British Waterways Scotland

Forth and Clyde Canal
Lock 17, Underwood
Survey and Trial Trenching (Phase 1)

Archaeological Survey and Excavation
August - September 2009

Project Code: BW-FC17-2009-02

30 October 2009
Kirkdale Archaeology

Site: Lock 17 on the Forth and Clyde Canal, and the Antonine Wall, at Underwood near Allandale, Stirlingshire.

Description: Survey and trial excavation of modern overburden on the Antonine Wall.

NGR: NS 8053 7897

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Fieldwork: Completed over 6 working days between 25/08/09 and 29/09/09.

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Contents

1 Background to the Project....1
1.1 Introduction....1
1.2 Desk Based Assessment....2
1.2.1 The Antonine Wall....2
1.2.2 The Forth & Clyde Canal....3
1.2.3 Lock 17....3
1.2.4 Underwood House and Garden....8
1.3 The Development of the Lock 17 Site....10
1.3.1 Period 1: late 19th century – mid 1980s....10
1.3.2 Period 2: 1985 – c.2003....11
1.3.3 Period 3: c.2003 – December 2008....11
1.3.4 Period 4: January 09 – March 09....12
2 Fieldwork....15
2.1 Topographic Survey....15
2.2 Trial Trenching....17
2.2.1 Introduction....17
2.2.2 Excavation Account....18
2.2.3 Conclusions....24
2.2.4 Periodised Results....25
2.2.5 Estimated Volume of Overburden....25
A1. Appendix 1 : List of Features noted during the Survey....27
A2. Appendix 2: List of Contexts in Trench 2....28
A3. Appendix 3: List of Contexts in Trench 3....28
A4. Appendix 4: List of Drawings....28
A5. Appendix 5: List of Photographs....29

Figures

Figure 1: Location of Lock 17 1
Figure 2: The area before the Canal. 2
Figure 3: Detail from John Grassom's map of 1817. 4
Figure 4: Detail from the OS 6-inch 1st edition map 4
Figure 5; 2nd Edition OS Map (1898) with modern map overlaid 5
Figure 6: View of 1970 from SSE 6
Figure 7: View of 1970 from SE 6
Figure 8: View in 1981 from SW 7
Figure 9: Photograph of 1981 showing detail of paddle gear 7
Figure 10: 1954-57 Working Sheets 8
Figure 11: Annotated aerial photograph of the area 11
Figure 12: The landscape immediately prior to construction of the by-wash culverts 12
Figure 13: The landscape during construction of the by-wash culverts 13
Figure 14: Features surveyed during the topographic survey 16
Figure 15: Establishing the Site Grid 16
Figure 16: Location of trenches excavated during this phase of work 17
Figure 17: Opening Trench 3 19
Figure 18: W Facing Section of Trench 2 20
Figure 19: W Facing Section of Trench 21
Figure 20: N end of W facing section through cut *F304* (Trench 3) 22
Figure 21: W facing section of Trench 2 showing *F203*, *F204* and the Tree Hole 23

1 BACKGROUND TO THE PROJECT

1.1 Introduction

Kirkdale Archaeology was contracted to survey an area of overburden that had been recently spread over an area of the Antonine Wall to the W and E of Lock 17 on the Forth and Clyde Canal. The work took place over two main stages. The first of these was a topographic survey of the area to define the extent of the modern overburden and the surviving remains of the Antonine Wall. The second phase was to dig three trenches (one to the W and two to the E of the Lock). These trenches were intended to identify the depth and character of the overburden in order to quantify the volume of modern material on the site (see section 2.2.5). Only 2 of the 3 trenches were dug due to poor weather and a second phase of work is anticipated to excavate the remaining area.

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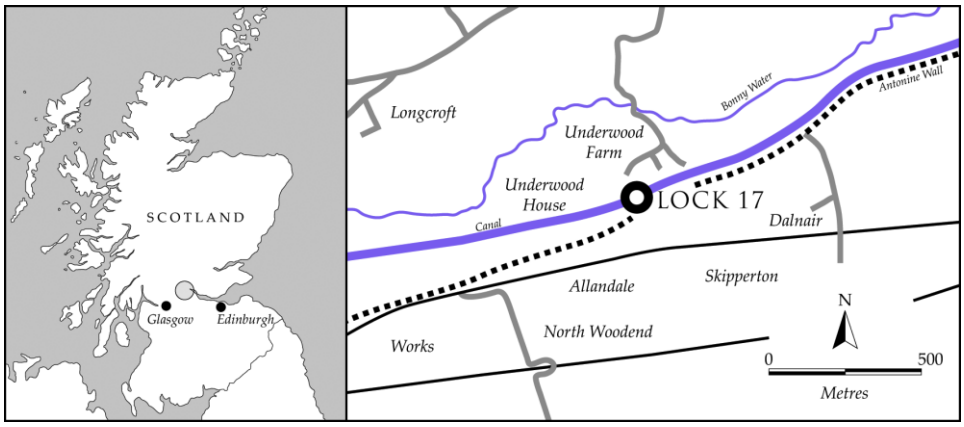

Figure 1: Location of Lock 17

1.2 Desk Based Assessment

The following section is an expanded version of the desk based assessment that was undertaken in 2007 prior to the installation of the by-wash culverts. The area under consideration is remarkable in that it contains two monuments of major international significance. The Forth and Clyde Canal is a Scheduled Ancient Monument and at Lock 17, it lies close to another, older, monument the Antonine Wall. The Canal itself falls within the buffer zone of the new *Frontiers of the Roman Empire* World Heritage Site. (*Frontiers of the Roman Empire. World Heritage Site Proposed Extension. The Antonine Wall*, map V-16). The cultural significance of the monument in its international context has been presented most recently in *The Antonine Wall: The North West Frontier of the Roman Empire* (Breeze 2004).

1.2.1 The Antonine Wall

The Antonine Wall was constructed in the 2nd Century AD, defining the northern frontier of the Roman Empire. The actual wall itself was constructed of turf on a stone base. The northern approach to the wall was defended with a deep ditch the excavated material from which was tipped out to the N lip to form a wide, low mound known as the upcast or outer mound. The approach to the wall could be made more difficult by digging *lilia*, small pits which probably held stakes. Much of the Antonine Wall survives as a degraded earthwork, as is the case near Lock 17. It has attracted the attention of antiquarians from the early 18th Century onwards. The canal builders were aware of its presence and often respected its remains.

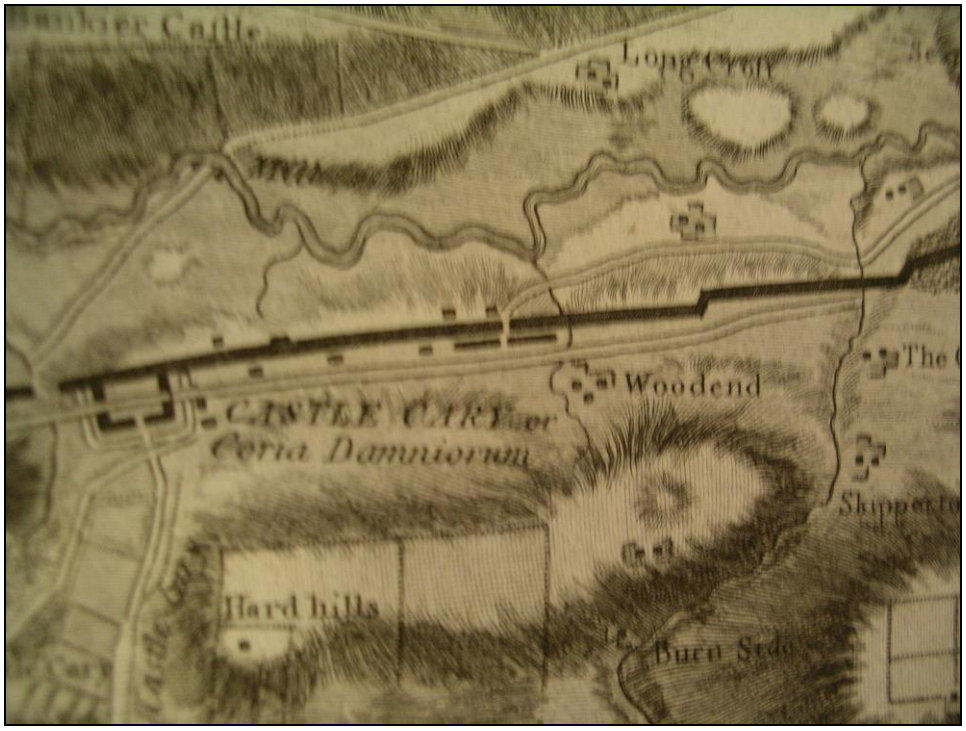

Figure 2: The area before the Canal: a survey by General Roy, published in *The Military Antiquities of the Romans in North Britain* in 1793.

