

Assisa bene recogni et thomas de keshim a Robt de ems in tunc ad diffisio...  
et Robt de ems de lito convento suo in Grinstead de p[ro]prietate et de unde qu[er]it a...  
eos de d[omi]na p[ro]prietate d[omi]ni molend[ar]um aquarior[um] et b[er]ni minere ferr[is] in p[ro]prietate. Et...  
et resp[on]dit p[ro] Robt de ems de m[er]it die p[ro] assisa remaneat. nisi tunc...  
quod p[ro]prietate tunc aliquo tempore b[er]ni tunc p[ro]prietate p[ro]prietate molend[ar]um et non...  
deus ip[s]ius tunc. Et sic quod p[ro]prietate p[ro]prietate de p[ro]prietate molend[ar]um illa p[ro]prietate quod nec ip[s]e Thom[as]  
a Robt de ems et non m[er]it p[ro]prietate de molend[ar]um illis. Et p[ro]prietate convento p[ro]prietate Thom[as] a Robt  
de ems quod p[ro]prietate Thom[as] reparare debet molend[ar]um illa ad tunc s[un]t. et om[n]es p[ro]prietate p[ro]prietate de  
molend[ar]um illis reparare ad op[er]a s[un]t saluo eisdem p[ro]prietate et Robt de ems p[ro]prietate p[ro]prietate de molend[ar]um p[ro]prietate  
m[er]it de p[ro]prietate eisdem molend[ar]um. Et p[ro]prietate de quod ip[s]e Thom[as] concessit p[ro]prietate p[ro]prietate et Robt de ems p[ro]prietate  
quod p[ro]prietate convento s[un]t in Laneyge facienda eisdem novo molend[ar]um quod p[ro]prietate p[ro]prietate  
et Robt de ems in p[ro]prietate villa de Laneyge. quoniam convento amantur solebant facere p[ro]prietate ad p[ro]prietate  
suo molend[ar]um. p[ro]prietate p[ro]prietate p[ro]prietate p[ro]prietate et Robt de ems p[ro]prietate de d[omi]na p[ro]prietate de p[ro]prietate molend[ar]um.



Verdict from the Sussex eyre of 1262 relating to the ownership of an iron mine in [East] Grinstead (The National Archives, JUST 1/912A m17d)

Field Note: Petley Wood, Battle, East Sussex  
Medieval iron at Lavertye, Forest Row, East Sussex  
Abraham Willard  
Ordnance production at Imbhams Furnace  
Evidence of 'Throwing in the Claves': backfilled minepits  
at Horam, East Sussex

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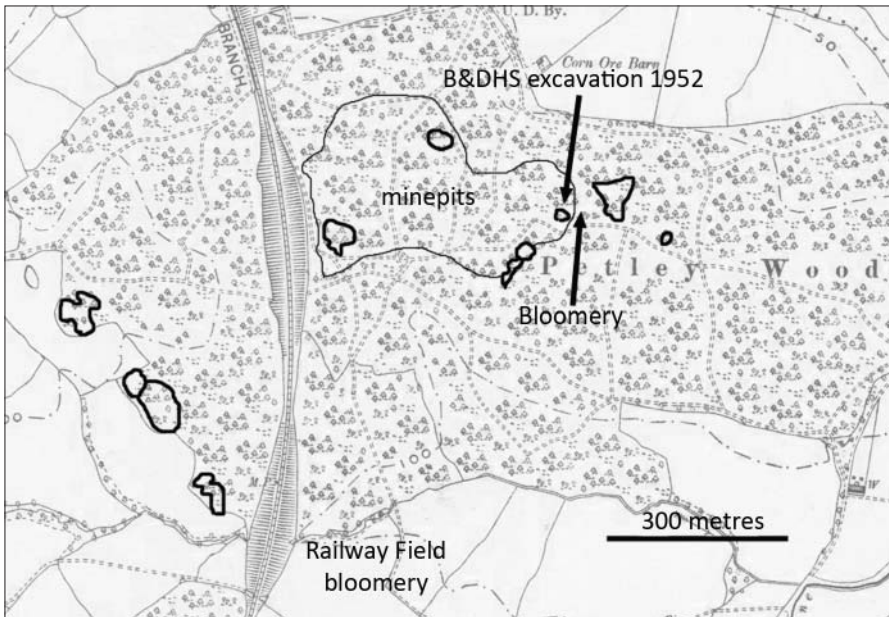


# FIELD NOTES

## Petley Wood, Battle, East Sussex

Robert Turgoose

Petley Wood is about three miles north-east of Battle in East Sussex. The wood formed part of the estate of Battle Abbey from its foundation soon after the Conquest until the dissolution of the monasteries in the 1530s. The centre of the wood is an outcrop of Wadhurst Clay which extends eastward from the railway line which cuts off the western extremity of Petley Wood.



*Figure 1: The western end of Petley Wood, showing large pits and other features; the position of the large pits and the extent of the area of minepits have been identified from a LIDaR survey (based on OS Six inch map, Sussex XLIII, 1899)*

The Battle and District Historical Society (B&DHS) visited Petley Wood in 1952. Their report published in the Transactions of the Society for that year records large and small mine pits, an ore roasting hearth and a flat heap of

roasted ore.<sup>1</sup> A trench yielded 147 sherds of pottery dated to the second and third centuries AD. They also produced sectional drawings of a mine pit and the ore roasting hearth which were not published at the time (Fig. 2). It was not possible with any certainty, after the passage of nearly 70 years, to locate the trench dug by B&DHS or the ore roasting hearth.

WIRG visited Petley Wood in November 2021. An area of bloomery slag, about 50m by 40m, which was evidently not seen by B&DHS, was noted at TQ 7635 1754, close to the edge of the concentration of mine pits. This had first been recorded in 1973 during a field survey by the Royal Commission on Historic Monuments.<sup>2</sup> The slag was on a flat area and the only indication of its depth was where part of it had been removed to leave a water-filled hole some 1.5m deep, the water making it impossible to say whether the base of the slag had been reached. The remains in Petley Wood have been underestimated in the literature. The ore-roasting can now be seen to be associated with the bloomery and the considerable quantity of Roman pottery discovered in 1952, which included Samian and New Forest wares, and featured dishes, platters and cooking pots, must surely lead to the conclusion that a substantial building of that period existed somewhere close by.

A bloomery site lies just outside the south-west corner of the wood in Railway Field.<sup>3</sup> The slag area was found not to have extended into the wood.

In its report the B&DHS suggests that the small minepits, which were evidently dug within a defined, and possibly enclosed, area, were earlier than the large excavations that have been noted in the western part of the wood. Evidence that has accumulated since the 1950s of the methods of ore extraction in the medieval and post-medieval periods, and not least at Horam, reported elsewhere in this volume, suggest that the small pits are likely to be of medieval or post-medieval date.

We are most grateful to the owners of the wood for allowing the Group access.

1. C. H. Lemmon, 'Fieldwork during the season 1952', *Transactions of the Battle and District Historical Society*, 1951-3, 27-9.

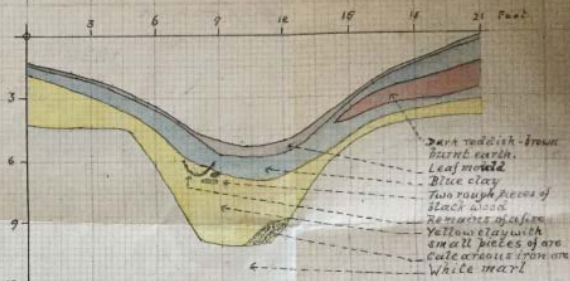
2. Historic England Monument No, 414468, Field Investigator's comments, TQ 71 NE 3, 10 Jan 1973.

3. J. S. Hodgkinson (ed.). 'Field Notes', *Wealden Iron*, 2nd ser., 24. (2004), 2.

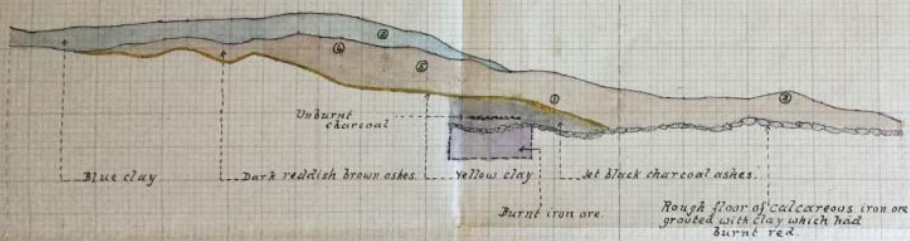
ROMANO-BRITISH  
IRONWORKING AREA  
PETLEY WOOD

Lat. 50°55'48" N Long. 0°30'36" E  
Nat. Grid 5171 764176

Small Mine pit

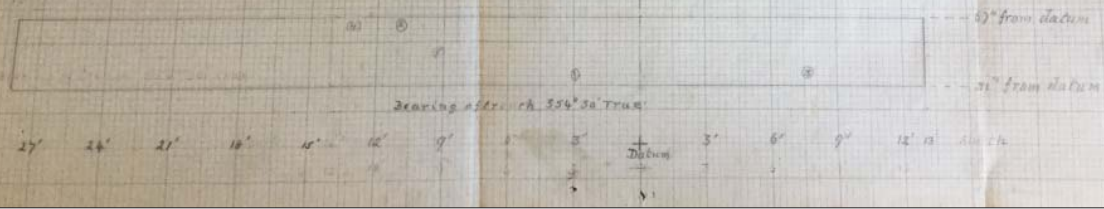


Section of ore roasting site



Pottery finds  
Reference

- ① 2 Pieces Samian 1<sup>st</sup> half I century
- ② Piece of flanged lip of Native pot I century
- ③ Larger piece of Samian 1<sup>st</sup> or 2<sup>nd</sup> century
- ④ 3 Pieces of New Forest ware Black Antiquarian Period 400-450 - End of Roman Period
- ⑤ 25 Pieces of Native Pottery of Roman Period.



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Figure 2: Petley Wood; sketched sections of a minepit and ore-roasting site, 1952 (courtesy of Battle & District Hist. Soc.)

# MEDIEVAL IRON AT LAVERTYE, FOREST ROW, EAST SUSSEX

Geraldine Crawshaw

Lavertye, formerly in East Grinstead, is probably the site of the only *ferraria* mentioned in the Sussex Domesday folios. It has been linked by Salzman to the dispute over an iron mine in 1262.<sup>1</sup> This article attempts to link the 1086 record with that of 1262 in more detail than hitherto covered, by research into the lucrative marriages made by certain Anglo-Norman families and the descent of their land. Details from other documents, maps, Lidar and fieldwork may contribute towards finding further evidence.

The thirteenth-century document, part of which is illustrated on this publication's cover, recorded a verdict given in an assize of novel disseisin heard at the Sussex eyre of 1262.<sup>2</sup> The following translation from the Latin has been made by Anne Drewery.

*An assize comes to give its verdict whether Thomas de Aldham and Isabella, his wife, unjustly disseised Nicholas Malmeins and Agnes, his wife, of her free tenement in East Grinstead [Grenestede] after the first [crossing of the king into Gascony]. And concerning which they [Nicholas and Agnes] complain that they [Thomas and Isabella] disseised them of the third part of two water mills and of one iron mine [minere ferri] with the appurtenances.*

*And Thomas comes and answers for himself and Isabella, his wife. And he says nothing to stop the assize merely that the said Nicholas and Agnes at some time had the third part of the profit of the said mills as Agnes' dower and that by passage of time those mills became utterly ruined to the extent that Thomas and Isabella, Nicholas and Agnes received nothing from them. Afterwards it was agreed between Thomas and Nicholas that Thomas should repair the mills at his cost [ad custum*

1. L. F. Salzman, *Victoria County History of Sussex* vol 2, 241-2.
2. The National Archives, (hereafter TNA), JUST 1/912A m17d.

