

## Alport Mill, Harthill, Derbyshire

### Report on a Watching Brief.



Alport Mill, viewed facing south from across the River Lathkill

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## ***Executive Summary***

*Archaeological Research Services Ltd were commissioned by Derwent Hydro Ltd to undertake a watching brief in relation to ground works associated with the installation of a hydro electric turbine near the site of Alport Mill, Harthill, Derbyshire. This was required by the Senior Conservation Archaeologist of the Peak District National Park Authority, as part of the planning condition imposed for the installation of the turbine. The watching brief was requested due to the possibility that archaeological features relating to the earlier presence of a mill, recorded to have been present on the site since the 12<sup>th</sup> century, may have been encountered.*

*Ground works were to be undertaken in three distinct areas, the area of the turbine house located due east of the mill near the exit of the covered section of the mill race, the area of the intake tank located to the south west of the mill above the main weir and within the mill pond, and the interceding area west of the mill between the mill and the River Lathkill where the feed pipe was installed. Work in each area was undertaken during separate phases of ground work. Within the area of the turbine housing no archaeological features beyond the upstanding structures of the mill race cover and old bridge were encountered. Ground works relating to the intake tank were undertaken without archaeological supervision but no archaeological features were encountered other than a section of the mill pond reservoir wall. A connecting pipeline trench extending between the intake house and turbine house travel was excavated through made ground and no significant archaeological features, deposits, buried land surfaces or small finds were located within this area.*

# 1. Introduction

1.1 This report details the findings of an archaeological watching brief undertaken during the construction of a hydro electric turbine and associated features at the site of Alport Mill, Harthill, Derbyshire. The work was undertaken during several phases, the first related to the area of the turbine house and commenced between the 16<sup>th</sup> and 18<sup>th</sup> of February 2009, the second related to ground works for the intake tank and the third related to the feed pipe, between the intake tank and turbine house, which was completed on 21<sup>st</sup> and 22<sup>nd</sup> April 2009. The work was undertaken by Adam Tinsley of Archaeological Research Services Ltd acting on behalf of Derwent Hydro Ltd, a contracted agent of Haddon Hall Estates.



Fig. 1: Site Location

## **2. Location and geology**

- 2.1 The site lies within a steep sided valley on the south-eastern bank of the River Lathkill immediately opposite the village of Alport, 6.5km south of Bakewell centred at grid reference SK22236463 (Fig. 1).
- 2.2 The solid geology of the area consists of Carboniferous Coal Measures above shale and sandstone of the Millstone Grit.

## **3. Background**

- 3.1 A desk-based assessment (DBA) of the site was undertaken by Jessica Shakarian of Archaeological Research Services Ltd prior to the commencement of the field project (Shakarian 2008).
- 3.2 The DBA confirmed a number of Neolithic and Bronze Age find spots occur within a 1km radius of the site but do not bare an immediate relation to the site of the proposed ground works.
- 3.3 Alport was situated on an important thoroughfare during the Roman period when it became a major arterial route in the transport network established to serve the rich Derbyshire lead orefield. In particular it served to connect the Roman fort of Navio (Brough) to the settlement of Lutudarum in the south of the mining field. However, there is no evidence of Roman activity directly linked with the site of the Mill.
- 3.4 The route way continued to function following the Roman withdrawal from the British Isles and on into the medieval period. The natural topography and geology of the site were ideal for the positioning of a mill and the creation of a mill pond and documentary evidence indicates that the Cannons of Darley Abbey were granted permission to establish a corn mill on the site during the reign of Henry II in 1159. However, no cartographic evidence exists to pinpoint the position of the original mill.
- 3.5 During the post medieval period Alport continued to develop and a second paper mill was reportedly established, although the exact location of this building is also uncertain.
- 3.6 The lead mining industry flourished in the area and an important smelting industry was established due north of the mill between 1845 and 1875. The remains of this site, while greatly hidden by current undergrowth, represents one of the most complete and best examples of its kind in the country and includes a number of smelting furnaces, Spanish slag hearths, as well as an extensive and complex system of flues, condensers and a chimney.
- 3.7 The establishment of the lead smelting industry saw the creation of new stone built homes for the workers, many of which now represent listed buildings within the village of Alport.

