Friends of Gillfield Wood
Final HLF2 Report on
Gillfield Wood's Stone Posts

friendsofgillfieldwood.com

Authors: Kevin Walker and Paul Hancock

Co-Authors: Chris Brewster, Josie Dunsmore, Mac Jackson, Pauline Burnett, Brian Farnell & Andy Brewster

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Introduction

The enigma regarding the purpose or function of the standing stones in and around the brook running through the ancient woodland of Gillfield Wood, southwest of Totley, remains unresolved. This is despite two distinct lines of enquiry.

Firstly, a consideration of the physical aspects of the stones in Totley Brook comprising physical measurements and ecological observations of the immediate area around each site. Along with this we sort expertise in hydrological matters concerning the brook from Dr Simon Doncaster and in geological matters from Frank Spode. Unfortunately, Simon, a member of the team from South Yorkshire Biodiversity Research Group (SYBRG), found new employment out of the Sheffield area. We did get some valuable insights before he left.

Secondly, we began enquiries using a wide range of archival material looking for connections to the brook from businesses and significant people in the area. A strong team developed during this research. Many hours of work have produced good but somewhat limited rewards in advancing our understanding of the stone sites. Our support from SYBRG with their wider professional network indicates at present that no other sites seem to exist in other areas of the country.

Combining the two lines of enquiry has led to much speculation regarding the purpose of the stone sites, including:

- Land boundary markers.
- Extensions of livestock enclosures across the brook.
- Filters to reduce silting up of mills, water courses and industry downstream.
- Ganister traps from the mining activity above the A621 Baslow Road.
- Flow management to prevent flooding lower down the valley (cf Pickering traps).
- Water regulation to provide a constant regular supply to downstream industries.
- Pheasant enclosures with access to water
- Trout ponds
- Compartmentation for protection from grazing by cattle of newly coppiced trees

To whittle down these ideas into workable hypotheses we have followed various avenues including:

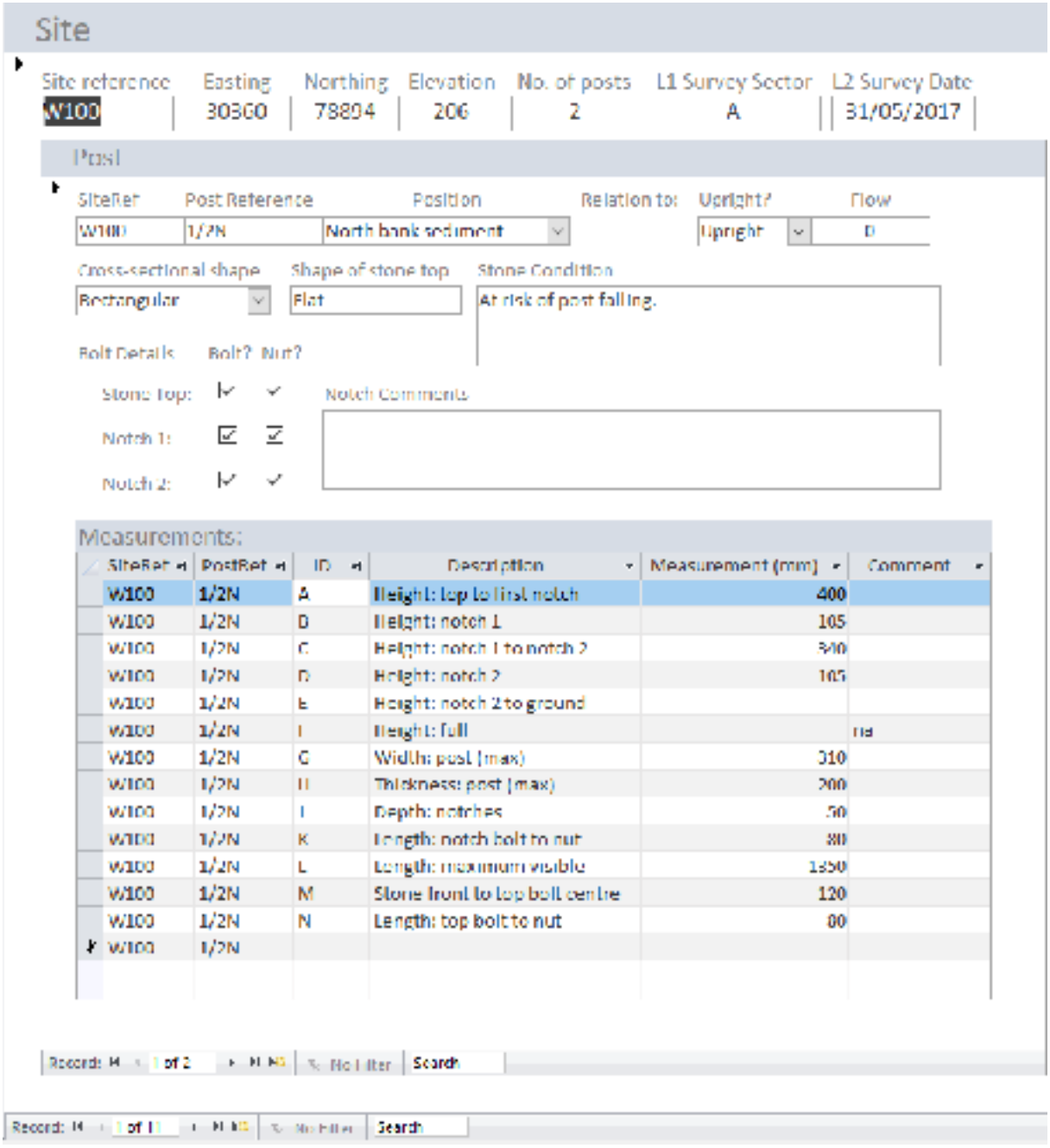
- Land ownership
- Enclosure Act
- Ancient field names
- Wills, sales, deeds, court records, inventories
- Maps and surveys produced for landowners
- Local history, human activity and uses of the wood
- Living testimonies and recollections
- Graduate papers and theses
- Metallurgy, Geology, Hydrology and Ecology
- Historical businesses and families
- Extreme weather and flood records
- Industry, trades, apprenticeships
- Prominent family trees
- Hedgerows, Flora and Ancient Woodland Indicators (AWIs)
- Historical newspapers

A significant part of the project uses Graphical Information System software (QGIS in our case) to map the distribution of the sites and the details of the watercourse on historical and modern maps. SYBRG have made available training from Dr Barry Wright and Chris Percy.

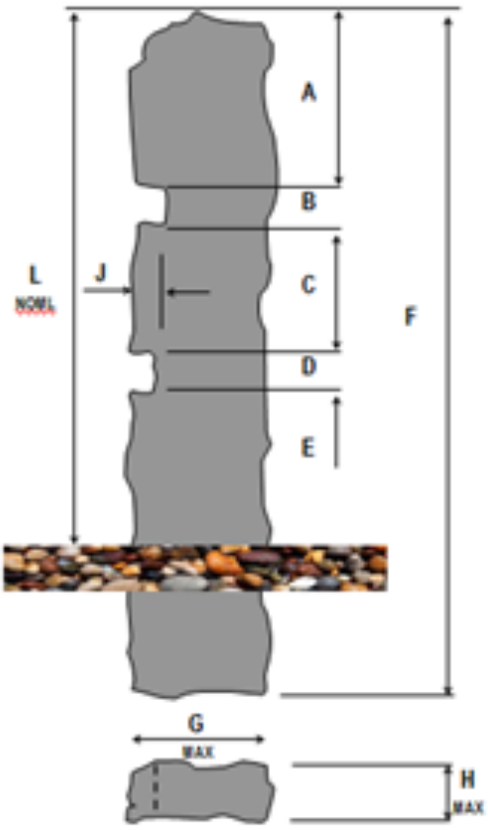
Physical Evidence

Site Location – Each site has been given a unique reference number aligned to the flow of the brook from east to west. These are numbered as hundreds W100 to W900 so that new sites or particular features can be inserted using fifties or tens. Indeed, two new sites were found which were number accordingly W450 and W950. The number of posts at each site have been added to these references as -1, -2 or -3 giving a reference for the most westerly site of W100-2 as this has two posts (see lists below for further detail). As many sites had more than one post we needed to differentiate each post. This was done by adding a suffix of N for northern post, S for southern post and M for middle post a third post existed.

Many of the posts were originally noted in the Level 1 Survey of the wood in 2012/3 with a GPS position. For this second survey we relocated the posts and reaffirmed their GPS positions but as site locations. Following that walkover, we made individual excursions to each site, over a number of months, recording new data with a site survey booklet. The front covers ***only*** of the Field Reports can be seen on pages 23 to 33. They comprise site location, Level 1 photographs, access instructions and sketches of the site 10-20m upstream and downstream of the posts. Each post has a detailed, dimensioned sketch, photographic records and specific notes. Where possible quantifiable data has been kept in an MS Access database to enable data to be transferred to other software packages for analysis.



The measurements taken from each stone post are shown in the database screen shot above labelled A to N. These are also presented diagrammatically here on a 'typical' stone post. All measurements are in millimetres and were taken to the nearest 5mm as the working of the stone's shape did not warrant a more accurate measurement.



We completed the stone post survey and catalogue in August 2017 and we have identified 11 sites containing stone posts as listed below:

a) W100-2 1 post standing, one full post laid in the brook

b) W200-2 both posts are laid down in the brook intact

c) W300-2 1 post standing, one laid in the brook, fractured

d) W400-3 2 standing and one laid down in the brook, partially buried

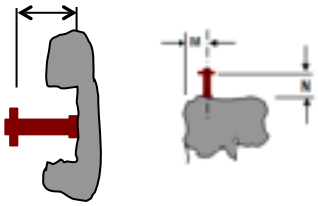
e) W450-3 1 standing, 2 laid in the brook intact, one partially buried (within holly tree)

f) W500-1 part post top and base missing laid down in the brook

g) W600-3 2 standing, one laid down in the brook intact

h) W700-1 standing part buried in silt

i) W800-2 both standing, one part buried, in silt one fractured but pieces found



j) W900-2 both laid down in the brook, one intact, one fractured top and bottom

k) W950-3 all down, one laid in the brook and 2 recycled into an adjacent wall

Photographic site records – Where possible a photographic record of each face of every post has been made. Rotating round the post clockwise these consist of:

- Face a, the notched side of the post facing the water flow.
- Face b
- Face c
- Face d
- Top of post (plan view)

In addition to the posts, photographic records have been made of:

- 10-20m lengths upstream of each bank
- 10-20m downstream of each bank
- Additional points of interest, e.g. the bolts set in lead in the posts

Photographic records, taken at high resolution, provide an overall view of the distribution of flora on each bank. Additionally, dominant flora has been listed in the Site Survey Report for the North and South bank where available.

Post Bolts – We enquired about a possible analysis of the material used in making the post-bolts either by a spark test or by mass spectrometer analysis.

FoGW member, Mac Jackson, has contacts within Sheffield Hallam University Materials Department. In discussion with one of their material specialists he was informed that the cost (up to £400) of spark and/or mass spectrometer testing will reveal little to age the bolts.

On a field trip in late July 2017 to site W200 we managed to uncover the head bolt of post 'B'. This had been buried with the fallen post for some time and was better preserved than most bolts still in situ in their respective post notches.

The thread was not too disfigured by corrosion so Mac used a thread gauge to determine the teeth per inch (TPI) of the thread. This resulted in a TPI of 9 suggesting, at first, that the thread was made to a Whitworth standard. This is typical of a 7/8" diameter bolt. However, the post bolts are only 5/8" in diameter leaving us with the possibility that we have a bespoke thread.

James Whitworth specified the first national thread standard in the 1841 but it must be remembered that bolts forged from square bar were manufactured in local workshops using old tooling techniques many years after the introduction of the Whitworth standard.

If we could have been sure that this was a bolt manufactured to the Whitworth standard we would have had a useful minimum date for the construction of the stone posts. If 5/8" bolts with a TPI of 9 were part of left-over stock in, say, the Totley Rolling Mill, these may have been used and reduced the cost of the post production.

Watercourse

Hydrology - In December 2016, members of FoGW spent several hours walking the brook with Dr Simon Doncaster (Hydrologist). He was intrigued by the stones but also the course of the brook and we had high hopes of learning much more about the formation of the brook, its uses and the reasons for features like the silt deposits around the posts.

In February 2017, Kevin Walker and Paul Hancock undertook to walk the watercourse with a GPS tracker attached to see if the brook had deviated since the 1898 OS map update. However, the results were disappointing as the GPS signal was too heavily influenced, even in winter, by the close proximity of embankments and trees. Although Kevin walked upstream in a roughly central position the tracking when mapped was highly erratic at times jumping from one embankment to the opposite.

Dr Doncaster was unable to continue with the project due to new work commitments. He did, however, produce a brief report (see page 47 & 48) that the watercourse had changed over time and continues to change. Simon pointed out the flood plains left due to changes in watercourse, the number of silt deposits and the water flow possible outside the dry weather banks of the brook during extreme weather. (It had rained heavily in the previous couple of days and the water had clearly 'combed' the vegetation having gone straight over the ground rather than following the meanders).

Subsequent efforts by Professor Ian Rotherham (SYBRG) to provide a replacement hydrologist / archaeologist were for a time unsuccessful. We have now had confirmation that Dr Kevin Spence (Hydrologist and armature archaeologist) will visit the brook shortly after September 2017. In addition, through funding, 1 or 2 students will provide further support tying their final year project with our future deliberations in 2017-18.

Geology - Frank Spode visited the wood with Paul Hancock, Kevin Walker, Paul Ardron and Dr Barry Wright. Examination of the posts confirmed that they were made with Greenmoor rock, a fine-grained sandstone created in the Carboniferous period. We also looked at the stone in the quarry south of Little Wood.

Frank notes that there are some large beds of Greenmoor sandstone, necessary for building structures such as the stone posts, in some parts of Sheffield. Those currently found around Gillfield Wood consist mainly of thin bedded flagstones as seen in the quarry below Little Wood. It is unlikely that the stone posts were locally sourced. Local Greenmoor stone was useful in building walls as evidenced by examination by Frank of some local walls.

We have been in contact with the Friends of Brincliffe Quarry where Greenmoor stone was once extracted. This resulted Ian Prior, an amateur geologist, visiting the group, (see his field survey report of 28th July for 'Long Field Quarry' and 'Old Quarry' in the Appendix). He confirmed the stones to be made of Greenmoor Sandstone, and, also, that the quality of the sandstone was only suitable for building walls, and not substantial enough to have been the source for the posts. In Long Field Quarry a significant section of stone has been buried by farm waste. Mr Prior noted that where the lower rock strata are visible they do appear to be wider than the upper strata.

Whilst surveying the east end of the brook, team members found an outcrop of worked rock strata with exposed sections of a suitable size for our stones. We hope SYBRG's expert, Dr Kevin Spence, will be able to shed light on these outcrops as a possible local source for the posts.

In addition to the mapping and geology we were hoping that soil samples of the sediment around some of the embedded posts might have been provided by SYBRG before the end of HLF2. We did make a crude soil sampler to core into the deposits around the sites. To our untrained eyes and with no scientific analysis these deposits seem to comprise mostly of silt and vegetation! It is hoped that the proposed student projects will include core sampling around the stone post sites and 'flood plains' as part of their remit.

Mapping watercourses - As part of the project we were hoping to have access to Chris Percy and his skills with Graphical Information Systems to put together a series of maps to analyse the water courses running through the wood in more detail. Overlaying geological information along with details of our sites provides a picture of the relationship between the sites and local geology.

We have also investigated LIDAR maps of the area. (Light Detection and Ranging is a remote sensing method used to examine the surface of the Earth). Unfortunately, these do not extend far enough into the wood to be of use in understanding how rain water flows off the surrounding hills.

Document / Archive research

Source of the Stone Posts in Totley Brook - We have investigated known quarries that might have supplied the stone by visiting Sheffield Archives. The only documentation found was from Green Moor Quarry itself, near Penistone, but found nothing in their accounts linking them to Totley.

Searches for local stonemasons in the Trade Directories have found no relevant records related to the stones. Similarly, searches for Water Bailiffs in Sheffield and Matlock Archives, as well as in historical newspaper articles, found a few references, but none mentioned the stone posts.

Local Businesses and Industries - There were two main industries at Totley Rise during the 18th/19th centuries that relied on the water supplied by Totley Brook. The Chemical Yard distilled pyroligneous acid and naphtha from the charcoal burning process. More importantly, Totley Mill, (initially smelted lead but later converted to rolling steel), relied on water to power their machinery.

We have found no records of the building of the mill dams, but it is possible to speculate the smaller upper dam was the original one when only a small amount was required to power the bellows for lead smelting. The larger dam, fed by both Totley Brook and Old Hay Brook could have been a later addition (circa late 18th century) when more power was required as the increased industry demanded a greater and more reliable water supply.

There is ongoing research to discover any evidence of flooding or silting that would have required management of the brook. There have been instances reported in the newspapers but with little to give us further leads.

