

# CARNARVON NEW PIT IRON MINE: ANALYTICAL EARTHWORK SURVEY

## PROJECT REPORT

By Hazel Riley



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Hazel Riley BA (Hons),ACIFA, FSA  
Consultant in Landscape History, Management and Conservation Grazing  
The Furley Herd of Dexter Cattle  
New House Cottage  
Furley  
Axminster  
Devon  
EX13 7TR  
01404 881330  
*hazelfurleydexter@btinternet.com*

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OASIS PROJECT NO 205167

## **ABBREVIATIONS**

EH English Heritage

EMRG Exmoor Mines Research Group

ENPA Exmoor National Park Authority

GPS Global Positioning System

NMR National Monuments Record

OSGB36 Ordnance Survey National grid

OSTN02 Ordnance Survey transformation parameters for conversion of WGS84 coordinates to the Ordnance Survey National Grid coordinates

RCHME Royal Commission on the Historical Monuments of England

RICS Royal Institution of Chartered Surveyors

WSMR West Somerset Mineral Railway

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## ABSTRACT

A survey of the remains at Carnarvon New Pit iron mine has recorded and identified the remains of mining from four distinct phases. Numerous small, circular pits represent extraction of iron ore in the Roman and/or early medieval periods; large openwork trenches were probably worked in the later medieval and/or early post medieval periods. The remains of several structures from 19<sup>th</sup>-century iron mining at Carnarvon New Pit date from two periods: 1866-1872 and 1873-1883.

## INTRODUCTION

This survey of the archaeological remains at Carnarvon New Pit iron mine and a section of the WSMR track bed was undertaken on behalf of the ENPA Historic Environment Team in advance of proposed consolidation and new fencing work at Carnarvon New Pit, following the removal of a larch plantation in 2012. The fencing was carried out to protect livestock and people gaining access to the deep shafts. Access was kindly permitted by the landowner, Mrs J Maunder. The principal aim of the survey was to record the surviving extent of the archaeological earthworks and built structures on the site and to record their current condition. This report provides a record of the site in its current state to inform future management (Blaylock 2014).

The report consists of two sections: the archaeological features and their historic landscape context are outlined and interpreted in the first section.

The second section contains the evidence base for this in the form of a Site Gazetteer which presents the detailed results of the survey work.

### Location, topography and geology

Carnarvon New Pit iron mine lies at the SE edge of Exmoor National Park, SW of the 19<sup>th</sup>-century mining village of Brendon Hill, at ST 0205 3428. The site lies on a ridge top which forms part of the Brendon Hills, at c 390m OD, close to the sources of the Rivers Tone and Haddeo to the SE and south, and the Washford River to the north (Figs 1 & 2). Most of the site was planted with conifers in the mid- 20<sup>th</sup> century (Exmoor HER MSO8864); these were removed in 2012 and the land is now rough grazing, with some bramble scrub, bracken, saplings and numerous tree stumps (Front cover).

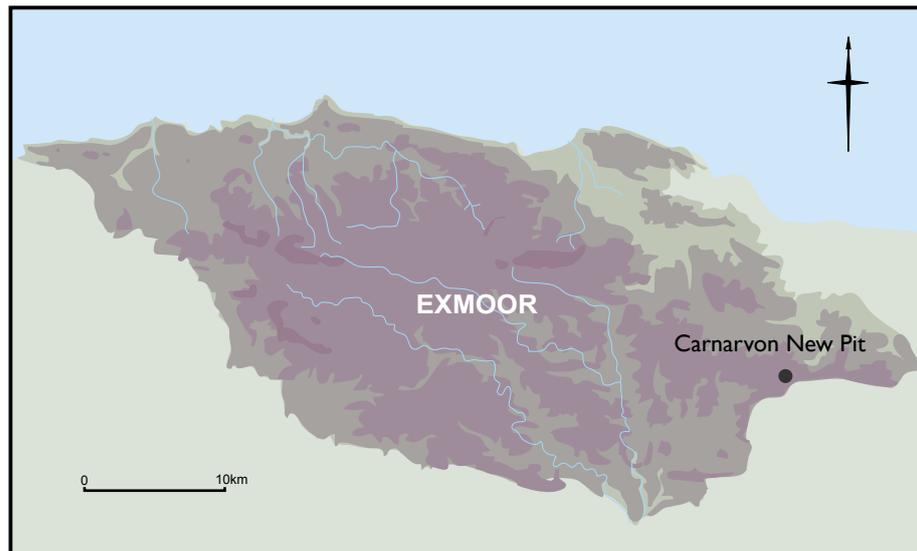


Fig 1 Location map

The underlying geology of the main ridge of the Brendon Hills is composed of siltstones of the Brendon Hill Series. Mineralization seems to be closely associated with folding of these rocks: Carnarvon New Pit lies on the Brendon syncline. The pockets of iron ore associated with this mineralization are lenticular, consisting of iron oxides – haematite, limonite and goethite, with spathic ore or iron carbonate at deeper levels. Quartz is commonly found at Raleigh’s Cross and Carnarvon Mines (Jones and Hamilton 2010, fig 3; Sellick 1970, 48-49).

**Administrative and designation information**

NGR: ST 0205 3428

Parish: Brompton Regis

District: West Somerset

County: Somerset

Exmoor HER: MSO8864

Designated status: Scheduled Monument 1021352 Carnarvon New Pit iron mine and section of mineral railway trackbed, 300m south west of Heather House (Appendix)

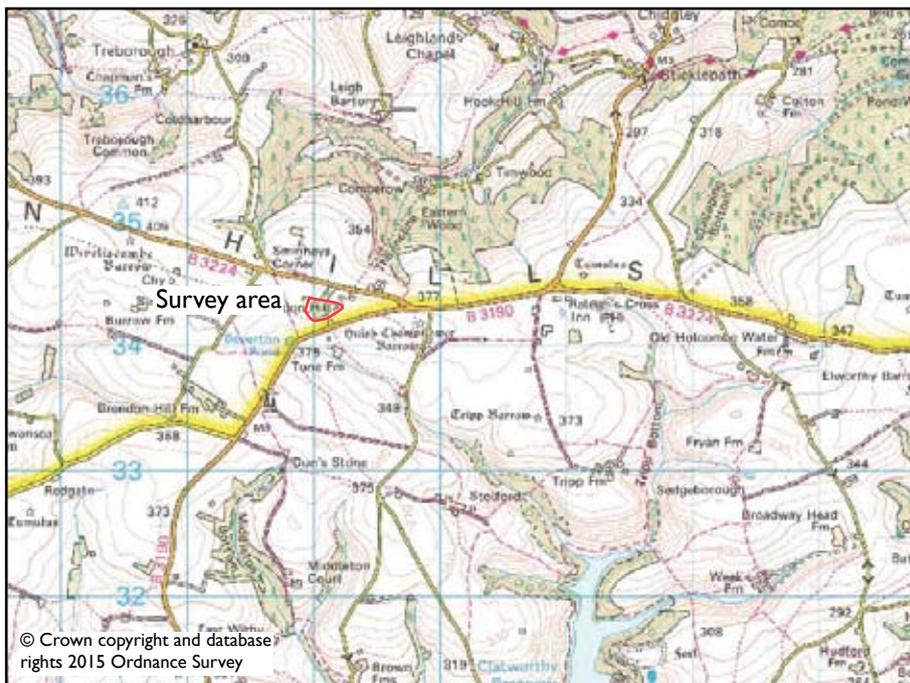
**Site numbering**

Each archaeological feature has been given a unique number with the prefix CNP. These numbers are used throughout this report and are shown on Figures 4 and 11.