*suum] and take to his own use all the profits coming from those mills saving to Nicholas and Agnes a quarter part per year of the mulcture coming from the profit of those mills. Besides he says that he, Thomas, granted to Nicholas and Agnes that certain of his tenants in Lavertye should pay suit to a new mill which Nicholas and Agnes had raised in the vill of Lavertye, which tenants from of old were accustomed to pay suit at the aforesaid two mills, for the remission which Nicholas and Agnes made to them of the third part of the said mills.*

*And concerning the third part of the said mine he says that in truth Agnes, in the time of Ralph de la Haye Isabella's first husband, was accustomed to receive at the hands of a servant of the said Ralph the third part of the profit coming from that mine in the name of her dower and that still he grants to Nicholas and Agnes the third part of the profit to be taken at the hands of his servant as often as he chooses to work the said mine [quotienscumque contigerit ipsum in predicta minera aliquid manu operari]. However, he says that he and Isabella after the death of Ralph, her first husband, have never had any profit from that mine. And to prove this [et quod ita sit] he places himself on the assize.*

*The jurors say on their oath that in truth the said Agnes was endowed with the third part of the said mills and likewise with the third part of the said mine. So that whenever the lords who held the two parts of the tenements, of which she was endowed, dug in the mine then she should have by the hands of their servants the third part of the profit coming from the mine or even the third pit [vel etiam terciam foveam]. Also they say, that as for the third part of the mills, that it was agreed between Nicholas, with the assent of Agnes his wife, and Thomas and Isabella that they [Nicholas and Agnes] would grant to Thomas and Isabella whatever was belonging to them of the said mills [in exchange] for the suit of certain of Thomas' and Isabella's tenants to the mill newly built by Nicholas and Agnes. And they were seised of that suit and [in exchange] for one quarter of corn to be taken annually from the mulcture of the said [two] mills.*

*As for the third part of the mine, they say that Thomas and Isabella never, after he had espoused the said Isabella, ever had anything dug in*



*that mine dug nor received any profit from it. Also they say that Nicholas and Agnes ought not to receive anything from that mine by reason of her dower and that Thomas and Isabella, who hold two parts of that mine, should have the profit. In respect whereof they say that Thomas and Isabella did not disseise Nicholas and Agnes.*

*Therefore it is adjudged that Thomas and Isabella go without a day [ie go free] and Nicholas and Agnes are in mercy [ie are to be fined] for a false claim.*

In essence, Nicholas and Agnes Malmeins were claiming a third of the profits from two mills and an iron mine in Lavertye, Sussex, as part of a dower portion to which Agnes was entitled by reason of her previous marriage. Thomas and Isabella de Aldham, the lords of the remaining two thirds of that estate, claimed the mills were in a state of decay, making no profit, and that after the death of Isabella's first husband, Ralph de la Haye, no iron ore had been mined and no iron produced. An agreement was made that Thomas and Isabella should repair the mills, allowing a quarter of the profit of the mulcture (the fee for grinding corn) to go to the Malmeins and Nicholas and Agnes would receive the entire profit from their newly-built mill in Lavertye. Any profit from future iron working would go to the de Aldhams.

It is necessary to look at the people mentioned in this document, their wider family relationships and their ancestry to show why Lavertye iron is so important.

Agnes, the wife of Nicholas Malmeins, was claiming the dower (third) portion of her inheritance from her former husband, William de Montacute.<sup>3</sup> Later, she is named as Agnes de Monte Acuto, at one time holding a tenement in Lavertye, in a fine between Thomas de Monte Acuto and Richard of Pevensey levied at the Sussex eyre in 1279.<sup>4</sup>

3. G. Baker, *History and Antiquities of The County of Northampton* 1, (J. B. Nichols & Son, 1822), 434. Here a date of 1234/5 is given for a grant to the Prior and Convent of Daventry from William de Montacute for the health of his soul and that of his wife Agnes. Baker gives a version of the genealogical tree for the Montacute, Etchingham, Aldham and St Clere families..

4. L. F. Salzman (ed.), *An Abstract of Feet of Fines for the County of Sussex 1249-1307*, (Lewes, Sussex Record Society (hereafter SRS) 7, 1908) no. 893. Thomas de Monte Acuto is from a different branch of the Montacute family..

The children of Agnes and William de Montacute were Margaret/Margery and her younger sister Isabella, named as co-heiresses of their father who had died by 1239.<sup>5</sup> Margaret had married William de Etchingham by 1245, though he died before 1253, and she was dead by 1257 leaving Isabella as her sole heir.<sup>6</sup> Isabella married Ralph de la Haye in about 1252 but he died before 1254.<sup>7</sup> The next year she paid 200 marks to the king in order to be allowed to marry a husband of her choice.<sup>8</sup> This was Thomas de Aldham, a loyal supporter of the king.<sup>9</sup> Their children were Baldwin, William and Joan.<sup>10</sup>

When Thomas died in about 1275 Isabella took as her third husband Richard of Pevensey, steward of the Honour of l'Aigle.<sup>11</sup> He managed the Honour for Queen Eleanor, Edward I's mother. Richard became notoriously unpopular for the misuse of his office, taking bribes, exacting unlawful fines etc. though he was appointed Sheriff of Sussex from 1285-1287.<sup>12</sup> Nicholas Malmeins had also held the stewardship of this honour before 1250 and had

5. *Fine rolls 42 Henry III*, membrane 12, no 80 [accessed <https://finesrollshenry3.org.uk>]; G. Baker, op.cit., 369, 370; L. F. Salzman, 'Some Sussex Domesday Tenants 1', *Sussex Archaeological Collections* (hereafter SAC), 57 (1915), 174. This reference is given to show Agnes' actions to claim dower in her late husband's estates in 1239.

6. *Patent rolls of the reign of Henry III*, (PRO 1901) 469; *Calendar of Inquisitions Post Mortem Vol 1, Henry III* (HMSO 1904) 74-80, no 287; *Fine rolls 42 Henry III*, membrane 12, no 80, 81; [https://finerollshenry3.org.uk/content/calendar/roll\\_055.html#d66779e18879](https://finerollshenry3.org.uk/content/calendar/roll_055.html#d66779e18879).

7. SRS, 7 no 518. This fine, dated 1251, shows that Ralph de la Haye was still married to his previous wife Eustachia at this date; *Fine rolls 38 Henry III*, membrane 5, no 620; *Calendar of Inquisitions Post Mortem, vol 1, Henry III*, 74-80, no 291 Ralph de la Haye.

8. SAC, 57, 176; [https://finerollshenry3.org.uk/content/calendar/roll\\_052.html#d314964e28289](https://finerollshenry3.org.uk/content/calendar/roll_052.html#d314964e28289) no. 332.

9. W. Page, (ed.) *The Victoria County History of Sussex*, 1 (1905) 588. The Royalist side at the Battle of Lewes in 1264 included Thomas de Aldham; W.H. Blaauw, 'Inquests concerning the rebels of Sussex after the Barons' War' SAC, 6 (1853), 219. Lands of rebel barons that were possessed by Thomas de Aldham as one of the faithful are given.

10. *Calendar of Inquisitions Post Mortem* (hereafter *Cal IPM*), vol 2, Edward I, (HMSO 1906) 112-118, no 195; *Cal IPM, vol 7, Edward I*, (HMSO 1909), 1-10, no 5.

11. *Cal IPM, vol 7, Edward I*, 112-118, no 193, Thomas de Aldham; SAC, 57, 176; SRS 7, no 893.

12. W. Hudson, 'The Hundred of Eastbourne and its Six Boroughs' SAC, 42, (1899) 185-186

been accused of mismanaging the accounts.<sup>13</sup>

These were wealthy families, often battling in the courts for every penny and piece of land they believed to be rightfully theirs. That Lavertye, with its iron mine, ever came into the hands of Isabella and Thomas de Aldham is quite a story and shows that while families were disputing lands and property, concerns such as corn mills and iron works could easily fall into periods of dilapidation.

The story begins nearly 200 years earlier with the apportionment of lands following the Norman Conquest when Count Robert of Mortain, half-brother to King William, became tenant-in-chief of most of the land in the Sussex rape of Pevensey plus large areas of Somerset, Devon, Cornwall, Northamptonshire, Yorkshire and Essex; in total 994 estates. Mortain's 'butler', his chief retainer or steward, was Alvred Pincerna (possibly a Breton) who received lands in eleven counties including Montacute in Somerset and large areas of Pevensey rape.<sup>14</sup>

Alvred, who lived to 1103, married Emma, daughter and heir of Ralph de Dene, another major land-holder in Domesday Sussex.<sup>15</sup> Their sons were Ralph Pincerna de Dene and Robert, William and Richard Pincerna. Robert Pincerna married Seburgis or Sibil the daughter and heir of Ansfrid, yet another wealthy Domesday tenant of Mortain. Ansfrid is associated with two places before the conquest and 33 after. The majority of his 14 estates in Sussex were passed on to the de Dene family. Using information from several charters (mostly of Lewes Priory) and grants of land it can be shown that an amalgamation of 15½ knight's fees from the holdings of Alvred Pincerna, Ralph de Dene and Ansfrid fell to the sons of Alvred, and the bulk to William fitz Alvred.<sup>16</sup> He was recorded as an official in Pevensey in 1130. The estates

13. TNA, JUST 1/909A, Pleas of Juries and Assizes, Sussex Eyre at Lewes 1248.

14. Brian Golding, 'Robert of Mortain' in M. Chibnall (ed.), *Anglo-Norman Studies 13* (Boydell Press, 1990) at p136: [https://www.google.co.uk/books/edition/Proceedings\\_of\\_the\\_Battle\\_Conference/tu4Eu5ozEVIC?hl=en&gbpv=1&dq=%22alvred+pincerna%22+%22probably+a+breton%22&pg=PA136&printsec=frontcover](https://www.google.co.uk/books/edition/Proceedings_of_the_Battle_Conference/tu4Eu5ozEVIC?hl=en&gbpv=1&dq=%22alvred+pincerna%22+%22probably+a+breton%22&pg=PA136&printsec=frontcover;); A. Powell-Smith, <https://opendomesday.org/name/alfred-the-butler/>.

15. British Library, Add MS 4936, fol. 17r.

16. K.S.B. Keats-Rohan, *Domesday People: a Prosopography of Persons Occurring in English Documents 1066-1166* Volume 1 (London, Boydell Press, 1999) 144, 155; my thanks to Jeremy Clarke for this reference; J. P. Fearon 'Nyland and Holland in Balcombe with notes

William inherited included Lavertye from Ansfrid and the neighbouring manor of Brambletye from Ralph, both in the Hundred of East Grinstead.

The son of William fitz Alvred, Richard fitz William, or Richard de Montacute as he styled himself, lived from c. 1136 to 1196. He married Isabel de Warenne and left two sons, John and William Montacute.<sup>17</sup> John, the elder son, inherited most of the Montacute lands in Sussex and Northamptonshire and in about 1200, as owner of the Lavertye estate, he arranged for his mother to have a private chapel built there.<sup>18</sup> John married Lucy de Bohun. Their daughter, Katherine, became the subject of a Montacute family scandal. Her father denied all knowledge of having a daughter and wanted his brother William as his heir. A series of disputes followed the death of John de Montacute in 1228, with his brother William and his daughter Katherine each claiming to be the rightful heir and Lucy attempting to claim her dower third of the vill of Jevington, Brambletye and Lavertye in Sussex. William de Montacute took over many of the Sussex estates and, despite three marriages and many disputes fought by her husbands, Katherine de Montacute died in 1244 with matters unsettled.<sup>19</sup>

Thus it was that Margaret and Isabella, Katherine's two cousins as daughters of Agnes and William Montacute, inherited the estates and by 1257 Isabella had become the sole heir.<sup>20</sup> In 1244 she was still under age and a royal ward. In 1247 the king granted her wardship to Stephen de Salines and in 1249 Salines sold it to her mother Agnes de Montacute who was already married to Malmeins by this date.<sup>21</sup>

Isabella de la Haye (taking her first husband's name as was the custom)

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on old military tenure of land by knight service', *SAC*, **12**, (1860), 143..

17. *Curia Regis rolls of the reigns of Richard I and John preserved in the Public Record Office* vol 1, (1922), 121.

18. L. F. Salzman, *The Chartulary of the Priory of St Pancras, Lewes*, Part 1, *SRS*, **38**, (1932), 76.

19. L. F. Salzman, 'Some Sussex Domesday tenants', *SAC*, **57**, 169-175; E. Byford, *Forest Row Historical Aspects and Recollections*, vol 4 part 3, 14.

20. *Patent Rolls of the reign of Henry III preserved in the PRO*, vol 1, (1901), 469.

21. *op. cit.*, 503; *Patent Rolls of the reign of Henry III preserved in the PRO*, vol 2, (1903), 42; L. F. Salzman, *An Abstract of Feet of Fines for the County of Sussex, vol 1, 1190-1248*, *SRS*, **2** (1903), no 506.



died in 1285 when her son Baldwin was 23.<sup>22</sup> His brother William was already dead, so he became sole heir to the Montacute lands. Baldwin married Nicholaa de Wintershull who when widowed became a very wealthy land-owner with much land in Sussex. The three earliest subsidies (in effect taxes) for Sussex in 1296, 1327 and 1332 all show her paying larger than average sums of money to the king.<sup>23</sup> Land held by Nicholaa is listed in the assessments relating to feudal aids in 1302-1303. This included 13 fees listed under the parent manor of Jevington, half a fee held in 'Laverketye' in the Liberty of Leicester, all in Sussex, and two fees of the former Mortain lands in Northamptonshire.<sup>24</sup>

In the Domesday Book of 1086 amongst the entries for the Hundred of Grinstead is an unnamed estate:<sup>25</sup>

*Ansfrid holds 2 hides less 1 virgate from the Count outside the Rape. King Edward held them: they lay in the [lands of the] Manor of Ditchling. They did not pay tax. Land for 6 ploughs. From the woodland and grazing 6 pigs; meadow 1 acre; a forge [una ferraria]; 6 villagers [villani] with 2 ploughs. Value before 1066 15s, now 20s.*

This is the only Domesday record of a *ferraria* in Sussex. In the quotation above Morris translated *ferraria* as 'a forge' and Latham<sup>26</sup> defines *ferraria* as 'a smithy or a forge'. However, the online *Dictionary of Medieval Latin from British Sources* translates *ferraria* as 'an iron-mine'.<sup>27</sup>

Following Salzman's suggestion, P. D. Wood gave convincing evidence

22. *Cal IPM* vol 2 Edward I, (HMSO 1906) 339-348 no 571, Lady Isabel de la Haye.

