Northamptonshire Archaeology

Earthwork survey and watching brief at the SITA Cornwall's Household Waste Recycling Centre (HWRC) extension, Menear Road St Austell. Cornwall

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Report 10/37

March 2010

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QUALITY CONTROL

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OASIS REPORT FORM

PROJECT DETAILS		
Project name	Earthwork survey and watching brief at the SITA Cornwall's Household Waste Recycling Centre (HWRC) extension, Menear Road, St Austell, Cornwall	
Short description (250 words maximum)	The proposed extension of the Menear Household Waste Recycling Centre by SITA would damage part of the remains of the extensive tin streaming landscape of the Garkar Sett. Northamptonshire Archaeology was commissioned by RPS to carry out an initial earthwork survey and then a watching brief during the development. Lengths of three stone edged leats were recorded as earthworks and other possible examples were identified as soil marks. All the remains were undated and part of a much more extensive system probably related to post-medieval tin streaming.	
Project type (eg DBA, evaluation etc)	Earthwork survey and watching brief	
Site status (none, NT, SAM etc)	None	
Previous work (SMR numbers etc)	DBA (RPS), Assessment Cornwall Archaeology Unit	
Current Land use	Recycling facility	
Future work (yes, no, unknown)	no	
Monument type/ period	Medieval to post-medieval tin streaming leats	
Significant finds (artefact type and period)	None	
PROJECT LOCATION		
County	Cornwall	
Site address (including postcode)	Menear Road Household waste recycling facility, St Austell PL25 3DG	
Study area (sq.m or ha)	0.7ha	
OS Easting & Northing (use grid sq. letters)	SX 033 545 approx centre	
Height OD	165m aOD	
PROJECT CREATORS		
Organisation	Northamptonshire Archaeology	
Project brief originator	RPS	
Project Design originator	D Slatcher RPS	
Director/Supervisor	I Meadows	
Project Manager	I Meadows	
Sponsor or funding body	SITA	
PROJECT DATE		
Start date	July 2009	
End date	September 2009	
ARCHIVES	**Location (Accession no.)**	**Content (eg pottery, animal bone etc)**
Physical		
Paper	SARC09	
Digital		
BIBLIOGRAPHY	Journal/monograph, published or forthcoming, or unpublished client report (NA report)	
Title	Earthwork survey and watching brief at Menear household waste recycling centre extension, St Austell, Cornwall	
Serial title & volume	10/37	
Author(s)	Ian Meadows	

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Earthwork survey and watching brief at the SITA Cornwall's Household Waste Recycling Centre (HWRC) extension Menear Road, St Austell Cornwall

Abstract
The proposed extension of the Menear household waste recycling facility by SITA would destroy part of the remains of the extensive tin streaming landscape of the Garkar Sett. Northamptonshire Archaeology was commissioned by RPS to carry out an initial earthwork survey and then a watching brief during the development. Lengths of three stone edged leats were recorded as earthworks and other possible examples were identified as soil marks. All the remains were undated and formed part of a much more extensive system presumed to be related to probably post medieval tin streaming.

1 INTRODUCTION

The proposed expansion of the household waste recycling facility at Menear, St Austell (NGR SX 033 545, Fig 1) into land adjacent to the present site by SITA was preceded by a desk-based assessment (Slatcher 2007). This assessment showed that whilst the area did not lie within a conservation area or contain any listed buildings or scheduled monuments it did have a high to medium chance of containing archaeological remains. The existing site covered an area of just under 0.3ha and the proposed extension would affect a further 0.7ha. Mitigation works agreed between RPS and Cornwall County Council comprised an earthwork survey, after the reduction of vegetation, followed by a watching brief during the earth moving.

2 BACKGROUND

2.1 Topography and geology

The site is situated 1km to the north-east of St Austell near to the top of a south-east facing slope, and adjoining the north side of the existing household waste recycling facility (Fig 2). The ground fell to the south-east at a moderately steep angle and also on the northern side into a small valley, perhaps in part a product of the 19th and 20th-century china clay workings. The area was covered with rough gorse and bracken and small shrubs. The underlying geology is coarse-grained granite overlain by quartzitic/felspathic clay containing granite boulders.

2.2 Historical and archaeological background

The present study area lies just within Garkar Sett tin extraction area, first mentioned when the boundaries were renewed in 1659, but the first working is perhaps medieval or earlier in origin. The boundaries of the sett were renewed again in 1748 and whilst

parts of Garkar Sett were in operation as late as 1864, neither the St Austell Tithe map of 1842 or the Ordnance Survey map for 1881 show tin working on the present study area, suggesting operations had ceased. It has been suggested that the present household waste facility is located within the Garkar Sett with its southern boundary perhaps at the southern boundary of the sett.