**HISTORICAL BACKGROUND**

The first mine with the name Carnarvon at Brendon Hill was begun in 1857, when Nicholas Ennor sunk a shaft ‘through ancient workings’ between the WSMR and Raleigh’s Cross Mine (Fig 3). This became known as Carnarvon Old Pit (or Old Carnarvon mine). Thomas Brown paid ‘an enormous sum’ to acquire the rights to the mine but no ore was found in the main drift. Morgan Morgans, the mines captain between 1858 and 1867, recorded that in Carnarvon mine ‘the lode proved

unfavourable, and for a long time nothing was done at the mine’ (Jones 1998, 15; Jones and Hamilton 2010, 297).



*Fig 2 Survey location and topography*

In 1866 Morgans took the decision to sink a new shaft about 190m to the west of Carnarvon Old Pit, where the older openwork trenches were deeper. The portable engine from Carnarvon Old Pit or Raleigh's Cross was moved to this site, which became known as Carnarvon New Pit (or New Carnarvon mine). The mine was worked for six years with the portable engine winding the ore up the shaft, with horse drawn carts taking the ore to a siding of the WSMR; water was drained to the Raleigh's Cross mine and pumped out by the beam pumping engine installed in that mine in 1865 (Jones and Hamilton 2010, 290).

Carnarvon New Pit was more fully developed by Henry Skewis. Between 1872 and 1873 the mine was converted to skip haulage with a headframe, which was a more efficient method of hauling the ore from the shaft than that that used previously. At the same time, a more powerful single cylinder hoisting and pumping engine was installed in a new engine house, with a single boiler. The temporary winding engine was moved from Carnarvon New Pit to Elworthy mine in 1873. The boiler house was extended when a second boiler (from Langham Hill mine) was installed 1874-1875 (Jones and Hamilton 2010, fig 80). The iron ore was brought out of the shaft onto a wooden platform then taken by trams to a loading platform over a short siding to the WSMR. The engine house at Carnarvon New Pit was built of local slatestone with sandstone quoins and a blue slate roof. Mike Jones considered that 'the buildings as a whole having a simple beauty which contrasted well with the complexity of the engines they housed' (Sellick 1970, 53).

The mines at Raleigh's Cross, Carnarvon New Pit and Gupworthy were the most productive of the iron mines on the Brendon Hills in the 1860s and 1870s. When Morgans left the job of mines captain in 1867 the mines at Raleigh's Cross and Carnarvon New Pit had produced over 100 000 tons of iron ore, with maximum production reaching over 400 tons per week. (Sellick 1970, 37-38).

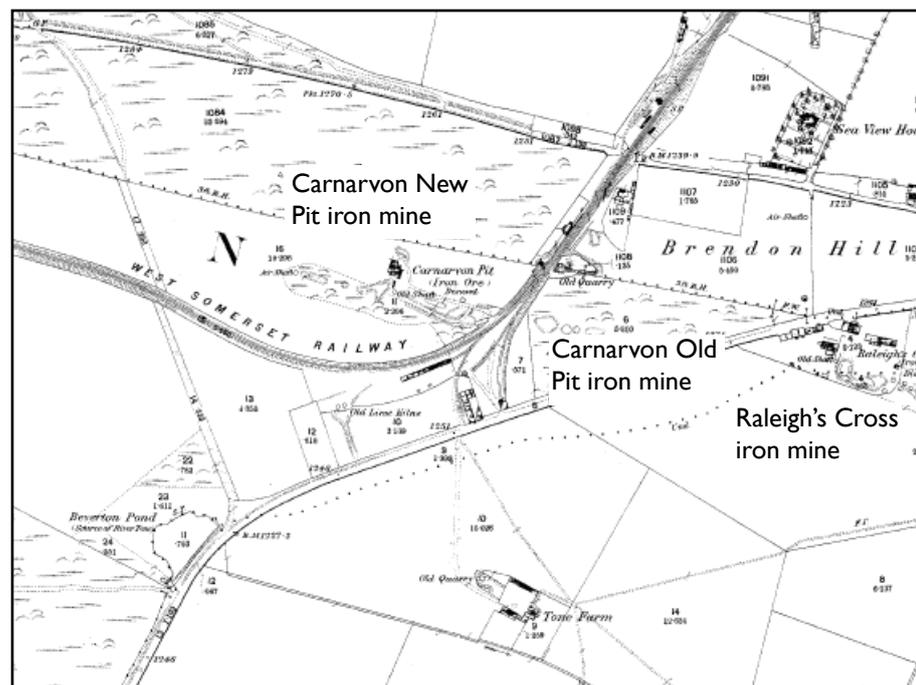


Fig 3 OS 1st edition map extract showing Carnarvon Old Pit, Carnarvon New Pit and Raleigh's Cross iron mines

Carnarvon New Pit reached its maximum depth of 507 feet in May 1880, but by the end of September 1883 all the iron mines on the Brendon Hills had been closed. Following closure of the mines, the machinery was dismantled and removed and the shafts sealed by the construction of arches a few feet below the surface which were then covered with earth. In 1907 the Raleigh's Cross mine buildings, and probably those at Carnarvon New Pit, were blown up by the Somerset Mineral Syndicate to provide ballast to work the incline (Sellick 1970, 46-47, 54).

## **PREVIOUS ARCHAEOLOGICAL WORK**

A survey of early ironworking on Exmoor identified lode back pits forming irregular trenches at 'Carnarvon,' and speculated that 'the surface mining ....could have taken place at any time from the late prehistoric period to the 19<sup>th</sup> century' (Juleff 1997, 14-16). A survey of the remains at Carnarvon New Pit at a scale of 1:2500 was carried by the RCHME in 1999, when most of the site was still covered in conifers. The survey identified two elements: 19<sup>th</sup>-century shaft mining and earlier surface workings (NMR ST 03 SW 44).

The EMRG excavated the buildings at Carnarvon New Pit between 1999 and 2003 (Jones and Hamilton 2008; Jones and Hamilton 2010, 299-300; figs 74-80). The excavations uncovered the base for the first winding engine on the northern edge of the shaft, built in 1866-1887; and the settings for the two boilers and the balance bob pit of the permanent engine house (Jones and Hamilton 2010, figs 75 & 76). Reconstruction drawings of the temporary winding engine house and the permanent pumping and winding engine house show how the mine functioned between 1866 and 1883 (Jones and Hamilton 2010, figs 79 and 80). The 19<sup>th</sup>-century mine workings, structures and the earlier mine workings, together with a section of the WSMR, were designated a Scheduled Monument in 2005 (Appendix).

## **THE SURVEY**

The fieldwork was carried out in December 2015. All of the extant archaeological features were surveyed at a scale of 1:500 using survey grade differential GPS (Figs 4,5,11). The GPS-derived geodetic WGS84 coordinates were transformed to the Ordnance Survey National Grid (OSGB36) using the Ordnance Survey's grid transformation (OSTN02) in Leica's GPS post-processing software. Observation times were based on those recommended by the OS and the RICS in order to obtain accurate heighting information (OS 2010; RICS 2010).