23. W. Hudson, *The Three Earliest Subsidies for the County of Sussex, 1276, 1327, 1332*, SRS, **10** (1910). The subsidies record names of those contributing to the tax on moveables, the earliest form of general taxation. In 1296 Nicholaa de Aldham paid 19s 3¼d in the Liberty of Leicester. In 1327 she paid a combined total of 23s 6d in the 'villats' of Exete, Tarring and Jevington. In 1332 Nicholaa paid a total of 36s 1d for Jevington, Heighton and Sheffield.

24. *Inquisitions and assessments relating to feudal aids with other analogous documents preserved in the Public Record Office, AD 1284-1431 Northampton to Somerset* (HMSO, 1899) 130, 132.

25. J. Morris, *Domesday Book: Sussex* (Chichester, Phillimore, 1976), 10, 22c.

26. R. E. Latham, *Revised Medieval Latin Word-List* (Oxford University Press, 1965).

27. *Dictionary of Medieval Latin from British Sources*, <http://www.dmlbs.ox.ac.uk/web/online.html>.

that the unnamed holding in Grinstead Hundred was Lavertye and that in 1086 it would have contained at least 680 acres including woodland.<sup>28</sup> The small manors of Tablehurst (*Tavelhurst* - perhaps disputed woodland<sup>29</sup>) and Pixton (*Picstones*) were created out of Lavertye at a later date.<sup>30</sup> This indicates that the Domesday holding is in the same estate as the Lavertye iron mine of the Montacute dispute in the mid-thirteenth century, retained by the same family.

The Wealden Iron Research Group acknowledged the importance of this in the 1990s and forays took place to locate the Domesday *ferraria*. Only three bloomeries have been recorded so far on Lavertye land: Pixton House - scatter of undated bloomery tap slag TQ 440351; Wickwood 2 - undated bloomery close to a stream just inside the eastern Lavertye boundary TQ 451 363; Tablehurst - damaged bloomery furnace found 1m below the surface in digging a modern farm reservoir. Dated from a charcoal fragment to 360 BC -AD 30. This is close to the western edge of Lavertye, beside the ancient trackway from the Cansiron ridgeway heading south to the Medway. An extensive mine pit can be seen across the old track north west of this site (TQ 4298 3559). Perhaps re-working of ore?

To be recorded in Domesday Book this *ferraria* must at some time have been producing a valuable, taxable resource. The estate would have been producing a surplus of iron needing organization for its distribution and a communication network. The location of an iron production site would depend primarily on the source of raw materials (iron ore, wood/charcoal) and a transport route, by land or river. Proximity to a settlement site would be a secondary consideration. The produce of an iron mine is the ore, which would normally be smelted into blooms of iron and possibly forged on the same estate.

One theory could be that blooms from different sites were consolidated and transported from a single location. Agnes Montacute/Malmeins seems to have formerly been offered a third of the profit from iron production or

28. P. D. Wood, 'East Grinstead in the Domesday Survey', *Bulletin of the East Grinstead Society*, 58 (1996), 10.

29. A. Mawer and F. M. Stenton (ed.), *The Place Names of Sussex part II*, (English Place Name Society, 7, 1930), 329.

30. M. Leppard, *A History of East Grinstead* (Chichester, Phillimore, 2001), 7, 8.

the third pit dug.

Lavertye land was originally within the Saxon King Edward's mid-Sussex estate extending north from Ditchling and the deposits of iron ore here would have been valuable to the crown.<sup>31</sup> Its thirteenth-century extent may never be precisely known but it seems likely that the northern boundary ran along Cansiron Ridge, the western boundary followed the ancient north-south track from Dry Hill to the Medway and beyond and the eastern boundary was formed by a stream marking the old East Grinstead Hundred boundary (Fig. 1).

The southern boundary of Lavertye was assumed by Wood to follow the River Medway, with the settlement centre at Ashdown Farm (TQ 4447 3580).<sup>32</sup> However, parts of Lavertye are recorded south of the river, extending at least to the old west/east route (now B2110).<sup>33</sup> The earliest available maps of Sussex, Norden (1595, Fig. 2), Speed (1611), Blaeu (1645) and Morden (1695), all show the position of 'Labor Tye' south of the Medway and on the northern edge of Ashdown Forest, in the area currently known as Rystwood (TQ 4406 3452). The medieval form of the name 'Laverketye' means a lark-frequented enclosure.<sup>34</sup> The Lidar map for the area (Fig. 3) shows extensive pits both on the Wadhurst Clay and Ashdown Beds.

The Fraternity or Brotherhood of St Katherine based in East Grinstead is known to have held land in the Lavertye and Rystwood area of Forest Row. It is possible that some of the iron ore pits were due to an interest they had in exploiting iron resources. Little is known about this particular Brotherhood but they were formed before 1419, a group of men and women promoting religion, charity and also contributing to the local economy through trade, agriculture and rents.<sup>35</sup> On Lavertye land just north of the

31. Heather Warne (personal communication).

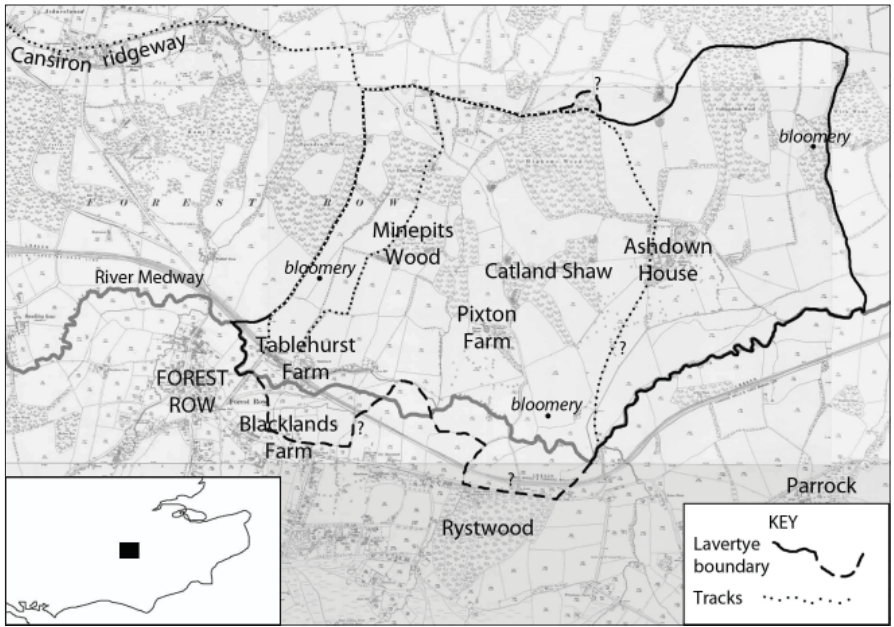
32. Wood, 'East Grinstead in the Domesday Survey', 10.

33. C. J. Hobbs, 'The manors of Maresfield and Duddleswell in East Grinstead', *Bulletin of the East Grinstead Society*, **62** (1997), 6.

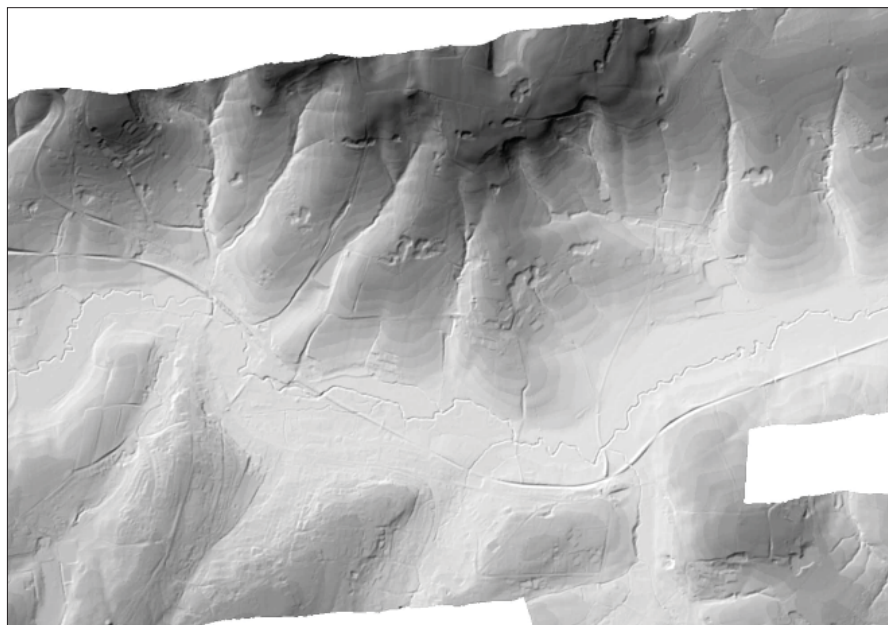
34. Mawer and Stenton, *The Place Names of Sussex part II*, 329.

35. J. E. Ray, *Sussex Chantry Records*, SRS, **36**, (1930), 140.

**(Facing page, top) Figure 1: The Lavertye area**  
**(Facing page, bottom) Figure 2: John Norden, Map of Sussex (detail), 1595**







*Figure 3: Lidar plot of the area shown in Fig. 2*

Medway is a woodland containing large mine pits named Catland Shaw (TQ 44153580) still identifiable on the OS map of 1887-1880. The surrounding fields were called Great, Middle and Little Catherine Land at the time of the East Grinstead title map, apportionment numbers 631, 632 and 633.<sup>36</sup> By the 1990s these fields had become amalgamated into one enclosure called Catspiece.<sup>37</sup>

In about 1550 Sir Richard Sackville purchased the lands of the Fraternity of St Katherine after its dissolution.<sup>38</sup> A part of this included lands held by Sackville Turner called Hurts and Oldlands between the River Medway and the 'waie from Forest Row to the Forest of Ashdown'.<sup>39</sup> Land on the east and south sides of the present road had also previously belonged to the Fraternity.

36. Tithe maps for East Sussex, Brighton and Hove (accessed from [esc.mapsarcgis.com](http://esc.mapsarcgis.com)).

37. C. Richmond, *A History of Ashdown House* (1991), 4.

38. E. Straker, *The Buckhurst Terrier, 1597-1598*, SRS, **39**, (1933), 18.

39. op. cit., 58 and map page XXXVIII, map 250.138.

William Norman, the keeper of Broadstone Walk in Ashdown Forest, leased 'The Lines' (Lines Farm) and 'The Reist' (Rest Hills, Ristwood), a total of 92 acres, in 1597-1598. Two other keepers were renting former Fraternity lands: John Fourde held 35 acres and Thomas Pepper 32 acres, both on yearly tenancies.<sup>40</sup> As early as 1560 Sir Richard Sackville is known to have been taking iron ore from Rest Hills and sending it to his furnace at Sheffield.<sup>41</sup> His son, Sir Thomas Sackville, purchased the Lavertye estate in 1591.<sup>42</sup> In 1571 he leased out the manor house and demesne land of the manor of Parrock, which included an iron forge on the Medway (TQ 45653577) in Hartfield parish just 0.5 km east of the Lavertye boundary.<sup>43</sup> It is interesting that the WIRG site database records five bloomeries at Lines Farm in Hartfield.

Exploitation of iron ore in this area after the thirteenth century has been considered in order to demonstrate that present day research is not dealing with a fossilised landscape but with a dynamic landscape which changes over time.

If the Lavertye estate did extend both north and south of the river, other locations exist which hint at iron-working in the landscape. An area south of the Medway, opposite Tablehurst, is still known as Blacklands Farm, an interesting name since the Roman ironworks a few kilometres to the north-east (Great Cansiron) were known as Blacklands. Further downstream, again on the south side of the river, was a Mineral Mead numbered 602 on the East Grinstead tithe map. On the far eastern boundary of Lavertye manor, near to the former cross roads at TQ 4428 3473 was a Smethes Mead mentioned in a document of 1553.<sup>44</sup> Hammer Grove, 703 on the tithe map, immediately south of Minepits Wood, has previously been noted by Brian Herbert.

The descent of land in Lavertye from Domesday through to the thirteenth century and later can be proved, although as yet no single site has been identified that has produced evidence of working in Saxon/Norman times and the later medieval period. The estate was certainly well served by north-

40. op. cit., 58

41. East Sussex Record Office (hereafter ESRO), SAS/G 6/50; see also J. Brent, 'A Dispute over iron ore between two county grandees', *Wealden Iron*, 1st ser., **11** (1977).

42. SRS, **39**, 19.

43. ESRO, SRL 7/3 (28 June 1571).

44. ESRO, SAS/G 6/6/10 (12 Oct 1553).

south and east-west routeways as well as the potential for water transport downstream.

