

Two Weirs on Colne Water, Cotton Tree, Colne, Lancashire

An Archaeological Recording Programme

By J.M. Trippier Archaeological and Surveying Consultancy



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Clients: The Environment Agency

	<i>Page</i>
Executive Summary	1
1. Introduction	2
2. Situation of Property	2
3. Historical and Archaeological Background	3
4. Methodology	5
5. Physical Description	5
6. Analysis and Interpretation	9
7. Output and Archiving	10
8. Bibliography	11
-	
Appendix 1: Figures	12
Appendix 2: Plates	28

EXECUTIVE SUMMARY

J. M. Trippier Archaeological and Surveying Consultancy of Bolton was instructed by the Environment Agency to make an archaeological record of two largely stone-built weirs on Colne Water, Cotton Tree, Colne, Lancashire prior to the reduction of the weirs in order to increase the hydraulic capacity of the watercourse to alleviate local flooding problems. The upstream weir predates 1848 and was probably constructed to serve a lodge or mill pond connected with the original Ball Grove textile mill which became a tannery in the latter half of the 19th century. The downstream weir was constructed between 1848 and 1893 and is a more rudimentary structure which was probably constructed in connection with the processes being carried out within the tannery buildings.

ACKNOWLEDGEMENTS

Thanks are due to Gary Hilton of the Environment Agency who commissioned the survey and to Tony Gibbon of Jacobs Environmental Consultants and Graham Leighton of Barhale the engineering contractors for their assistance on site. The work by Site Surveying Services of Clitheroe, who carried out the electronic survey of the weirs on our behalf, is also gratefully acknowledged as is the assistance provided by the staff of Colne Library where our documentary research was carried out.

1. INTRODUCTION

- 1.1 J. M. Trippier Archaeological and Surveying Consultancy of Bolton was instructed by the Environment Agency to make an archaeological record of two weirs on Colne Water, Cotton Tree, Colne prior to the reduction of the weirs in order to increase the hydraulic capacity of the watercourse to alleviate local flooding problems. John Trippier BA (Hons), MRICS, PIFA is a Chartered Surveyor and Practitioner of the Institute of Field Archaeologists with over 40 years experience of surveying and recording buildings and structures of many types. He was assisted by Steven Price BA (Hons), M.Phil and by Ron Gurney BA (Hons) who carried out the photography.

2. SITUATION OF PROPERTY

- 2.1 The two weirs to be reduced are situated on Colne Water some 220m (the upstream weir) and 120m (the downstream weir) northeast of the hamlet of Cotton Tree which itself lies just east of the B 6250 road from Colne to Trawden about 1.2 km south east of the centre of Colne (**Fig.**

1). Their locations are shown arrowed red on the map at Fig. 2. For ease of reference the weirs have been referred to as weir 1 (the upstream weir) and weir 2 (the downstream weir). Their NGRs are SD 91004036 and SD 90884020 respectively. The river bank has an elevation of approximately OD 165m. This reach of Colne Water lies immediately east of Ball Grove Country Park from which its right bank is separated by a metalled public right of way and a high retaining wall (c1m above ground level). The country park is itself the site of a former tannery and earlier textile mill and there is a residual mill lodge at the north end of the park across the track from Weir 1. The left bank of the river comprises fields laid down to pasture which slope down to the river bank but which do not appear to be subject to any public rights of way and are therefore presumed inaccessible without permission.

3. HISTORICAL AND ARCHAEOLOGICAL BACKGROUND

- 3.1 A short documentary research exercise was carried out in Colne Library. In normal circumstances the Lancashire Record Office in Preston may also have been visited but it was closed for restoration work. Although constructed before 1900 the weirs are neither Listed structures nor Scheduled Ancient Monuments nor are they recorded on the Lancashire Historic Environment Record. So far as we are aware no previous archaeological work has been carried out at either site.
- 3.2 Colne Water rises as various streams on the moors of Great Edge to the north and Comb Hill to the east which combine to form a single watercourse in the vicinity of Laneshaw Bridge about 1.5km east of Cotton Tree. By the mid-19th century there were at least two textile mills in the river valley- Bough Gap Cotton Mill about 600m up stream from the subject site and Ball Grove Cotton Mill which was on the site of the current children's playground at the south end of Ball Grove Country Park. Both are shown on the 1st edition 6" scale OS Map of 1848 (Figs. 3 & 4). The upstream weir (Weir 1) is also shown on that map immediately to the east of the lodge which is still in existence to the east of the children's playground and which presumably served Ball Grove Mill.
- 3.3 Works at Ball Grove were in existence in 1814 when William Garth is listed in relation to woollen manufacturing (Directory 1814-5, 35; Baines 1818, 115) and this most likely represents the time when Weir 1 was constructed. Mr Garth was still present in 1825 (Baines 1824-5, 622) although the property was no longer listed in the directories for 1828-9 (Pigot 1828-9). By 1834 Rayne William Taylor was at the premises although this was to be short-lived (Pigot 1834, 261)

- 3.4 1848 saw the Ball Grove Mill being occupied by “Sagar Hartley (Cotton Spinner) Ball Grove” (Slater 1848, 346; Slater 1855, 102). [It is worth noting that Sagar, R & W and Co., had also been woollen cloth manufacturers in the area since at least 1814 (Baines 1814-5, 36)]. The OS mapping for 1848 shows the upper weir (Weir 1) already in place and the mill itself is shown as a series of interlocking buildings, with a very long and thin building running alongside the river (Figs. 3 & 4). 10 years later the property had changed hands and was occupied by “Smith, Joseph and Benjamin” who ran both Ball Grove and Wolverden Mills as cotton spinners and manufacturers (Slater 1858, 111; Slater 1861, 128; Slater 1865, 167). However by 1872 the Sagar family was back in the mill with William and John listed as fellmongers and leather dressers at “Ball Grove Leather Works” (Slater 1872, 144). This was clearly the beginning of the tannery for which Ball Grove Works is best known.
- 3.5 Prior to this, in 1869, William and John Sagar were at Lidget, listed as Fellmongers under the heading of “Curriers and Leather Dressers” (Slater 1869, 200). Sons of a farmer, Oates Sagar at White Walls, the brothers went into partnership in 1860, their first business being housed to the rear of the Craven Heifer Inn on Keighley Road. As noted, the move to Ball Grove occurred in the early 1870’s where they could take advantage of cheap power from Colne Water to drive the waterwheel and obtain the pure water which was essential for tanning. Although John died in 1878 and William in 1911, their sons William Jnr and Alfred Parker Sagar had already taken over the business. On William’s death, he left an Estate of £14,632 ((Barrett 1879, 600; Barrett 1887, 301; Barrett 1893, 424; Barrett 1899, 544 and Wrightman 1983, 72). The business does not appear in the directory for 1896 (Barrett), suggesting that during this time it was being refurbished. When it appears again in 1902, it is no longer listed as a fellmongers, just as a tannery (Barrett 1902, 598).
- 3.6 The OS mapping for 1893 shows the upper weir (Weir 1) with a sluice and the lower weir (Weir 2) is now also present (Figure 5). The long thin building alongside the river is shown to be two separate buildings with a third on the left bank and a further building astride the watercourse linking those on either side. The main building has been amalgamated into a single block with several outbuildings. The OS mapping for 1912 shows the premises expanding further. The main block has been extended to the southwest and a new parallel block to the northwest is linked to it to present an ‘n’ shaped footprint (Figure 6). An additional weir has also been put in place downstream of Weir 2. Judging by these developments it seems likely that this pre-WW1 period saw the tannery reach its high point.

- 3.7 The company continued into the 20th century (Barrett 1911, 675; Barrett 1923, 696; Barrett 1937, 644; Barrett 1949, 379), although the works suffered a fire in 1932. The OS mapping for that year shows the premises having expanded once again, with an additional building to the southwest. The lower weirs are still in place, as is the upper weir (Figure 7). The company became a public one in 1946. However, the latter half of the 20th century saw its decline and it became bankrupt in the 1970's, ending a century long business at Ball Grove.

4 METHODOLOGY

- 4.1 The recording requirements were for:
- 4.1.1 An EDM Survey and production of schematically (not stone by stone) drawn plans and elevations of each weir annotated to show areas of archaeological interest along with dimensions and construction details. The survey was carried out on behalf of the archaeological contractors by Site Surveying Services of Clitheroe and their resultant AutoCad drawings were annotated by the archaeological contractors to highlight the required information.
- 4.1.2 Scaled photographs showing the general setting of the weirs, elevations and plans and features of archaeological interest as best could be achieved given the access difficulties resulting from the location of the weirs within the river. Scale was achieved by using mainly a specially designed one metre scale bar (one half red and one half white) or a two metre ranging rod. Where possible the photos were taken from the river bank by the archaeological contractors but on occasions photos were taken from within the river by Tony Gibbon of Jacobs, the on-site supervisor. Digital images were taken with a Fuji Finepix S5700 camera of 7.1 megapixels backed up with traditional monochrome 35mm photographs taken with a Pentax P30 SLR camera loaded with Ilford HP5 film to enable the production of 5"x 7" prints. A full photograph index and is included at Fig. 14 in Appendix 1 of this report.
- 4.1.3 The output was to be one hard copy of the above documents together with a summary report and an electronic copy for submission to the Lancashire Historic Environment Record.

5. PHYSICAL DESCRIPTION

WEIR 1 (THE UPSTREAM WEIR)

5.1 General

- 5.1.1 Weir1 is located at the point where the long retaining wall running north on the right bank of the river from Cotton Tree comes to an end and gives way to the grass covered river bank. The top of the weir comprises a row of massive gritstone blocks set out in a crescent shape with the horns of the crescent pointing downstream. The weir then falls in a series of roughly defined steps by approx 2.25m over a distance of approx 15 metres to the riverbed further downstream (**Plates 1 to 4**). Both sides of the weir are bounded by walls built of gritstone blocks. An inspection of the river banks upstream of the weir did not reveal any outlets which might explain the purpose of the weir. The topographical survey of the weir along with an archaeological plan and elevational drawings of the banks are included at **Figs. 8 to 10** in Appendix 1.