1.2.2 The Forth & Clyde Canal

Schemes for a waterway linking the Forth with the Clyde had been discussed during the early eighteenth century, but actual work did not start until the 1760s. The Canal was constructed the civil engineers John Smeaton and Robert Mackell, with the former as chief engineer. Smeaton was responsible for planning the management of the work, necessary with a work force of over 1000. He also introduced the use of standardised procedures in design. Standard designs for lock gates, for example, survive among the Smeaton drawings in the archive of the Royal Society. Construction work on the Canal began in 1768 and by 1773 it was navigable from the Forth to Kirkintilloch.

1.2.3 Lock 17

The proposed work site for Lock 17 is remarkable for the richness of the archaeological resource, its small area including two Scheduled Ancient Monuments, the Forth & Clyde Canal itself and the Antonine Wall.

The line of the Antonine Wall lies immediately to the S of the Canal. The E and W edges of the site include parts of the visible monument.

The original lock house and stables, built to a non-standard design, have now been converted into a pub and restaurant. Between this building and the lock is a cobbled forecourt (Carter 1991, 22-23).

The OS 1:2500 map of 1859 (Stirlingshire XXIX.8) shows a crane on the N towpath to the W of the lock. Foundations of this structure may survive. The buildings to the N of the towpath extend further W, ending c 10m from the boundary wall of Underwood House garden. Each side of the lock is shown as a surfaced area, with the towpath continuing on the N side of the Canal. Two small plots of land occupy the area between the lock and the road to the S. A small building stands in the southern part of the eastern plot. There is a well outside the western wall of these two properties, the wall being in line with the western lock gate.

The OS 1:2500 second edition map of 1898 (Stirlingshire Sheet XXIX.8) shows the buildings on the N extending as in 1859. The building to the S has a small structure to its E, by the roadside. The crane and well shown on the 1859 map are no longer marked. The S side of the Antonine Ditch is shown as extending into the small plots to the S of the lock.

The OS 1:2500 map of 1918 (Stirlingshire Sheet NXXIX.7) now shows the visible earthwork of the Antonine Wall stopping abruptly at the boundaries of the small plots to the S of the lock. Frequent mooring posts are shown on the S side of the canal outside the area of the two small plots. There is a single mooring post shown on the N side of the canal, approximately 30m to the west of the lock.

Figure 3: Detail from John Grassom's map of 1817.

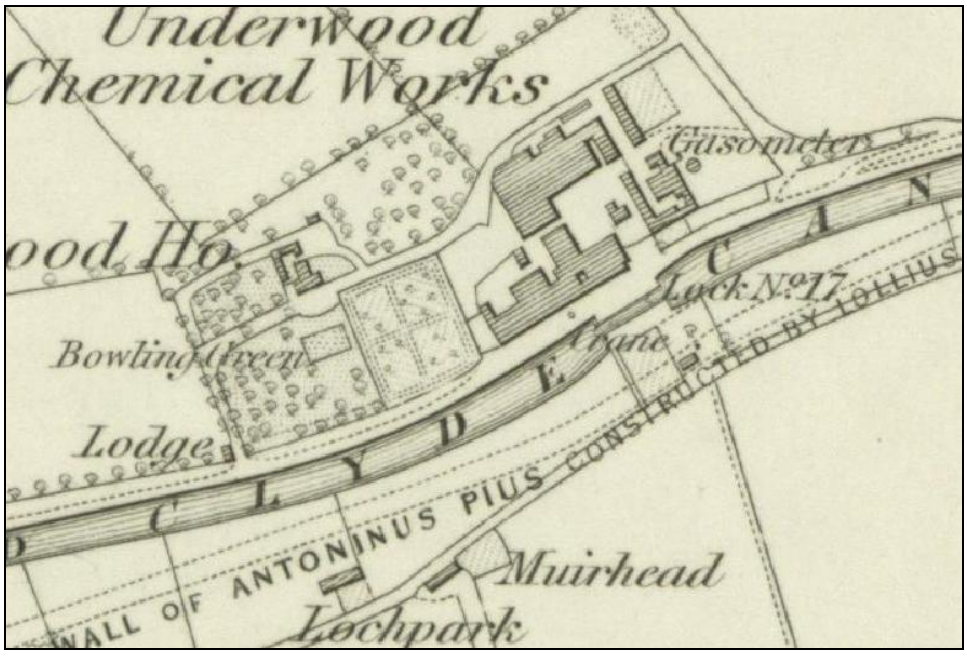

Figure 4: Detail from the OS 6-inch 1st edition map. Stirlingshire Sheet XXIX, surveyed 1859.

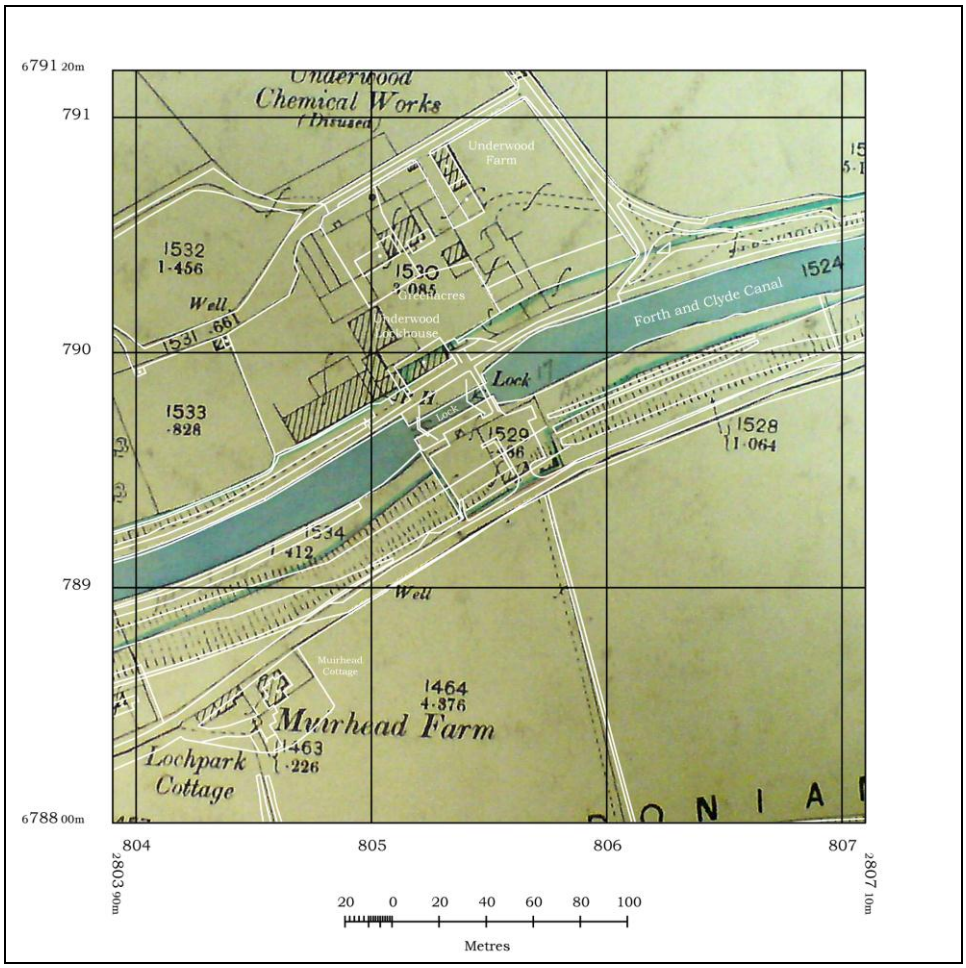

Figure 5; 2nd Edition OS Map (1898) with modern map overlaid

Figure 6: View of 1970 from SSE showing top of W lock gates with part of lock keeper's house and stables in background (RCAHMS SC733396)

Figure 7: View of 1970 from SE showing SSE and ENE fronts of lock keeper's house and stables with remains of E lock gates in foreground (RCAHMS SC733397)

