

ARCHAEOLOGICAL WATCHING
BRIEF
AT
POWICK NEW BRIDGE,
MALVERN ROAD,
WORCESTER

Tom Vaughan and Justin Hughes

Illustrated by Carolyn Hunt

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INVESTOR IN PEOPLE

Project 3121
Report 1683
WCM 101562

Archaeological watching brief at Powick New Bridge, Malvern Road, Worcester

Tom Vaughan and Justin Hughes

Background information

<i>Client</i>	Halcrow Group Limited
<i>Site address</i>	Malvern Road, Powick and Lower Wick, Worcester
<i>National Grid reference</i>	S0 8361 5241
<i>Sites and Monuments Record reference</i>	WCM 101562
<i>Planning authority reference</i>	Worcester City Council L07C0039
<i>Brief</i>	WCMAS 2007b
<i>Project design</i>	HEAS 2007
<i>Project parameters</i>	IfA 2008

Archaeological and Historical background

The bridge is a listed grade II structure, with the following listing description:

‘Public road bridge over River Teme. 1837. Red sandstone ashlar and cast-iron. Abutments have two moulded string courses. Each has a solid parapet with coping and terminates at octagonal piers at each end. Both abutments have passageways through them. These have flat heads above cast-iron trusses which have Tudor arches with lattice spandrels. The central span is of iron and has segmental arches with lattice spandrels, and iron railings. At the centre of each arch is a shield of arms. Part of this bridge is in the City of Worcester’ (EH 2009, LB ref. 153408).

It is registered on Worcester City Historic Environment Record (HER) as monument WCM 91054 (Fig 1).

Brooks and Pevsner record the structure as follows:

‘The present POWICK [NEW] BRIDGE, by C H Capper of Birmingham, 1836-7, is of Arley sandstone, with slight Gothic detail (this was far more pronounced until *c* 1950, when Gothic domes were removed from the eight octagonal turrets), but with segmental cast-iron arch of Telford type (cf. Holt [Fleet bridge, 11km to the north]) across the river. Seven ribs underneath, latticed spandrels, pretty iron parapet railings with heraldic cartouche below; one smaller cast-iron, four-centred flood arch either side. The ironwork was by Yates of Birmingham’ (Brooks and Pevsner 2007, 777).

A contemporary newspaper account describes the decision to construct the bridge:

‘The Trustees of Worcester Turnpikes accepted the tender of Mr Faville of Harrowgate for the stonework for the buttresses etc. of the new iron bridge over the River Teme at Powick. The present bridge will remain for use by occupants of the Mill. The new bridge will be placed approximately 100 yards downstream, the road from the City being altered to lead to it starting between Mr Smith’s farm at Wick and The Lion public house and entering the old line again near the brickworks on Lower Ham. The bridge will consist of one arch of 70 foot span and will be 32 feet wide (10 feet wider than the Worcester Bridge) allowing ample space each side for foot passengers. Work to commence forthwith and be completed by the end of the year. Mr Faville will use Arley stone and Mr Yates of Birmingham is the contractor for the ironwork at £2020, the total cost will be £6020.’ (‘Herald’ 21 May 1836; WCM 91054)

Within the raised causeway to the north of the ridge are two barrel vaulted brick culverts. They connect fields laid to pasture on either side, which are recorded on the 1st edition Ordnance Survey as 'Liable to floods' (1886).

During World War II the bridge was defended with a road block (WCM 92270). This is conjectured to have comprised a vertical rail block supplemented by concrete anti-tank cylinders, supplemented with a 'Wallace Bagnet'. This latter comprised three linked coils of barbed wire connected to a wooden frame, approximately 2m high, which could rapidly be deployed as an obstacle to both vehicles and personnel. Powick New Bridge was the site of the first use of this defence, in 1941, which were apparently unique to Worcestershire. They are thought to have been named after Captain Wallace, the Chief Engineer for the Central Midlands Area Headquarters, based at Droitwich (Wilkes 2007, 162).

There has been no previous archaeological recording of the bridge nor any archaeological investigations immediately adjacent.