5.2 The Lip of the Weir

- 5.2.1 As outlined above the top (or lip) of the weir comprised a row of massive gritstone blocks (**Plates 5 to 9**) set out in a crescent shape with the horns of the crescent pointing downstream. It was some of the more central of these blocks which were to be removed in order to increase the hydraulic capacity of the watercourse. They varied in size but generally measured approx. 1mx 1.5m in plan and were approx. 0.5m deep. The blocks were not mortared but at the south end of the weir a layer of concrete had been deposited over the rear (east) surface of the blocks; presumably to improve their stability (**Plates 7**). Those blocks on the flanks had a regular rectangular shape and were laid longside to longside (**Plate 9**). The central blocks were wedge-shaped on their shorter sides (**Plate 10**) and were laid end to end. The blocks contained Lewis Holes (**Plates 6 & 10**) –small rectangles their surface which enable lifting pins (‘Lewises’) to be inserted as an aid to moving the blocks. These features along with their size and shape suggest that the blocks were specifically quarried to build the weir rather than being reused from elsewhere. The central blocks were removed by mechanical digger and re-sited on a grassed area at the north end of the lodge in approximately the same layout as in the river (**Plates 11 & 12**). However those adjacent to the river banks remained in place.

5.3 The Left Bank Retaining Wall

- 5.3.1 The retaining wall which comprised the left bank of the weir was substantially hidden by trees. However it could be seen to have been built from large rectangular shaped gritstone blocks which rose for approx one metre above the height of the weir lip and then sloped down from east to west in line with the weir’s descent (**Plates 5, 7 & 8**). Again these blocks were not mortared but laid dry.

5.4 The Right Bank Retaining Wall

- 5.4.1 The retaining wall which comprised the right bank of the weir was partially hidden by trees at its northern end. At the lip of the weir it stood some 2.5m above the latter but at the foot of the weir it rose 5m above the latter. It was possible to discern at least three phases of building. The lower part of the wall, which rose approx. one metre from the lip of the weir and 3.5m from the foot was constructed of mortared uncoursed irregularly shaped gritstone blocks. However the top 1.5m was constructed of mortared rectangular and square blocks many of which were tooled (**Plates 13 & 14**).
- 5.4.2 Beyond the end of the weir the wall was constructed of fairly regularly coursed stone blocks for the whole of its 5 metres plus height (**Plate 15**). It seems likely that the wall was raised in height at some time to protect pedestrians using the adjacent footpath rather than for water management purposes. It is also likely that the tooled masonry was a reuse of stone from one of the nearby mill buildings that went out of use. At the foot of the weir was a small rectangular outlet and a metre west of this was a similar one that debouched into an earthenware trap with a concrete cowl (now partially broken) (**Plate 16**). Both appear to be overflows from the adjacent lodge and leet. The wall is topped with a convex concrete haunching

5.5 Body of Weir

- 5.5.1 As described above the weir falls in four roughly defined phases for about 15 metres (measured horizontally) from the lip to its foot. The first and third phases are more or less level with the second and fourth descending more obviously (**see Fig 9**). The weir is constructed of large river pebbles with two 'islands' of more protruding adjacent to the right bank and in the centre of the stream (**see Plate 2**). There are also a number of isolated stones which stand proud of the weir.

WEIR 2 (THE DOWNSTREAM WEIR)

5.6 General

- 5.6.1 Weir 2 is located at a point where the long retaining wall on the right bank of the river is at its maximum height which renders the stream inaccessible at this point without the use of a ladder. In this case the top of the weir comprised what appeared to be an iron or steel flanged pipe which extended almost the full width of the weir. The weir then falls in a

single step by a depth of approx 2m over a distance of some 5 metres to the river bed further downstream (**Plates 17 to 20**). Both sides of the weir are bounded by walls built of gritstone blocks. An inspection of the river banks upstream of the weir did not reveal any outlets which might explain the purpose of the weir. The topographical survey of the weir along with an archaeological plan and elevational drawings of the banks are included at **Figs. 11 to 13** in Appendix 1.

5.7 The Lip of the Weir

- 5.7.1 In this case the top (or lip) of the weir was formed by what appeared to comprise a substantial iron or steel pipe (or set of pipes) which straddled the weir (**Plate 21**). This was set out in a slightly segmental arrangement with the head of the segment projecting slightly downstream of the ends of the pipework. It was also slightly raised towards the centre. It was this pipework which were to be removed in order to increase the hydraulic capacity of the watercourse.
- 5.7.2 Upon removal the pipework was seen to comprise four hollow steel tubes each with a butt end and a flanged opening (**Plate 22**). The tubes were measured upon their removal and were found to be 2.35m long with the flange being 30mm thick. The external diameter was 375mm with the flange projecting some 60mm above the outside of the tube (**Plate 23**). There was a gap of some 930mm between the butt of the southernmost tube and the south retaining wall. The length of the string of the weir from wall to wall was some 10.2m whilst the actual distance along the length of the pipework including the southern gap was some 10.3m. About half the diameter of the pipework stood proud of the weir at its centre; rather less towards the ends. It seems clear that the stones on the downstream side of the weir butted up against the pipework suggesting that the latter had been part of the original design. On the upstream side there was a row of stones set back about some metre behind the head of the weir (**Plate 21**).

5.8 Body of Weir

- 5.8.1 In this case the weir falls some 2 metres in a single phase over about 5 metres (measured horizontally) from the lip to its foot at the centre of the stream (see **Fig 12**). As with Weir 1 this one is also constructed of large river pebbles. There is a substantial 'island' of larger stones in the central part of the weir (**Plates 17 & 18**).

5.9 The Left Bank Retaining Wall

- 5.9.1 The retaining wall which comprised the left bank of the weir was built from large shaped gritstone blocks (**Plate 24**). These were substantially

overgrown with vegetation but appeared to curve upwards in a segmental shape towards the centre of the weir's edge. It appeared to be kerbed with regular gritstone blocks. As with Weir 1 these blocks were also not mortared but laid dry.

5.10 The Right Bank Retaining Wall

- 5.10.1 The retaining wall which comprised the right bank of the weir was inaccessible to the archaeological for health and safety reasons as agreed with the client. However we did have the benefit of photos taken from within the river by Tony Gibbon of Jacobs, the on-site supervisor. The wall was found to be of stone construction comprising in the main of roughly shaped gritstone blocks of various sizes but with the larger ones being towards the base of the wall. This was particularly noticeable in the area just downstream of the pipework which formed the lip of the weir (**Plate 25**). A row of large elongated blocks appeared to form a plinth which presumably marked the top of the original wall before it was extended upwards (**Plate 26**). The large blocks were laid unmortared but the smaller ones above were mortared. Conversely the large blocks were brought to courses whilst the smaller ones above were more random. Just beyond the foot of the weir was an angle in the wall where it turned southwards. At this point a stone block rose above the water level and supported a broken pipe which emerged from the wall itself (**Plate 27**). It was not possible to identify the purpose of this pipe but nothing was debouching and it appeared to be redundant. A little further downstream the wall was substantially undercut by a large rough-edged void (**Plate 28**).

6. ANALYSIS AND INTERPRETATION

- 6.1 It is clear from the cartographic evidence that both weirs were in existence before 1893 but only the upper weir (Weir 1) was in existence before 1848. It seems certain therefore that Weir 1 was constructed in connection with Ball Grove Mill which was a woollen mill from at least 1814 and a Cotton Mill from at least 1848. Immediately beyond the track, which runs parallel with the river, is an overgrown leet which is not present on the 1848 OS map but is shown on the 1893 map as a mill stream which runs into the buildings shown as Ball Grove Tannery. This leet clearly runs a considerable distance down the valley from north of the White House where it appears to have been culverted and it cannot have been fed by Weir 1. It is much more likely that the latter was constructed to feed the lodge or mill pond which is also shown on the 1848 map. A similar arrangement existed at Bough Gap Mill which formerly existed to the north-east of the White House. However there is no sluice or outlet visible

in the right bank of the river east of the weir which might have performed this function and it can only be assumed that these have been removed by landscaping. There are two outlets from the lodge into the river at the bottom end of the weir (see para. 5.4.2 above) which are presumably intended to drain off any overflows.

- 6.2 There are two features of note concerning the construction of Weir1. Firstly the large blocks that make up the lip of the weir are so large that it is difficult to imagine that they were not purposely cut for this use. They have also been intentionally shaped to form a shallow arc which, if extended, would also be unusually large ruling out an alternative use such as a chimney base. Secondly the right bank wall was built in two phases (see para. 5.4.1 above). Some of the blocks in the upper part were tooled suggesting that they might have been brought from a demolished building in the vicinity (Bough Gap Mill?) and the wall was presumably heightened once Ball Grove Works went out of use and the area became popular for recreational use.
- 6.3 By the time the downstream weir (Weir 2) appears on the 1893 map the Works had become a tannery and whilst there is an outlet from a broken pipe towards the bottom of the weir, again, there is no indication of an outlet or sluice above the weir indicating its purpose. However there are some buildings shown on the 1893 map upstream of the weir which sit athwart both banks of the river and it seems most likely that the weir was constructed to create a pool or head of water for use in connection with these buildings.
- 6.4 The main feature of note concerning the construction of Weir 2 is the use of the four steel tubes to form the lip of the weir. These appear to have been originally intended for storage purposes but not for any purpose connected with textile production and presumably were salvaged from some redundant use within the tannery. They appear to have been an integral part of the original construction of the weir (see para. 5.7.1 above) which indicates a makeshift approach suggesting that the weir may have been constructed to deal with some unforeseen circumstance.