Figure 8: View in 1981 from SW showing WSW front (RCAHMS SC573879)

Figure 9: Photograph of 1981 showing detail of paddle gear (RCAHMS SC573882)

1.2.4 Underwood House and Garden

Underwood House and garden lie on the N side of the Canal, immediately adjacent to Lock 17. The house, together with its boundary wall and gate piers, is a Category C(S) Listed Building. Roy's map published in 1793 but surveyed in the mid-18th Century shows an unnamed settlement in the approximate location of Underwood and is indicative of an earlier settlement on this site. Grassom's map of 1817 shows that there was a house of some substance on the site by the early 19th Century and the present house is a well-detailed and well-preserved mid-19th Century villa. It is also indicative of the successes of the Canal, bringing new industry and increased wealth to new parts of Central Scotland. Underwood House was built by Mr Robert Bennie, the owner of a chemical works that sat to the E of the house, at the rear of Underwood Lockhouse (see separate listing). A hostelry was established due to the increased population brought to the area by the works, the Canal and the nearby Stein's Brickwork at Allandale. A bowling green was also established in the grounds of Underwood House. The OS map of 1859 shows that Underwood boasted a walled garden, the external wall of which lines the driveway, and a lodge facing onto the canal towpath. Towards the end of the 19th Century, the Chemical Works began to fall into disrepair and the fortunes of the Underwood community declined. Underwood House continues to be inhabited, however the walled garden and surrounding property have fallen into disrepair. A farm and new housing occupy the site of the former chemical works.

The condition of the Antonine Wall adjacent to Lock 17 was noted by the Ordnance Survey in their revisions of 1954-7 (RCAHMS: 1954-57 Working Sheets, Map Sheet 29 DP051455).

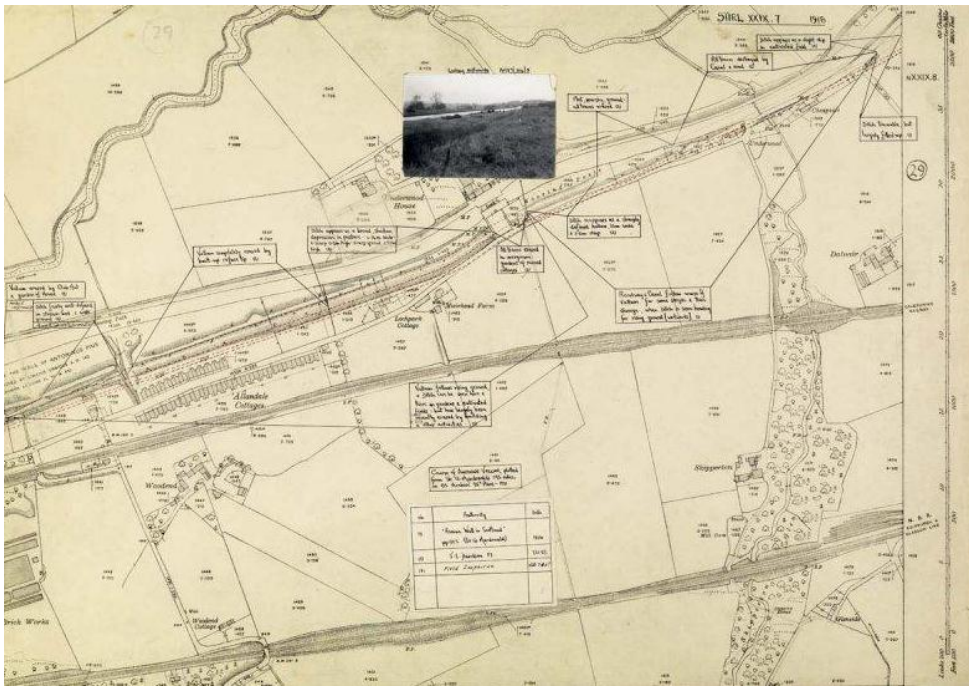

Figure 10: 1954-57 Working Sheets, Map Sheet 29 DP051455

This notes that W of the lock the 'Ditch appears as a broad shallow depression in pasture c 14m wide and scarp 0.2m high: scarp spread c 1.5m high'. The approximate area of the present car park was occupied by the gardens of cottage and the OS noted that 'All traces erased in overgrown gardens of ruined cottages'. To the E of the lock the 'Ditch reappears as sharply defined hollow, 10m wide and 1.5m deep'. This extended to c 110m E of the lock, to the W of which there was 'flat marshy ground – all traces erased' (RCAHMS: 1954-57 Working Sheets, Map Sheet 29 DP051455).

This was further amended in a further survey of the Antonine Wall by the OS in 1980. This noted that to the E of lock, the spread of the S scarp of the ditch was visible across the field. West of the lock the S scarp was 10m broad, the ditch was 1.5m deep and outer mound up to 0.7 m high (OS 1980 survey, RCAHMS).

A further survey of the condition of the monument took place in 2006 prior to its proposal as a World Heritage Site. Areas where the ditch and the upcast mound were visible were marked on a series of maps. This showed that 200m of the ditch and 95m of the upcast mound were visible extending the E of the car park. The ditch was visible extending 210m W of the car park, but the upcast mound was only visible at a point 140m W of the car park where it was seen to extend W for a further 40m.

An archaeological excavation was carried out in 1983 S of the lock on the line of the Antonine Wall ditch prior to the removal of c 30 cm of topsoil. No trace of the ditch was observed; through it survives as a pronounced hollow W and E of the site. This was attributed to earlier disturbance associated with the construction of the lock (Keppie & Walker 1989, 148).

1.3 The Development of the Lock 17 Site

The changes in condition and setting of the Lock 17 site in relation to the Antonine Wall, can be described in terms of 4 principal periods.

Period 1: late 19th century – mid 1980s
Period 2: mid 1980s - 2003.
Period 3: 2003 – late 2008
Period 4 late 2008 – early 2009

1.3.1 Period 1: late 19th century – mid 1980s

Despite the cumulative effects of erosion and slumping over many centuries, three clear elements of the Antonine Wall (AW) are depicted on the 2nd edition OS map of 1898. These are:

- the N face of the main rampart
- the main outer ditch
- the outer / upcast mound

Judging by the detail of the mapping on the 2nd edition OS map, these elements survived as clear topographic features up until 1898, truncated however, by a variety of works associated with the FCC and Lock 17 in particular. Despite the scale of the map and the generalised use of mapping conventions particularly in regard to hachures, it is likely that the depiction of the AW at this time is the most accurate available.
It is proposed that the evidence from the 2nd edition OS map should form a baseline against which subsequent survey data can be compared in to assess the condition and general state of the AW up until December 2008.

Supplementary surveys were undertaken in 1954-57 and 1980 which annotated the existing OS mapping. This exercise described upstanding parts of the AW and also represents the last detailed record of its dimensions.

In terms of significant impacts on the AW associated with the Canal, two enclosures were in place along with a series of small buildings from at least 1859. A cottage described as ruinous in 1954-57 is shown in the in the area of the SE corner of the present car park which in turn must have been removed by 1985 when the car park was constructed. The latter generally follows the E and W limits of the two enclosures shown on the 1898 OS survey.

Setting
The F&C canal has the line of the denuded AW as part of its setting on its S side. To the NW of the Lock itself, lies Underwood House which had a series of walled gardens and formal plantation in its immediate vicinity. It is also noteworthy that the mature trees on either side of the Lock probably date from the mid-19th century if not earlier. With the construction of the car park and clearance of the cottage the less substantial tree and shrub cover evident to both the E and W of the car park has developed. The House and the formal plantation along the side of the canal are part of a designed landscape with the more informal planting on the S side of the canal (**F020** and **F021**, see figure 12) defining the canal overall, as a tree-lined feature on either side of the Lock area . This in turn contrasts with the open fields further N and S.

Figure 11: Annotated aerial photograph of the area

1.3.2 Period 2: 1985 – c.2003

With the construction of the present car park in 1985, over the site of the cottage and its boundaries, topsoil was removed under archaeological supervision[1]. This exercise found no trace of any Roman remains within the 30cm depth of topsoil removed. Bricks and pan-tiles, which may well have come from the demolished cottage, were noted during the landscaping work of Period 4.

The car park was constructed to allow parking at the pub and restaurant created in the former lock keepers cottage. This represents the current and continued use of the Canal as a leisure facility.