The site lies within the Riverside Conservation Area and the registered Battlefield of Worcester (WCMAS 2007b).

Powick Mills are located 1.25km upstream, where evidence has been found for industrial activity from the 11th century onwards (WSM 8606).

Powick Old Bridge (WSM 239, SAM 331), 1km up stream at the confluence with the Laughern Brook and the Teme, is of 15th century stone construction. It underwent major alterations, which are visible in brick, in the latter half of the 17th century, following damage during the Civil War. The bridge was the location of the first skirmish of the Civil War on 23 September 1641. The Parliamentary victory was won at the Battle of Worcester, on 3 September 1651, which commenced across the surrounding floodplain and approaches into Worcester (Atkin 2004, 51).

Aims

The aim of the watching brief was to observe and record archaeological deposits and structures exposed during repair work to the bridge.

The project provided the potential to address a number of research questions, particularly relating to the post-medieval bridge and road construction; and the defence of Worcester in World War II (WCMAS 2007a)

Methods

General specification for fieldwork	CAS 1995 (as amended))
Sources consulted	HER 1 st edition Ordnance Survey, 1886, sheet XXXIII.7, scale 25":1 mile
Dates of fieldwork	29 August 2007 to 19 August 2008

The strip along the entire length of the south eastern footpath was observed and recorded, along with two deeper sections to either side of the main arch, during the initial works in 2007. For ease of recording, discrete areas were identified and described as Trenches 1, 2, 4 and 5 (Figs 2-4).

The two culverts under the road within the raised causeway to the northeast of the bridge were exposed and recorded as Trench 3 (Fig 5).

The decking plates over the south and north arches were exposed and recorded as Trenches 6 and 7 respectively (Fig 2).

Statement of confidence

Access to, and visibility of, deposits allowed a high degree of confidence that the aims of the project have been achieved.

Results

The decking plates which spanned the main arch were observed within Trenches 1 (1022) and 2 (1032) within the southeast footpath, at a depth of approximately 0.34m, bedded on brick bases (1013 and 1017 respectively; Plates 2 and 4). The larger portion of the decking across the main arch under below the road itself was not observed.

Decking plates were recorded at a similar depth below the road, in Trench 6 (1021), and under the southeast footpath, spanning the south arch (Plates 9, 12-4), in Trench 7 and under the southeast footpath (1020), spanning the north arch (Plate 7). The decking recorded over the south arch (Trench 6) was noted to lie over brick foundation bases to north and south (1025; Plates 12-4).

The decking over each span comprised twelve individual cast iron plates, each with diagonal reinforcing bars, bolted together in four rows of three, spanning the full width of the bridge (Fig 2). They were generally sealed by a thick layer of redeposited clay, without inclusions or dateable artefacts (1012, 1016, 1026 and 1031). This in turn was generally sealed by compacted light grey pebble gravel hardcore (1007, 1027 and 1030), below modern gravel hardcore and the present tarmac road surface (1000, 1005, 1028 and 1029).

Areas of concrete were noted below the current road surface, particularly along the southeast footpath (Fig 3; Plates 5 and 8), including one which was reinforced with steel mesh and horizontal cast iron bars (Plate 10).

The bridge superstructure, comprised of rough hewn red sandstone blocks was noted below the parapet wall (1014, 1018 and 1019) along the southeast side (Plates 6-9).

A line of roughly hewn blue lias stones (1009) was noted within the southeast footpath in Trench 5 to the northeast of the north arch, at a depth of 0.24m below the present road surface. The stones lie parallel with the existing road edge, but are approximately 0.40m closer to the bridge parapet wall. A layer of compacted gravel and hoggin (1007) lay at a similar depth, over a coarse silty sand (1008), which continued into the section under the present road surface (Plate 3).

Two culverts were recorded within Trench 3 (2007 and 2008) within the raised causeway to the north of the bridge. The two, aligned west northwest to east southeast, were butting and parallel. They had barrel vault roofs and were constructed of the bright orange handmade bricks, of a type manufactured in the late 18th century (pers comm Dennis Williams).