7. OUTPUT AND ARCHIVING

- 7.1 An archive will be prepared in accordance with the recommendations of *The Management of Archaeological Projects* 2nd ed.1991. The archive will be deposited at the Lancashire County Record Office in Preston. A copy of this report will also be sent to the Lancashire County Historic Environment Record also in Preston.

8. BIBLIOGRAPHY

Maps

OS Map 1848 Lancashire Sheet 49 6"

OS Map 1893 Lancashire Sheet 49/13 1:2,500

OS Map 1932 Lancashire Sheet 49/13 1:2,500

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1923 Barrett's Directory of Burnley and District

1916-7 Barrett's Directory of Burnley and District

1911 Barrett's Directory of Burnley and District

1902 Barrett's Directory of Burnley and District

1896 Barrett's Directory of Burnley and District

1899 Barrett's Directory of Burnley and District

1893 Barrett's Directory of Burnley and District

1887 Barrett's Directory of Burnley and District

1879 Barrett's Directory of Burnley and District

1876 Slater's Directory

1872 Slater's Directory

1869 Slater's Directory

1865 Slater's Directory

1861 Slater's Directory

1858 Slater's Directory

1855 Slater's Directory

1848 Slater's Directory

1834 Piggot and Co's Directory

1828-9 Piggot and Co's Directory

1824-5 Baines Directory

1818 Baines Directory

1814-5 Baines Directory

APPENDIX 1: FIGURES

Fig. 1: Site Location Map

Fig. 2: Site Plan

Fig. 3: OS Map 1848 Lancashire Sheet 49, 6" scale

Fig. 4: Detail of OS Map 1848 Lancashire Sheet 49, 6" scale, magnified 400%

Fig. 5: OS Map 1893 Lancashire Sheet 49/13 1:2,500

Fig. 6: OS Map 1912 Lancashire Sheet 49/13 1:2,500

Fig. 7: OS Map 1932 Lancashire Sheet 49/13 1:2,500

Fig. 8: Topographical survey of Weir 1

Fig. 9: Archaeological Plan of Weir 1

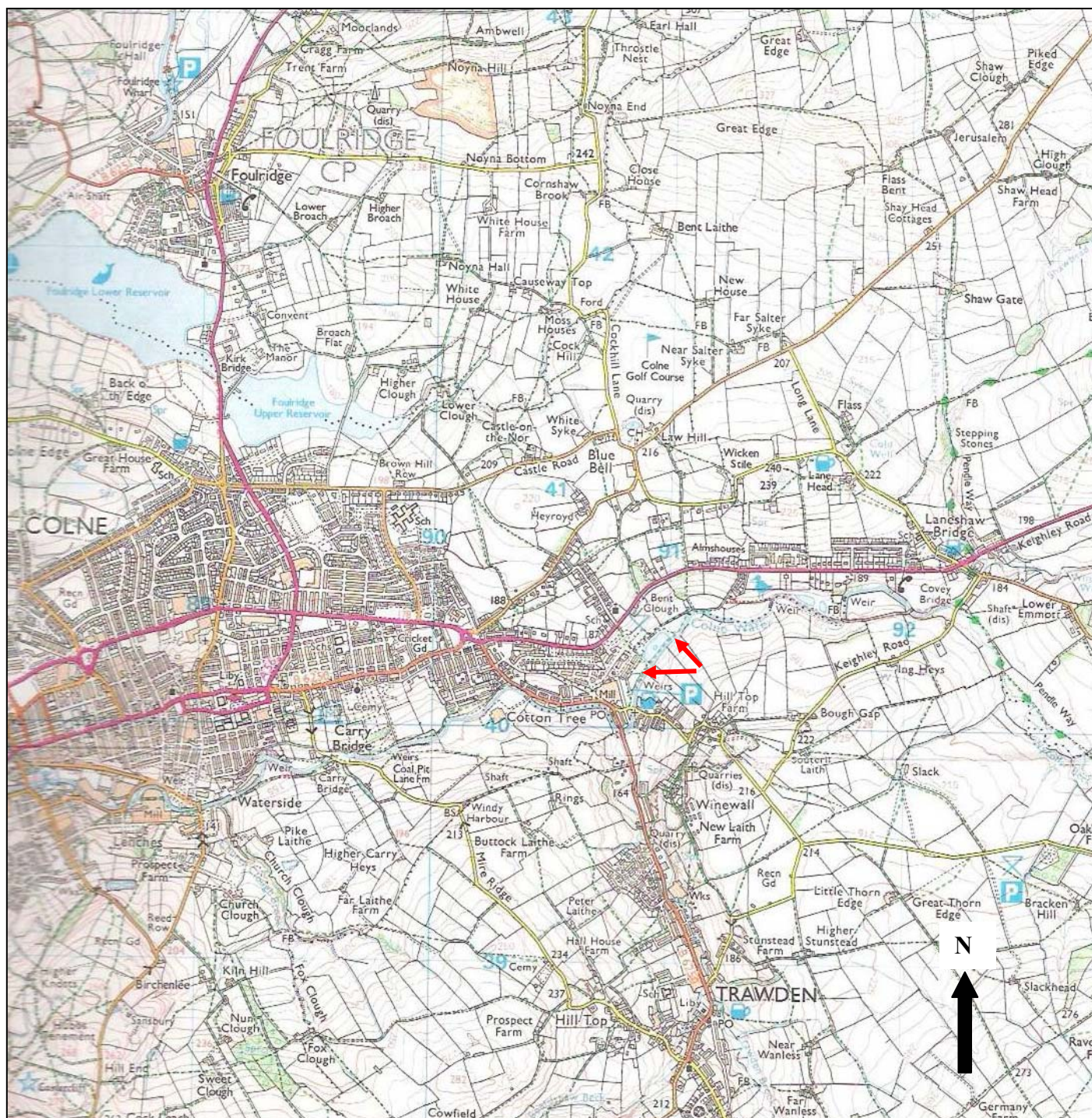
Fig. 10: Archaeological Elevations of Weir 1

Fig. 11: Topographical survey of Weir 2

Fig. 12: Archaeological Plan of Weir 2

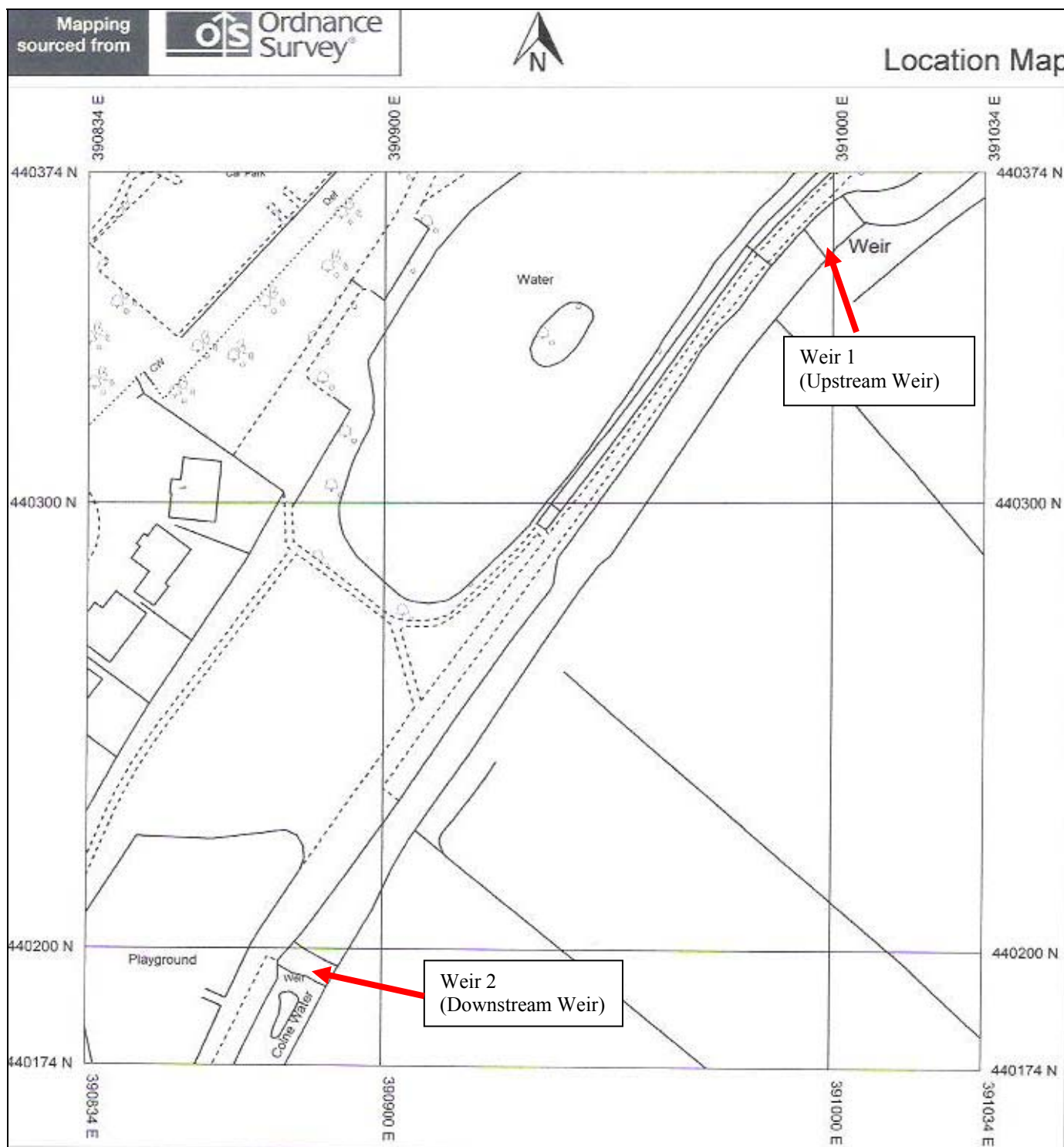
Fig. 13: Archaeological Elevations of Weir 2

