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**An Archaeological Evaluation
at Whitegates, Biddulph, Staffordshire**

by
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Introduction

This short report outlines the results of an archaeological evaluation carried out at Whitegates, Biddulph (N.G.R: SJ 887 603). The work was commissioned by North West Water Limited in advance of a proposal to construct water treatment facilities, and was undertaken by Birmingham University Field Archaeology Unit between the 8th and 11th of December 1991.

The Site (fig.1)

The site (PRN 1609) was situated in an area of overgrown waste ground containing a number of young trees, the land rising steeply as a distinct, but undulating, bank towards the road-frontage. Located immediately north of Whitegates Garage and bounded to the west by the A 527 Congleton to Biddulph road, and by a steep bank falling sharply into the Biddulph Brook to the east, the site has attracted the attention of a number of local historians, intent on a landscape pockmarked with the evidence of past industrial activities.

The remains of what may have been an Elizabethan glassworks were recorded here in 1943 - a 'centre hole nine feet deep and three feet in diameter...its sides breasted with sandstone' - containing a lot of blue and pale yellow glass and waste saggars, was thought to be the disused draught hole of a furnace (Trans N.Staffs FC 1943,54). However, no trace of this feature was found during the present excavation. In the early 1970s an excavation was carried out by members of the Biddulph Historical Society, but despite an extensive search no records of this work have been located. However, it appears that a small area adjacent to the road on the westernmost extremity of the site was examined (Derek Wheelhouse pers.comm.), and that evidence of an extended period of iron-making was found in the form of an expanse of fused, iron-rich slag 'as much as five feet thick', which in turn was overlain by evidence of later Elizabethan glass-making, apparently c.1580-1610 in date (Wheelhouse 1979,79).

The Documentary Evidence

While documentary evidence for iron-making in Biddulph can be traced as far back as the early 14th century, references to industrial activity in Whitegates do not appear to exist before the mid-16th century. No references were found for glass-making in the area. The Mainwaring Estate Map of 1597 (SRO D[W] 1743/Add/16), surveyed by Fletcher to a scale of c.13.2 inches to the mile, provides a good topographical framework with which to make sense of the other documentary references. It shows five buildings standing around the Biddulph Brook, an artificial leet branching into the largest building and perhaps suggesting its identification as a mill. These five buildings stand in an area which roughly corresponds with the area recently under evaluation, an area called Bloomsmithie Meadow, a name which appears on the Tithe Map of 1840 (SRO D 3539/1/28), and in 17th-century deeds relating to certain cottages and land compounded from the Biddulph family during the Civil War (Roots 1957,247). Unfortunately, while the map shows these buildings in elevation, the architectural detail is not sufficient to determine any particular clues as to the function of the buildings at the time, apart from the probability that the largest was a mill of some kind.

One of the houses may correspond to a messuage called Smithie Place, listed in the manorial court records of 1539. Various deeds dated between 1543 and 1598 describe an Old Smithie Place (SRO D[W] 1743/T/255-257), presumably the same property. The adjective 'old' may refer straightforwardly to the age of the building or to the antiquity of its association with iron-making; alternatively, it may suggest a change in function of that building, which, significantly, corresponds with the short-lived period of glass production at Whitegates around the end of the 16th century, noted above. The Yates County Map of Staffordshire made in

1775, placed special emphasis on the rapidly evolving industrial geography of the region. It shows that a large forge and pool, called Lea Forge, 0.25 kilometres south of the Bloomsmithie site, had clearly superseded operations there. Lea Forge continued to operate in a variety of forms into the 20th century. Later large-scale Ordnance Survey maps of c.1880 indicate that the Bloomsmithie site lay waste but, unfortunately, they do not show the remains of the furnace noted in 1943.

The Evaluation (fig.2)

Two trenches were dug with a JCB machine using a 1.5m-wide, toothless bucket in order to gain as complete an east-west profile as possible through the site while avoiding several trees. The location of the trenches was targeted to answer the objectives of the evaluation which were; to assess the nature, quality and survival of any archaeological deposits present; and to determine if these deposits were affected by the proposed development. Trench I, 12m in length, was opened as near to the frontage of the A 527 as possible to determine the impact of the proposed access road and to sample part of the bank for evidence of industrial activity. Trench II, 13m long, was located near to the northern edge of the site where the sump for the water treatment works is to be located. Limited access meant that a complete profile through the site was impossible.

