been elements within a 'stage set' linked to a telling of the legend of Tristan and Isolde to reinforce Richard's claims to the control over Cornwall, the ceramic evidence suggests that occupation appears to have been sporadic (it was sometimes used as a state prison in the 14<sup>th</sup> century), ceasing by the 15<sup>th</sup> century. In the 16<sup>th</sup> century, two small gun houses were proposed by Sir Richard Grenville on the northern end of the Island in response to a possible threat from the Spanish (it is uncertain if they were ever completed); the rest of the castle however was by then described as a picturesque ruin (Thomas 1993).

In the 19<sup>th</sup> century there was an attempt to mine the lead and silver lodes found on the Island as Wheal Heart and then as King Arthur's Mine and the haven developed as a harbour for servicing the surrounding slate quarrying industries. In the 12<sup>th</sup> Century, Geoffrey of Monmouth had identified Tintagel Castle as that where King Arthur was

conceived (not born); this attribution was popularised by Tennyson, Swinburne and Hardy, and Tintagel quickly became an increasingly popular and highly romanticised tourist destination, particularly following the coming of the main line railway to Cornwall and the construction of the Railway Hotel at Tintagel. The Reverend Kinsman, taking on the title of the Constable of the Castle, oversaw the reconstruction of some elements of the monument, and a guide was employed to take visitors around the Castle. A series of formerly rather narrow and dangerous paths to, across, and up the cliff above the neck were re-cut to enable visitors to access the Island at this time. Eventually the isthmus became too narrow, unstable and dangerous to carry the path linking the Island to the Mainland and the first of a number of low-level footbridges was constructed. This was replaced by the present bridge in 1975.

Tintagel Castle remains owned by the Duchy of Cornwall, but passed into the Guardianship of the State, being cared for by the Office of Works (and its successors, now the English Heritage Trust) from 1929 and was Scheduled in 1981. Archaeological investigations overseen by C.A. Raleigh Radford during the 1930s were followed by some landscaping, reconstruction and repair works. English Heritage commissioned some research excavation at Site C and elsewhere from 1990 to 1999, whilst Cornwall Archaeological Unit and its successors have undertaken a number of watching briefs during safety, visitor management and other works within the Castle site since the mid-1980s to the present day, most recently (in 2016) at sites on the eastern and southern flanks of the Island as the first stage in the Tintagel Castle Archaeological Research Project (TCARP).

## **6 Impact assessment**

Available archaeological records and reports have been consulted in this study in order to draw together all available information concerning the archaeology underlying the Lower Ward (on the mainland) and the Inner Ward (on the island) at Tintagel Castle. These are listed in the references (Section 9), and consisted of:

- Appleton, N., Fox, T., and Waters, A. 1988. *Tintagel Castle: survey and excavation at the Inner Ward, the Chapel, Site 4 and the Garden*, Cornwall Archaeological Unit unpublished report
- Barrowman, R., Batey, C, and Morris, C. 2007. *Excavations at Tintagel Castle, Cornwall, 1990-1999*, Society of Antiquaries monograph (in particular the work on Trench T01 extension into the Lower Ward)
- Hartgroves S. and Walker R. 1988. 'Excavations in the Lower Ward, Tintagel Castle, 1986', *Cornish Studies* **16**, 9-30
- Padel O. 1988. 'Tintagel in the twelfth and thirteenth centuries', *Cornish Archaeology*, **16**, 61-66
- Ramboll UK 2013. *Tintagel Castle Bridge options appraisal: Stage 1 report – March 2013*
- Ramboll UK 2013. *Tintagel Castle bridge geotechnical evaluation: desk study and site visit report*
- Reynolds A, 2006. *Repairs to Tintagel Castle 1998/9: archaeological recording*, CAU report to English Heritage
- Sharpe, A, 2016. *Archaeological impact assessment of proposed new access arrangements to the island*. CAU report 2016R064 to English Heritage
- Smith R, 2016. *Archaeological evaluation and watching brief at Tintagel Castle, Cornwall*. CAU report 2016R060 to English Heritage.
- Thomas C, 1988. 'CAU discoveries at Tintagel Island, 1988: the discoveries and their implications', *Cornish Studies* **16**, 49-60
- Thomas, A. C, 1993. *Tintagel, Arthur and Archaeology*, London (English Heritage)

- Thorpe, C, 2004. *Extreme Archaeology: an excavation at Tintagel, Cornwall: archaeological finds report*, Cornwall Archaeological Unit report 2004R012
- Thorpe C, 2006. *The Iron Gate, Tintagel Castle, Cornwall: fence replacement works*, CAU report 2007R007 to English Heritage
- Thorpe C, 2008. *The information hut, Tintagel Castle, Cornwall: paving works*, CAU report 2008R012 to English Heritage
- Thorpe, C, 2014., *Tintagel Island trial pits, Tintagel Castle, Cornwall, Scheduled Monument 1014793: archaeological watching brief*, HE Projects report 2014R030
- The full finds catalogue of all finds discovered on the Island since Raleigh Radford's 1930s excavations to 1991 – produced by Professor Charles Thomas and Carl Thorpe
- The Royal Commission survey (RCHME) of the Island undertaken during the 1980s
- Material produced by Raleigh Radford and Wright during the 1930s excavations at Tintagel, in particular that relating to Site Z.
- Illustrative material from Professor Charles Thomas' archives
- Illustrative material from Carl Thorpe's archive
- Postcards, guidebooks and other printed ephemera relating to Tintagel Castle
- Design and construction proposals for the bridge drawn up by Ney and Partners with William Matthews Associates and for access improvements by Nicholas Pearson Associates (both 2016).

### **Geology and topography**

The geology of Tintagel is quite complex. The coastal bedrock here consists of Upper Devonian slates, siliceous sandstones, pillow lavas, tuffs and phyllites which have been over-thrust towards the north-north-west. These over-thrust strata were affected by approximately parallel normal faulting, the bedding of the slates generally dipping to the west, whilst the faulting throws the thrust slices down to the west and north-west. At Tintagel Castle specifically, the cliffs consist primarily of a mix of Lower Carboniferous and Upper Devonian strata where faulting has inverted the original depositional sequence. Volcanic rocks are also present at the base of the cliffs. As reported by Ramboll 2013 (citing a stability report produced by Gifford), this complex geology has not only brought into being this dramatic coastal landscape, but also threatens its future stability and that of the Castle ruins. Recent (2016) core drilling near the bridge landing points has confirmed the fractured nature of the underlying geology.

As indicated in the 2013 Ramboll study (authored by Cresswell and West), coastline development here has been controlled by two dominant fault zones: the Castle Fault between West Cove and Smith's Cliff and the Caves Fault Zone, which cuts through the Island across Tintagel Haven to Barras Gug. As the report notes, these are easily worked by marine erosion where exposed, and particularly so where steeply-dipping. The dominant joint set within the rocks trends more or less at right angles to the faults, and has functioned with them to shape the local coastline.

This underlying geology has therefore controlled the topography of both the island and mainland sections of Tintagel Castle. The top of the Island is relatively level (and is sometimes referred to as a 'plateau'); the upper cliff slopes tend to be steep (though notably less so to the east) and the lower sections of the cliffs are tall (between 44m and 64m high) and more or less vertical. The cliffs to the west of the mainland wards are again almost vertical (and 55m high), at the top of which is a narrow-topped ridge whose eastern side slopes down into the adjacent valley. As mentioned in Sharpe 2016,

erosional processes along locally significant faulting has created the narrow isthmus connecting the two parts of the site, as well as West Cove to its south-west and the Haven to its north-east.

The section occupied by the medieval castle on the Island is therefore underlain by bedrock whose surface naturally slopes down from west to east. Its mainland section occupies the northern end of a narrow ridge whose northern slopes run to the nearby valley.

### **Post-Roman landforms**

The eastern side of the Island (in particular) therefore provided opportunities for the creation of platformed areas sheltered from the prevailing south-westerlies.