Fig. 14: Photographic Register



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Fig. 1: Site Location Map



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Fig. 2: Site Plan

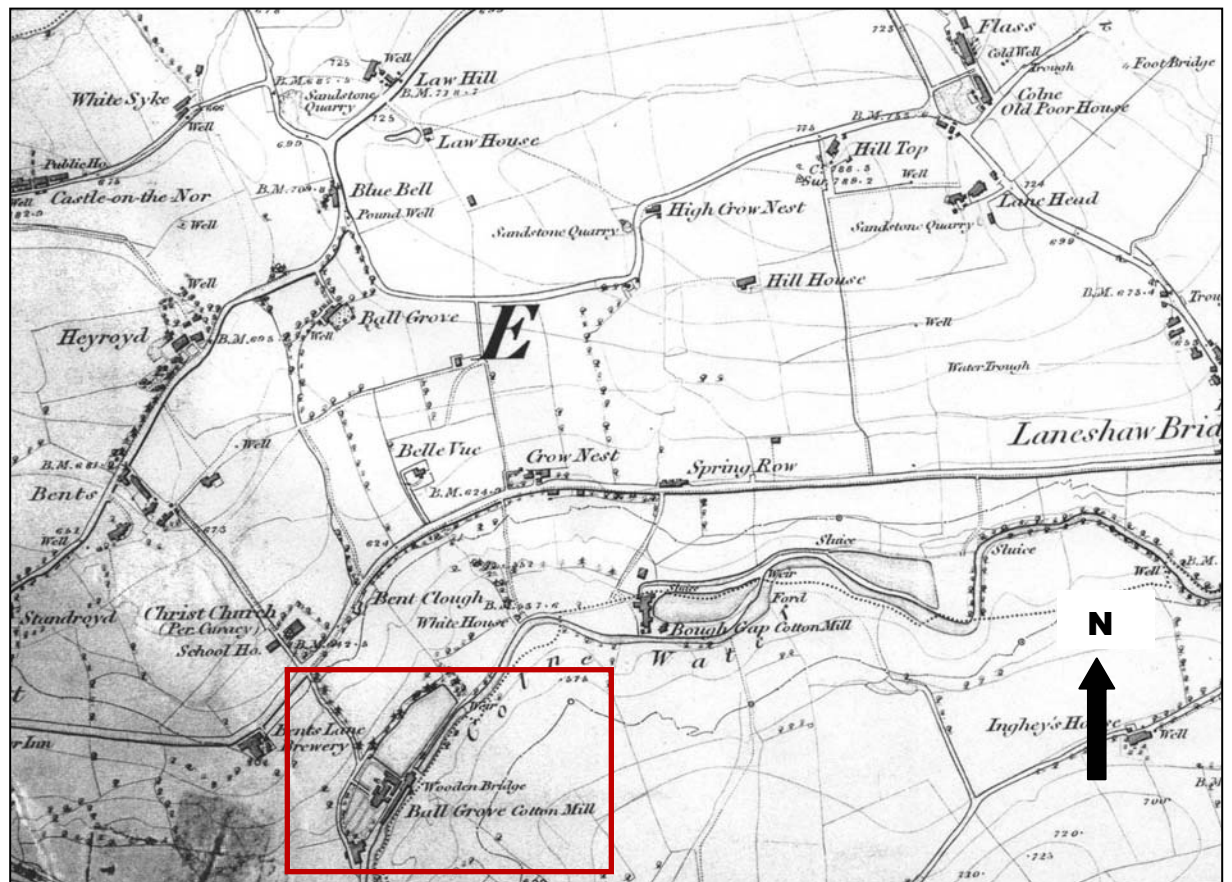


Fig 3: OS Map 1848 Lancashire Sheet 49, 6" scale



Fig 4: Detail of OS Map 1848 Lancashire Sheet 49, 6"scale, magnified 400%