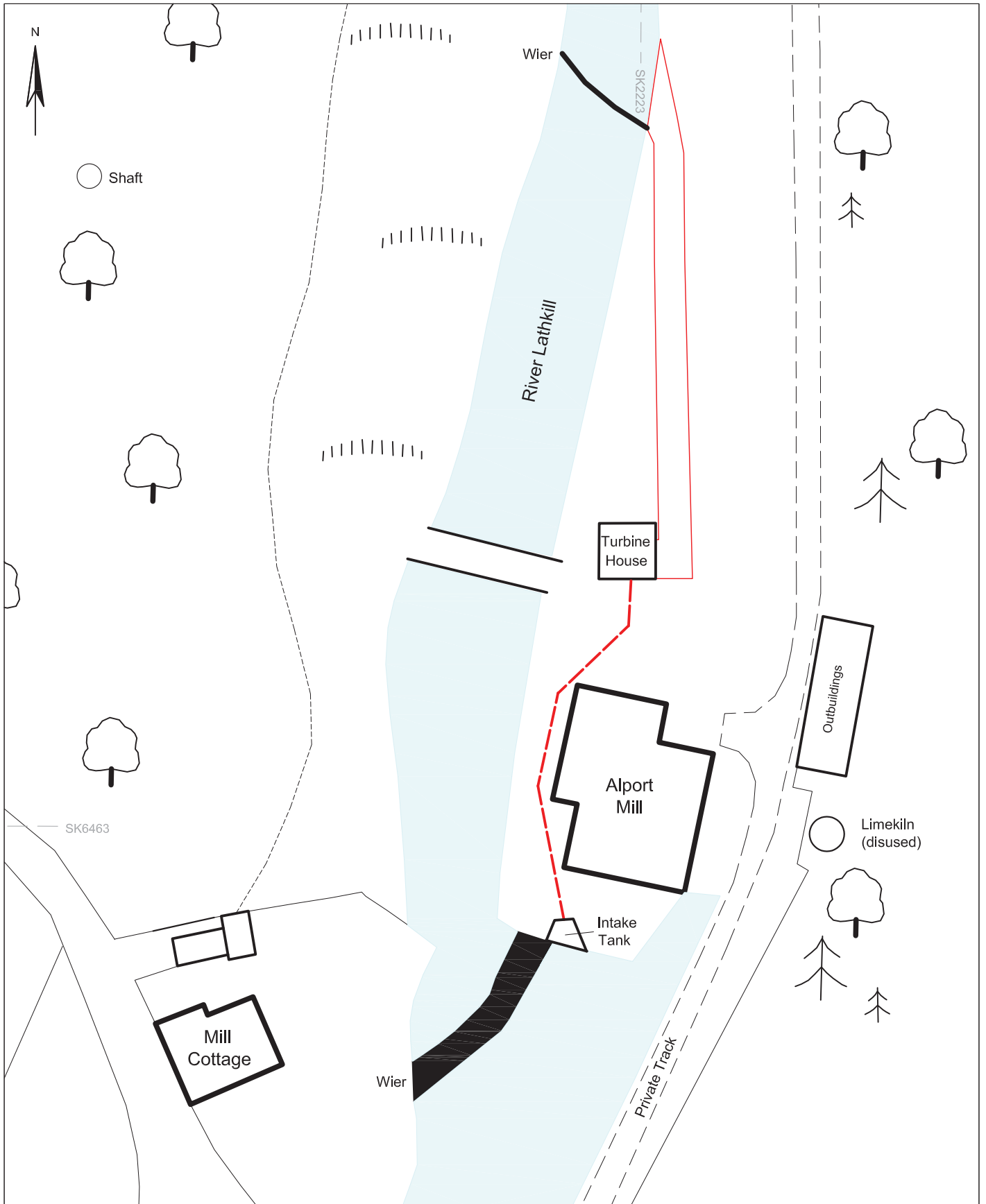
- 3.8 The corn mill itself was extensively remodelled during the 18<sup>th</sup> century and at subsequent points during the 19<sup>th</sup> century and it is this structure that constitutes the current upstanding structure and Grade II listed building.

