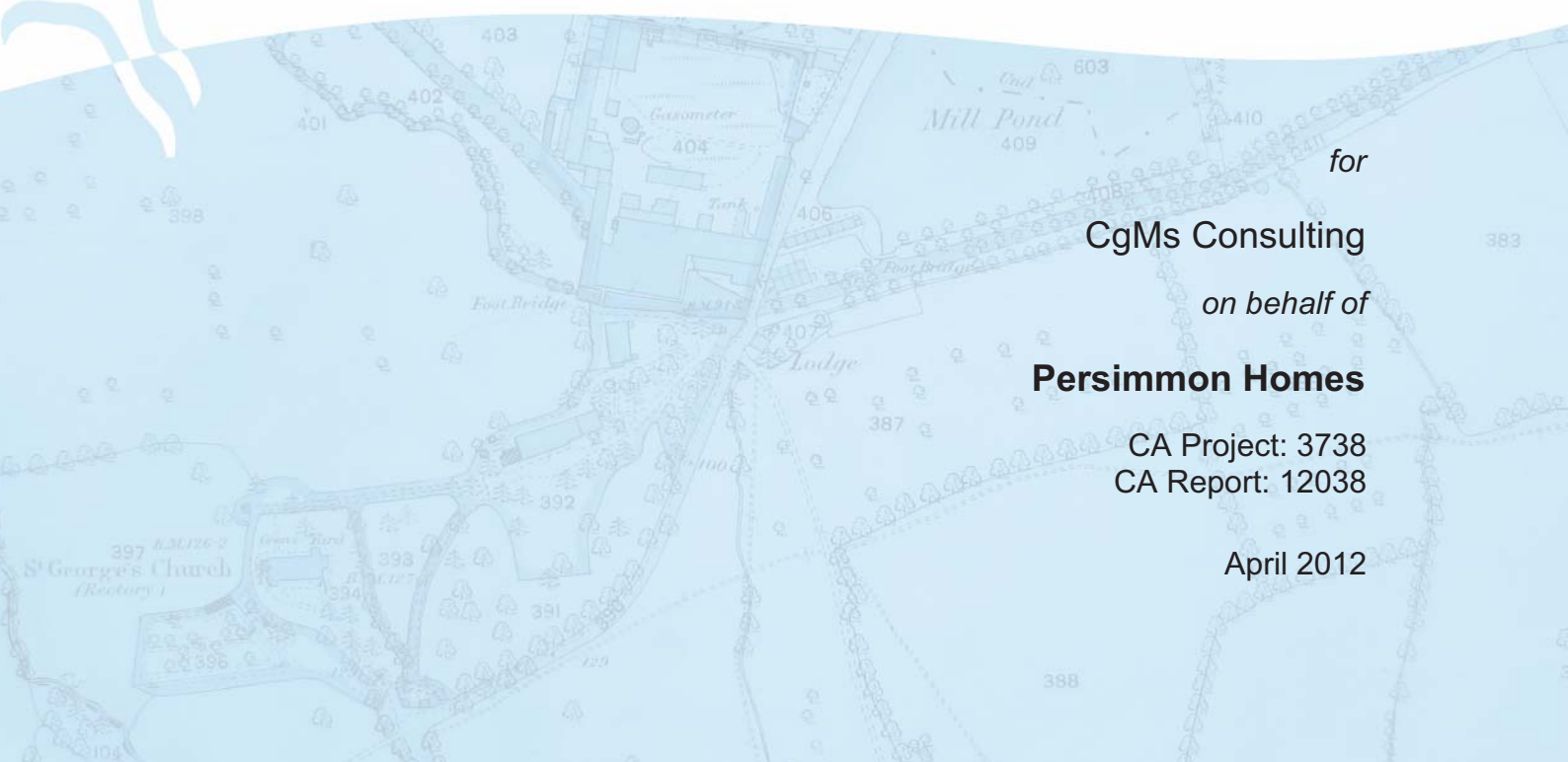


Plymstock Lime Kiln
Pomphlett
Plymouth
Devon
Historic Building Recording



for
CgMs Consulting
on behalf of
Persimmon Homes

CA Project: 3738
CA Report: 12038

April 2012

Plymstock Lime Kiln
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Historic Building Recording

CA Project: 3738
CA Report: 12038

prepared by	Peter Davenport (Senior Historic Buildings Consultant)
date	13 April 2012
checked by	Mark Collard, Head of Contracts
date	13 April 2012
approved by	Mark Collard, Head of Contracts
signed	
date	13 April 2012
issue	02

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SUMMARY

Project Name: Plymstock lime Kiln,
Location: Pomphlett, Plymouth, Devon
NGR: SX 54075 51300
Type: Historic Building Recording
Date: 2nd March 2012

Historic building recording was undertaken by Cotswold Archaeology for CgMs Consulting on behalf of Persimmon Homes plc, at Plymstock Lime Kiln, Pomphlett, Plymouth, Devon. An English Heritage Level 3 record was carried out on the building prior to its demolition. The earliest OS mapping indicates the building was in existence by 1894 and labelled "old lime kiln", by 1907. Observations made during the site visit indicated that the building had been built in an old hillslope quarry, and the remains of access tracks and probable working areas were evident. The exterior showed signs of major rebuild or repair. It was in largely complete condition, but was beginning to be dilapidated.