Further fieldwork is ongoing to find the elusive Domesday *ferraria*, but has been expanded to examine iron production within a landscape perspective. This partly involves searching for old route-ways, including the transportation tracks of iron ore from mine pits to a bloomery or consolidation site. Such a location may have been subject to geographical inertia: Domesday to thirteenth century iron production may have continued in the same place despite other variables changing such as the distance ore was carried and the direction of the market.

# ABRAHAM WILLARD

*Maureen McLeod*

The Willard family played an important role in the iron industry in Tonbridge during the latter part of the sixteenth century. David Willard was perhaps best known as an iron master but his sons Edmund and Abraham also worked in the industry. This article looks at the life of Abraham Willard.

Although there is no surviving record of Abraham's birth he and his brother Edmund are referred to as the sons of David Willard in an indenture dating from 1570.<sup>1</sup> In this document John Collyn of Leigh appointed the Willards as trustees in an arrangement to ensure that his daughters Anne and Ethelreda benefited from certain properties that he owned. Their role as trustees indicates that they were adults and must therefore have been born by the 1550s.

Although relatively little is known about Abraham's life a number of documents survive which do provide some information. It is known that, like his father, Abraham worked in the iron industry. He is named in inventories produced for the Crown of iron works and iron masters. In 1588 he, and his brother Edmund, were at Sir Thomas Fane's furnace called Bournmill (or Vauxhall) near Tonbridge. This produced iron sows but no ordnance. For several years both men had also leased Barden furnace in Tonbridge which produced ordnance rather than sows. Both Abraham and Edmund are recorded as still occupying Barden furnace in 1590 but this is the last known reference to Abraham in connection with the iron industry.<sup>2</sup>

Shortly afterwards he appears in the records for the Kent Quarter Sessions. On 10 September 1606 he and Thomas Iden provided sureties for a William Willard of London, who seems to have been Abraham's nephew.<sup>3</sup> Previously

1. Kent History Centre, Maidstone (hereafter KHC), U908/T16/19.

2. [www.kentarchaeology.org.uk/research/transcriptions/casting-iron-ordnance-late-16th-century/3inventory-iron-working-masters](http://www.kentarchaeology.org.uk/research/transcriptions/casting-iron-ordnance-late-16th-century/3inventory-iron-working-masters); see also J. S. Hodgkinson, 'Ironworks in late-16th century Kent', *Wealden Iron*, 2nd ser. **24** (2004), 6-16.

3. KHC, QM/Src/1606/228; The National Archives (hereafter TNA), PROB 11/139/438, Will of William Willard of Tonbridge, 1621.



in September 1599 Abraham and Thomas Iden, together with two other men, had been accused of an unlawful assembly.<sup>4</sup> Sadly the records do not provide more detail about the circumstances and outcome. In both Abraham is described as a gentleman which shows that he had a certain standing in the local community and presumably commensurate wealth.

In 1613 Abraham leased Priory House farm from the Earl of Clanricarde.<sup>5</sup> The indenture shows that the farm comprised 121 acres and in addition Abraham leased a further twenty-five acres from the Earl, at least some of which bordered Priory farm. There was also a farm house, known as the Priory House, which lay on the site of the former Tonbridge Priory. The site is now occupied by one of the car parks serving Tonbridge railway station and no trace of the former priory or farm house survives. It is not clear if the farm house had been adapted from one of the former priory buildings, such as the abbot's lodging, or built after its dissolution, possibly using stone from the priory. The indenture mentions a pigeon house that lay within the priory site and Abraham was given permission to demolish this if he wished. It is also likely that he inherited from his father a share in two properties in the town of Tonbridge, the George Inn and a house, which were the subject of a 1639 Chancery law suit, by which time Abraham was dead and the property in question had passed to his grandson John.<sup>6</sup> In this case Abraham would have received a share of the rental income from these properties which was supplemented by his farming activities.

Abraham's wife Alice predeceased him and was buried at Tonbridge on 12 September 1616.<sup>7</sup> Abraham made his will on 23 January 1622/3. He was then close to death and was buried on 21 March 1622/3 at Tonbridge.<sup>8</sup> In the burial register Abraham was dignified by the appellation of 'Mr' which showed his

4. KHC, QM/SRc/1599/168

5. KHC, U38/T8.

6. TNA, C 6/138/222. See commentary by Dr. C. W Chalklin in the appendix to 'Some title deeds relating to Tonbridge town and parish, 1473-1869', for the Kent Archaeological Society, [www.kentarchaeology.ac/Records/KRNS5-1.pdf](http://www.kentarchaeology.ac/Records/KRNS5-1.pdf). The position is not entirely clear though and information from another law suit suggests that the properties were originally owned by William Willard and not David Willard.

7. Burial register for Saint Peter and Paul, Turgoose, R., 3 Tonbridge, KHC, P371/1/A/3. So far it has not been possible to find the record of their marriage.

8. *op.cit.*

perceived status in the town. Abraham made a number of bequests, with the majority being to family and godchildren. Ten shillings was given to the poor of Tonbridge and his servant John received his doublet and venetians, which were a form of breeches.

There were specific bequests of certain possessions and items of furniture. For example, Abraham's married daughter Susan was left the feather bed, bolster and bed sheets in the 'new chamber.' Abraham's unmarried daughter Alice received a flock bed with bolsters, blankets, sheets and pillow cases together with chests, boxes and table ware. She was also left a pewter chamber pot. Abraham made provision for Alice's future and his son David was charged with her maintenance. However, if this arrangement was not deemed to be satisfactory, her sister Susan or some other person was to look after her. Most of the table ware mentioned was pewter but a silver salt, silver cup and coloured pot with a silver footing is listed which had apparently all belonged to Abraham's wife. Two of Susan's daughters were left a silver spoon. There were cash bequests to Alice of £15 and to his son John of £1. The residue of the estate was left to Abraham's son David, who was to be the sole executor.

The probate inventory, which would have itemised all Abraham's possessions, has unfortunately not survived. However, the impression given by the will is of a testator with a number of possessions and a well-furnished house. Abraham is described in the will as a husbandman although in the court papers of 1599 and 1606 he had been recorded as a gentleman. Perhaps at the end of his life Abraham chose to identify as a free tenant farmer. Perhaps the appellation was chosen by John Hooper the Tonbridge notary who appears to have drawn up the will.

It is intriguing that Abraham seems in the latter part of his life to have chosen farming over iron working. It was of course possible to combine both, and Abraham's father David owned land and is described in several documents as a husbandman. Of course, the opportunity to continue as an iron master may not have been there but it does appear that in the end the land and not iron working claimed Abraham.

# ORDNANCE PRODUCTION AT IMBHAMS FURNACE: Separating fact from fiction

*J. S. Hodgkinson*

## **The Tudor Period**

A number of unsubstantiated assumptions have been made about Imbhams Furnace in Chiddingfold, Surrey. The first of these is that it was the “new furnace sett upp in Haselmoore by my L. Montague” in the list of ironworks that followed the declaration by Christopher Barker in 1574.<sup>1</sup> That Viscount Montague’s furnace was in Chiddingfold is made evident in the draft responses to a letter sent by the Queen’s Council to Sir William More and Sir Thomas Browne in August 1576, requesting certain information about the ironworks operating in Surrey at that time.<sup>2</sup> The details given state that Montague’s furnace had been in operation for no more than three years and that neither ordnance nor round shot had been cast there.<sup>3</sup>

However, two furnaces have been recorded in Chiddingfold - Imbhams and West End - and it cannot be stated unequivocally which was Lord Montague’s. The manor of South Imbhams had been acquired by Thomas Quynell in 1568<sup>4</sup> and Cooper, writing in 1900, stated that Montague had built his furnace on land leased from Quynell, but he quoted no source for this assertion.<sup>5</sup>

The first mention of Imbhams Furnace, by name, is in a recognizance

1. The National Archives, Kew (hereafter TNA), SP 12/95/20 f.48.
2. Surrey History Centre, Woking (hereafter SHC), 6729/13/23.
3. SHC, 6729/11/45/1.
4. H. E. Malden (ed.), *Victoria County History of Surrey* (hereafter VCH), vol. 3 (London, Constable, 1911), 48.
5. T. S. Cooper, ‘The Will of Thomas Quynell, of Lythe Hill, Chiddingfold, yeoman, 1571’, *Surrey Archaeological Collections* (hereafter SyAC), 15 (1900), 42.

of 16 December 1588 in which John Duffield of Tillington in Sussex, chief workman at the furnace (but described in the document as a forge), was to undertake not to make more ordnance without instructions from the Queen's Council.<sup>6</sup> This would seem to have been issued in response to a letter from the Council of 31 October to the Lord Lieutenant of Surrey with an attached list of ironworks (which did not actually include Imbhams) requiring him

*to charge as well the owners of the saide furnaces, as also the cheife workmen perteyninge to the same to forbear to cast any more peeces of Iron ordnance untill they shall receive expresse direction from us.*<sup>7</sup>

This general direction from the Council not to cast any more ordnance is very similar to instructions issued to the founders at Kent furnaces at around the same time.<sup>8</sup> There, founders were bound not to cast ordnance irrespective of whether their furnaces had been engaged in gun-casting. So the recognizance to Duffield does not constitute evidence that Imbhams was casting guns at that time.

## The Civil War

A number of writers have claimed that gun-founding took place at Imbhams during the Civil War. Again, it was Cooper who wrote:

*The Quynells appear to have been staunch Royalists, and as long as they were permitted to do so, 'made Gunns and shott for supply of his Mat<sup>ies</sup> stores' at Imbhams furnace.*<sup>9</sup>

The internal quote is significant and will be referred to below. Cooper had undoubtedly implied, by referring to the Quynells' Royalist sympathies, that the period he was writing about was the Civil War. Peter Quynell (d.1650) was clearly a Royalist and had attempted to raise a force for the king in 1642, but it was swiftly put down and those involved had to hand in their weapons.<sup>10</sup> In the first volume of the *Victoria County History of Surrey* H. E.

6. SHC, LM/994/3.

7. SyAC, 33 (1920), 124-5; SHC, LM/994/1.

8. J. S. Hodgkinson, 'Ironworks in late-16th century Kent', *Wealden Iron*, 2nd ser., 24 (2004), 6-16.

9. Cooper, *op. cit.*, 42.

10. SHC, 6729/4/174, 1 Aug 1642.



Malden wrote, without giving a source:

*One furnace, Mr Quennell's at Imbhams, near Chiddingfold, which had been Lord Montague's, supplied the king with guns till it was stopped by force...*<sup>11</sup>

and in a later volume wrote that Peter Quynell had 'made guns for the king when the Civil War was breaking out', but the source he gave relates to Quynell's attempted rising and does not refer to cannon casting.<sup>12</sup> In the second volume the unnamed author of the section on Industries cited Cooper when writing that Peter Quynell,

*as long as he was permitted to do so ... made guns and shot for supply of his majesty's stores.*<sup>13</sup>

Malden was, in turn, cited as his source by Ernest Straker who amalgamated the last two statements when he wrote about the Quynells:

*Robert's eldest son, Peter, was a Royalist and made at Imbhams 'gunns and shott for supply of his Majesties' stores' until his furnace was stopped by force...*<sup>14</sup>

So a succession of writers, each quoting their predecessors, had perpetuated the, as yet, unsupported statement that guns were being cast at Imbhams during the Civil War. This does not rule out the possibility that guns had been cast at Imbhams in this period or before, but the proof is lacking.

## The Dutch Wars

Significantly, all of the preceding writers had quoted: "made Gunns and shott for supply of his Majesties' stores". But the source of this quotation is the retrospective lists of ironworks that had been operating in 1653 and 1664 that were transcribed by Parsons and published in the *Sussex Archaeological Collections* in 1882.<sup>15</sup> The original lists have since been lost. The first line of

11. H. E. Malden (ed.), *VCH*, vol. 1 (London, Constable, 1902), 406.

12. H. E. Malden (ed.), *VCH*, vol. 3 (London, Constable, 1911), 11; see fn. 10.

13. H. E. Malden (ed.), *VCH*, vol. 2 (London, Constable, 1905), 271.

14. E. Straker, *Wealden Iron* (London, Bell, 1931), 420.

15. J. L. Parsons, 'The Sussex ironworks', *Sussex Archaeological Collections* (hereafter *SxAC*), **32** (1882). 21-3. David Crossley combined Parsons' transcription with an earlier one by Lower which had only included Sussex ironworks, in *Wealden Iron*, 1st ser., **8** (1975), 2-7.

