ARCHAEOLOGICAL RECORDING AND EVALUATION AT A LIMEKILN, WORTHY, PORLOCK, SOMERSET, EXMOOR NATIONAL PARK

PROJECT REPORT

By Hazel Riley

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OASIS PROJECT NO 332715

ABBREVIATIONS

ECP England Coast Path
ENPA Exmoor National Park Authority
HECO Historic Environment Conservation Officer
HER Historic Environment Record
OS Ordnance Survey
RCHME Royal Commission on the Historical Monuments of England

ADMINISTRATIVE INFORMATION

Exmoor HER: MSO 7985
County: Somerset
District: West Somerset
Parish: Porlock
NGR: SS 8583 4832
Exmoor National Park Authority

ACKNOWLEDGEMENTS

The estate owners kindly allowed access to the limekiln through the Ashley Combe Estate; Sue Applegate (ENPA) facilitated the fieldwork; Shirley Blaylock (ENPA) advised on the location of the evaluation trench and commented on the draft report, and Catherine Dove (ENPA) provided background material for the survey work.

LIST OF FIGURES AND IMAGE ACKNOWLEDGEMENTS

1.0 EXECUTIVE SUMMARY

An archaeological survey and evaluation excavation at the coastal limekiln at Worthy, near Porlock Weir, Exmoor, was carried out in advance of proposed works relating to the new England Coast Path. The survey identified a previously unrecorded lime store associated with the limekiln and the excavation recorded a stone surface on one of access ramps to the combustion chamber from the beach.

2.0 INTRODUCTION

2.1 This report sets out the results of archaeological recording and assessment of a limekiln at Worthy which lies on the proposed route of the new England Coast Path (ECP). The survey was commissioned by the Historic Environment Conservation Officer (HECO) of the Exmoor National Park Authority (ENPA) in order to record, and inform future management of, the structure and its immediate environs affected by the development of this part of the new ECP route (Blaylock 2018).

2.2 The limekiln at Worthy is located on the coast by a stream at the end of a valley which runs north from Worthy Combe and the hamlet of Worthy to the pebble beach at the Gore, west of Porlock Weir, Porlock. It lies within Exmoor National Park and is centred at SS 8583 4832 (Figs 1 and 2).

2.3 The geology of the survey area comprises Quaternary deposits of clay, silt, sand and gravel over Devonian sandstones of the Hangman Sandstone Formation (bgs.ac.uk).

2.4 The proposed route of the new ECP uses the northern access ramp of the limekiln to gain access from the beach to the coastal field to the west of the limekiln via a set of steps located on the ramp to cross the steep bank of the field boundary.

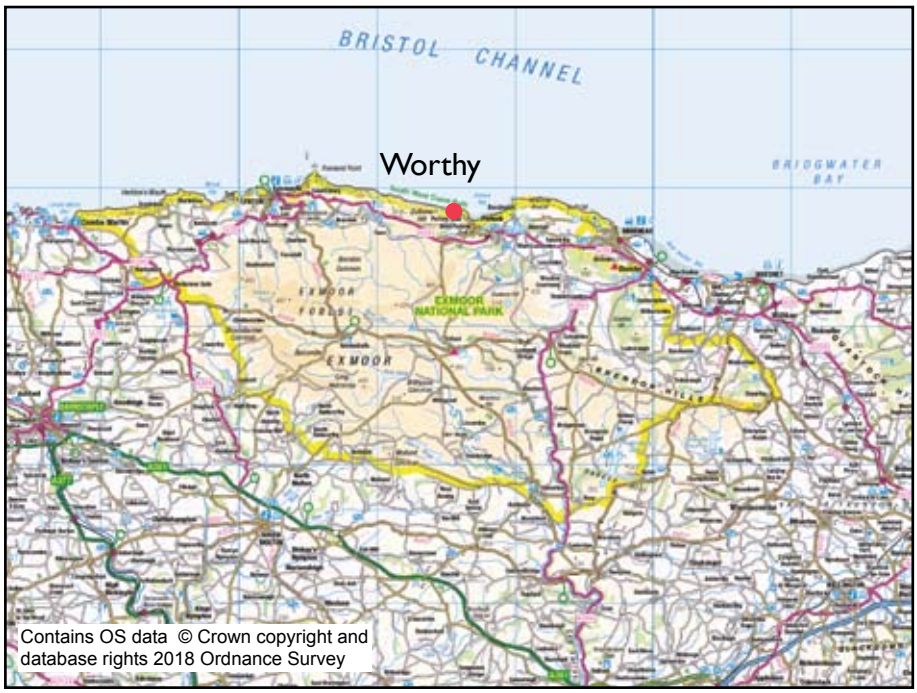
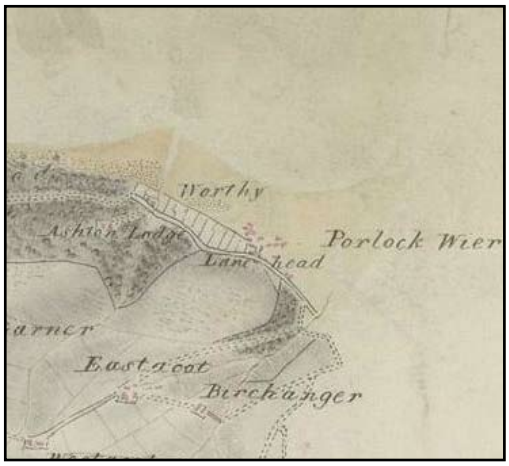