Other Information Sources - Dr Sam Eyre's Thesis, completed in the early 1950's, has been located and reviewed. It was known to cover the Gillfield Wood area, although we found the thesis looked at land reclamation and not industry or water control. It is known from discussions with his sister (now deceased) that Sam was a prolific note taker of all aspects of Gillfield Wood in his youth. His archive of material was the basis of his book and thesis in later years at Oxford, Leeds and Sheffield Universities. We have spoken to his wife and sons regarding Sam's original records. However, we have been informed by the family that none of the work that he did prior to 1960 has been found in his files. However, his paper on the reclamation of uplands has proved useful in naming ancient fields.

FoGW have been in contact with descendants of the men who once worked this area (Tyzack and Dyson), some of whom have already researched their own families and have shared their findings. We have spoken to the authors of 'Water Power on the Sheffield Rivers' and searched Brian Edward's Archive but have gathered no specific information to focus our minds on the stone posts. Bob Warburton's excellent thesis on Gillfield Wood (1974/5) unfortunately makes no reference to the stones.

Discussion

The Need for Water Management - It would have been a priority for the industries of the Sheaf (particularly those in the southern section after the confluence of Totley and Old Hay brooks) to control the water supply from both brooks to maintain their operations. Equally, the quality of the water, particularly in relation to the amount of silt, would have been an ongoing concern.

Flow Control

It is known that the flow rate of Totley Brook rises very quickly after heavy rains and rapid snowmelt. A resident of Milldale Road has witnessed it rise from a depth of 18cm to 2m in a matter of a few hours. This would not only have brought excess silt downstream, but its power had the potential to damage machinery and cause flooding.

Newspaper reports give accounts of flooding events, for example, at the Chemical Yard in 1958.

Interestingly, the stone posts are not found on Old Hay Brook which may imply their purpose was more local to Totley Brook.

Silt Reduction

Newspaper records and verbal accounts give proof of a severe problem with silt.

- Deeds belonging to West View Cottage below the Totley Mill include a clause instructing them to keep the river free from silt.
- 1899 Tyzack, Sons and Turner were taken to court for allowing 30,000 tons silt to drain quickly into the R. Sheaf at Abbeydale Forge, resulting in the killing of trout stock downstream.
- Anne White, a lady who lived in a cottage at the Chemical Yard, tells the story of the 'swimming pool' in Gillfield Wood, dug by local youths (circa 1900), constantly silting up which lead to its eventual abandonment.
- Although we have as yet not found documented evidence there is a hypothesis that the Mill dam design (a small section at the inlet with a sluice gate to the main section (see Map3 on page 21) could have been a silt settling pond.
- There was a period from 1832-1848 when the ganister works at Totley Moor, Totley Rolling Mill and Abbeydale Forge were all under the management of John Dyson. Fairbanks (surveyor) worked for Dyson in 1836 with a view to extending the dam at Totley Rise. This was never implemented. Were our stone posts used as an alternative method of water management?

By slowing the brook with barriers, settlement of silt would be encouraged upstream and thus reduce the problem of silting in the dams. A FoGW member has been made aware of a site in France where a straw barrier is used to filter dirty water into a run-off pond. See photograph on page 59.

The barriers created by the multiple stone post sites may have slowed the progress of the brook and potentially reduced both problems.

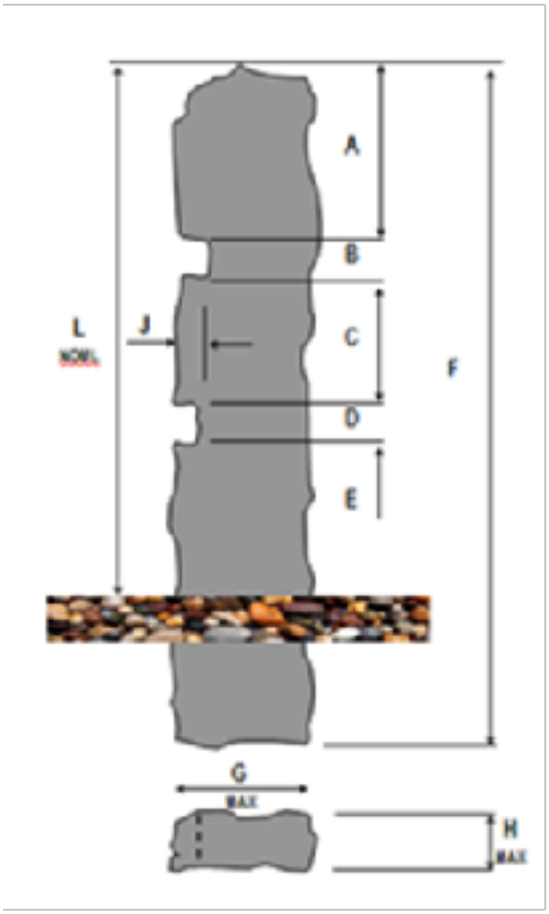
Stone Post Construction and Installation – There are certain aspects of the construction of the stone posts which shed light on their installation. Accuracy would have been required in some of the post dimensions such as placing the notches at the correct height, with their own correct height and depth. However, the thickness of the posts would have been less critical, although a minimum would have been required for the strength of the posts.

It is possible that the stones were not installed on mass but that they evolved westwards upstream each replacing the former when it failed to control the water or silt adequately. Variations exist in cross sections of the posts but this is not strong evidence for this idea. If they were all produced to be installed at the same time would they have probably been uniform?

The wooden beams used across the posts were also not uniform in size from site to site. This is evidenced by the measurements taken of the notches in the posts (see table and diagram page 10). From site W100 in the west to site W450 the notches consistently measured close to 100mm. Those from W500 to W900 measured around 80mm. This implies the use of two sets of wooden beams; timbers 4" deep on the western section, but 3" timbers in the east. Furthermore, the bolt-to-nut lengths

(K & N) have a median value of around 75mm suggesting that most cross-members were 3" thick. Clearly, variations exist; 30mm at W100-22S either had thinner timbers across the top, or the nut was turned down after the beam – whole or broken – was removed.

Were the timber variations because the earlier rails kept failing so were increased in size? Or is it because the more easterly sites are calmer deeper water than the narrower faster flowing western sites? Was the difference in size just a coincidence relating to the size of wooden beams available?



Post	A: Top section	B: Notch 1 height	C: Middle section	D: Notch 2 height	G: Post Width	H: Post Thickness	J: Notch depth	K: Notch bolt to nut	M: Front to top bolt	N: Top bolt to nut
W100-12N	400	105	340	105	310	200	50	80	120	80

Post	A: Top section	B: Notch 1 height	C: Middle section	D: Notch 2 height	G: Post Width	H: Post Thickness	J: Notch depth	K: Notch bolt to nut	M: Front to top bolt	N: Top bolt to nut
W100-22S	410	100	345	105	260	190	40	75		30
W200-12N	400	100	350	100	290	170	50	75	130	70
W200-22S			370	100	270	160	50			
W300-12N	400	100	350	100	350	230	35	70	85	
W300-22S	400	100	350	100	350	200	45	70	120	80
W400-13N	350	100	350	105	305	170				
W400-23M	405	104			345	120	40		72	90
W400-33S	400	100	350	110	360	190	45	48	130	70
W450-13N	400	105			420	150	45		130	80
W450-23M	415	100	350	100	360	170	40	80	130	70
W450-33S	380	100	350	105	340	160		70	135	80
W500-11N	420	80	390		250	210	35	70	100	65
W600-13N	410	80	380	85	410	150	45		85	70
W600-23M	410	80	385	85	280	185	55		115	85

Post	A: Top section	B: Notch 1 height	C: Middle section	D: Notch 2 height	G: Post Width	H: Post Thickness	J: Notch depth	K: Notch bolt to nut	M: Front to top bolt	N: Top bolt to nut
W600-33 S	410	85	385	85	280	260			70	65
W700-11 N	410	80	370	80	430	200	35	65	100	70
W800-12 N	400	75	370	80	200	225	30	75	65	75
W800-22 S	420	75			260	170	30	75	130	60
W900-12 N		90	390	80	280	150	50	75		
W900-22 S	440	80	380	80	380	140	40	75		
W950-13 N	400	110	410	100	400	190	50	85	115	
W950-23 M	395	105			310	180			145	
W950-33 N	405	115	210		320	165	40		150	
Median	403	100	360	100	315	175	43	75	120	70

Section A (top) is roughly consistent throughout all the post builds but, though consistent, Section C (middle) is often up to 50mm (2”) shorter in height. How any determination was made regarding the distance apart of the cross-members remains unclear. We do not know if additional timbers (planks) were assembled over the two cross-members to create a barrier or whether the cross-members supported hay bales to act as a filtration system. These kinds of material are not going to survive the rigours of time.

Notch depths vary from 35 to 55mm and within sets, e.g. W100, W300, W600 & W900, there can be 10mm difference. The general impression for the stone post construction is that low levels of tolerance were fine within the overall shape of the posts with more accuracy required for the notches and bolts.

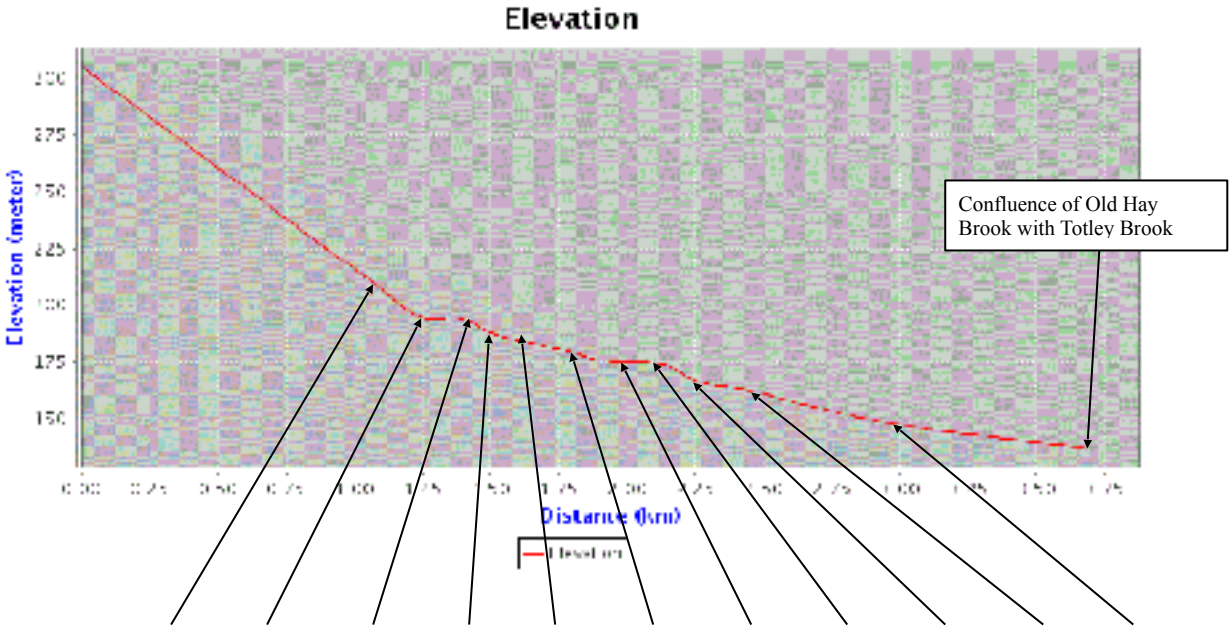
The notches face upstream on all posts, thereby pushing the rails into the stone from the force of the water upstream. The stones are of robust construction although with today's engineering knowledge the notches are actually the posts' weak points. Four have fractured at the lower notch. This is furthest from the top of the post and therefore prone to the turning force being applied with increased depth of water. These are referred to as the clockwise moments of the longest lever i.e. the top of the post. (See stone post catalogue 200B, 300A, 500A and 900A page 34-46.)

With regard to silt control each site may have been constructed as a 2-post site. Later the need for a third post to strengthen the barrier or control the changing course of the brook, may have been installed. (See 3rd post hypothesis the appendix, page 16).

Another possible date for the installation of the stone posts is also revealed by Archival research. For a period of approximately 30 years, between 1850 and 1880, Totley Hall was not occupied by the owners but let out to tenants and somewhat neglected. This may have provided a window of time when little notice was taken of Gillfield Wood, allowing the stones to be put into place without any records being made.

Considered Hypotheses regarding Purposes of Stone Posts

Context - The brook, from its origin west of Dyson's Refractory to its confluence with Old Hay Brook to form the Sheaf, is fed by many small tributaries. A quick count on Google Maps shows 14 tributaries of which 5 are substantial. The map clearly demonstrates the Dendritic(tree-like) Drainage pattern typical of an eroded V-shaped valley landscape. This valley descends 168m (552ft), from 305m (1001ft) above sea level at SK29277883 in the west to 137m (449ft) at SK31818044 (start of the Sheaf) over 3.7km (2.3 miles). These are direct measurements rather than actual brook distances. The posts are located along the brook at almost regular intervals. They are noticeably missing from the steepest sections apart from W100.



Stone Post	W100	W200	W300	W400	W450	W500	W600	W700	W800	W900	W950

The brook, throughout its entire length passes through woodland apart from a small section out on the moors beyond Baslow Road. Some tributaries are quite heavily wooded passing through Holmesfield Park Wood, Fanshawe Gate and Little Wood. Toward the eastern end fields and housing limit the wood. All of these contribute debris as well as silt and leaves. We also need to recognise that in heavy rainfall run-offs appear adding more material to the brook.

Here we discuss our own speculations for why the barriers may have been used along half the length of Totley Brook.

1) **To prevent or reduce the amount of silt reaching the dams**

Silting has always been a problem because watercourses carry alluvial deposits downstream. Not only will silt accumulate but debris from However, both small and large debris can be caught in the flow. Go to the moors on a really wet day and watch the run-off taking the routes of least resistance e.g. paths and natural gullies and you can see the amount of soil, leaf and bracken litter etc that is being carried down to Totley Brook.

The tracks that facilitate this fast drainage of the moors were probably created by men accessing the mines of the 18th and 19th century sited immediately behind Dyson's Refractory (1834)…initially coal was mined here from at least the 18th century, followed by ganister mining when the refractory was in operation. The ganister extraction ceased when flooding of the mines became a problem.

The refractory has a drainage gully running from the yard area adjacent to their spoil heap. This gully probably also channels water from the hillside above and goes under the highway to join the nascent Totley Brook towards the southern end of the field below. (Totley Brook's source is approximately 100m above the Dyson site). Added to the alluvial waste washing off the moor would also be industrial deposits from the mining and brick making processes.

No scientific assessment of the amounts of silt has been made at this time.

The group has learned that a method for silt management in dams was to have straw bales packed against the bottom shuttle before opening it…like a huge sieve.

We think this method was employed when maintenance necessitated the emptying of a dam, to prevent the water taking any accumulated silt with it.

Is this the principal that could have been used in conjunction with the crossbars?

2) **To prevent flood damage to the millwheel and buildings**

The posts may have supported barriers to slow and hold water back at times of increase in water flow., thus reducing the risk of flooding or machinery damage at the Chemical Yard, Rolling Mill, and even further downstream.

The numerous stone sites might also help to disperse water laterally onto flat areas alongside the brook and further delay its arrival at the R. Sheaf (Totley Rise)

a) Evidence…

Immediately upstream from some of the post sites we have recorded plateaux of vegetation established on beds of sediment (see table above). . Extending many metres to the side of the stream's current course this shows that water must have flowed slowly over these areas, like a mini flood plain. This vegetation does not contain ancient woodland indicators, whereas the opposite steeper bank often does, indicating the former has been colonised more recently.

At site numbers W400 and W600 the level of the lower notches in the stones correlate with the level of the flat sedimentary area to the North side of the brook, now covered in vegetation… verified by laser measurement.

Flood evidence has come from archived newspapers…

-Reports of extreme weather events e.g. flooding reported at Walk Mill (Dore and Totley Station area) July 1843.

-Report of R. Sheaf flooding at Woodseats 26th Feb 1923, see newspaper accounts of weather conditions and photograph. *I'll attach these separately or bring them to the meeting*

-Severe flooding at the Chemical Yard area in 1957 when water management upstream was no longer in place.

2007 flooding of R. Sheaf in Millhouses Park. (By this date we have been told that holding tanks had been installed in Totley adjacent to Aldam Rd. Their role is to capture surface water and delay its arrival at the river, avoiding inundation in the Chemical Yard area.) *To be verified.*

3) **To maintain a constant supply of water to the mill**

The brook is small and the amount of water it carries depends very much on weather conditions. Prior to the dam(s) being built at Totley Rise any wheel in that vicinity would have been served by a goit from the brook and subject to the vagaries of rainfall, therefore needing some type of water management upstream to maintain a constant and sufficient supply.

Evidence…1589 6th Earl of Shrewsbury paid 4d rent to Mr.Francis for water. *Mr. F owned the field where the allotments are and Josie thinks he will have owned others in the vicinity*. The goit ran through his field to 'Totley Lead Milne'.