#### **4. Aims and Objectives**

- 4.1 The objective of the watching brief was to ensure that any archaeological features affected by the groundwork were recorded and interpreted according to current best industry standards.

#### **5. Methodology**

- 5.1 Ground work on the site involved excavation of the footings for the turbine house, the intake tank and an interconnecting feed pipe. The turbine house is located near the stone faced exit of the covered section of the mill race, approximately 12m north of the mill. The intake tank is located approximately 2m southwest of the mill just above the main weir in order to access the main reservoir of the mill pond. The interconnecting feed pipe runs between the two points along the western edge of the mill (Fig. 2).
- 5.2 Construction of the turbine array progressed in stages as defined by the three components listed above and will be discussed accordingly.
- 5.3 Excavation of the footing for the turbine house represented the first stage of construction and involved the reduction of an area 5m square to a depth of approximately 1.4m. At this point a central sump was created extending for a further 1m in depth. The ground work also involved the clearing out of the channel of the mill race. All work was undertaken by a hydraulically operated machine equipped with a toothless bucket. The use of a toothed bucket was sanctioned in the area of the turbine house sump once the presence of natural deposits had been established. A photographic and drawn record of pertinent features, in particular the mill race, was generated prior to excavation which was then monitored at all times.
- 5.4 Ground reduction works related to the construction of the intake tank and the initial first few metres of the feed pipe trench were excavated without an archaeological watching brief.
- 5.5 The remaining thirty metres of the feed pipe trench was excavated using a toothless bucket except in areas when natural bedrock and consolidated made ground required the use of a toothed bucket.



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Figure 2

Key:   
 - - - - Trench line  
 [Red Box] Mill Tail Race

Site Code: ALP 09  
 Drawing Ref:  
 Date: 22-04-09  
 Drawn: BM  
 Scale: 1:500 at A4

Notes:



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## 6. Assessment Results

### 6.1 The Turbine Housing

- 6.1.1 Prior to excavation of the footing for the turbine house the area around the exit of the covered section of the mill race had been stripped of extensive foliage. The consolidation of access between this area and the mill itself was also necessary and involved removal of a waterlogged overburden and the laying of a hardcore deposit. Removal of the overburden penetrated less than 0.1m before encountering a relatively compact made ground deposit, probably associated with the former track way extending across the old bridge to the west (Figure 3)



Fig. 3 Stripped area north of the mill to allow consolidation of access, facing east.

- 6.1.2 The turbine house footing was excavated in an embanked area forming part of the western bank of the mill race and also rising from north to south to the level of the bridge across the River Lathkill. This area had formerly comprised of scrub and extensive overgrowth with no visible structural features other than the stone constructed exit of the covered mill race to the east and the old bridge to the west (Figs 4 and 5).



Fig.4 The stone built exit of the covered mill race prior to defoliation, facing south towards the mill.



Fig. 5 Pre-excavation shot of the turbine house area, facing south.

- 6.1.3 Excavation within the 5m square area of the turbine house revealed a deposit or sequence of deposits of made ground extending to an approximate depth of 0.5m. This deposit is the same as that exposed during consolidation of the

access area and probably relates to the raising of the ground level to create a track way, possibly during the 18<sup>th</sup> century or later.

- 6.1.4 Below the made ground layer were a series of natural deposits including sandstone bedrock and accumulations of tufa. Initial excavations reached a depth of approximately 1.4m below the upper most level of the current ground surface and the base of the pit levelled off (Fig. 6).



Fig. 6 The east facing section of the turbine pit before excavation of the sump.

- 6.1.5 Excavation of the turbine pit initially retained a spit of ground approximately 0.5m wide extending north from the western edge of the covered mill race. It was deemed necessary to remove this spit in order to facilitate the re-instatement of the mill race to function as the outlet of the turbine. Removal of this spit was undertaken with due care so as not to disturb the upstanding front of the covered mill race and the western retaining wall edge. It was found to contain a quantity of sandstone blocks that obviously related to a section of collapsed wall. A significant amount of root penetration from removed foliage was also observed and as a consequence excavations were halted due to fear that these roots may penetrate into the structure of the covered mill race and their removal result in a dislodgment and possible collapse of any upstanding features. However, removal of the material in front of the covered mill race must have reduced the supporting pressure on the structure as a short while later debris was observed to be falling from a central point in the race arch. The front of the mill race then suffered a collapse as the arch collapsed at the centre. This revealed the extent of the root penetration from previous coverage of the covered race which had obviously destabilised the structure to the point of collapse (Fig. 7).