The area of the present study had been identified as having the potential for containing remains of tin streaming (Smith and Buck 1994, feature 37).

The closest statutorily protected feature to the proposed development area is an extant standing stone (SAM County number 1054), approximately 80 metres from the southern edge of the proposed development area and some 140 metres from the southern edge of the extension of the existing civic amenity site (Slatcher 2007, 1).

3 EARTHWORK SURVEY

Northamptonshire Archaeology was commissioned to carry out the Earthwork Survey across the proposed expansion area. This was carried out in July 2009 following the reduction of vegetation, including Japanese knotweed. The aim of the survey was to provide a detailed record of the earthworks prior to their removal. The survey was undertaken using a Leica System 1200 GPS to an accuracy of +/- 20mm to Ordnance Survey National Grid and Datum. Tops and bottoms of slopes were surveyed at close intervals in order to establish the form of the surviving earthworks. Results were plotted using MapInfo and hachure plans generated (Figs 3-5).

The earthwork survey identified three discrete channel courses (1-3), a hollow way, a Cornish hedge and extensive areas of uneven presumed disturbed ground (Fig 4). One of these disturbed areas lay between the Cornish hedge and the road.

4 THE WATCHING BRIEF

4.1 Introduction

Following the earthwork survey a watching brief was carried out on most of the over site soil strip, with the exception of the area of Japanese knotweed clearance and the adjacent Cornish hedge which was removed at the same time. It was agreed prior to the start of works that because the method of stripping necessary to remove the knotweed was not conducive to archaeological observations and also as the area appeared to have been severely disturbed by recent dumping activity a watching brief would not be maintained over that part of the site.

The northern part of the site contained a series of complex earthworks which were ultimately not included in the development and which were probably part of a continuation of the 19th-century china clay workings. Although the removal of the Cornish hedge was not observed it was seen to have been constructed of large granite boulders, which were retained to create a herpetaria as part of the final reinstatement of the site.

The site was stripped of the thin soil under archaeological supervision. Generally this process involved the removal of the topsoil with a short toothed riddling bucket in

order that the soil could be separated from the significant number of granite boulders that were present and these were stacked separately from the soil. The surface once stripped was then scraped clean with a toothless ditching bucket to provide a surface for observation and recording. The thin dark organic soil, up to 0.20m thick, directly overlay the upper surface of the natural gritty clay which was marked with dark stains indicative of former, undated, vegetation on the site.

In order that some of the upstanding earthwork remains could be better recorded limited trenches were hand excavated through them before any mechanical stripping. This approach enabled the recovery of not just the plan of the features but also a vertical understanding of their composition.

The earthwork survey had identified a series of features (see above) which can be interpreted as follows. Along the southern side of the study area several dumps of material were present, presumably upcast from the construction of the adjacent household waste centre as they sealed other recent evidence for dumping containing plastics. These dumps of upcast were composed of soils that were presumably 'lost' by spreading around the earlier development area. The recent dumps sealed a large irregular pit or conjoined pits, *c* 20m west to east, filled with dark grey loam, containing granite boulders and broken rubbish including modern glass, ceramics and plastics. This pit or pits extended to the southern limits of the present development and had presumably extended into the area now occupied by the waste centre.

To the north of this area of disturbance there was a hollow way, 2m wide at the base, that first appeared on the Ordnance Survey map in 1992 at the same time as the household waste centre is shown. The construction of the track may have been necessitated to maintain access down the valley. There was no indication of a deliberate track surface observed during the watching brief, so it is unlikely the track was ever for more than pedestrians or light agricultural traffic. It was flanked on both sides with banks of upcast material from its original excavation. Pneumatic tyres had been incorporated in the soils, reflecting extensive dumping on the site and the recent date of the track.

To the north of the bank of upcast beside the hollow way there was an area of ground, 40m x 50m, which appeared to be relatively undisturbed by recent dumping activity. This area had been seen during the earthwork survey to contain a series of three small channels that were interpreted as probably associated with the tin working of this area.

4.2 Channel 1

The shortest channel had a curved plan form that could be traced for 16m (Figs 3-6, Fig 7, section 2); at its southern end it was destroyed by the construction and upcast from the hollow way. The degree of curvature was such that at the opposite end it was running almost east.