1. INTRODUCTION

- 1.1 On 2 March 2012, Cotswold Archaeology (CA) carried out historic building recording for CgMs Consulting on behalf of Persimmon Homes at the Plymstock Lime Kiln, Pomphlett, Plymouth, Devon, (centred on NGR: SX 54075 51300; Fig. 1). The record was undertaken at the request of the client to fulfil planning conditions on consent to demolish granted by Plymouth City Council (Ref: 07/01094/OUT).
- 1.2 Mr Mike Daniels, Historic Environment Officer of Plymouth City Council determined that a programme of archaeological work on the structure would be required in mitigation of its demolition, i.e., a Level 3 record (EH 2006). CgMs Consulting produced a project specification of works (brief) for implementing such a programme (CgMs 2011). CA have provided a WSI for a programme of works to fulfil these requirements.
- 1.3 The recording was also guided by the *Standard and Guidance for the archaeological investigation and recording of standing buildings or structures* (IfA 2008), the *Management of Archaeological Projects 2* (English Heritage 1991), the *Management of Research Projects in the Historic Environment (MORPHE): Project Manager's Guide* (EH 2006). The record was made to Level 3 as defined in *Understanding Historic Buildings: A guide to good recording practice* (English Heritage 2006).

The site

- 1.4 The kiln was a large limestone structure set in an old quarry, terraced into a steep south-facing slope between the 25 and 30m contours. The slope was overgrown and wooded both over and below the quarry but more open, having recently been fields, up slope. The flat floor of the quarry formed the lower working area during the working life of the kiln, and the upper quarry edge gave access to the upper platform of the kiln. Parts of the quarry floor had been levelled and walled and fenced. Remains of trackways were evident into, above and past the lower edge of the quarry (Fig. 2). The hillside continued upwards for approximately 100m before ending at the southern edge of the disused Saltram Quarry.
- 1.5 The building consisted of an approximately rectangular structure built out from the steeply sloping north face of the quarry, resting directly on the bedrock there. The floor of the quarry was covered in soil and vegetation, but bedrock was presumably

just below the surface (Fig. 2). The kiln was in fact of a curved plan, the access platform bending slightly westwards as it approached the kiln proper at the southern end. The kiln proper was a brick-lined cylinder in the south end of the structure, with a firing hole/tapping gate at its base in a vaulted recess either side of the kiln in the east and west faces.

2. OBJECTIVES

- 2.1 The objective of the visit was to produce a Level 3 record of the buildings (EH 2006) in mitigation of consent to demolish.

Methodology

- 2.2 This followed the requirements in the brief and the WSI (CgMs 2011 and CA 2012). A topographic site survey of the immediate environs of the kiln was prepared and the kiln was surveyed by REDM and hand measurements. The kiln and its context were recorded photographically to Level 3, in black and white film and digital format.
- 2.3 The archive from the recording work is currently held by CA at their offices in Kemble, but will be transferred to The Plymouth Museum and Art Gallery. A summary of information from this project, set out within Appendix A, will be entered onto the OASIS online database of archaeological projects in Britain.

3. DESCRIPTION

- 3.1 The kiln was a plain broadly rectangular-plan structure (although the east and west walls splayed somewhat to widen the entrance to the upper platform, Fig. 3) built of large, roughly-dressed Middle Devonian Carboniferous Limestone (the immediately local bedrock, RGS 1974), set in a hard, well-mixed lime mortar, pinkish pale-grey in colour with coarse sand aggregate (worn quartz and chert clasts typically 2-3mm but rarely up to 6-8mm). The stone was blue-grey with a reddish cast, possibly due to iron content and varied in shape from roughly-squared to triangular to irregular (Fig. 6). In size the blocks were up to 0.45m x 0.35m in the visible face. The lower parts of the corners were made of large, roughly-squared quoins (Fig. 6).
- 3.2 The south face was plain walling but the east and west each had an arched recess, leading to firing holes (Figs 4 and 5). The recesses were arched with large stone

voussoirs. Thin schist slabs were used as packing/spacers between the voussoirs as they varied in width considerably (Fig. 7). The arch over the east recess was noticeably less well made than the western one, with a straight section of what should have been an arc and some non-radial voussoirs (Fig. 8).

West face

- 3.3 On this face the southern end was well-pointed but the northern end joints were more open (Fig. 4). In addition the mortar at that end, while otherwise similar, was coarser, with larger aggregate. This may have been a weathering effect, or differential maintenance, but there is a possibility that this part has been rebuilt. The upper one metre or so of this north end was laid in slightly smaller stones (but still c. 0.3m x 0.2m). Above the level of squared quoins, there was a triangular area of stones set in a paler mortar. This could be seen to be a rebuild or repair (Fig. 9).