Both the Lower and Inner Wards site medieval structures and surfaces. Their construction can be seen to have involved the levelling of pre-existing post-Roman land surfaces to create platformed areas through a mixture of ground reduction involving the removal of superficial materials which could well have included structural remains and probably also some bedrock, and the infill of hollowed areas, probably utilising the excavated material.

In some areas which are now levelled, artificial truncation is thus likely to have occurred; conversely, in infilled areas, the redeposition of the material stripped from originally higher areas is likely to have taken place – the fills within these areas may be partially or wholly stratigraphically inverted and overlying the original land surfaces; these fills may well contain significant quantities of artefactual material.

Information which would allow the determination of the post-Roman topography of each area of the site is very limited, and has primarily been drawn from a small number of archaeological section drawings and the detail included in archaeological accounts, though the sketch section drawing of the exposed cliff section to the south of the Great Hall drawn up by Thomas and Thorpe in 1988 prior to the netting of the cliff face has proved particularly useful.

For the mainland Lower Ward, data used to determine the likely earlier landform and the depths at which post-Roman surfaces, deposits and structures are likely to be found has been drawn from the results of small scale trenching undertaken by Radford in 1933, an archaeological evaluation trench excavated by McAvoy in 1983, those excavated by Hartgroves and Walker (CAU) in 1986, and the 2016 CAU watching brief on small-scale geotechnical test pits at the sites of drilling locations (Smith 2016). As can be seen from Figure 10, only a small proportion of the Lower Ward and the areas fringing it have been archaeologically examined. The evidence suggests the likelihood of post-Roman artificial terracing inside, underlying and external to the north-eastern side of the Lower Ward (see the Hartgroves and Walker's composite section of their trenches at the northern end of the Lower Ward reproduced in this report as Fig 9).

What is unclear is whether the profile recorded at the northern end of the Lower Ward also applies in the central and southern sections of this area of the site. The current topography and the presence to the west of the crag which now sites the Upper Ward, which may well have been partly quarried away during the medieval period to create the levelled area on which to site the Lower Ward suggest that the originally higher south-western side of the promontory here might originally have been wider than to the north. If this is the case then any post-Roman terracing in the southern part of this area is likely to have been less substantial than that archaeologically recorded to the north.

On the Island the clearest cross-section of the underlying topography is that derived from Thomas and Thorpe's 1988 sketch section of the southern cliff face (Figure 11 in Thomas' article on the CAU excavations in *Cornish Studies* 16, reproduced as Fig 5 in this report), this adding considerable detail to the hypothetical cross section published by Thomas (1988, Fig 7) incorporating the evidence from the 1988 soakaway cutting excavation (Appleton et al) and that from Radford's Site Z trenches. The 1988 Thomas

and Thorpe sketch section recorded two terraced areas underlying the medieval Great Hall (T1 and T2) as well as a third levelled area immediately to its east. The cliff face evidence indicates that the westernmost of these included the remains of stone-built structures. Thomas and Thorpe also produced mapping showing the hypothetical extents of these terraced areas (Figs 7 and 8), and postulated the existence of a third terrace immediately to the west of the Great Hall. The conclusion that this area sited an additional terrace seems to have been based on the topography of the site, as no evidence is available within the cliff section, which consists of bedrock to surface. It should be stressed, however, that the extents of these post-Roman terraces have not, to date, been archaeologically tested, as only a limited amount of very small-scale excavation has been carried out within this area.

It is also unclear to what degree artificial levelling of the area within and adjacent to the 13<sup>th</sup> century curtain wall took place during the post-Roman period. Some localised levelling of the western part of this area to produce the stances for structures during this period seems likely from evidence found elsewhere on the Island.

Given the topography and strategic location overlooking the Haven of the area now occupied by the Great Hall and the concentration of post-Roman artefacts which have been recovered from this area and that to its north, it has been argued that this is likely to have been the location of the core of a high status post-Roman administrative and trading settlement – some commentators have suggested that Tintagel was the local equivalent of an Oppidum.

### **Medieval and modern landforms**

The cliff section recorded by Thomas and Thorpe in 1988 (Thomas 1988) makes it clear that the construction of the medieval castle at the southern end of the Island involved considerable modification of the post-Roman topography in this area. This was achieved predominantly by the construction of an encircling curtain wall founded off the post-Roman land surface to the east. Between two and three metres of fill material were imported to level up the ground behind this walling (which subsequently had to be buttressed to resist the resultant ground pressure on the original revetment). This infill extends the full width of the 1230's Great Hall at its southern end as well as 2.25m beyond its western wall, terminating at a 2m deep sloping cut; where exposed in the cliff section this equates to the location of the modern path through the site.

To the west of the modern path running from the head of the steps to the northern doorway in the curtain wall is a levelled area, postulated by Thomas as having sited post-Roman structures. The soils are thin at the south-eastern corner of this area, and bedrock is exposed at surface near the 19<sup>th</sup> century doorway at the top of the steps from the Neck. No excavation has taken place at the northern end of this area, and the depth to the underlying bedrock across this area is largely unknown, though the soils are likely to be shallow. A very small test pit on the western side of the path near the new interpretation panel revealed bedrock at 0.4m from surface (Smith 2016). This area slopes gently upwards to the west to low cliff faces. No medieval buildings are known of within this area with the exception of that at its northern end.

It seems very likely that this levelled area was produced by quarrying away the bedrock during the medieval (castle-building) period to produce at least some of the fills used to level up the area to be occupied by the Great Hall. The Appleton et al south-facing soakaway trench section shows fills whose tip-lines clearly indicate that the material (earth and slates) making up the platformed area at this location derived from its west.

The modern landforms within the Inner Ward relatively closely follow those created during the medieval period. A small-scale build-up of material has clearly occurred on the cliff slope to the east of the curtain wall, some of this probably deriving from material formerly being parts of the superstructures of the medieval castle buildings, this being topped with naturally-accreting soils. Within the area of the Great Hall Radford cleared fairly substantial amounts of debris and build up. One postcard

contemporary with his 1930s excavations shows what appears to be a timber chute running down the cliff slope to the north of the castle, suggesting that the excavation spoil was disposed of into the sea. To the west of the path traversing the area inside the curtain wall, the gentle rise in the grassy area probably reflects a build-up of material eroded from the cliffs and slopes above onto what is likely to have been a more or less level rock-cut surface during the medieval period.

### **The likely extents of post-Roman terraced occupation areas**

In order to assess the potential impacts on the archaeology of Tintagel Castle which would result from the excavations for the new bridge abutments it is necessary to attempt to hypothesise the locations and extents of this resource within the areas which will be affected by the works. For the purposes of this study the areas are taken to be the Lower Ward and its immediate environs on the Mainland and the area within the curtain wall forming the Inner Ward on the Island.

For the mainland section of the castle the archaeological evidence consists of the four trenches excavated by Radford against the inner face of the northern wall of the Lower Ward in 1933 and the single trench excavated by him against the eastern wall of this area, all of which showed depths to bedrock of between 1.6m and 2.18m. To this should be added the profile provided by CAU's 1986 trenches A, C and D (Fig 9) which showed bedrock sloping north-north-eastwards from 0.3m from surface near the location of the proposed bridge abutment to 1.35m from surface external to the curtain wall, the deepest deposits being along the line of the wall where they were estimated to be 2.5m below ground level inside the Lower Ward.

The evidence here indicates post-Roman activity (including cooking and possibly also craft activities) taking place on one or more terraces levelled into the upper northern slope of the ridge. The eastern edges of the terraces were determined by a steepening of the valley slope, whilst their western edges would appear to lie between two and four metres into the area subsequently occupied by the Lower Ward. The maximum area available for post-Roman terraces is 45m by 15m (675m<sup>2</sup>). It should be stressed, however, that whilst deep stratigraphy was shown by Radford along the eastern and southern line of the curtain wall, the only area within which post-Roman activity has been archaeologically recorded is adjacent to its north-eastern corner (Hartgroves and Walker, 1988). Within the Lower Ward, this terrace and the ground surface into which it was cut has been buried in medieval backfill.