In both trenches the topsoil was removed by machine. It consisted of a dark layer of humic loam between 0.20 and 0.30m deep which had clearly built up while the land was waste. There was evidence of recent disturbance, particularly towards the west end of the site, where a quantity of glass waste and iron slag was mixed into the horizon. Further excavation showed that the development of the site differed markedly from east to west, and therefore, the text will discuss both trenches separately.

Trench I (fig.3)

While it was originally envisaged that Trench I would provide a profile of the western half of the site, running through the bank near to the road frontage, problems of access for the machine up the steep and overgrown bank here meant that the westernmost extent of the trench had to be located

about 7m back from the road. Removal of the topsoil (1000) revealed an area of very mixed industrial waste (1003), mainly consisting of coal-ash and iron-slag, which was removed by machine down to an extremely compact area of solid, fused-iron residue which even the machine could not remove. About 2.5m from this end of the trench a modern trench (F1), c.1m wide and 0.5m deep, was defined in the section, the fill of this trench (1001) contained a number of pieces of large ceramic saggars between 0.05 and 0.07m thick with residues of green glass stuck to the inner surfaces; these are probably remnants of glass-making seige pots.

It was decided to cut into the fused-iron residue where the machine was able, in order to define the nature of the feature, hand-digging here being impossible. This proved that the fused-iron was, in fact, the core of a massive *in situ* industrial feature (F2), the full extent of which could not be gauged in the evaluation trench. The fills of the feature were assigned a single context number (1004), but consisted of numerous bands of ash and slag, burnt gravel and sand undercutting the solid fused-iron. Another, deeper iron-slag band, about 0.2m thick, lay under the ash/slag bands, 1m beneath the surface, in turn overlying a layer of c.0.2m thick dirty grey, burnt sand (1005) which got progressively cleaner towards the bottom of the layer. The sand overlay the natural gravel (1007). The whole feature tipped noticeably and, presumably, was roughly circular in plan, its centre lying somewhere outside the evaluation trench.

Although difficult to differentiate, a variation in the nature of the soil immediately beneath the topsoil was apparent east of the modern trench F1. This dark black layer (1002), containing grit, slag, coal, and burnt ironstone, overlay the whole of the trench, including part of F2, but diminished noticeably in thickness from c.0.6m to c.0.25m towards the east of the trench. It would appear to be a tip sealing *in situ* archaeological deposits beneath, accentuating the naturally-sloping topography of the site.

In the middle of the trench was another industrial feature (F3), with straight sides, and although only partially exposed in the evaluation trench, was roughly rhomboid. Its fill consisted

of dark brown loamy sand, iron-slag lumps and some coal smears (1006). The iron-slag lumps had a different appearance to those in F2, and resembled the waste associated with a bloomery furnace. Just to the east of F3 the natural gravel into which the feature was cut appeared to have been terraced, the ground level here dropping c.0.4m. This depression was filled with a dark brown humic loam (1008), which probably represents another earlier phase of waste ground, being similar in character to the topsoil (1000). This was removed by hand and contained fragments of Post-Medieval, green vessel glass. Two other industrial features (F4 and F5), were found cut into the lower terrace of the natural gravel (1007). Both were similar in plan, roughly circular with a diameter of between 1m and 1.2m, and both contained iron-making residues, primarily iron-rich waste blooms, although F4 also contained a little fused-glass residue and part of a hand-made brick.

Trench II (fig.4)

This trench was cut through the lowest terrace of the site which is truncated by a sheer drop of about 2m into the Biddulph Brook. Beneath the topsoil (2000), which was slightly deeper and less disturbed than in Trench I, was a layer of light brown, mottled, sandy clay (2001), between 0.75 and 0.85m deep, which was also removed by machine. The appearance of this layer, together with the proximity of the Biddulph Brook, was suggestive of the build-up of meadow soil deposits. No cuts or disturbances were visible along its entire length.

Beneath this layer the surface of the natural orange gravel (2003), which contained some large cobbles and yellow sandy patches, was cleaned by hand, c.1.15m below the ground surface. Two features (F6 and F7) were visible cut into the gravel. The southern end of F6 was excavated up to the baulk of the trench, and it proved to be a shallow scoop, about 0.10m deep, with a vaguely oval plan defined by very irregular edges. The fill, a mixture of discoloured gravel and ironstone (2002), would appear to indicate that F6 was a natural feature. The second feature (F7) was also only partially within the western end of the trench, its fill (2004) of sandstone fragments, pebbles, and iron slag blooms, in a brown loamy clay matrix, indicated an industrial

association. F7 represented the easternmost extent of archaeological evidence for industrial working found on the site, and while a similar deposit to 2004 was not found in Trench I the feature was probably related to the lowest archaeological deposits in that trench.