South face

- 3.4 The stones here had a less red cast, but this was still noticeable. It may be that the colour had been affected by the recently removed ivy. Some schist packing was visible in the low west end of the elevation, but was not present anywhere else on this face. There are two putlog holes one above the other in the centre in lower half of the face (Fig. 10). Other holes in this face appear to be merely missing stone holes.
- 3.5 There was a variation in the character of the stone work and mortar, marked by a paler mortar and, in fact, a boundary between two areas could be traced. This lined up with the discontinuity of quoinwork and the paler triangle of stonework in the south face (above). Indeed a large rebuild or repair was evident (Figs 9 and 10). The two putlog holes occurred in the rebuilt section. A significant vertical crack ran across both sections of work, the result of tree root action.

East face

- 3.6 The original large quoins survived on the south-east corner so that no evidence of rebuild or repair was visible on this face, which was otherwise similar to the others (Fig. 11). The mortar, however, may have been repointed as it is here struck, rather roughly but pretty clearly. The actual mortar was the same as elsewhere.

The recesses

- 3.7 These were large covered openings to give access to the access holes at the base of the kiln. In plan the form was a square with a three-sided apse at the end (Fig. 3). The square bay was covered with a stone barrel vault with an almost flat crown. The two, angled, sides of the apse were covered in part by a partial semi-dome but this was cut across by the steeply-corbelled ceiling that extends out from the end wall over the firing hole (Fig. 12). This projected squarely from the end bay and rose to meet the flat section of the barrel vault roughly at the inner end of the square bay. On the sides it increases in width as it rises and merges into the rough semi-dome over the angled walls. The corbelling, the semi-domes and the barrel vault are all heavily sooted. The floor of the eastern recess was of clay with a covering of soot about 20mm thick.
- 3.8 The lintel of the firing hole in the west recess was missing (Fig. 13) and there it is just possible to see, through a small gap, into the kiln cylinder (mostly choked with debris). The brick lining could be best seen here. There was no obvious system in the coursing, although its orientation (headers, soldiers, stretchers) seemed to be arranged approximately to vary every three or four courses. It was one brick length thick.
- 3.9 The western recess was partly infilled with debris and its floor and lower walls could not be seen. The external arch of the western recess was well-made and a true semicircle. Stones were 350mm x 100-200 mm x up to 250mm thick.
- 3.10 On the east, the arrangements were intact. The firing hole had square limestone jambs with a flat-arched lintel of schist, supported by an iron bar. The corbelled ceiling rose from this lintel. The external arch on this side was less well-formed, with straight sections and at least one non-radial voussoir. There was evidence for two iron pintle-hinge hangers on the southern jamb of the arch, but only on the straight section of jamb below the arch. Nothing could be seen on the north side nor on the western recess. A large wrought-iron, double-sided strap hinge for such a pivot was found *ex situ*, west of the kiln, the timber door or gate having rotted out. The two sides were held together by bolts. The pintle loop was very worn (Fig. 14).

The upper platform

- 3.11 The kiln was built against the north side of a quarry that had been cut into the hillside, forming a large terrace. Access to the upper platform was via a track that

approached on a gentle uphill path from the west (Fig. 15). Little could be seen at this level as the kiln was covered in grass and low vegetation, but it was clear that it was surrounded by a low wall, a parapet formed by the upward extension of the side walls (Figs 3 and 16). This was nowhere more than 0.3m high. In the middle of the south end was the open mouth of the circular kiln chamber. It was lined in fire brick (Fig. 17), of a rather odd size, 8¼x 4¼" x 3⅞" (209mm x 108mm x 79mm). They had a vertical-sided, round-ended, shallow frog with PHIL... impressed. They were laid header fashion, on their sides, as soldiers, and stretcher-wise. The chamber was half-filled with soil, the rear axle of an ancient van or trailer, plus vegetation, and tips of material. The curving plan seems to have been to ease the approach from the track from the west, which otherwise would require a sharp, right-angled turn, presumably in reverse, as the cart approached the kiln mouth.

The topography of the immediate surroundings

- 3.12 The kiln was clearly built against the face of the small quarry in the hillside which provided the two-level access required to operate the kiln (Fig. 23). In 1894 this was marked as "old quarry" (Fig. 18). It was apparent that an approach road had been made in the hillside rising from the west to the upper platform (Figs 2, 15 and 19). In 1894 this led to the site of Pomphlett Farm, and thence to the original line of Billacombe Road, now-upgraded as the A379. Another track led west from this track just south of Pomphlett Farm, and continued to Pomphlett Quarry (Fig. 18). This seems likely to have been the source of the lime for the kiln. Succeeding editions of maps show the track extending eastwards until by 1933 it was also providing access to market gardens some hundreds of metres to the east.
- 3.13 A branch from this track led to the base of the kiln and the floor of the quarry and another branch went even further downslope and bypassed the quarry and continued some distance to the east (Figs 3 and 20). These details do not appear on the 1:2,500 OS maps of 1894 to 1933 and later. Just east of the kiln was a north-south step in the quarry floor with indications of a fence along it, including a metal gatepost. Beyond this was a flat and level area partly enclosed by the quarry face and partly by a low, dry-stone wall on the east (Figs 3 and 21). These presumably represented the working areas of the kiln production process, perhaps with stores, workshops and offices, no clear sign of which otherwise was visible.