Setting
The removal of buildings and enclosures on the S side of Lock 17 from the early 19th Century at least, has altered the approach to the Lock itself and has opened the view from the S of the Lock Keepers House. The fact that the new car park follows the limits of the earlier enclosures has mitigated the clearance work.

1.3.3 Period 3: c.2003 – December 2008.

The next significant event which has influenced the present topography of Lock 17 was the construction of a temporary dam. This was intended to facilitate works on the Lock infrastructure by dewatering the Canal. Once this work was complete, the dam was dismantled and dumped to the E of the car park. The temporary dam was made of

[1] See G Bailey, Discovery and Excavation Scotland, 1985 p5.

imported blaize and when dumped, this material was mixed with dredged canal fill (wood and other organic material)

The elements of the AW in terms of the upcast mound (**F012** in Area 1 and **F018** in Area 3) the ditch (**F011** in Area 1 and **F017** in Area 3) and the rampart N face (**F015**) were still evident but were now partially buried.

Setting
The construction and demolition of the blaize dam has affected the setting of both AW and Canal primarily in terms of the landscaping to the E of the present car park.

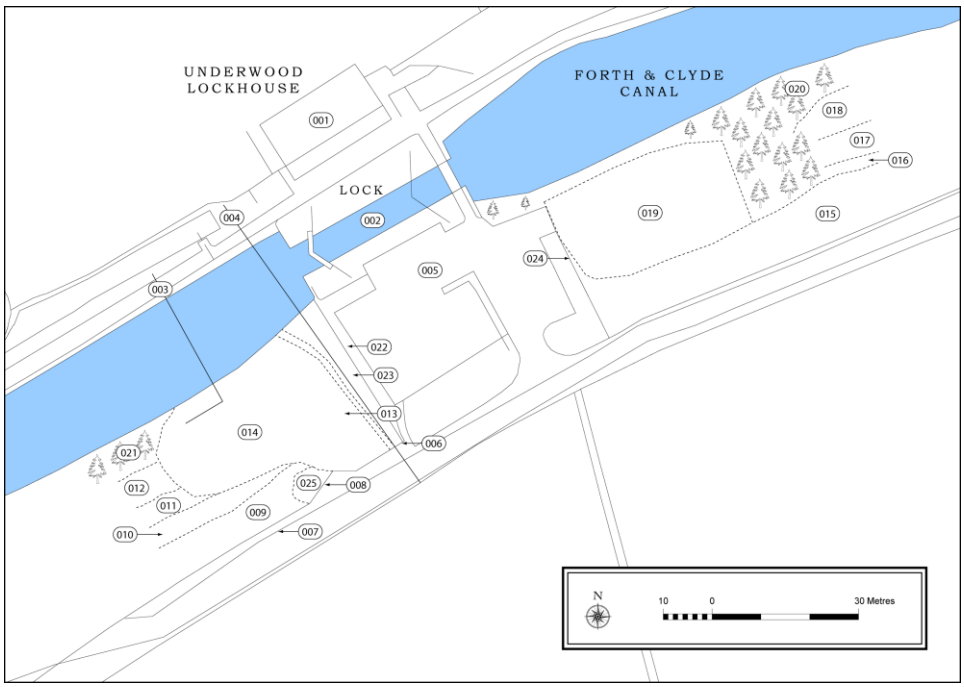

Figure 12: The landscape immediately prior to the construction of the by-wash culverts

1.3.4 Period 4: January 09 – March 09

At the beginning of 2009 work was undertaken to excavate by-wash culverts to reduce pressure on the lock gates. This involved excavation along the S side of the lock, with an inlet chamber constructed at the W end, an outlet chamber at the E end and a pipe connecting the two. It was the spoil from this operation that was spread across the fields to E and W of the S side of the lock. For a more complete account of the work see Kirkdale Archaeology Report BW-FC17-2009-01.

Essentially the landscaping work was completed in two stages

Stage 1: The excavation and construction of the by-wash culvert
This saw:

- the establishment of a series of temporary spoil heaps in both Areas 1 and 3 (**F026**, and **F036**) ,
- an access track in Area 3 (**F034**)
- temporary hard standing areas for portacabins (**F030**)
- the backfill and recutting of a drainage gully in Area 1. (**F013** and **F027**)
- the spreading of the dumped remains of the Period 3 blaise dam.

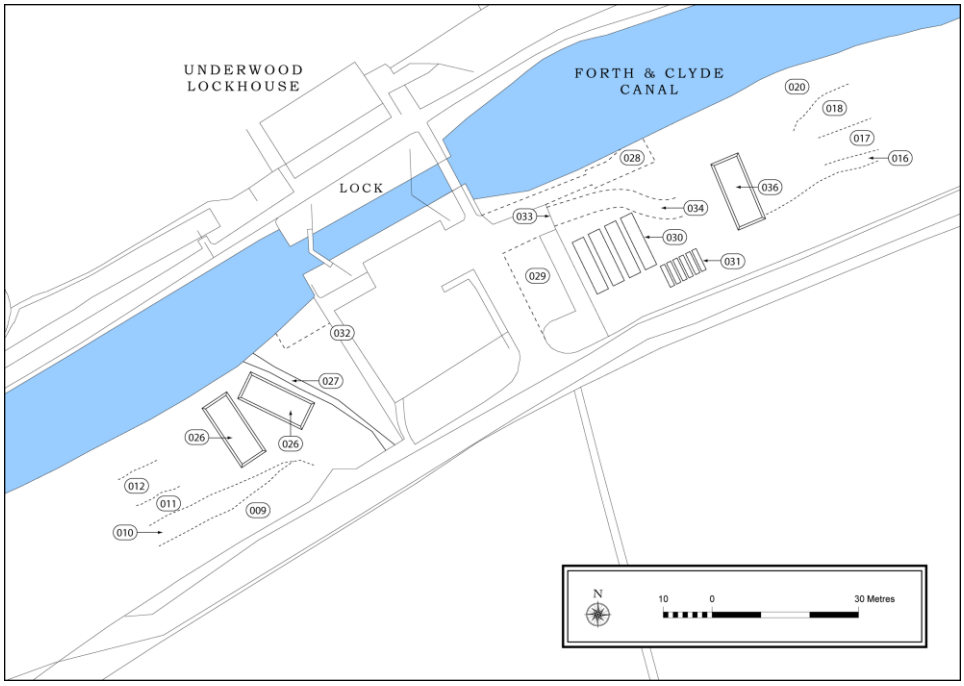

Figure 13: The landscape during construction of the by-wash culverts

Stage 2: The landscaping of the site after the completion of the by-wash culvert
This saw

- the spreading of all Stage 1 spoil heaps (**F026** and **F036**)
- the infill of the Stage 1 trackway (**F034**)
- the creation of 2 large spoil heaps –**F042** in Area 1 and **F043** in Area 3

This was the condition of the site pre survey and trial trenching.

Setting
The setting of both the AW and the F&C Canal has been affected in the following ways:

F&C Canal

- Covered grassy areas on either side of the car park with clay rich soils
- Raised ground levels on either side of the car park by up to 1m
- Altered existing water course in Area 1

The AW

- Buried completely elements of the upcast mound, the ditch and rampart in Area 1
- The unburied elements of the rampart in Area 1 have been partially obscured

2 FIELDWORK

2.1 Topographic Survey

The site was described in terms of 3 areas:
Area 1 W of the car park
Area 2 the car park
Area 3 E of the car park

The work comprised 4 stages, in line with the technical proposal submitted to BW Scotland and was completed over 5 working days (25.8.09 – 1.9.09)

Stage 1
All relevant features were identified, numbered and recorded in a pre-survey walkover. These are presented in appendix 1

Stage 2
All relevant features were then plotted using a total station (see figure 14)

Stage 3
A Contour Survey was then completed over the Period 4 spoil heaps in Areas 1 and 3. This is available as a digital file but is not presented graphically in this report.

Stage 4
Locations for three proposed trial trenches were identified and plotted and a site grid was established (see figure 15).