At Abbeydale a wheel repair and upgrade is recorded in Bright's 17th century papers. In Gelley's map of 1725 this wheel is shown being supplied by a goit from R. Sheaf. The field through which this ran was flooded by the construction of Beauchief dam in 1778.
Did something similar occur at Totley Rise? *(We need to look for further evidence of the goit).*

Speculation… the stone sites might have been erected to hold water back in an early attempt to maintain a steady supply. Barriers could have been used to retain water in several ponds throughout the wood, to be let down when required. This may have been as simple as overnight storage.

a) Building of a dam/dams to store water
   19th century maps show the dam at Totley Rise was in two distinct sections. Fed by Totley Brook, the small upper pond known as Little Dam had a shuttle that emptied directly into the larger dam, known as Great Dam. Does this 'extra' engineering indicate that the smaller dam had existed prior to the larger one being built circa 1760, and show early water management had been in place.
   We know a lead smelting mill existed at Totley Rise from the late 16th century when waterpower became the energy source to drive the bellows (invented by William Humphrey), ref 6th Earl of Shrewsbury paying 4d for the goit on Mr Francis' field to serve his mill, and also Humphrey bringing a case against the Earl for stealing his patent!
   Might this indicate when Little dam was created? The amount of water required to drive the bellows was small, and only required intermittently, but we also know Totley Brook carries very little water in dry periods. A small reservoir of water might be all that was necessary to ensure that water was always available and could also supply the mechanism driving the bellows at an even rate.

   Great Dam was probably built when the Rolling Mill was developed from the earlier lead smelting mill and was needing more power. This is thought to be in the late 18th century, but and exact date is unknown. As well as being fed by Totley Brook the map clearly shows this dam was also supplied via a goit from Old Hay Brook, indicating that the supply from Totley Brook was either erratic or insufficient, or both.
   Water supply from Old Hay Brook had the advantage of being stored by at least 3 dams that supplied the several mills on its banks, and having been used by them would pass down river and be available to Great Dam, should it be needed.

   If the stones pre-date the dam and had been erected to improve the availability of water they would be redundant once a dam had been built. However, if their purpose had been to hold back silt they would still remain important.

4) Questions on points 1-3

Did the slowing of water at one stone site only catch a limited amount of sediment? Did multiple sites further reduce its speed and allow increasing amounts of sediment to settle?

If it was only necessary to have one site to catch the sediment it has been suggested that as each site silted up it would be abandoned and another built, accounting for the many sites.
A further observation is that the notches in the stones on sites ? to? measure ?cm, whilst the notches on sites ?to? are ?cm. *(Kevin's recent observation)* Does this indicate they were

constructed in different phases, and/or represent a re-thinking of the strength of the cross timbers required.

It has been noted that at sites where there are 3 stones, stone A on the north side of the stream is of a different size, quality and workmanship to stones B and C. Were these added at a later date and, if so, why…
-to enlarge the barrier for some unknown reason…by-passing? early silting problems?
-to embrace a wider stream bed, maybe created as a side effect of damming?

If silt was the problem they were trying to solve wouldn't it be more efficient to have the trap closer to the mill? This would catch the maximum amount of silt before reaching the dam and make maintenance more convenient.
This raises the suggestion that Little Dam could have been used latterly as a silt trap, maybe not when initially constructed, but after the Great Dam was built…why was it never incorporated into the Great Dam?

5) Elements of Woodland Management

a) Fencing supports protecting recently coppiced wood from animal grazing

The stone posts were part of a secure fencing system surrounding recently worked compartments. This idea was put forward by Geoffrey Nixon, who visited the group at the library meetings of 08/05/2017 and 25/07/2017. He has read about historical woodland management and the use of brush fencing to protect new growth.
In discussion the group felt the engineering of the stones seemed excessive for that purpose but have requested references from Geoffrey, which can be pursued. (L1 Tree and stored coppice distribution maps have been produced for Geoffrey but no correlation is obvious (see Maps 1 and 2 on page 20.

b) 19th and early 20th century pheasant rearing

The wood was used to raise pheasants as noted in a letter to Sheffield Telegraph dated Sept 11th, 1895.
Could enclosures have been used for this purpose, the stones being part of the fence supports needed to build them?
By straddling the brook each enclosure would give the birds access to water.
Again, the engineering of the posts seems excessive for fence supports, but might have been deemed necessary to withstand spate events.

c) Trout farming

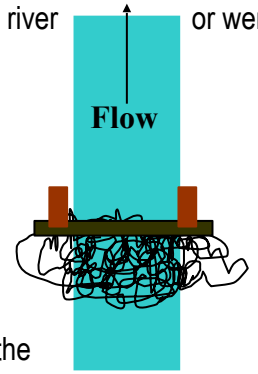
Barriers may have been erected to create pools for trout farming. The River Sheaf was certainly stocked for fishing. Did local people set up barriers to create pools to encourage trout to accumulate and make them more accessible for catching? We have tried to find records of the River Bailiff's work in the Archives, but so far unsuccessfully. This seems more plausible if one or two such barriers were found along the brook not 11 barriers.

Elderly residents talk of children learning to tickle trout (large enough for their tea) near the chemical yard. Pools upstream must have existed in which the trout could grow to this size.

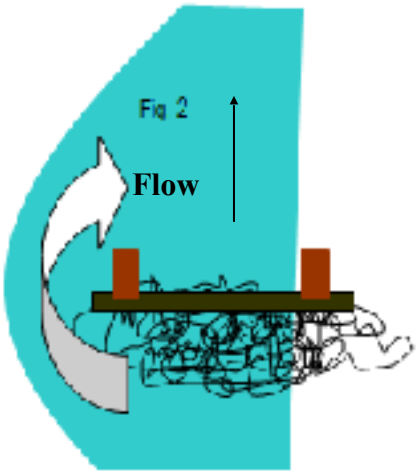
In 1899 Abbeydale dam was emptied too quickly, resulting in an estimated 30,000 ton of sediment being washed downstream. In court the water bailiff reported how this had suffocated the trout in what was one of Sheffield's best fishing rivers.

3rd Stone Post Hypothesis

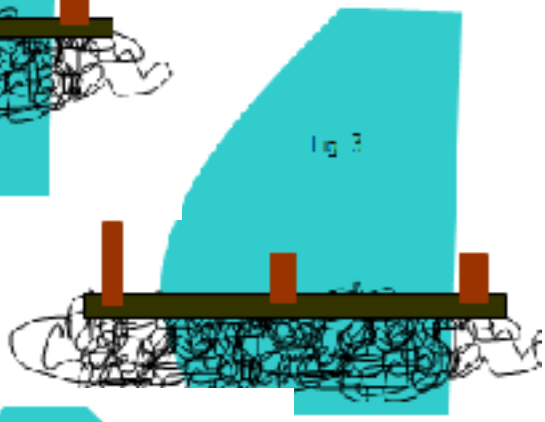
Example Site W600-3. The timber bars either collected debris from the river or were 'pre-loaded' with bails of hay for filtration. For example, Abbeydale Industrial Hamlet bought 38 bails of hay to place behind the sluice gate before opening the sluice to drain and silt deposits were collected. (Source farmer John Bramall manager at the Industrial Hamlet circa 10 years ago). Could this be to prevent silting up at the Totley Rise foundry / mill?



1. Time passed and the barrier became fully silted. As water attacks the weakest point in the structure let's say it veers around post 'B' close to the northern bank of the brook.

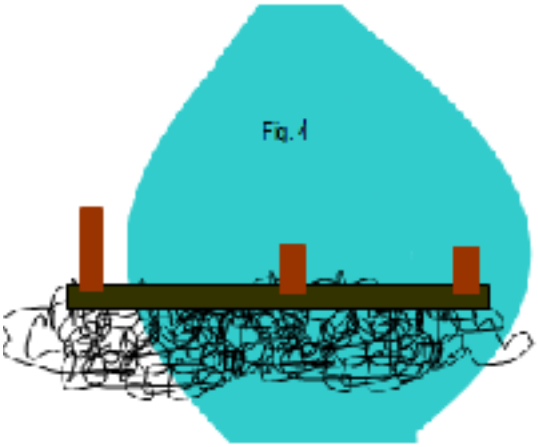


Such a breach would vastly reduce the effectiveness of the filter. To reinstate the effectiveness of the barrier a third post was installed where the breach occurred i.e. cutting into the north bank. To support the theory that post 'A' was a later addition it is noteworthy that it is a different cross section to posts 'B' and 'C'. Additionally, this feature is the same on Sites W400 and W450 where posts 'A' are a larger section than the other 2 posts.



water ones
in the
near the

2.Once again after the barrier is reinstated the silting up causes an almost total blockage and the again works at the weakest point structure and cuts around post 'C' south bank.

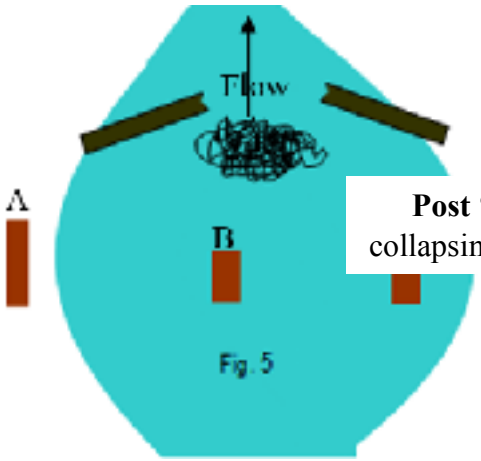


3.The barriers purpose of either blocking or filtering the water flow is once again compromised with high amounts of silt deposited in front of and around the barriers although over time the southern bank would be gradually eroded away.

4. Once again it can be argued that the profile of the silt upstream increases from brook bed level up to 750mm deep around post 'A' and diminishes back to brook level downstream. Photographs PH600/3/A/33 and 43.

5. Now the barrier has been compromised it could be hypothesised that as repair was no longer an option the Site was abandoned and another Site was identified and a new barrier installed further upstream restarting the whole cycle.

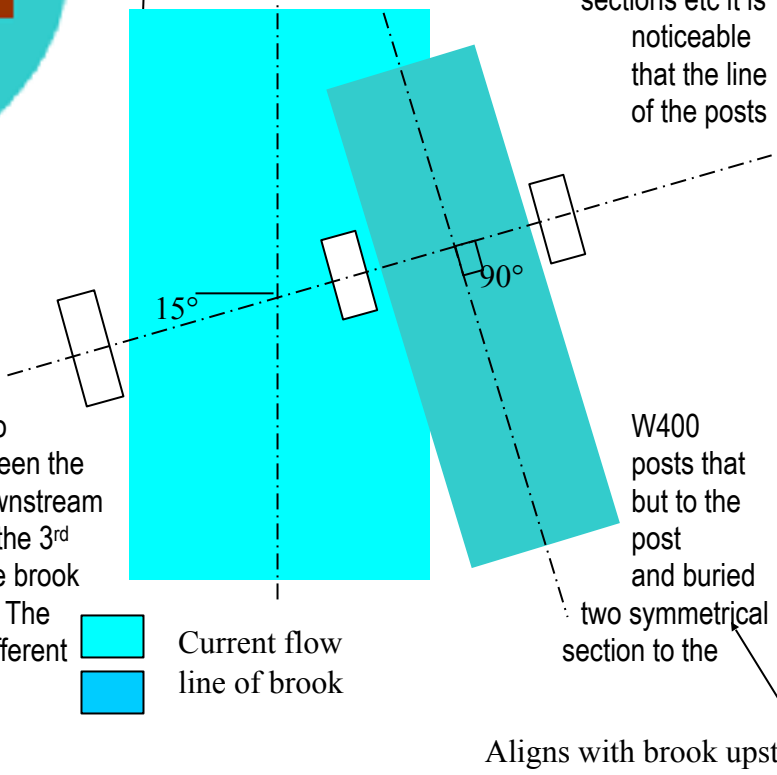
   This would suggest if true that the stone posts were not all installed at the same time but gradually evolved up the brook with each being abandoned once silted up then compromised. If this is what happened it can be argued that once compromised the site went unmaintained and eventually the timbers across the brook became waterlogged, rotted and failed.



This would have washed away the barriers timbers and silt between the posts explaining the height of the bank in comparison to the post notches and the shape of the water bed and banks on the site.

Post 'C' before collapsing in to brook.

to the physical evidence of the posts sections etc it is noticeable that the line of the posts



across the brook are not at 90° to the current brook but are at an angle of approximately 15°.

Comparison evidence

This hypothesis can also be applied to where the brook no longer flows between the were set in a left meander viewed downstream south bank of post 'C'. On site W450 the 3rd (designated post 'A') is inland from the brook higher than the mid notch in deep silt. The 'original posts' ('B' and 'C') are of a different 'additional post' (post 'A').

W400 posts that but to the post and buried two symmetrical section to the

Conclusions

No firm conclusions can yet be reached based on the evidence we have compiled as to the purpose / function of the stone posts. Below we summarise those things that we know, those things we suspect and what remains as unknown.

Things we do know:

1. The rock the stone posts are made from Greenmoor sandstone (based on 3 posts sampled it is assumed the rest are the same).
2. The bespoke thread of the leaded bolts predating the bolts (but not the posts) to standards before the introduction of the Whittworth thread introduced in the 1850's
3. The brook has changed direction at some of the site locations.
4. Silting up of the brook and dam were an issue. (Evidence; (i) from the Deeds of West View Cottage near Bradway Mill, (ii) the court case when 30,000 tons of silt was released from the dam at Abbeydale Works, and (iii) problems with the swimming pool in Gillfield Wood).
5. There are large deposits of silt on flat areas around many stone post sites.
6. Posts in sets of 3 have one of the outer posts asymmetric to the other two posts. It should be noted that some of the stone posts are more regular in shape than others (worked more) whereas others are more natural in shape. Therefore, measurements are often nominal.
7. The shape of the notches is for 3" beams in posts downstream and 4" beams upstream of W450.
8. Where posts are still standing the notches are within 35mm of horizontal alignment.
9. Post profiles and sections vary from site to site and within sites of 3 post installations.
10. The sites are fairly evenly distributed with the exception of W500 and W950.

    Site W500 may not actually be a true site as it consists of one-part section of a post. It raises the question as to whether it has moved downstream by the force of water or upstream by human intervention. Site W950 consists of 3 posts that have been used to support a wall on the North Bank just below the Scout Hut. The riverbed has a rocky substratum with little sediment at this site. It is hard to see how stone posts would have been set into the brook here.

What we suspect but do not have definitive evidence for:

1. The notches in the posts were to hold wooden cross beams possibly as part of a barrier or filter system.
2. The bolts on the top of the posts possibly secured the posts with a wooden cross beam.
3. Posts at W950 have been relocated. The posts appear to have been recycled into building a curved wall and drainage gully. The riverbed of the area is bedrock and it would have been difficult to bury the bases to secure the stones in place.
4. Each set of posts started out as a pair. Where leakage was encountered a third post was added (see 3 Post Hypothesis on page 16). The third post was generally a different size to the original pair i.e. larger in cross-section.

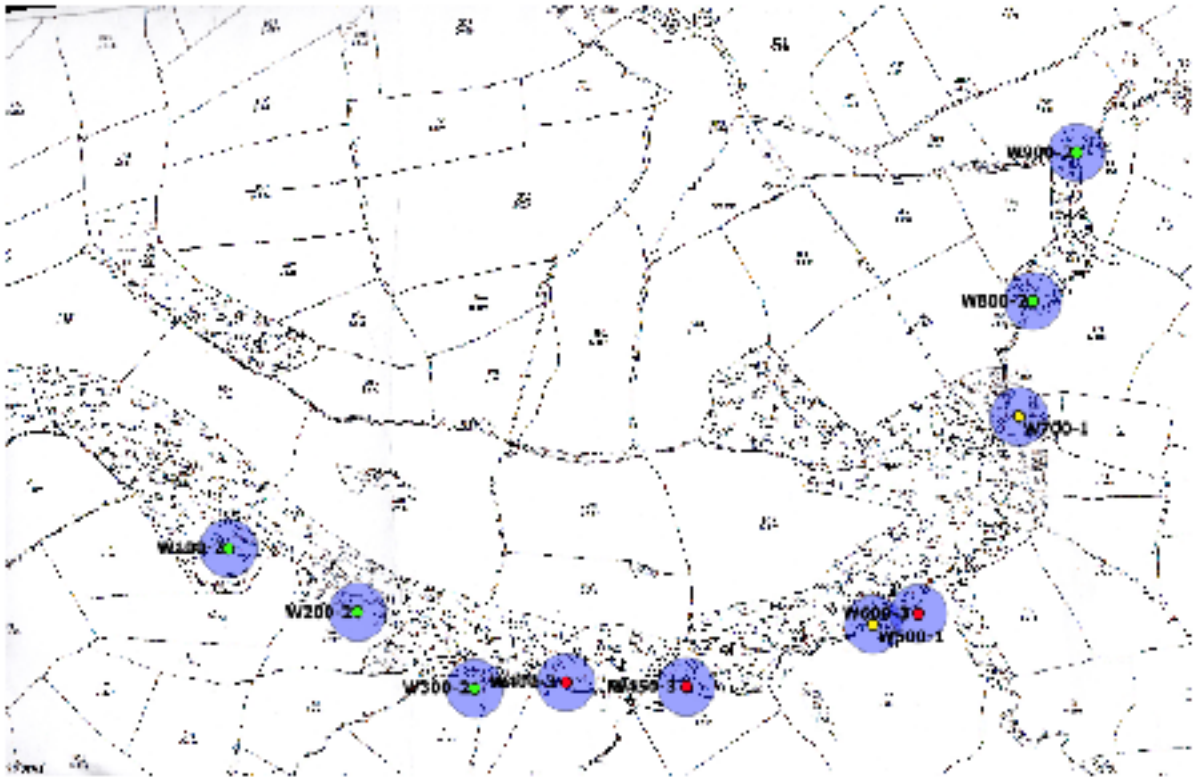
Things we don't know:

1. What the posts were used for.
2. Who erected the posts.
3. When the posts were erected.
4. Why the posts have to our knowledge not been recorded in surveys and maps?
5. The composition of the silt deposits.

