ARCHAEOLOGICAL RECORDING AT CRICKLEPIT MILL, EXETER 2010

Prepared on behalf of Devon Wildlife Trust

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1. INTRODUCTION (Fig. 1)

This report sets out the results of archaeological recording undertaken by Exeter Archaeology (EA) in May and June 2010 at Cricklepit Mill (SX 91858 92186; Fig. 1). The work was required by the Local Planning Authority (Exeter City Council) as a condition of the grant of planning permission, and listed building consent (Nos 09/0486/03 and 09/0485/07) for the installation of a hydropower turbine by the Devon Wildlife Trust.

The hydropower turbine was installed within the base of the tailrace immediately below the mill in an area where water scouring downstream of the internal waterwheel pit has removed part of the stone lining of the base of the Higher Leat. It involved the excavation of a pit for the concrete foundation of the turbine, and the installation of a feeder pipe and other equipment within the northern wheelpit within the mill.

2. AIMS

The principal aims of the project were to investigate and record (whilst the leat was dry) the exposed historic fabric and features of the leat and wheelpit prior to them being part obscured by the installation of the turbine and associated equipment, to monitor and record the excavation for the turbine base, and to report on the results of the recording work.

3. METHOD

A review of previous recording of the leat was carried out prior to works starting. This was undertaken in order to understand the nature of the previous investigations (see section 4 below) and the development of the Higher Leat.

Following draining and drying out of the leat, and prior to the start of construction works, a record of the base of the leat, including the wheelpit within the mill, was prepared. This comprised a plan, a photographic record using black-and-white print film and a digital camera, and interpretive notes made during a meeting with mill historian Martin Watts.

During excavations for the foundation pad of the new turbine further recording of the base of the leat and the adjacent leat walls was undertaken.

4. HISTORICAL AND ARCHAEOLOGICAL BACKGROUND

Cricklepit Mill has a long history and is first recorded in the early 13th century. The site was used for industrial purposes into the 20th century. The building was converted into office accommodation for the Devon Wildlife Trust in 2004. The history and development of Cricklepit Mill and the surrounding mill has been presented in two extensive archaeological reports (Henderson *et al* 1996; Parker 1996). Information from these reports is integrated into the results section of this report. In 1989 the walls (but not the base) of the Higher Leat between Cricklepit Mill and the Lower Mills were recorded, but the results were never published. This record, currently held by EA, is referred to in the relevant section of the report.

5. RESULTS (Fig. 2)

The recording was confined to the bed of the Higher Leat within Cricklepit Mill and the tailrace as far south as its junction with a bypass channel which emanates from under the former Miller's House. Limited recording of the adjacent leat walls was also undertaken.

The leat walls

The walls forming the east and west sides of the wheelpit have been investigated as part of the analysis of the standing structure of Cricklepit Mill (Parker 1996, 4-5, fig. 5). The earliest fabric (forming the sides of the leat walls) may date to *c.*1690 when the present mill was constructed, although it is possible they were retained from an earlier mill. The walls are constructed largely from blocks of breccia (Heavitree stone).

There are distinct building breaks between the walls of the wheelpit within the mill and the leat walls to the east. The latter (1 and 2; recorded as 2331 and 2330 respectively in 1989) are constructed largely of volcanic trap. They are however contemporary with the side walls of the wheelpit since they form part of the same structure as Cricklepit Mill (cf. Parker 1996, fig. 5).

Limited observations were made under the leat's north wall where a layer of smooth rounded cobbles (4, not illustrated) set into sandy clay were observed overlying natural red-brown clay. Modern brick capping (5) had removed evidence of earlier rebuilding (2236 and 2245 recorded in 1989).

The Cricklepit Mill wheelpit

From *c.* 1589 to *c.* 1835 the Higher Leat powered up to three waterwheels on the site of the present Cricklepit Mill (Henderson, Hall and Collings 1996, 3-5, and unnumbered figures which show the stages of development). Evidence relating to three phases of 18th- and 19th-century waterwheels was recovered. Within the elevations of the wheelpit no previously-unrecorded features were observed, although a record was made of some post-1996 additions. Details of these are held in the archive.

North wheel

The base of this wheelpit was laid in flagstones (7), with brickwork (6) forming the curved breastwork at the head of the wheelpit. The latter material may be a replacement for earlier stonework, since further brickwork (8) was also present to the south (Pl. 1). This material is however easier to manipulate into the curved shape required for a breastwork than the flagstones used elsewhere and the two materials could therefore be contemporary. On the basis of this observation and the earlier historic building recording the waterwheel was *c.* 2.60m (8ft 6in.) diameter by 0.56m (1ft 10in.) wide. The flagstones terminated along the axis of the east wall of the mill where the remains of a wooden cill (9) were exposed (Pl. 3). At this point the gap between the end of the cill and the north leat wall was narrower (0.40m) possibly to increase the flow of water to a waterwheel within the Cricklepit Fulling Mill downstream (see below), or perhaps a third central waterwheel. The superstructure above the cill has been removed, but nails and a nut and bolt attached to the cill may have supported further timberwork including sluices (Pl. 2). Downstream of the cill beam a socket in a flagstone (10) may also have supported a timber associated with a sluice. This socket may have been contemporary with the cill beam, but could be earlier or later in date.