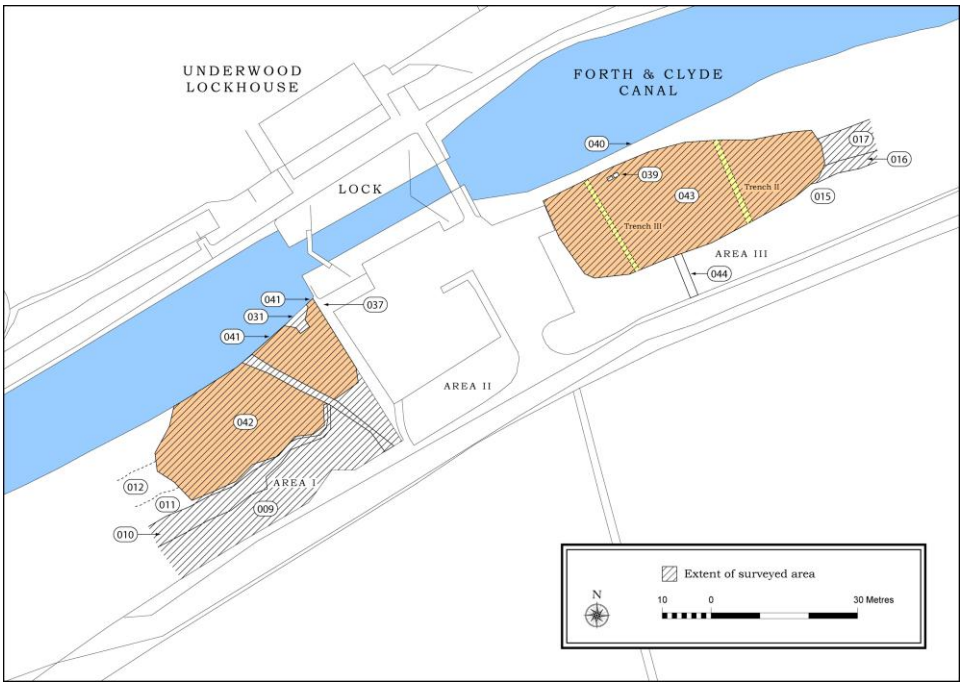

Figure 14: Features surveyed during the topographic survey

Figure 15: Establishing the Site Grid

2.2 Trial Trenching

2.2.1 Introduction

In line with the proposed methodology submitted as part of the SMC , the sites of 3 trial trenches were identified. All trenches were to be dug by machine under archaeological supervision. Due to heavy rainfall , the trial trenching was limited to trenches 2 and 3 (Area 3) with the assessment of Area 1 postponed . The work took place over 1 working day (29.9.09)

Trench 1: Area 1
Aligned N/S : The single trench was intended to pick up any evidence of the upcast mound and ditch. As mentioned above, the excavation of this trench was postponed due to poor weather.

Trenches 2 & 3.: Area 3
Aligned N/S .The combination of two trenches on a N-S alignment was intended to calculate approximate volume of this the larger and more complex spoil heap and also to characterise it's make-up. The trenches could extend up to 25m in length

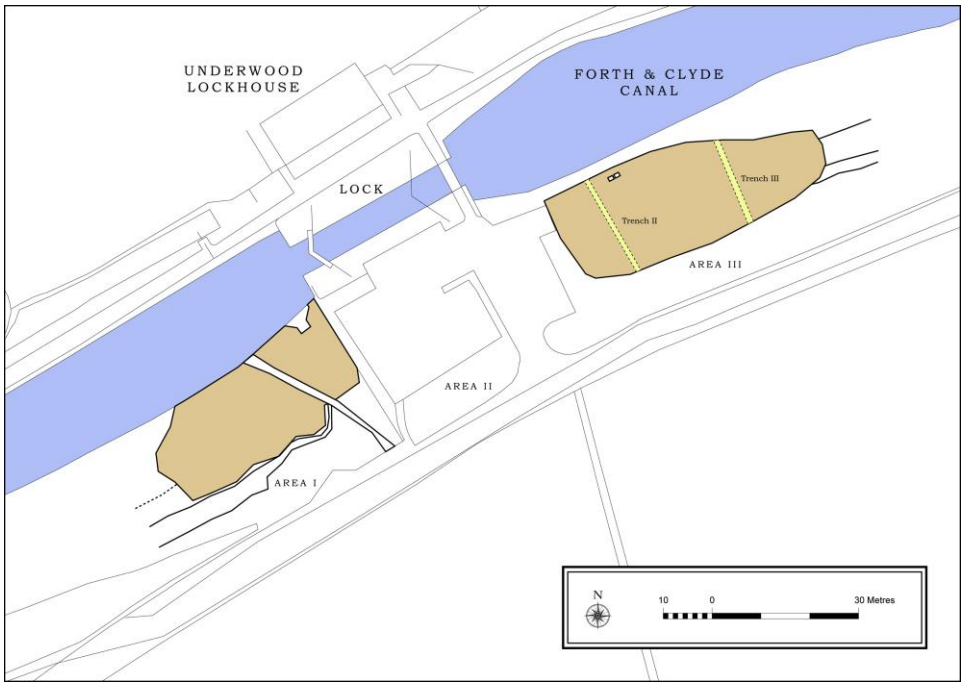

Figure 16: Location of trenches excavated during this phase of work

The eastern of the two spoil heaps (**F043**) runs along the S side of the Forth and Clyde canal, over the site of at least the N side of the Antonine Wall (**F018,F017,F015**). Heap **F043** was roughly rectangular in shape, some 58 m E- W by up to 22 m N- S, narrowing to only 12 m wide at its E end.

The material had been dumped over the archaeological remains located here. Within the affected area this comprises the N side of the AW itself; (**F015**) the ditch to its N; (**F017**) and the upcast mound (**F018**).

The N face of the AW (**F015**) is very prominent in this area, although the extent to which this represents an untouched Roman feature is unclear. The ground drops steadily from S to N, so the slope forming the wall may be at least partly natural and the modern road (the B816) runs along the top of this rise, so it may well have been landscaped when this was built.

At the E end of the spoil heap the Roman ditch (**F017**) was readily identifiable as a low lying boggy area. It measures some 3 m wide, with the ground rising steeply and far to the S, and in a shallower, lower slope to the N. The ditch was traced during the contour survey for some 15 m, running under the spoil heap to the W and into the scrubby undergrowth flanking this side of the canal to the E.

The gentle slope to the N of the ditch is thought to represent the remains of the upcast mound / counterscarp bank **(F018**). This was some 6 m wide and perhaps 500 mm high and was again traced for some 15 m, also running under the spoil to the W and into the undergrowth to the E.

The spoil from the 2009 work had then been dumped across these remains. Its E limit was principally determined by the amount of spoil, while the S limit was formed by the base of the slope representing the N face of the rampart from the Antonine Wall (**F015**). To the N, the Canal formed the edge of dumping, although to the E, it pulled back from the lip of the Canal, probably to avoid smothering the dense undergrowth in this area. The W limits were determined by the position of the existing car park serving the Underwood pub, just to the N of the Canal.

2.2.2 Excavation Account

Two trenches were excavated within the area of spoil heap **F043**, both running from N to S across it. The aim of this exercise was to both quantify and characterise the introduced material and typify the archaeology below it, and it was felt that two machine dug trenches near either end would be most helpful in this. The excavation was carried out by a 7.5 tonne excavator, under archaeological supervision and was monitored by British Waterways Scotland and Morrisons Construction staff

Figure 17: Opening Trench 3

An important aim of this project was of course not to damage any upstanding archaeological remains below the spoil heap. To this end the excavator was fitted with a flat bladed bucket, 550 mm across. For reasons of health and safety, no part was to be hand dug, and the archaeological recording was completed outside each trench. This in turn, constrained the level of detailed recording. However, the excavation was closely archaeologically monitored and W facing trench sections were drawn, photographed and recorded on *pro rata* context sheets.

Work started with Trench 3, which measured some 17.3 m long and was located 19 m W of the E end of spoil heap **F043**. Excavation started at the N end and worked S, until close to the base of **F015,** where the machine reversed itself and worked from S to N.

The overlying deposit along the length of the trench was **F300**. This proved to be a moderately compact mixed deposit, principally mid brown silty clay but with discrete patches of blaze within it. Blaze, tree roots and sub angular stones (up to 500 by 300 mm) were noted throughout, as well as modern finds, which were not retained. The greatest depth of **F300** recorded was at the N end of the trench, where it was up to 500 mm thick, while towards the centre (see figure 17) this reduced to as little as 200 mm, thickening again to the S to a maximum of 400 mm.