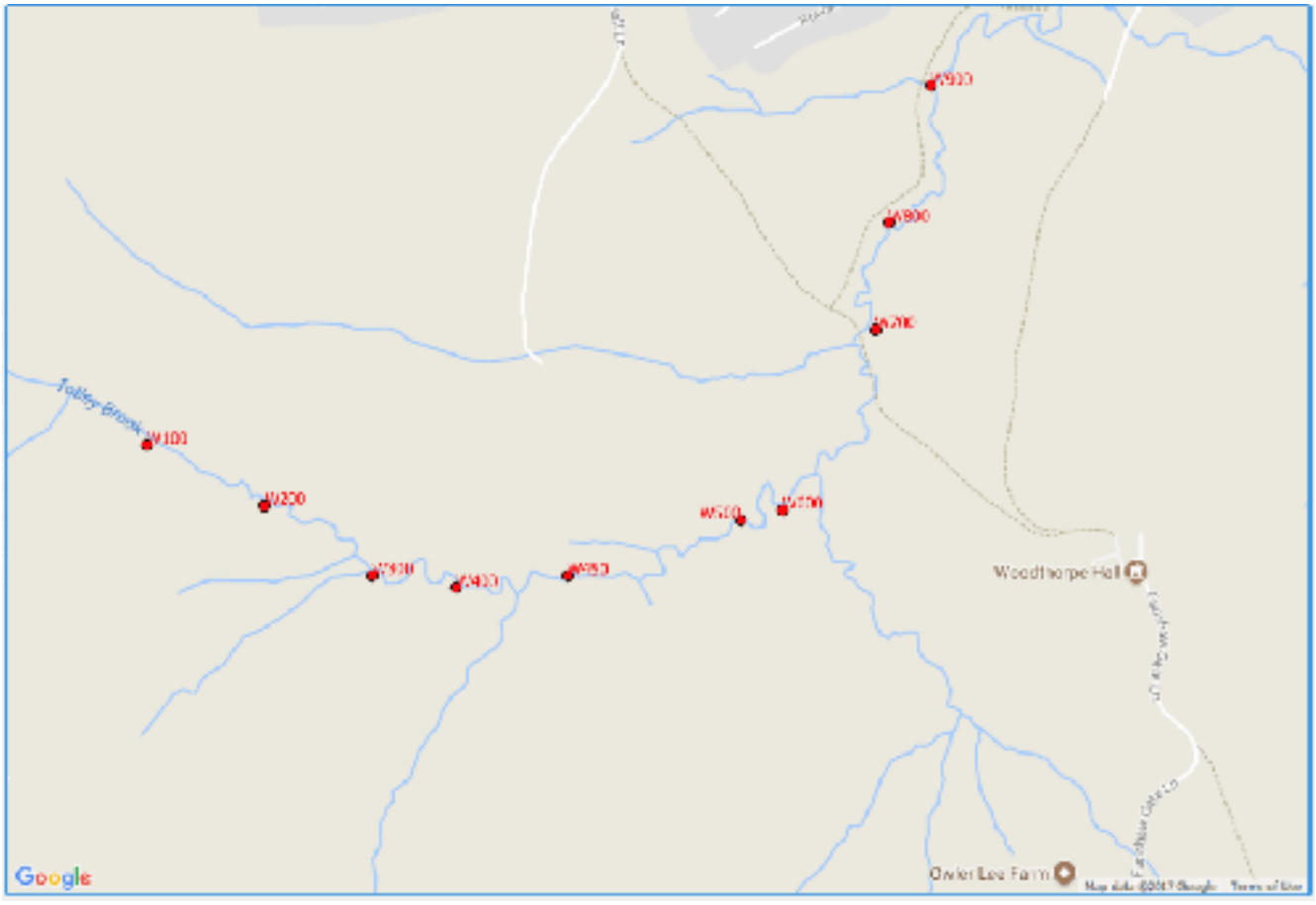
Appendix

Mapping

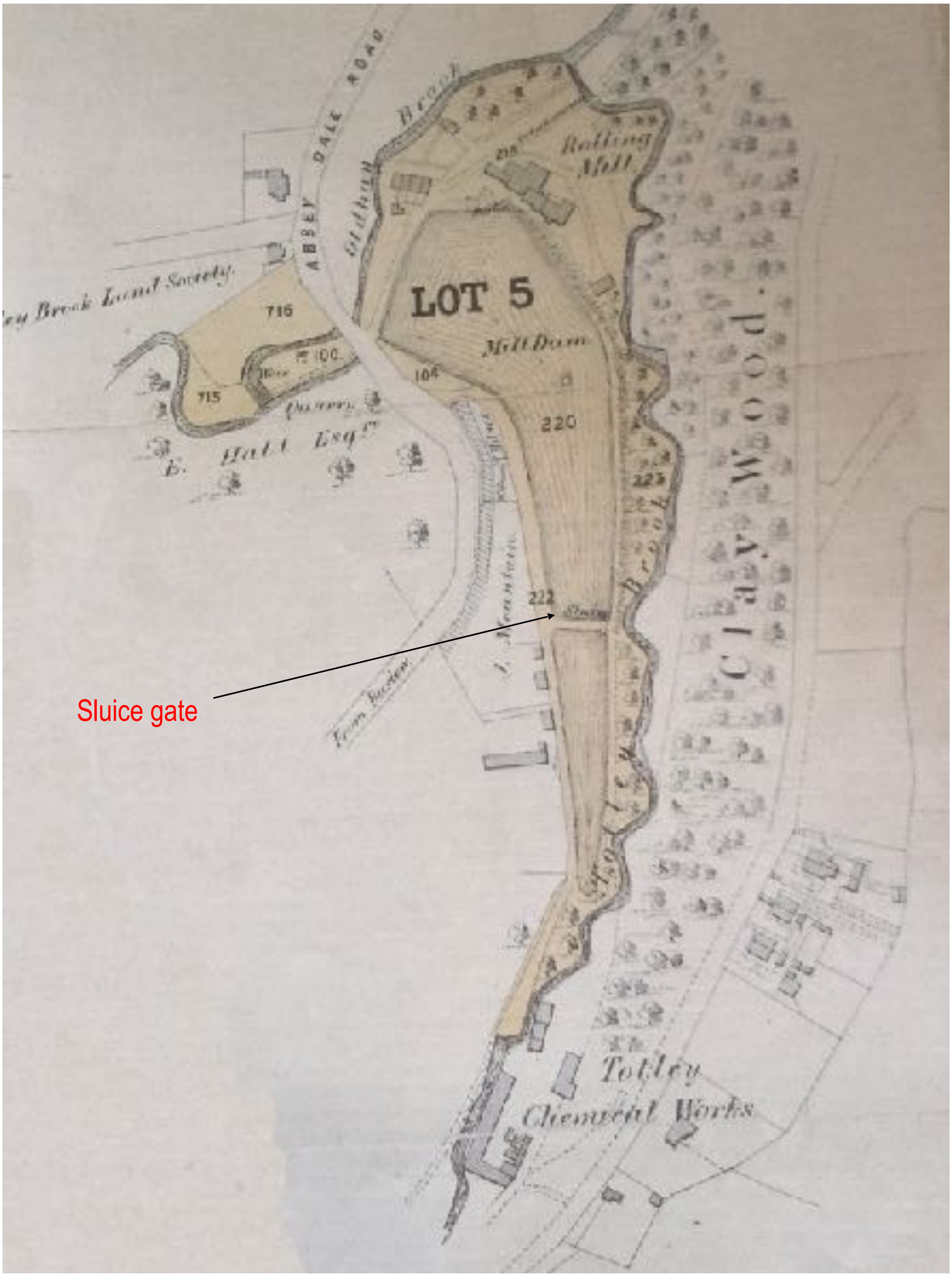
Map 1 – Position of stone post sites relative to the countryside around Gillfield Wood (1898 OS Map)



Map 2 – Position of stone posts relative to Totley Brook (Google Maps 2017)



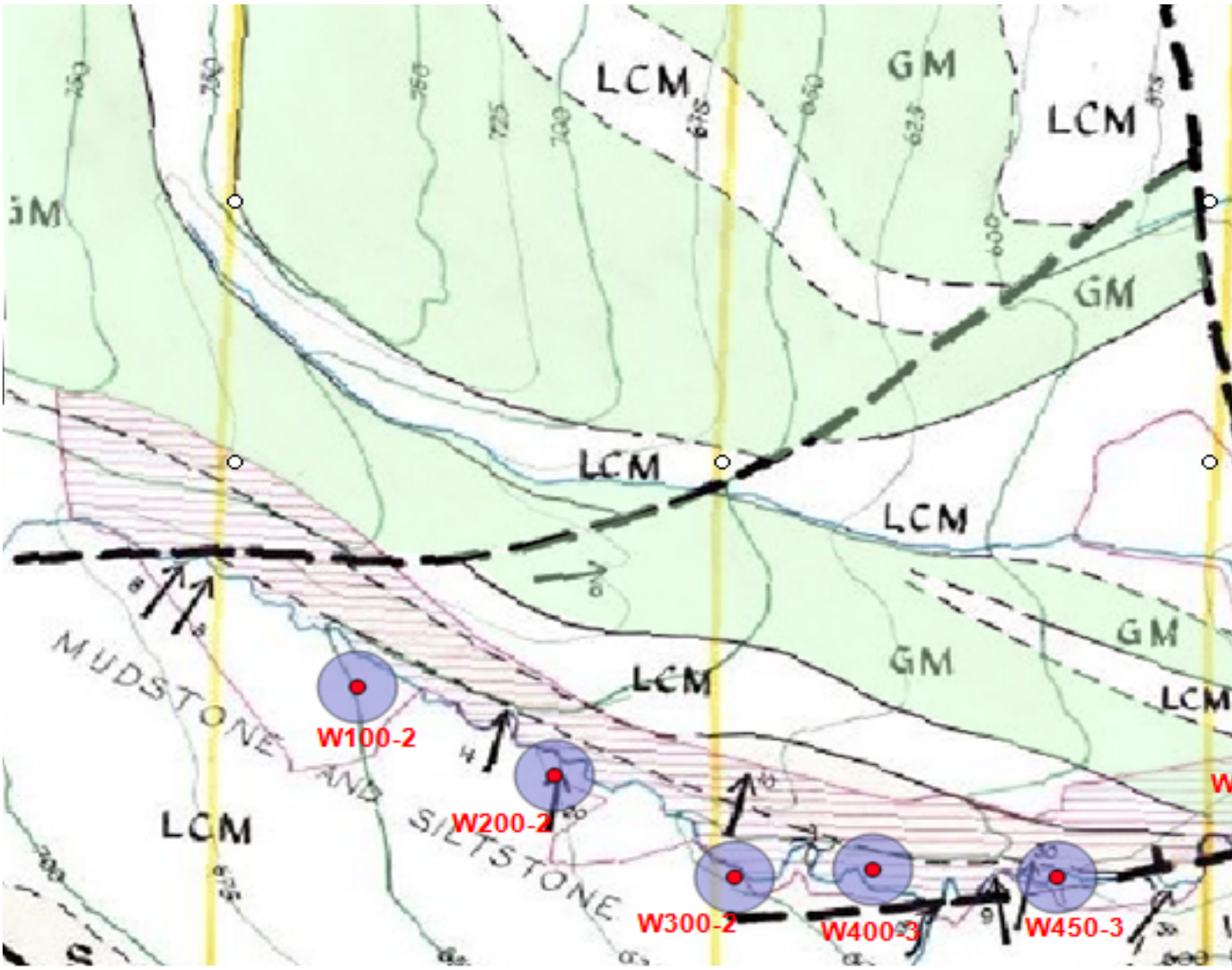
Map 3 – Dam



ABBEY DALE ROAD
Brook
Rolling Mill
LOT 5
Mill Dam
716
715
104
220
222
223
Quarry
E. Hall Esqr
Clay Wood
Totley Chemical Works
Sluice gate

Map 4 – Greenmoor deposits in relation to Stone Post Sites.

Greenmoor Stone deposits in relation to Post Sit



Stone Post Level 2 Survey Field Recording Booklet

Site Ref Nº – W 100 / 2		Stone posts in this Site	~~1~~ - 2 - ~~3~~	Site Location GPS Ref	E 30360 N 78894
Level 1 Feature References	F0334 P0334	F0335 P0335	F P	Level 1 Survey Sector	A
Level 1 Survey Images				Notes from L1 Survey Listed as two separate features on level 1 survey.	
Wood Location Map					
L1 Sector Location Map					

Date L2 Survey Undertaken	**/ /2017**	**Survey Team Members**	Kevin Walker

Stone Post Level 2 Survey Field Recording Booklet

Site Ref Nº – W 200 / 2		Stone posts in this Site	~~1~~ - 2 - ~~3~~	Site Location GPS Ref	E 30499 N 78824
Level 1 Feature References	F 0281 P 0281	F - P -	F - P -	Level 1 Survey Sector	B
Level 1 Survey Images				Notes from L1 Survey Stone posts (2) in river	
Wood Location Map					
L1 Sector Location Map					

Date L2 Survey Undertaken	**/ /2017**	**Survey Team Members**	Kevin Walker

Stone Post Level 2 Survey Field Recording Booklet

Site Ref Nº – W 300 / 2		Stone posts in this Site	~~1~~ - 2 - ~~3~~	Site Location GPS Ref	E 30626 N 78743
Level 1 Feature References	F 0234 P 0234	F- P-	F- P-	Level 1 Survey Sector	B
Level 1 Survey Images				Notes from L1 Survey Q. Is the broken laid post from the South or North bank? Orientation could suggest South bank. Q If laid post is from South bank was this a three-post site and 3rd post silted in to North bank? Investigate length of rotten sponge like wood embedded in South bank between posts and bridge.	
Wood Location Map					
L1 Sector Location Map					

Date L2 Survey Undertaken	**/ /2017**	**Survey Team Members**	Kevin Walker

Stone Post Level 2 Survey Field Recording Booklet

Site Ref Nº – W 400 / 3		Stone posts in this Site	~~1 - 2~~ - 3	Site Location GPS Ref	E 30725 N78749
Level 1 Feature References	F 0206 P 0206	F- P-	F- P-	Level 1 Survey Sector	C
Level 1 Survey Images				Notes from L1 Survey Recorded in L1 survey as a 2-post site. However, 3rd post discovered laid in brook 90% covered in silt. Original bank to North of posts where meander used to run between posts. Q. Was purpose to divert water for flood / debris control or to re route brook?	
Wood Location Map					
L1 Sector Location Map					

Date L2 Survey Undertaken	**/ /2017**	**Survey Team Members**	Kevin Walker

Stone Post Level 2 Survey Field Recording Booklet

Site Ref Nº – W 450 / 3		Stone posts in this Site	~~1 - 2~~ - 3	Site Location GPS Ref	E 30855 N 78744
Level 1 Feature References	F Unrecorded P	F P	F P	Level 1 Survey Sector	
Level 1 Survey Images	Missed on L1 Survey so no records			Notes from L1 Survey	
Wood Location Map					
L1 Sector Location Map					

Date L2 Survey Undertaken	**/ /2017**	**Survey Team Members**	Kevin Walker

Stone Post Level 2 Survey Field Recording Booklet

Site Ref Nº – W 500 / 1		Stone posts in this Site	1 ~~2~~ ~~3~~	Site Location GPS Ref	E 31058 N 78811
Level 1 Feature References	F 1177 P 1177	F P	F P	Level 1 Survey Sector	D
Level 1 Survey Images				Notes from L1 Survey	
Wood Location Map					
L1 Sector Location Map					

Date L2 Survey Undertaken	**/ /2017**	**Survey Team Members**	Kevin Walker

Stone Post Level 2 Survey Field Recording Booklet

Site Ref Nº – W 600 / 3		**Stone posts in this Site**	~~1~~ ~~2~~ 3	**Site Location GPS Ref**	**E 31107 N 78823**
Level 1 Feature References	**F 1097 P 1097**	**F P**	**F P**	**Level 1 Survey Sector**	**D**
Level 1 Survey Images				**Notes from L1 Survey** 3 posts; 2 standing, 1 laid pointing downstream Top of Post A found 1m away downstream near North bank. Most complete Site intact. Large flat plane to North bank; is this silt?	
Wood Location Map					
L1 Sector Location Map					

Date L2 Survey Undertaken	**/ /2017**	**Survey Team Members**	Kevin Walker

Stone Post Level 2 Survey Field Recording Booklet

Site Ref Nº – W 700 / 1		Stone posts in this Site	1 ~~2~~ ~~3~~	Site Location GPS Ref	E 31215 N 79035
Level 1 Feature References	F 0120 P 0120	F P	F P	Level 1 Survey Sector	F
Level 1 Survey Images				Notes from L1 Survey	
Wood Location Map					
L1 Sector Location Map					