South wheel
Cill beam (9) terminates 0.56m (1ft 10in.) from the south wall of the leat. Flagstones (11) are present forming the base of the leat both sides of and adjacent to the end of the cill beam. Although there is no evidence from the flagstones to indicate the position of a narrow waterwheel it seems likely that the gap between the leat wall and the cill beam represents the downstream end of a narrow 18th-century (or potentially earlier) wheelpit (i.e. presumably within the grist/malt mill rather than within the fulling mill).

The present waterwheel was probably erected between 1835 and 1841, replacing the earlier, narrower waterwheels. The steel shaft is likely to be a replacement, dating to the third quarter of the 19th century (*ibid*, 5). The north end of the axle is supported on a brick wall (12) constructed in the centre of the wheelpit. The wall is partially covered in plaster, and has been laid on a concrete footing that rests on the earlier flagstones (11). The waterwheel itself was recorded in 1996 by Martin Watts (Watts 1996).

Central wheel
On the basis of documentary evidence Henderson *et al* (1996, stages 4-9) place a third waterwheel centrally within the wheelpit. This arrangement is known from mainland Europe, and indeed Bonhay Mill further upriver from Cricklepit Mill is depicted on the 1756-8 Chamber Map Book with several wheels within a single wheelpit. Firm archaeological evidence is lacking; there is not for example any evidence for the position of the shaft. In the position suggested by Henderson *et al* any fabric or fittings associated with this waterwheel (such as timber framing) must have been removed when the present waterwheel was erected and wall 12 constructed. Alternatively, it is possible that the wheel could have been located outside the present building, which may explain the presence of cill beam 9, the latter supporting sluice gates above the wheel.

The Cricklepit Fulling Mills wheelpit
A fulling mill was added to the east side of Cricklepit Mill in the late 17th-century. Fulling stocks were powered by waterwheels located in the Higher Leat and in the bypass channel to the north. Some of the external walls of this mill, including an 18th-century extension to the south of the leat (see Fig. 2), were excavated in 1989-90.

The base of the leat
This had been disturbed by water action and within the west end of the mill only the remains of flagstone surface 11 survived. To the east of this washout, the base of the leat (13) was lined with breccia (and occasionally volcanic trap and granite). This surface continued beyond the limit of the building. The same materials were used for the base of the bypass channel (14) leading from the Miller's House, although a break between these two surfaces was observed.

Within the western part of the fulling mill where the surface did not survive the remains of a sub-base of roughly-hewn breccia (21) was observed. This was supported on a timbers and stakes. Adjacent to the leat's southern wall the remains of three horizontal timbers were exposed (15-17), along with a number of oak stakes (18). Several of these supported either the horizontal timbers or other stones within the sub-base.

The leat walls
At one location below the leat's south wall rows of three stakes (19) were partially exposed supporting the masonry above. These coincided with a break in masonry and may relate to a rebuild of the leat wall (3).

As noted above, the north wall is constructed of volcanic trap, although some breccia was recorded near the base of the leat. Below the modern capping at the top of the wall quantities of brick were noted. No evidence for wholesale rebuilding was observed either in 1989 or 2010 and it seems likely this represents recent consolidation and repair. Further down the wall several voids, fully or partially infilled with brick, may represent sockets for timbers or metalwork associated with the former waterwheel (such as bearing holding-down bolts). No evidence of fittings for the waterwheel axle was observed, and this must have been located either where the top of the wall has been rebuilt or was above ground level (cf. Passmore *et al* 2009, fig. 29, for illustrations of fulling mills and stocks).

The stakes (Pl. 4)
A number of stakes were recovered from the base of the leat (18) to assess their potential for dendrochronological or radiocarbon dating. These were oak and measured from 0.40m to 0.60m in length with diameters of between 80mm and 150mm. Their lower tips were smooth and pointed before becoming roughly hexagonal in profile. The stakes were shown to Vanessa Straker, the English Heritage Regional Science Advisor for the South West Region, who advised they were unlikely to be suitable for dendrochronology, and that (if they are post-medieval) radiocarbon dating was unlikely to provide an accurate enough date range to be meaningful. No further analysis was undertaken.

The millstone
Half of a granite edge-runner millstone (20) was situated within the washout in the base of the leat. The stone is probably of later 19th or 20th century date and may have derived from the manure mill housed within the former fulling mill from 1854, or from the Lower Mills.