Fig 1 Location map

3.0 HISTORY AND ARCHAEOLOGY

3.1.1 Worthy is first mentioned around 1292 when Walter of Worthy sued Simon de Roger of Porlock for diverting a stream; in 1424 the Hinsley family owned Worthy (Chadwyck-Healy 1901, 322-3). By the 18th century, Worthy was one of the manors owned by the King family, whose main residence was at Ockham Park in Surrey. A house known as Ashley Combe was built by Peter King, 7th Baron King (1776-1833), in 1799. Peter King's eldest son, William, inherited the estates in 1833. He married Augusta Ada Byron, the daughter of Lord Byron and his wife Anne Isabella Milbanke, in 1835, and from 1835 to 1840 the house at Ashley Combe was extended and improved, gardens were created and landscaping of the steep woodlands between Ashley Combe and Culbone Church was carried out (Riley 2017a). William King was appointed Lord Lieutenant of the County of Surrey in 1840. In the same year he bought the East Horsley Estate in that county and the family moved there in 1846. William King died in 1893; he was succeeded by his second son, Ralph King-Milbanke, who extended Ashley Combe and erected deer fences around the estate. Mary, the 2nd Countess Lovelace,



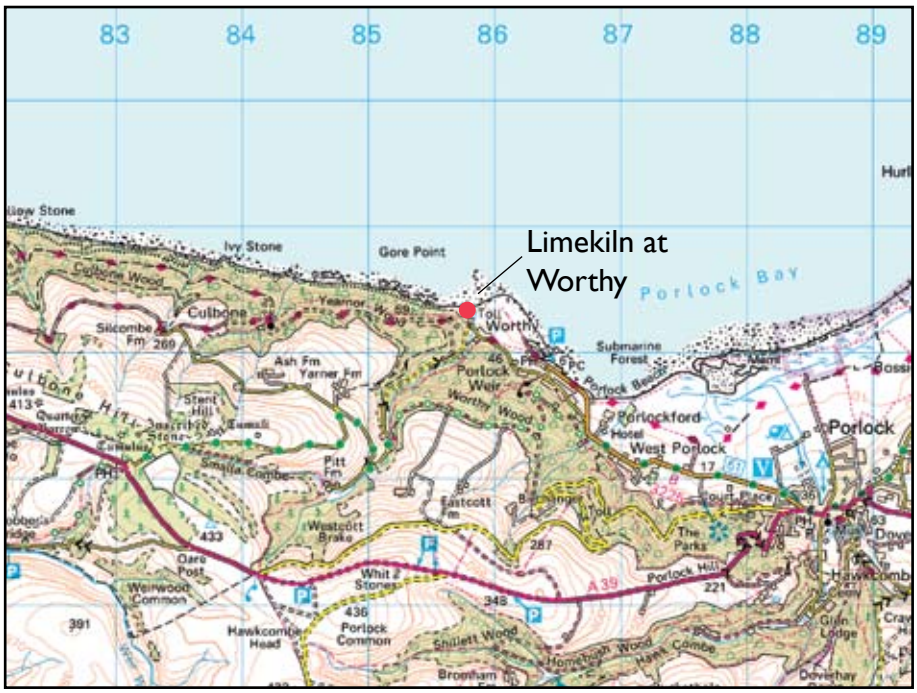


Fig 2 (left) Survey location and topography

Fig 3 (above) Extract from OS map North Molton 1804 (bl.ac.uk)