The limited evidence available from the southern two thirds of the Lower Ward suggests that the original natural topography on its western side was truncated and then blinded with a shallow (0.3m to 0.6m) spread of material during the medieval period to produce a levelled surface. To the east the natural slope was infilled with quarried material behind the lower section of the 13<sup>th</sup> century curtain wall, which was subsequently raised to its current height (Hartgroves and Walker 1988).

Turning to the Inner Ward on the Island, the archaeological evidence is very limited indeed. This consists of Radford's three Site Z trenches excavated against the outer face of the curtain wall which recorded depths to bedrock of around 0.3m, and the three trenches excavated in broadly similar locations by CAU in 2014 which showed depths between 0.5m and 0.6m. Within the curtain wall, the 1988 CAU soakaway trench proved a build-up of material of around 3m over probable post-Roman deposits. The small trench excavated by the Central Excavation Unit in 1981 at the location of the short flight of steps leading from the southern end of the Great Hall to the nearby path was only excavated to 0.35m from surface and was not bottomed onto bedrock (Browse 1982). It was identified by the excavator as a probable medieval midden or drain, but reinterpretation by Thomas (1988) suggests that it intersected the upper part of the western edge of the cut for the post-Roman terrace recorded in Thomas and Thorpe's 1988 cliff section (Fig 5). Their sketch-surveyed drawing of the exposures in the southern cliff face provides the only cross-section across the post-Roman land surface. The information it provides is valuable but only indicates what lies beneath the

Great Hall at its southern end. The topography and extent of the post-Roman land surface to the north of this area is unknown.

However the extent of the high status post-Roman site which is considered likely to underlie the Inner Ward can be inferred to extend from the southern cliff face to at least the location of the soakaway trench and (from the Site Z evidence) at least a couple of metres to the east of the curtain wall. Taking into consideration the local topography, Thomas and Thorpe hypothesised that the terraced area occupied during this period is likely to have extended a short distance to the north of the northern section of curtain wall (Fig 8). This produces an area of potential archaeological deposits dating to the post-Roman period measuring a maximum of 40m by 17m (680m<sup>2</sup>). The majority of these are, and will always remain, inaccessible for study, given that they lie under the medieval castle structures.

The western area within the curtain wall has been subject to almost no archaeological investigation - the excavation of a very small trench here in advance of geotechnical core drilling in 2016 (Smith 2016) produced limited and inconclusive results. As mentioned above, Thomas and Thorpe have hypothesised that this area might also have sited a post-Roman occupation terrace (shaded green on Fig 7), part of the core area of the high status site. However, given its proximity to the Great Hall this area is certain to have been occupied or utilised during the medieval period. The soils here appear to be thin and given the very substantial depths of the material underlying the Great Hall there must be a strong likelihood that the levelling of this area took place during the castle-building period, to produce the necessary fill material as well perhaps stone for building and to extend the levelled area within the curtain wall, as is suggested in Thomas 1988. If, as seems likely, this was the case, most if not all evidence for post-Roman activity within this area of the site will have been destroyed during the 13<sup>th</sup> century castle-building phase. Based on these conclusions, for the purposes of this study this part of the site has been assessed as not being likely to contain post-Roman archaeological deposits.

### **Physical impacts arising from the construction of the proposed bridge abutments**

Information from the designers passed to CAU via English Heritage indicate that each abutment thrust block is likely to measure 3m x 1m in plan (3m<sup>2</sup>) set into an area excavated down to bedrock to a sufficient depth. If the engineers' calculations suggest that these would be insufficient to carry the imposed loads, the abutment thrust blocks will be enlarged to approximately 3m x 3m in plan (9m<sup>2</sup>). Two scenarios have therefore been addressed in the following impact assessment.

In both scenarios, all archaeological deposits would be destroyed within the areas which would be excavated to allow the construction of the abutments. It is assumed that the construction work would be preceded by full archaeological excavation and recording of the affected areas to avoid loss without record.

#### Impacts on the archaeology of the Lower Ward

For location see Figure 3.

The Lower Ward measures approximately 1,300m<sup>2</sup> in plan. A bridge abutment measuring 3m x 1m in plan would affect 0.23% of this area, whilst an abutment measuring 3m x 3m in plan would affect 0.69% of the area. Although it has been calculated (above) that an area of up to 675m<sup>2</sup> might contain post-Roman deposits, given the location selected for the abutment thrust block it is considered unlikely that any of this material will be affected by construction activities. It is thought most likely that the affected deposits will consist of around 0.6m depth of medieval and post-medieval surfaces over levelled bedrock.



### Impacts on the archaeology of the Inner Ward.

For location see Figure 4.

The Inner Ward measures approximately 730m<sup>2</sup> in plan. A bridge abutment measuring 3m x 1m in plan would affect 0.41% of this area, whilst an abutment measuring 3m x 3m in plan would affect 1.2% of this area. The location of the abutment thrust block falls within the smaller area (680m<sup>2</sup>) focussed on (but extending beyond) the area of the Inner Ward considered likely to contain post-Roman archaeological deposits. A 3m x 1m abutment would affect 0.44% of the potential deposits, whilst a 3m x 3m abutment would affect 1.3% of the deposits.

However approximately 450m<sup>2</sup> of the area of potential post-Roman deposits is covered by above-ground medieval structures – these areas will never be available for archaeological research investigation using currently-available techniques. If this figure is subtracted from the maximum estimate around 230m<sup>2</sup> is theoretically potentially accessible for research investigations which might throw light on the post-Roman history and use of what appears to be the core area of the Island. The excavations for a 3m x 1m bridge abutment would affect 1.3% of the post-Roman deposits not covered by later buildings, whilst those for a 3m x 3m abutment would affect 3.9% of these deposits.

### **Limitations and caveats**

Very approximate calculations have been made to attempt to determine the likely areas and extents of surviving post-Roman archaeological deposits in the vicinity of the proposed footbridge and on the proportional impacts which the excavation of the bridge abutments would have. However, given its national and international significance, post-Roman Tintagel has, somewhat surprisingly, been little investigated archaeologically. As a result only limited archaeological evidence is available to indicate whether these estimates are any more than broadly correct, and they therefore represent, at best, informed guesswork.

Furthermore, within the area of Tintagel Castle Radford's principal remit was to locate and expose the medieval structures and not to investigate the early history of the site. With the exception of Hartgroves and Walker's investigations at the northern end of the Lower Ward (which were to investigate an area occupied by one of Radford's 1933 trenches which was to site new drainage features) none of the post-war archaeological investigation within the area of the Castle has been for research purposes – all the remainder have been watching briefs or equivalent recording exercises during management works such as the installation of drains, steps, paths and surfacings, cables, strong points for abseil ropes, geotechnical drilling points, etc. These investigations have all been small-scale and in locations chosen for reasons other than research into the development of the site. Archaeologically, therefore, their distribution is random and not related to any research framework. It is difficult, as a result, to draw any more than limited and localised conclusions from their findings.

Finally it is likely that the hypothesised core of post-Roman Tintagel will contain a mixture of areas containing high status structures, areas used for craft activities or storage and open areas such as yards. On present evidence it is impossible to determine, or even predict, how these were distributed around the core area. Any part of this part of the site might therefore contain evidence critical to enhancing our understanding of post-Roman Tintagel.

### **Impacts through uncontrolled erosion**

CAU was also asked by English Heritage to consider the potential for losses to archaeology in a scenario where the footbridge was not constructed and there would therefore be no impacts resulting from excavation for its abutments, but where the cliff-edge archaeology would be subjected to continuing erosional processes.