Parsons' transcription begins:

*All those marked with m made Gunns & Shott in the late warre for supply of his Ma<sup>ties</sup> stores.*

The lists then note those furnaces and forges in operation in 1653 and which ones were still doing so in 1664. For the lists to have included ironworks that were in operation in 1664 they must have been compiled subsequently and 'the late warre' must therefore have meant the Second Dutch War which broke out in March 1665 and came to an end with the Treaty of Breda in July 1667. Referring to Imbhams, Parsons' transcription goes on to include the following:

*Blowing Ann<sup>o</sup> 1653 in Surrey*

*m Imbhams, w<sup>h</sup> Mr Brown Stocked to make Gunns & is aside*

This tells us that Imbhams Furnace was active in 1653 and, because the lists must have been compiled after 1664, that it was one of the furnaces where guns and shot were cast for the king's stores in the war that ended thereafter, and that those guns were cast by 'Mr Brown'. But did Cooper mistakenly assume that with Imbhams active in 1653 the late war referred to the Civil War? It seems probable. Read correctly, 'his Majesty' would have been Charles II, not Charles I as Cooper implied and Malden and Straker repeated. In the published *Royalist Ordnance Papers* no mention is made of any guns being supplied for the King's cause from furnaces in the Weald, gun-foundries instead being set up in Worcester, Cirencester, Lichfield, 'the North' and at Soudley Furnace in the Forest of Dean.<sup>16</sup>

That the lists Parsons transcribed were compiled after 1664 is further reinforced by the fact that the guns made by 'Mr Brown' at Imbhams resulted from an agreement signed on 15 February 1664/5. This was between (1) John Yalden of Fernhurst, Hampshire, and (2) George Browne of Buckland, Surrey, and Alexander Courthope of Horsmonden, Kent, for the lease of Imbhams Furnace at a rent of £25 until 13 May 1666.<sup>17</sup> The choice of Imbhams by

16. I. Roy (ed.), *The Royalist Ordnance Papers 1642-1646 Part I* (Oxfordshire Record Society 43, 1963-1964), Appendix A, Receipts.

17. Kent History Centre, Maidstone (hereafter KHC), TR/1295/43; the reference to Fernhurst being in Hampshire relates to the fact that John Yalden then resided at Upperfold which at that time lay in a detached part of the Hampshire parish of North Ambersham

Browne and Courthope is not immediately obvious. All of the other furnaces operated by the partnership were in a more or less contiguous area of east Sussex and west Kent, but in looking for another furnace that was set up for gun-casting there were probably very few to choose from. Most of those that had been active in the Tudor period would have been converted back to casting iron sows. Maresfield and Pounsley were probably active gun foundries but the former was in the hands of Sir Sackville Crowe, who had had the monopoly of casting guns for the merchant trade, and the latter may have been similarly committed. So that suggests that despite being some 30 miles south-west of George Browne's home at Buckland, near Reigate, Imbhams was perhaps already equipped for gun-founding and might not require major work to bring it to readiness. It also had the advantage of being near to a navigable river, the Wey, from which its products could access the Thames and the arsenal at the Tower of London.

The lessees were to repair the furnace, except the bellows and 'scouring ye huches', before 1 Aug 1665 and were at liberty to dig and use as much ore as they needed from the lands of Peter Quynell, the owner of the furnace, at 2s 6d a load and 11s for each load of ore already dug.<sup>18</sup> Yalden was to have 500 cords of wood cut and ready for coaling within four miles of the furnace by 10 May 1665 payable by the lessees at 6s 3d a cord, and Browne and Courthope were to pay 21s for each load of charcoal delivered to the furnace by Yalden thereafter. If any ore or charcoal was left at the furnace after the end of the lease, and any bellows or bellow boards that the partners had made, they were at liberty to take them away. They were also to deliver to Yalden 30 tons of broken iron guns 'att some convenient place or places' between Woolwich and London Bridge by 24 July 1665 for which Yalden would pay £4 a ton. Furthermore Browne and Courthope agreed to deliver 30 tons of iron sows at the furnace by the end of the lease, for which Yalden would pay £5 15s a ton.

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though within the bounds of the Sussex parish of Fernhurst.

18. Huches were large, probably wooden, containers. At Gravetye Furnace in 1761 there is a reference to '2 huches of mine' and that a huch contained 28 bushels; J. Hodgkinson (ed.), 'The Carrier's Account of Robert Knight', *Wealden Iron*, 1st ser., 14 (1978), 16. At Heathfield Furnace in 1738 a load of ore was given as 12 bushels, varying in weight between 16 cwt if unroasted and 11 cwt if roasted; H. Blackman, 'Gun Founding at Heathfield', *SxAC*, 67 (1926), 30-1.

John Yalden (1627-1707) is not known to have been involved in the iron industry hitherto. He was a younger brother of William Yalden of Blackdown (1615-74), who leased the ironworks in the Earl of Northumberland's Petworth estate as well as those belonging to Viscount Montague; he also leased the Burningfold ironworks in Dunsfold and, briefly, the group of forges at Thursley. It is not known when John Yalden came to be tenant of Imbhams Furnace or for how long. In 1660 Peter Quynell (d.1666) had mortgaged much of his property, including Imbhams, to Thomas Newton, of Guildford, and in 1665 had been negotiating with Newton to buy it back. Before this had been concluded Quynell died, leaving his son, also Peter, to sort it all out. Further discussions were interrupted by the younger Quynell being called up for military service in Kent because of the threat of a Dutch invasion.<sup>19</sup> So it is not known whether it was Peter Quynell the elder or the younger, or Thomas Newton, who had leased Imbhams to John Yalden. The fact that Yalden was willing to sub-let the furnace to George Browne and Alexander Courthope suggests that he was not heavily engaged in iron production there.

On 3 June 1665 it was reported in the minutes of the Office of Ordnance that Imbhams would be ready to begin casting within the next five weeks, and indeed a month later it was said to be "now goeing for Gunns".<sup>20</sup> It had taken five months from the signing of the lease to make the necessary repairs to the furnace to have it ready for production. George Browne, 'His Majesty's founder of Ordnance', was hard-pressed at that time to cast enough guns for the navy and needed to increase the number of furnaces at his disposal. He was already utilising Horsmonden, Hawkhurst, Bedgebury, Ashburnham and Barden furnaces and the short period of the lease suggests that Browne and Courthope needed additional furnace capacity to complete one or more specific contracts. The demand for guns, it turned out, made it necessary to continue to cast at Imbhams beyond the agreed term. Ten days before the lease was due to end James Osborne, who was evidently managing Imbhams for Browne and Courthope, wrote to George Browne:

19. SHC, LM/1298; Summary of the case of Newton v. Quynell, concerning a mortgage of Imbhams and Lythe Hill.

20. R. R. Brown, 'Notes on Wealden furnaces in the records of the Board of Ordnance, 1660-1700', *Wealden Iron*, 2nd ser., 13 (1993), 21.

May 3rd 1666

Worthy Sir

*After my humble service presented unto you these are to lett you understand that the workmen had begun moulding some hoale culverings at my coming from Buckland and we have cast foure of them since, but cannot continue uppon them to make good worke therefore shall fall to D Culvings again I cannot find it for your comfort to keepe in the furnace with new coales, for bark'd wood is but now cutting therefore not fitt to coale, & to blow with small coales will not doe well therefore wee doe intend without farther orders from you, to blow out the old coales & soe to end, which will hold as we suppose about 3 ffoundys more,<sup>21</sup> with the old wood that was bought last yeare, I have here inclosed sent you an account of all ye guns cast at Embham to this day,<sup>22</sup> and an estimate what will be cast more with this old stocke, and alsoe what money I have received in the whoale, and by estimation what is wanting at present and will be at the blowing out to cleere this blowing by which you may judge what this blowing will com too, I shall not keep anything unknowne to you till the last, but doe desire that you should know the full preedings from time to time, & shall give you a true account of my disbursements in particular - when you desire it, the Saker cutts are all board and shall be at Guildford the beginning of the next week which I shall take order to send away with all others as fast as they can be made ready. Pray lett me desire you to order Mr Tuckey to pay the money for this old stock as soone as possible, for I am very much bauled att for it by som which say they doe use to have better pay of other men*

*This much from your faithful servant*

*Ja. Osborne<sup>23</sup>*

Culverins were medium calibre guns firing a shot weighing about 18 pounds; demi-culverins fired a shot about half of that weight. Sakers fired a ball weighing about 6 pounds, 'cutts' being a shorter variant.

21. Three foundays, or 18 days, i.e. to 21 May 1666.
22. This list has not survived.
23. KHC, TR/1295/92.



That the lease was extended even further is indicated in a letter written to Alexander Courthope by Humphrey Tuckey, the partners' London agent on 16 March 1666/7:

*Mr Osborne was with me this day & says they have cast 37/24 pounders and hopes to make them 66 he hopes this blowing to cast 180 tonn with the charge of 2000<sup>li</sup> ...<sup>24</sup>*

The Office of Ordnance had contracted with George Browne on 20 October 1666 to deliver 510 guns of a variety of calibres and lengths to the Tower of London by 30 April 1667.<sup>25</sup> In fact 408 guns were cast at five of the partners' furnaces, and of those the 93 guns cast at Imbhams during that campaign were 61 24-pounders, 10 culverins and 22 demi-culverins.<sup>26</sup> Its production for that contract was only exceeded by the furnace at Horsmonden. With the cessation of hostilities in July of that year and the consequent downturn in orders from the Crown it is probable that Imbhams was not used for gun-founding after that. When war with the Dutch broke out again in 1672 Imbhams was not one of the furnaces of which the Browne family made use.

In conclusion, there is no firm evidence that Imbhams Furnace was casting guns in the 16th century. While its choice by George Browne to do so to complete his contracts with the Government in the 1660s suggests that it might have already been set up for ordnance production, the allegations by a succession of writers that it was supplying the Royalist cause during the Civil War were based on a misreading of evidence that, in fact, related to the Second Dutch War 20 years later.

24. East Sussex Record Office, Brighton (hereafter ESRO), SAS-CO/1/49/716/33.

25. ESRO, SAS-CO/1/49/715/9.

26. ESRO, SAS-CO/1/49/715/10; Bedgebury was casting round shot; Brown, *op.cit.*, 21.

# EVIDENCE OF ‘*THROWING IN THE CLAYES*’: BACKFILLED MINEPITS AND OTHER ARCHAEOLOGICAL FEATURES AT THE ROSEMEAD PLACE DEVELOPMENT, HOREBEECH LANE, HORAM, EAST SUSSEX

*Simon Stevens*

## INTRODUCTION

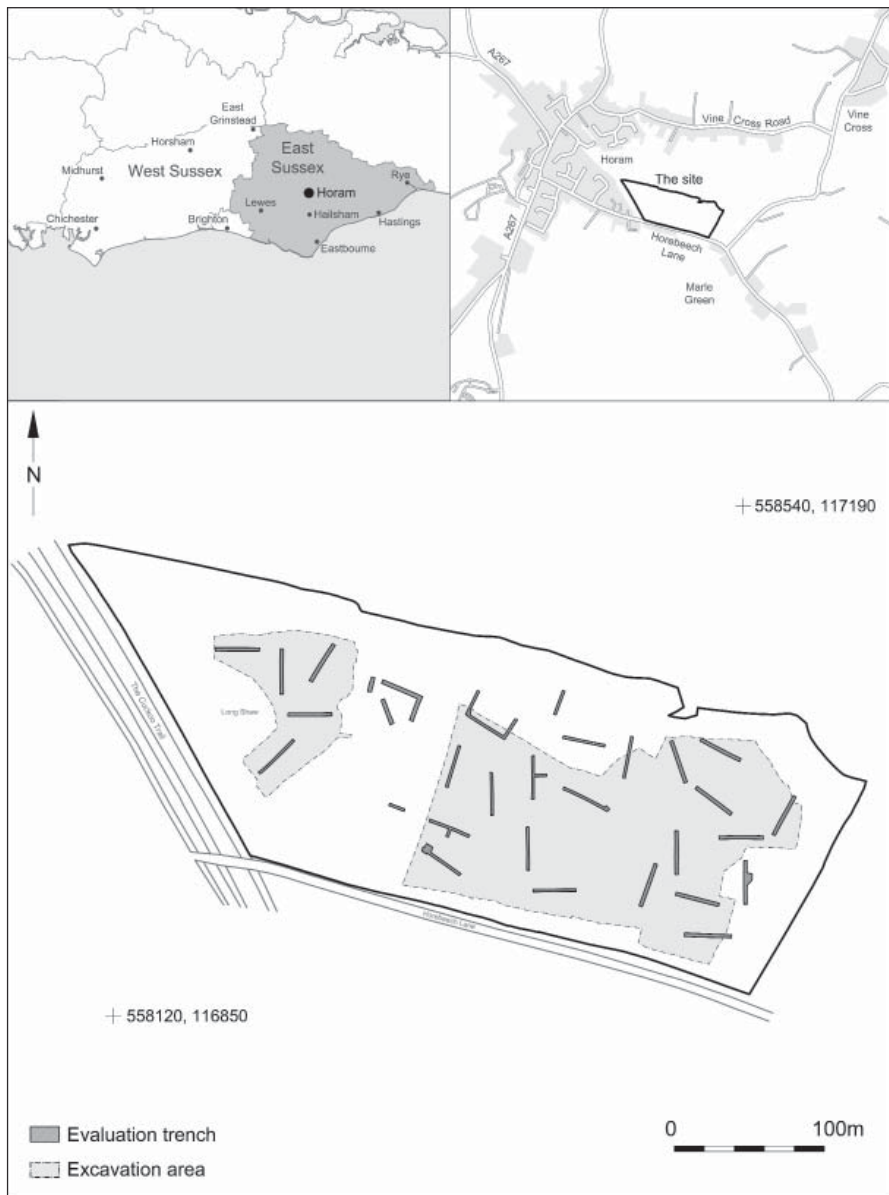
This article provides the results of a programme of archaeological work carried out by Archaeology South-East (ASE, UCL Institute of Archaeology) on the Rosemead Place Development, Horebeech Road, Horam, East Sussex (TQ 58374 17000; Fig. 1). The fieldwork was undertaken in advance of residential development, as a condition of planning, and was commissioned and funded at all stages by Bovis Homes.