The channel was about 1.0m wide and 0.80m deep. The sides of the channel were formed by granite boulders defining both sides of a stone-free channel which extended onto the dirty orange gritty clay natural (C). Overlying this natural was a compact grey-brown sandy silt, 0.15m thick (A), containing a significant amount of crystalline material, either felspathic or quartzitic. This layer had a slightly dished upper surface and throughout its matrix it had a lenticular form suggestive of a series of episodes of waterlain material. The deposit was seen to extend a short distance up the granite channel lining. Sealing this deposit was dark brown, near black, organic

soil, 0.10m thick, containing only isolated pieces of granite, which in turn was sealed beneath the recent vegetation and mulch shreddings.

In a hand excavated section no dateable finds were recovered (Fig 7, section 2). Examination of the waterlain deposit under a lens showed the presence of orange mica, which was observed during the excavation and was erroneously thought to have been metal ore.

4.3 Channel 2

A second channel ran north to south straight across this area for a distance of 30m (Figs 3-5, Fig 7 section 1). Channel 2 was 0.75m wide and about 0.30m deep with granite boulders defining its sides. The basal fill (C) comprised a compact grey-brown sandy silt with felspathic or quartzitic inclusions and had a slightly dished upper surface. This appeared to run under the lowest stones of the channel edging. Overlying this was dark brown near black organic soil, 0.2m thick (A), containing isolated granite boulders, sealed in turn beneath recent recent un-rotted vegetation (Fig 8).

The northern end appeared to disgorge into the wide hollow which was perhaps part of the china clay working, although during the soil stripping a possible eastwards arm was observed as a soil mark. At its southern end it appeared to have been cut by the previous curving channel (Channel 1).

4.4 Channel 3

A further course ran eastwards from about the mid point of the surviving length of Channel 2. It ran for more than 24m down slope, extending beyond the limit of the present study area (Figs 3-5 and 9, Fig 7, section 3).

As with the previous channels this example comprised a parallel pair of rough uncoursed channel sides, *c* 1.60m wide, formed from granite boulders resting directly on a dirty natural orange gritty clay natural (D, Fig 9). There was no evidence for any interstitial bedding or bonding material and many voids existed between individual stones. In the base of the channel a shallow 0.04m thick lens of compact grey silty material containing felspathic or quartzitic grits was present (C), this was in turn overlain by a very dark black fine gritty loam containing a number of granite boulders sealed by the recent vegetation (A).

4.5 Other channels and features

Once the channel earthworks had been removed to the 'build level' on the site there remained darker streaks in the upper surface of the natural. Further possible feature bases were observed including a possible 0.70m wide channel extending eastwards for 13m from Channel 2.

To the west of Channel 2 an extensive 11m x 4m but shallow pit, 0.3m deep, [131] (Fig 10) containing granite boulders and fragments of recent moulded glass vessels (not retained) was present. It possibly formed an outlier for the tipping observed to the south and to the west of the 'Cornish hedge'.

In the observations of the north-west corner of the area a dendritic plan of a series of possible channel bases were observed as dark streaks in the top of the natural (Fig 5). One length, [106], lay parallel to the 'Cornish hedge', running for 8m until it joined another length, [108]. A second small channel 5m long [104] joined the north-east side of channel [108].

The channel, [108], lying approximately south-west to north-east in the base of a large linear hollow, was traced for 18m, at which point it joined a north-west to south-east channel [114] which was intermittently traced for 22m. A further example [130] was also observed running from the northern part of Channel 2 towards the wide hollow.

5 FINDS AND SAMPLES

No finds were retained because all the material was of recent post-medieval date, including pieces of vehicle, golf balls and plastics. No artefacts were found within of any of the leats.

No samples were taken for environmental analysis because they could not be dateable and the only medium likely to yield any results would have been the organic rich topsoil.

6 DISCUSSION

In the three stone-lined channels the rubble edging was apparently *ad hoc* with individual stones wedged and jammed in. It was difficult to ascertain how thick the individual edgings were since the stones just tailed off away from the channel, but they were generally at least 1m thick. The enclosed channels were nowhere completely infilled; the lowest infill probably reflecting the washing effect of flowing water and the upper infill a product of decaying vegetation. The rubble edging sat directly upon the natural clay and nowhere was a cut visible to suggest they were inserted through a contemporary soil horizon. Similar boulders were conspicuous by their absence across the bulk of the study area and therefore the area could have been cleared in the process of constructing and managing the channels.

The identification of leats on this site is only a small part of the tin streaming process and the leats would have carried the water from the surface reservoirs to the actual streamworks some distance downhill (Sharpe 2008, 44). As these leats were undated by finds it is unclear to which period they belonged. The elluvial working of tin on Bodmin was found to be largely single phase and date to the medieval or early post-medieval period (ibid 46), but it is uncertain whether a similar broad dating can be applied here.