Fig. 7 Collapse of the mill race front showing evidence of extensive root penetration.

- 6.1.6 The western retaining wall of the covered mill race remained intact to its full height, however, the instability of the structure meant that it was subsequently demolished due to concerns of health and safety.
- 6.1.7 With the permission of the Listed Historic Buildings Officer for The Peak National Park Haddon Estates has reconstructed and consolidated the front of the mill race using like for like materials.
- 6.1.8 Further excavation in the turbine pit reduced a central area by approximately 1m more in order to create a sump. This cut through entirely natural deposits and was undertaken using a larger machine equipped with a toothed bucket.
- 6.1.9 Reinstatement of the uncovered section of the mill race required that the silts accumulated across the base of the race be removed. As a result a record of the uncovered section of the race was generated (Fig. 17).
- 6.1.10 A visual examination of the race revealed a much dilapidated retaining wall to exist along its eastern edge and to extend from the outlet of the covered section for approximately 40m north in various states of disrepair (Fig. 8). The most intact section of this wall was found to occur approximately 20m



Fig. 8. A dilapidated section of the eastern mill race wall near the covered outlet, post collapse.



Fig.9 An intact section of the eastern mill race wall.

north of the covered exit and consisted of a section of dry stone wall approximately 1.45m high with up to fifteen courses of roughly hewn and irregularly sized blocks. (Fig. 9). Further north of this section the wall appeared to have largely collapsed but also to have probably reduced in height as it approached the outlet of the race into the River Lathkill.

6.1.11 A section was excavated across the mill race and found the eastern wall to have been constructed immediately over natural deposits.

6.1.12 The section also revealed the silts of the mill race to be extremely shallow, with a depth of less than 0.1m at the centre increasing in height up to 0.4m in against the eastern wall and western bank. The base of the race was formed by a natural sandstone derived deposit (Fig.10).



Fig.10 South facing section through the mill race.

6.1.13 Excavation of the western bank of the mill race also revealed that no retaining wall had been constructed along this edge and that the retaining edge had been constructed entirely from banked earth.

## 6.2 The Intake Tank

6.2.1 Work upon excavation of the overburden south of the reservoir retaining wall to facilitate the intake tank, basic construction of the tank and the laying of an initial section of the pipeline was undertaken without a representative archaeologist from Archaeological Research Services Ltd being present (Figs 11-13).



Fig. 11 Pre-excitation shot of the intake tank area, facing south.



Fig. 12 Intake Tank area under excavation, facing south-west.  
Photograph supplied by Derwent Hydro Ltd.



Fig. 13 Intake Tank and initial section of laid pipeline. Facing south

### 6.3 The Feed Pipe

- 6.3.1 The trench excavated prior to archaeological supervision as seen in Figure 13 measured approximately 2m wide x 1.2m deep from the current ground surface; this appeared to consist entirely of made ground banked against the reservoir retaining wall.
- 6.3.2 Under archaeological supervision excavation of the pipe trench progressed north. Excavation revealed made ground to a depth of 1.3m consisting of a dark brown sandy soil and containing substantial quantities of building debris in the form of sandstone blocks ranging in size no greater than 0.5m x 0.3m x 0.2m.
- 6.3.3 Approximately 10m north of the reservoir wall the banked ground levelled out. The trench ran parallel to the west wall of the mill, 2.1m to the west and was approximately 1m in depth at this point. A large area by the west wall of the mill had become overgrown with dense shrubs. The topsoil in this location was a heavily rooted black humus layer of 0.1m to 0.2 m in depth, this overlay dark brown made ground containing a smaller amount of building rubble as the layer thinned out to approximately 0.2m and overlay an outcrop of limestone tufa. The trench was excavated to the required depth through the tufa outcrop by using a toothed bucket.