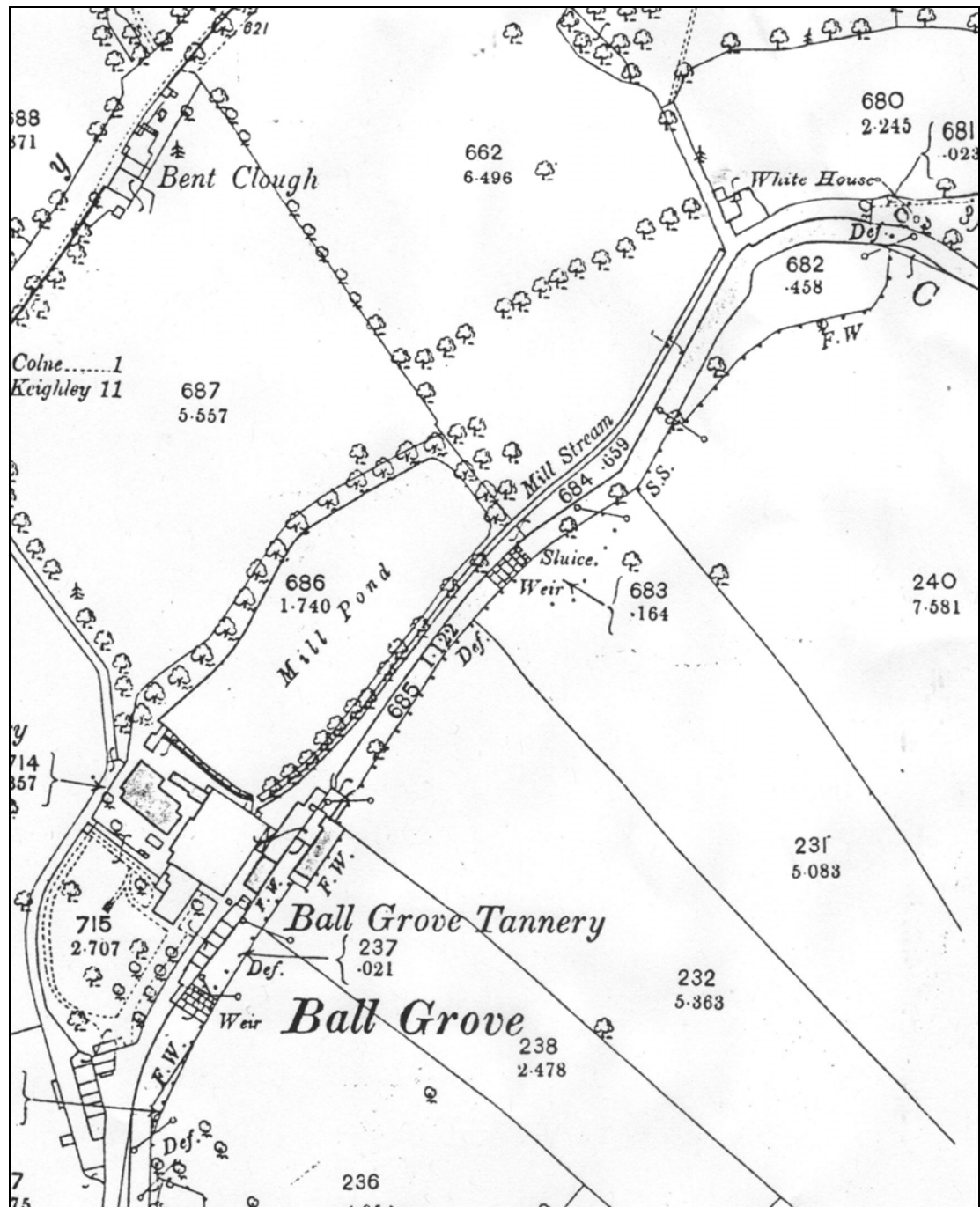


Fig 5: OS Map 1893 Lancashire Sheet 49/13 1:2,500

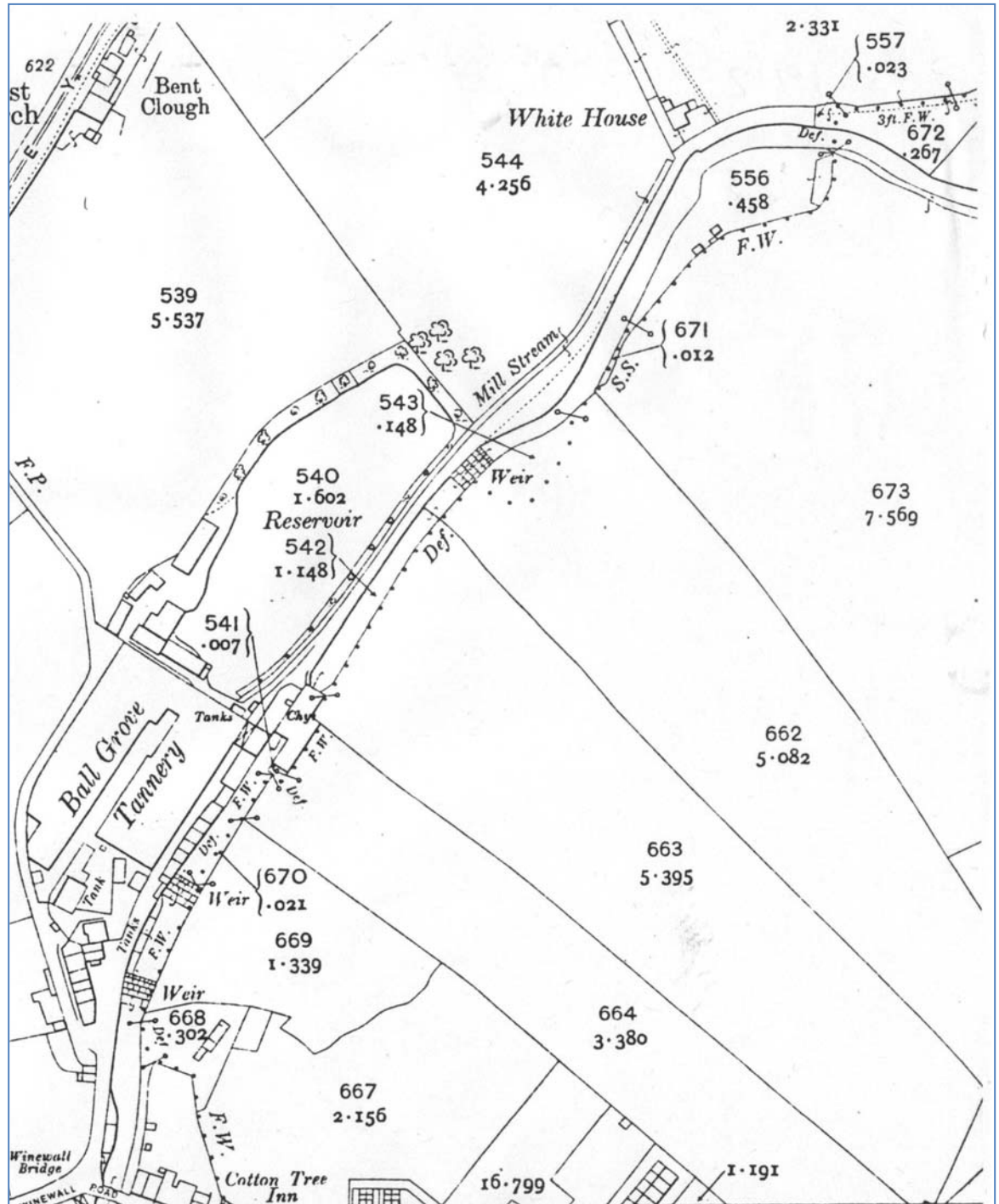


Fig 6: OS Map 1912 Lancashire Sheet 49/13 1:2,500

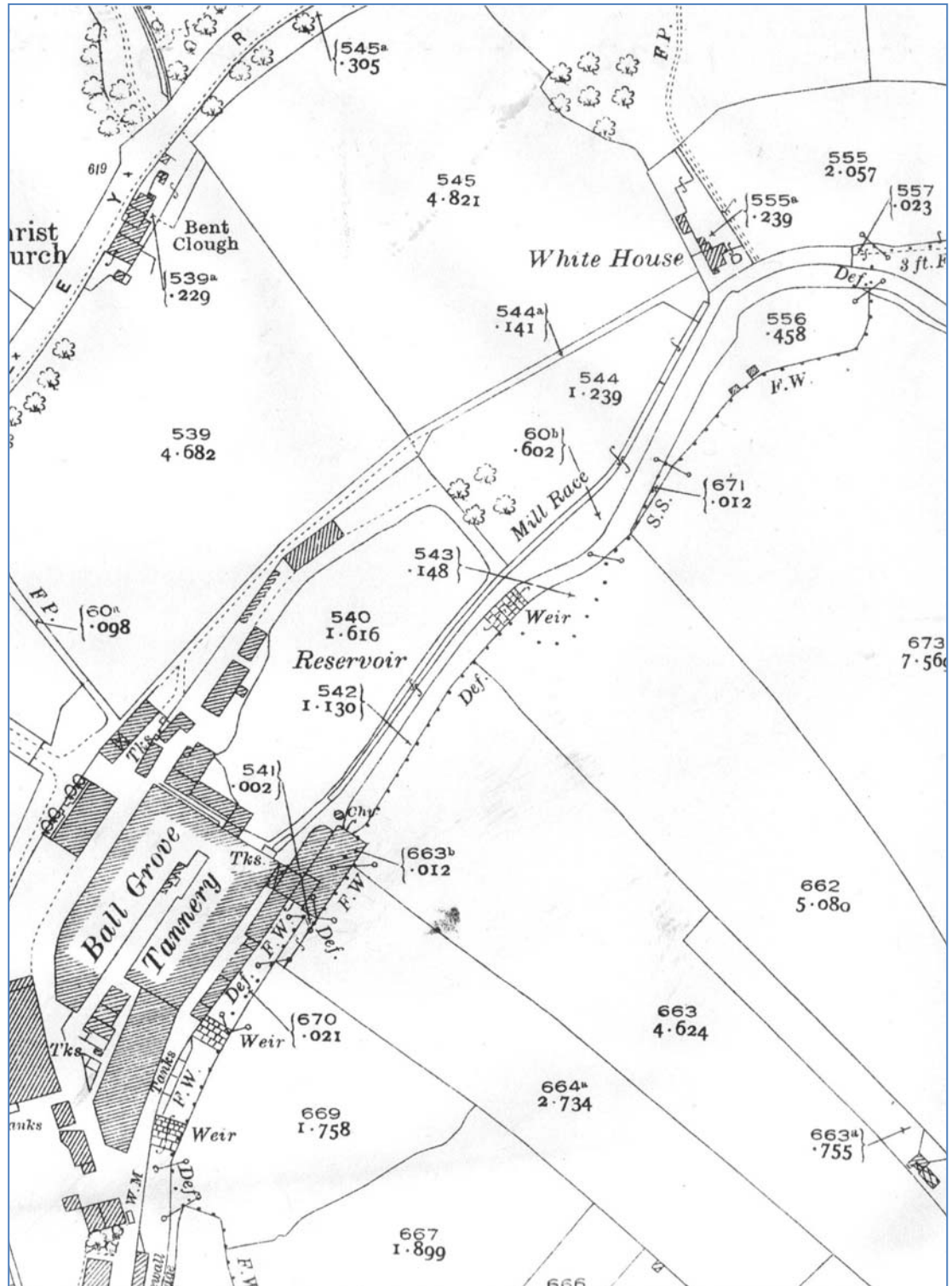


Fig 7: OS Map 1932 Lancashire Sheet 49/13 1:2,500

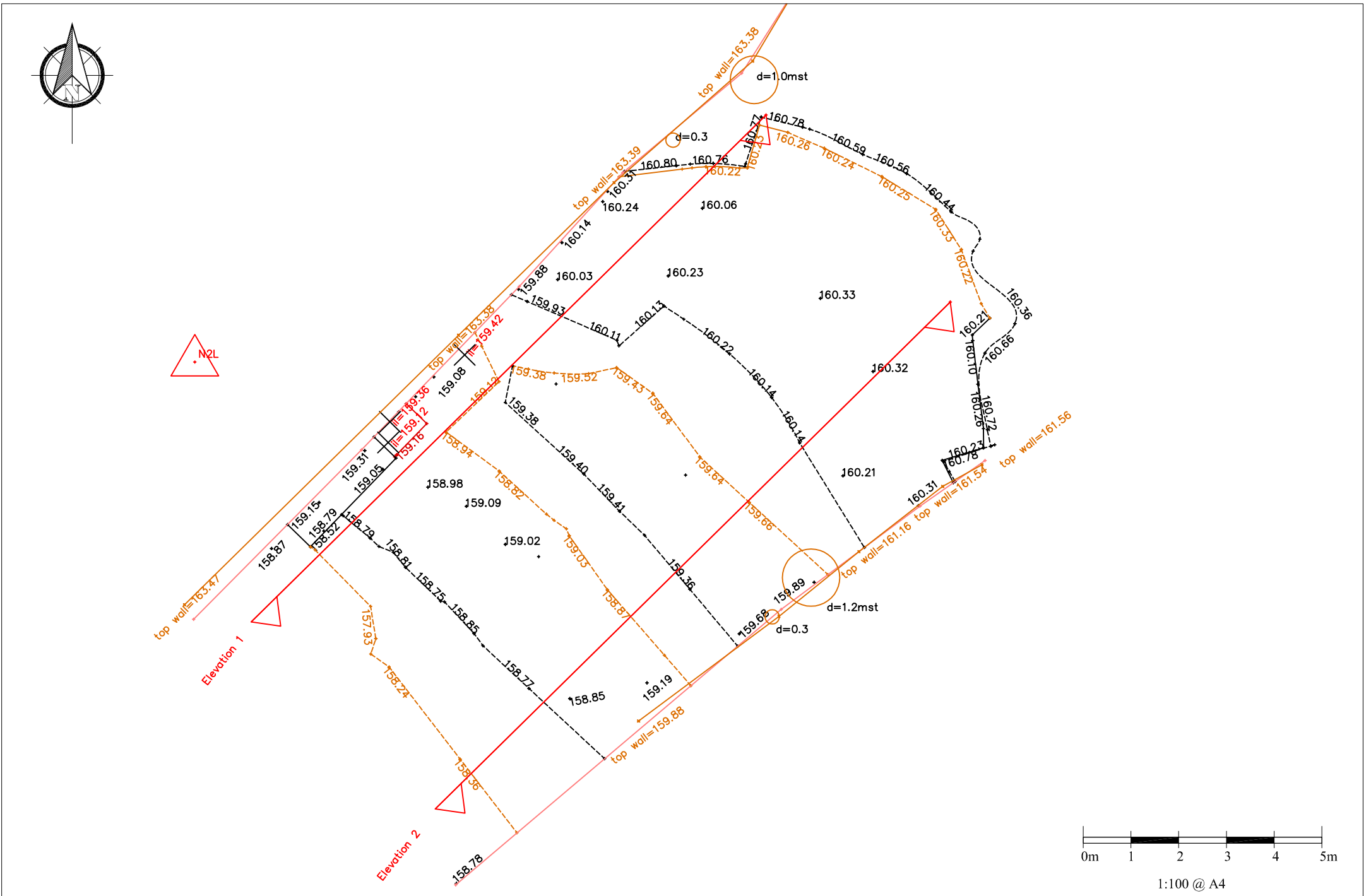


