

## **Blackdown Hills Iron Working Survey 2013 Interim Report**

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It is only through recent works (for example Griffith & Weddel 1996 and Wiecken 2004) that the Blackdown Hills have received recognition as an important landscape for early iron working. The extent and exact chronology of which is still not completely clear, but with much more detailed development-led investigations being carried out more and more often (for example Reed, S.J., Juleff, G. & Bayer, O.J. 2006, Reed, S.J. 1995, Exeter Archaeology 2008 and AC Archaeology *Publication forthcoming*) the picture is slowly starting to form.

This field survey was carried out in the winter of 2012 and into the spring of 2013. It was funded through Devon County Council's Heritage Service and the Blackdown Hills AONB Sustainable Development Fund. The two authors carried out the work with substantial help from a large force of volunteers, local history societies and landowners. The equipment was loaned by the University of Oxford Royal Laboratory of Art History and Archaeology.

### **1.1 Introduction**

Following initial work undertaken in the 1990s as part of Chard Museum's Blackdown Hills Ironworking Project (e.g. Blackdown Hills Ironworking Project 1995a & 1995b), alongside Devon County Council led research (e.g. Reed, S.J. 1997 and Weddell, P.J. & Simpson, S.J. 1993), there proved to be a real need to carry this work forward into the 21<sup>st</sup> Century. It required a more substantial, holistic and far-reaching investigation, bringing together what was known thus far and attempt to fill in the vast gaps in between. This would hopefully begin to really understand the nature of this industry and place it within a definite timeframe.

In the Summer of 2012 support for such a project was raised and emphasised during the Blackdown Hills AONB Heritage Festival, where large numbers of local residents came along or got in touch with the authors to bring forward evidence of ironworking in their local vicinity. This forms one of the main purposes of the current survey, following up these lines of enquiry and essentially adding 'dots to a map', taking samples and recording what remains on each of these sites. Using a database of known sites taken from the Somerset and Devon HER (Cox, M 2009), we could target our work on potential areas where little or nothing was known about the metallurgical archaeology alongside filling out and complementing existing knowledge.

### **1.2 The Current Survey**

The aim of this field work is to visit and comprehensively record sites of potential archaeometallurgical significance that have come to light through our publicity and outreach, along with re-visiting and integrating previously known sites into this database. The overarching objective is to implement a

systematic approach at investigating industrial landscapes from the 'macro to the micro'. It will take a view from the whole network of ferrous workings to the microscopic analysis of individual slag samples, presenting an ambitious and long-term methodology of studying an extensive area and logically focussing on more targeted points as the project progresses.

Our project began by visiting a number of potential iron working sites and visually recording any extant remains, the presence of any relevant artefacts, the location, the suitability for further investigations along with a whole host of other information that may aid our understanding of the archaeological picture (see Appendix 1). This thorough documentation was complemented by a detailed photographic record, field plans and selective sampling of metallurgical debris for further analysis. During each visit the landowner was questioned about the site, what they had found, where they had found it and whether they knew of any other potentially relevant features in the area. This forms a crucially important part of the fieldwork, as it produced vital pieces to the puzzle that have long since been destroyed or were never recognised archaeologically.

Over the course of this field season we investigated and identified 17 archaeometallurgical sites in both Devon and Somerset (see fig. 1). That said, this part of the project is ongoing and will hopefully see this number increase dramatically over the life of the project.

The next phase was a trial at taking the information gathered a step further; this came in the form of large scale, topsoil magnetic susceptibility surveys. They were undertaken on two positively identified iron smelting sites, the first under permanent pasture and the second in woodland (a third ploughed site was identified nearby for future work). The aim of this was to assess the wider contextual setting of iron smelting and whether they form part of a more dynamic industrial complex (see 2.0 Preliminary Results of the Survey).

With this in hand, we can utilise the data to undertake a much more targeted magnetometry survey, small scale excavation of identified features and scientific analysis of metallurgical debris from secure contexts, starting with these trial sites during 2014.

## **2.0 Preliminary Results of the Survey**

The main dataset from the initial field season is attached as a gazetteer of sites, in Appendix 2. This has been entered and mapped separately into a GIS package alongside other known sites, fieldnames and findspots taken from the respective county Historic Environment Records. This format of recording will stay consistent throughout the life of the project, enabling an ease of data logging and comparison.