DISCUSSION

The installation of the hydropower turbine necessitated and enabled the recording of the base and walls of the Higher Leat both within Cricklepit Mill, and downstream of the present standing structure. Fabric in the base of the leat, in particular 6-9 and 11, could be associated with the positions of two of the three waterwheels formerly installed within the mill, but could not be specifically dated. However, the layout of the flagstones and brickwork predates the present mid-19th-century arrangement with one large wheel, although their origin is unknown. This surface may be contemporary with the construction of the present mill in *c*.1690 but is more likely to relate to 18th-century alterations to the building. There was no evidence for the third wheel, and any fabric relating to it may have either been removed or obscured by the wall (12) supporting the present 19th-century wheel.

The base of the wheelpit (within the leat) of the 18th-century fulling mill was also recorded, but no remains that can be confidently associated with its waterwheel survive.

ACKNOWLEDGMENTS

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out by Marc Steinmetzer and Gary Young, and the report illustrations prepared by Tony Ives. Thanks are due to Martin Watts for his input into the interpretation of the site, and to Vanessa Straker for commenting on the wooden stakes. The project was monitored on behalf of Exeter City Council by Andrew Pye who, along with Martin Watts, also commented on a draft version of this report.

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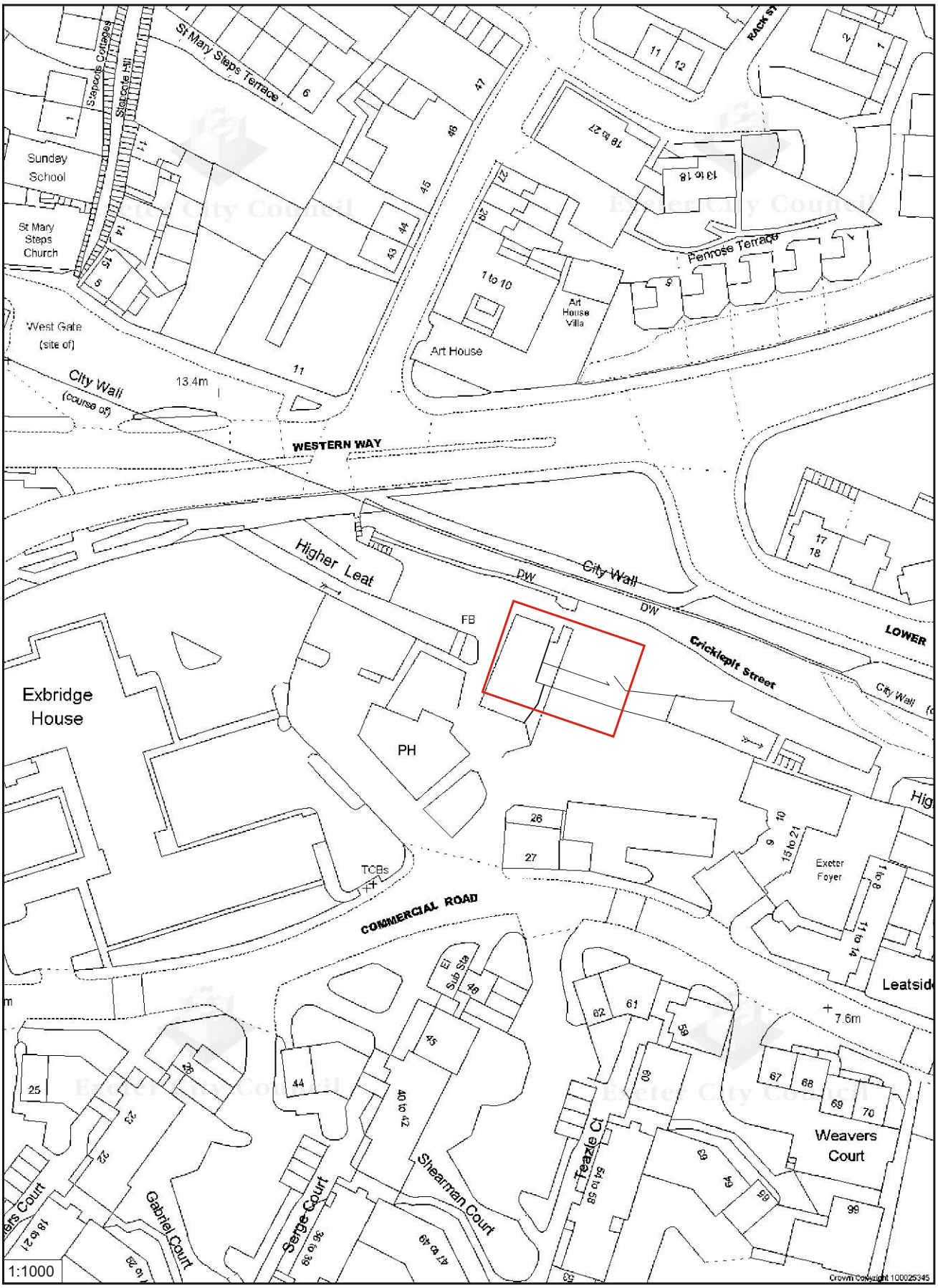

Fig. 1 Location of site.