Figure Number 8. Topographical survey of weir 1

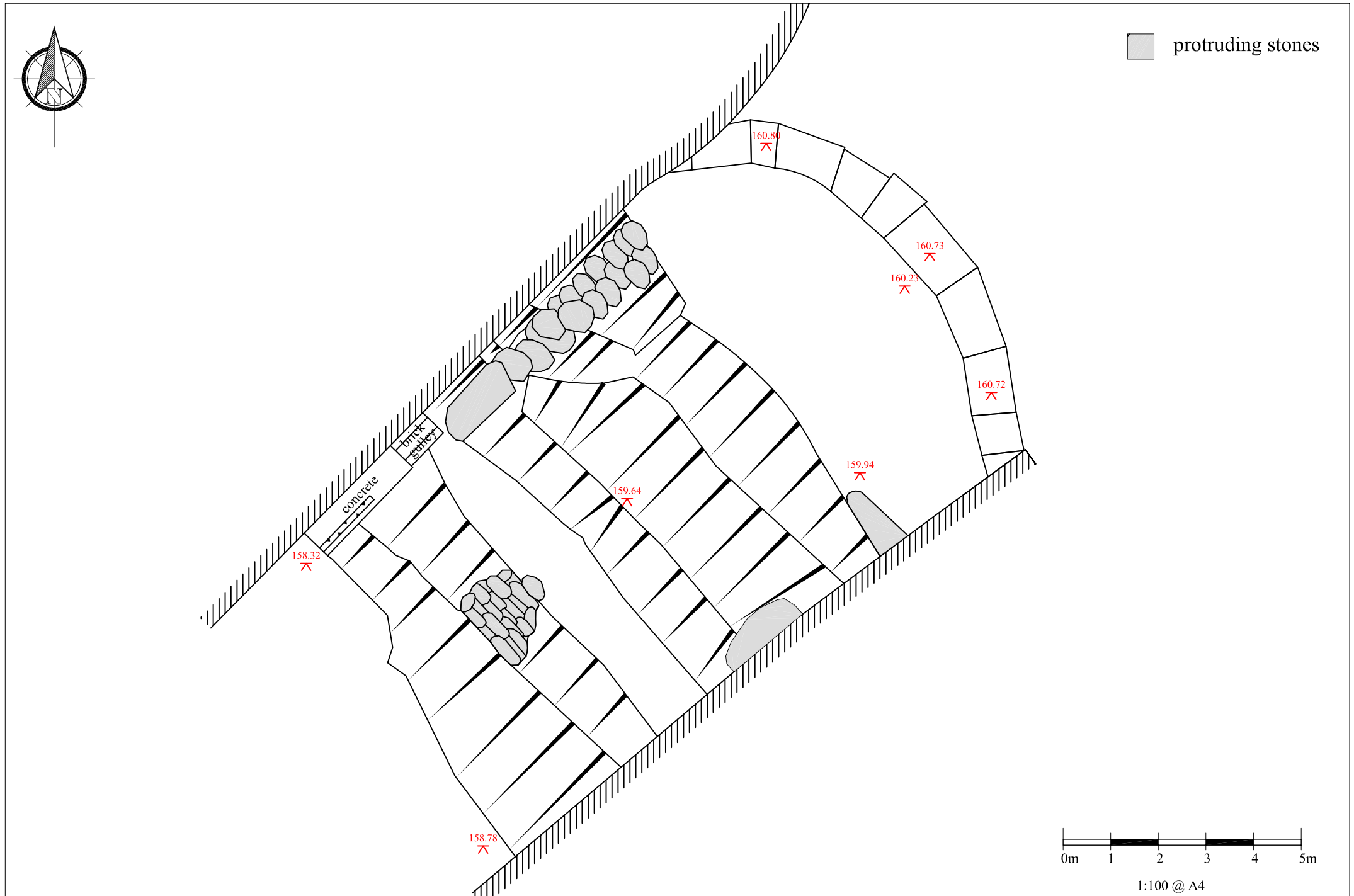


Figure Number 9. Archaeological Plan of weir 1

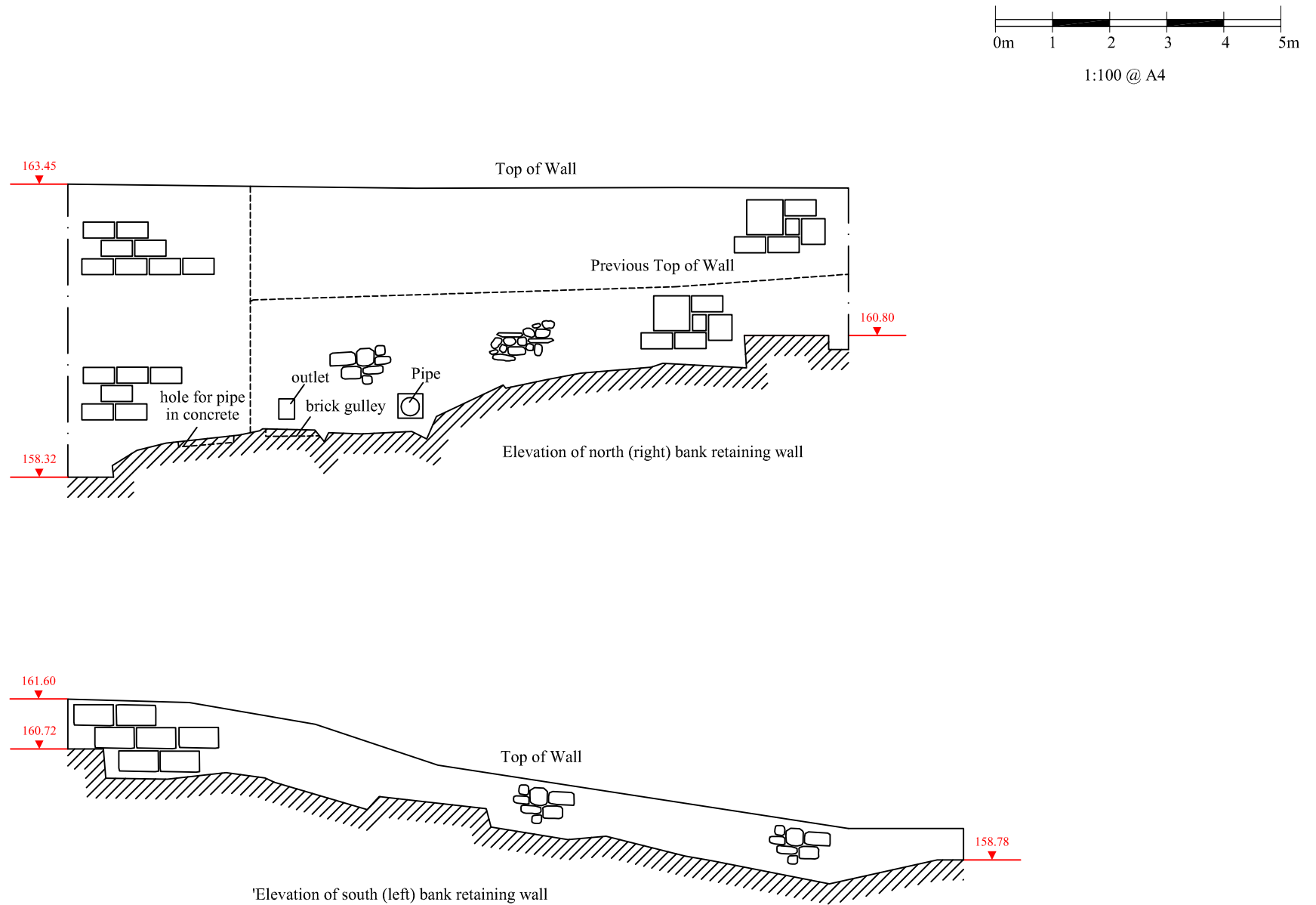


Figure Number 10. Archaeological elevations of weir 1

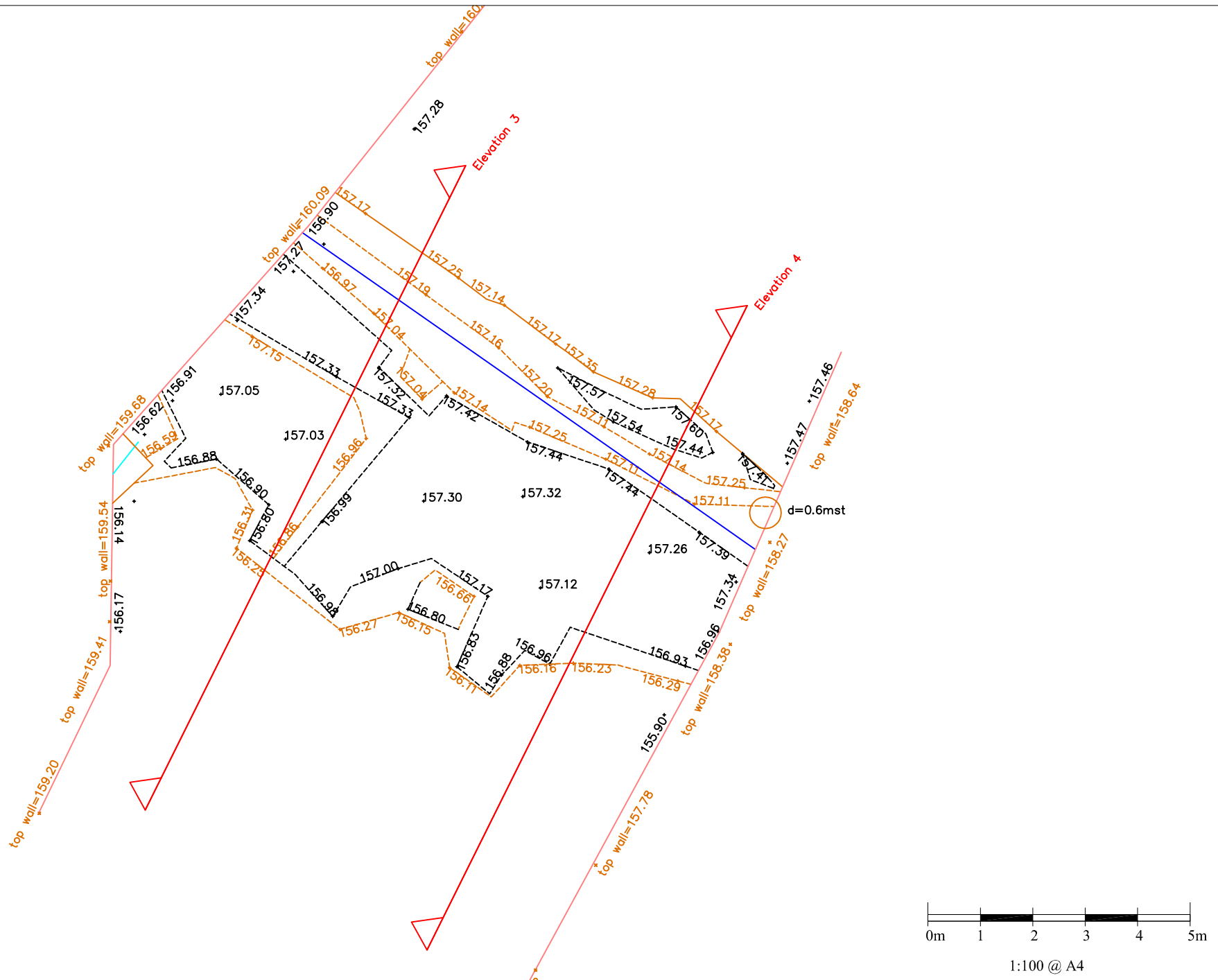


Figure Number 11. Topographical survey of weir 2

