ENGLISH HERITAGE

Colton Pits, Nettlecombe, Somerset

Hazel Riley

SURVEY REPORT

ENGLISH HERITAGE

Colton Pits, Nettlecombe, Somerset: early iron ore extraction pits and 19th/20th century mining

An archaeological survey by English Heritage

County:	Somerset
District:	West Somerset
Parish:	Nettlecombe
OS Map No:	ST 03 NE and ST 03 SE
NGR:	ST 052 350
NMR No:	ST 03 SE 8
Surveyed:	June 2000
Report by:	Hazel Riley
Surveyed by:	Hazel Riley and Abby Hunt

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Summary

A survey of an extensive area of iron ore extraction pits, locally known as Colton Pits, was carried out by the Exeter Office of English Heritage at the request of the Exmoor National Park Authority. The pits are currently in commercially managed coniferous woodland. Current work suggests that the extraction pits could date from the medieval period, perhaps very early in this time period. The survey, combined with air photographic transcription, also recorded features concerned with the 19th and 20th century working of the site. The site contains features which relate to the some of the earliest and some of the latest iron ore mining operations on the Brendon Hills.

Figure 1: Colton Pits: location map.

INTRODUCTION

Colton Pits lies within a belt of commercially managed coniferous plantations which straggle across the northern escarpment of the Brendon Hills. A survey of the archaeological features at Colton Pits was requested by the Exmoor National Park Authority to aid management of the site. In particular, the extent of the extraction pits and their relationship to the numerous forest track and rides needed to be established, prior to the granting of a felling licence. The survey was carried out by the Exeter Office of English Heritage in June 2000, using a combination of EDM and graphical survey methods. The survey was located to the Ordnance Survey National Grid using GPS (see Appendix for details).

LOCATION AND GEOLOGY

Colton Pits lie at the eastern end of Exmoor National Park, on the edge of the northern escarpment of the Brendon Hills (Fig 1). The site, centred at ST 052 350, lies on a broad spur at about 320 m OD. The spur is defined by two very steep valleys, Galloping Bottom to the west and an un-named valley to the east. Both valleys are part of the headwaters of a stream which flows into Doniford Stream at Williton. Virtually all of the features lie in dense coniferous plantation, the exceptions being the winding house and part of the incline, which