Interpretation

The evaluation has shown that *in situ* archaeological deposits associated with industrial activity are particularly concentrated in the western half of the site, their location probably determined by the terraced topography. The following sections of the report will attempt to assess the importance and quality of these deposits, and then judge the implications of their presence for the development proposals.

The lack of any substantial dating evidence makes the precise phasing of the various industrial activities encountered during the evaluation problematic. However, the absence of any 19th-century finds, taken together with the available cartographic evidence, certainly indicates that the site had fallen into disuse before then. Only one glass find, belonging to the fill of F4, was found in an undisturbed archaeological deposit, and even this may have settled from the overlying layer (1008). Large quantities of broken seige pots, in which the glass was heated, were visible in the disturbed layers near to the road, and these sound similar to the ones found in 1943 in the draught hole of the furnace. However, the results of the evaluation cannot confirm the findings of the 1970s excavation, which dated the glass-making activities on the site to the late 16th century, and no trace of the draught hole was found. If the draught hole had been demolished after 1943 the contents would have been scattered over the site, and this may explain the concentration of surface evidence.

The surviving industrial features (F2, F3, F4, F5 and F7) are all primarily associated with iron-making. Samples taken from F4 and F5 appear to indicate that these features, while structurally no more than pits, were associated with bloomery-type operations rather than a blast furnace. While the bloomery method of cupulation was used extensively between the medieval period and the 18th century to produce iron, the presence of the hand-made brick would appear to indicate a

16th-18th century date. F2 was much larger than the other industrial features investigated, and the nature of its backfilled iron-slag deposits very distinct, lying in dirty bands within the pit. It is tempting to interpret F2, and the other iron-slag-rich deposits in the west of the site, as residues of a later period of larger-scale iron production. Indeed, the possibility that the steep bank near the road was formed by waste dumped from the Lea Forge cannot be precluded.

The archaeology of the early Post-Medieval glass industry, although better understood since the 1960s, is still sufficiently rare to make the site of special archaeological interest. Although no evidence of glass-making was found in undisturbed archaeological deposits during the evaluation, the possibility that evidence of the draught hole found in 1943 may still exist on the site, together with the large quantity of related finds in the upper layers of the site, the recovery of more of which may provide further evidence of the period and type of glass production here, suggests that further examination is probably necessary if these deposits are threatened in any way by the development.

Equally, the preservation of the features associated with the bloomery phase of iron production on the site suggests that there is an horizon of industrially-related features and activity preserved at about 1m beneath the surface of the site. Coupled with the documentary evidence that the site was probably water-powered, this archaeological evidence may also be considered to be important enough to warrant either preservation *in situ*, or, alternatively, preservation by recorded archaeological excavation, because this phase of the industry is under-represented in the archaeological record.

Implications and Recommendations

While the presence of potentially significant archaeological deposits on the site has certain implications for the proposed development there are a number of different options which can be

considered. The evaluation in the area of Trench II has established that the position of the proposed sump for the water processing plant probably does not have any archaeological implications. It is on the western side of the site that some design-option accommodation may be necessary. While figure 5 shows that the presumed levels of the *in situ* archaeological deposits are not directly threatened by the proposed development of the access road, it is suggested that as little of the present ground surface be removed as possible. This is because of the presence of large quantities of redeposited material relating to the production of glass near to the surface, and the possibility that other features - including the draught hole described in 1943 - unlocated in the evaluation might be disturbed by any development. Therefore, if some stripping is considered necessary here, it is recommended that this be undertaken by suitably qualified archaeological personnel, and that if any undisturbed deposits or previously unlocated features are found to be present then these would merit further, full excavation ahead of development. However, given the degree of disturbance which is known to have occurred in this area, it may be predicted that excavation would be over a relatively small area, and, therefore, not be particularly intensive or time consuming.