Four profiles were surveyed across the openworks; one of these was located to record the tramway remains. Profiles were also recorded across two of the larger iron extraction pits (Fig 5). The structural remains from the 19<sup>th</sup>-century iron mining at Carnarvon New Pit were recorded at 1:250 scale to enable comparison with the results of the excavations by the EMRG (Fig 11).

### **Archive arrangements**

A CD containing copies of the plan, archive photographs and the report in digital format has been deposited with the Exmoor HER.

## DESCRIPTION AND INTERPRETATION OF THE ARCHAEOLOGICAL FEATURES

The iron mining remains at Carnarvon New Pit cover a roughly rectangular area 200m long by 40m wide. There are six main elements to the archaeological features in the survey area: an area of shallow, circular and sub-circular pits; three linear trenches with spoil banks on their edges and pits or shafts sunk into their base; the remains of structures and buildings; a deep shaft, and the remains of a tramway and the WSMR.

### Pre 19<sup>th</sup>-century mining remains

Numerous shallow pits, with some dumps of excavated material lie to the south of the survey area (CNPI). They are difficult to discern in the long grass and remains of the felled conifers (Fig 6). The pits are mostly circular, ranging from 3-5m in diameter and 0.2m to 0.3m in depth. Some of the largest pits are oval or sub-rectangular and measure c 8 x 5m and are c 0.5m deep.

To the north of the pits are three narrow, linear trenches, with banks of spoil on the north and south sides and several deep pits cut into the bottom of the trenches. A small trench 15m long, 4m wide and 0.5m deep and a small circular pit mark the westernmost extent of the site (CNP2) (Fig 7). A second, much larger, linear trench CNP3 lies to the east of it, separated from CNP2 by a 19<sup>th</sup>-century ventilation shaft (below) (Fig 8). The trench is 44m long, up to 10m wide and up to 1m deep. A few small pits



Fig 5 (right)  
Profiles across  
the openworks  
and pits at  
Carnarvon New  
Pit

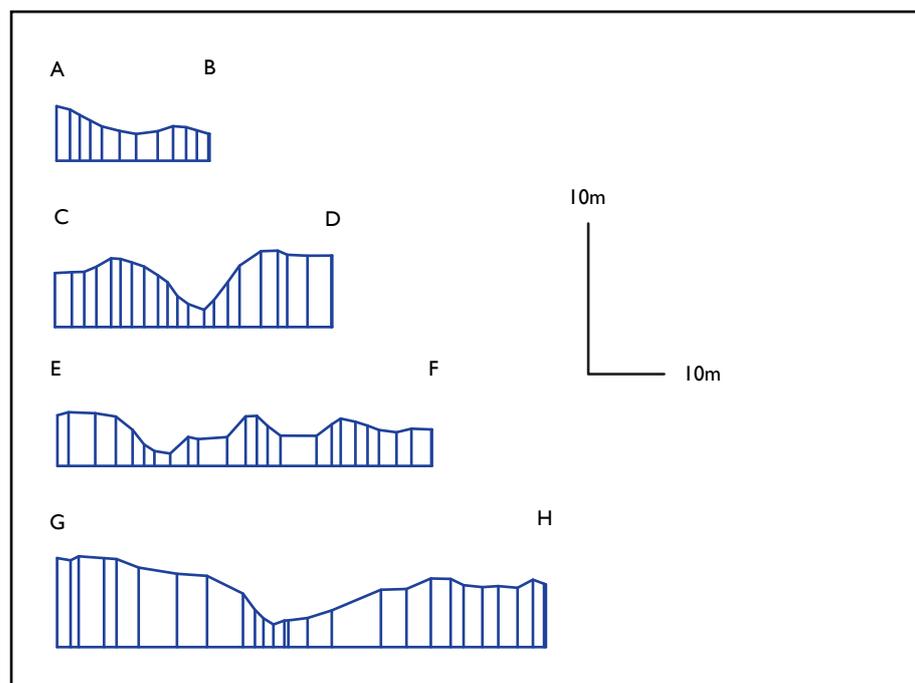


Fig 6 (above  
right) Shallow  
extraction pits at  
the SW end of  
the site (Hazel  
Riley)

separate this trench from the third, CNP4, which is 160m long, up to 12m wide and up to 2m deep. The main shaft of the 19<sup>th</sup>-century mine was sunk in the middle of this trench (Fig 9). To the east of the 19<sup>th</sup>-century shaft the workings are partially obscured by the 19<sup>th</sup>-century ore tramway, but the openwork with several deep pits or shafts at its base can be seen (Fig 10).

These trenches and pits are the remains of openwork iron mining and prospecting for iron ore; they pre-date the documented 19<sup>th</sup>-century mining. The openworks seem to be later than the small circular pits: on the south side of the openwork CM3 the pits are cut by the openwork; a single pit on the north side is cut by the same openwork.

*Fig 7 (below left) The openwork CNP2 at the western end of Carnarvon New Pit (Hazel Riley)*

*Fig 8 (below right) The openwork CNP3 to the east of the 19<sup>th</sup>-century ventilation shaft at Carnarvon New Pit (Hazel Riley)*

*Fig 9 (bottom left) The openwork CNP4 at the eastern end of Carnarvon New Pit, with the engine drift in the foreground (Hazel Riley)*

*Fig 10 (bottom right) One of the pits in the bottom of the openwork CNP4 at the eastern end of Carnarvon New Pit (Hazel Riley)*



## The 19<sup>th</sup>-century mine: 1866-1872

There are several elements from the first phase of 19<sup>th</sup>-century mining which survive at Carnarvon New Pit (Fig 11).

The deep shaft (CNP5) in the centre of the site is the shaft known as the engine drift, first sunk in 1866 by Morgans (above) and in use until 1883. It is now a roughly circular shaft, 10m in diameter, with the vertical rock face clearly visible on the south edge (CNP5) (Fig 12). The base for the first, temporary winding engine survives on the northern edge of the shaft (CNP6). The remains, as excavated by the EMRG, now survive as a rectangular stone structure, 9m long, 4m wide and up to 0.75m high, with rectangular slots: the firebox pit, the ash pit and the winding drum pit (Figs 11 & 13) (Hamilton and Jones 2010, fig 75).

The winding engine hauled trams full of ore up the shaft. The ore was tipped onto a short horizontal ore gantry which passed over the top of the temporary winding engine. A freestanding stone wall, 2.5m long, 1m wide and less than 0.5m high, between the engine house and the base for the temporary winding engine, is the support for this ore gantry (Fig 11) (Jones and Hamilton 2010, fig 80).

The iron ore was probably loaded into horse drawn carts which carried it, via a weighbridge, to a short siding of the WSMR, where they were unloaded by hand (Jones and Hamilton 2010, 290). A track which linked the WSMR siding with the buildings at Carnarvon New Pit is shown on the OS 1<sup>st</sup> edition map (Fig 3), and the square structure shown on the northern side of this track has been identified as the weighbridge (Jones and Hamilton 2010, fig p 195). A slight scarp on the edge of the openwork CNP4 may mark the site of the weighbridge (Fig 4).