Fig 4 (above left) Extract from Porlock tithe map, 1841 (SHC D\D/Rt/M/430) (Reproduced with the kind permission of the South West Heritage Trust)

was an architect; she worked with Voysey on designs for Ashley Combe Lodge (Toll House) and Worthy Manor in the late 19th and early 20th centuries (ENPA 2014, 4.12).

3.1.2 The limekiln is not depicted on the 1804 Ordnance Survey (OS) map or the Porlock tithe map of 1841 (Figs 3 and 4). The plot where the limekiln now stands is named as a garden on the tithe map; it was owned and occupied by the Earl of Lovelace (William King). The limekiln and associated structures are first shown on the OS 1st edition map (surveyed 1888, published 1889), the OS 2nd edition map (revised 1902, published 1903) depicts the kiln and labels it 'Old Limekiln', suggesting that the Worthy limekiln was built after 1841 and fell into disuse before 1902 (Figs 5 and 6).

3.2.1 The limekiln at Worthy was visited and described in 1996 as part of Holley's survey of limekilns on Exmoor (Holley 1997, site 46). It was investigated by the Royal Commission on the Historical Monuments of England (RCHME) in 1998 in the course of their Exmoor survey (Exmoor Historic Environment Record (HER) MSO 7985).

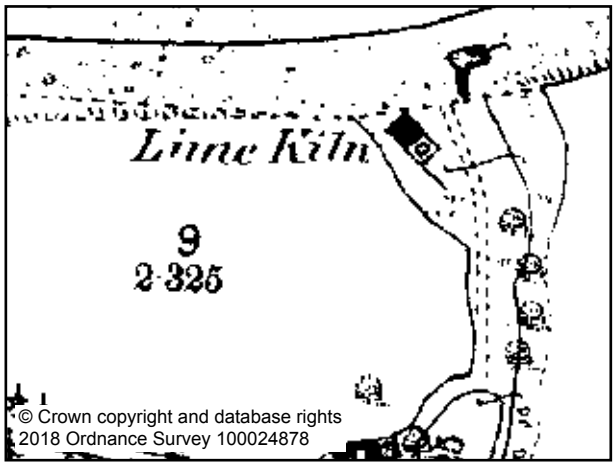


Fig 5 (above right) Extract from 1st edition OS map, Somerset 33.4 (1889)

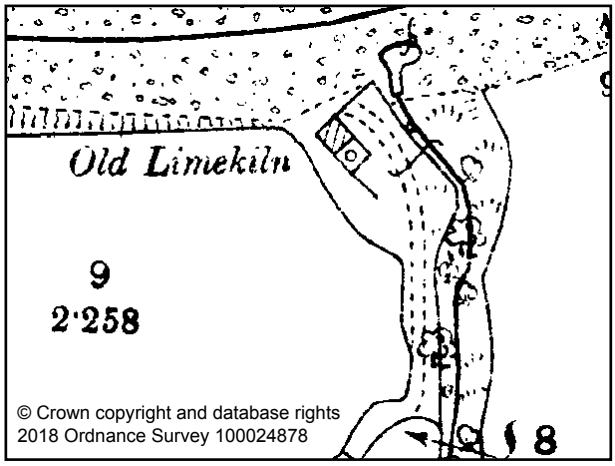


Fig 6 (right) Extract from 2nd edition OS map, Somerset 33.4 (1903)

3.2.2 The limekiln was included in a topographical survey of the proposed route of the new ECP by Staddons Architectural Services for the ENPA.

4.0 OBJECTIVES

4.1 The main objective of the work was to record the limekiln in advance of the development of this part of the new ECP and to inform the proposed development and future management of the site. In particular, it was carried out to inform the construction of the steps from the ramp to the field and the possible installation of a hand rail along the wall of the processing area and to inform any watching brief or other recording that may be required for the development of the proposed new path.