4. CONCLUSIONS

- 4.1 No dating evidence was found, although the kiln was marked as “old” and presumably disused in 1907 (Fig. 22), and existed by 1894 (Fig. 18). The use of pressed fire bricks suggests a later 19th-century date for the last refurbishment of the kiln. Its general style probably indicates a date not before 1800 and as far as could be ascertained on site is apparently unusual in being a cylinder rather than a cone or cup shape. This and the opposing recesses may reflect influence from more advanced shaft kilns, of later 19th century date, although the kiln is not otherwise of an advanced form. However, the survey shows that the kiln must taper on the east (which is obscured by infill otherwise) to clear the recess on that side, although there is no sign of a taper on the west. The wrought-iron hinge found *ex situ* in the quarry was not closely datable but was probably of 19th-century origin, given its use of bolts to fit it to the door.
- 4.2 The kiln was in existence long enough to have been extensively repaired, but how long this was cannot be calculated from the available evidence.
- 4.3 Other lime kilns were known in the area and were common along the coastline, sea transport being the easiest and most economical for such a bulk commodity. An example very locally would be that at Mill Field, Pomphlett, which was on the quayside south of Laira railway bridge and is noted in a lease agreement of 1813 (Plymouth Record Office ref. 69/M/4/407). It was also adjacent to the main quarry of the period. It is hard to see how the Plymstock kiln could have competed with the Mill Field one as the latter was so much closer both to its supplies and its outlet. As it had closed by 1907 at the latest, and probably much earlier, it clearly did not.
- 4.4 Many other kilns are known in Devon and Cornwall, often coastal or on navigable rivers but of the illustrated examples none are quite like this one (ref. Lime Kiln database 2012). For example, none with opposing recesses has been found in the search for this report. A datable or technological typology ought to be possible but this does not appear to have been achieved as yet.

5. CA PROJECT TEAM

Fieldwork was undertaken by Peter Davenport and Andrew Baines. The report was written by Peter Davenport. The illustrations were prepared by Peter Moore. The

archive has been compiled by Peter Davenport, and prepared for deposition by James Johnson. The project was managed for CA by Mark Collard.

6. REFERENCES

CA 2012 *Plymstock Quarry, Plymstock, Plymouth, Devon, Written Scheme of Investigation for Historic Building Recording*

CgMs 2011 *Historic Buildings Specification In respect of: Plymstock Quarry*. CgMs ref **SR/12929**

EH (English Heritage) 2006 *Understanding Historic Buildings: a guide to good recording practice*

Lime Kiln database 2012 <http://www.brocross.com/industrial%20history/database/limekiln%20data.htm> accessed 6th March 2012

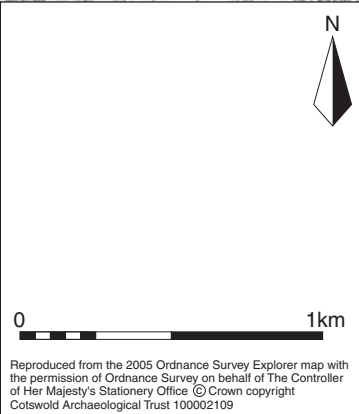
Ordnance Survey 1894 1:2,500 County Series. *Plymouth*