Full details of the site including descriptions of features and specialist reports on finds are available on request (ASE 2020).

## THE TOPOGRAPHIC AND GEOLOGICAL SETTING

The site lies on the northern side of Horebeech Road, to the south-east of the centre of the Wealden village of Horam. It is situated on a gentle north-west to south-east slope at heights between 63mAOD and 69mAOD. The development lies within the High Weald Area of Outstanding Natural Beauty, with extensive views over the valley of the Waldron Gill and land to the north.

According to the most recently available data from the British Geological Survey, the underlying geology consists of the mudstones of the Wadhurst Clay, with the sandstone, siltstone and mudstones of the Ashdown Formation immediately to the north. Superficial deposits of alluvium exist within the



**Figure 1: Site location**

valley (BGS 2022). Seams of iron ore (the mineral siderite) occur in the 'natural' Wadhurst Clay and have been utilised by the Wealden ironworking industry for more than two millennia (Hodgkinson 2008, 10–12).

## **RESULTS**

### **Desk-Based Assessment and Geophysical Survey**

The results of initial examination of cartographic material and data held on the East Sussex County Council Historic Environment Record (ESHER) did not suggest the site offered much potential for the survival of buried archaeological remains (ASE 2016a). However, a geophysical survey provided more optimistic results, with anomalies suggesting some level of pit digging at the site (ASE 2016b).

### **The Evaluation**

The Rosemead Place Development was archaeologically evaluated by the mechanical excavation of trial trenches (Fig. 2). Most of the available area had suffered considerable damage from a destructive ecological survey which had destroyed any evidence of earthworks. However, numerous archaeological features were found spread across the site, mostly large extraction pits, with exposures of seams of iron ore in the edges of the features (ASE 2019). It was decided that further archaeological mitigation work was necessary to meet the terms of the planning condition.

#### **The Strip, Map and Sample (Area Excavations)**

Two portions of the site (Areas A and B) were stripped and excavated between March and July 2019. A range of archaeological deposits were encountered and recorded (Fig. 2). For ease of reference, some parts of the site have been labelled in the text and figures according to interpreted land use, i.e. Open Area (OA), Enclosure (ENC1), Ditch (D) etc. with groups of features labelled as G1, G2 etc.

#### **Residual Prehistoric Material**

The earliest material recovered from the site consisted of a thin residual 'background scatter' of struck and fire-cracked flint recovered from later deposits. A Mesolithic/Neolithic date for activity in the locale was suggested by two blades, a blade-like flake and an awl. The remaining worked flints



*Figure 2: Site plan showing areas of archaeological intervention and all features*



could be later prehistoric.

### **Period 1: Middle to Late Iron Age (c.200 BC to c.0 BC)**

The earliest group (G5; Fig. 3) of archaeological features encountered at the site comprised a handful of small pits with charcoal-rich fills. These were notably different to the majority of features encountered at the site and all were found in Area A. The pits were sub-circular in plan, with near vertical sides and flat bases. None of them were more than 1m in diameter or more than 0.15m in depth.

Though no pottery or other datable artefacts were recovered from any of these pits, a sample of charcoal taken from one of the features gave a radiocarbon date of 174 cal BC to 0 cal BC (Beta-543502; 2070 ± 30 BP; 95% probability).

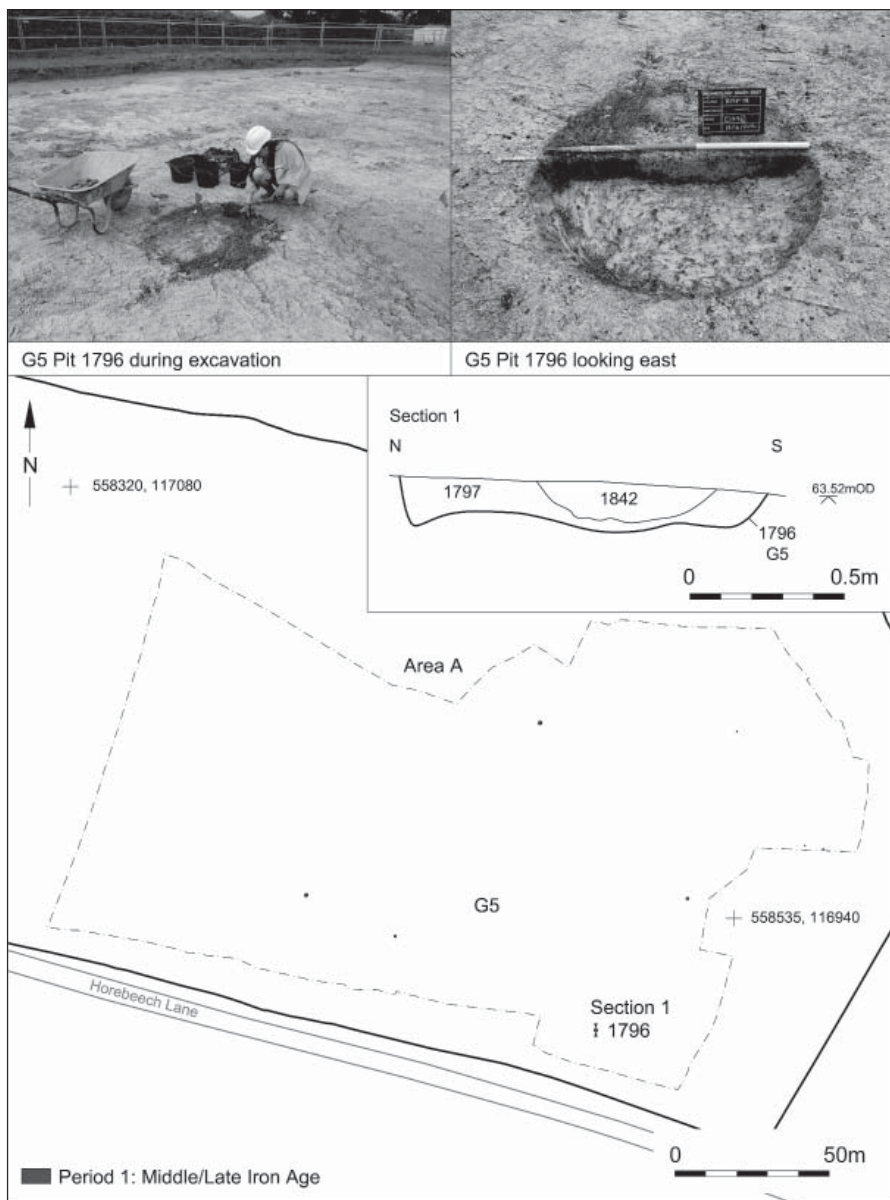
This dating places the features in the Middle to Late Iron Age. Unfortunately, the deposits produced no other evidence of domestic or industrial activity, so further interpretation of the site at this time remains speculative. The complete absence of iron-working debris found in these pits nevertheless suggests that iron smelting was not being undertaken at the site at this time, despite the presence of local ore deposits.

### **Period 2: Early Romano-British (c. AD 50 to AD c.120)**

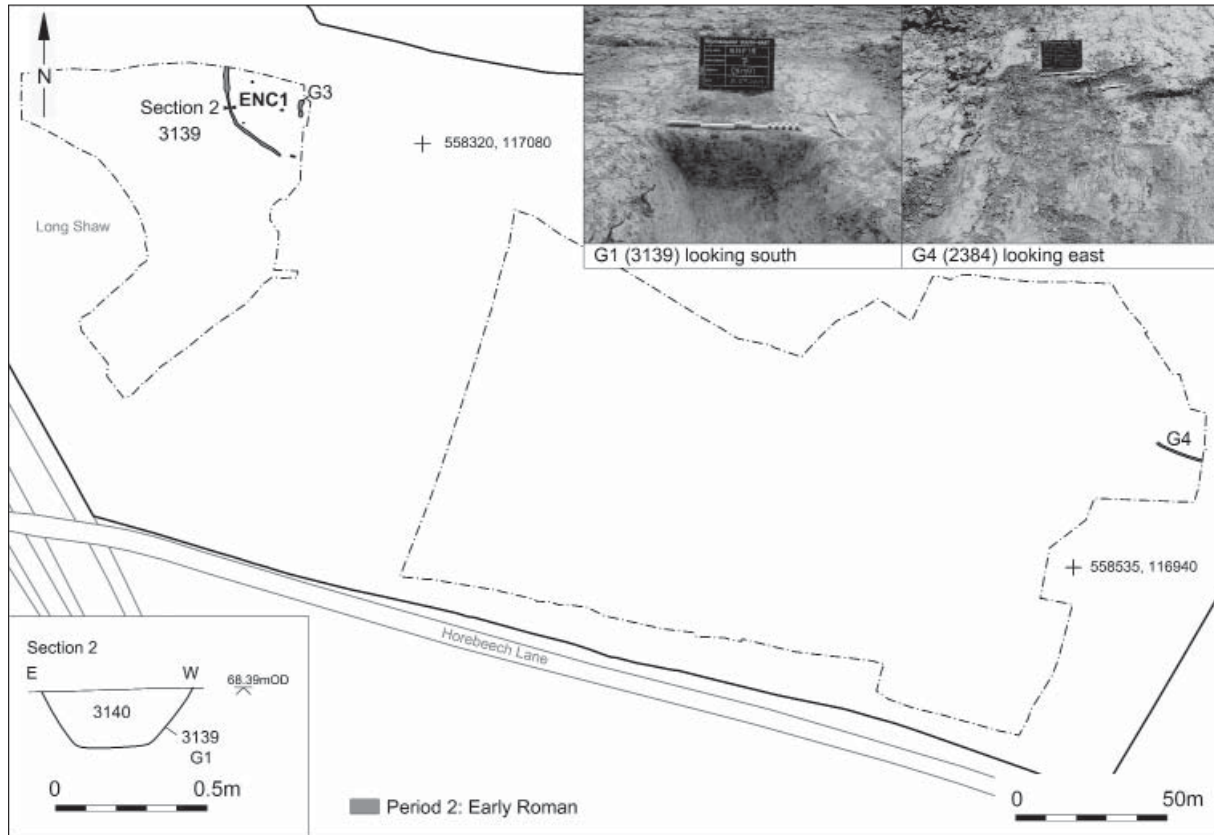
A curved ditch, interpreted from its shape as forming part of a hilltop enclosure, was excavated in Area B (ENC1; Fig. 4). The ditch was investigated in six 1m wide sections, to reveal a consistently flat-bottomed feature, which varied in width from 0.5m to over 2m. The fills were all grey or orangey grey silty clays. A small assemblage of pottery dated to the AD 1st and 2nd centuries was recovered, as well as debris from ironworking including slag and fired clay.

A thin scatter of small pits and/or post-holes were found within the enclosed area some containing contemporary pottery and similar metalworking debris to that recovered from the enclosure ditch. The features were never more than 0.30m in diameter or more than 0.26m in depth, with near vertical sides, flat bases and orangey grey silty clay fills.

Two large elongated pits were found close to Area B's eastern limit of excavation (G3). They contained the largest groups of AD 1st and 2nd century pottery from the site, incorporated into backfills mostly consisting of ironworking debris, mainly bloomery slag, as well as oak charcoal and



**Figure 3: Period 1 – Middle/Late Iron Age plan, section and photographs**



*Figure 4: Period 2 – Early Roman plan, section and photographs*

fragments of fired clay, presumably from construction and/or repair of a furnace (or furnaces), as well as more obvious furnace lining with slag adhering to it.

The presence of debris from ironworking in such a high concentration is clearly indicative of the location of a Romano-British bloomery furnace or furnace(s) in the vicinity, presumably to the north of the site, closer to the valley side, in the preferred location for iron smelting furnaces of this era (Hodgkinson 2008, 32–3).

There were no features outside of the enclosure, and the only other Romano-British feature identified was a length of shallow, flat-bottomed gully encountered at the other end of the site in Area A (G4). The gully continued beyond the eastern limit of the site. Pottery found within the gully suggests that it is contemporary to the enclosure in Area B and suggests Romano-British remains may survive to the east of the site.

### **Period 3: Post-medieval (c. AD 1571 to c. AD 1793)**

The vast majority of the recorded archaeological features at the site were assigned a post-medieval date. This was based on limited artefactual and scientific dating, represented by numerous pits mostly excavated deep into the underlying geological grey and orange clay strata of the Wadhurst Clay. Most of the investigated features consisted of near vertical-sided pits, some with a gently tapering cone-shaped profile, with no evidence of deliberate splaying near the base to form a ‘bell pit’ (cf. Crossley 1994, 204). The pits exposed the underlying geological deposits, which included seams of naturally occurring iron ore, confirming the interpretation of the features as ‘minepits’ (the traditional Sussex name for iron ore was ‘mine’; Hodgkinson 2008, 12). Such pits were usually backfilled with the upcast either from the minepit itself, or from the next adjacent pit being dug; a technique described in 1741 as ‘throwing in the Claves’ (letter written by local ironmaster, John Fuller to Hans Stanley; quoted in Blackman 1926, 43).