4.2 The significance of the limekiln at Worthy, locally and regionally, was also considered.

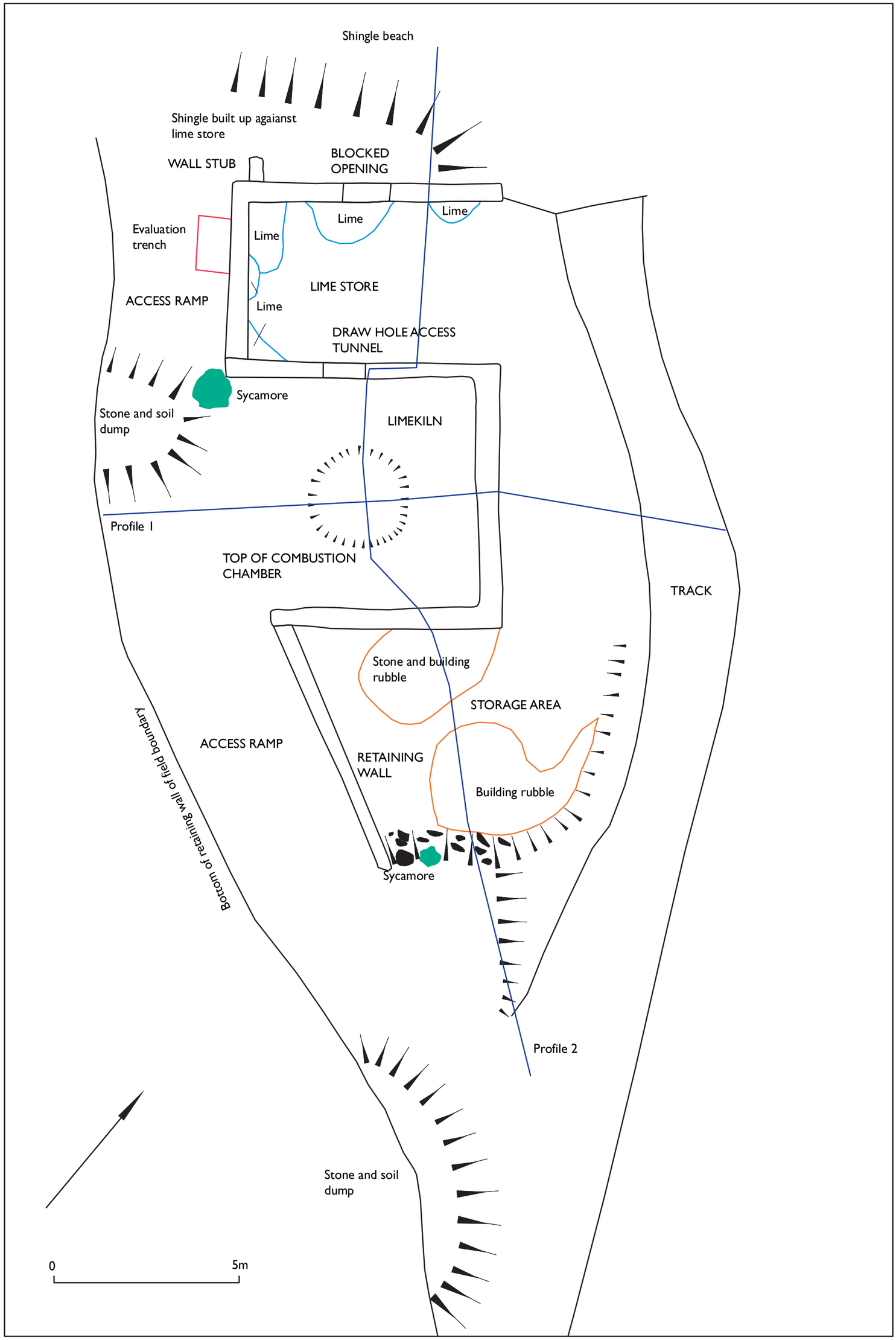


Fig 7 Plan of the limekiln at Worthy 1:100

5.0 METHODOLOGY

5.1.1 The desk-based assessment located records relevant to the survey in the Exmoor HER (www.exmoorher.co.uk) MSO 7985

5.1.2 The following historic maps and air photographs were consulted
North Molton 1804 (www.bl.ac.uk)
Tithe map: Porlock (1841)
Ordnance Survey 1st edition 25" map (surveyed 1888, published 1889)
Ordnance Survey 2nd edition 25" map (revised 1902, published 1903)
RAF vertical air photographs (1946-48)