Date L2 Survey Undertaken	**/ /2017**	**Survey Team Members**	Kevin Walker

Stone Post Level 2 Survey Field Recording Booklet

Site Ref Nº – W 800 / 2		**Stone posts in this Site**	~~1~~ - **2** - ~~3~~	**Site Location GPS Ref**	**E 31230 N 79160**
Level 1 Feature References	**F 0133 P 0133**	**F 0134 P 0134**	**F P**	**Level 1 Survey Sector**	**G**
Level 1 Survey Images				**Notes from L1 Survey** The two posts were identified separately in the L1 survey Post B is buried in what appears to be silt. Q. Was this a dam? Q. Is outcrop man made?	
Wood Location Map					
L1 Sector Location Map					

Date L2 Survey Undertaken	**/ /2017**	**Survey Team Members**	Kevin Walker

Stone Post Level 2 Survey Field Recording Booklet

Site Ref Nº – W 900 / 2		**Stone posts in this Site**	**~~1~~ - 2 - ~~3~~**	**Site Location GPS Ref**	**E 31279 N 79320**
Level 1 Feature References	**F 0153 P 0153**	**F P**	**F P**	**Level 1 Survey Sector**	**G**
Level 1 Survey Images				**Notes from L1 Survey** This was identified as a 1 post site in L1 survey? On walkover of L2 survey the base of Post A was found and a complete post was discovered laid in brook	
Wood Location Map					
L1 Sector Location Map					

Date L2 Survey Undertaken	**/ /2017**	**Survey Team Members**	Kevin Walker

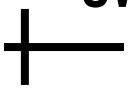
Stone Post Level 2 Survey Field Recording Booklet

Site Ref N^{O} – W 950 / 3		**Stone posts in this Site**	~~1 - 2~~ - 3	**Site Location GPS Ref**	**E 31279 N 79707**
Level 1 Feature References	**F - P -**	**F - P -**	**F - P -**	**Level 1 Survey Sector**	
Level 1 Survey Images	**Site not identified in L1 Survey**			**Notes from L1 Survey Site not identified in L1 Survey**	
Wood Location Map					

L1 Sector Location Map	Behind Scout Hut car park		
Date L2 Survey Undertaken	**/ /2017**	**Survey Team Members**	Kevin Walker

Stone Post Catalogue

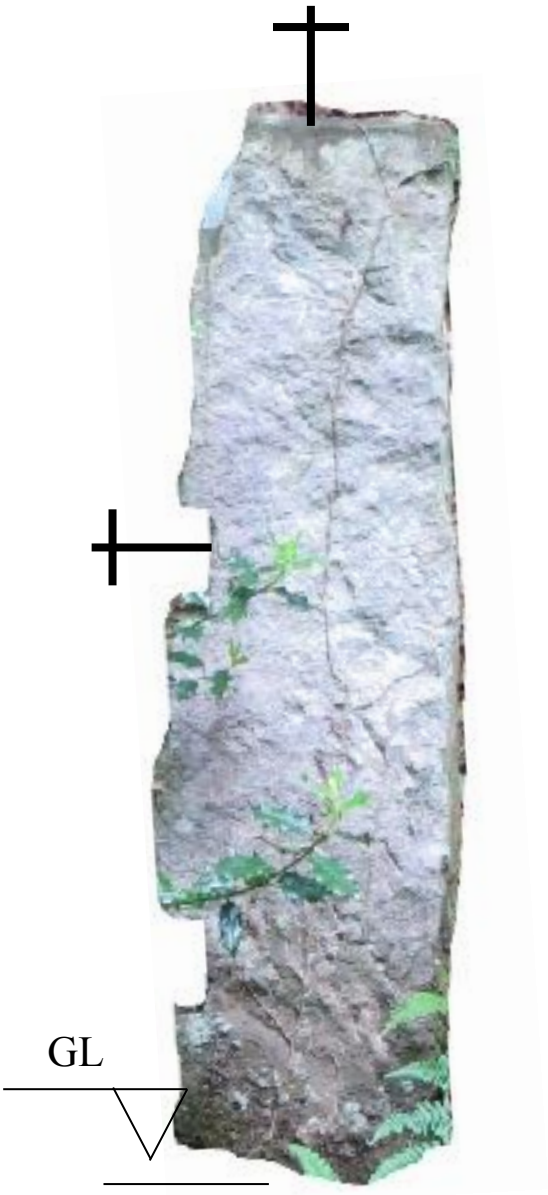
Legend

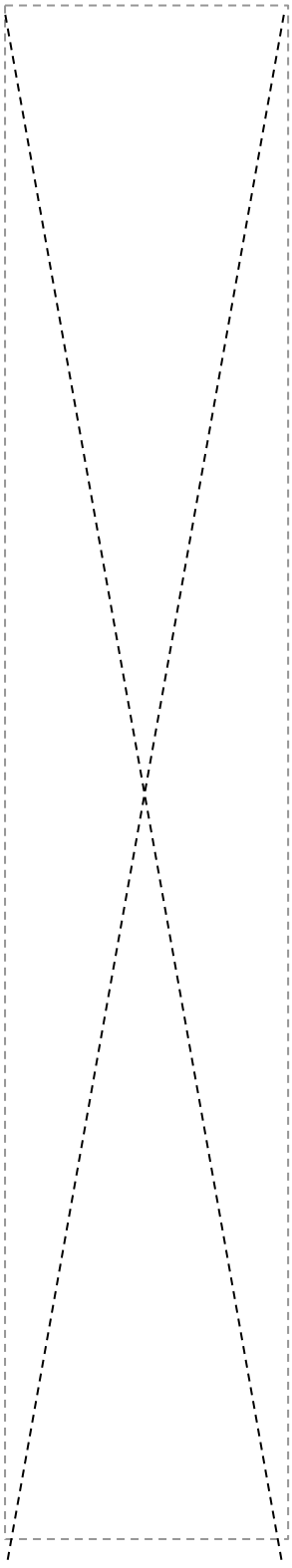
ACF = As Crow Flies
GL = Ground/Silt Level
BL = Brook Bed Level
Fr = Fracture line
B = Buried
LB = Laid and Buried
UW = Under Water
 = Bolt in place

Metres to last post	<	Easting	>	Metres to next post
139	<	**30490**	>	**127**
		ACF	>	**165**
				As Crow Flies to next post

W100-2

?< 30360 > 139
ACF > 165





Post A

STANDING BUT AT RISK

Post B

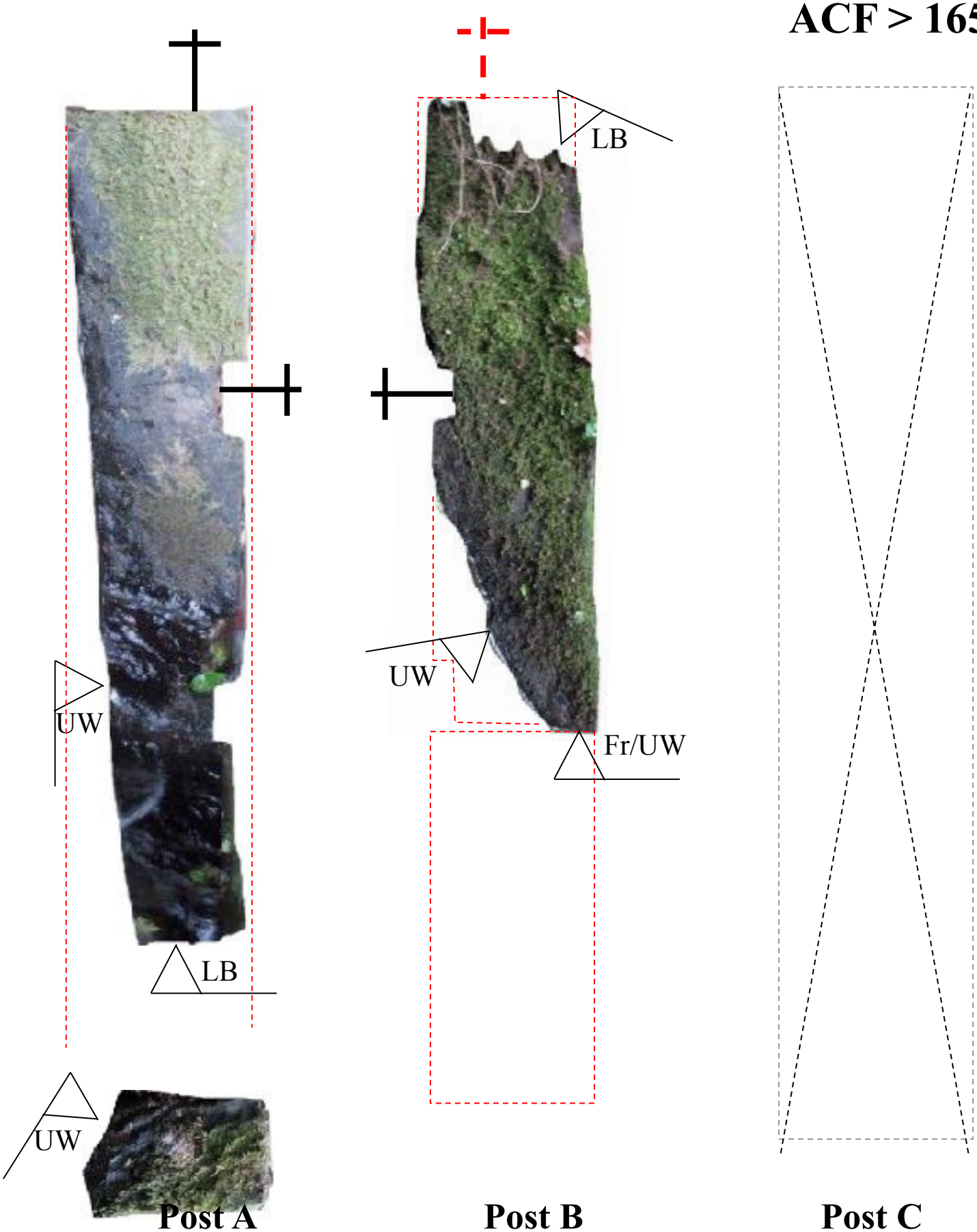
LAID IN BROOK

Post C

W200-2

139 < 30490 > 127

ACF > 165



Post A
LAID IN BROOK

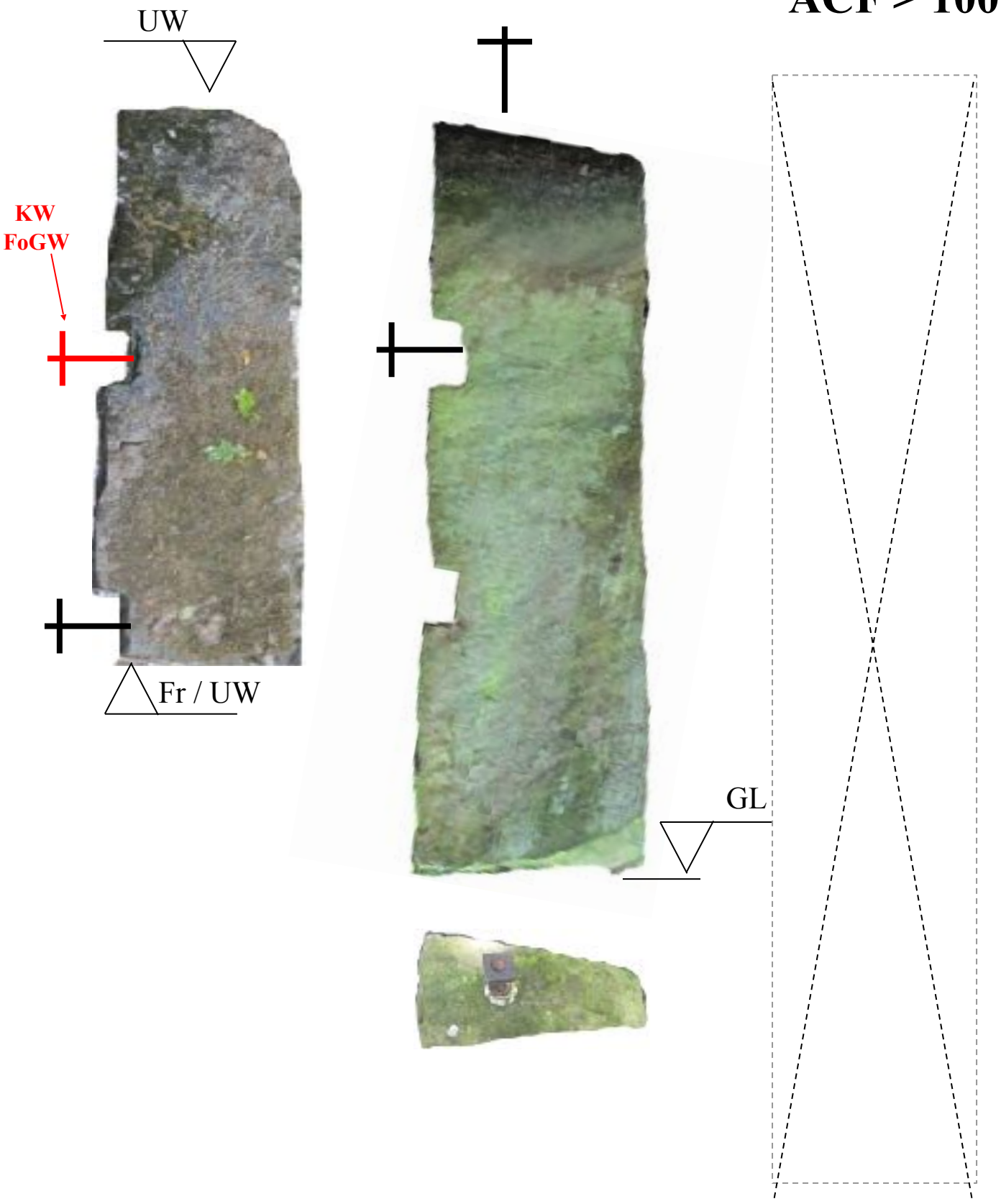
Post B
LAID IN BROOK

Post C

W300-2

127 < 30626 > 99

ACF > 100



Post A ?

LAID IN BROOK

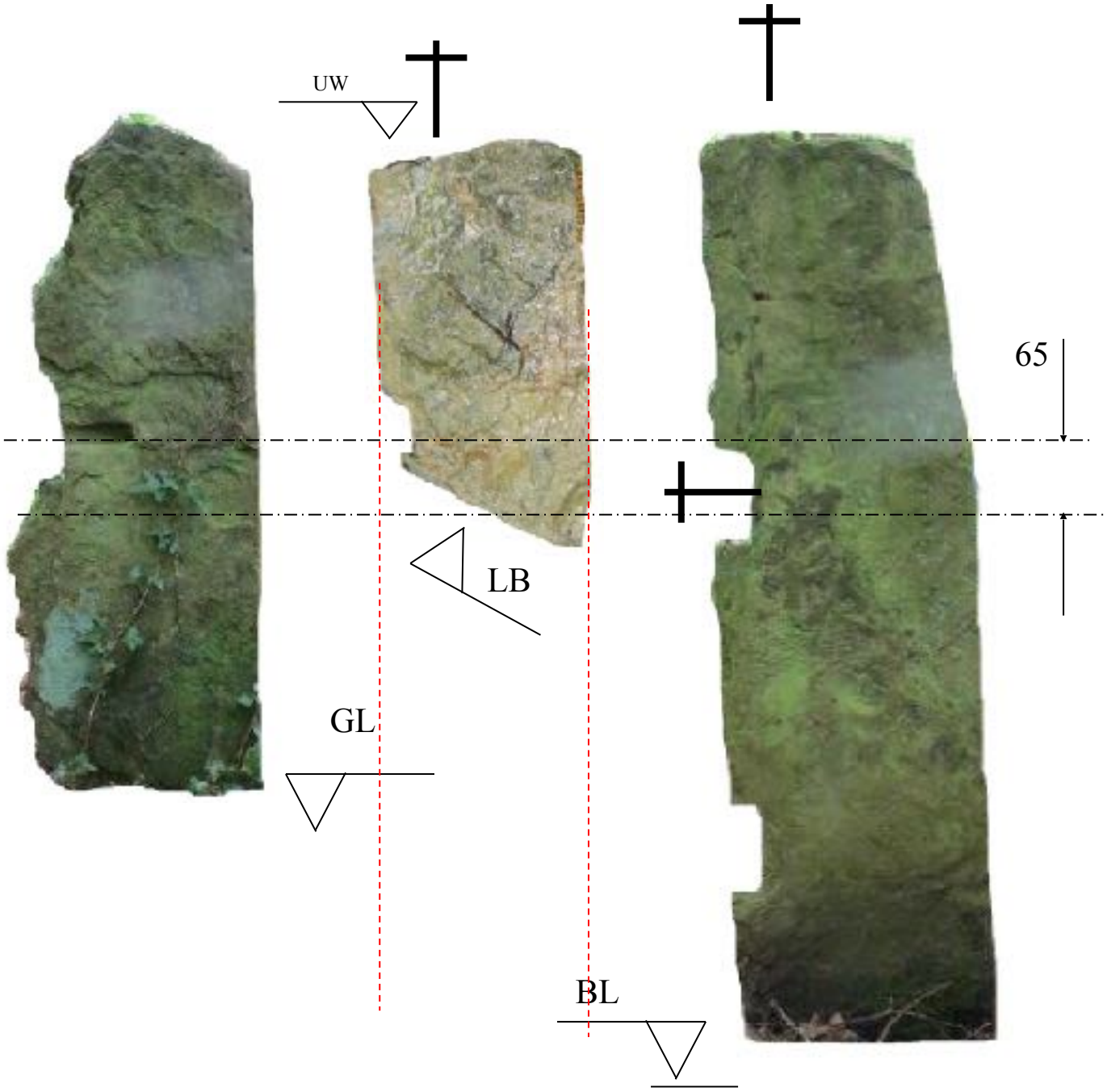
Post B ?