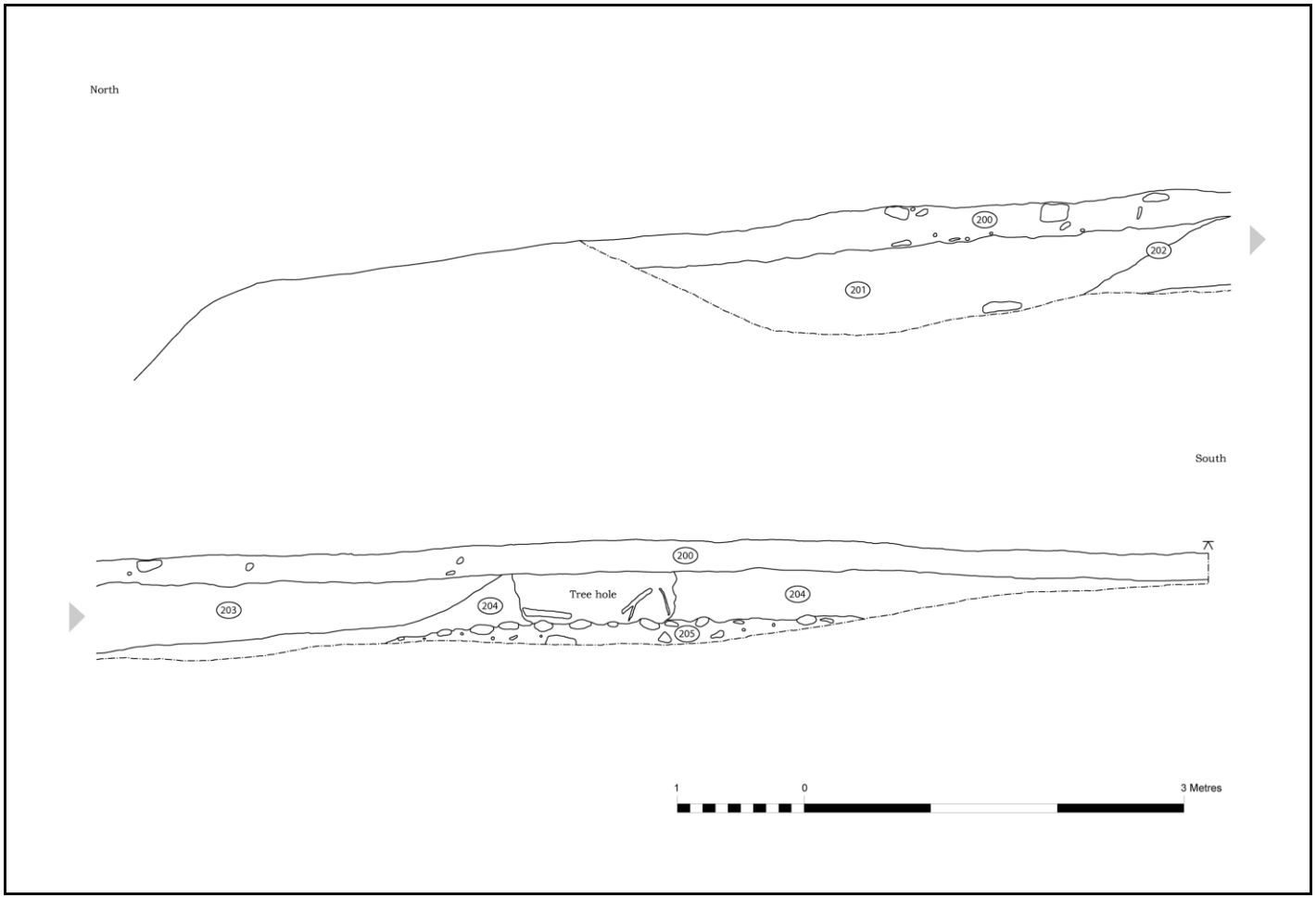

Figure 18: W Facing Section of Trench 2

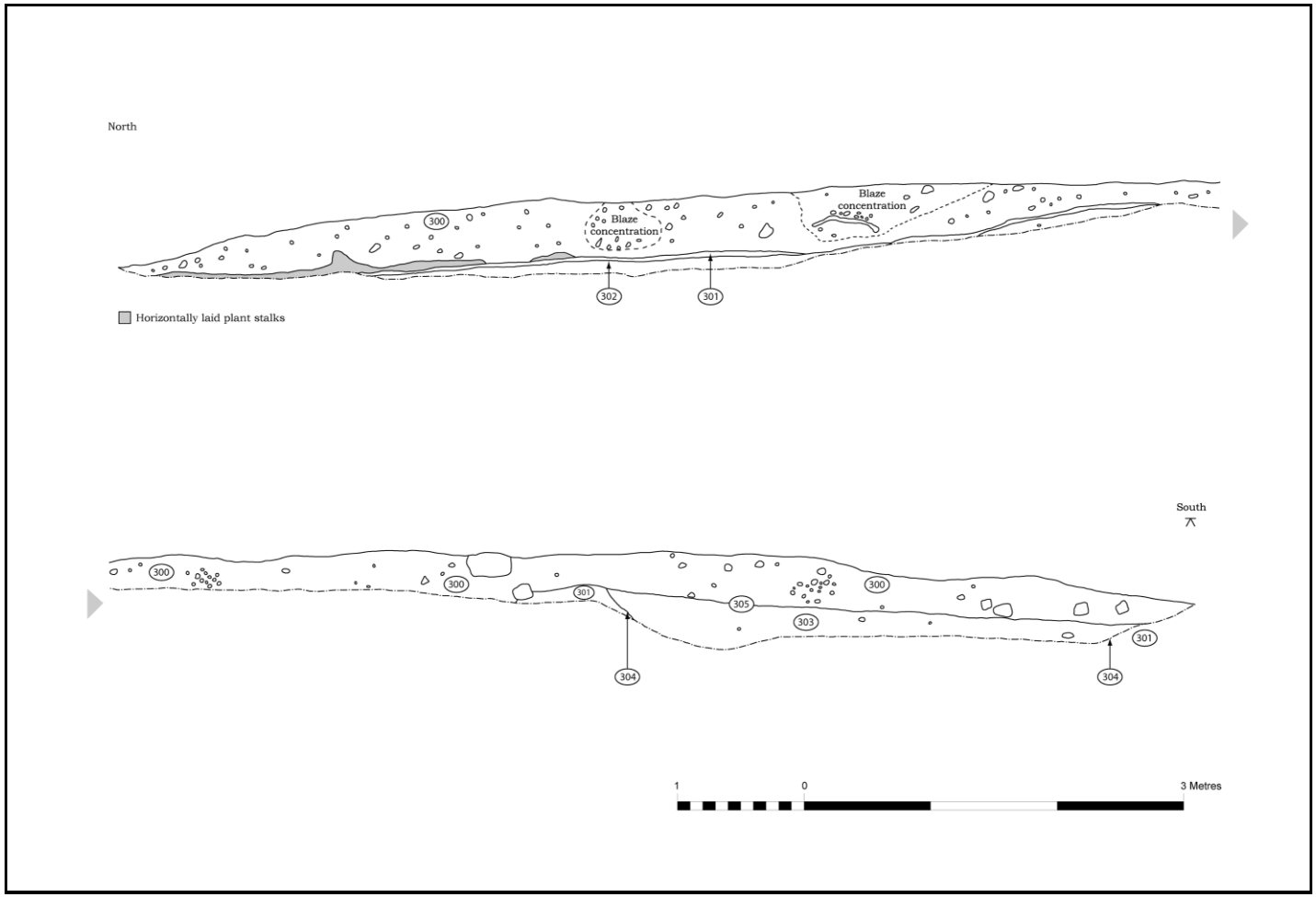

Figure 19: W Facing Section of Trench

Underlying **F300** was **F301**, a thin (100 mm) layer of dark brown to black silty clay. Grass survived within this, and at the N end (where there is thick vegetation today) the crushed stalks of plants forming a thick mat were noted. At the extreme S end of the trench **F301** was reduced to a very thin layer (numbered separately as **F305**), with **F303** below it. This was a pale brown silty clay with occasional small rounded and sub angular stones throughout it. This ran along the southern 4.5 m of the trench and was excavated to a maximum depth of 400 mm. At both its N and S ends **F301** could be seen to drop fairly steeply below **F303**, with just the thin strip of **F305** continuing along at the height of **F301** in the rest of the trench. This drop in height of **F301** was interpreted as a cut, and numbered **F304**, which would make it at least 400 mm deep by some 4.6 m wide at its top and 3.4 m wide at the base of the trench. The sides slope in at around 45 degree angles.