- 6.3.4 The tufa outcrop continued for 10m north almost to the northern extent of the mill. To the north of the mill the surface cover had been tracked over and a loose hardcore laid down.
- 6.3.5 Underlying the hardcore surface was made ground, 2.4m north of the mill this deposit contained fine black smelly humic organic deposit containing hewn sandstone blocks of approximately 0.6m x 0.3m x 0.2m. Below this layer a concrete base 0.15m thick was encountered and removed, local knowledge identified this area as the location of a modern fish pond.
- 6.3.6 The concrete base extended for approximately 3m to the north and overlay a light brown sandy soil containing sub angular pebbles and cobbles, probable redeposited natural ground; this was the limit of excavation (Figure 14).



Fig. 14. Redeposited natural deposit within the pipe trench. Facing south.

- 6.3.7 North of the fish pond remains a shallow topsoil 0.1m to 0.15m in depth overlay a light brown clayey sand which was loosely compacted and contained a high percentage of pebbles, cobbles and boulders <0.3m. The stone inclusions consisted of all shapes and sizes with rounded pebbles to sub angular boulders and fragments of limestone tufa, other inclusions of lesser extent where fragmented red brick, ceramic drain pipe and metal brackets. The ground was raised slightly in this area, and along with the fall required for the pipe the trench depth was 1.4m, this continued north for 6m to enter the turbine house and completed the excavation of the trench.