Ordnance Survey 1907 1:2,500 County Series. *Plymouth*

RGS 1974 Royal Geological Society *Ivybridge* sheet **349**

APPENDIX A: OASIS REPORT FORM

PROJECT DETAILS		
Project Name	Plymstock Lime Kiln, Pomphlett, Plymouth, Devon	
Short description	Historic building recording was undertaken by Cotswold Archaeology for CgMs Consulting on behalf of Persimmon Homes plc, at Plymstock Lime Kiln, Pomphlett, Plymouth, Devon. An English Heritage Level 3 record was carried out on the building prior to its demolition. The earliest OS mapping indicates the building was in existence by 1894 and labelled "old lime kiln", by 1907. Observations made during the site visit indicated that the building had been built in an old hillslope quarry, and the remains of access tracks and probable working areas were evident. The exterior showed signs of major rebuild or repair. It was in largely complete condition, but was beginning to be dilapidated.	
Project dates	2 March 2012	
Project type	Historic Building Recording	
Previous work	None	
Future work	Unknown	
PROJECT LOCATION		
Site Location	Plymstock Lime Kiln, Pomphlett Farm, Plymouth	
Study area (M ² /ha)	5409m ²	
Site co-ordinates (8 Fig Grid Reference)	SX 54075 51300	
PROJECT CREATORS		
Name of organisation	Cotswold Archaeology	
Project Brief originator	CgMs Consulting	
Project Design (WSI) originator	Cotswold Archaeology	
Project Manager	Mark Collard	
Project Supervisor	Peter Davenport	
MONUMENT TYPE		
SIGNIFICANT FINDS	None	
PROJECT ARCHIVES		
	Intended final location of archive (museum/Accession no.)	Content
Physical		None
Paper	Plymouth Museum and Art Gallery	Site notes, BW photos
Digital	Plymouth Museum and Art Gallery	Digital photos, pdf report
BIBLIOGRAPHY		
CA (Cotswold Archaeology) 2012 <i>Plymstock Lime Kiln, Pomphlett, Plymouth, Devon: Historic Building Assessment</i> . CA typescript report 12038		



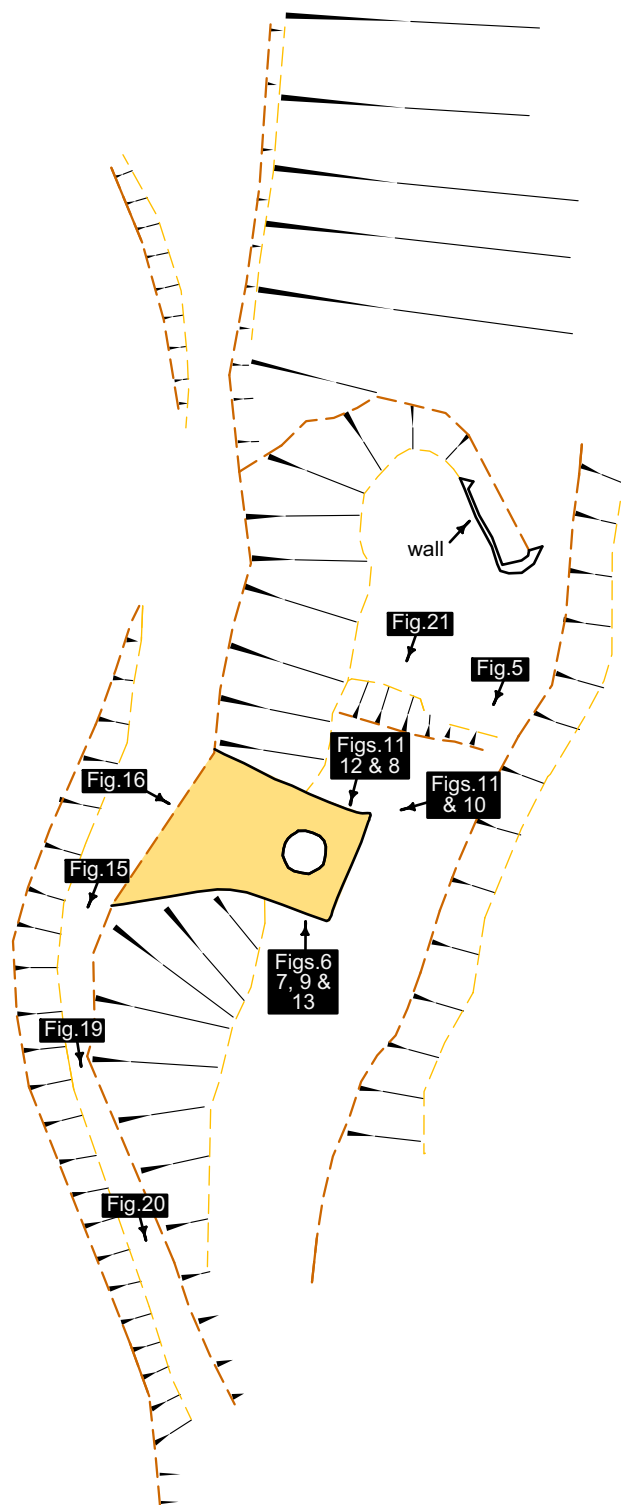
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 Milton Keynes 01908 218320
www.cotswoldarchaeology.co.uk
enquiries@cotswoldarchaeology.co.uk

PROJECT TITLE
 Plymstock Kiln, Pomphlett, Plymouth
 Devon

FIGURE TITLE
 Site location plan

PROJECT NO. 3738	DATE 26-03-2012	FIGURE NO.
DRAWN BY JB	REVISION 00	1
APPROVED BY PJM	SCALE@A4 1:25,000	

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P:\3738_plymstock lime kiln br\illustration\Drafts\3738 Plymstock Kiln, Pomphlett Devon Fig.2 & 3.dwg



- - - - - top of slope
- - - - - bottom of slope
- kiln
- direction of photograph