Acknowledgements

Steve Litherland and David Redhouse conducted the evaluation for B.U.F.A.U., Liz Hooper prepared the drawings and the finished report and Iain Ferris edited the text. The evaluation was co-ordinated by Mr G. Whibbly, Principal Project Manager, and Mr G. Limna, Site Engineer, of North West Water Limited. Mr R. Meeson and C. Welch of Staffordshire County Council Planning Department, and Mr J. Leach of the Staffordshire Moorlands Council also provided advice on the site, as did Mr J. Milln of the National Trust and Mr D. Wheelhouse of the Biddulph Local History Society.

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List of Figures

1. Location Plan (reduced from recent edition OS 1:10000)
2. Plan of the Site (1:200)
3. Trench I: Plan and Section (1:50)
4. Trench II: Plan and Section (1:50)
5. Site Profile: Development Implications and Archaeological Deposits. (1:100 Vertical, 1:200 Horizontal).

WHITEGATES, BIDDULPH 1991

Location

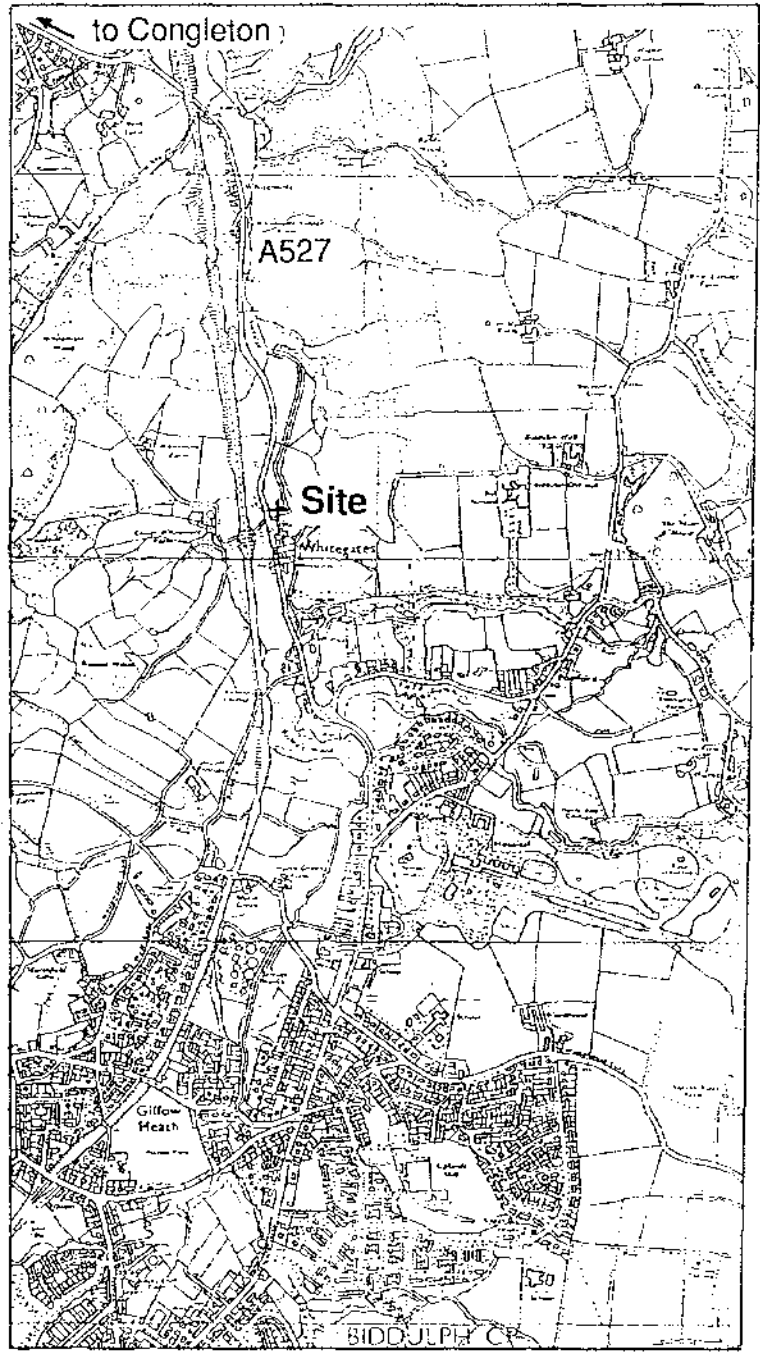


Fig. 1

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Location of Trenches

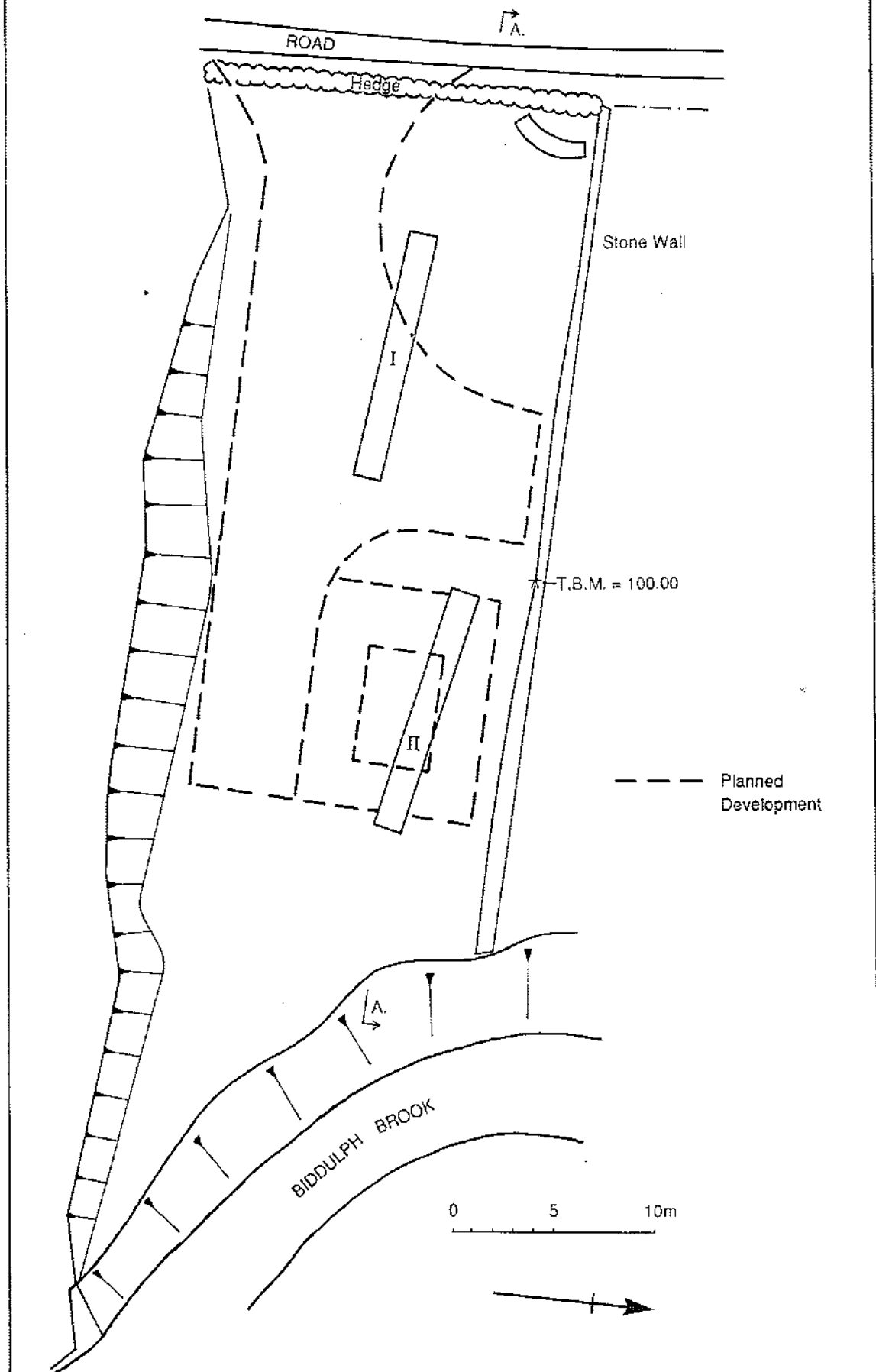


Fig. 2

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Plans and sections

Trenches 1 & 2

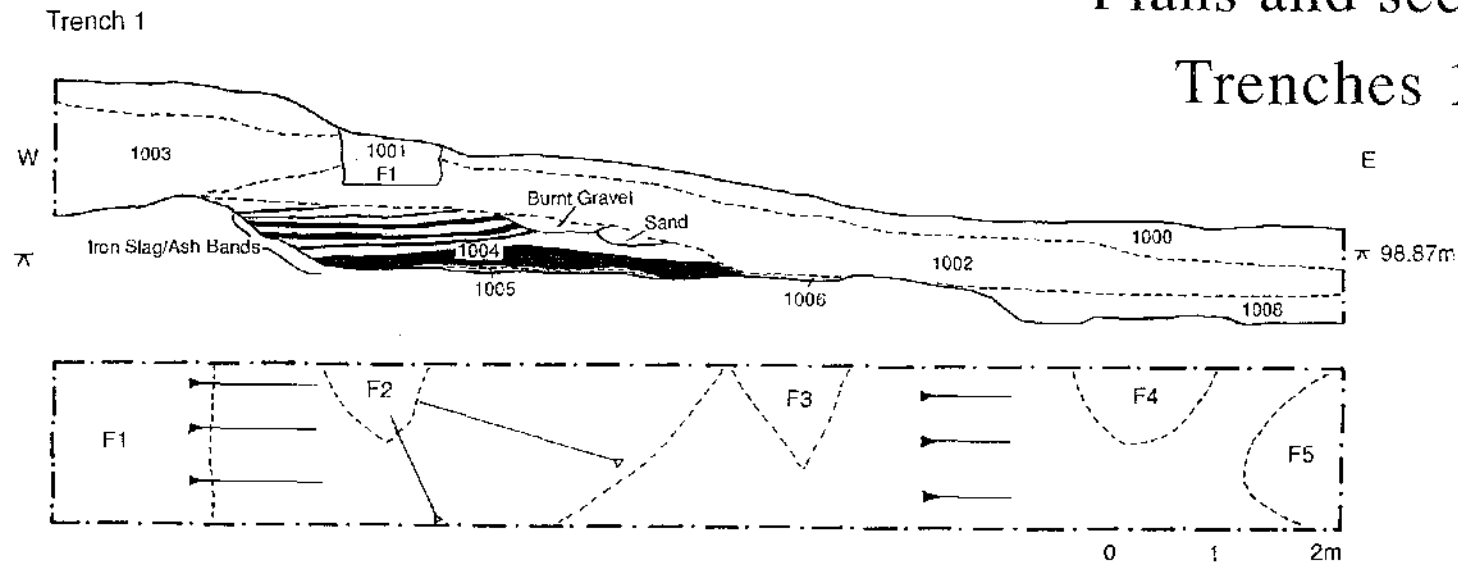


Fig. 3

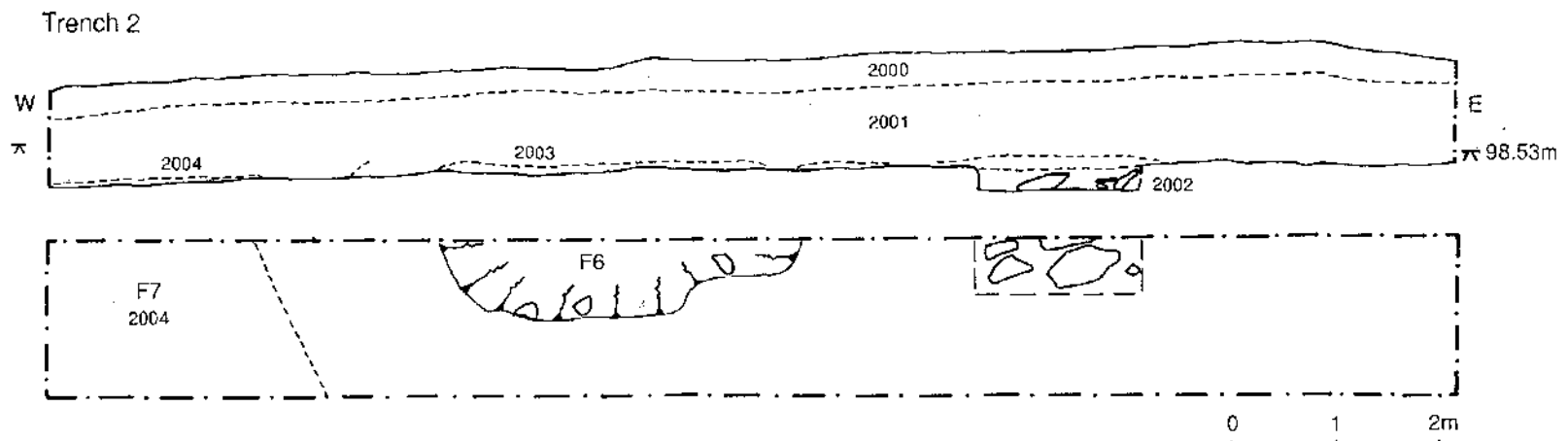


Fig. 4

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Section A-A (approx.)