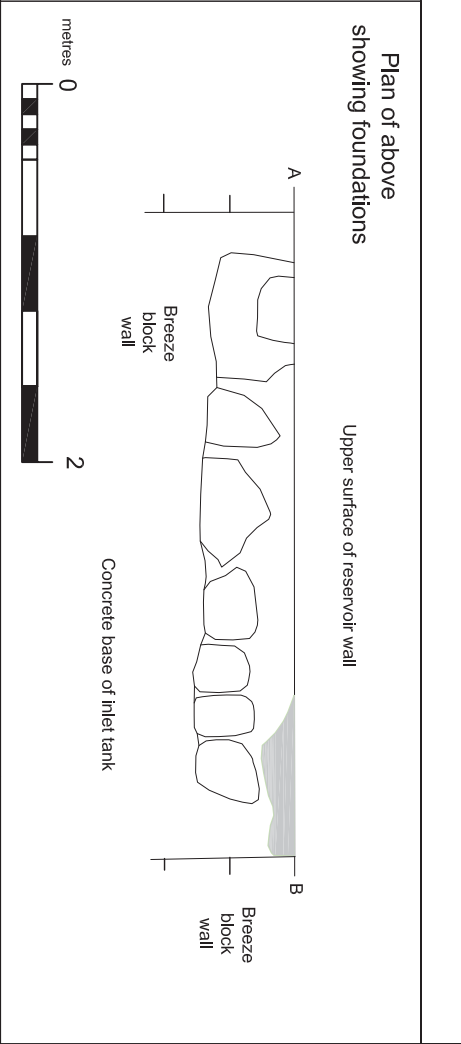
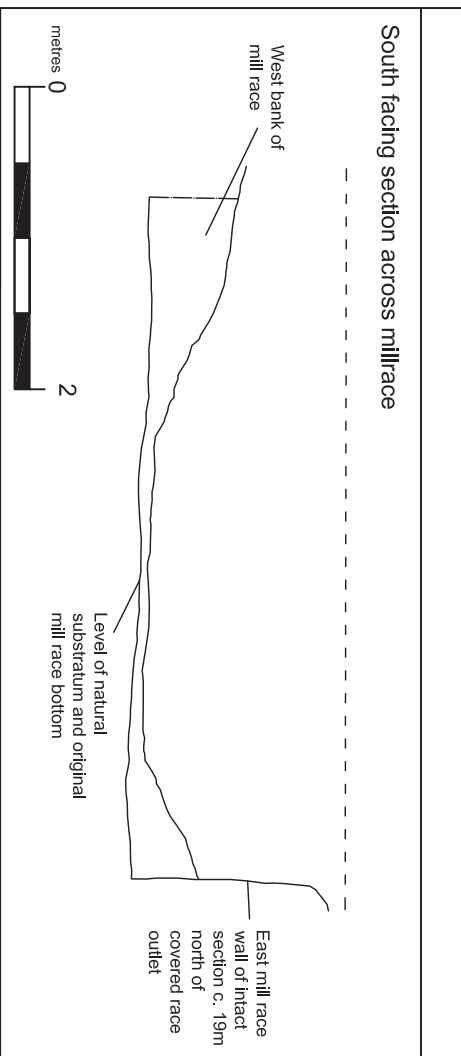
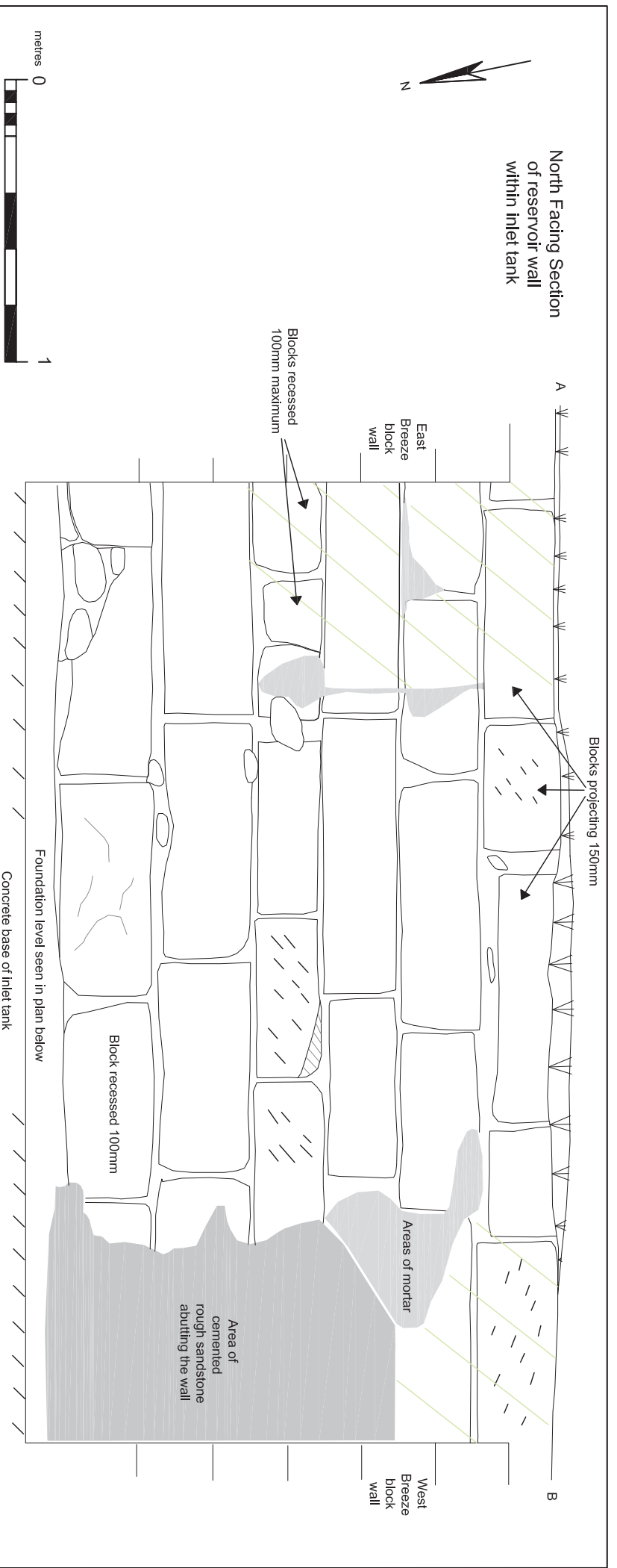
## 6.4 Reservoir Wall

- 6.4.1 Within the confines of the breeze block constructed intake house a north facing section of the reservoir wall was revealed. The wall measured 3.4m in length, 1.8m high and 0.35m to 0.4m in width, with the surface of the upper course covered by coarse vegetation which had developed over the banked up ground previously abutting the wall (Fig. 15).
- 6.4.2 The section of the wall recorded was constructed with six courses of irregular sized worked sandstone blocks ranging in size from 0.22m x 0.2m to 0.89m x 0.25m, bonded by a clay matrix. The majority of the blocks had been roughly hewn with the exception of four blocks which displayed evidence of chisel marks (Fig.16). The face of the wall is mainly flush, with the exception of three blocks on the top course which protrude up to 0.15m and several blocks recessed up to 0.1m (Figs 15 & 16).