The extent of the channels was only partially revealed and no point of origin, such as a pond, identified. None of the historic maps examined as part of the desk-based assessment identified such features but they are likely to have lain within the boundaries of the sett and uphill of the exposed leats. Such water management systems are particularly associated with the working of elluvial tin deposits which lack the reliable water flow of a stream, which are often associated with alluvial workings. Workings such as these would operate during the winter months when the water reserves would build up sufficiently to be employed to separate the tin ore. At this

time many of the alluvial stream-based workings would have to be abandoned owing to the greater level of water flow which would be too great to separate the ore. The evidence from each of the leats was of smooth compact waterlain deposits of silty material in the base of the channels.

The occurrence of a number of phases of leat is suggested by the pattern of channels in soil marks, and that Channel 2 was cut by Channel 1. This multi-phase usage might suggest the working was of long duration and perhaps episodic resulting in the creation of a number of systems of leats to supply the area that was at that time prepared for washing, to separate the *shoad* (tinstone) from the *stent* (waste). It is possible the actual working area was some distance from the present study area with the leats running from reservoirs as far distant as possible in order to maximise the rate of flow of the water when released. In the present case the reservoirs may have been arranged around the edge of the sett.

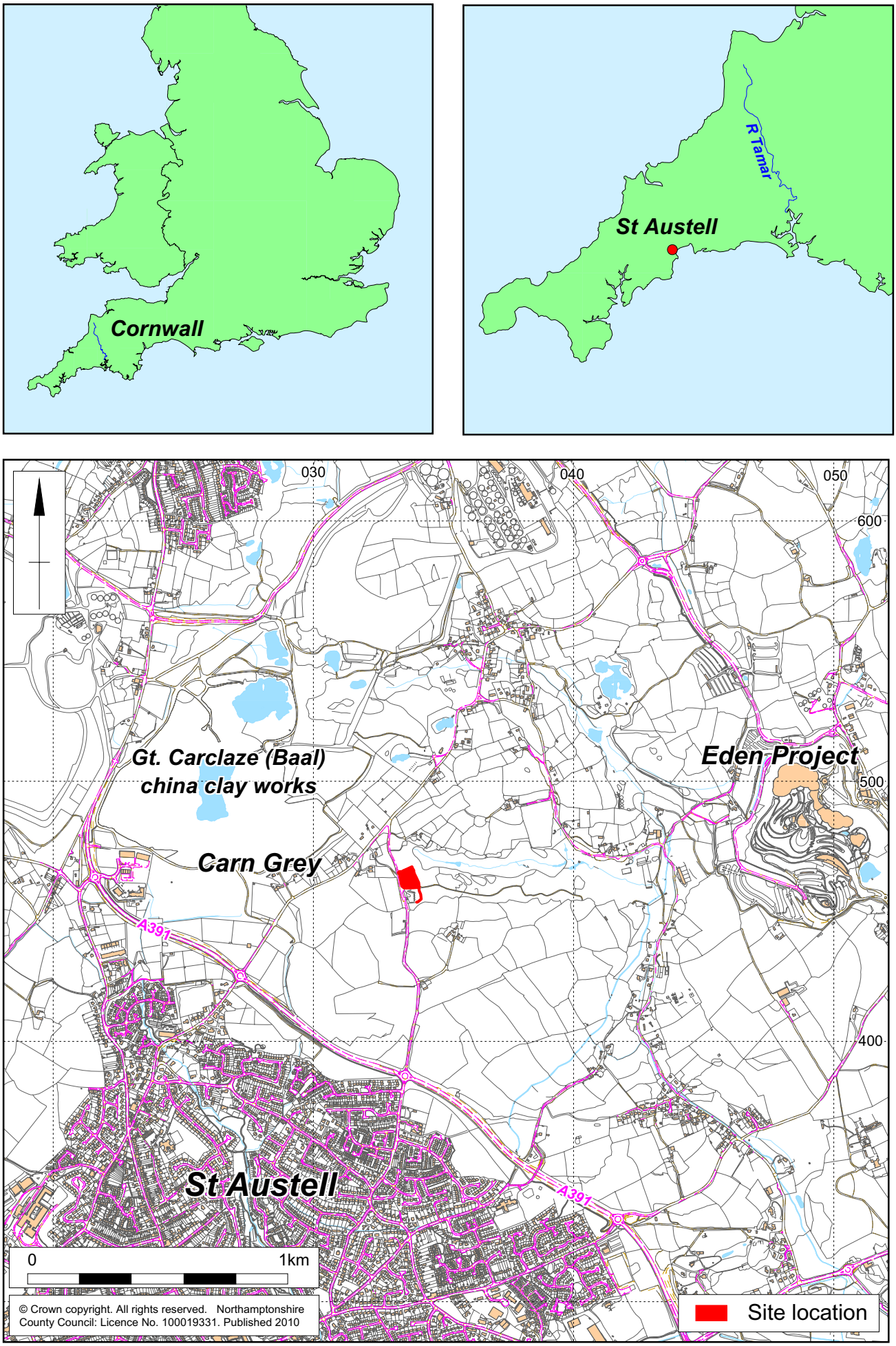
BIBLIOGRAPHY

Herring, P, (ed) 2008 *Bodmin Moor An archaeological survey Volume 2 The Industrial And Post-Medieval Landscapes*, English Heritage

Sharpe, A, 2008 Mining, in P Herring 2008

Slatcher, D, 2007 *A desk-based archaeological assessment in connection with the proposed construction of a household waste recylcing centre at Menear, St Austell, Cornwall*, RPS

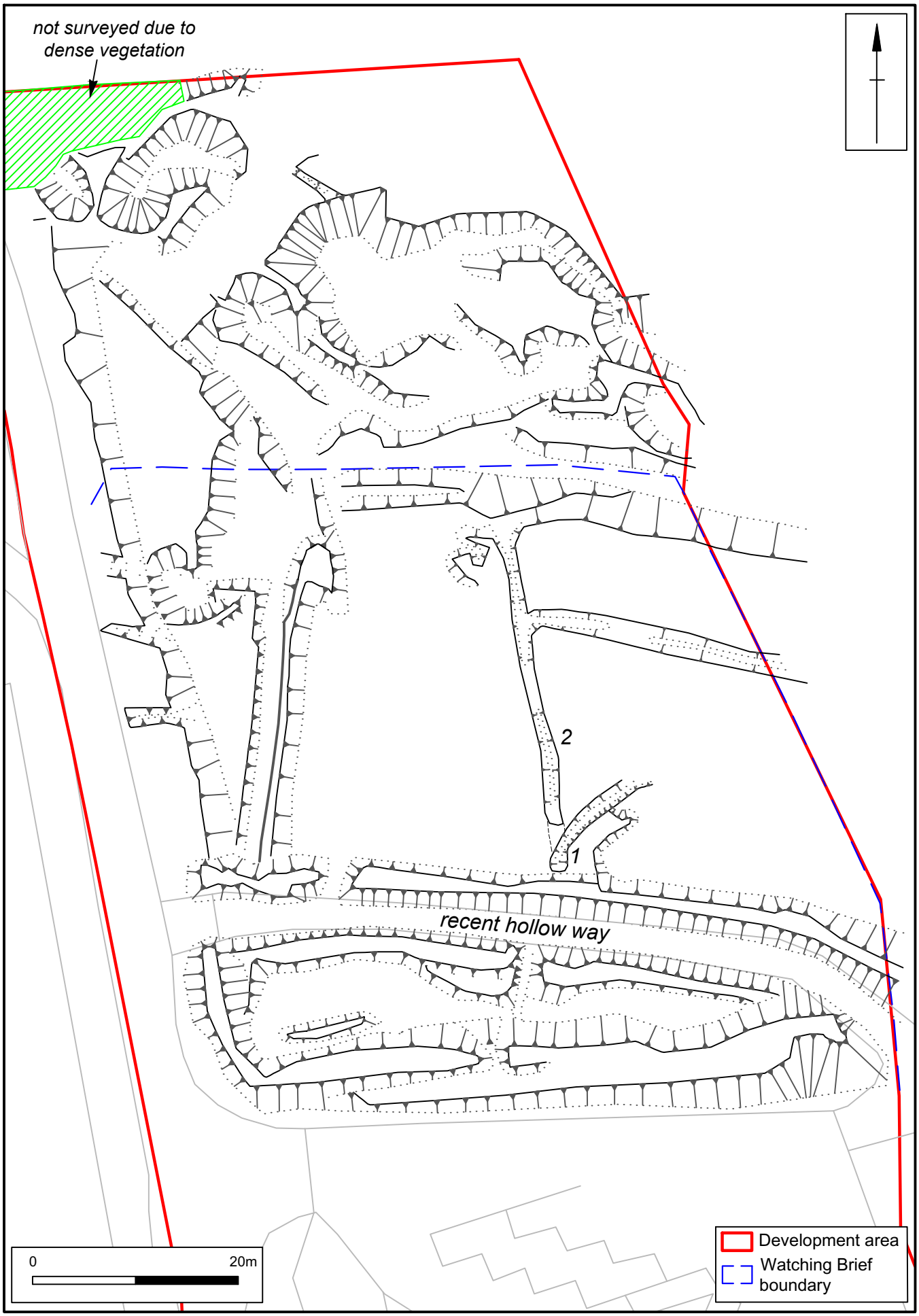
Smith, J R, and Buck, C, 1994 *Garkar china-clay and tinworks Tregrehan, St Austell: Archaeological Assessment,* Cornwall Archaeological Unit, unpublished report