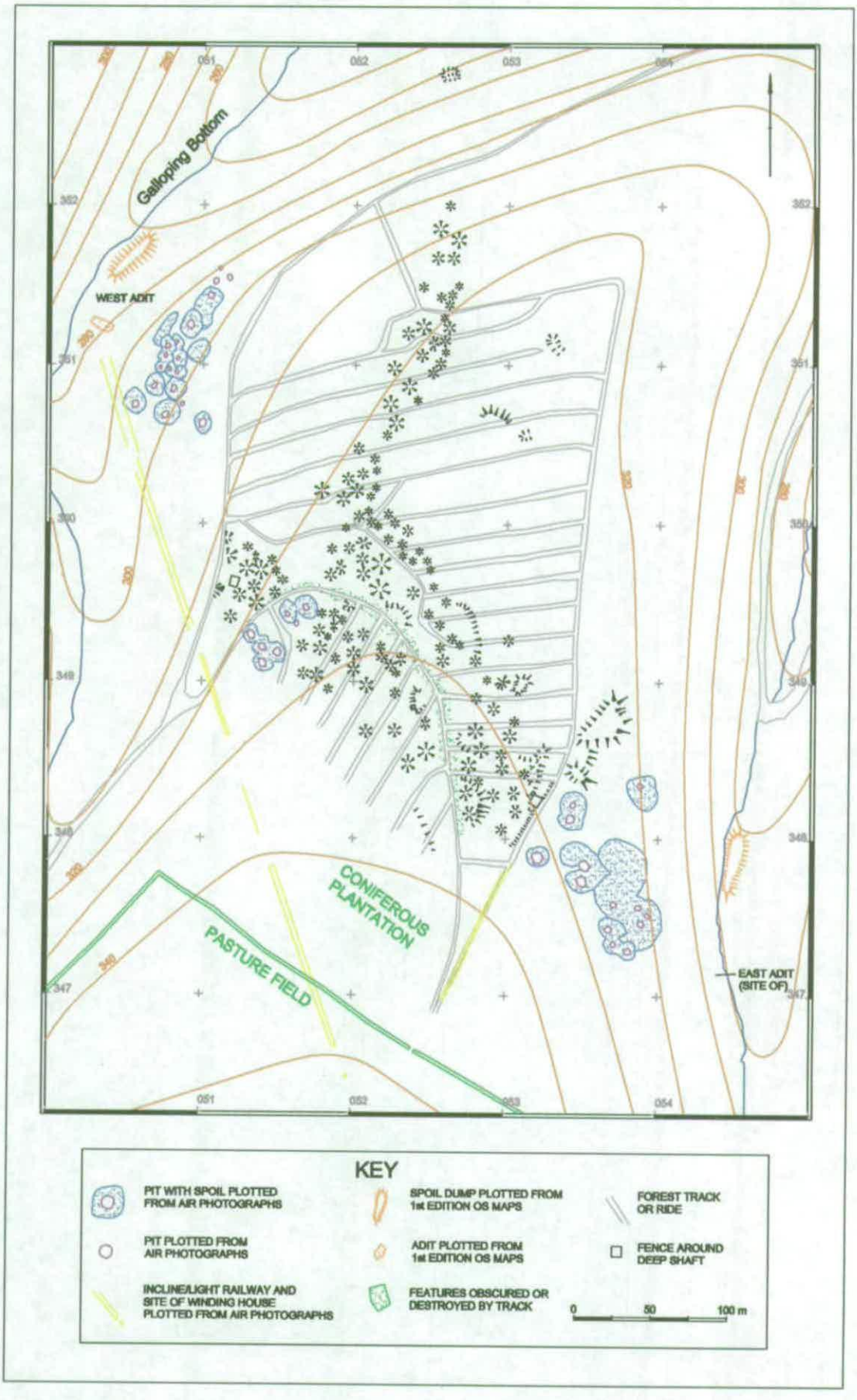

Figure 2: Colton Pits: extent and topography

lie in a pasture field to the south (outside the survey area) (Fig 2). Air photographs show that the conifers were planted some time after 1964 (AP 1964).
The geology of the area comprises Upper Devonian Morte Slates (Brendon Hill Series) – siltstones, slates and sandstone (BGS 1969). The iron ore occurs in lodes running roughly west-east across the hills. Near the surface the ores are weathered to iron oxides (haematites), at depth they occur as iron carbonates (spathic iron ore).

HISTORICAL BACKGROUND AND IRON ORE MINING ON THE BRENDON HILLS

Nineteenth and twentieth century iron ore mining

The history of the 19th and early 20th century iron mining on the Brendon Hills is well documented (Sellick 1970; Jones 1997; 1998). From the mid-19th century to the first decade of the 20th century, iron ore was taken from numerous mines on the Brendons, and transported to the harbour at Watchet via the West Somerset Mineral Railway (WSMR). It was then shipped to the iron works of south Wales. The railway and the mines were worked by the Ebbw Vale Company. During the 1860s new technological processes in the steel industry, combined with the Spanish civil war blocking imports of cheap ore and a demand for steel for the railways, meant that the spathic ore of the Brendons was in great demand. Numerous mines were in operation on the Brendon Hills, and a busy community grew up around the incline head at Brendon Hill.

At Colton, the east adit was opened in 1865. This adit intercepted 'ancient workings' over 100' below ground level, good ore was found, and a drift was sunk from the surface to connect with this. Between 1872 and 1874 the west adit was dug, working east from Galloping Bottom. A drift was dug to connect with it. A recession in the steel trade in the late 1870s, combined with the ending of the war in Spain, combined to reduce the demand for the ore from the Brendon Hills, which was expensive to mine and transport. The less productive mines were closed at this time, this included Colton, which had ceased production by the end of 1877. The recession continued, and the Ebbw Vale Company was hit hard. By 1879 all of the mines in the Brendon Hills had closed. Towards the end of that year, however, the iron and steel trade recovered, and the Ebbw Vale Company began to re-open some of its mines on the Brendons. Around 1880 work resumed at Colton. The eastern drift was deepened and the west adit extended to meet it. This drift reached a depth of 192 feet with 5 levels. The output in 1881 was so great that an extra siding was installed at Brendon Hill to cope with it. At this time all of the ore from Colton was transported to Brendon Hill by horse and cart.