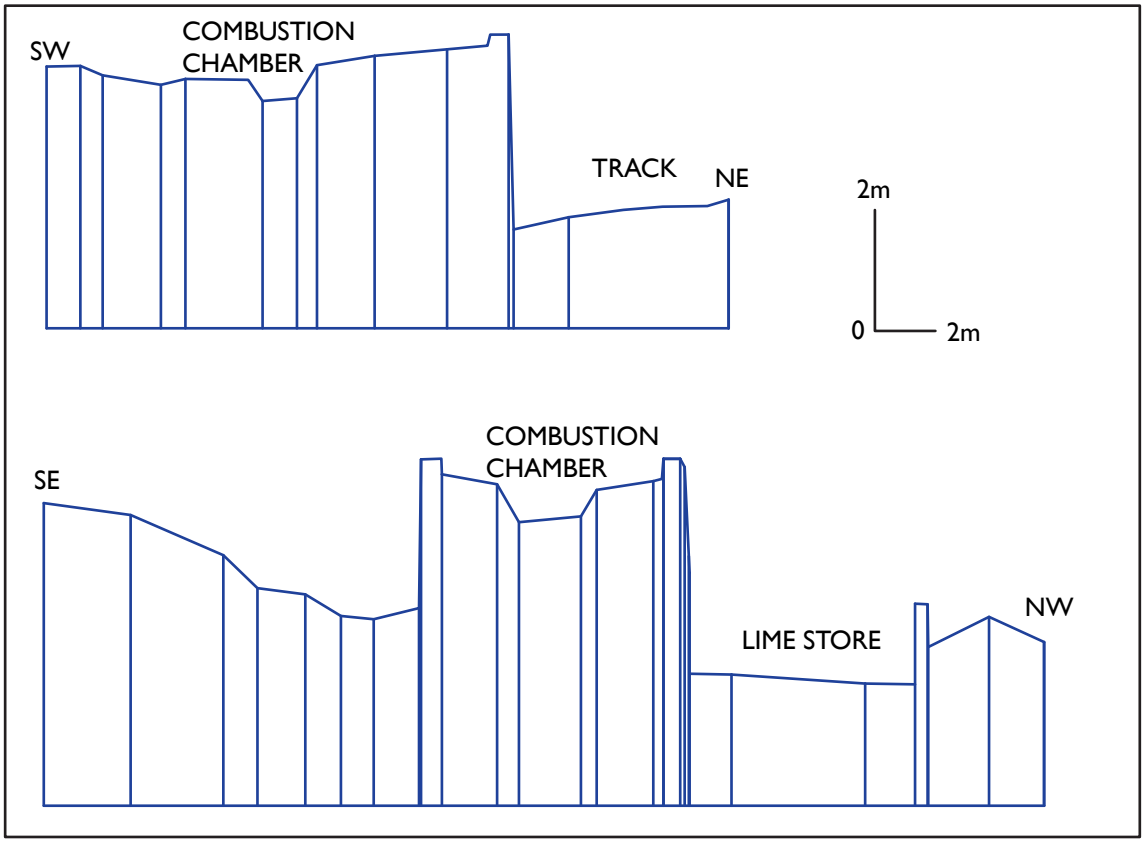
5.2.1 A photographic record of the limekiln and associated structures was undertaken, the photographs form part of the survey archive.

5.2.2 A metric survey of the limekiln and associated structures was carried out at a scale of 1:100 using a total station theodolite on 5th October 2018. Two profiles across the structures were also measured (Figs 7 and 8).

5.2.3 An evaluation trench was dug on the northern access ramp on 8th October 2018 in order to identify and record the nature of the surface of the ramp. No ramp material or other structural material was removed (Blaylock 2018, 2.2.5).

5.3 The project archive has been deposited with the Exmoor HER, ENPA.

Fig 8 Profiles across the limekiln at Worthy (HZ 1:200 V x2)



6.0 RESULTS

6.1 There are several structures at Worthy associated with lime burning: a square, stone limekiln, built into the base of a steep bank; a rectangular structure with a modern steel roof on the NW side of the kiln, interpreted here as a lime store; a triangular area formed by a retaining wall on the SE side of the kiln; two access ramps to the limekiln's combustion chamber, and a track from the beach which runs along the NE side of the limekiln to Wentworth and Milbanke Cottages and Ashley Combe Lodge (Fig 7).