Analysis of the pattern of features showed an arrangement of larger pits for extraction surrounded by notably smaller pits thought to be for prospecting. The latter were intended to trace the extent of the highly irregular siderite seams:

*‘The horizons or beds, containing the ore often end abruptly only to reappear again at a short distance away; they do not keep to a definite*

*'line' in the clay. Such breaks or interruptions in the occurrence of the ore are shown by the repeated remains of old pits and workings found in various parts of East Sussex and Kent. It would seem that early workers on 'losing' the ore at one point would move on to about 50 to 100 yards and would begin again with trial holes and pits' (Sweeting 1944, 5–6)*

This juxtaposition has been noted in woodland (Jonathan Prus pers. comm.) but was obviously clearer in plan at Horam, where the topsoil was stripped to reveal something of an exaggerated 'moonscape' across most of the investigated areas of the site (Figs 5 and 6).

Features interpreted as prospecting pits were sometimes less than 1m in diameter, but usually between 1m and 1.5m in diameter, and investigated examples were up to 4m deep. Extraction pits on the other hand were found to be up to 5m in diameter, with a similar maximum depth. Examination of the surviving edges of the pits showed that there were up to five separate seams of ore per pit, with exposures varying in position from the surface of the Wadhurst Clay deposits to a depth of nearly 4m within them. The seams were never more than 0.15m in thickness, suggesting the successful removal of thicker deposits, and cessation of extraction when the seams became too thin. All excavated minepits showed characteristic layers of post-medieval backfill (Fig. 6).

Despite the categorisation of features based on morphology there are clearly issues with this implementation of an artificial dividing line between the supposed classes of feature. This is especially true given problems with exact measurements of the archaeologically unexcavated pits where post-medieval backfilling had left unclear edges. Arguably, the most valuable insight was simply to reinforce the idea that the pits were not dug randomly, but with clear evaluation of areas by small pits, followed by extraction of the highly irregular seams of ore in larger sub-circular pits extended until the siderite deposits became too thin (or perhaps too poor in quality) to be economically viable to extract. This may have led to the considerable variation in size of the larger pits.

In terms of analysis of features, numerical analysis of the ratio of prospecting pits to extraction pits (based on diameter) is hamstrung by the limitations of the space available for archaeological excavation, i.e. no complete, discrete minepit area with discernible boundaries could be discerned.

There was, however, some subtle (and some not so subtle) differences



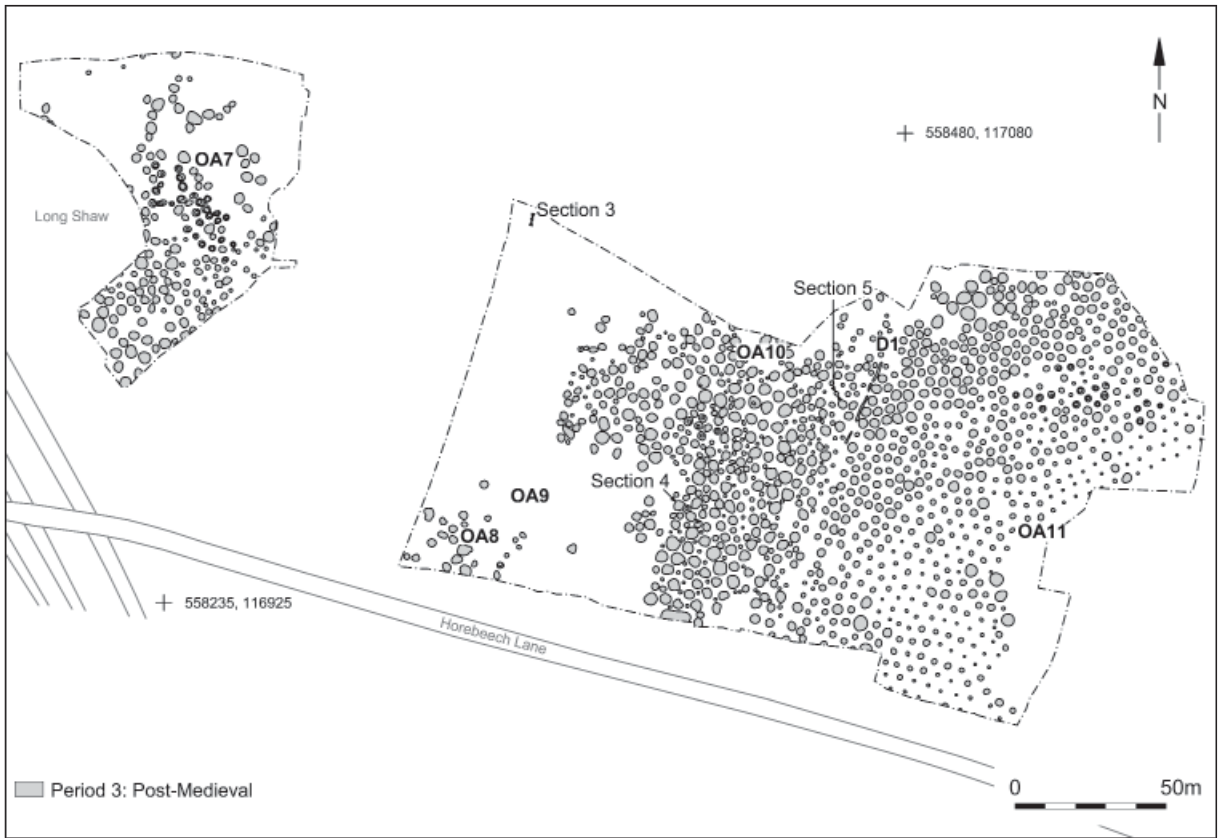
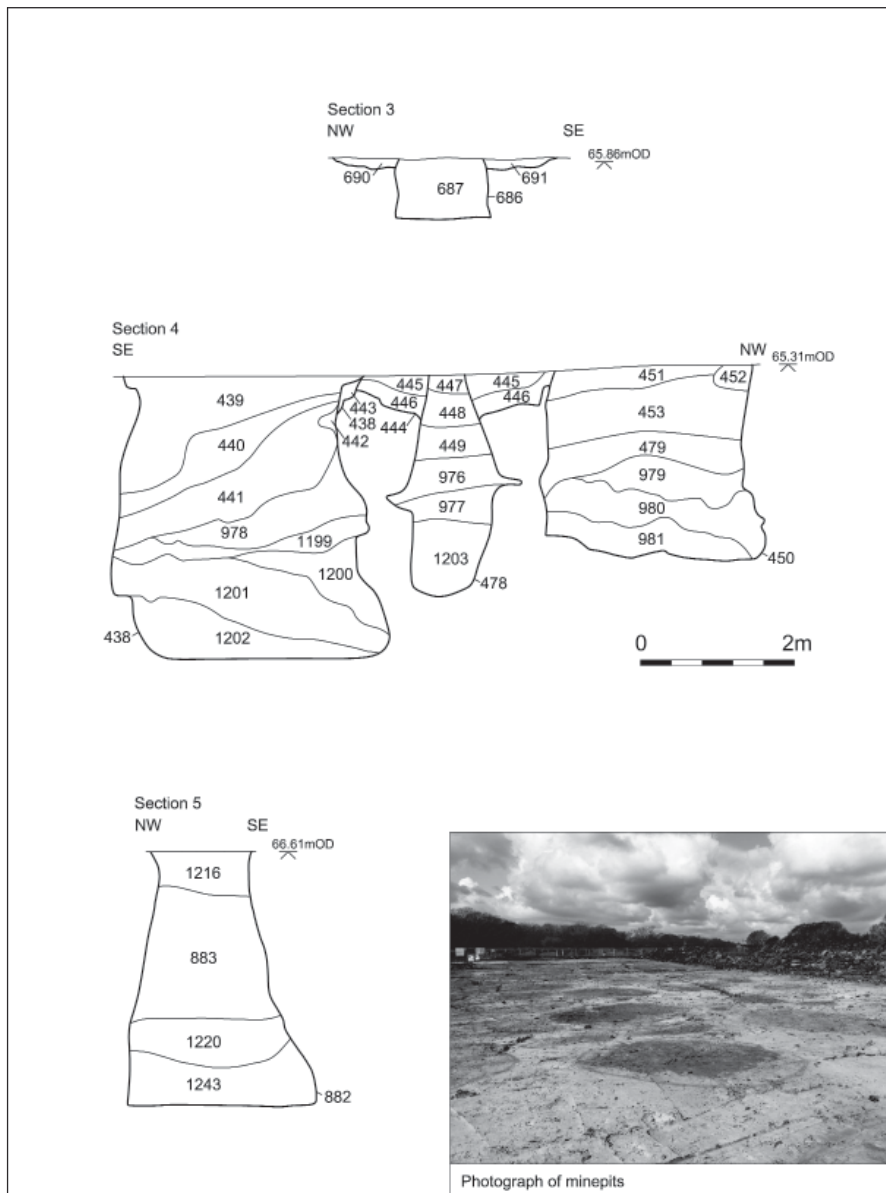


Figure 5: Period 3 – Post-medieval plan



**Figure 6: Period 3 – Sections and photographs**

in distribution across the site, most notably on either side of a former field boundary (D1), which ran north-east to south-west across Area A. The landscape feature possibly had medieval origins and was marked on cartographic sources dating from the late 17th century. By the time of the late 19th century Ordnance Survey map it was no longer shown (ASE 2016a). The minepits clearly respected the feature (offering the first clue as to their date; see below), which survived in places as a shallow gully in the Wadhurst Clay.

#### Features to the east of D1 (OA11)

A total of 628 pits (170 surviving prospection pits and 458 larger minepits) were encountered and recorded in this area. There was an almost geometric pattern of prospection pits, with a notable concentration of extraction pits in OA11's north-western portion. This pattern apparently showed that the main ore seams considered to be economically viable were 'lost' or just absent in the south-eastern part of the area. This despite a clearly rigorous campaign of prospection. Arguably, the paucity of extraction pits left a much clearer pattern of the prospection pits visible, and this may have been the 'original' pattern across much of the site prior to the more concerted push for extraction.

The largest of the extraction pits was over 5m in diameter, with mechanically excavated examples of up to 4m deep with four or five exposed siderite seams. All pits were backfilled with layers of 'Clayes'. A group of nineteen intercutting features of a distinct type of concentric minepit where one deep pit clearly cut through a wider, shallow silted up pit was also identified. The later, inner pit, often varied in its position in relation to the larger outer pit. The reasons for this arrangement remain obscure, perhaps evidence of localised systematic tree removal. What was clear was that a small number of pits had been dug through shallower examples (noticeably these were not deliberately backfilled, but apparently silted up over time; Fig. 6).

A number of the features in the area were manually or mechanically investigated. Timbers were recovered from the backfill of two of the larger minepits, although neither were suitable for scientific dating. A fragment of clay pipe stem recovered from the surface of a minepit was dated to between c. AD 1610 and c. AD 1710 providing a date range which broadly corresponds with two radiocarbon dates obtained from charcoal from a

sealed context in one of the minepits; cal. AD 1726 – cal. post AD 1950 (Beta – 543503;  $190 \pm 30$  BP; 95% probability) and cal. AD 1619 – cal. post AD 1950 (Beta – 543504;  $260 \pm 30$  BP; 95% probability). An iron pick head (RF <1>) discovered lodged in the natural clay between two minepits in this area may relate to the ore extraction, but this was far from certain. The pick head was complete, with a large oval socket for a wooden handle, and measured 290mm in length. It is in good condition and of probable late post-medieval date.



*Figure 7: Iron pick head, RF <1>*

#### Features to the west of D1 (OA10)

A total of 480 pits (117 surviving prospection pits and 363 larger minepits) were encountered and recorded in this area. The extraction pits formed the most concentrated arrangement of minepits at the site, evidence of targeting of seams of apparently economically viable ore. There was a cluster of six pits of the concentric type identified in plan (Fig. 3, Section 3).

Given the high concentration of larger pits, the potential geometric pattern of any initial prospection had been lost, but it is clear that there had been some form of systematic prospection prior to the excavation of the larger pits. The features extending westwards from the field boundary (D1) ceased at apparently clearly defined boundaries, which did not survive as discernible archaeological features (see below).

It was possible to manually archaeologically excavate a number of features in this area by systematically reducing the surrounding areas by machine to

allow safe ingress. A cluster of three features excavated in this way clearly showed prospection pits that predated larger extraction pits. A 2.90m deep conical prospection pit (which showed signs of limited collapse at depth) was recorded as single pit [444], but was actually shown in section to be two concentric pits ([444] and [478]) with the outer fills cut by minepits [438] and [450]. The latter were 3.1m and 2.6m in diameter, and 3.6m and 2.5m deep respectively. All three of the features show the expected post-medieval method of backfilling (Fig. 6, Section 4).