The Ebbw Vale Company continued to struggle, and further recession set in during the early 1880s. Spanish ore was very cheap, and further technological advances in the steel-making process meant that the spathic ores from the Brendons were no longer in demand. The Company decided that its Brendons mines were no longer economic – Colton was closed once again in 1883. With the closure of the mines, the WSMR limped on for a few years, but it was closed by 1898.

At the beginning of the 20th century gales wrecked the harbour at Watchet. The engineer engaged in the rebuilding works was interested in the derelict mines and railway – the steel industry had by now recovered. The Somerset Mineral Syndicate was formed in 1907, the WSMR was re-opened in 1907, and Colton was the only mine to be re-opened. Both the west

Figure 3: Colton Pits: working the west adit in 1908. Iron ore was tipped from the mine tramway wagons into these wooden bins. A light railway then took the ore up the incline (Hole Collection).

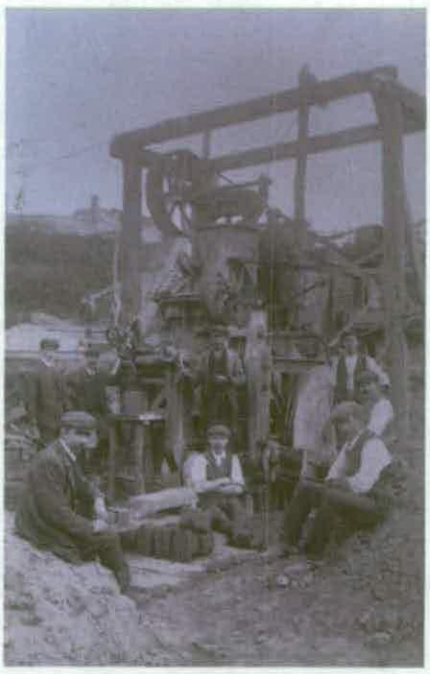

Figure 4: Washford briquetting plant c 1909. The poor quality ore from Colton was made into briquettes before shipping to the blast furnaces in south Wales, but the venture was short-lived (Hole Collection).

and the east adits were cleared. At the west adit, a 'Tangye's Special Steam Pump' was installed underground, with a boiler house at the surface near the west drift (Sellick 1970). The original intention was to link Colton to the WSMR at Comberow by an aerial ropeway. This was never built, instead a narrow gauge tramway was laid along the road (the B2234) to transport ore to Brendon Hill. Although the council were not enthusiastic about this plan, they apparently preferred it to the original scheme to transport ore along the road using traction engines. The ore from the mine was brought out through the west adit in Galloping Bottom, transferred from the mine tramway wagons to ore bins, then into the trucks of the light railway, which transported it up the valley side by an incline (Fig 3) (Sellick 1970; Jones 1998).

The ore obtained from Colton was crumbly and tended to clog the blast furnaces. The Watchet Briquetting Syndicate, formed in 1909, built a block-making plant and kiln near Washford station to process the crumbly ore into a more usuable form (Fig 4). Unfortunately a slump in the steel trade caused the closure of furnaces in south Wales during 1908 to 1909 and only a single trial load of blocks was shipped from Watchet in 1909. Both syndicates were declared insolvent in 1910. This was the last serious mining operation carried out in the Brendon Hills (Jones 1997; 1998).

Early iron ore extraction

The 19th century iron mines on Exmoor were generally sited on areas of much older working. To the west of the Brendons, in the heart of the former Forest, a substantial openwork at Burcombe – the Roman Lode – may date from the early medieval period, and it may well have its origins in the later prehistoric period (Fletcher 1997). On the Brendons many of these earlier workings are now obscured or obliterated by ploughing or by forestry operations. An extensive area of pits and linear trenches around the engine house at Burrow Farm is now much slighted by ploughing; at Kennisham Hill and New Carnarvon Pit coniferous plantations obscure large areas of early workings.