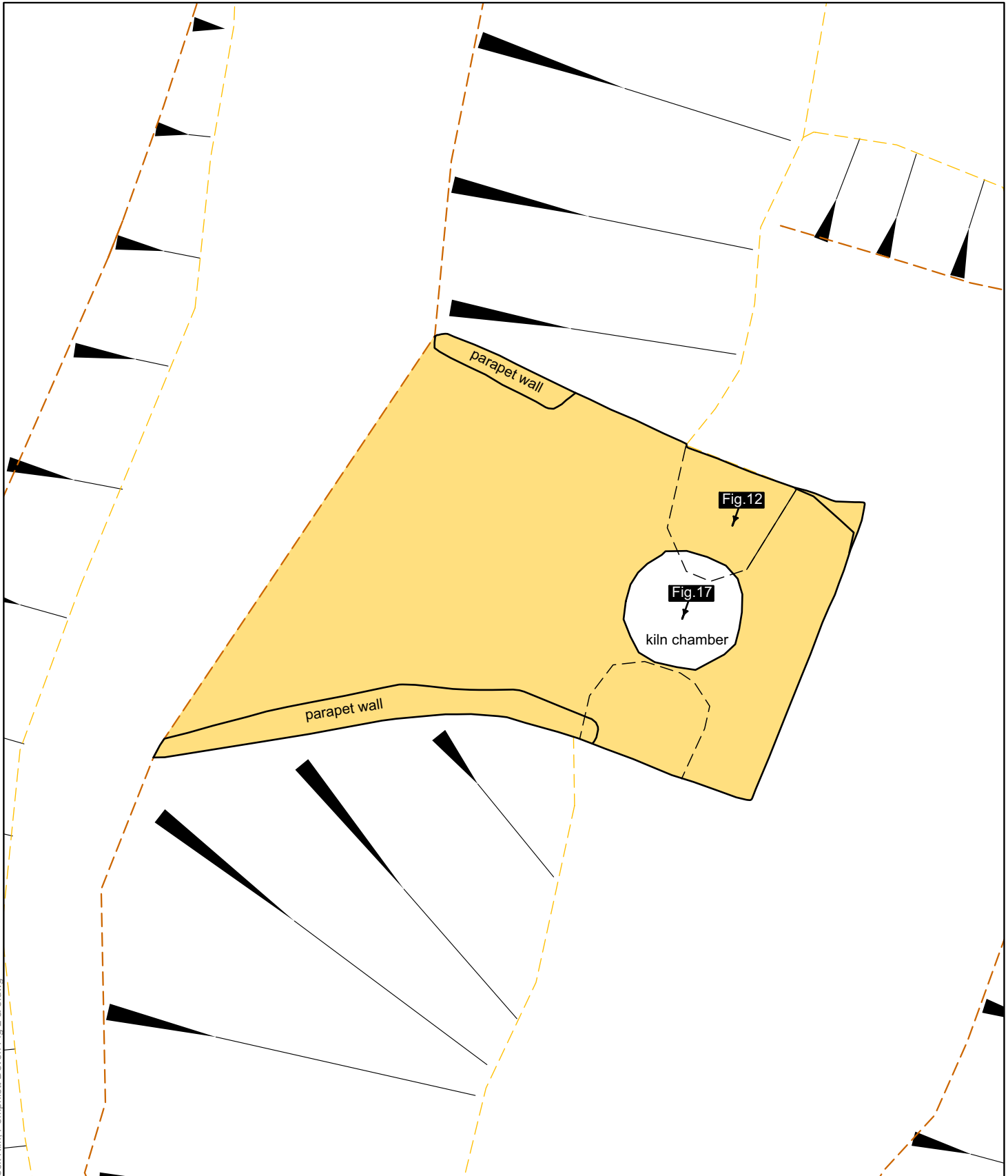

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PROJECT TITLE
 Plymstock Kiln, Pomphlett, Plymouth Devon

FIGURE TITLE
 Topographical site plan with viewpoints of photographs

PROJECT NO.	3738	DATE	26-03-2012	FIGURE NO.
DRAWN BY	JB	REVISION	00	2
APPROVED BY	PJM	SCALE@A4	1:500	

P:\3738 plymstock lime kiln br\illustration\Drafts\3738 Plymstock Kiln, Pomphlett Devon Fig 2 & 3.dwg



- - - top of slope
- - - bottom of slope
- kiln
- kiln interior
- direction of photograph



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PROJECT TITLE
 Plymstock Kiln, Pomphlett, Plymouth Devon

FIGURE TITLE
 Plan of the lime kiln

PROJECT NO.	3738	DATE	26-03-2012	FIGURE NO.
DRAWN BY	JB	REVISION	00	3
APPROVED BY	PJM	SCALE@A4	1:125	



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- 4 The kiln from the west under survey
- 5 The kiln from the east
- 6 The west elevation of the kiln (scales 1m)
- 7 The arched recess in the western elevation (scales 1m)