The engine house built by Henry Skewis between 1872 and 1873 (below) now occupies most of the site, but these later buildings were constructed on the remains of ramps and some spoil heaps which are associated with the 1866-1872 workings under Morgans (Fig 11).

*Fig 12 (below left) The vertical rock face on the south side of the engine drift (CNP5) (Hazel Riley)*

*Fig 13 (below right) Base for the temporary winding engine, Carnarvon New Pit (CNP6) (Hazel Riley)*



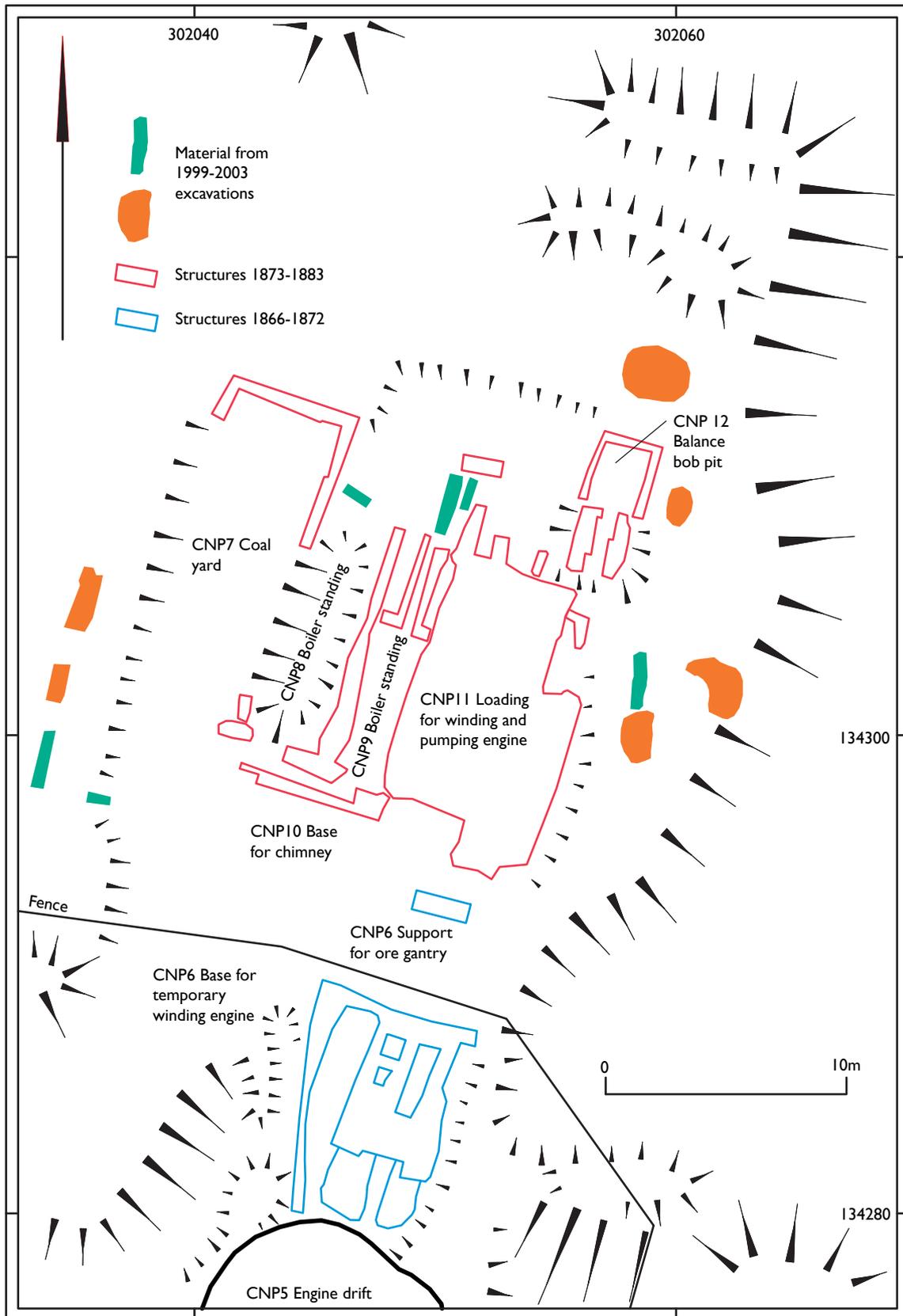


Fig 11 Plan of the 19th-century structures at Carnarvon New Pit (1:250)



Fig 14 (top left) Engine house CNP1  
 Fig 15 (top right) Coal yard, boiler standings, chimney base (CNP 7,8,9,10)  
 Fig 16 (above left) Boiler standings (CNP 8,9)  
 Fig 17 (above right) Loading for engine house (CNP11)  
 Fig 18 (below left) Balance bob pit (CNP12)  
 Fig 19 (left) Ventilation shaft (CNP13)  
 Fig 20 (below) Remains of tramway (CNP14)  
 (photographs by Hazel Riley)



### **The 19<sup>th</sup>-century mine: 1873-1883**

The remains of the structures associated with the permanent winding and pumping engine installed by Henry Skewis lie some 25m to the north of the engine drift (Figs 11 & 14). These structures were also excavated by the EMRG between 1999 and 2003. A rectangular hollow, 15m long, 4m wide and 0.3m deep, defined by a scarp and by the foundations of a narrow stone wall, 0.5m wide and 0.6m high (CNP7). This was identified as a coal yard following the EMRG excavations. To the NE of the coal yard two narrow pits 10m long, 2m wide and 1m deep, are the standings for two boilers (CNP 8, CNP9), with the base of the brick chimney stack (CNP10) at their SW end (Figs 15 & 16).

The stone structure CNP11 to the east of the boiler standings is 10m long, 7m wide and stands to between 1m and 2m high. A revetment wall of large sandstone blocks runs along the east and SE of the structure. This structure is the loading for the engine winding gear and is all that remains of the engine house for the permanent winding and pumping engine in use at the mine between 1873 and 1883. The sandstone revetment is the remains of a sloping, buttressing wall built of Torre sandstone, constructed after the engine winding gear loading began to disintegrate (Fig 17). To the NE of the engine house is a hollow, 6.5m long, 3m wide and 1m deep, with a stone revetment wall, and stone work at its base (CNP12) (Fig 18). This was a balance bob pit, built to relieve the engine of some of the weight of the pump rods. Several piles of bricks and building stone scattered around the area are materials from the EMRG excavations between 1999 and 2003. A circular shaft, 5m in diameter, with a stone collar 0.5m wide (CNP 13) lies between the two openworks CNP2 and CNP3 towards the western end of the site (Fig 19). This is the ventilation shaft for Carnarvon New Pit, dug in the 1870s (Jones and Hamilton 2010, 298).