The chronology of any extractive process is difficult to assess, especially from the ground evidence alone. Productive sites would have been worked over many years, thus obscuring or destroying traces of the original workings. In general, the earliest workings comprised pits and linear trenches, exploiting iron ore lodes at or close to the surface. As these reserves became exhausted, the iron ore at a greater depth was exploited. On the Brendon Hills, there is very little in the way of documentary evidence for iron ore mining in the early historic period, and it seems that the later workings date from the 19th and early 20th centuries. The early workings may have their origins in the later prehistoric period, with continued exploitation in the early and later medieval periods. Current research on early iron-working on Exmoor is providing a chronology for iron-working sites on Exmoor. These dates range from the later prehistoric period, through the 6-7th centuries AD, to the 12th and 13th centuries for iron smelting sites (Juleff 2000).

An oak shovel, some broken earthernware, a pickaxe and a turf dam were found over 100 feet below the ground at Colton (Sellick 1970, 11). This was presumably when the east adit was driven and 'ancient workings' were intercepted at about 100 feet below the surface (above). Otherwise there is little written about the early workings at Colton. The tithe map of 1840 shows the area with much the same pattern of land division as exists today. The area that is

Figure 5: Colton Pits: air photograph looking south. This air photograph, taken in 1947, shows the area before the conifers were planted. The extent of the pits can be seen clearly. The large spoil dump, probably the result of the workings in the early 1880s, can be seen at the top left of the picture. RAF photograph from the NMR collection (CPE UK 1980, frame number 332).

now pasture was called 'A New Inclosure, Great Common' and was heath, furze and pasture. It belonged to Holcombe Water Farm. The area which is now wooded, and which contains the pits themselves, was called 'Colton Pits', it was furze and pasture and was part of Colton Farm (SCRO 1840).

The Ordnance Survey 1st edition map shows the 19th century mines. The large spoil dump is annotated with the words 'Colton Pit (Iron Ore) (Disused)' and the spoil dumps associated with the east and west adits are shown. None of the pits are depicted – this is unusual as the early workings at, for example, Kennisham Hill and Burrow Farm are shown. They may have been omitted as each individual pit is relatively small (Ordnance Survey 1888).

ARCHAEOLOGICAL RESEARCH

Colton Pits has received little attention in terms of archaeological investigation. In 1985 the site was recognised and plotted from air photographs (McDonnell 1985). An air photographic transcription was undertaken as part of the RCHME Exmoor Project, when the extent of the site and some individual features were mapped at 1:2500 scale (Crutchley 1999).

THE SURVEY

Survey information was obtained from three sources. The bulk of the site was recorded from ground survey. Dense vegetation meant that some areas could not be investigated on the ground. The RCHME air photographic transcription was used to fill in these gaps. The positions of the 19th century spoil dumps and adit were obtained from the Ordnance Survey 1st edition maps (OS 1888) (Fig 2).

The iron ore extraction pits

The pits lie in three main areas. The largest area runs across the spur for 370 m NW – SE, and is 100 m wide. A narrow strip of pits 30 – 40 m wide runs for 200m NNE – SSW downslope from the main band. A further block of pits lies on the western edge of the spur, on the steep SE edge of Galloping Bottom (Figs 2 and 5).

The pits are fairly uniform in size and shape (Fig 6). They are usually roughly circular in plan, about 8 m in diameter and between 0.8 m and 1.5 m deep. Most have an associated spoil dump. The spoil is generally dumped on the downslope side of the pit, but this is by no means always the case. A particular configuration of spoil occurs in the area to the west of the main trck, where the pits are quite uniform. Many have spoil arranged so that there a flat area, presumably left clear to ease ingress and egress from the pit (Figs 6 and 7). The largest and most impressive pits lie in a band just to the east of the track. These are up to 15 m in diameter and up to 2 m deep with impressive spoil heaps, around 2 m high.

The site shows evidence of having been worked over a period of time, with some pits being dug into the spoil dumps of others. Their general condition – the silting up of the bottoms and smoothness of the spoil heaps – suggests that they are of considerable antiquity.