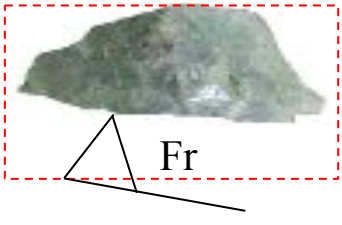
LAID IN BROOK

Post C

W400-3

99 < 30725 > 130
ACF > 140





Post A
STANDING

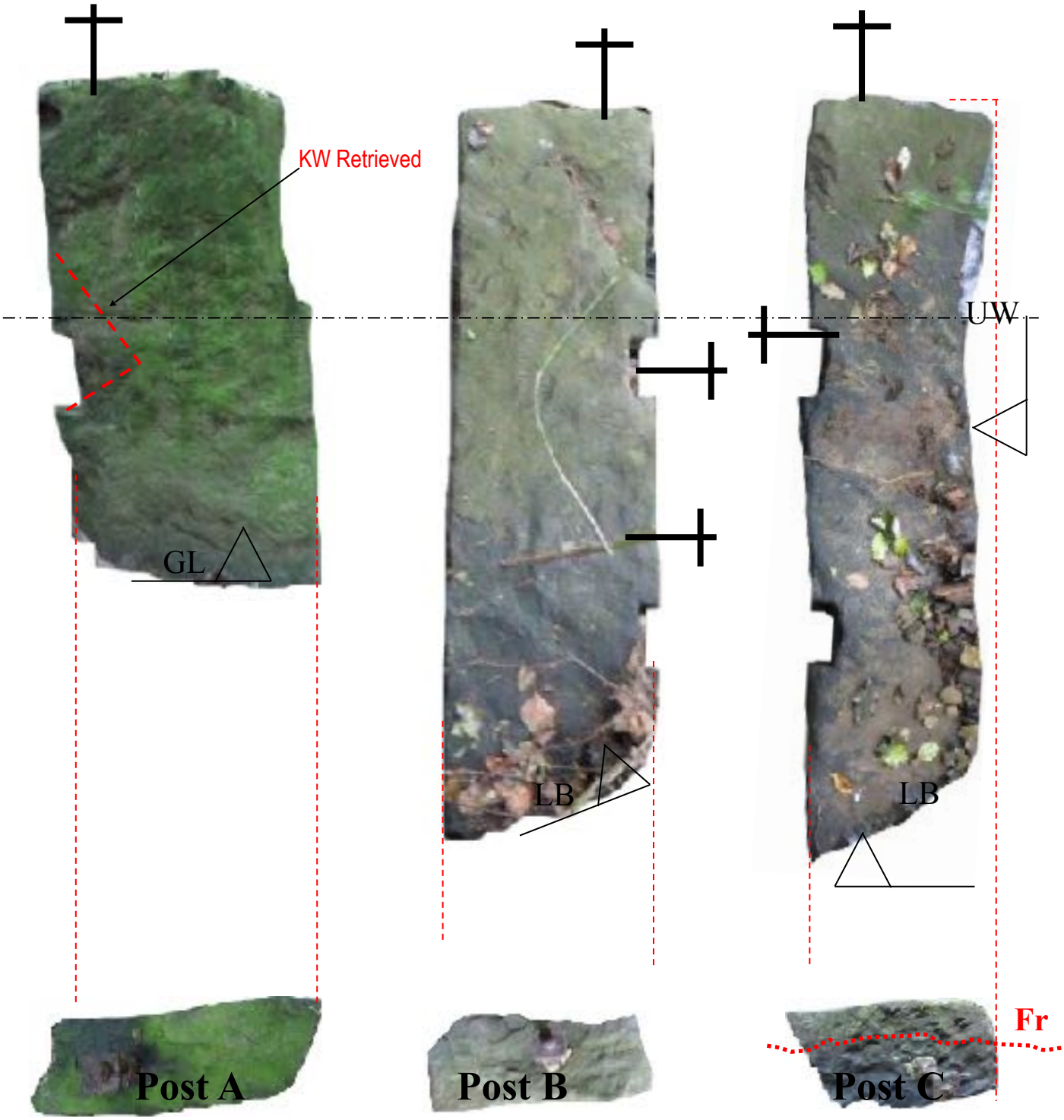
Post B
LAID IN BROOK

Post C
STANDING
AT RISK

W450-3

130 < 30855 > 203

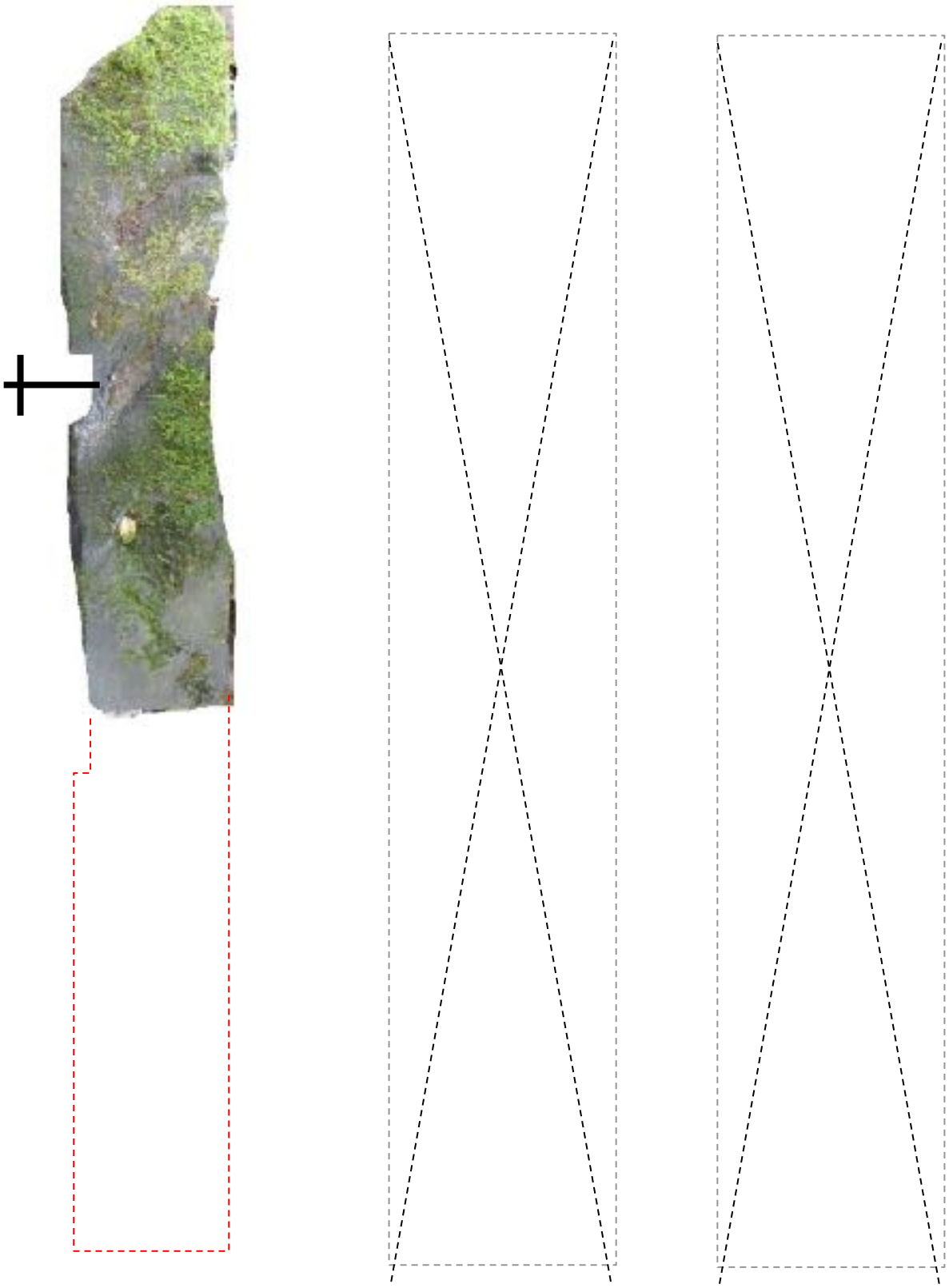
ACF > 205



W500-1

203 < 31058 > 49

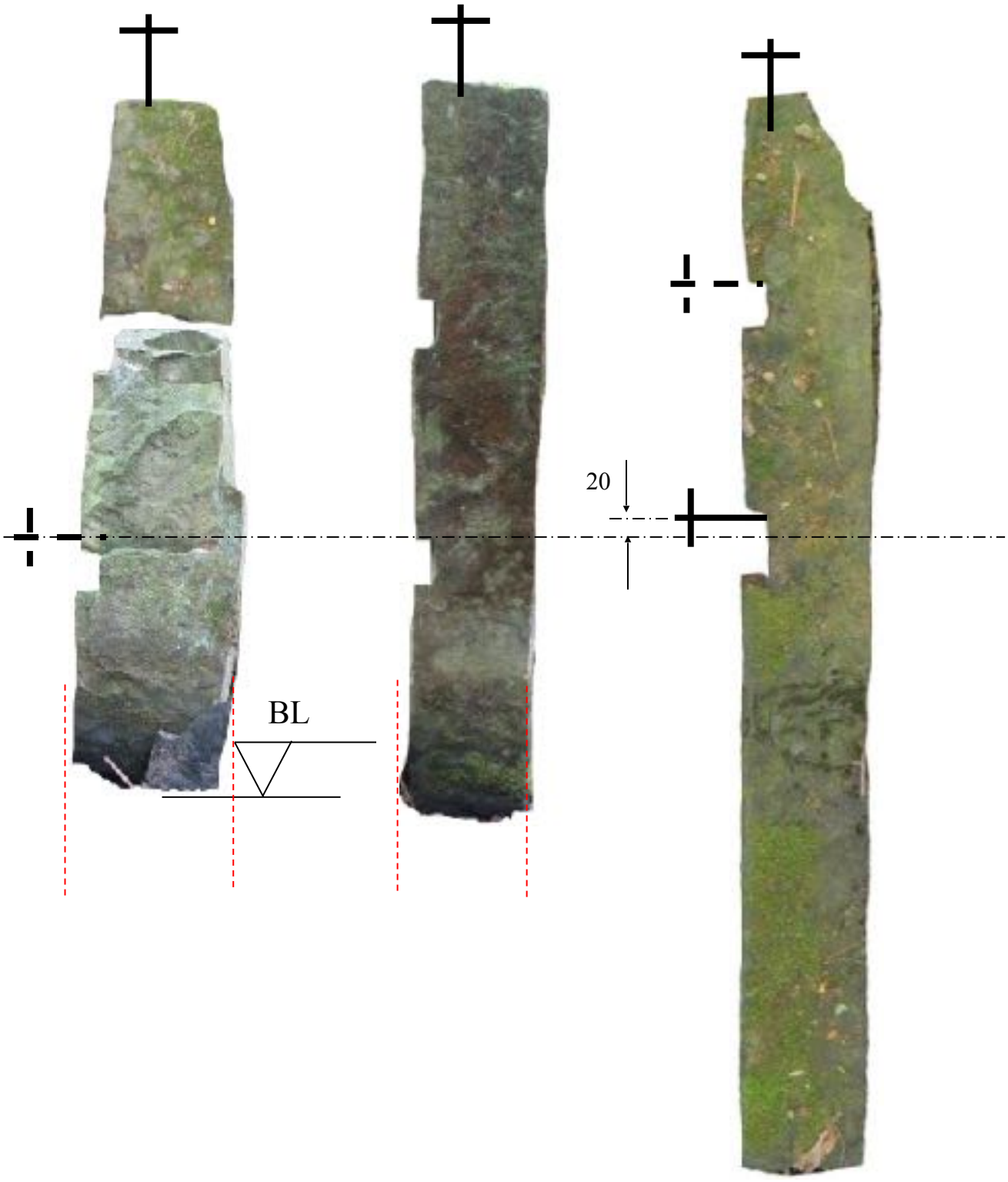
ACF > 55



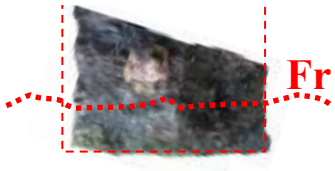
Post A **Post B** **Post C**

LAID IN BROOK

W600-3



Complete Post



Post A

STANDING (TOP IN BROOK)