Scale 1:20,000

Site location Fig 1

General view of site before stripping Fig 2



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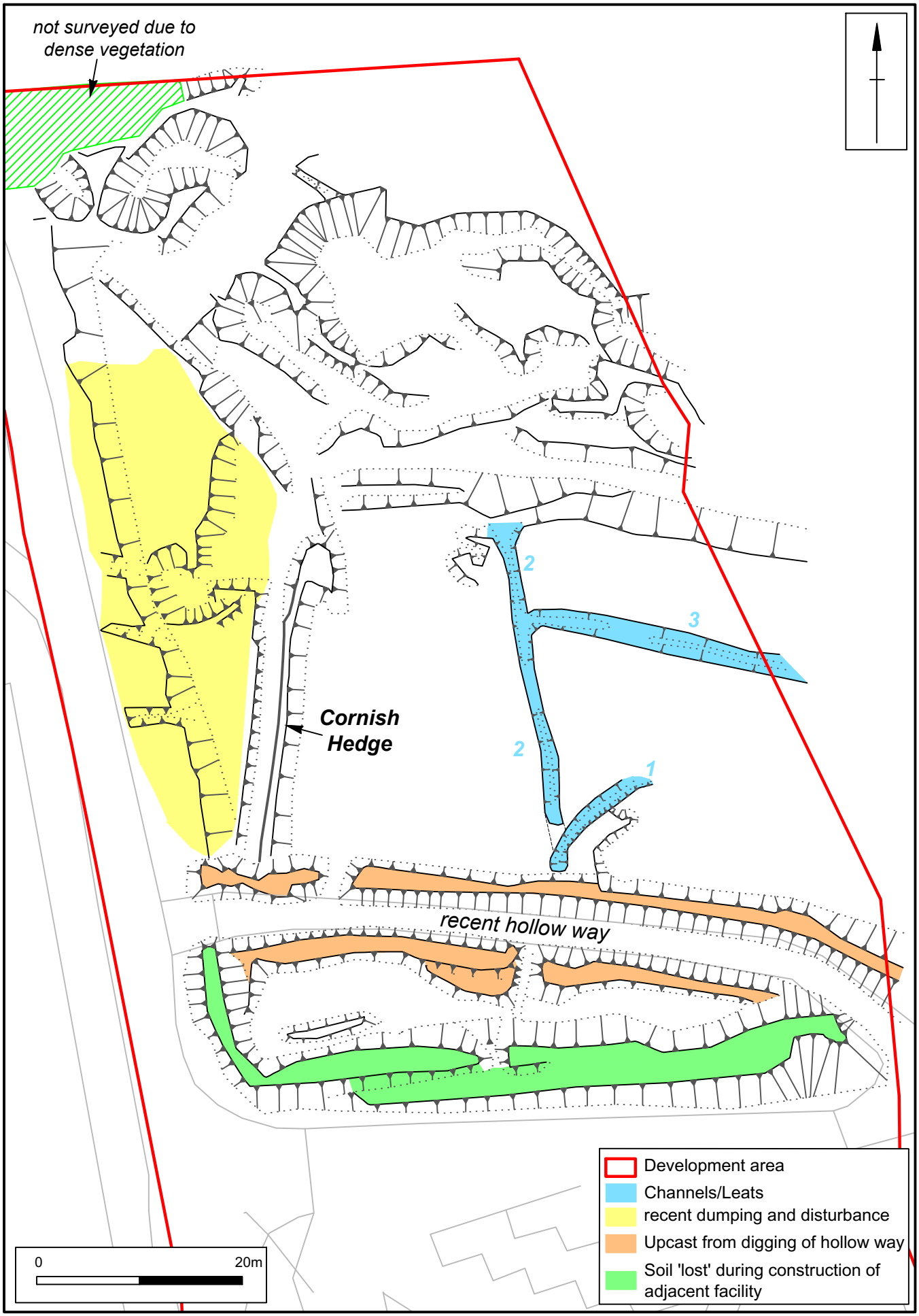
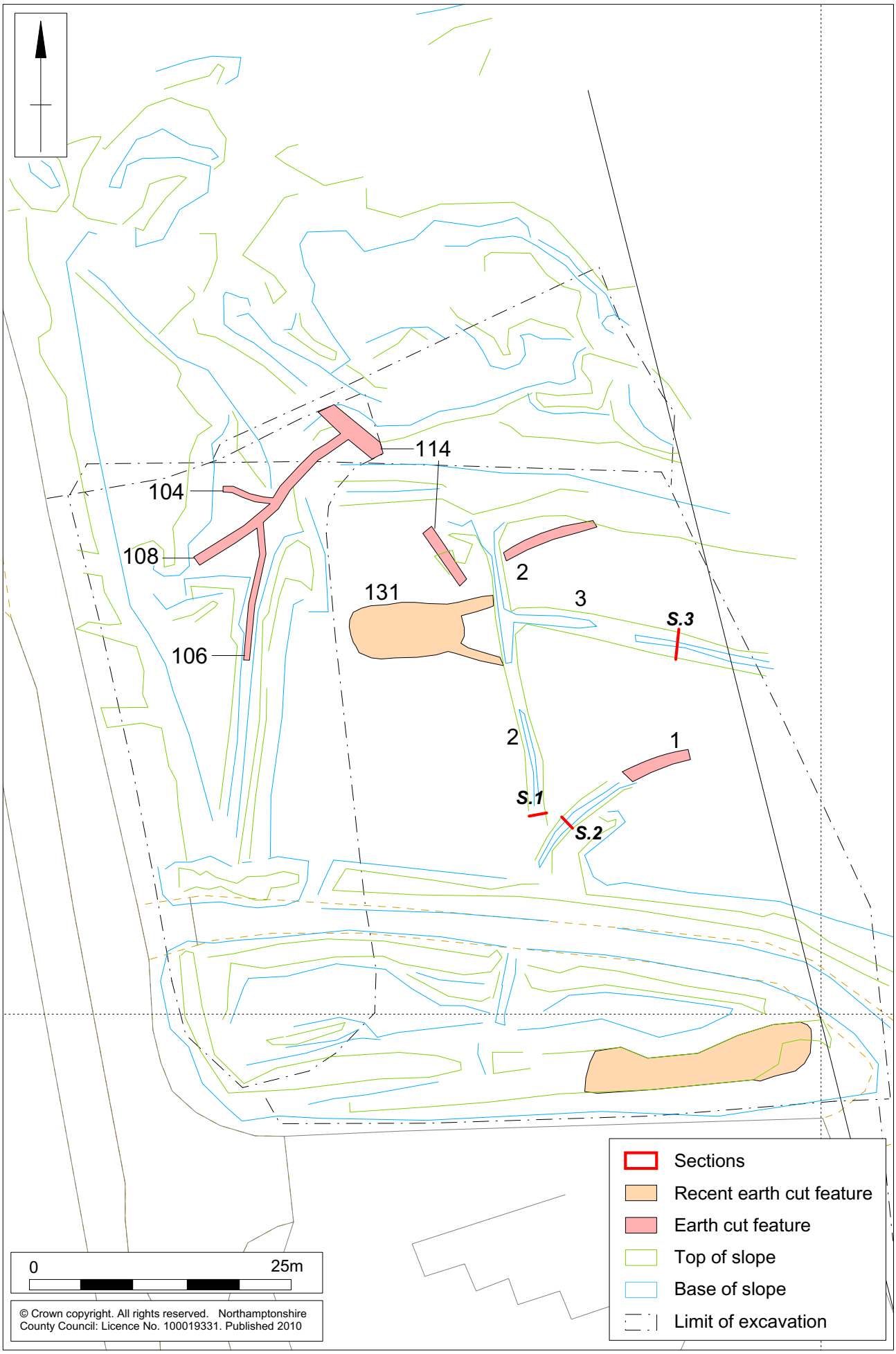
The earthwork survey results Fig 3