It is interesting to note that there are very few examples of deep linear trenches or openworks which can occur when many pits are dug to exploit a particular lode. A couple of examples of shallow trenches occur in the centre of the site, and the east shaft appears to have been dug

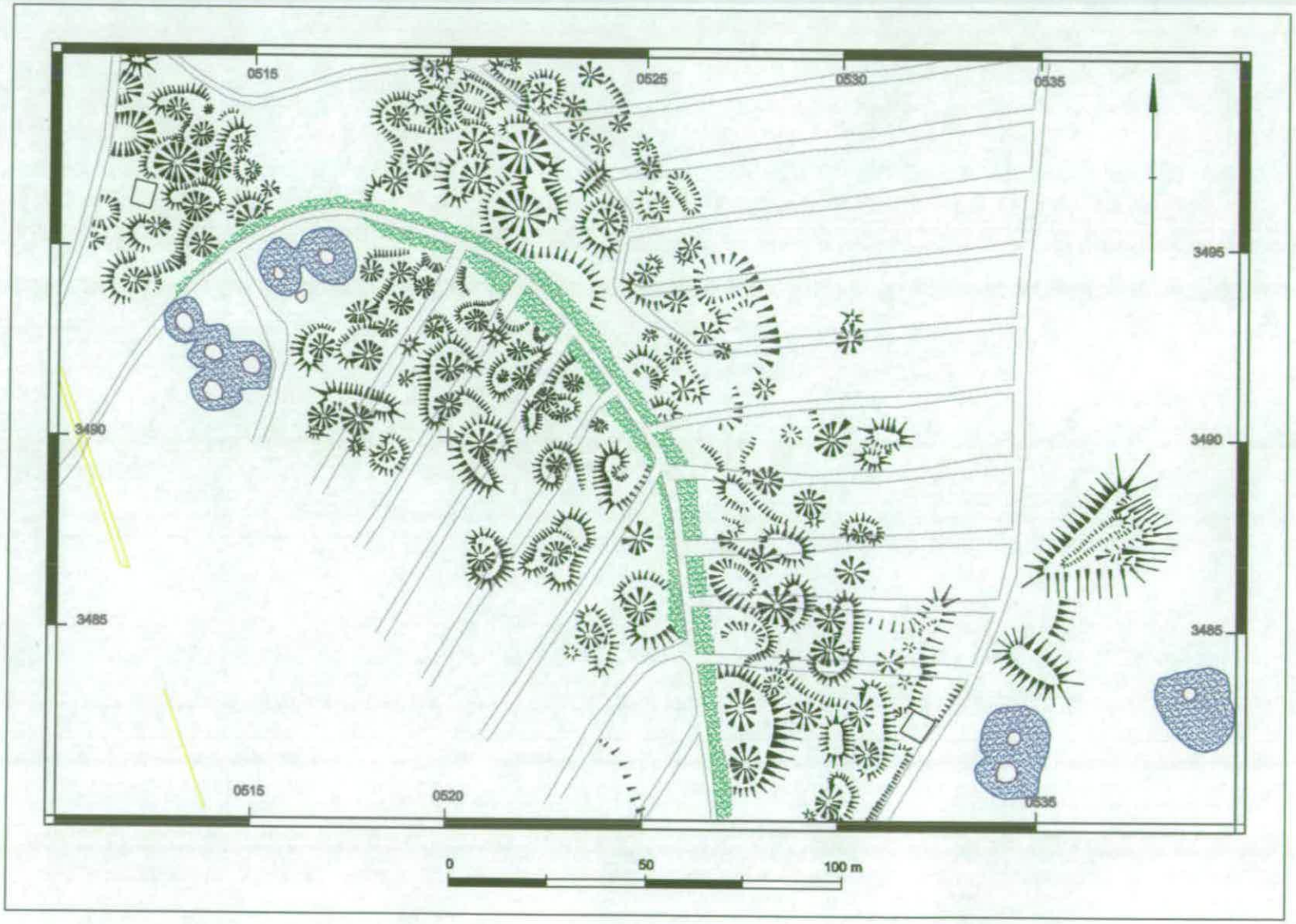

Figure 6: extract from the 1:1000 survey, showing the most complex area of the site (Key as for Figure 2)

Figure 7: Colton Pits: the ranging pole (2m scale) lies across the level area at the mouth of a pit. Similar pits can be seen in the surrounding area.

Figure 8: Colton Pits: extraction pits in coniferous plantation. The extracton pits continue in the dense woodland in the background (photograph by Abby Hunt).

into another shallow trench. This could be the result the conformation of the ore body, or it may be another indication of the antiquity of the site.