6.2 The limekiln is built primarily of large beach cobbles and lime mortar with ashlar blocks of local sandstone forming the corners. The walls are 0.5m thick, with evidence of repair and re-pointing in places. The NW and NE walls are 7.1m long and 3.5m high, the SE wall is 6.2m long and 2.5m high, the SW side of the kiln is built into the base of a steep bank. Several build lines are visible in the SE and NE walls, with the top line corresponding to the base of a low parapet wall around the top of the limekiln. Two large cracks, probably caused by tree root damage, are visible in the SE and NE walls of the limekiln (Figs 9 and 10).

Fig 9 (right) The SE wall of the limekiln (1m scale) (Hazel Riley)

Fig 10 (below) The NE wall of the limekiln (1m scale) (Hazel Riley)

6.2.1 The NW wall contains the draw hole access tunnel (Fig 11). The entrance to the tunnel is formed by an arch, 2.45m wide and 1.8m high, supported by stone voussoirs (Fig 12). The tunnel, which is 3.1m long, gives access to the draw hole where the finished product – quicklime – was dug out from a grate at the base of the combustion chamber. The draw hole is supported by a relieving arch of fire bricks, 1.4m high and 1.2m wide. Above the draw hole is a poking hole which allowed the lime burner to insert an iron rod into the charge, either to loosen it up or check if calcination was complete (Holley 1997, 28) (Fig 13).

6.2.2 On the top of the kiln are the remains of the top of the stone-lined combustion chamber, 2.5m in diameter and infilled to a depth of 0.8m (Fig 14). Fragments of coal are visible scattered across the top of the limekiln. It is surrounded by a parapet wall, 0.5m wide and up to 0.6m high, which served to stop the lime burner falling from the kiln while working (Figs 14 and 15).

6.3 On the NW side of the limekiln is an open fronted, rectangular structure, 5m N/S and 7.5m E/W, formed by the NW wall of the limekiln, and stone retaining walls to the SW and NW. It has a recently installed steel sheet roof (Fig 16). The walls are of stone rubble with lime mortar and are 0.5m thick; the SW wall butts up against the top of the NW wall of the lime kiln and slopes down to the NW wall which is 1.2m high.

6.3.1 Midway along the NW is a blocked opening, 1.3m wide. It appears to be an original feature, with ashlar blocks at each end (Fig 17). Its function is unclear. It is unlikely to have been an entrance or window given that the structure is only 1.2m high here and is open fronted. It may have been a storage alcove or it could have been designed to aid the flow of air into the kiln draw hole.

6.3.2 The structure is shown as a roofed building on both the 1st and 2nd edition OS maps (Figs 5 and 6). The newly installed roof obscures any features relating to the original roof. The remains of lime can be seen in several places against the walls, suggesting that quicklime was stored here after removal from the kiln before collection (Fig 18). Shelter from the weather was important to

Fig 11 (left) Draw hole access tunnel in NW wall (Hazel Riley)

Fig 12 (above left) Detail of draw hole access tunnel (1m scale) (Hazel Riley)

Fig 13 (above left) Draw hole with poking hole above (0.5m scale) (Hazel Riley)

Fig 14 (above) Top of the combustion chamber (1m scale) (Hazel Riley)

Fig 15 (left) Detail of the parapet wall (0.5m scale) (Hazel Riley)

Fig 16 (right) The lime store on the NW wall of the limekiln (Hazel Riley)

Fig 17 (below right) Blocked opening in the NW wall of the lime store (1m scale) (Hazel Riley)

Fig 18 (below) Lime in the southern corner of the lime store (0.5m scale) (Hazel Riley)

avoid the quicklime slaking and so adding to its volume during transport. The structure would have also provided shelter for the lime burners.

6.4 On the SE side of the limekiln a triangular area, 6.5m NW/SE and 5.5m SW/NE, is formed by the SE kiln wall, the stone retaining wall of the kiln access ramp to the SW, and a stony scarp to the SE. This may have been a storage area for limestone and coal. Piles of building rubble have been dumped in the area (Fig 19).