Fig. 15. North facing section of reservoir wall within the intake house. Scale 2 x 1m

- 6.4.3 0.7m west of the eastern breeze block wall an area of mortar bonded to the sandstone blocks suggested the construction of a structure abutting this wall. A greenish discolouration of the blocks to the east of this mortar and the existence of a water tank relating to a fishfarm intake constructed in the 1970s approximately 3m east, confirmed the presence of another fishfarm intake (Figs 17 and 18).
- 6.4.5 An area extending approximately 0.8m in length and 1.2 high was bounded by the western breeze block wall (Fig. 16). This area displayed the remains of small irregular shaped pieces of sandstones rubble which were bonded by lime mortar and a clay matrix to the face of the reservoir wall. Extending north of the wall by 0.15m this may also represent a previous structure abutting the



Archaeological Research Services Ltd Angel House Portland Square Bakewell Derbyshire DE45 1HB	<b>Site Code:</b> Alp 09 <b>Drawing Ref:</b> 30-04-2009 <b>Date:</b> BM <b>Drawn:</b> 1:20, 1:40, 1:50 at A4 <b>Scale:</b>	<b>Figure 16</b> Section and plan of reservoir wall contained within intake tank and south facing section of mill race
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reservoir wall. Evidence of the greenish discolouration seen previously was also evident in this location suggesting the possibility again of another water tank.



Fig. 17. Shot shows the relationship of water tank with area of intake tank. Facing west.



Fig. 18 Fish farm intake prior to removal (photograph supplied by Olly Paish)

- 6.4.6 The six courses off the upstanding wall are constructed on top of a wider course of sandstone blocks whose depths are unknown due to the construction of a concrete pad which butts up against them and reveals 0.1m (figure 15). Extending north by 0.5m and presumably extending below the courses of wall above it can be interpreted as either a substantial foundation or the footprint of an earlier structure.

## **7. Conclusions**

- 7.1. Excavation of the shallow silts of the millrace and an area close to the exit of the stone built arch of the covered millrace did not reveal any deposits or finds of archaeological interest. They did however highlight the unstable condition of the mill race retaining wall and the northern archway of the covered millrace.
- 7.2. The ground excavated to facilitate the turbine house and pipe trench leading to the intake house consisted of made ground overlying the natural stratum. No significant archaeological features, deposits, buried land surfaces or small finds were located within this area.
- 7.3. The removal of overburden from an area related to the intake tank revealed a section of the reservoir wall. When observation was undertaken upon the excavation of the pipe trench it was noted that the made ground contained substantial quantities of building debris in the form of sandstone blocks. Recording the section of the reservoir wall revealed within the intake tank drew attention to the possibility of stone structures abutting this wall. Greenish discolouration to the stone and close proximity of an intact water tank possibly suggests a similar function associated with the trout hatchery.
- 7.4. The exposed reservoir wall was constructed on top of a more substantial structure, the limited view of the structure available leaves an unclear conclusion as to whether it is a substantial foundation layer or the foot print of an earlier structure.
- 7.5. The absence of any evidence of the mill suggests that it is probable that any evidence of the medieval occupation of the site was located within the footprint of the current upstanding structure

## **8. Publicity, Confidentiality and Copyright**

- 8.1 Any publicity will be handled by the client.
- 8.2 Archaeological Research Services Ltd will retain the copyright of all documentary and photographic material under the Copyright, Designs and Patent Act (1988).

## **9. Statement of Indemnity**

All statements and opinions contained within this report arising from the

works undertaken are offered in good faith and compiled according to professional standards. No responsibility can be accepted by the author/s of the report for any errors of fact or opinion resulting from data supplied by any third party, or for loss or other consequence arising from decisions or actions made upon the basis of facts or opinions expressed in any such report(s), howsoever such facts and opinions may have been derived.

## **10. Acknowledgements**

Archaeological Research Services Ltd would like to thank all those involved in this project, in particular Olly Paish of Derwent Hydro Ltd, the ground workers on site of Haddon Hall Estates and Sarah Whiteley of the Peak District National Park Authority.

## 11. References

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