Potential working areas

If the pits are, indeed, of considerable antiquity then preliminary ore processing may have occurred close to the extraction areas. A possible such site has been suggested at the head of the Roman Lode, where a wedge shaped area of slight earthworks has no other satisfactory explanation (J Guleff pers comm). Unfortunately, ground conditions at Colton Pits do not allow the identification of slight earthworks. The forestry operations have disturbed the area and pine needles and brashings cover much of the ground (Fig 8). This also means that the identification of, for example, iron ore on the ground is difficult. Three areas are, however, worth considering (Fig 9). At the southern end of the site, a slight scarp defines a clear area, immediately adjacent to two of the largest extraction pits. Another clear area lies to the east of the west shaft. On its NW edge, a slight, isolated mound may be of significance. These areas are unusual precisely because no extraction pits occur in them. The third area lies to the north of the east shaft. Here, a small platform with a few small pits and hollows on it is different in character to the rest of the site. It does, however, lie close to an area of 19th century working (Fig 9).

Nineteenth and twentieth century features

Colton Pits was worked in during two periods in the latter part of the 19th century and again at the beginning of the 20th century (above). The remains of all of these phases of mining can be identified on the ground (Fig 9). The exact location of the east adit could not be ascertained, it probably lies just to the SW of the large spoil dump associated with it. This dump is well preserved and clearly shows tip lines on its top. A further mound is marked on the OS 1st edition, but this has been removed by the construction of the forestry track. There appears to be no traces of the small stores building located at the east adit (Sellick 1970, 54). Two drifts appear to be associated with the east adit. One now remains as a deep, vertical shaft, marked by a fence. The other, apparently that which was so productive in the early1880s, lay between the two large spoil dumps. This area is now covered with brashings and is overgrown. The shaft is marked in this position on the OS 1st edition, but presumably has been infilled.

The remains of the west adit are clear. A deep rectangular hollow in the steep side of Galloping Bottom marks the mouth of the west adit. Here, all the iron ore which was mined in the 20th century operations came to the surface. A long, narrow spoil dump lies to the NE. An open, level area just to the south of the adit is presumably the area where the ore bins stood (above, Fig 3). Here the ore was transferred to the railway trucks for conveyance up the incline. The incline itself shows up well on air photographs (Fig 5). Its course has been plotted from these, and no attempt was made was made to follow it during the current survey: the steep slopes were too overgrown to make this practical (below). The drift associated with the west adit is a deep, vertical shaft, now fenced. It lies in an area of extraction pits. There are no obvious traces of the boiler house for the steam pump (above), it may have been located in a fairly level area to the south of the shaft (Fig 9).

A rectilinear pit with spoil mound is quite sharp and different in form to the circular pits. It lies to the west of the large spoil dump and probably relates to the later use of the site. Two features lie on the eastern edge of the site. They may relate to the 19th/20th century