### Impacts on the Lower Ward

The cliffs forming the western edge of the Upper and Lower Wards of Tintagel Castle are high, vertically fissured, lie along a pair of fault lines and are clearly potentially unstable. Collapses of these cliff faces have occurred within recent decades, on the most recent occasion resulting in losses to parts of the Upper Ward; further losses to some sections of this cliff face are probably inevitable. The slope falling northwards from the current end of the Lower Ward down towards the Neck is the result of the erosional processes which resulted in the historical loss of the original land bridge between the mainland and the island, the link between the two being finally severed between 1540 and 1580 (Sharpe 2016). The northern end of the Lower Ward lies within the area of influence of a fault zone not far to its north and has been truncated by erosion along a line of weakness induced by it which resulted in the destabilisation of material reaching back towards Lower Ward until it reached its angle of repose. It seems likely that angle has now been reached. Further erosion of the remains of the isthmus (the Neck) continues, but currently at a relatively slow rate (pers. comm. Matt Ward). Should this situation change, the remains of the Neck be lost to coastal erosion and the cliff slope below the Lower Ward not be artificially stabilised, the undermining of the base of this slope will eventually occur, potentially leading to a readjustment of the slope profile until it once again stabilises. However this landform resulting from this process will be controlled by the fracture pattern and bedding planes within the rock making up this slope, and as mentioned, the geology here is complex. Rock bolting and netting has already been undertaken on sections of the cliff slope, retarding natural erosional processes, and this approach could be extended to other at-risk sections of the cliff slope if it were considered that the protection of the archaeology of Tintagel Castle warranted it. Barring a currently unlikely catastrophic loss of material from the Neck, the timescale over which such approaches might be required is likely to be measured in decades. The potential for erosional losses to archaeological deposits in the vicinity of the proposed abutment is therefore assessed as very low.

### Impacts on the Inner Ward

The archaeological deposits which will be affected by the construction of the bridge abutment on the island are at the upper edge of its southern cliff face: a tall, near-vertical and, in places, potentially unstable feature.

The final loss of the land bridge during the early post-medieval period and the subsequent erosion of the isthmus to its present condition has left these cliffs vulnerable to collapse, and it is clear from the Thomas and Thorpe 1988 cliff section that truncation of archaeological deposits and structures has occurred. That process was (possibly only temporarily) halted by the rock bolting and netting of vulnerable sections of the cliff face post-1988, though as this work (and the use of explosives to remove dangerous sections of the rock face) was primarily undertaken to enhance visitor safety rather than to halt cliff retreat and protect archaeological deposits, further erosion may well take place. Should this occur it may well degrade the foundations of the curtain wall and Great Hall and make the southern section of the site unsafe for visitors. Given the investment in the site currently being made by English Heritage (particularly as a new footbridge access is being proposed) it is considered unlikely that erosion of the southern cliff face would not be controlled by rock bolting, netting or other stabilisation works unless made either impossible or uneconomic as a result of a large scale catastrophic collapse of the cliff face.

Whilst there is the potential for continued small scale, slow erosion of archaeological deposits within the area proposed for the northern bridge abutment, these are largely controlled by the stabilisation works undertaken some decades ago. Provided that this protection is maintained and (if necessary) renewed and unless a large scale cliff face collapse here occurs, the archaeological deposits at this location are not considered to be at significant risk from the impacts of natural processes.

## 7 Conclusions

The abutments for the proposed footbridge are located at the eroded edges of two sections of Tintagel Castle – the Lower Ward on the mainland and the Inner Ward on the island.

The footprints of the abutments are small relative to the areas of both wards. The available evidence suggests that archaeological impacts on the Lower Ward are likely to be minor, most likely affecting medieval and post-medieval levelling deposits. On the island, the impacts are likely to be more significant given that the construction of the abutment here is likely to impact on an area incorporating post-Roman deposits and is within an area of the site identified as being its high status core.

An assessment as also been made of the potential for these deposits to be negatively impacted on by natural erosion processes should the bridge not be constructed. It is concluded that, barring the catastrophic loss of all or part of the isthmus, erosion to the cliff slope beneath the northern end of the Lower Ward is likely to be slow and small-scale and could be controlled using methods already applied to this area. The cliff face beneath the proposed abutment site on the island is somewhat more mobile and potentially at risk of further collapse, though has been trimmed, gunnited, rock-bolted and netted to stabilise it. Significant erosion of this cliff face is likely to be controllable using already-adopted methods unless a significant loss of the material making up the Neck occurs, as this might have the potential to result in some destabilisation of the cliff face above it.

## 8 Proposed mitigation

Should the footbridge be constructed as planned, excavation down to bedrock will be required to site its thrust blocks at the top of the cliff slope at the northern end of the Lower Ward and in the upper cliff face at the southern end of the Inner Ward. It is recommended that these areas are excavated and recorded under controlled conditions by professional archaeologists in advance of the construction works.

Should the footbridge not be constructed the southern cliff slope and northern cliff face should continue to be stabilised by rock bolting and netting as at present. Periodic inspections of the stability of the cliff face below the Great Hall should continue to be undertaken. Regular checking and monitoring would be required in any case.

## 9 References

### 9.1 Primary sources

- Ordnance Survey, c1880. 25 Inch Map First Edition (licensed digital copy at CAU)
- Ordnance Survey, c1907. 25 Inch Map Second Edition (licensed digital copy at CAU)
- Ordnance Survey, MasterMap Topography
- Tithe Map and Apportionment, c1840. Parish of Tintagel (licensed digital copy at CRO)

### 9.2 Publications

- Barrowman, R., Batey, C, and Morris, C. 2007, *Excavations at Tintagel Castle, Cornwall, 1990-1999*, Society of Antiquaries monograph (in particular the work on Trench T01 extension into the Lower Ward)
- Thomas, A. C. 1993. *Tintagel, Arthur and Archaeology*, London (English Heritage)

### 9.3 Archaeological reports

- Appleton, N, Fox, T, and Waters, A, 1988. *Tintagel Castle: survey and excavation at the Inner Ward, the Chapel, Site 4 and the Garden*, Cornwall Archaeological Unit unpublished report

Bowden M, and Jamieson E, 2016. *Tintagel Castle and Island, Cornwall: archaeological survey enhancement*, Historic England Research Report Series N° 33-2016

Browse, RG, 1982. 'Tintagel Castle', *Cornish Archaeology*, **21**, 189-190

Hartgroves S, and Walker R, 1988. 'Excavations in the Lower Ward, Tintagel Castle, 1986', *Cornish Studies* **16**, 9-30

Padel, O, 1988. 'Tintagel in the twelfth and thirteenth centuries', *Cornish Archaeology*, **16**, 61-66

Reynolds A, 2006., *Repairs to Tintagel Castle 1998/9: archaeological recording*, CAU report to English Heritage

Sharpe, A, 2016. *Archaeological impact assessment of proposed new access arrangements to the island*. CAU report 2016R064 to English Heritage

Smith R, 2016. *Archaeological evaluation and watching brief at Tintagel Castle, Cornwall*. CAU report 2016R060 to English Heritage.

Thomas C, 1988. 'The 1988 CAU excavations at Tintagel Island: the discoveries and their implications', *Cornish Studies* **16**, 49-60

Thorpe, C, 2004. *Extreme Archaeology: an excavation at Tintagel, Cornwall: archaeological finds report*, Cornwall Archaeological Unit report 2004R012

Thorpe C, 2006. *The Iron Gate, Tintagel Castle, Cornwall: fence replacement works*, CAU report 2007R007 to English Heritage

Thorpe C, 2008. *The information hut, Tintagel Castle, Cornwall: paving works*, CAU report 2008R012 to English Heritage

Thorpe, C, 2014. *Tintagel Island trial pits, Tintagel Castle, Cornwall, Scheduled Monument 1014793: archaeological watching brief*, HE Projects report 2014R030

## **9.4 Other reports**

Ramboll UK, 2013. *Tintagel Castle Bridge options appraisal: Stage 1 report – March 2013*

Ramboll UK, 2013. *Tintagel Castle bridge geotechnical evaluation: desk study and site visit report*

Design and construction proposals for the bridge drawn up by Ney and Partners with William Matthews Associates and for access improvements by Nicholas Pearson Associates (both 2016).