6.5 Access to the combustion chamber on top of the limekiln was by two ramps. From the seaward side there was access by a steep path, 3m wide and 8m long, along the NW and SW sides of the lime store. A short stub of wall on the seaward side of the NW wall of the lime store, just visible by the encroaching shingle ridge, may be the remains of a retaining wall for this access ramp or a buttress for the lime store wall. Access from the south side of the limekiln was by a gently sloping track, 12m long and 3.7m wide, with a retaining wall 7m long, up to 1.6m high and 0.4m wide, which led from the Worthy track to the combustion chamber (Figs 20 and 21).

6.6 A track runs from Milbanke and Wentworth Cottages at Worthy to the limekiln and the beach (Front cover). At the cottages, access to the track is through an ornate, round headed arch which is clearly part of the designed landscape of Ashley Combe (Fig 28; Riley 2017a).

Fig 19 (left) Storage area to the SE of the limekiln (1m scale) (Hazel Riley)

Fig 20 (below) Access ramp to the combustion chamber from the seaward side (1m scale) (Hazel Riley)

Fig 21 (below left) The southern access ramp (Hazel Riley)

6.7 An evaluation trench was dug on the northern access ramp to identify and record the nature of the surface of the ramp (located on Fig 7). No ramp material or other structural material was removed. A plan at 1:20 scale and a section at 1:10 were recorded (Figs 22 and 23).

6.7.1 A layer of loose, brown topsoil with a fine granular texture and about 30cm deep was removed (Layer 1: Munsell colour 7.5YR 3/3 DARK BROWN). The layer contained fragments of coal and mortar. Two finds were recorded: a rim sherd of modern pottery at the top of the layer and a broken piece of roofing slate with a nail hole at the base of this layer (Fig 27).

6.7.2 Below layer 1 was a compact, reddish brown matrix containing large stones (Layer 2: Munsell colour 5YR 4/3 REDDISH BROWN). The majority of the stones were laid vertically into the matrix with an infill of loose, smaller stones. Flecks of mortar and small, loose stones indicated the junction of layers 1 and 2. Layer 2 was interpreted as

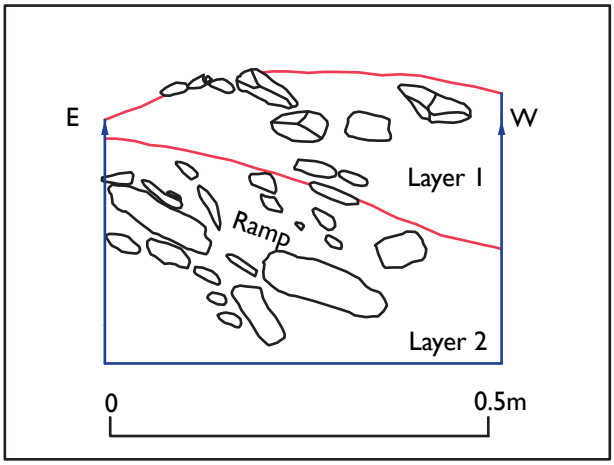
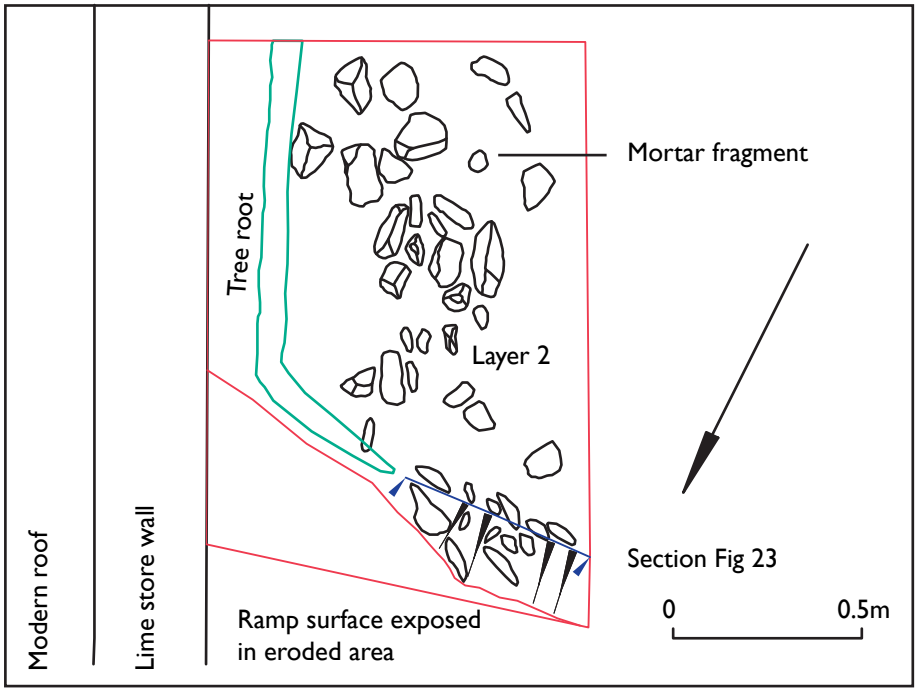