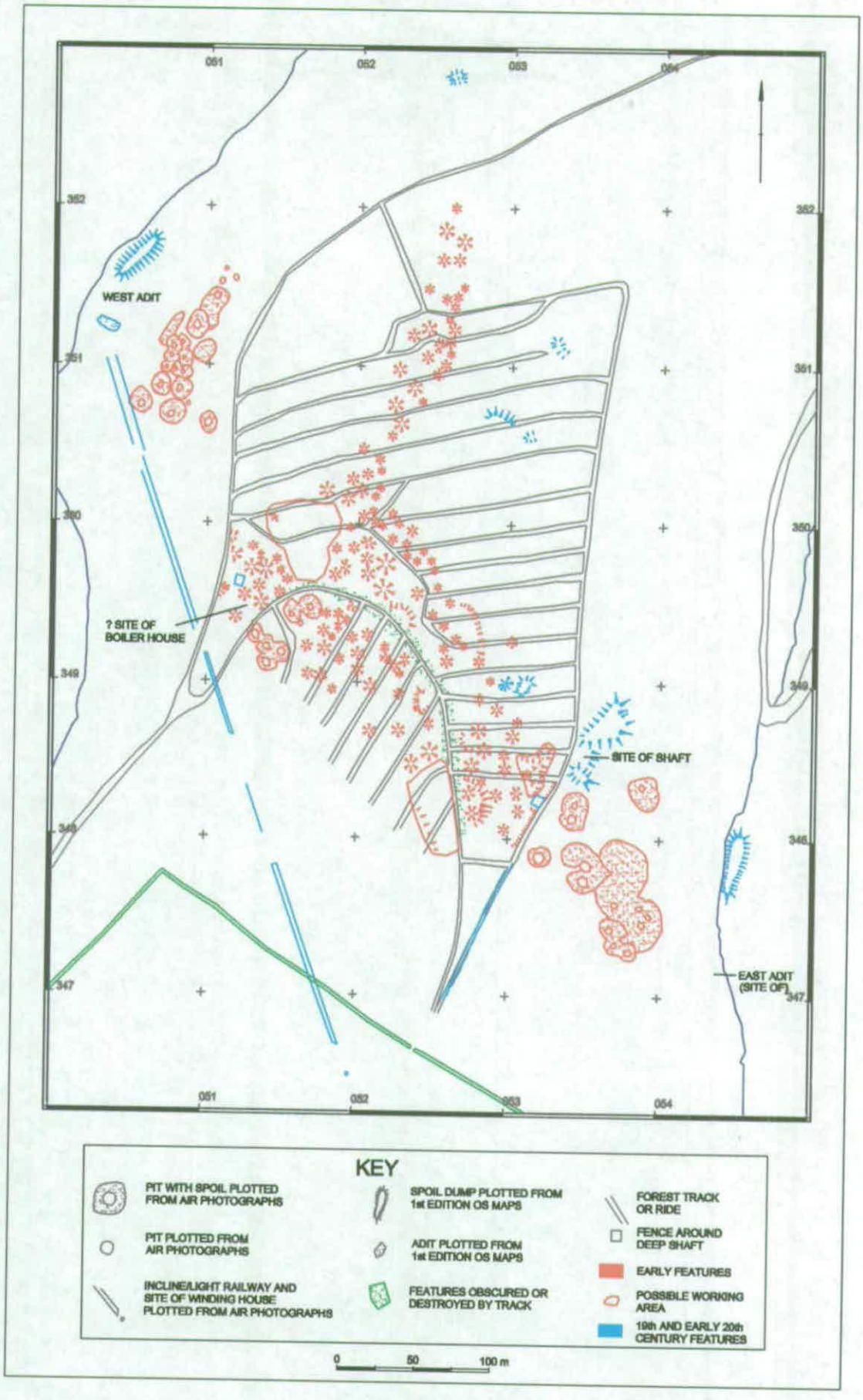

Figure 9: Colton Pits: interpretation plan

exploitation of the site or they may be earlier, although they are different in character to the circular extraction pits. Both comprise linear trenches with spoil mounds; that to the south is obscured with vegetation. A similar feature lies on the northern edge. It follows the line of extraction pits down the slope, but is of a different form.

CONCLUSIONS

The remains of both early and post-medieval iron ore extraction are preserved at Colton Pits. The post medieval mining is well documented, and is of particular interest because it was one of the very latest mining operations in the Brendon Hills. Contemporary photographs add a further dimension to this. The transportation of the ore from the west adit to Watchet, via two inclines, is also of interest.

The earlier remains are potentially of great importance, both regionally within the Exmoor National Park and nationally in the context of the development of metallurgy in this country. Current work on Exmoor (above) is showing that the iron ore reserves were exploited as early as the later prehistoric period, and into the early medieval period (Juleff 2000). The dates are available from smelting sites, as early extraction sites are difficult to date. Some 3 kms to the south of Colton Pits lies Clatworthy Reservoir. The farm of Syndercombe now lies under its waters. During the construction of the reservoir, iron slag in association with Roman pottery was found. Quantities of iron slag were reported south of Syndercombe in the 1930s (NMR nos. ST 03 SW 9, 10). The place name 'Syndercombe', deriving from iron slag, and the later prehistoric hillfort above Clatworthy Wood are both of significance. Colton Pits could well have provided the iron ore for the smelting sites which seem to have been located around the former farm of Syndercombe. Further afield, some 7 kms to the NW, an iron smelting site dating from the 5th – 6th centuries AD has been found (Somerset SMR no. 33449) at Eastbury Farm, Carhampton.