## **9.5 Collections**

- The full finds catalogue of all finds discovered on the Island since Raleigh Radford's 1930s excavations to 1991 produced by Professor Charles Thomas and Carl Thorpe
- The Royal Commission survey (RCHME) of the Island undertaken during the 1980s
- Material produced by Radford and Wright during the 1930s excavations at Tintagel, in particular that relating to Site Z.
- Illustrative material from Professor Charles Thomas' archives
- Illustrative material from Carl Thorpe's archive
- Postcards, guidebooks and other printed ephemera relating to Tintagel Castle

## **9.6 Websites**

<http://www.heritagegateway.org.uk/gateway/> Online database of Sites and Monuments Records, and Listed Buildings

## **10 Project archive**

The CAU project number is **146660**

The project's documentary, digital, photographic and drawn archive is maintained by Cornwall Archaeological Unit

Electronic data is stored in the following location:

Project admin and communications: \\Sites\Sites T\Tintagel Castle footbridge abutment impact assessment 2017\

Historic England/ADS OASIS online reference: cornwall2-276051

## Appendix 1: Written Scheme of Investigation

### Tintagel new bridge abutments: Written Scheme of Investigation for an archaeological impact assessment

Client: English Heritage  
Client contact: Reuben Briggs  
Client tel: 020 7973 3814  
Client email: Reuben.Briggs@english-heritage.org.uk

#### Project background

Cornwall Archaeological Unit were contacted by Reuben Briggs, National Project Manager, Estates Department, English Heritage on 24 January 2017 with a request for a method statement and cost schedule for undertaking an assessment of the physical impacts of the new footbridge proposed to link the mainland and Island sections of Tintagel Castle, specifically 'to quantify the overall harm of the loss of the archaeological deposits at the sites of the abutments. The assessment is to assess the level of harm which would result from their loss against the volume of potentially similar deposits likely to remain *in situ*, and the potential vulnerability of these deposits (given their cliff edge location) to a continuation of known erosion processes'.

#### Project extent

The new footbridge abutments are proposed at SX 05135 88957 at the northern end of the Lower Ward of Tintagel Castle on the mainland (to the west of the current steps) and SX 05090 89004 at the southern end of the Inner Ward on the Island, this being immediately adjacent to the south-western corner of the remains of the medieval Great Hall.

As currently designed, both abutments will measure 3m x 1.5m in plan and will be excavated down to bedrock. CAU have also been asked to consider the impacts of a scenario where the abutments will measure 3m x 3m in plan.

#### Aims and objectives

The principal aim of the study is to gain a better understanding of the potential impacts of excavation to install concrete abutments for the proposed new footbridge linking Tintagel Island to the mainland and to quantify the potential for the physical loss of archaeological deposits; the study is also to consider the vulnerability of the archaeological deposits which would be affected by the construction works to natural erosional processes.

The primary objective is to produce a written and illustrated report meeting these aims. A second objective is to produce an entry to the Historic England OASIS/ADS-Online national database of archaeological projects.

#### Working methods

All recording work will be undertaken according to the Chartered Institute for Archaeologists *Standards and Guidance for Archaeological Investigation and Recording*. Staff will follow the CIfA *Code of Conduct* and *Code of Approved Practice for the Regulation of Contractual Arrangements in Archaeology*. The Chartered Institute for Archaeologists is the professional body for archaeologists working in the UK.

#### Desk-based research

A desk-based assessment will be carried out to inform the impact assessment. fieldwork stage. The following will be considered:

- Historic maps;
- Modern maps;
- Archive photographs and other images of the site;
- Aerial photographs;
- Plans and other records of archaeological investigations at Tintagel Castle;
- CAU and CC GIS database layers.

### Impact assessment

An assessment will be undertaken to determine a) the likely impacts of the construction of the proposed bridge abutments and the resultant proportional loss of the archaeological deposits making up the post-Roman high status site which is thought to underlie the medieval Great Hall and b) the potential vulnerability of the archaeological deposits within the areas to be occupied by the bridge abutments to loss due to erosion, should the project not go forward.

An assessment of the likely extent of the early high status structure will be made in order to allow an estimate of proportional loss to be made – this will be based on all available archaeological information relating to this part of the site. Archive images and maps will be used to provide some insight into historical cliff erosion at the bridge landing points and to determine the likelihood of the loss of these deposits to future erosional processes.

### Creation of site archive

To include:

- Completion of an entry to the Historic England ADS OASIS online archive.

### Archive report

A written report will include:

- Summary;
- Project background;
- Aims and objectives;
- Methodologies;
- Location and setting;
- Designations;
- Summary site history;
- Impact assessment;
- Possible mitigation measures;
- References;
- Project archive index;
- Supporting illustrations: location map, historic maps, plans, elevations/sections, photographs.

A digital (PDF) copy of the report, illustrations and other project material will be lodged with the Cornwall HER. Paper copies of the report will be distributed to the client, to local archives and national archaeological record centres.

### Archive deposition

An index to the site archive will be created and the archive contents prepared for long term storage, in accordance with CAU standards.

The archiving will comprise the following:

1. All correspondence relating to the project, this WSI, a single paper copy of the report together with an electronic copy on CD, stored in an archive standard (acid-free) documentation box.
2. The project archive will be deposited initially at ReStore PLC, Liskeard and in due course (when space permits) at Cornwall Record Office.
3. Digital data will be stored on the Cornwall Council network which is regularly and frequently backed up.

CAU uses the following file formats for stored digital data:

- DOCX Word processed documents
- XLSX Spreadsheets
- PDF Exports of completed documents/reports/graphics
- JPG Site graphics and scanned information
- DNG or TIF Digital photographs
- DWG AutoCAD drawings, measured surveys
- MXD ArcView GIS (electronic mapping) data
- AI Adobe Illustrator graphics

## Timetable

It is anticipated that this study will be undertaken in January/February 2017.

## Cornwall Archaeological Unit

Cornwall Archaeological Unit is part of Cornwall Council. CAU employs 20 project staff with a broad range of expertise, undertaking around 120 projects each year.

CAU 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



CAU is a Registered Organisation with the Chartered Institute for Archaeologists and follows their Standards and Code of Conduct.

<http://www.archaeologists.net/codes/ifa>

## Terms and conditions

### Contract

CAU is part of 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 CAU and will be presented in good faith on the basis of professional judgement and on information currently available.

### Project staff

The project will be managed and undertaken by a nominated CAU Archaeology Projects Officer who will:

- Discuss and agree the detailed objectives and programme of each stage of the project with the client.
- Monitor progress and results for each stage.
- Edit the project report.
- Liaise with the client regarding the budget and related issues.

### Report distribution

Paper copies of the report will be distributed to the client, to local archives and national archaeological record centres.

A digital copy of the report, illustrations and any other files will be held in the Cornwall HER and also supplied to the client on CD or other suitable media.

### Copyright

Copyright of all material gathered as a result of the project will be reserved to Cornwall Archaeological Unit, 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.

CAU 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 CAU may need to disclose any information it holds, unless it is excluded from disclosure under the Act.