Figure 20: N end of W facing section through cut *F304* (Trench 3)

Below **F301** in all but the S end of the trench, **F302** was noted. This was a compact, mid brown, clayey silt with frequent small (up to 100 mm) rounded and sub angular stones throughout. This deposit rose in height in the centre of the trench, and was not seen at the S end, in the area of cut **F304**. Its thickness is unknown.

Trench 2 was started some 23.5 m W of Trench 3, making it 9.5 m E of the car park. Although the spoil heap was at its widest here, the N end of the trench was not dug due to the presence here of the buried pipe, installed at the beginning of the year as part of the overflow mechanism. This meant that the excavated length of the trench was only 14.5 m long, while the spoil heap is some 22 m wide at this point.

The overlying deposit in Trench 2 was **F200**, moderately compact, mid brown silty clay with frequent small to large (up to 400 by 350 mm) sub angular or rounded stones, as well as some blaze fragments, and much in the way of modern finds (not retained). This covered the whole trench to a fairly uniform depth of 300 mm.

The northern 5 m (continuing to the N) was filled by **F201**, a mixed deposit comprising principally sub angular whin gravel, with mid brown silty clay and occasional flecks of blaze throughout. This sat in a cut **F202**, only the S edge of which was located in the trench. It had a 45 degree slope for this edge, and was at least 5 m wide and 800 mm deep.

F202 was dug against **F203**, a substantial deposit comprising almost entirely blaze, often powdered but with some larger chunks, with discrete patches of dark grey to brown silty clay throughout it. It was 500 mm thick and some 4.2 m long, although with its N end truncated by **F202**, and its S end disturbed by a tree hole. **F200** ran directly over the top of **F203** away from cut **F202**.

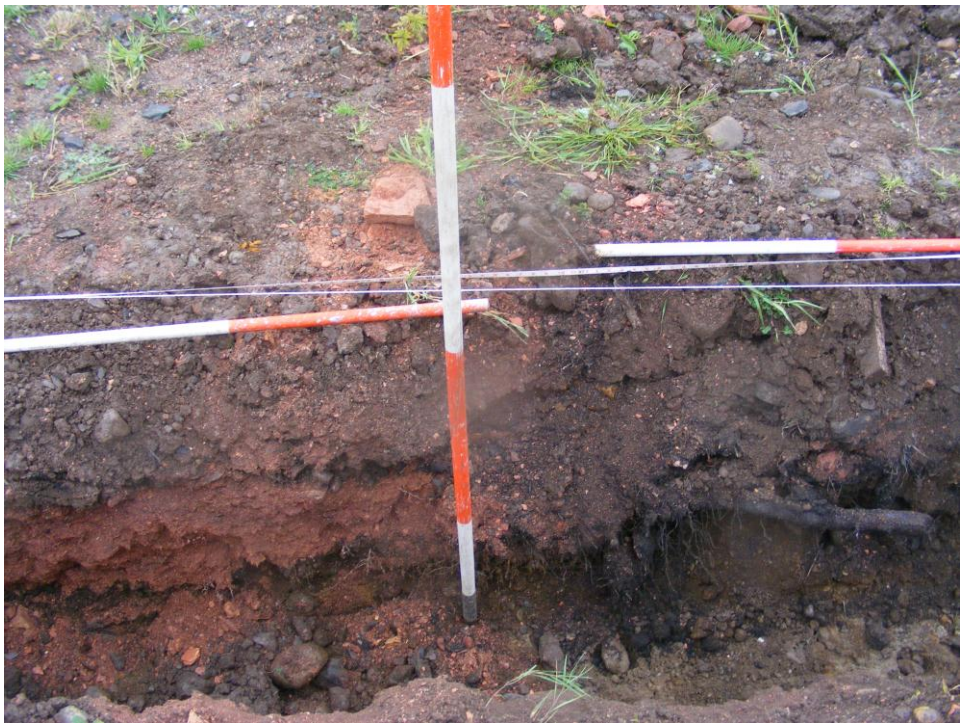

Figure 21: W facing section of Trench 2 showing *F203*, *F204* and the Tree Hole

Running under the S end of **F203** was **F204**, a compact very dark grey silty clay with frequent roots (including a large tree hole at the S edge of **F203**). This proved surprisingly thick (up to 400 mm) and was traced over the southern 9.6 m of the trench. Below **F204** was **F205**, only traced for a length of 3.8 m from the S edge of **F203**, but continuing to both N and S. This was fairly compacted pale yellow to brown sandy silt, rich in small to medium rounded and sub angular stones. Little of **F205** was seen, but at its N end it gave the impression of dropping down gently.

2.2.3 Conclusions

The excavation of these two trenches has been very useful in terms both of examining the recently dumped material, and in exposing the ground surface below this. Within Trench 3 the overlying deposit **F300** represents the introduced material. Its thickness reflected the underlying topography, varying from 200 mm in the centre of the trench to 500 mm near its N end.

F300 had buried topsoil **F301** beneath it, which could be easily traced as a thin organic rich layer across all but the S end of the trench. Here a similar, but even thinner deposit **F305,** was recorded at the same height as the upper surface of **F301** across the last 4.5 m of the trench. This is thought to represent the ground surface in January 2009.

At this (S) end the thicker topsoil **F301** could be seen to dive down fairly steeply, and deposit **F303** was sandwiched between this and **F305**. This drop in slope was given a cut number **F304**, and this is thought to represent the line of the Roman ditch (F017), corresponding fairly well in both position and dimensions with the traces of this feature noted emerging from the E end of the spoil heap. The implication of this is that **F303** represents an earlier episode of infilling this ditch. No dating evidence for this was recovered, but the thinness of the topsoil **F305** that had formed over it, indicates that this occurred in the relatively recent past. Most likely this occurred in 2003 when work associated with the blaze dam was completed (Period 3)

The underlying subsoil **F302** gently rises in height towards the centre of Trench 3 by some 150 mm, and it is thought that this provides evidence for the counter scarp, upcast mound (F018). **F302** was not excavated, so it is unclear if this is re- deposited natural forming F018, or whether the subsoil has been better preserved in this section by the former presence of F018. This raised area measures some 6.5 m N- S, and again matches well the size and position of the upstanding parts of F018, to the E of the spoil heap.

The evidence uncovered in Trench 2 is more complex. Here again, the overlying deposit **F200** is thought to represent the recently introduced material (Period 4) It was of a reasonably uniform 300 mm thickness across the trench. Below this, at the N end of the excavated area was a wide deep cut, **F202**. This had been infilled by hard-core **F201**. This feature represents the remains of an access track formed at the beginning of 2009 to allow access for heavy machinery (**F034**).

The S edge of **F202** was dug against **F203**, a substantial deposit of almost pure blaze. This is the remains of the blaze dam created some 5 years ago (Period 3), and traces of the distinctive orange blaze were noted in the recently introduced material in both trenches. No topsoil was noted over the top of **F203**, so this must have been stripped off, or not had time to form on this material of low organic content.

Running under **F203**, and continuing beyond its S limit, was thick, dark and often pungent organic layer **F204**. This was up to 400 mm thick, and is likely to represent garden or plough soil within the E of the two fields shown around the cottage (Period 1) on what is now the site of the car park. A fairly substantial tree hole was recorded within this, against the S edge of **F203**, possibly creating its S limit, and although no cut number was assigned, it seems possible that **F203** was dug down into **F204**.

Only a relatively small stretch of subsoil **F205** was exposed, but its N edge seemed to rise gently to the S, possibly indicating the position of the counterscarp bank. Although no

trace of the Roman ditch was noted it seems likely that it runs through the S end of the trench. As **F204** was not bottomed in this area it is probable that the ditch is here sealed below it, in which case it must have been in filled, as there is no hint of a dip in the upper surface of **F204**.

2.2.4 Periodised Results

The results of the trial trenching can be described in terms of:

Period 1 (late 19th century - 1985)
This includes sub soils **F205** and **F302**, with the thick topsoil in trench 2 (**F204**) probably representing an enhanced, manured soil, either plough soil or a garden earth associated with the demolished cottage. The thinner trench 3 topsoil (**F301**) represents the ground surface at this time.

Period 2 (1985 - 2003)
This is not represented in either trench, this period saw the construction of the car park (Area 2).

Period 3 (2003 - 2008)
This is represented by two deposits. In Trench 2 the blaze dump (**F203**) is the remains of the temporary dam constructed in 2003, and then spread across the site. The lower fill in the ditch in Trench 3 (**F303**) is not directly dateable, but seems most likely to relate to the same phase of activity on the site. Thin topsoil **F305** which formed over **F303** after its deposition should also be assigned to period 3.