This first phase of the project focussed mainly on investigating primary smelting sites, with very little attention paid towards extraction or secondary

processing and smithing (with Site 5 presenting a noticeable exception). The results take the form of a written, photographic and finds database. The second phase saw us revisit Trent's Farm (Site 9) and Higher Wood (Site 10), taking the initial information to help undertake a topsoil magnetic susceptibility survey. With this, we can understand the smelting arrangement more precisely (see fig. 2, 3 & 4) and start highlighting areas for more intense investigations.

The survey utilised a Bartington MS2 magnetic susceptibility meter, with readings taken at 10m intervals for the work carried out at Trents Farm and 5m intervals for the work at Higher Wood.

## **2.1 Interpretation of Results**

### ***2.1a Phase One***

Through analysis of such a small sample of sites, general trends and remarks about the nature of the industrial operation is hard to put forward. However there are some elements that do start to stand out.

The first and most logical point of note is one of geology; all the sites investigated that had any hint of primary smelting activity lay on, or upon the edge of, the outcropping greensand (see fig. 1). This makes perfect economic sense, as it is within this band of geology, that iron ore (in the form of an iron carbonate, siderite) is deposited. This being said, it is reasonable to assume the ore was not being transported any distance. Instead it is more likely the bloom (worked or not) and the finished metal artefacts were the object being distributed; whether to provide for the immediate community within the lower valleys on the Blackdowns or more widely, is unknown at this stage. Materials in the form of clay (which is ubiquitous) and fuel (a highly sustainable product if well managed), form the other limiting factors of any ferrous industry; yet which provide no problem in this setting.

It is also interesting to note the ubiquity of smelting across the landscape. Even though the sample of investigated sites is small, known sites (recorded in the HER) stretch extensively across the Blackdown Hills in all directions and even head further south along the ridge of similar geology into East Devon, almost to the coast.

The size of the surveyed metallurgical debris mounds still extant and the slag deposits proposed to be left in situ (or thereabout) suggest small episodes of smelting. Linking this with the numerous site locations, begin to paint a picture of itinerant metal workers conducting isolated smelting events, perhaps reflecting a pattern in woodland management or coppicing rotation.

This hints at a self-sufficient, wide spreading industry utilising local resources to produce a highly desirable product. Producing a more detailed chronological sequence for the sites will help compound these theories.

### **2.1b Phase Two**

Although only two sites were surveyed using magnetic susceptibility, there already seem to be some consistencies. The most apparent is the highly magnetic nature of topsoil over the smelting sites, even under permanent pasture with no surface features evident. This evidence of the magnetically rich smelting debris being brought up through the soils highlights the importance and significance of bioturbation; it is this natural process of soil mixing that validates our use of the technique.

With the sites clearly, magnetically-visible it becomes apparent that these smelting episodes are actually quite isolated and compact. The sites appear to lack any surrounding associated magnetic features or anomalies, close to the smelting centre. This begins to suggest no obvious presence of separate units for the furnace itself (away from the slag heap), any pre-smelting ore treatment or secondary processing as part of a 'smelting complex'. There also seems to be a real lack in evidence for non-industrial activities, including occupation or habitation in the immediate vicinity (see fig. 2, 3 & 4)

The limitation of magnetic susceptibility is the coarse view of the results, it produces data that irons out minor anomalies and creates images without any subtle features that may be present; a fact that must be kept in mind whilst analysing the results.

### **2.2 Conclusions and Future Objectives**

It is clear at this point that the project is only scratching the surface of what was an impressive and hugely significant industry. An industry that due to the traditional land use of the Blackdown Hills, is exceptionally well preserved, archaeologically.

It seems that the iron working was of an extensive nature, creating enough product for immediate demand in the combs and valleys of the Hills, with surplus heading further a field, perhaps into the vale of Taunton or even south towards the coast, East Devon and into Dorset.

If more work is carried out, the chronology of the smelting campaigns may be ascertained and perhaps the scale of industry may be able to be seen through time. To achieve this goal, an investigation into the different branches of the activity must be looked into; from extraction to any historical accounts of iron transactions. Each piece of evidence will provide another invaluable clue into the iron working industry that once shaped the Blackdown Hills and that still lie beneath its' fields.