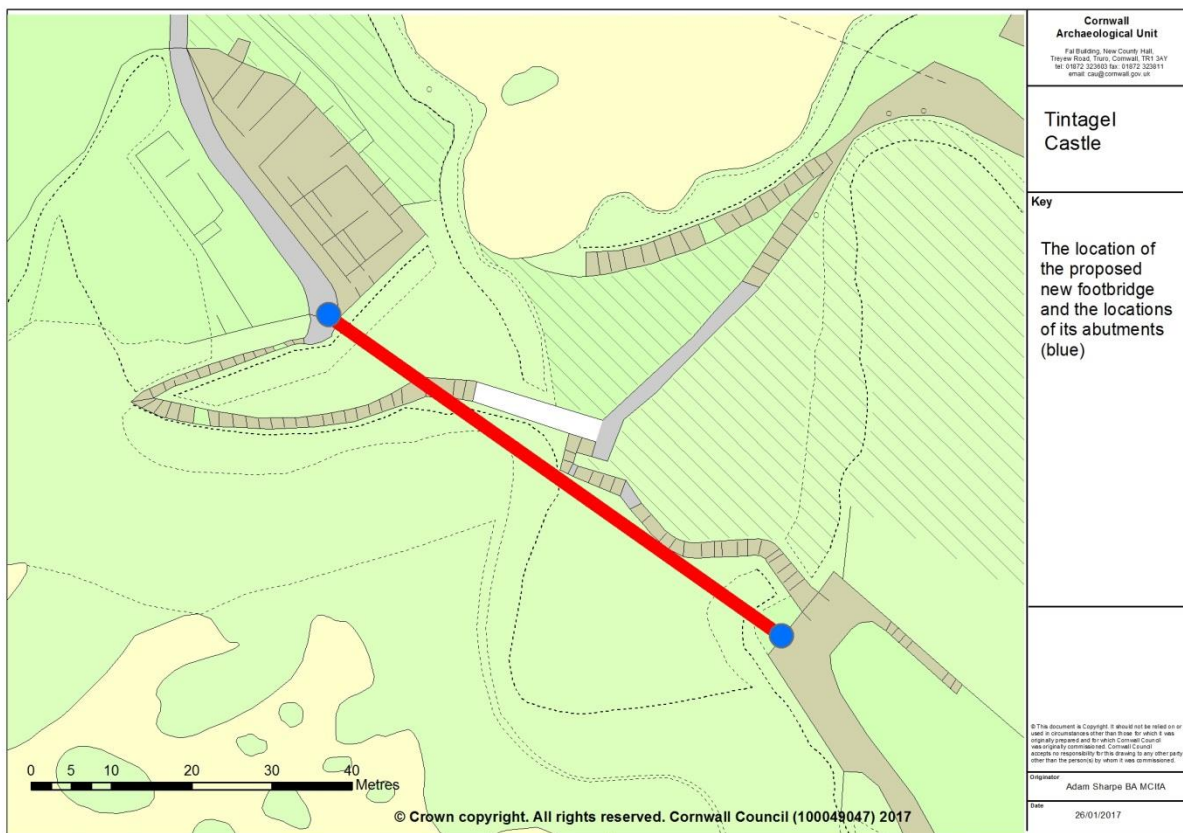
### Insurance

CAU is covered by Cornwall Council's Public and Employers Liability Insurance, with a policy value of £50m. The Council also has Professional Negligence insurance with a policy value of £10m.

Adam Sharpe BA MCIFA  
Archaeology Projects Officer  
25 January 2017

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*Fig 3. The northern end of the Lower Ward at Tintagel Castle. The location of the proposed bridge abutment is circled.*



*Fig 4. The southern cliff beneath the Great Hall at Tintagel Castle. The location of the proposed bridge abutment is circled.*

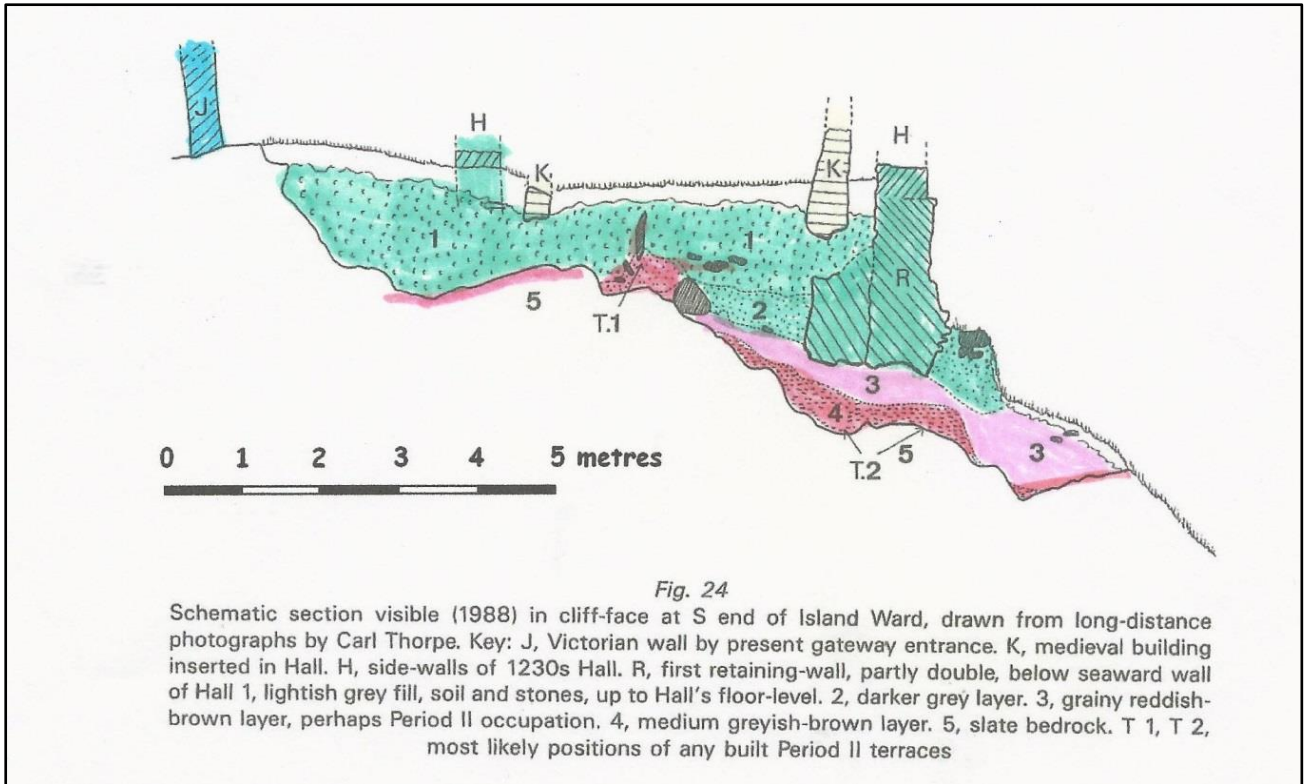


Fig 5. Thomas and Thorpe's 1988 sketch section of the exposed cliff section below the Great Hall (from Thomas 1988, colours added subsequently). Green: 13<sup>th</sup> century fill material and structure; pink and red: post-Roman deposits and terraces.