Period 4 (January 2009 - March 2009)
This is represented by the track (cut **F202**, fill **F201**), constructed to enable the work to be carried out. At the conclusion of the work undertaken on the Lock the spoil (**F200** and **F300**) was spread across the area.

2.2.5 Estimated Volume of Overburden

Four discrete and fairly recent (probably all post 2000) deposits were found over the area of the excavations. Most pertinently to the current project is the latest, the spoil from the 2009 work, represented by **F200** and **F300** overlying everything. **F200** has a fairly uniform thickness, while **F300** was more variable. Within Trench 3 **F303** seems to be an earlier episode of depositing material in the Roman ditch. The thin topsoil (**F305**) formed over this indicates that this is also fairly recent. Within Trench 2 the remains of the blaze dam (**F203**) and the cut (**F202**) in filled by hardcore (**F201**) are also late.

An attempt has been made to roughly calculate the volume of these deposits, except for **F303** whose thickness and length (E- W) are entirely unknown and **F204**, whose thickness is known, but whose extent is not.

For the 2009 overburden it is assumed that the depth recorded for **F200** holds true for the whole wider W end of the spoil heap, this would give a figure of c.193 cu.m. At the E end of spoil heap F043, an average thickness of 350 mm depth is assumed, which gives a figure of c. 98 cu. m. Combined, these give a rough estimate of 290 cu.m. for the Period 4 spoil spread across the area.

The track (**F034)** represented by cut **F202** and its fill **F201** was also only part exposed, and its course has only been generally plotted, an estimated 29 m long. A minimum figure of 85 cu.m can be given as a very rough guide to the quantities of this material.

If this material is to be removed to return the site to approximate Period 3 horizons then great care must be exercised. This would involve the removal of fairly substantial amounts of soil, but spread relatively thinly across a wide area. The presence of upstanding Roman remains, at least towards the E end of the site means that great care and archaeological supervision will be required. The site also presents the practical problems of working close to the Canal and the road, as well as public access to the lock and pub.

A1. APPENDIX 1 : LIST OF FEATURES NOTED DURING THE SURVEY

Feature #	Description
F001	Underwood Lockhouse Pub & Restaurant
F002	Lock 17 (Lock Chamber)
F003	Overhead Telephone Cable & Pole (Wires sagging)
F004	Overhead Electricity Cables (x3) & Poles
F005	Car Park for Underwood Lockhouse Pub & Restaurant
F006	E part of Bonded Rubble Wall to S of W Field
F007	W part of Bonded Rubble Wall to S of W Field
F008	Metal barred gate between F006 & F007
F009	S Scarp of Roman Ditch in W Field
F010	Waterlogged base of Roman Ditch in W Field
F011	N Scarp of Roman Ditch in W Field
F012	Anterior Mound in W Field
F013	Original Course of Burn in W Field (Now Diverted)
F014	Flat, Low-Lying Boggy Ground in E Portion of W Field (Partially stripped of vegetation & topsoil to E of Cut F025)
F015	S Scarp of Roman Ditch in E Field
F016	Waterlogged base of Roman Ditch in E Field
F017	N Scarp of Roman Ditch in E Field
F018	Anterior Mound in E Field
F019	Dumped Remains of Blaze Dam & Canal Dredgings Sealed With Topsoil & Overgrown With Immature Scrub in E Field (Largely Removed)
F020	Mature Stand of Trees on the Canal Bank in the E Field
F021	Mature Stand of Trees on the Canal Bank in the E Field
F022	Earth & Rubble bund bordering the W Side of Car Park F005
F023	Line of Shrubs & Scrub Flanking Burn F013 in W Field
F024	Wooden Fence between Car Park F005 & W Field
F025	Area of Levelling/Track to N of Gate F008
F026	Spoil Heaps Within W Field Composed Largely of Cleared Topsoil & Scrub to the W & Sub-soils to the E
F027	Cut to Divert Burn F013 in W Field
F028	Cuts to Insert W Inlet Chamber, Baffle Chamber, E Outlet Chamber & Connecting Pipes
F029	Site of Original Compound (To W of Fence F024)
F030	Adjusted Site of Compound (To E of Fence F024)
F031	Site of Pipe Storage
F032	Site Access Point To W Field
F033	Site Access Point To E Field
F034	Position of Temporary Road/Track in E Field
F035	E Limit of Excavation in E Field
F036	Spoil Heap (Now Flattened) in E Field
F037	Short Formal Path Abutting W Inlet Chamber F038
F038	W Inlet Chamber
F039	Hatches for Baffle Chamber in E Field
F040	Rip Rap (Large Angular Blocks of Whin) Facing the E Outlet Chamber (Chamber Not Visible)

Feature #	Description
F041	Rip Rap to E & W of the W Inlet Chamber
F042	Extent of Spoil Heap & Graded Ground in W Field
F043	Extent of Spoil Heap & Graded Ground in E Field
F044	Area of track damage on rampart

A2. Appendix 2: List of Contexts in Trench 2

Context #	Description
F200	Spoil heap
F201	Fill of cut F202
F202	Cut at N end of trench
F203	Blaze dump
F204	Buried topsoil
F205	Subsoil

A3. Appendix 3: List of Contexts in Trench 3

Context #	Description
F300	Spoil heap
F301	Buried topsoil
F302	Subsoil
F303	Lower ditch fill (fill of F304)
F304	Ditch cut
F305	Thin topsoil band separating F300 from F303

A4. Appendix 4: List of Drawings

Drawing #	Type	Description	Scale
1	Section	W Facing Section of Trench 3	1:20
2	Section	W Facing Section of Trench 2	1:20

Comment [KA2]: descriptions

A5. APPENDIX 5: LIST OF PHOTOGRAPHS

Frame	Description	From	Date
1	Trench 3 pre- excavation	SE	29/09/2009
2	Trench 3 pre- excavation	S	29/09/2009
3	Trench 3 being opened	W	29/09/2009
4	Trench 3 general shot	N	29/09/2009
5	Trench 3 W facing section from N to S	W	29/09/2009
6	Trench 3 W facing section from N to S	W	29/09/2009
7	Trench 3 W facing section from N to S	W	29/09/2009
8	Trench 3 W facing section from N to S	W	29/09/2009
9	Trench 3 W facing section from N to S	W	29/09/2009
10	Trench 3 W facing section from N to S	W	29/09/2009
11	Trench 3 W facing section from N to S	W	29/09/2009
12	Trench 3 W facing section from N to S	W	29/09/2009
13	Trench 3 W facing section from N to S	W	29/09/2009
14	Trench 3 W facing section from N to S	W	29/09/2009
15	Trench 3 W facing section from N to S	W	29/09/2009
16	Trench 3 W facing section from N to S	W	29/09/2009
17	Trench 3 W facing section from N to S	W	29/09/2009
18	Trench 3 W facing section from N to S	W	29/09/2009
19	Trench 3 W facing section from N to S	W	29/09/2009
20	Trench 3 W facing section from N to S	W	29/09/2009
21	Trench 3 as finished	S	29/09/2009
22	Trench 2 general shot	E	29/09/2009
23	Trench 3 showing central mound and ditch cut F304	NW	29/09/2009
24	Trench 2 as finished	S	29/09/2009
25	Trench 2 as finished	S	29/09/2009
26	Trench 2 as finished	N	29/09/2009
27	N end of W facing section through cut F304	W	29/09/2009
28	S end of W facing section through cut F304	W	29/09/2009
29	N side of cut F304	S	29/09/2009
30	Trench 2 W facing section from N to S	W	29/09/2009
31	Trench 2 W facing section from N to S	W	29/09/2009
32	Trench 2 W facing section from N to S	W	29/09/2009
33	Trench 2 W facing section from N to S	W	29/09/2009
34	Trench 2 W facing section from N to S	W	29/09/2009
35	Trench 2 W facing section from N to S	W	29/09/2009
36	Trench 2 W facing section from N to S	W	29/09/2009
37	Trench 2 W facing section from N to S	W	29/09/2009
38	Trench 2 W facing section from N to S	W	29/09/2009
39	Trench 2 W facing section from N to S	W	29/09/2009
40	Trench 2 W facing section from N to S	W	29/09/2009
41	Trench 2 W facing section from N to S	W	29/09/2009