Absolute Levels

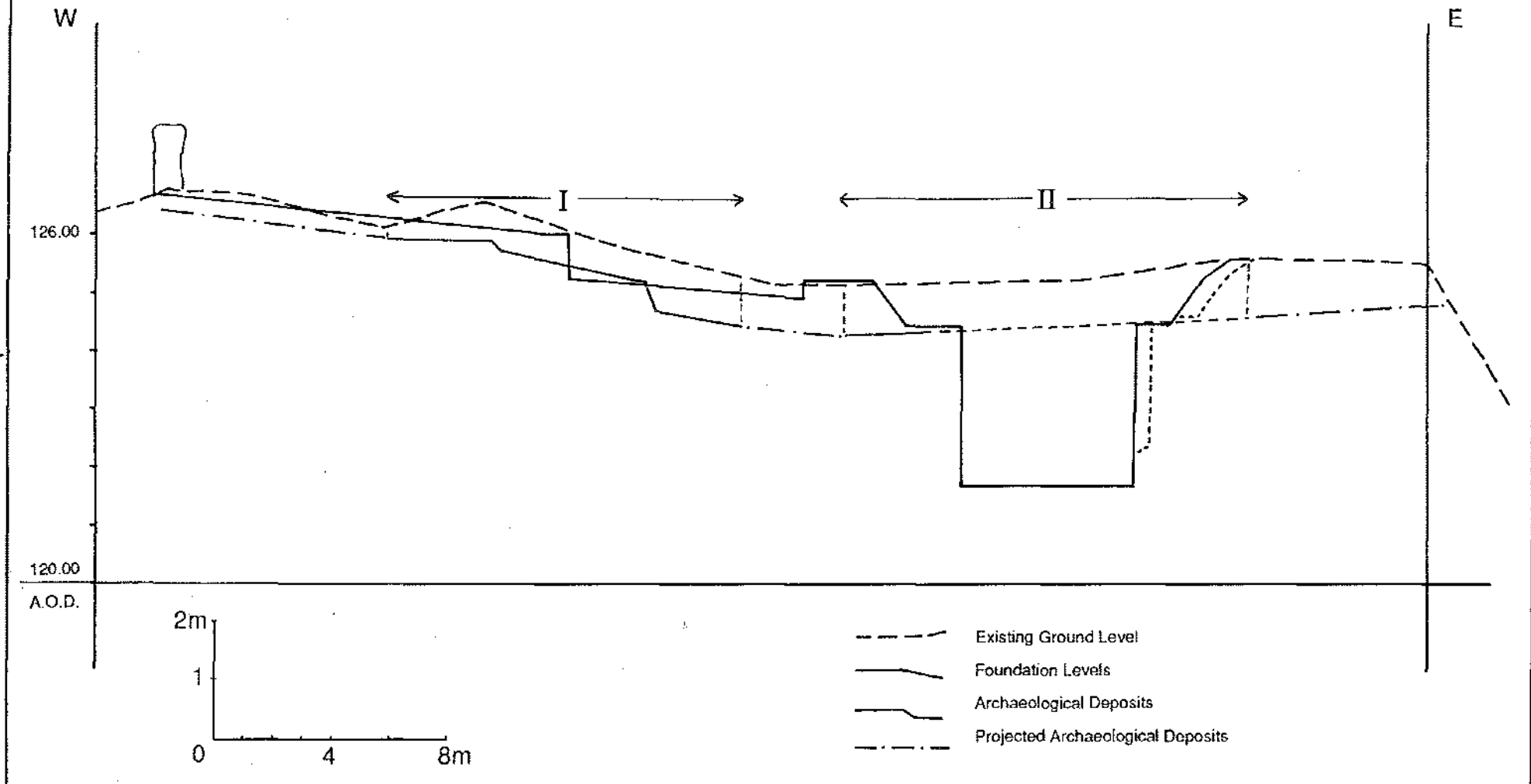


Fig. 5