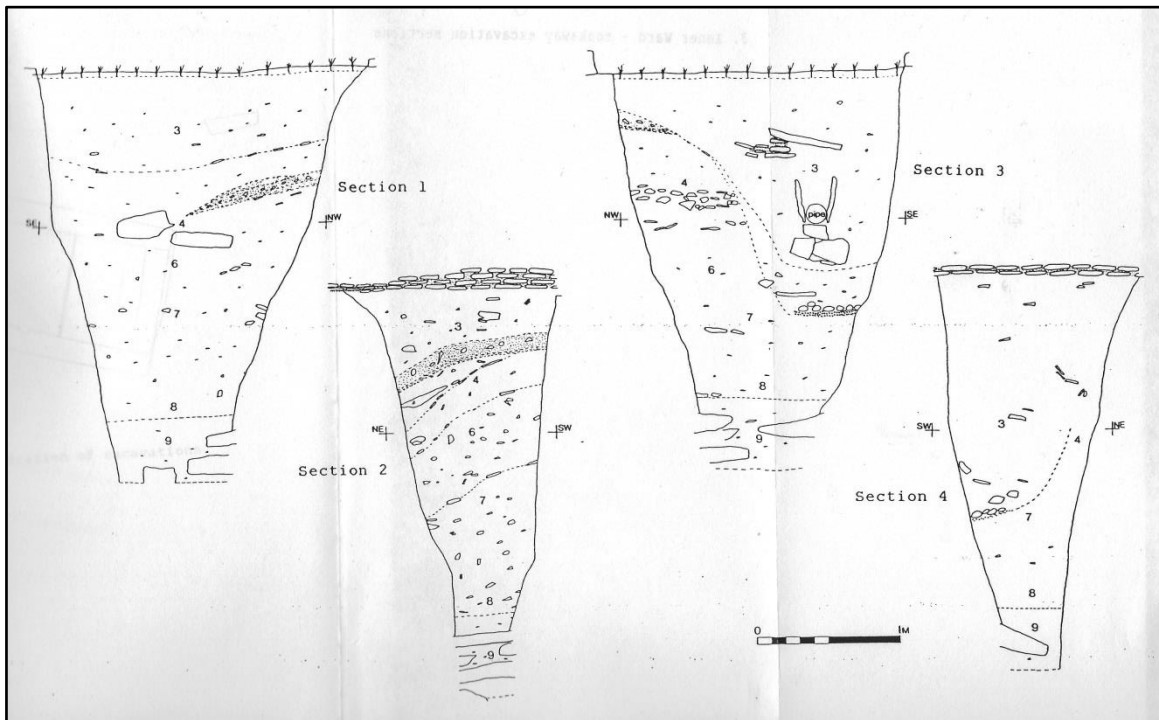


Fig 6. Appleton at el section drawings of the 1988 soakaway excavation within the Great Hall (from Thomas 1988). Features at the base of the excavation were interpreted as being of post-Roman date.

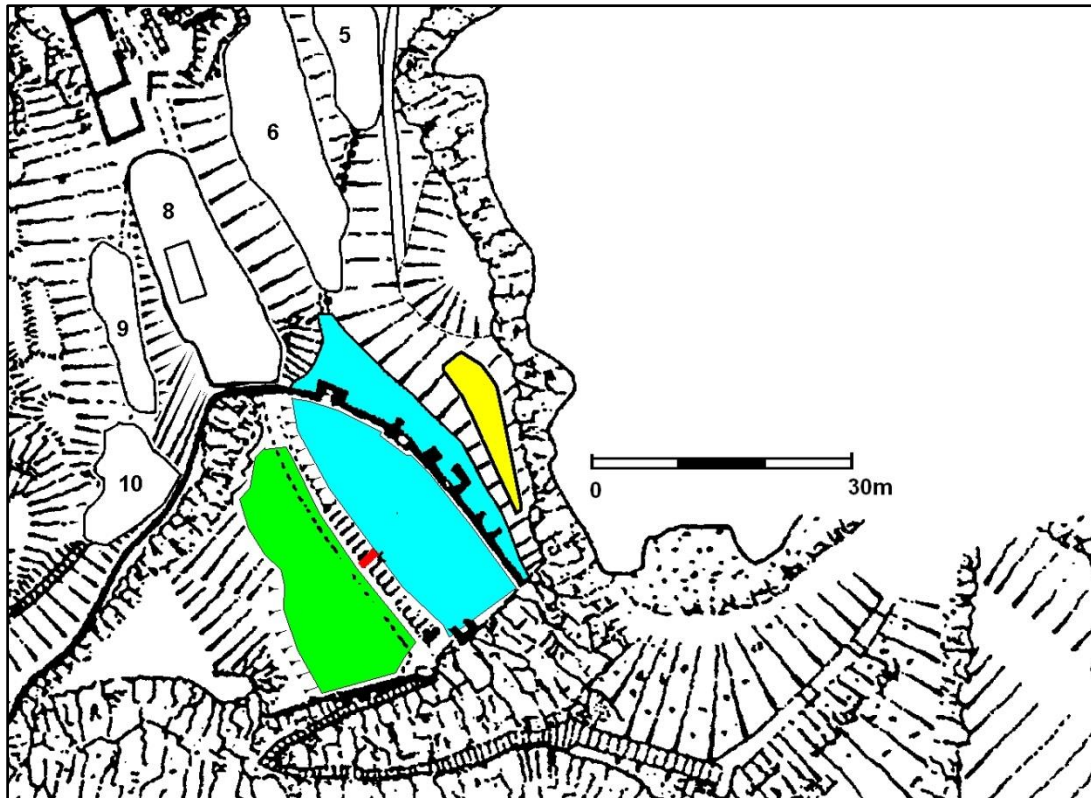


Fig 7. An extract from a plan of Tintagel Island produced by Thomas and Thorpe showing the hypothetical extents of post-Roman terracing underlying and adjacent to the medieval Great Hall.

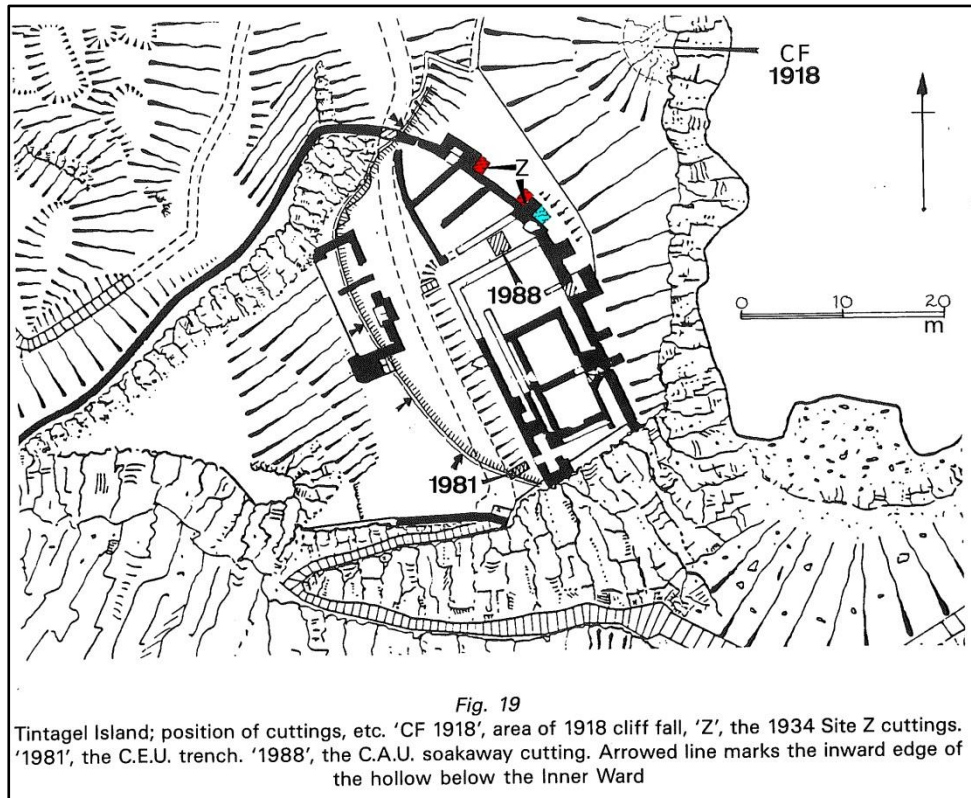


Fig. 19  
Tintagel Island; position of cuttings, etc. 'CF 1918', area of 1918 cliff fall, 'Z', the 1934 Site Z cuttings. '1981', the C.E.U. trench. '1988', the C.A.U. soakaway cutting. Arrowed line marks the inward edge of the hollow below the Inner Ward

Fig 8. Figure 19 from Thomas 1988, showing his hypothesised extent of the terraced area under the Great Hall. Note the rather larger extent of this terrace from that shown above.