Fig 22 (below) Plan of the evaluation trench (1:20)

Fig 23 (right) Section (1:10)



the surface of the path or track of the northern access ramp to the kiln (Figs 24 and 25). A section through the path or track was visible due to erosion around a tree root showed that it was c 0.26m thick (Fig 23).

6.8 Several objects which may have been found during the installation of the new roof had been placed inside the draw hole access tunnel. These included an iron bar which could be part of the draw hole grate (Fig 26). The slate found in the evaluation trench probably came from the original roof of the lime store (Fig 27).

Fig 24 (right) The evaluation trench (1m scale) (Hazel Riley)

Fig 25 (below) Detail of access ramp surface (0.15m scale) (Hazel Riley)

Fig 26 (below left) finds from the vicinity of the limekiln with part of iron bar from draw hole grate on right (0.5m scale) (Hazel Riley)

Fig 27 (below) Roofing slate found in the evaluation trench (0.3m scale) (Hazel Riley)

7.0 DISCUSSION AND RECOMMENDATIONS

7.1 The map evidence suggests that the limekiln at Worthy was in use in the second half of the 19th century. Holley in his study of limekilns on Exmoor has shown that these sort of large, stone draw hole limekilns date from the later 18th century and were used to produce large quantities of quicklime for agricultural use and for the building industry (Holley 1997, 16-19). By the late 19th – early 20th century the agricultural depression and the introduction of crushed lime rather than quicklime in agriculture led to the decline of lime burning and by the 1920s all of Exmoor's limekilns had shut down (Holley 1997, 25).

7.2 The limekiln at Worthy is one of 17 limekilns situated on Exmoor's coast (Holley 1997, 43) which were built to use imports of coal and limestone from South Wales.

7.3 The highest cost in agricultural liming was transport from the kiln to the fields – by pack horse or horse and cart – so it would seem reasonable to assume that the Worthy limekiln was used to provide lime for the Ashley Combe Estate and other local farms, and for the local building industry.

7.4 This survey has recorded a lime store associated with the limekiln at Worthy for the first time. This adds to the four lime stores associated with limekilns on Exmoor recorded by Holley (1997, 73).

7.5 Holley's study of Exmoor's limekilns identified 18 limekilns on Exmoor as worthy of conservation. The limekiln at Worthy is one of these and is one of only two coastal limekilns ranked as having a good survival/condition score and a high amenity value. In addition, the limekiln at Worthy is highlighted as a 'High Value Priority Site' (Holley 1997, tables 7 and 8, 88-92).

7.6 The limekiln at Worthy was cleared of vegetation in early 2018 and the structures are now clearly visible. Its location on the coast and by the proposed route of the new ECP leaves it vulnerable to accidental or deliberate damage, and to deterioration through weathering and vegetation growth. A conservation management plan for the limekiln and associated structures is recommended.

Fig 28 The archway at the southern end of the track to the limekiln (Hazel Riley)

7.7 The limekiln at Worthy is part of the Ashley Combe Estate, one of three 19th-century estates on Exmoor which use the coast as part of their landscape setting (Riley 2017a; 2017b; 2018). The limekiln should be included in plans for the interpretation of the Ashley Combe Estate from the proposed new ECP route.

7.8 The limekiln, while firmly rooted in the economy of the Ashley Combe Estate, was incorporated into the 19th-century designed landscape. The round headed archway and stone walls at the end of the track to the limekiln and the beach echo the tunnels and arches found in the vicinity of Ashley Combe House (Fig 28). The track past the limekiln was an easy route to the beach and Rockford Cottage, an isolated building which may have been a bathing house or boat house for the estate.

8.0 REFERENCES

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