Another manually excavated feature, minepit [882] was 3.31m deep, again slightly conical in shape rather than bell-shaped (Fig. 6, Section 5).

No datable material was encountered in the manually excavated features; a single piece of residual bloomery slag was found in the backfill of one, and a piece of preserved timber was recovered from another, but neither could be used to date the features.

Samples of in situ iron ore deposits were taken from the margins of two minepits in the area, and were submitted to Alan Davies for analysis. The ores were found to be more suitable for smelting in a blast furnace than a bloomery furnace, further supporting a post-medieval date for the campaign of extraction (Davies 2020, 62–3).

### Separate Fields? (OA8 and OA9)

A clearly defined right-angled area possibly corresponding to two rectilinear fields (OA9) had virtually no minepits within it, although there appeared to be some encroachment around the areas edges. Presumably this zone was in use for some other purpose, perhaps even managed woodland for the production of charcoal, although this is pure speculation.

There was another area of extraction to the south-east (OA8). Twenty-eight pits were encountered (only 4 surviving prospection pit and 24 larger minepits) with no obvious pattern to the prospection pits. Some of the investigated extraction pits were up to 4m in diameter with a maximum archaeologically machined depth also approaching 4m. A fragment of tile was recovered from the upper fill of one, suggesting a late post-medieval date.

In addition to the arrangement of pits, two small, shallow hearths (G16) were encountered. Both were surrounded by a characteristic 'halo' of baked 'natural' clay showing significant heat had been generated within the

features. Evidence of this in situ burning and the presence of roasted ore in the oak charcoal-rich fills (coupled with a total absence of slag) provided clear evidence of ore roasting at the site, but only on a small scale. Although ore roasting is usually a pre-smelting process which alters the chemical composition of the ore, drives off water, and breaks it into more manageable pieces (Hodgkinson 2008, 15–17), given the limited capacity (and limited number) of these features, it is suggested that they were for some form of quality control/testing rather than wholesale processing of ore on-site to create the ‘Burnt Mine’ for the local furnace(s) (Blackman 1926, 30; Salt 1966, 78).

## OA7

A total of 153 features were encountered in Area B (35 surviving prospection pits and 118 larger minepits). They were more concentrated in the southern part of the area, noticeably thinning to the north and north-west. Twenty eight examples of the concentric pit arrangement were encountered and recorded. Limited manual, and deeper mechanical, excavation showed the familiar near vertical or slightly conical profile of the minepits, with no evidence of splaying near the base. Diameters of the extraction pits were sometimes over 4m, with mechanically excavated examples as deep as 3.1m. Samples of iron ore were recovered from seams revealed by minepits, and were submitted for analysis to Alan Davies (see above).

## DISCUSSION

Arguably any discovery of archaeological remains in the general area is important given the relative scarcity of known sites in the Weald, although increasingly this seems to reflect the historic rarity of fieldwork rather than the true situation on/in the ground (Margetts 2018). The excavation produced a small quantity of worked flints that reflect human presence during the remote past. This adds to the corpus of sites with evidence of hunter/gatherer activity in the Weald, but little else of value can be said.

Although no evidence of Iron Age iron-working per se was recorded, the charcoal-rich pits might suggest that such activity was occurring at this time; possibly situated close to the site or truncated away by the intensive post-medieval mining activities. The Romano-British iron-working evidence might support a model that there was an Iron Age precursor, however given



the available evidence, this is pure supposition.

Given that the usual method of discovery of Wealden bloomery sites is from the identification of deposits of inherently undatable slag, any site with closely datable pottery found in close association with iron-working debris must be considered of great importance. In the last published survey only 29% of Wealden bloomery sites had been dated and of those only 70 could be firmly dated to the Romano-British era (Hodgkinson 2008, 27). WIRG's database currently shows that although the percentage of dated bloomery sites has remained the same, the number of sites securely dated Romano-British period has increased to some 136. Clearly great progress has been made in the intervening years (e.g. on WIRG's ongoing excavations at the Romano-British site at Great Park Wood, Brede; Stevens 2019), the Horam site enters a relatively small corpus of investigated sites of this date. Although it was unfortunate that the furnace or furnace(s) lay outside of the investigated area, the nature of the evidence strongly suggested that iron smelting was undertaken on the valley side closer to the Waldron Gill to the north (cf. Hodgkinson 2008, 32–3).

In terms of activity within the excavated area, (as opposed to outside of it), analysis was somewhat handicapped by the paucity of features within the investigated element of the enclosure (ENC1), and the somewhat limited range of artefactual evidence. It would appear that a small assemblage of pottery dating from the 1st and 2nd centuries AD had become incorporated into deposits of ironworking waste. This is not indicative of any extensive domestic local occupation, but more likely the result of consumption of food and drink during the hard (and thirsty) work of iron smelting. However, pottery of a broadly similar date was recovered from a substantial deposit of slag and furnace debris in Clappers Wood c.1km to the east of the site in 1990 (Hodgkinson 1991, 5), with another deposit of undated slag even closer (Straker 1931, 383), indicative of at least some concentration of Romano-British iron smelting in the vicinity.

The investigation of the methodologies employed in ore extraction are amongst the rarest areas of study into the Wealden iron industry. A search of the Wealden Iron Research Group database (WIRG 2022) reveals numerous examples of places with names such as 'Minepit Wood', and there are a number of examples of recently published surveys of the distribution of minepits within tracts of woodland (e.g. on a large scale at St. Leonard's

Forest; Blandford 2013, or in a single small plot of woodland as at Waldron; Smith 2016). Examples of excavated minepits are, however, much rarer, limited to a mere handful of investigations.

Published examples are restricted to undated minepits at Herstmonceux (Tebbutt 1978), Rotherfield (Swift 1982), a possible Romano-British example at Battle (Lemmon 1951–2) and the firmly dated medieval minepit at Sharpthorne (Worssam and Swift 1987). Anecdotal evidence suggests some others may have been excavated in the past, for instance at Fernhurst (Jonathan Prus pers. comm.), but the published dataset remains extremely limited. What all the features revealed was that extraction was undertaken by the excavation of a near vertical shaft with no evidence of deliberate splaying at the base to form the characteristic bell-shaped profile of other types of mineral extraction pit (cf. Crossley 1994, 204).

What is now absolutely clear is that it is time to finally abandon the term ‘bell pit’ in reference to iron ore extraction in the Weald, as firmly stated by Hodgkinson (2008, 13), and previously partially addressed by Cleere and Crossley (1995, 263). The evidence from the minepits excavated at the current site (and the limited pre-Horam dataset) clearly counters Straker’s assertion that the term minepit ‘usually denotes a bell-pit’ (Straker 1931, xiv).

The discovery of the minepits in an area of open ground bucked the trend of the ‘usual’ recorded location of these remains in woodland (Cleere and Crossley 1995, 16–18). It appeared that the Horam site had been subject to an organised campaign of reinstatement and levelling allowing it to be put to agricultural use. This is unlike the more stereotypical Wealden minepit concentrations, which left the land too pockmarked with partially waterlogged holes to be of any economic use except as woodland. It should, however, be noted that still-visible minepits can occasionally be encountered in open fields (e.g. Worssam and Herbert 2000, 17–20).

In John Fuller’s aforementioned letter of 1741, he states that if the backfilling and levelling are carried out correctly, ‘then the ground will look as well and be more profitable to the Tenant than it was before the oare was dug’ (quoted in Blackman 1926, 43). The current site offered the first evidence of the wholesale implementation of Fuller’s advice on a Wealden ore extraction site.

This brings us neatly to the question of site ownership and the destination of the ore. It was presumed that the nearby Heathfield Furnace (in operation

c.1693 to c.1793; WIRG database 2022; Straker 1931, 374–6), or the Waldron Furnace (in operation c.1571 to c.1787; WIRG database 2022, *op. cit.* 381–2) would have been the receivers of the ore, dates of operation corresponding with the limited artefactual and more solid scientific dating. Both are within 2km (and broadly equidistant, to the north-east and west respectively) from the site. The WIRG site database shows three further known blast furnace sites within a 5km radius (at Cowbeech, Markly (Rushlake) and at Stream Farm near Chiddingly).

The Fuller family, the well-known local ironworking dynasty had built Heathfield Furnace, and ran the complex primarily as a gun foundry during the 18th century. Although Straker (*op. cit.*) was of the opinion that Waldron came into the possession of the Fullers in AD 1716, more recent research shows that it was leased to Thomas Hussey and John Legas during the 18th century (Hodgkinson, 2009). But if the Horam site was providing ore for one (or indeed both of them) perhaps the Fullers owned the land, and were following their own advice in terms of the backfilling. It is, however known that the Fullers obtained ore from other landowners (Salt 1966, 78). Extensive documentary sources are available for both furnaces, and further research might be able to more firmly link the current site to the Fullers (or otherwise), but full study of the ‘superabundance of material’ (Salt 1966, 65) was beyond the remit of the current site report.

Even a cursory examination of the published sources on the Fuller archive reveals numerous references to ‘mine’ and ‘miners’ as well as costs of digging and transporting the material. In the much-quoted letter to Hans Stanley, Fuller offers advice on managing the miners, so that they extracted the best ore rather than the most easily accessible material (‘an ancient sin of the miners’; Straker 1931, 105), which could lead to flooding of deeper seams. Perhaps this advice was given to an ‘iron miner’ named Richard Barton who was attached to the Heathfield Furnace in AD 1741 (Blackman 1926, 33)?

An attempt was, however, made to match Fuller’s well-known descriptions of local ore seams (reproduced in Cleere and Crossley 1995, fig. 9) with those encountered at the site. He described eight distinct seams in a c.5.5m deep shaft sunk into the Wadhurst Clay near Heathfield, each with different characteristics and names. The uppermost was intriguingly called ‘Thirteen Foot Balls’. Sadly, this was somewhat doomed to failure at the outset, given:

*'the only consistent factor at the site is how inconsistent the ore seams are across the excavated area, a problem made worse by the skill of the ore miners in removing so much of the material and yet leaving so little on the edges of their workings' (Davies 2020, 49).*

Comparison of the thin deposits of ore left behind by the miners with Fuller's descriptions of the 'his' ore was entirely unsuccessful, perhaps only highlighted the mineral's characteristic variability.

This fundamental problem of attempting to analyse material that was by its very nature mostly no longer available for analysis also applied to any calculations of the volume of ore that had been removed from the site. Although calculations have been attempted elsewhere (e.g. near Bletchingley; Worssam and Herbert 2000, 19–20; at Sharpthorne; Worssam and Swift 1987, 14), the unpredictability of the Horam ore seams added to the problem of accurate calculation of ore volume, especially given the full extent of the area of extraction could not be seen given the development-led nature of the excavation.

Hodgkinson (2008, 92) has argued that some 150 minepits similar to those recorded at Sharpthorne would have been needed to keep a furnace like Heathfield in operation for a single, usually annual campaign (Fuller confirms that Heathfield followed the usual practice as a 'winter furnace', quoted in Blackman 1926, 42). Although the Sharpthorne minepits were deeper than those at Horam, the observed pits were smaller in diameter and had equally thin, although more numerous surviving seams of ore. Whilst acknowledging the vagaries of the ore deposits at Horam, Hodgkinson's calculations offer a firm benchmark for a broad estimate of the capacity of the site's minepits to feed a hungry local blast furnace (or indeed furnaces). Given there were nearly 1000 extraction pits at the current site, and even presuming the Horam pits had higher yields on average than the smaller Sharpthorne pits, this suggests that the enormous number of minepits recorded in the excavated areas would only have kept a furnace like Heathfield in blast for a decade or so. This is stark evidence of the immense scale of work required in just one element of the Wealden iron industry.

## **CONCLUSION**

In conclusion, archaeological mitigation work in advance of the development

of Rosemead Place, Horebeech Lane, Horem offered the chance to scientifically examine a large open area in the Weald, still a relatively rare opportunity. Scant but tangible evidence of prehistoric activity was followed by limited traces of Iron Age activity, in turn succeeded by more substantial evidence of Romano-British ironworking.

The site's greatest significance clearly lay in the first opportunity for the large-scale investigation of an ore extraction site in the Weald. Given the scarcity of archaeological investigation of these features (despite their key place in the iron production process) the site represents an all-too-rare window into an element of the recent past mentioned in surviving contemporary letters and accounts. Such features are often noted in the region's woodland, but have never before archaeologically investigated on such a scale.

## **ACKNOWLEDGEMENTS**

ASE would like to thank Bovis Homes for commissioning the archaeological work and Greg Chuter, and subsequently Neil Griffin (County Archaeologists, East Sussex Council County Council) for guidance and monitoring. The excavation was directed by Simon Stevens and was managed by Neil Griffin and Paul Mason in the field. Post-excavation management was by Dan Swift and Andy Margetts who edited this article prior to submission. The figures were produced by Hannah Faux.

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Alan Davies' work on the ores provided an extra dimension to the study. The author would also like to thank Georgina Doherty of Battle and District Historical Society for providing archive material on the 1950s Petley Wood excavation, and Steve Patton for drawing his attention to Sweeting's work on minepits and Wealden geology.

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