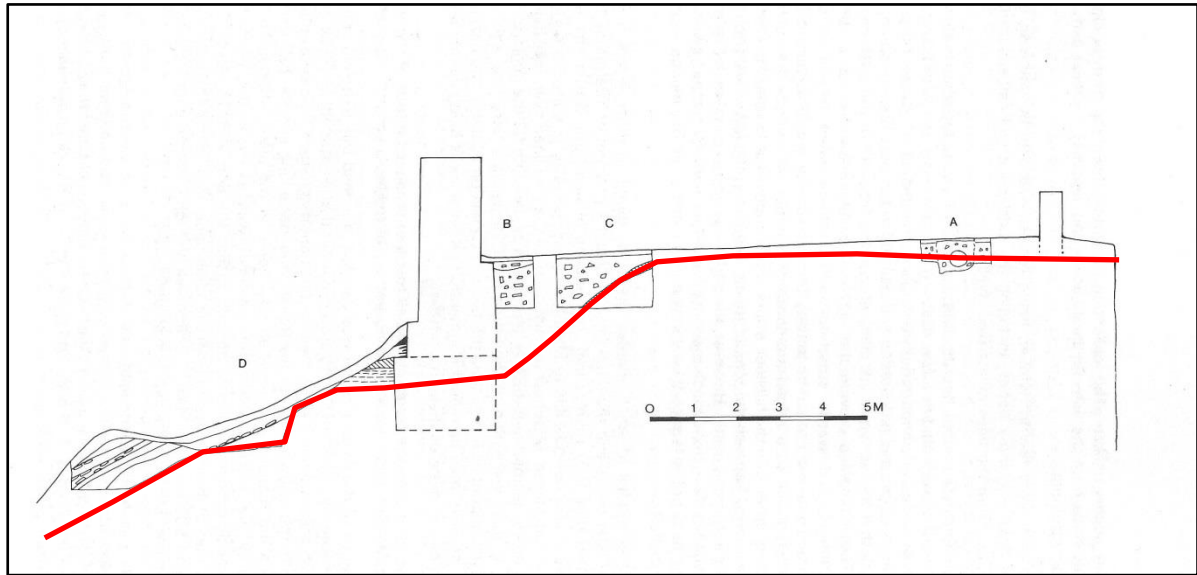


Fig 9. Hartgroves and Walker's composite east-west section across the Lower Ward derived from their 1986 excavations. The red line (added to the original drawing) indicates the top of bedrock and the locations of a post-Roman terrace. Hartgroves and Walker concluded that the bedrock had been lowered across the eastern two thirds of the promontory here.

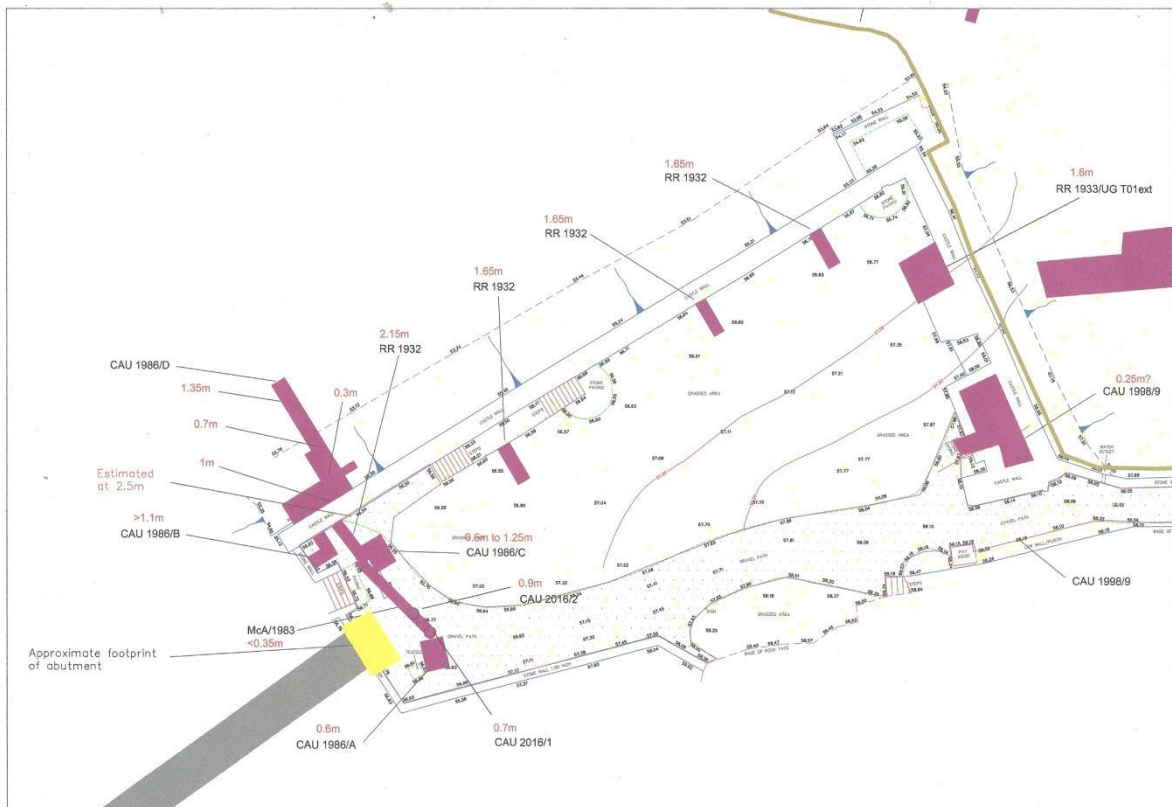


Fig 10. A composite plan showing archaeological interventions within the Lower Ward at Tintagel Castle and the depths to bedrock (in red) where known.

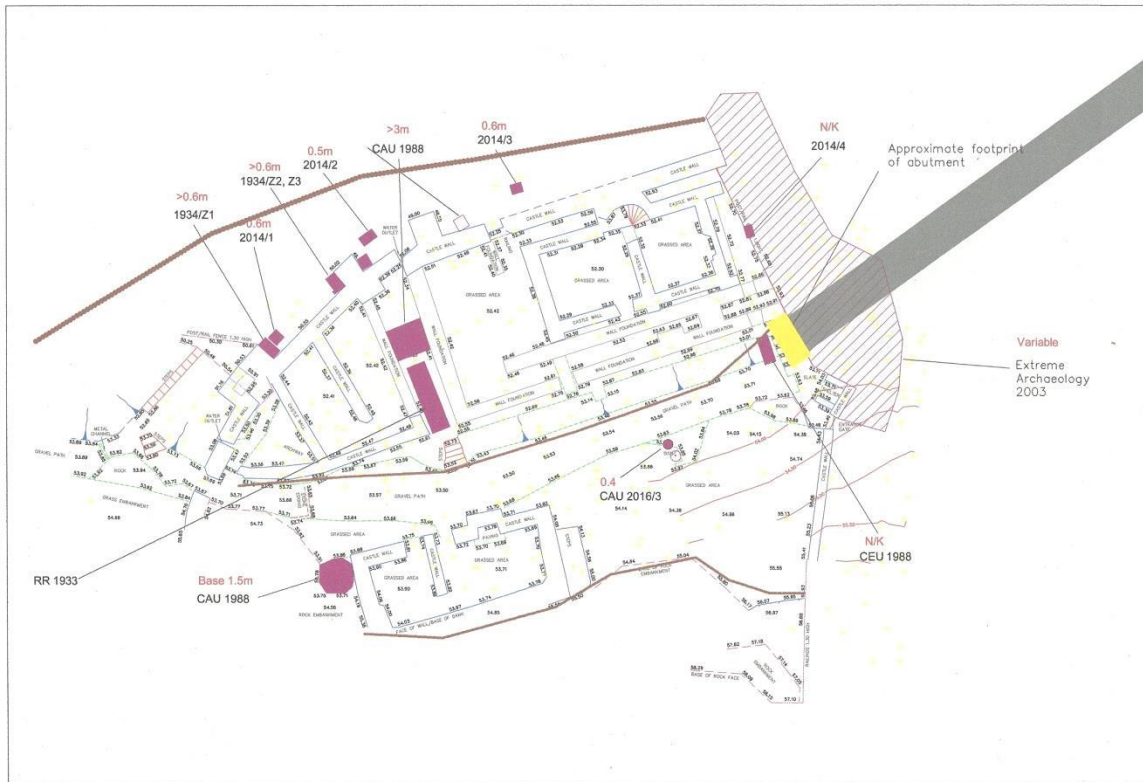


Fig 11. A composite plan showing archaeological interventions within the Inner Ward at Tintagel Castle and the depths to bedrock (in red) where known.

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