Despite the forestry operations of the latter decades of the 20th century, the extraction pits at Colton Pits are well preserved. This is in contrast to other known early extraction sites on the Brendon Hills (above). Colton Pits appears to be unique on Exmoor. An extensive area of iron extraction remains at Brockwell near Wootton Courtenay was worked as an opencast mine in the 19th century and such remains that are visible in the gorse and bracken are very different in form to the pits at Colton. The potential for an early phase to this site, however, does exist. On the Blackdown Hills, south of Exmoor, extensive areas of iron extraction pits have been recorded (Griffith and Weddell 1996). The excavation of a pit on North Hill Common, near Broadhembury, gave radiocarbon dates which indicate that the nodular iron deposits were being worked in the Roman and/or early post-Roman periods (Devon Arch Soc Newsletter 1997 and 1998, nos. 67 and 68). These early dates for iron ore extraction on the Blackdown Hills emphasise the potential of Colton Pits.

RECOMMENDATIONS

POTENTIAL WORKING AREAS

Careful surface examination after clearing the areas of pine needles and brashings.
Examination of the composition of the small mound in the area east of the western shaft.
Geophysical survey of the areas.

PITS

Auguring to examine depth of silting.

SAFETY

Examine the site of the shaft in between the two large spoil dumps to check if infilled.

Examine the site of the east adit when vegetation allows to check if the adit has been infilled/sealed.

Renew fencing around the whole of the west adit.

THE INCLINE

Examination of the course of the incline when vegetation permits.

SMELTING SITES

Examination of the valley bottoms for smelting sites.

ACKNOWLEDGEMENTS

The Exmoor National Park Authority archaeologist liaised with the land owners and tenants to set up the survey; Somerset Sites and Monuments Record provided information. A 1:1000 earthwork survey of the area is available for consultation in the NMRC, Swindon.

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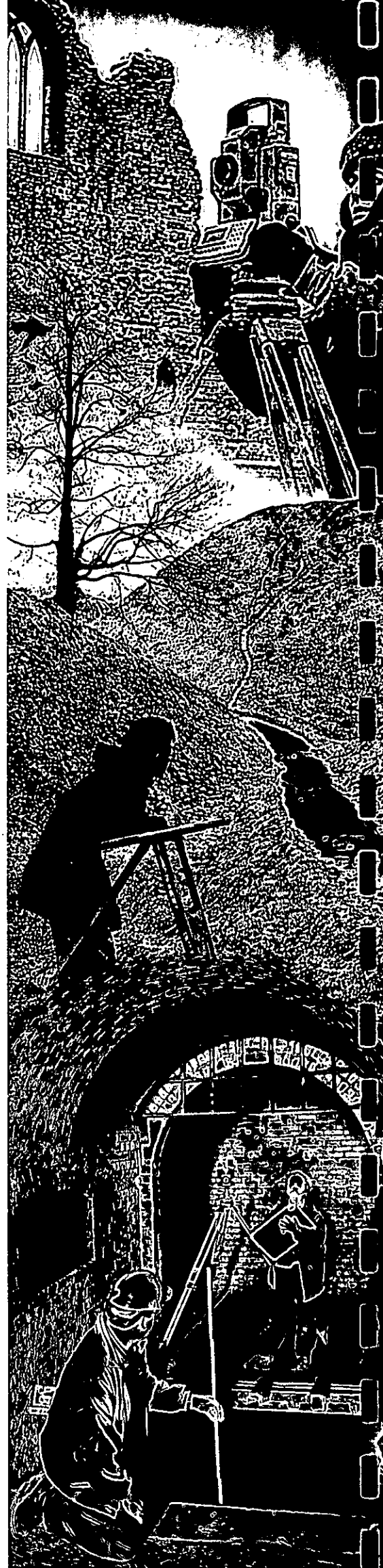
APPENDIX: SURVEY INFORMATION

The survey was carried out in June and July 2000. Control and as much archaeological detail as practical was recorded with a Leica 1610 total station electronic theodolite. The survey was located to the OS National Grid using differential GPS (global positioning system), positioned in clearings by the forestry tracks. The data was processed using Leica SKI software (GPS) and Key Terra-Firma software (EDM) and the survey was finished in the field using graphical methods. The survey drawings were produced using Autocad and Key Terra-Firma software.



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