When ore production at the mine increased under Henry Skewis, skip winding with a headframe was introduced. Trams emptied into ore bins at the top of the engine drift which then discharged into a narrow gauge tramway. Trams were pushed onto a timber platform sited over a short siding from the WSMR (Jones and Hamilton 2010, 195). The remains of the course of the tramway survive as a narrow bank, 3-4m wide and 0.7m high, which is built in the bottom of the eastern openwork (CNP14). It runs from the NE side of the engine drift SE towards the WSMR for c 70m (Fig 20). A regular, rectangular hollow, 11m long, 4m wide and up to 0.75m deep, lies below the SE end of the tramway. A stone wall, 0.5m wide and up to 1.5m high, built against the hedge bank make up the SE and east sides (Fig 21). This structure supported a loading platform, where ore was moved down to a siding of the WSMR (Jones and Hamilton 2010, 195).

The track bed of the WSMR survives as a slight bank, CNP15, 6m wide and c 0.5m high (Fig 22). To the south of this are two stony mounds, 7m long, 4m wide and 0.8m high, and a hollow, 30m long, 7m wide and 0.6m deep (CNP16) (Fig 23). These are the remains of a row of ten cottages, known as 'Extension Cottages,' and occupied by men working for John Gunn, a quarry owner from Wiveliscombe, who was the contractor for the westward extension of the WSMR (Jones 1998, 15; Jones and Hamilton 2010, fig p 195).



*Fig 21 (above left) Loading platform where tramway meets siding of WSMR (Hazel Riley)*

*Fig 22 (above) Trackbed of the WSMR (CNPI 5) (Hazel Riley)*



*Fig 23 (left) Remains of Extension Cottages (CNPI 6) south of Carnarvon New Pit (Hazel Riley)*

### **Context and date of the archaeological features**

A combination of field evidence, documentary evidence and excavated evidence has allowed the chronology of the extant archaeology at Carnarvon New Pit to be set out in relative terms for the pre-19<sup>th</sup> century remains, and in absolute terms for the 19<sup>th</sup>-century remains.

The survey has shown that at least some of the pits are cut by the openwork trenches. The pits are most likely to be the remains of shallow iron ore extraction rather than prospecting pits. The pits are scattered across the area rather than in an organised line, and there is very little spoil material associated with them, suggesting that the ore was close to the surface. Excavations of similar iron ore extraction pits on the Blackdown Hills indicated that the iron deposits were being worked in the Roman and/or early post-Roman periods (Griffith and Weddell 1996; Devon Arch Soc Newsletter 1998 (69), 12).

At Colton Pits, 3.5km to the NE of Carnarvon New Pit, an extensive area of similar pits occurs (Riley 2000). Here, 19<sup>th</sup>-century miners broke into 'workings of the Old Man. An oak shovel, some broken earthenware, a pickaxe and a turf dam which appeared to be one of a series that stepped up to the surface, by means of which water was baled from pound to pound out of the mine' (Jones and Hamilton 2010, 13; 15).

A summary of work investigating early ironworking on Exmoor suggested that Exmoor's iron deposits were probably exploited in the Iron Age, during the last few centuries BC, and that there is clear evidence of iron production in the Exmoor region in the 2<sup>nd</sup> century AD under the Roman occupation, at Clatworthy Reservoir, Sherracombe Ford and Brayford (Bray 2010, 5-6). This evidence indicates that the small pits at Carnarvon New Pit are the remains of the earliest phase of iron extraction at the site and that they probably date from the Roman and/or early medieval periods.

The field evidence clearly shows that the openwork trenches are later than the circular pits and earlier than the documented 19<sup>th</sup>-century ironworking remains. Documentary evidence from the tinworking industry on Dartmoor suggests that openworks date from the 16<sup>th</sup> and 17<sup>th</sup> centuries, and that the practice was considered archaic by the mid-18<sup>th</sup> century (Newman 2011, 154). There is some documentary evidence for medieval and early post-medieval mining east of Exmoor Forest and on the Brendon Hills. Petrus Filius examined mines in Cornwall, Devon, Somerset and Wales in c 1530. He described a lead mine on Exford Moor: possibly the large openwork on Kitnor Heath, east of Exford. A 15<sup>th</sup>-century record of a mine foreman called Herman being involved in a case of assault and battery in West Somerset, could refer to a group of German miners looking for mineral deposits in the area (Jones and Hamilton 2010, 16). The 1782 county map of Somerset and the 1802 OS drawing show no evidence for later post medieval mining in the area (Somerset Record Society 1981; Dunster [bl.ac.uk](http://bl.ac.uk)). This evidence suggests that the openworks at Carnarvon New Pit probably date from the late medieval or early post medieval periods

The detailed research and excavations by the EMRG has enabled the recognition of two phases of 19<sup>th</sup>-century mining at Carnarvon New Pit. The main shaft – the engine drift – was worked between 1866 and 1883. The base for a temporary winding engine, in use between 1866 and 1872, survives on the edge of the engine drift. A permanent winding and pumping engine was installed in 1872-1873, together with a tramway which connected with the WSMR at a nearby siding; remains of all of these structures survive on the site.

### **CARNARVON NEW PIT (CNP) SITE GAZETTEER**

CNPI Location: 301929, 134295 to 302129, 134238

Type: EXTRACTIVE PIT

Period: Roman (43 AD-409 AD); Early Medieval/Dark Age (410 AD-1065 AD); Medieval (1066 AD-1539 AD)

Description and interpretation: Numerous shallow pits, with some dumps of excavated material lie between the 19<sup>th</sup>-century structures at Carnarvon New Pit to the north and the WSMR to the south, covering an area roughly 200m NW/SE by 30m NE/SW. The pits are mostly circular, ranging from 3-5m in diameter and 0.2m to 0.3m in depth. Some of the largest pits are oval or sub-rectangular and measure c 8 x 5m and are c 0.5m deep. The pits are most likely to be the remains of shallow iron ore extraction rather than prospecting pits. The pits are scattered across the area rather than in an organised line, and there is very little spoil material associated with them, suggesting that the ore was close to the surface. Comparison with other sites in the Exmoor area suggests that they date from the Roman and/or early medieval periods.

Condition: The pits are difficult to see in the long grass and remains of the felled conifers. The earthworks are in a stable condition and the establishment of a suitable grazing regime should prevent damage from scrub encroachment following the felling of the conifer plantation. The pits are particularly vulnerable to damage from agricultural vehicles.

References: CNP1\_W\_16DEC14\_HRILEY

CNP2 Location: 301921, 134301

Type: EXTRACTIVE PIT

Period: Medieval (1066 AD-1539 AD); Post Medieval (1540 AD-1900 AD)

Description and interpretation: An openwork, 15m long, 4m wide and 0.5m deep lies at the western end of the site. Documentary evidence suggests that the openworks at Carnarvon New Pit probably date from the late medieval and/or early post medieval periods.

Condition: The earthworks are in a stable condition under a covering of grass with conifer stumps and brash. The establishment of a suitable grazing regime should prevent damage from scrub encroachment following the felling of the conifer plantation.

References: CNP2\_W\_16DEC14\_HRILEY

CNP3 Location: 301959, 134293

Type: EXTRACTIVE PIT

Period: Medieval (1066 AD-1539 AD); Post Medieval (1540 AD-1900 AD)

Description and interpretation: An openwork, 44m long, up to 10m wide and up to 1m deep, with a bank of spoil on its north side. Documentary evidence suggests that the openworks at Carnarvon New Pit probably date from the late medieval and/or early post medieval periods.