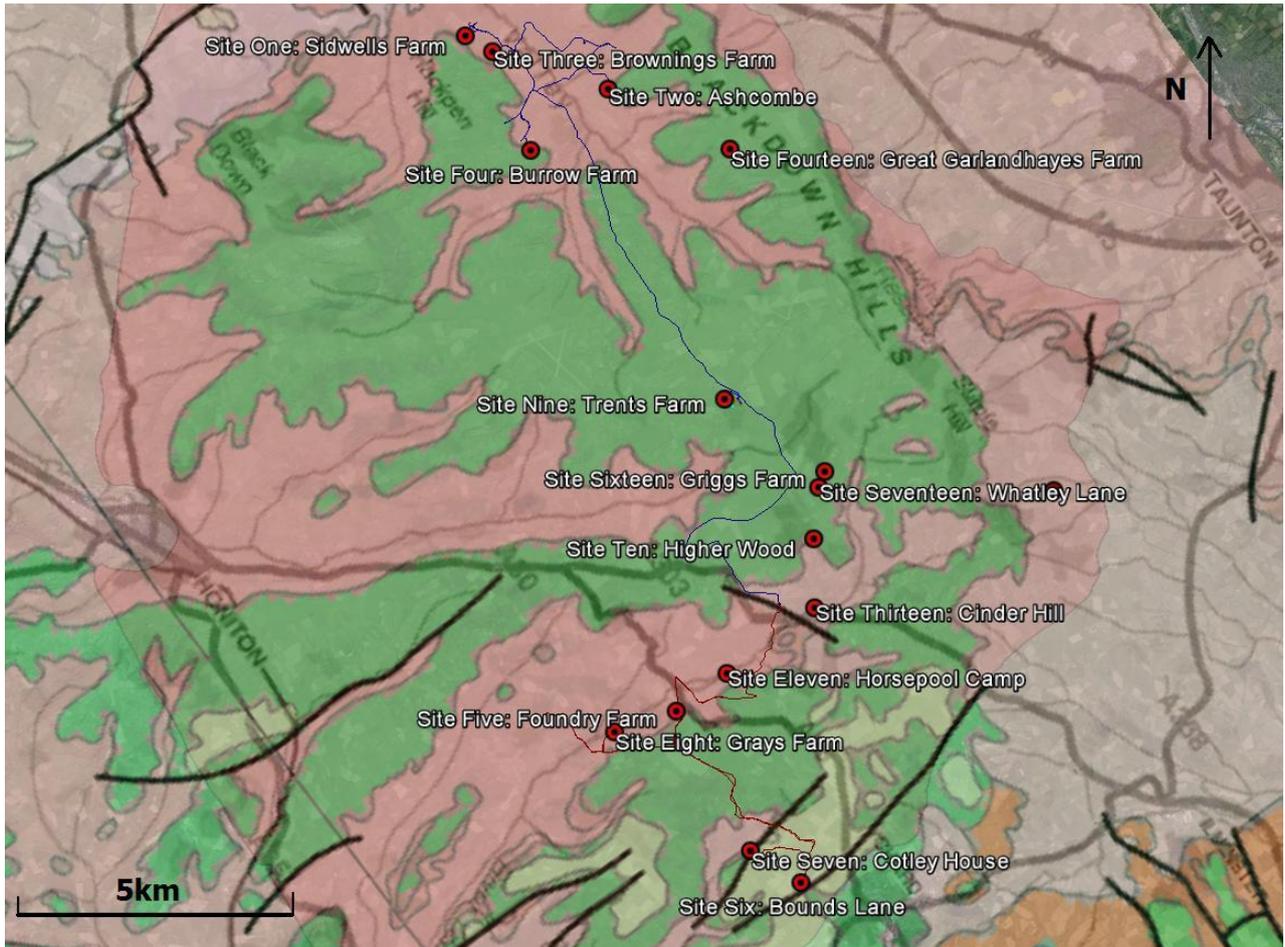
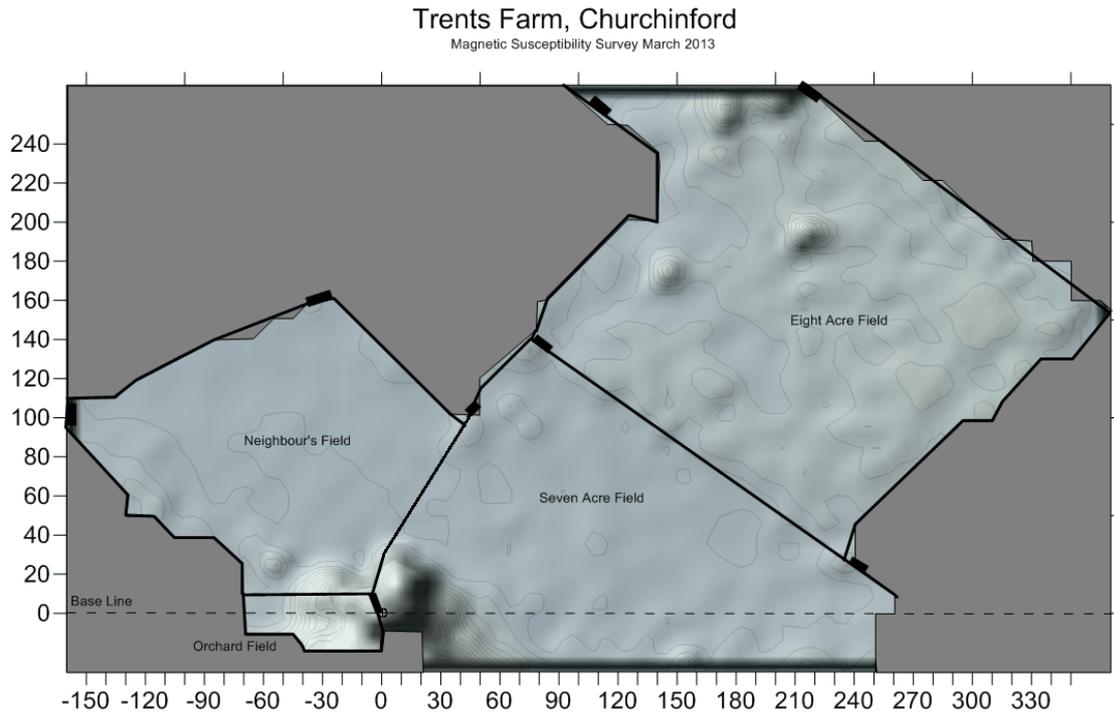