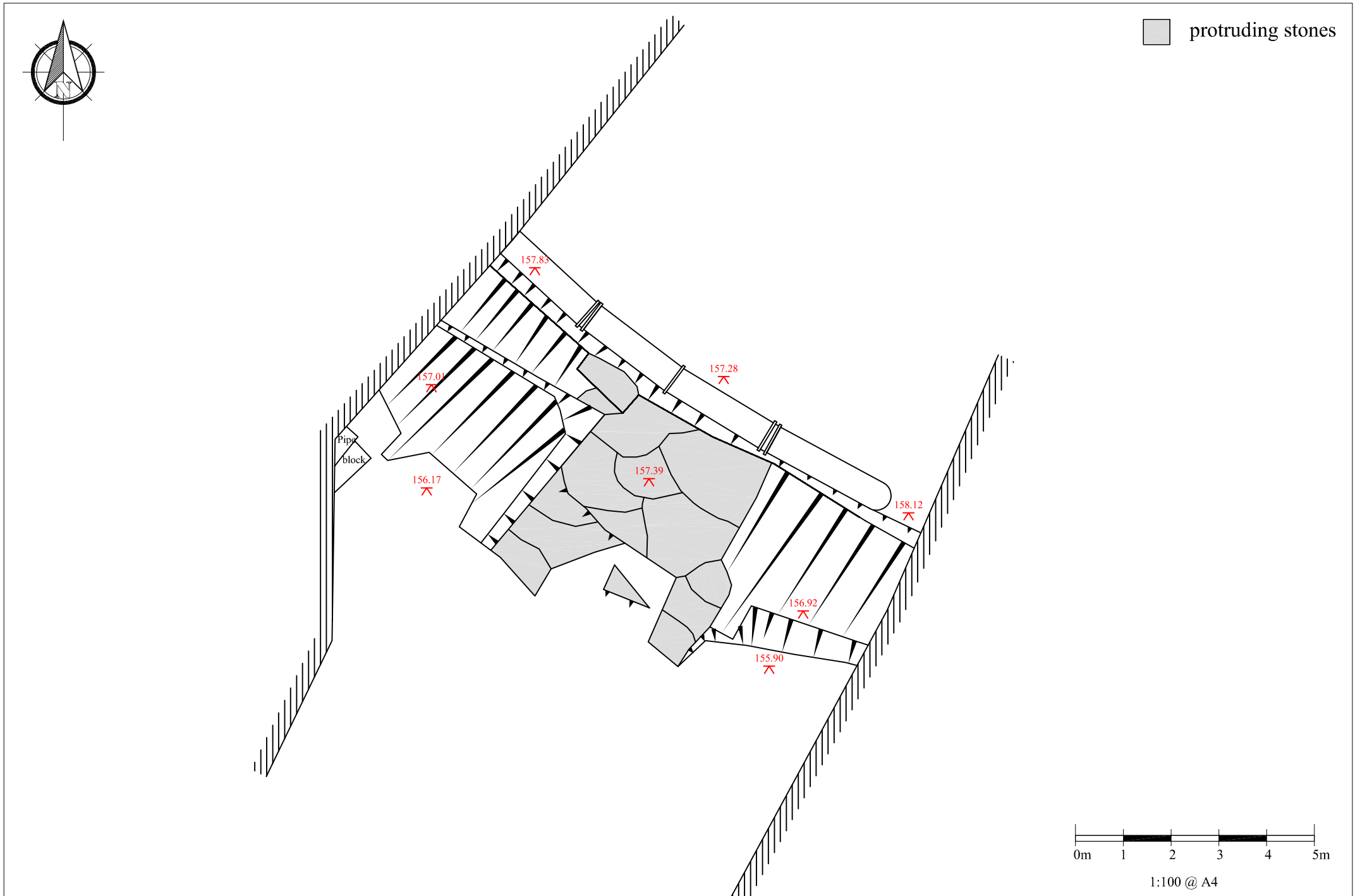


Figure Number 12. Archaeological Plan of weir 2

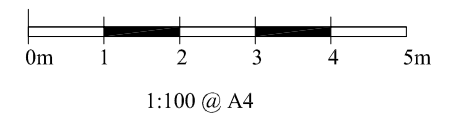
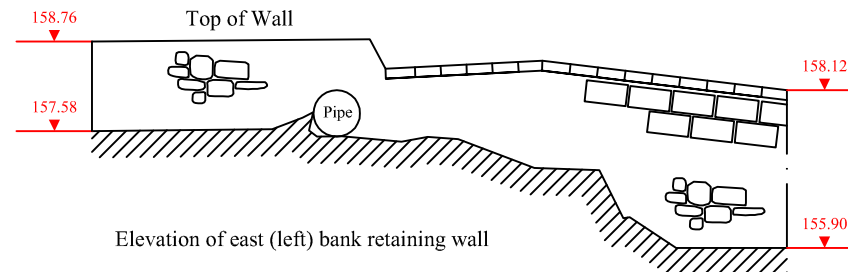
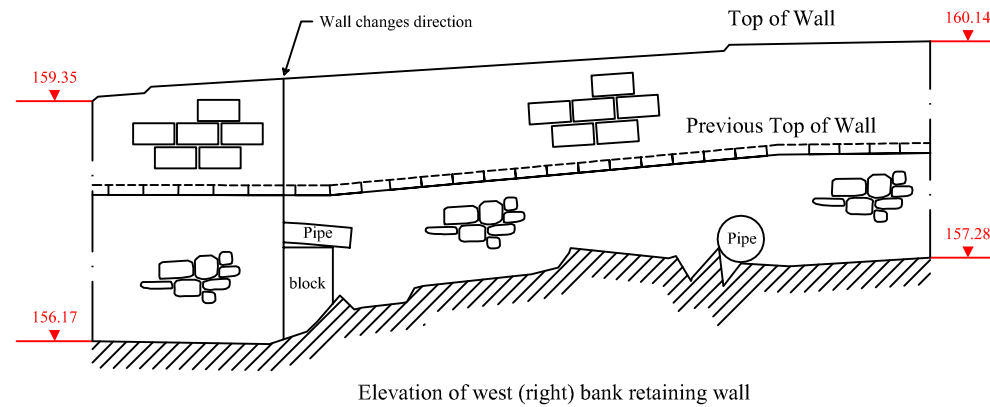


Figure Number 13. Archaeological elevations of weir 2

Fig 14: PHOTOGRAPHIC REGISTER (1of 2)