8



9

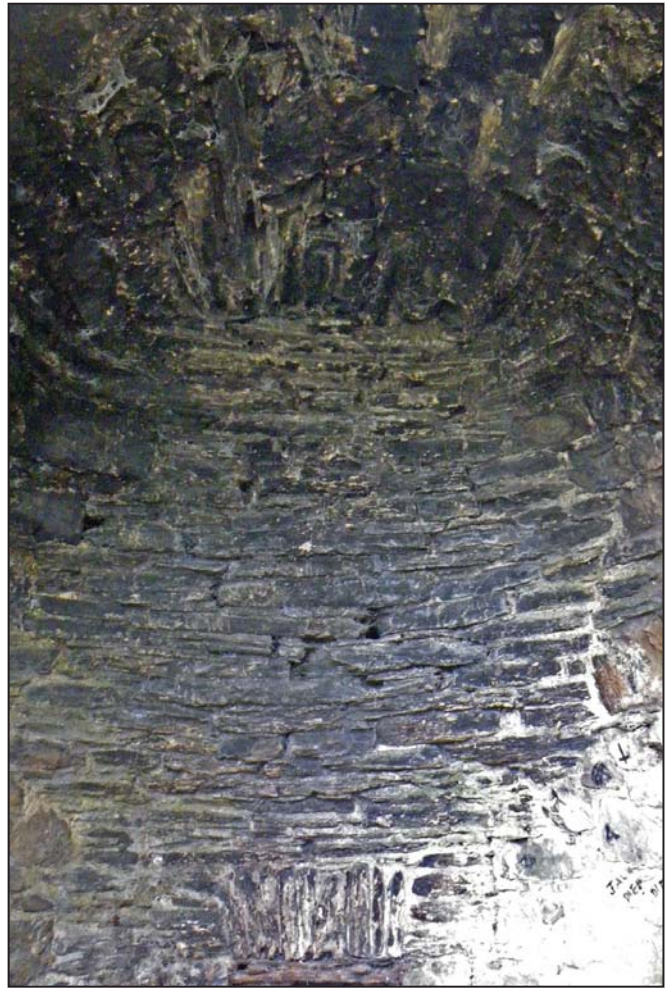


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- 8 The arched recess in the eastern elevation (scales 1m)
- 9 The west elevation south corner, showing rebuilt upper section
- 10 The south elevation of the kiln
- 11 East elevation of the kiln, to the north-west (scales 1m)



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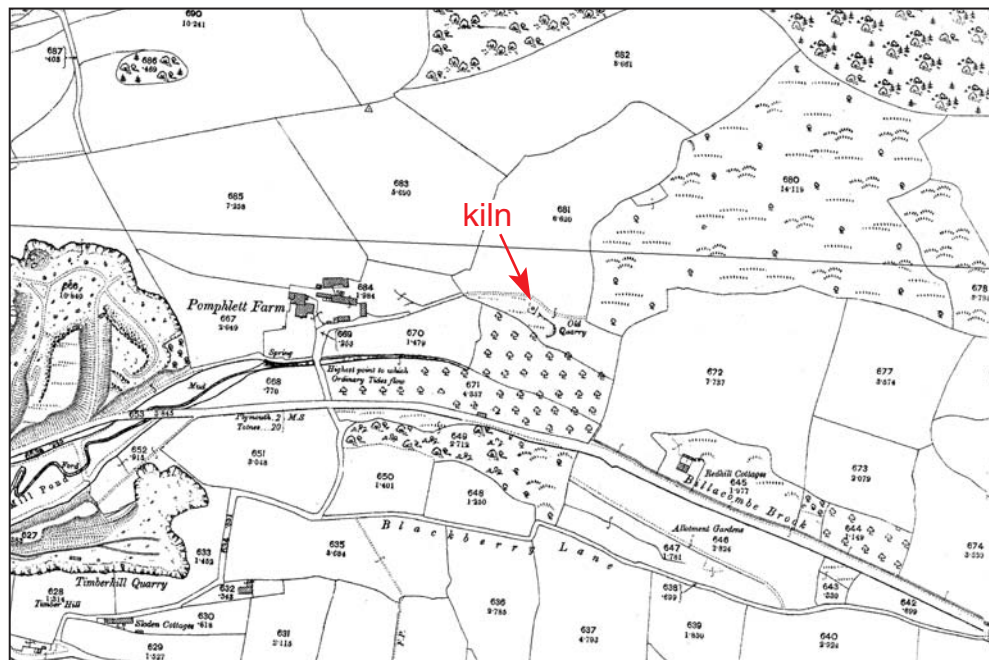
- 12 The eastern recess barrel vault meeting semi-dome meeting corbelling
- 13 The inner end of the western recess, the lintel collapsed and the debris in the kiln chamber visible beyond (scales 1m)
- 14 The strap hinge and eastern recess pintle (scales 1m)
- 15 The approach track from the upper platform, running right foreground to centre left, looking north-west