Post B

STANDING

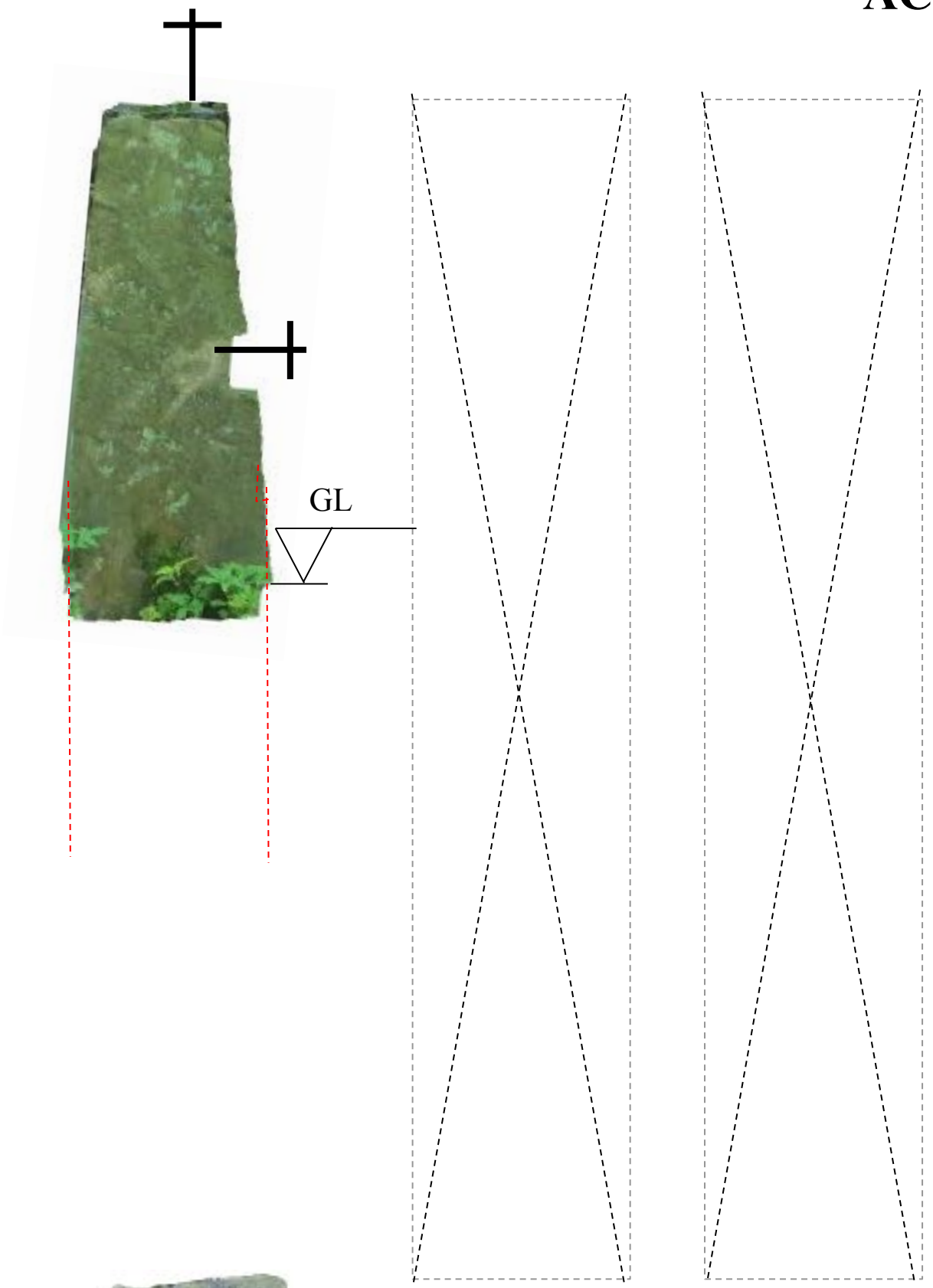
Post C

LAID IN BROOK

220 < 31215 > 120

ACF > 125

W700-1



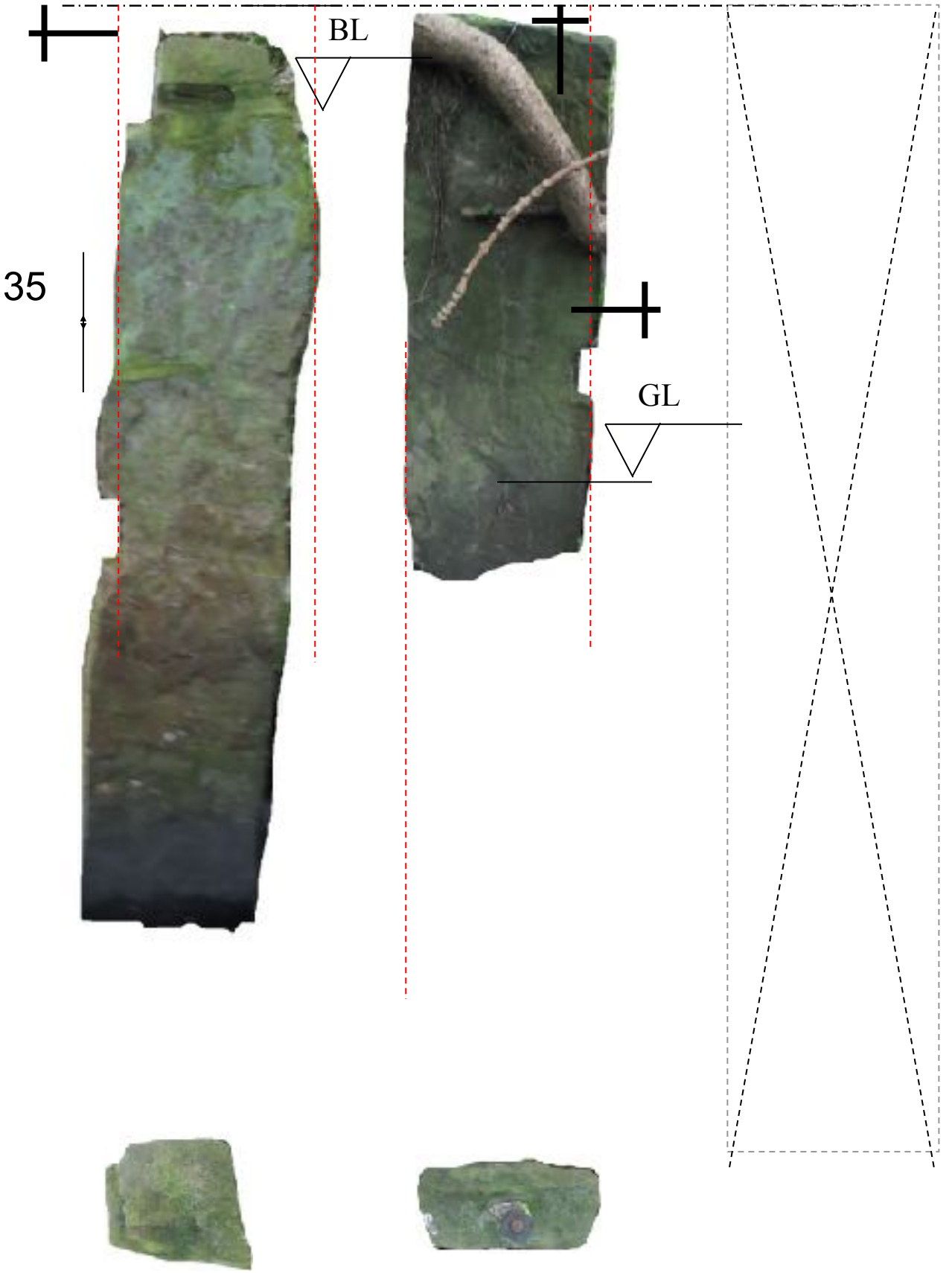
Post A **Post B** **Post C**

120 < 30626 > 150

ACF > 165

W800-2

STANDING

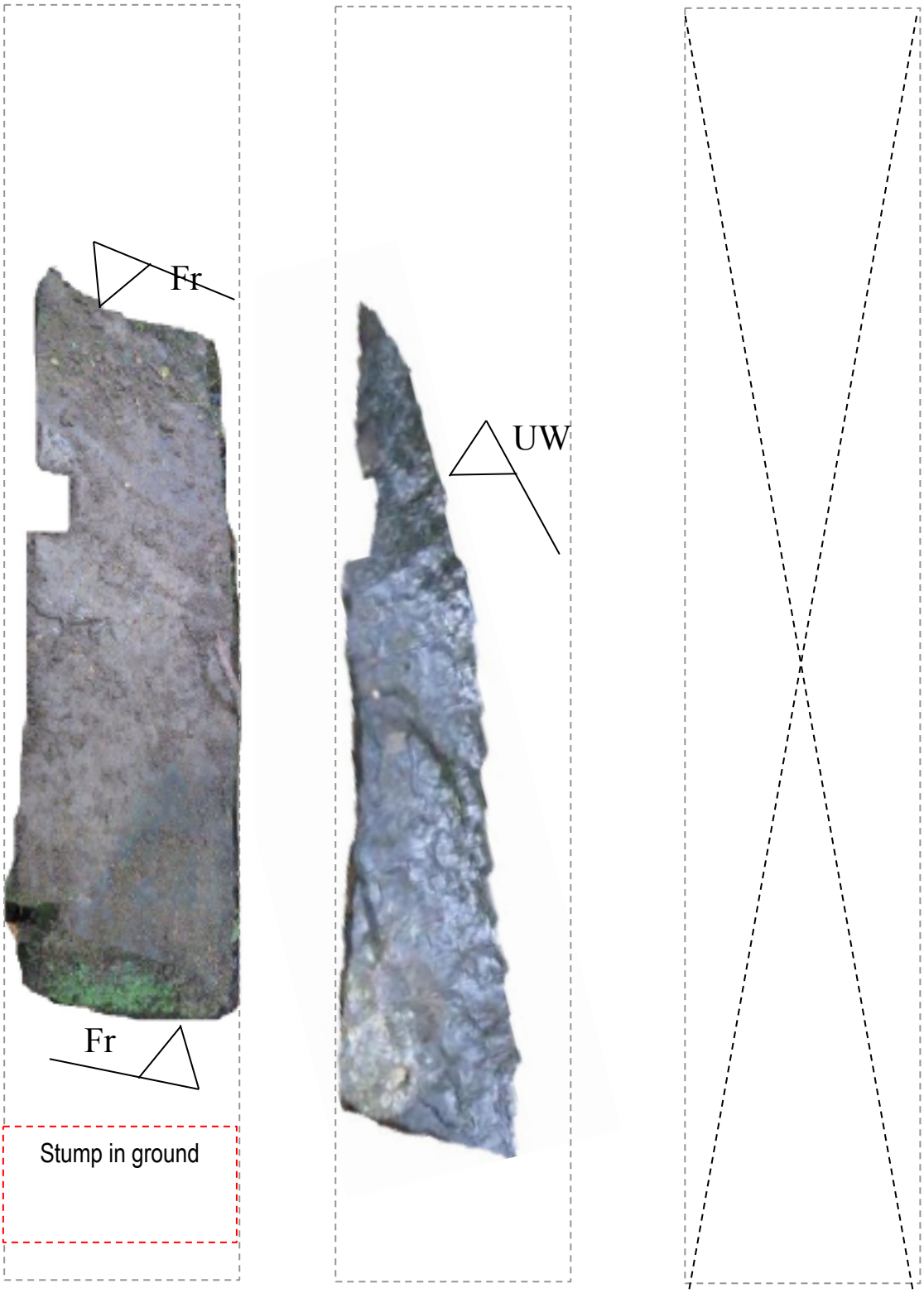


Post A
STANDING

Post B
STANDING

Post C

W900-2



Post A

LAID IN BROOK

Post B

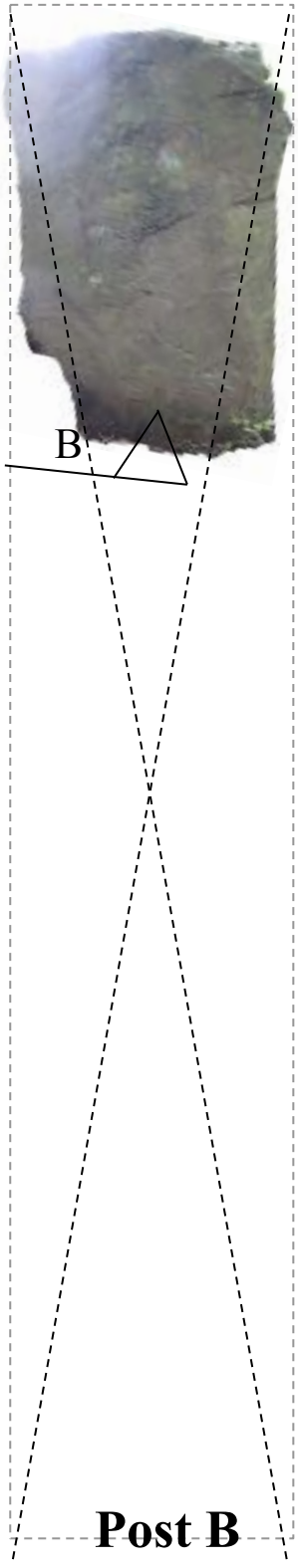
LAID IN BROOK

Post C

W950-3

Post A

LAID IN BROOK



Post B

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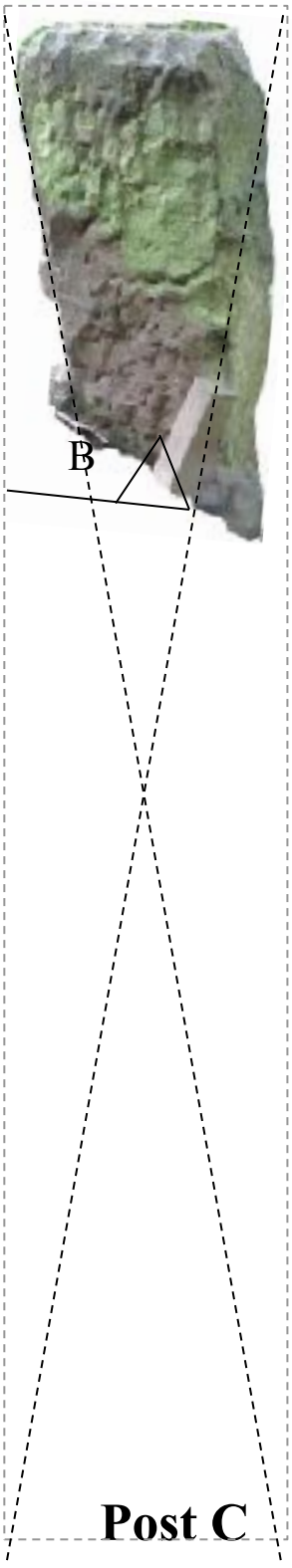


Post C

	W100-A	W200-A	W300-A	W400-A	450-A	W500-A	W600-A	W700-A	W800-A	W900-A	W950-A
A	400	400	400	350	400	420	410	410	400	X	
B	105	100	100	100	105	80	80	80	75	90	
C	340	350	350	350	X	390	380	370	370	390	
D	105	100	100	105	X	X	85	80	80	80	
F	X	2060	960-Fr	X	X	X	X	X	X	X	
G	310	290	350	305-Fr	420	250	410	430	200	280	
H	200	170	230-180	170	150	210	150	200	225	150	
J	50	50	35	X	45	35	45	35	30	50	
K	80	75	70	X	X	70	X	65	75	X	
L	1350	X	X	915	845	X	1585	X	1200	920	
M	120	130	85	X	130	100	85	100	65	X	
N	80	70	X	N	80	65	70	70	75	X	
	W100-B	W200-B	W300-B	W400-B	W450-B	W500-B	W600-B	W700-B	W800-B	W900-B	W950-B
A	410	X	400	405	415		410		400	440	
B	100	X	100	104	100		80		75	80	
C	345	370	350	X	350		385		X	380	
D	105	100	100	X	100		85		X	80	
F	2060	X	X	570-LB	X		X		X	1900	
G	260	270	350	345	360		280		250	380	
H	190	160	200-120	120	170		185		170	140	
J	40	50	45	40	40		55		30	40	
K	75	X	70	X	80-60		X		75	X	
L	X	X	1470	X	1035		1560		735	X	
M	?	X	120	72	130		115		130	X	
N	30	X	80	90	70		85		60	X	
	W100-C	W200-C	W300-C	W400-C	W450-C	W500-C	W600-C	W700-C	W800-C	W900-C	W950-C
A				400	380		410				
B				100	100		85				
C				350	350		385				
D				110	105		85				
F				X	1860		1950				
G				360-290	340		280				
H				190-165	160		260				
J				45	?						
K				48	60-70		X				
L				1360	X		X				
M				130	135		70				
N				70	80		65				

Gillfield Wood; watercourse walk over.

Dr Simon Doncaster, 12/12/2016 In conjunction with Friends of Gillfield Wood.

Following meeting at the road bridge by the Shepley Spitfire at 10:00am, the first point on the walk was the Scout Hut, and thence walking upstream. With an initial group of 10, the walk finished around 14:30 with two people left (the others having left during the day due to other commitments). This walk was intended to be an introductory walk for SHD to the wood and watercourse.

At the Scout Hut, two possibly three 'standing stones' were noted, one lying in the stream and two in the bank but not in line with the stream course. Apparently, these had not been included on the initial survey. As with other standing stones and where visible, the stones had two slots cut in the side with iron 'bolts' leaded into these, with a third leaded bolt in the top of two (maybe three) of the posts.

The walk consisted of walking as near as possible up the stream course, locating the standing stones and other features considered to be important, including low stone walls on the stream side, a former swimming pool, possible sheep-dipping locations and evidence of former coppicing and plantations adjacent to the stream. Generally, the standing stones were in pairs, with one set comprising of three stones. Additionally, two or three other 'standing' stones were found lying in the stream besides single, upright standing stones, partly covered by silt, stones and small pebbles. These may not have been surveyed and recorded before today. During the course of the walk it was noted that on all the standing stones, the cut recesses and iron bolts all faced upstream. This would provide greater strength for whatever structure was attached to the standing stones. Some of the standing stones are clearly set quite deep in the ground, whether by design or deposition of silt/debris is unknown.

In the lower end of the wood, the presence of larger trees in lines with roots over-hanging small banks suggested that the watercourse has moved in some locations, and that these trees are on the old, now dry course of the stream, the stream now being several yards away. The I presence of larger trees on the current watercourse banks also indicated that in many locations the water course had not moved very far, the trees themselves preventing bank erosion in conjunction with harder shale and sandstone deposits. The movement of the stream course was less obvious to see from tree size where felling and tree planting had occurred in the 1940s due to a lack of large trees.

From the standing stones it was also clear that the stream course had moved (presuming they were originally in or close to the water course); some were in the middle of the stream, others with one post in the stream and its pair on the watercourse bank. In particular, one pair of stones are completely out of the stream but on a line that appears to be the former course of the stream, as identified by a low bank that starts and finishes at the current watercourse. Small banks in the landscape on what could be described as the functional flood plain and the presence of a former 'oxbow lake' also suggest that the stream has moved and changed its course over time. With many meanders along its course and the soft nature of much of the underlying ground, it is probable that the stream course will change again in the near future. Undercutting of clay and shale banks is present, as is the deposition of debris and quite large stones on the inside of meanders.

Following heavy rain in recent weeks, it is clear that the stream responds quickly to surface flows, with strong evidence of flows exceeding the dry weather channel and travelling across the surrounding land and cutting across meanders, leaving plants flattened in the direction of flow and lots of debris (leaves, twigs, branches etc.) spread across the valley floor and including being trapped by some of the standing stones and tree branches lying across the water course. Some of

this debris was substantial and included an old mattress held back by one of the standing stones. Such flows will also increase erosion and the likely hood of changes in watercourse route.

The walk took longer than anticipated, in part due to the meandering course of the stream being much longer than a more direct, as-the-crow-flies route. Such a meandering water course suggests small changes in gradient at least in some parts of the wood. In combination with low flow velocities, deposition of silt and debris is likely to occur but which could be mobilised following high and extreme rainfall events. That the watercourse passes through a wood gives rise to increased debris in stream flows, particularly in autumn and winter following leaf fall, and may have necessitated some mechanism to catch such debris and prevent it entering mill dams. Capturing silt may have required a different mechanism than that suggested by the standing stones (assuming they were part of a debris-catching structure).

Highlight of the day; a kingfisher flying up the watercourse.

End of report.

Geologist (Ian Prior) - Field Survey Report 28th July 2017

Planned to accompany Friend of Brincliffe Quarry, Ian Prior to see a triple stone post site and the stone quarry in the field 349/351 Little Wood.

Present – (FoGW) Kevin Walker, Paul Hancock, Josie Dunsmore, Chris Brewster, Mac Jackson, Chris Measures, (FoBW) Ian Prior.