Plate No:	Digital Jpegs	Mono-chrome Film No/Frame	Description	Shot Towards
1	2/ /005	1/011&12	Weir 1 looking upstream	NE
2	4/004	2/10	Weir 1 looking upstream after removal of lip	NE
3	2/004	1/08 &10	Weir 1 looking downstream over lip of weir	SW
4	4/005	2/09	Weir 1 looking downstream after removal of lip	SW
5	3/001	1/017	Lip of Weir 1 looking towards left bank	SE
6	3/002	1/018	Block on lip in centre of Weir 1 looking downstream NB Lewis Hole	SW
7	3/011	3/01	Layer of concrete over lip of Weir 1 looking towards left bank	SE
8	3/026	2/03	Flanking blocks still in place on left bank after lip of Weir has been removed	E
9	3/007	2/02	Flanking blocks still in place on rightbank after lip of Weir has been removed	NW
10	3/008	1/26&27	Central blocks after removal from Weir 1 NB wedge shape and Lewis Holes	S
11	4/007	2/11	Central blocks from Weir 1 after relocation next to lodge	W
12	4/008	2/12	Central blocks from Weir 1 after relocation next to lodge	N
13	3/006	2/01	Right retaining wall above lip of Weir 1. Stonework changes at large block	NW
14	3/014		Tooled stonework in upper part of right retaining wall above lip of Weir 1.	SW
15	3/005		Random and tooled stonework in right wall; coursed beyond foot of Weir 1.	SW
16	3/003	1/16	Western outlet in right wall just beyond foot of Weir 1.	SW
17	2/ 001	1/06,7 &015	Looking upstream at Weir 2 under moderate water	NE
18	3/001	1/029&35	Looking upstream at Weir 2 under light water	NE
19	2/010	1/013 &14	Looking downstream at Weir 2 under moderate water	SW
20	3/016		Looking downstream at Weir 2 under light water	SW
21	3/019	1/36	Pipework forming lip at head of Weir 2	SE
22	3/020	2/04	Pipes being removed from lip of Weir 2	SE
23	3/021	2/05	Pipes or tubes removed from lip of Weir 2	SE

Plate No:	Digital Jpegs	Mono-chrome Film No/Frame	Description	Shot Towards
24	3/025	2/06	Left bank of Weir 2	SE
25	IMG2291	1/30	Right bank of Weir 2. Pipe marks head (lip) of weir	W
26	IMG2295		Right bank of Weir 2. Protruding pipe marks the foot of weir	SW
27	IMG2296	1/34	Detail of protruding pipe at foot of Weir 2	SW
28	IMG2294		Detail of undercut wall at foot of Weir 2	W
29	4/001	2/07	Looking upstream at Weir 2 after removal of pipework on lip	NE
30	4/003	2/08	Looking downstream at Weir 2 after removal of pipework on lip	SW

Fig 14: PHOTOGRAPHIC REGISTER (2of 2)

APPENDIX 2: PLATES



Plate 1: Weir 1 looking upstream



Plate 2: Weir 1 looking upstream after removal of lip



Plate 3: Weir 1 looking downstream over lip of weir



Plate 4: Weir 1 looking downstream after removal of lip (flanking blocks still in place)



Plate 5: lip of Weir 1 looking towards left bank

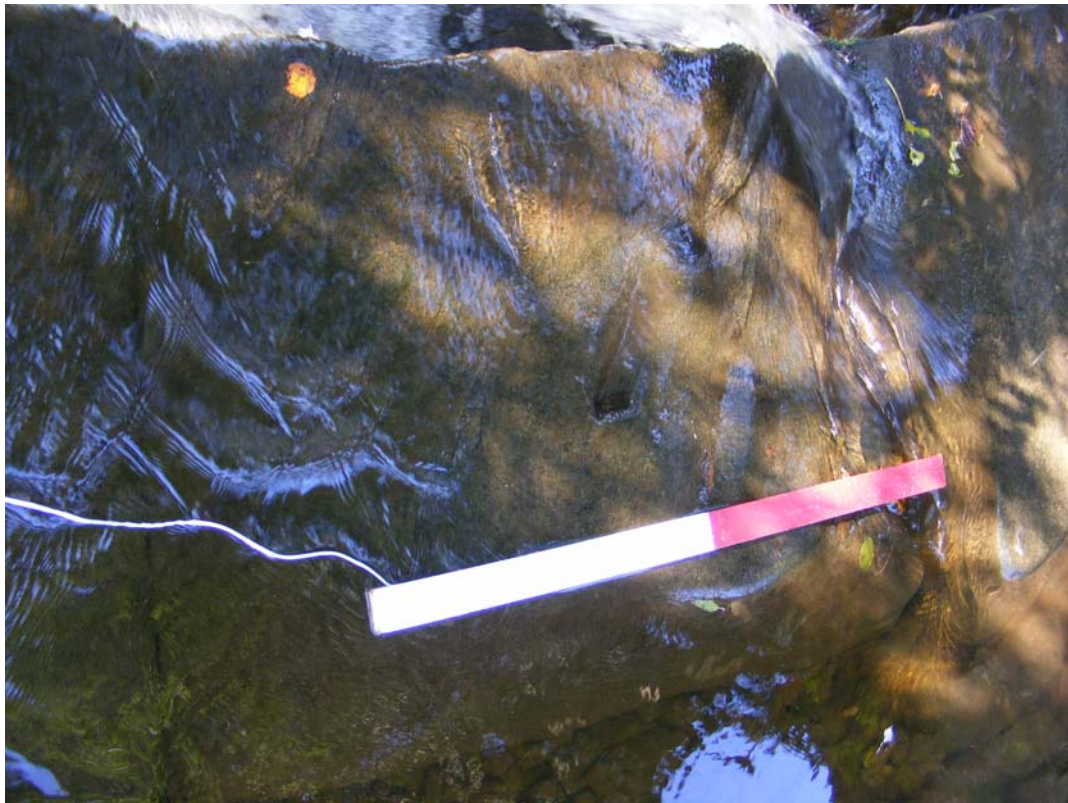


Plate 6: Block on lip in centre of Weir 1 looking downstream. NB Lewis Hole



Plate 7: Layer of concrete over lip of Weir 1 looking towards left bank



Plate 8: Flanking blocks still in place on left bank after lip of Weir1 as been removed



Plate 9: Flanking blocks still in place on right bank after lip has been removed



Plate 10: Central blocks after removal from Weir1. NB wedge shape and Lewis Holes



Plate 11: Central blocks from Weir 1 after relocation next to lodge looking west



Plate 12: Central blocks after relocation next to lodge looking north



Plate13: Right retaining wall above lip of Weir1. Stonework changes at the large block



Plate14: Tooled stonework in upper part of right wall above lip of Weir 1.



Plate 15: Random and tooled stonework in right wall; coursed beyond foot of Weir 1

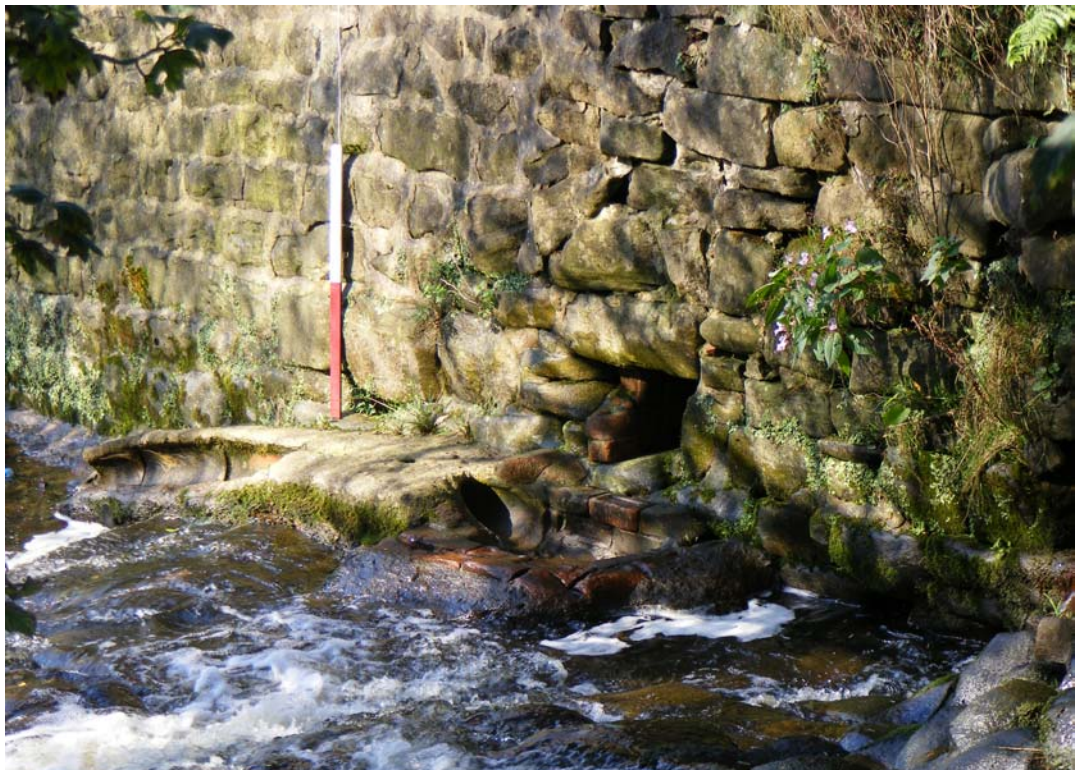


Plate 16: Western outlet in right wall just beyond foot of Weir 1



Plate 17: Looking upstream at Weir 2 under moderate water



Plate 18: Looking upstream at Weir 2 under light water



Plate 19: Looking downstream at Weir 2 under moderate water



Plate 20: Looking downstream at Weir 2 under light water



Plate 21: Pipework forming lip at head of Weir 2



Plate 22: Pipes being removed from lip of Weir 2



Plate 23: Pipes or tubes removed from lip of Weir 2



Plate 24: Left bank of Weir 2



Plate 25: Right bank of Weir 2. Pipe marks the head (lip) of the weir



Plate 26: Right bank of Weir 2. Protruding iron pipe marks the foot of the weir



Plate 27: Detail of protruding iron pipe at foot of Weir 2.



Plate 28: Detail of undercut wall below foot of Weir 2.



Plate 29: Looking upstream at Weir 2 after removal of pipework on lip



Plate 30: Looking downstream at Weir 2 after removal of pipework on lip