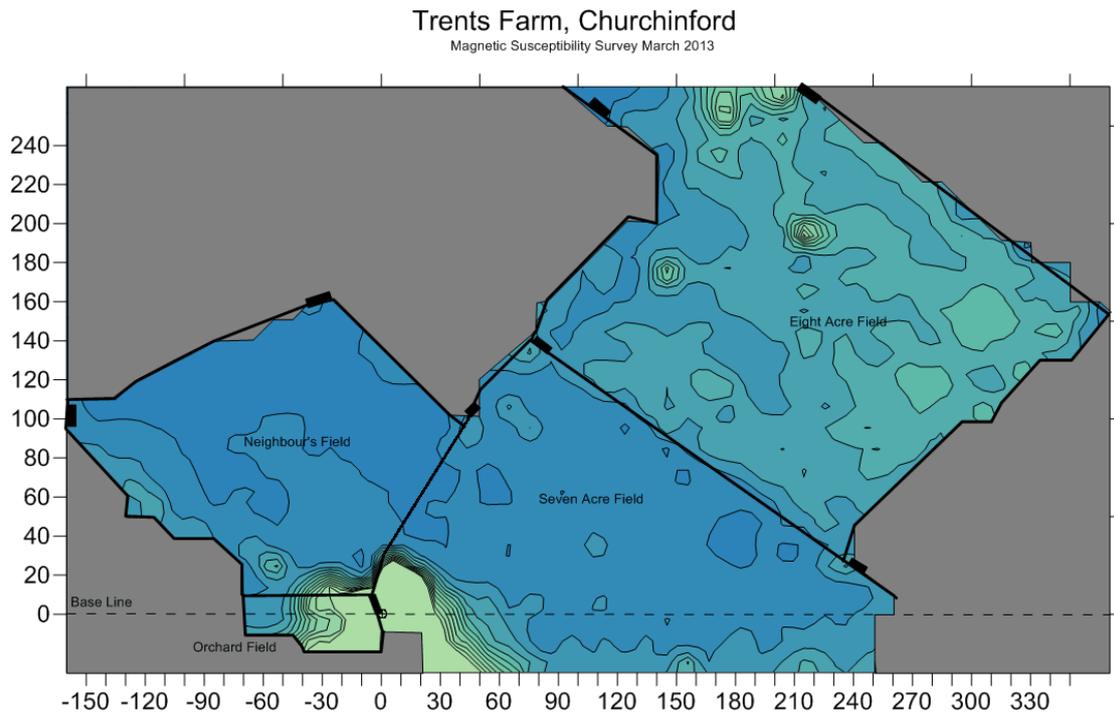