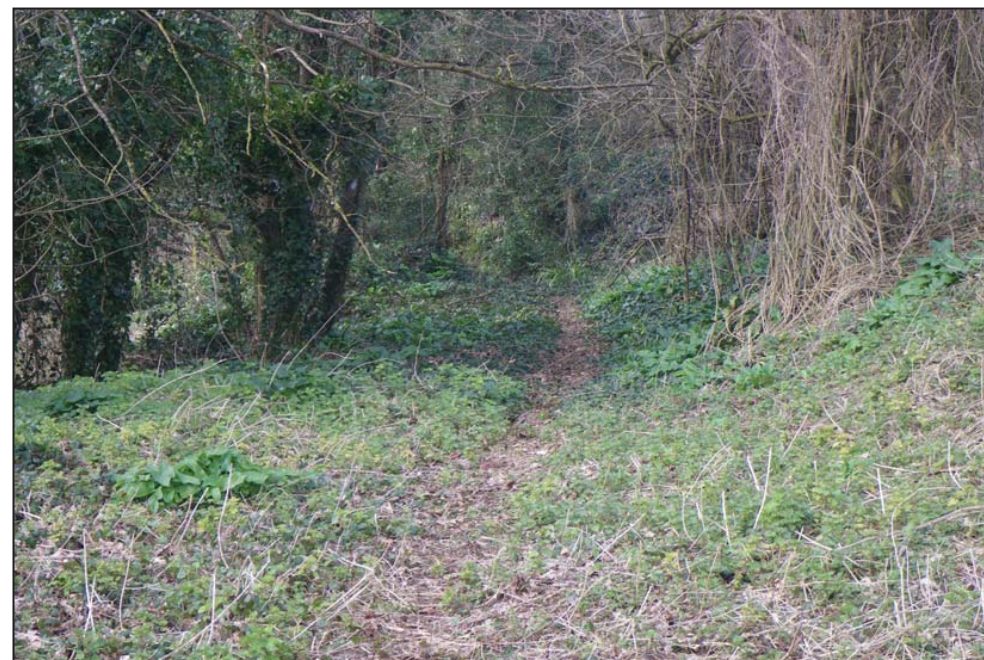
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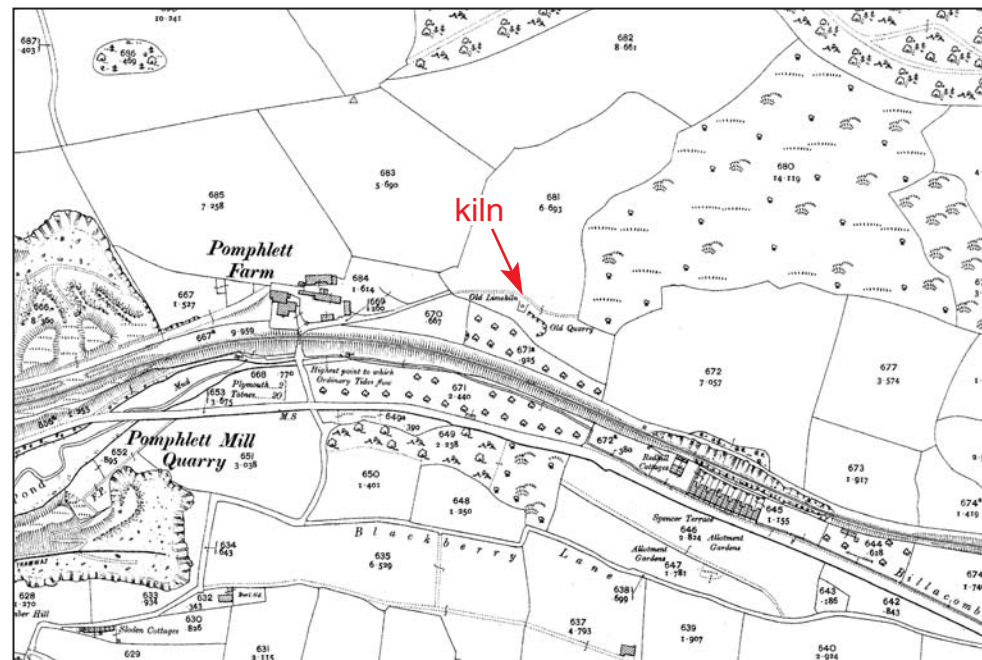
- 16 The upper platform looking south, kiln mouth centre (scales 1m)
- 17 The brick lining of the kiln chamber, western side
- 18 The 1894 Ordnance Survey 1:2,500 map of Plymouth
- 19 The track west of the kiln leading down to the site of Pomphlett Farm, looking west



20



21



22

- 20 The branching of the three tracks just west of the kiln looking west
- 21 The levelled enclosed area at the east of the old quarry looking east, wall under vegetation to right
- 22 1907 Ordnance Survey 1:2,500 map of Plymouth