Condition: The earthworks are in a stable condition under a covering of grass with conifer stumps and brash. The establishment of a suitable grazing regime should prevent damage from scrub encroachment following the felling of the conifer plantation.

References: CNP3\_E\_16DEC14\_HRILEY

CNP4 Location: 301982, 134292 to 302152, 134254

Type: EXTRACTIVE PIT

Period: Medieval (1066 AD-1539 AD); Post Medieval (1540 AD-1900 AD)

Description and interpretation: An openwork, 160m long, up to 12m wide and up to 2m deep. The main shaft of the 19<sup>th</sup>-century mine was sunk in the middle of the openwork. To the east of the 19<sup>th</sup>-century shaft the workings are partially obscured by the 19<sup>th</sup>-century ore tramway. Documentary evidence suggests that the openworks at the site probably date from the late medieval and/or early post medieval periods.

Condition: The earthworks are in a stable condition under a covering of grass with conifer stumps and brash. Most of the western part of the openwork has been recently fenced for safety reasons. The fencing will allow the encroachment of scrub and saplings which may obscure and possibly damage the earthworks within the fenced area over time. The establishment of a suitable grazing regime for the eastern part of the openwork, outside the fence, should prevent damage from scrub encroachment following the felling of the conifer plantation.

References: CNP4a\_SE\_16DEC15\_HRILEY; CNP4b\_SE\_16DEC15\_HRILEY

CNP5 Location: 302045, 134274

Type: MINE SHAFT

Period:AD 19<sup>th</sup> Century (1800 AD-1899 AD)

Description and interpretation:A roughly circular shaft, c 10m in diameter, with the vertical rock face visible on the south edge, is the shaft known as the engine drift. This was the only shaft worked in the 19<sup>th</sup> century at Carnarvon New Pit. It was first sunk in 1866, and was worked until the mine closed in 1883 (Jones and Hamilton 2010).

Condition:The top of the shaft is in a stable condition and is surrounded with a covering of grass. It has recently been re-fenced and this will allow the encroachment of scrub and saplings which may damage the top of the shaft.

References: CNP5\_SW\_16DEC15\_HRILEY

CNP6 Location: 302048, 134283

Type: ENGINE HOUSE

Period:AD 19<sup>th</sup> Century (1800 AD-1899 AD)

Description and interpretation:A rectangular stone structure, 9m long, 4m wide and up to 0.75m high, with rectangular slots, lies on the north edge of the engine drift at Carnarvon New Pit. This is the base for the first, temporary winding engine at the mine. It was used between 1866 and 1872 for hauling ore trucks out of the shaft. The ore was tipped onto a short timber ore gantry; the base of a stone wall which supported the gantry lies 4m to the north of the engine base. The structure was excavated by the EMRG between 1999 and 2003 (Jones and Hamilton 2010, figs 75 & 80).

Condition:The stone base for the temporary winding engine is in a deteriorating condition as it is under threat from the encroachment of scrub and, particularly, saplings, which are becoming established in and around the stonework. The site lies within a recently re-fenced area following the felling of the conifers, and the scrub growth will cause damage to the remains unless a suitable control regime can be established.

References: CNP6\_SE\_16DEC14\_HRILEY

CNP7 Location: 302042, 134309

Type: COAL SHED

Period:AD 19<sup>th</sup> Century (1800 AD-1899 AD)

Description and interpretation:A rectangular hollow, 15m long, 4m wide and 0.3m deep, defined by a scarp and by the foundations of a narrow stone wall, 0.5m wide and 0.6m high. This was identified as a coal yard following the EMRG excavations. It stored coal for powering the winding and pumping engine installed at Carnarvon New Pit 1872-1873 and was used until the mine closed in 1883 (Jones and Hamilton 2010).

Condition:The site of the coal yard is in a deteriorating condition as it is under threat from the encroachment of scrub. Although the site lies within the area which is regularly grazed, further management of the scrub will prevent future damage.

References: CNP7\_NE\_16DEC14\_HRILEY

CNP8 Location: 302045, 134303

Type: BOILER HOUSE

Period:AD 19<sup>th</sup> Century (1800 AD-1899 AD)

Description and interpretation:A narrow pit, with brick lining, 10m long, 2m wide and

1m deep, adjacent to the engine house remains at Carnarvon New Pit, is the standing for the first boiler for the winding and pumping engine installed by Henry Skewis in 1872-1873 (Jones and Hamilton 2010).

Condition: The boiler setting is in a deteriorating condition as it is under threat from the encroachment of scrub and weathering. Although the site lies within the area which is regularly grazed, further management of the scrub is recommended to prevent future damage.

References: CNP8\_SW\_16DEC14\_HRILEY

CNP9 Location: 302047, 134301

Type: BOILER HOUSE

Period: AD 19<sup>th</sup> Century (1800 AD-1899 AD)

Description and interpretation: A narrow pit, 10m long, 2m wide and 1m deep, adjacent to the engine house remains at Carnarvon New Pit, is the standing for the second boiler for the winding and pumping engine installed by Henry Skewis in 1872-1873. This boiler was brought from Langham Hill mine after it closed and was installed 1874-1875 (Jones and Hamilton 2010).

Condition: The boiler setting is in a deteriorating condition as it is under threat from the encroachment of scrub. Although the site lies within the area which is regularly grazed, further management of the scrub is recommended to prevent future damage.

References: CNP9\_E\_16DEC14\_HRILEY

CNP10 Location: 302044, 134298

Type: CHIMNEY

Period: AD 19<sup>th</sup> Century (1800 AD-1899 AD)

Description and interpretation: A low brick structure, c 1m square and 0.3m high, at the NW end of the boiler standings at Carnarvon New Pit. This is the remains of the chimney for the winding and pumping engine installed by Henry Skewis in 1872-1873 (Jones and Hamilton 2010).

Condition: The brick base for the chimney is in a deteriorating condition. Its exposure following the excavations has made it vulnerable to weathering and damage from scrub encroachment.

References: CNP10\_NE\_16DEC14\_HRILEY

CNP11 Location: 302052, 134301

Type: ENGINE HOUSE

Period: AD 19<sup>th</sup> Century (1800 AD-1899 AD)

Description and interpretation: A stone structure to the east of the boiler standings at Carnarvon New Pit is 10m long, 7m wide and stands to between 1m and 2m high. A revetment wall of large sandstone blocks runs along the east and SE of the structure. This structure is the loading for the engine winding gear and is all that remains of the engine house for the permanent winding and pumping engine installed by Henry Skewis 1872-1873 and in use until the mine closed in 1883. The sandstone revetment is the remains of a sloping, buttressing wall built of Torre sandstone, constructed after the engine winding gear loading began to disintegrate. Several piles of bricks and building stone scattered around the area are materials from the EMRG excavations between 1999 and 2003 (Jones and Hamilton 2010).

Condition: The stone base for the winding and pumping engine is in a deteriorating condition as it is under threat from the encroachment of scrub and, particularly, saplings. The exposure of the lower courses following the excavations has also made the structure vulnerable to damage from weathering.