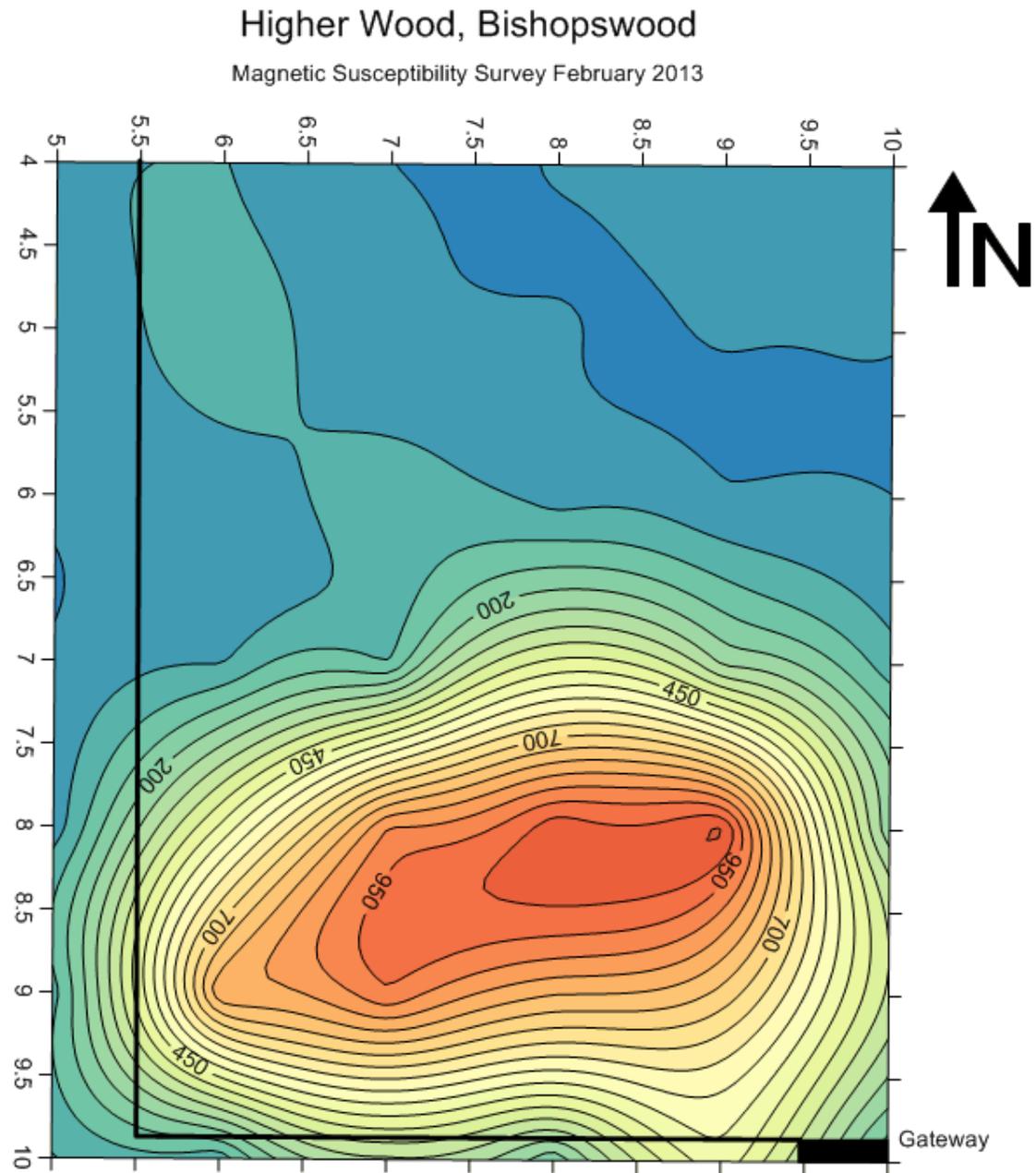
Figure 1: Locations and name of sites found during the 2012/2013 field survey



**Figure 2: Topsoil magnetic susceptibility survey of Trents Farm, showing the peak over the primary smelting area in the South West corner and four main anomalies in Eight Acre Field.**



**Figure 3: Magnetic Susceptibility results altered to show the more subtle signals particularly in Eight Acre Field and the isolated peak in the southern part of the neighbour's field**



**Figure 4: Results showing the closely spaced magnetic susceptibility survey over the slag heap at higher Wood and uphill to the north, there doesn't seem to be any sign of an isolated furnace signal.**

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