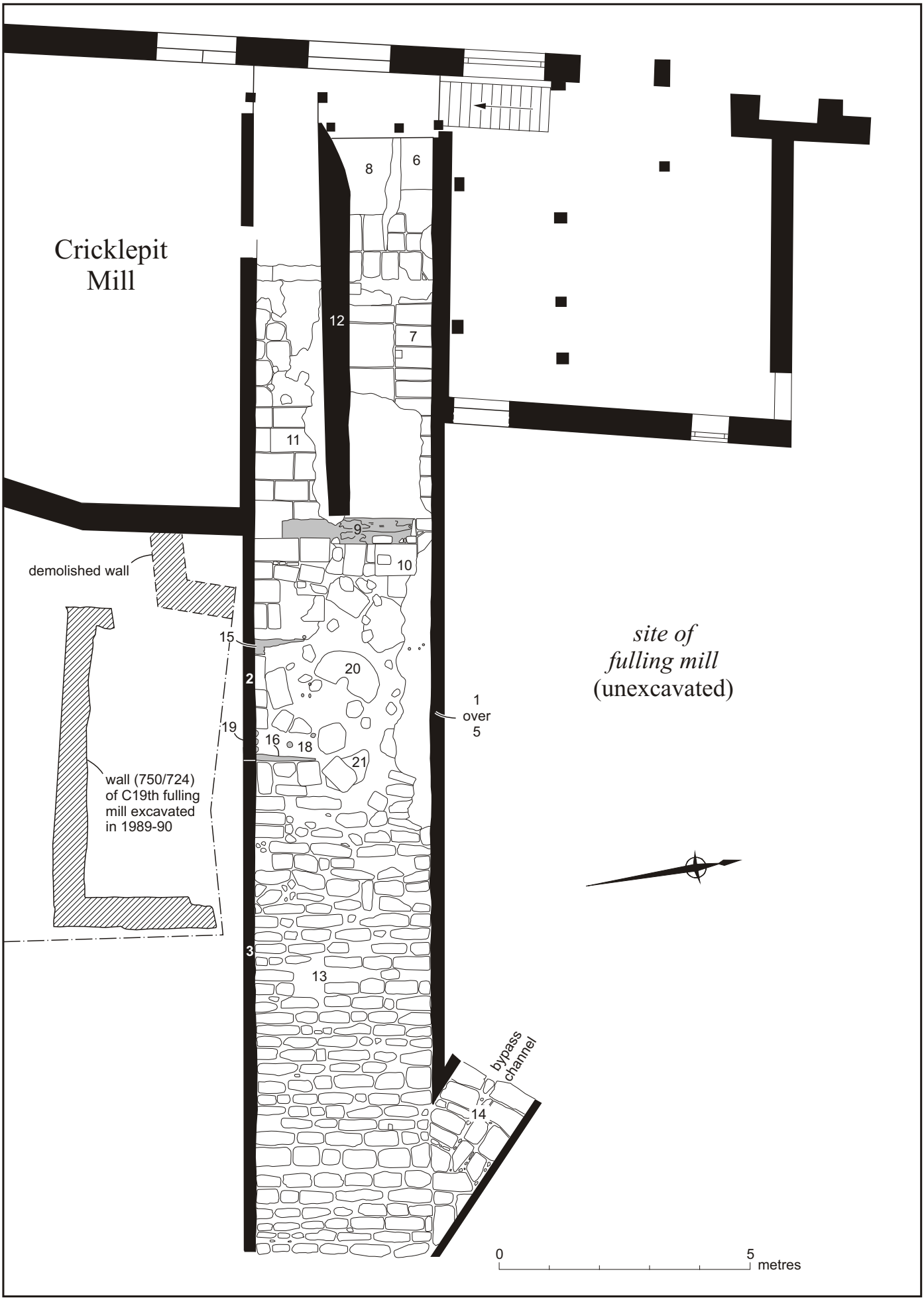

Fig. 2 Plan of the base of the leat.

Plate 1 Base of northern internal wheelpit showing masonry 7 to right of scale, looking west. 1m scale.

Plate 2 Area of washout showing surfaces 11 and 13 (foreground right and background), stakes 19 below leat wall and millstone 20 (foreground, centre), looking southeast.

Plate 3 Beam 9 with socketted stone 10 to right, looking north. 1m scale.

Plate Timbers recovered from the base of the leat. 0.25m scale.