Apologies – Pauline Burnett Howard (FoBW)

Ian (a geologist) showed maps he had printed and emailed to the group prior to the meeting showing the stone and coal deposits in the area. Additionally, Ian had provided links to old OS map sites and encouraged us to look back at the area for more information on the quarry. The group had prepared a map with the Greenmoor stone layers shown and overlaid it with the Stone Post site locations W100-W900 and the location of known Q-Pits.

We were going to enter the wood at entrance 3 and as we were passing looked at the 'gully' at the end of hedgerow HR-301-2. This is indicated as a quarry on the 1835/98 map but not labelled as such. Making our way up the hedgerow we considered the 90° walling in the gully and was interested to know if Brincliffe Quarry had any similar structures. Ian had not seen this type of structure in the quarry but wondered if it had anything to do with brick production. We noted the large opening constructed in the base of the wall in line with the stream through the gully. The looked much larger than the rabbit holes in the walling along the filed with a large plinth above. Purpose unknown, further investigation is not possible as the structure is in a fenced off area.

Into the quarry Ian took measurements and promised to write up some brief notes re his findings.

The information he was explaining was beyond my ability to take in and assimilate in detail so we await his report. What I did capture was that the layers of Greenmoor stone on the South side of the quarry are shelved at 15° (the upper limit of Greenmoor deposits 5°-15°) angled NE and these measurements tie in with the Brincliffe deposits and on the North face of the quarry the shelves were at 5°. The vast difference in the angles of shelving could be due to the fault shown on the map that appears to run directly through the quarry. Several angular and vertical cracks are visible in the North face.

We found 3 flat rocks (2 loose on the ground one in situ in the rock face) with smooth half spherical 'scoops' out of one face. Ian's theory is these were formed by a piece of grit being swirled around in the basin by water. No other fossils were found in the rock.

We traversed the wall along the wood to entrance 3 and Ian's conclusion on the rock forms in the quarry was used for this walling. However, it is unlikely there were substantial enough to use as posts as we had described i.e. 2m long x300x300 unless they came lower in the strata now buried in the farmers waste.

We visited sites W400 and W600 and Ian was fascinated with the stones, however, he was unaware of their purpose and like everyone else could only hypothesise as to their use. He has however, been involved with a de silting system for his work that involved slowing the water and increasing its running length using concrete 'A' blocks. These ponds containing the block had to be frequently drained and dredged of silt, a modern equivalent?

Ian and Kevin visited several other sites including some ad hock quarrying and W700 where Ian thought the diversion of the brook into 2x 90° bends was worth considering. Just above site W700 is a site worth re visiting in the winter months to look at a possible fault and outcrop of rock in a steep face on the south face of the brook.

Chris M, Chris B and Josie split off and followed up the footings of the old barn site in fields 353/354 boundary. Chris M reported as follows:

I have just looked at the website again and would like to draw your attention to the section "Gillfield Wood History".

Do you know the date of the old map of the wood that is on this page? I am intrigued with what is shown on this map compared to the map you had Josie that was dated early 1800's.

You will see "Quarry" is mentioned at the edge of the field in the spot I referred to in the email below, where the right-angled wall is that we looked at by the stream.

It also appears that the word "Quarry" (I think it reads that) is referred to on the very left of the map. This would be the south edge of the Dyson site. It would be, I think, on the north side of the footpath that leads on to Totley Moor. I assume this site must be the previously referred to Totley Quarry.

You and I, Josie, looked at the "hovel site" today (an open shed/outhouse) which I previously referred to as the foundations of a Barn. I note Brian's map (below the old map, same page on the website) refers to the field as Far Sishill, any idea what "Sishill" means. Fascinating that the trees in hedges, by walls and in fields are almost exactly the same as today.

And finally when you compare the two maps, the main quarry we visited today in the centre of the field.....was actually where hedges joined and when looking at Brian's map a barn is possibly shown as the "box" that is at that point where the hedges meet. The same spot as on your very old map Josie. The field to the north of the quarry and the barn, is referred to as Far Barn Close.

I will check out this latter site. As stated I know it is a raised area because I have checked it out many times for Rabbit activity, it appears to be a small old warren. I must see if any old foundations to a barn are still there. I will let you both know.

In addition Geoffrey had told us of the quarry above the Dyson site where he had been told by his mother stone from that site was used in the wood. Due to time and weather restrictions this site was not visited today.

The whole day was undertaken in torrential rain so thanks to everyone's effort, input, commitment and interest.

Edit – Ian Prior's follow up report.

Gillfield Wood, 28th July 2017, site visit notes:

Please feel free to ignore some or all of the following notes.

Curved stone unmortared (dry stone) wall with square aperture at its base above and set back from what is believed to be a small quarry in a stream bed. The purpose of the wall and aperture is unknown although there were various theories. Suggestions were that it was some form of small animal trap however if this was the case a known small animal trap that was seen later was constructed in a straight stone wall with an aperture approximately half the width in size. Was this curved wall part of some form of kiln or other process possibly associated with the Q pits (see below) or farming? The aperture may have been some feed into the structure for raw material or as an air vent. Has the structure been examined closely? There would need to be an access cut through the undergrowth. Does the wall form a complete circle? Has it had a top? Are there others within the area or is it a one off? Is it part of a larger structure now gone?

Old quarry site. The rock is very similar to that known as Greenmoor Sandstone and with the Geological map showing it to outcrop in this area then it is highly likely it is. The slope away down all sides may be a product of movements along the local fault line the rock having been thrown upwards or what is known as a Slack'. That is a slope created by weathering of a softer material. Associated with the Greenmoor Sandstone are a series of lesser resistant mudstones (aka silt and clay) and sandstones along with the occasional pocket of Peat deposits laid down in slightly different conditions. Both are from the Lower Coal Measures of the Carboniferous Period, between 312 and 313 million years ago – so quite young geologically speaking. The rock that can be seen in the abandoned quarry, above all the tipped materials, displays very regular bedding joints which trend generally east to west that dip at roughly 10 degrees. The outcrop is heavily faulted, probably parasitic faults caused by the main local faulting. It would be fair to

judge that due to the nature of the bedding planes and faults breaking the rock into quite regular tabular shapes the rock was suitable as walling stone rather than that for house or barn construction. The former structures are in evidence the latter not locally.

The geological map shows a second type of rock named as the Grenoside Sandstone from the same geological period. It lies somewhere near to the inside of the large curve of the Totley Brook, time did not permit a visit. No doubt associated with the Brook will be alluvium deposits of clays, silts, sands and gravels.

There are known to be smaller extraction pits in the area where stone was excavated for construction purposes and in fact the stone nearby one such pit was more blocky in nature, different in structure to that found in the main quarry, possibly building stone or even suitable for use as the mystery sets of posts (see below) if not broken up. The pit that was seen was overgrown and possibly in need of excavation to examine the quality of the stone that was found there.

A possible quarry, a high point, a type of cliff edge alongside the course of the stream to it's eastern in the wood (but inaccessible from the 'northern' side of the Brook where it was seen from). Distant visual inspection revealed several large blocks of rock which from their interlocking joint patterns showed them in place but ready to tumble down. This cliff edge requires closer examination under a specific Risk Assessment and Method Statement (RAMS).

Dug narrow water courses cross down the slope to the Brook under the main footpaths. These may have had two purposes, the first being to drain the local farm fields and a secondary purpose to drain spring lines that may occur uphill from the main east – west footpath, where a permeable soil coincides with an impermeable one and water flows at surface level.

The mystery of the sets of posts, generally in threes. Their purpose was believed to be associated with the course of the brook and it seems likely that their purpose was the temporary slowing down or calming of the water course. This may have been associated with the mill and mill pond further downstream, now demolished, as it is likely that during periods of prolonged rain such a narrow channel down through that part of the valley with steep sides would flood with waters collected on the local moors. The question is then, were they a series of silt-traps or did the temporary capture of the water lead to the thick deposits of silt? The Chicken or Egg problem. There of course may have been another purpose for the gate type posts such as boundary markers and/or gateways for land division. It was interesting to see the notches in the posts and the remains of bolts with small square washer plates to spread the weight out on (presumably) wooden rails? The course of the Brook does appear to have changed over time which may have been a natural process or by the action of man causing a change. Low spots on the inside of a river bend can often be dug out so that in normal flow times the water course follows its own channel but in times of flood the water overtops the low spot and causes water to flood over thus temporarily capturing water and causing eddies to slow the waters speed down.

There is a curved unmortared (drystone) wall near to the course of the Brook with an unknown purpose, it is approximately 1m in height and 10m in length. Again the structure being within the narrow flood plain of the Brook makes it likely to be associated with the course of the Brook, possibly an area containing a structure that used a supply of water? It appears to be relatively new when compared with the Posts. If the wall is set into the hillside that drops down to the Brook's channel then it is probably a retaining wall to hold soils back from any supposed structure. The author cannot recall the shape of the valley side at this point.

The so called 'Q pits', hollows in the ground with a tail out pointing downhill, are found on both of the valley sides. It seems likely as suggested the tail out of the pit was an air vents necessary during the manufacture of 'White Coal', a type of charcoal used in the refining of Blister Steel. Would these have been a short-lived structure whilst there was wood to burn in the area around them? It would have been a simple and relatively easy process to dig a new pit, much easier than moving wood further and further distances to the initial pit, 'Place Value' in action! But why then line them with stone, if in fact they did? this will be proven with excavation. If the local clays were used as a lining to the pits there would be some shrinkage and movement within the material but did it justify cutting stone to an exact shape to avoid this shrinkage? Was it possible that the stones if used were reused moved from an existing pit to a newly dug one so that if they are examined now some may have a stone lining and some may not? The pits when surveyed proved to vary in size.

There is the wide main footpath that runs parallel to the Brook but above it out of a probable normal flood zone so it stays in use at all times and requires no maintenance due to flooding. Was this a local feeder route with produce of the area being shipped out to where it was required to and from places such as Beauchief Abbey, the local watermill and local farms, from the brickworks where Dyson's refractory is now etc etc.

Several old bricks that were seen to make up footpaths were examined and the included bricks manufactured locally at Banner Cross by Gregory from about 1919 and an unknown brick marked 'S7' a precursor to the modern postcode of Nether Edge? It would be good to make that unlikely connection.

Is there anything else we examined and I missed or is there anything in this short report letter that is not clear?

Thank you for the Grand Tour, does it always rain in Gillfield Woods?
Ian Prior

A Review of the Geology of the Totley Brook and Gillfield Wood

Frank Spode

The Totley Brook rises on the eastern flank of the Pennines and flows in an easterly direction before turning towards the north-east and joining the Sheaf Valley into Sheffield. The valley of this stream is cut through rocks of Carboniferous age, in particular the Langsettian (Westphalian A) Stage with beds dipping towards the east. The main structural control of the area is from the Pennine fold with smaller east-west folds superimposed on this eastern flank, namely the Dronfield Syncline.

During the Hercynian tectonic movements, not only were the deposits tilted towards the east and north-east, they were also fractured, with several major faults created due to excessive tension being applied to the strata. The result of this faulting was to cause some of the harder sandstones to be displaced, leading to dominant features in the topography. The rocks of the area have been exposed to the elements of the weather leading to erosion and deposition over nearly 200 million years. As a result, the rivers have formed channels consequent of the easterly slope and have created a valley, which has reflected upon the relative resistance of the underlying rocks. The softer shales, mudstones and siltstones have been eroded further leaving the more resistant sandstones to form the surrounding higher ground. The sequence of

Figure 1:
Gillfield Wood

Carboniferous rocks exposed in the area of Gillfield Wood is shown in Fig. 1.

The south-facing slope of the valley is underlain by the lower two leaves of the Greenmoor Rock. This bed of sandstone, divided into three leaves, each of them separated by mudstones and siltstones, up to the top of the hill at over 750 feet. The lithology of the Greenmoor Rock is variable, ranging from a green, medium to fine grained sandstone, to more massive beds in some parts of Sheffield, but in Gillfield Wood consists mainly of thin bedded flagstones, as illustrated in the quarry at the top of the green pasture, to the north of the wood. (Fig.2)

Fig.2: Middle Leaf of the Greenmoor Rock - showing the characteristic flagstone

Research on the palaeogeography of the Greenmoor Rock and sandstones of the Upper Carboniferous have been carried out using the heavy mineral suites present and also measurements of the direction of false bedding present in the sandstones. The information obtained can provide clues regarding the nature of the landscape being eroded and the direction of the transport of sediment into the area of deposition and accumulation. The evidence that has been recorded by many authors suggests that the deposits of the Greenmoor Rock resulted from the erosion of Palaeozoic rocks, and possible reworking of those deposits during the Devonian period, followed by transport and deposition during the Upper Carboniferous.
The palaeocurrent measurements point to a derivation of the material

being transported in a river system flowing from the west towards the east before being deposited. It is fair to conclude that the composition of the Greenmoor Rock reflects its derivation from part of the Wales-Brabant massif created during the Caledonian mountain-building period.
The petrology of the Greenmoor Rock has allowed the deposit to be used for several different purposes dependent upon its characteristics. The flaggy nature of the stone has been used for building of boundary walls, some styles of architecture, and rooftop tilestones.
The more massive textures of the sandstone have been used for gateposts, for lintels, jambs and even grindstones. Posts located in the Totley Brook, Fig. 3.

Fig 3. Posts, cut from Greenmoor Rock, pr

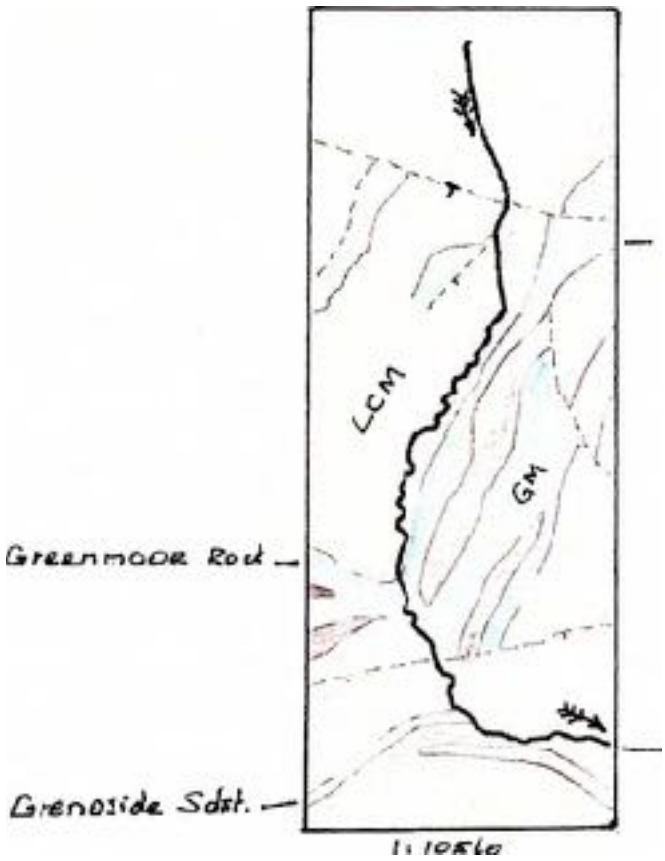
All the posts located in the channel of the Totley Brook are of the more massive textured variety of the Greenmoor Rock and therefore could not have been obtained from the flaggy sandstone version visible in the local quarry (Fig.2) which was certainly used in the construction of the local field boundaries.

East of the footbridge over the Totley Brook there is a small outcrop of another sandstone which is the younger Grenoside Sandstone. Its lithology is similar to that of the Greenmoor but according to the research the derivation of the sediment is a mix of west and north derived sources. The thickness of this sandstone reveals that it is insufficient for it to be worked other than for local field boundary walls

An examination of the channel of Totley Brook reveals that it is fairly mature with some meander curves within Gillfield Wood while further to the west the channel is straighter to the moors above the Baslow Road. An examination of the bedload of the channel reveals that there is a

mixture of the grade of material ranging from fine gravel to boulders. The dominant characteristics of the boulders indicates that much of the material consists of pieces of the flaggy Greenmoor Rock with some larger boulders of white medium grained ganister. These boulders have been washed down the channel from the area west of the Baslow Road where the deposits have been previously worked in earlier time and currently used in the factory adjacent to the Baslow Road. The finer gravels are predominantly fragments of sandstone, mudstone and shales all derived from the local bedded sediments outcropping below the Greenmoor Rock.

The Totley Brook continues to flow out of Gillfield Wood in an easterly direction where, at one time, it would have been a major contributor to, the mill ponds serving the Totley Forge located at Totley Rise, in the Sheaf valley. To enable the Forge to work effectively an adequate volume of water was essential therefore effort was made to prevent the mill ponds from silting up and reducing the volume of water available for the working of the Forge.The map of the geology underlying Gillfield Wood (fig. 4) indicates that the lower leaves of the Greenmoor Rock crop out on the south facing slope underlying the wood, the remainder of the wood is sited on the mudrocks of the Lower Coal Measures underlying the north facing side of the valley. The soils associated with the north facing slope would indicate that they are Brown Earths, while on the south facing slope the soils are more podzolic supporting more acid tolerant vegetation.



Totley Brook

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Artistic Impression What the posts may have looked like

Dirty run off water ditch with straw filter (located in France)

Photo Gallery

Acknowledgements

We have contacted many people during our yearlong HLF2 Project. We owe them and anyone we have forgotten to include below our sincere thanks for the time they have given to us.

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