Scale 1:500

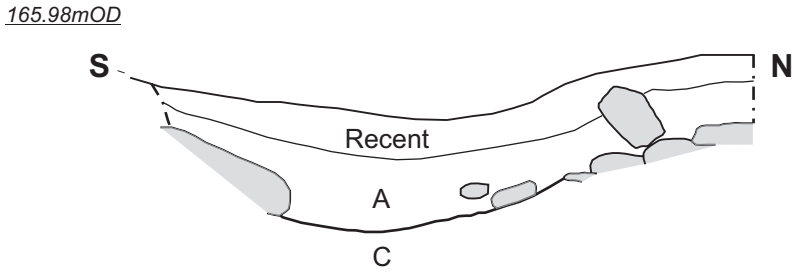
The earthwork survey interpretation Fig 4



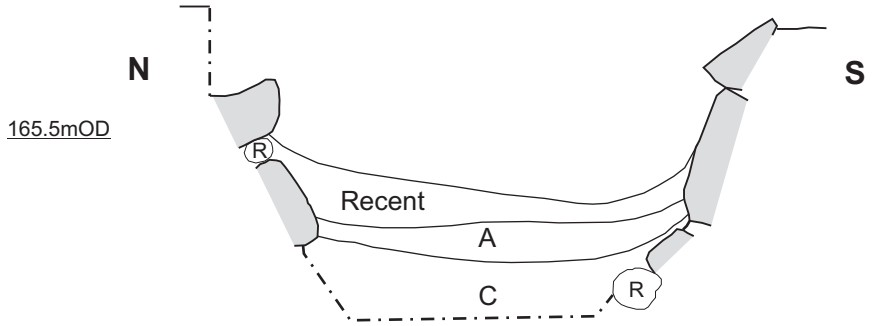
Scale 1:500 Earthwork survey showing top and bottom of slopes and section locations Fig 5

Channel 1 exposing the basal waterlain deposits Fig 6

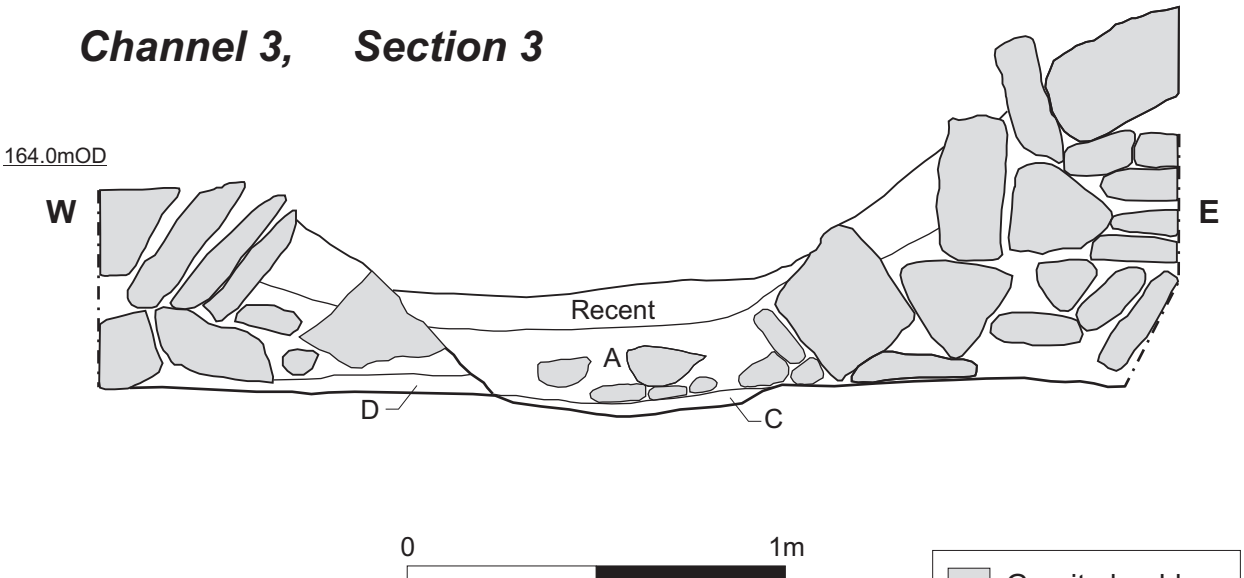
Channel 2, Section 1

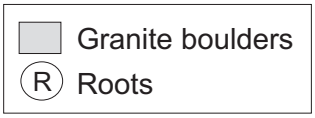


Channel 1, Section 2



Channel 3, Section 3





Sections 1,2 and 3 across leat channels Fig 7

Channel 2 showing thick recent organic horizon over a thin soil onto the waterlain deposits Fig 8

Channel 3 showing machine dug section through channel and lining to expose underlying natural with traces of previous vegetational staining Fig 9

Large shallow pit, [131] containing soil and granite boulders Fig 10

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