References: CNP11\_NW\_16DEC14\_HRILEY

CNP12 Location: 302057, 134310

Type: BOB SETTING

Period: AD 19<sup>th</sup> Century (1800 AD-1899 AD)

Description and interpretation: To the NE of the engine house at Carnarvon New Pit is a hollow, 6.5m long, 3m wide and 1m deep, with a stone revetment wall, and stone work at its base. This was a balance bob pit, built to relieve the engine of some of the weight of the pump rods (Jones and Hamilton 2010).

Condition: The balance bob pit is in a deteriorating condition as it is under threat from the encroachment of scrub and saplings. The excavations have exposed areas of stonework and made it vulnerable to damage from scrub encroachment and weathering.

References: CNP12\_SW\_16DEC14\_HRILEY

CNP13 Location: 301938, 134298

Type: VENTILATION SHAFT

Period: AD 19<sup>th</sup> Century (1800 AD-1899 AD)

Description and interpretation: A circular shaft, 5m in diameter, with a stone collar 0.5m wide, lies between two openworks, 100m to the west of the engine house at Carnarvon New Pit. This is the ventilation shaft for Carnarvon New Pit, dug in the 1870s (Jones and Hamilton 2010, 298).

Condition: The stone collar of the shaft is in a stable condition. Recent fencing will allow the encroachment of scrub and saplings which may damage the stonework.

References: CNP13\_E\_16DEC14\_HRILEY

CNP14 Location: 302078, 134264 to 302148, 134246

Type: TRAMWAY

Period: AD 19<sup>th</sup> Century (1800 AD-1899 AD)

Description and interpretation: A narrow bank, 3-4m wide and 0.7m high, in the bottom of the eastern openwork at Carnarvon New Pit runs from the NE side of the engine drift SE towards the WSMR for c 70m. This is the remains of a narrow gauge tramway, built when Henry Skewis introduced skip winding with a headframe at Carnarvon New Pit in 1872. Trams emptied into ore bins at the top of the engine drift which then discharged into the narrow gauge tramway. A regular, rectangular hollow, 11m long, 4m wide and up to 0.75m deep, lies below the SE end of the tramway. A stone wall, 0.5m wide and up to 1.5m high, built against the hedge bank make up the SE and east sides. This structure supported a loading platform, where ore was moved down to a siding of the WSMR (Jones and Hamilton 2010, 195).

Condition: The earthworks are in a stable condition under a covering of grass with conifer stumps and brash. The establishment of a suitable grazing regime should prevent damage from scrub encroachment following the felling of the conifer plantation. The structure at the eastern end of the tramway which supported the loading platform

for transferring ore from the trams to the WSMR sidings is deteriorating as it is very susceptible to damage from the trees growing above and around it.

References: CNP14a\_W\_16DEC14\_HRILEY; CNP14b\_S\_16DEC14\_HRILEY

CNP15 Location: 302035, 134193 to 302128, 134222

Type: MINERAL RAILWAY

Period: AD 19<sup>th</sup> Century (1800 AD-1899 AD)

Description and interpretation: A slight bank, 6m wide and c 0.5m high, runs in a smooth curve to the SE of Carnarvon New Pit. This is the track bed of the WSMR, completed to Brendon Hill in 1861 (Sellick 1970).

Condition: The trackbed of the WSMR is in a stable condition under a covering of grass. It may require further management to prevent the establishment of scrub and saplings.

References: CNP15\_W\_16DEC14\_HRILEY

CNP16 Location: 302062, 134186

Type: HOUSE

Period: AD 19<sup>th</sup> Century (1800 AD-1899 AD)

Description and interpretation: Two stony mounds, 7m long, 4m wide and 0.8m high, and a hollow, 30m long, 7m wide and 0.6m deep, lie to the south of the WSMR trackbed. These are the remains of a row of ten cottages, known as 'Extension Cottages,' and occupied by men working for John Gunn, a quarry owner from Wiveliscombe, who was the contractor for the westward extension of the WSMR (Jones 1998, 15; Jones and Hamilton 2010, fig p 195).

Condition: The trackbed of the WSMR is in a stable condition under a covering of grass. It may require further management to prevent the establishment of scrub and saplings.

References: CNP16\_W\_16DEC14\_HRILEY

## ACKNOWLEDGEMENTS

We are grateful to Mrs J Maunder for giving permission for the survey to take place. Staff from the ENPA Historic environment team provided background material and organised access to the site. The interpretation of the 19<sup>th</sup>-century mining remains draws on the detailed work of Mike Jones and his colleagues from the EMRG on the mines of the Brendon Hills over many years.

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## APPENDIX: DESIGNATED STATUS

### List Entry Summary

This monument is scheduled under the Ancient Monuments and Archaeological Areas Act 1979 as amended as it appears to the Secretary of State to be of national importance. This entry is a copy, the original is held by the Department for Culture, Media and Sport.

**Name:** Carnarvon New Pit iron mine and section of mineral railway trackbed, 300m south west of Heather House

**List Entry Number:** 1021352

#### Location

The monument may lie within the boundary of more than one authority.

**County:** Somerset

**District:** West Somerset

**District Type:** District Authority

**Parish:** Brompton Regis

**National Park:** EXMOOR

**Grade:** Not applicable to this List entry.

**Date first scheduled:** 14-Jan-2005

**Date of most recent amendment:** Not applicable to this List entry.

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### Legacy System Information

The contents of this record have been generated from a legacy data system.

**Legacy System:** RSM

**UID:** 33074

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### Asset Groupings

This List entry does not comprise part of an Asset Grouping. Asset Groupings are not part of the official record but are added later for information.

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### List Entry Description

#### Summary of Monument

Legacy Record - This information may be included in the List Entry Details.

#### Reasons for Designation

Iron has been produced in England from at least 500 BC. The iron industry, spurred on by a succession of technological developments, has played a major part in the history of the country, its production and

overall importance peaking with the Industrial Revolution. Iron ores occur in a variety of forms across England, giving rise to several different extraction techniques, including open casting, seam-based mining similar to coal mining, and underground quarrying, and resulting in a range of different structures and features at extraction sites. Ore was originally smelted into iron in small, relatively low-temperature furnaces known as bloomeries. These were replaced from the 16th century by blast furnaces which were larger and operated at a higher temperature to produce molten metal for cast iron. Cast iron is brittle, and to convert it into malleable wrought iron or steel it needs to be remelted. This was originally conducted in an open hearth in a finery forge, but technological developments, especially with steel production, gave rise to more sophisticated types of furnaces. A comprehensive survey of the iron and steel industry has been conducted to identify a sample of sites of national importance that represent the industry's chronological range, technological breadth and regional diversity.

The 19th century iron mines on the Brendon Hills are closely related to the iron industry of South Wales. By 1830 supplies of locally mined ore in South Wales were becoming exhausted at the very time when demand for wrought iron rails was increasing as a result of the spread of railways. It became economically profitable, at least for a period in the mid- to late 19th century, to mine the ore in the Brendon Hills and tranship it to South Wales for smelting. Carnarvon New Pit mine was one of the closest to the head of the Incline (the steepest section of the rail system used to carry the ore to Watchet). The remains of the mine provide a visible reminder of the importance of the iron mining industry of the late 19th century at a time when the British Empire was exercising great influence worldwide. The monument will retain archaeological evidence providing technological information about the mining processes of the period and about the community which grew up around the mines.

## History

Legacy Record - This information may be included in the List Entry Details.

## Details

The monument includes the greater part of the ruins, earthworks, and other remains of Carnarvon New Pit iron mine together with a section of the mineral railway trackbed adjacent to it. The mine, which is located on the north side of the B3190 road, was one of a number opened on the Brendon Hills in the mid-19th century to exploit the high quality iron ore lode which, on the Brendons, was most productive at two mines, Carnarvon New Pit and the adjacent Raleigh's Cross mine. The first Carnarvon pit was sunk in 1857 through earlier surface workings which lie to the east of the scheduling, but it was abandoned in the early 1860s as the ore was too difficult to reach. The later Carnarvon pit was started in 1866 and the ore platform at the shaft collar was connected by a narrow gauge tramroad to a loading platform over a siding from the West Somerset Mineral Railway (WSMR). From here the ore could be taken on to the railway for transport to Watchet and ultimately for transhipment to the South Wales smelting furnaces. The surviving components of Carnarvon New Pit include the remains of the winding engine house, the main shaft, two air shafts, and sections of the tramroad trackbed and the loading platform. The scheduling also includes a section of the cutting for the WSMR and some openwork trenches of unknown date which lie immediately adjacent and to either side of the main shaft. The outer walls and much of the superstructure of the engine winding house survive to a height of 2m in places. This building, which is about 12m square, lies approximately 30m north of the shaft and is constructed of local stone and brick. Archaeological recording of this building has been undertaken in the early years of the 21st century by the Exmoor Mines Research Group (EMRG) and an interpretative plan has been produced of the findings. Much closer to the shaft are the remains of a smaller and temporary winding engine base with dimensions of 8m by 4m; this has also been recorded by the EMRG. The mineshaft itself is cut vertically at its head for a depth of about 13m, thereafter the shaft angles to the south and has a maximum depth in excess of 152m with 16 levels (galleries). Two air shafts into the mine lie to the west of the main shaft in an area which is pitted with earlier surface workings of unknown date. The tramroad trackbed which carried truck loads of ore to the mineral railway survives as a cutting about 5m wide and is visible for much of its length from the shaft to the loading platform which survives as a bank about 16m long. Running to the south of the mine are the remains of the West Somerset Mineral Railway which provided the means of getting the ore to Watchet not only from Carnarvon pit, but also from Burrow Farm and Gupworthy to the west. A 62m length of the railway cutting is included in the scheduling together with the course of the trackbed as it bent around the south of the mine to incorporate the branch line for the mine trams and the branch line to the Watchet Trading Company stores which stood on the Bampton Road. The mine closed in 1879, re-opened briefly, before closing finally when the leases were surrendered in 1883. Information for this scheduling has been provided by Mike Jones of the Exmoor Mines Research Group. All gates, fencing, fence posts, and telegraph poles are excluded from the scheduling, although the ground beneath all these features is included.

MAP EXTRACT The site of the monument is shown on the attached map extract.

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## Selected Sources

### Books and journals

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### Other

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## Map

**National Grid Reference: ST 02057 34260**

The below map is for quick reference purposes only and may not be to scale. For a copy of the full scale map, please see the attached PDF - [1021352.pdf](#) - Please be aware that it may take a few minutes for the download to complete.



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This copy shows the entry on 18-Mar-2015 at 04:27:57.

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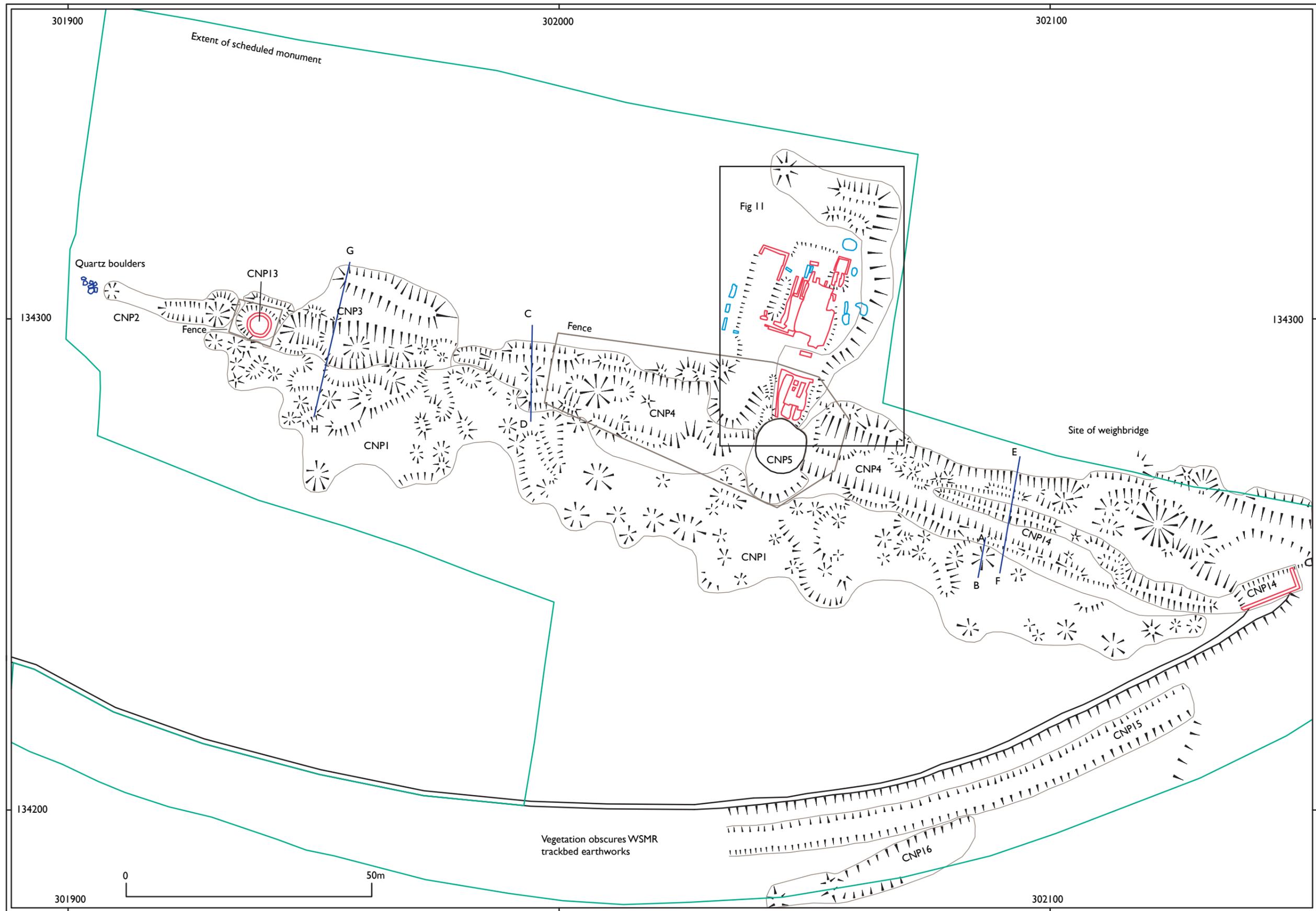


Fig 4 Carnarvon New Pit iron mine 1:500 survey plan (reduced) with site reference numbers