The culverts were sealed by a silty clay (2006), similar to the clays recorded overlying the decking plates for the bridge. A sequence of clays with varying proportions of pebbles overlay this material (2003, 2004 and 2005), sealed by a layer of medium to large pebbles at 0.35m depth (2002), below a compact light grey gravel (2001) at 0.29m depth, below the present road matrix. No dating evidence was recovered from these layers.

Conclusions

The bridge components observed during the project comprised the original 1837 cast iron metal decking plates laid over the south, main and north arches. They spanned the full width of the bridge and were bedded on brick bases. They were sealed by compacted clay (redeposited natural), which also appears to fill the upper portion of the piers between the arches and was used to raise the causeway for the northern approach to the bridge.

A thin band of gravel hardcore overlay the clay, onto which the modern road surface was bedded. This may represent an earlier road surface or road foundation layer. Unfortunately no finds were recovered in association which would have allowed for accurate dating of this horizon. On the northeast side of the bridge, this deposit lay at the same depth as a line of long thin blue lias blocks. These kerbstones define an earlier, and substantially narrower, footpath along the southeast side of the bridge (described as 'ample space... for foot passengers' in the contemporary Herald description!).

The bricks used within the culverts along the causeway to the northeast of the bridge are significantly different to those within the bridge itself, and are of probable late 18th century manufacture. As the causeway did not exist prior to the construction of the bridge in 1837, there would have been no reason for the culverts to exist prior to this date. It is conjectured that the bricks were therefore re-used from a structure elsewhere, or were of crude local domestic production. This may be argued to indicate that the culverts were in fact commissioned separately, and privately, most probably by the owner of the fields across which the bridge was being built, to aid drainage during the periodic flooding.

No structures or features were uncovered which could be ascribed to the World War II defences. However, this absence was not unexpected, not least as their *exact* position on the bridge is unknown. They were probably removed immediately after the threat of imminent invasion had passed, as, by their very nature, they would have impinged upon traffic flow over the bridge. The concrete blocks were probably not fixed into the structure of the bridge, beyond slots drilled to receive the vertical rails. Meanwhile the 'Wallace Bagnet', being a temporary structure, was probably only attached to the aforesaid blocks or the parapet wall, so would similarly have left little trace beyond ephemeral and undefined wear marks on the then road surface and the parapet.

Publication summary

The Service has a professional obligation to publish the results of archaeological projects within a reasonable period of time. To this end, the Service intends to use this summary as the basis for publication through local or regional journals. The client is requested to consider the content of this section as being acceptable for such publication.

A watching brief was undertaken on behalf of Halcrow Group Limited at Powick New Bridge, Malvern Road, Worcester (NGR: SO 8361 5242; HER ref. WCM101562).

Seven areas were recorded, which revealed the original 1837 cast iron plates spanning the north, south and main arches. These were bedded on brick piers which were filled and sealed with redeposited natural clay. A light grey gravel overlying this may represent an earlier road surface or road foundation layer. On the northeast side of the bridge an earlier line of kerbstones was recorded in association with the gravel, which defined the edge of the (narrower) original footpath.

Within the causeway along the road to the northeast of the bridge, two adjacent brick culverts were exposed and recorded. They comprised soft handmade bricks of late 18th century date, substantially different to those used within the bridge itself. It is conjectured that these more bricks were re-used from elsewhere, are of local, domestic, production and may indicate that the culverts were commissioned separately, and privately, most probably by the owner of the field to improve drainage during the periodic floods.

No evidence was found for the concrete tank blocks and 'Wallace Bagnet' barbed wire defence, which are documented to have been positioned on the bridge during World War II.

Acknowledgements

The Service would like to thank the following for their kind assistance in the successful conclusion of this project: Helen Riley (Halcrow Group Ltd), Ian Jackson (Laser Civil Engineering) and James Dinn (Archaeological Officer, Worcester City Council).

Personnel

This report was prepared by Tom Vaughan and Justin Hughes, on the basis of field notes prepared by Adam Lee and Simon Sworn. The illustrations were prepared by Carolyn Hunt.

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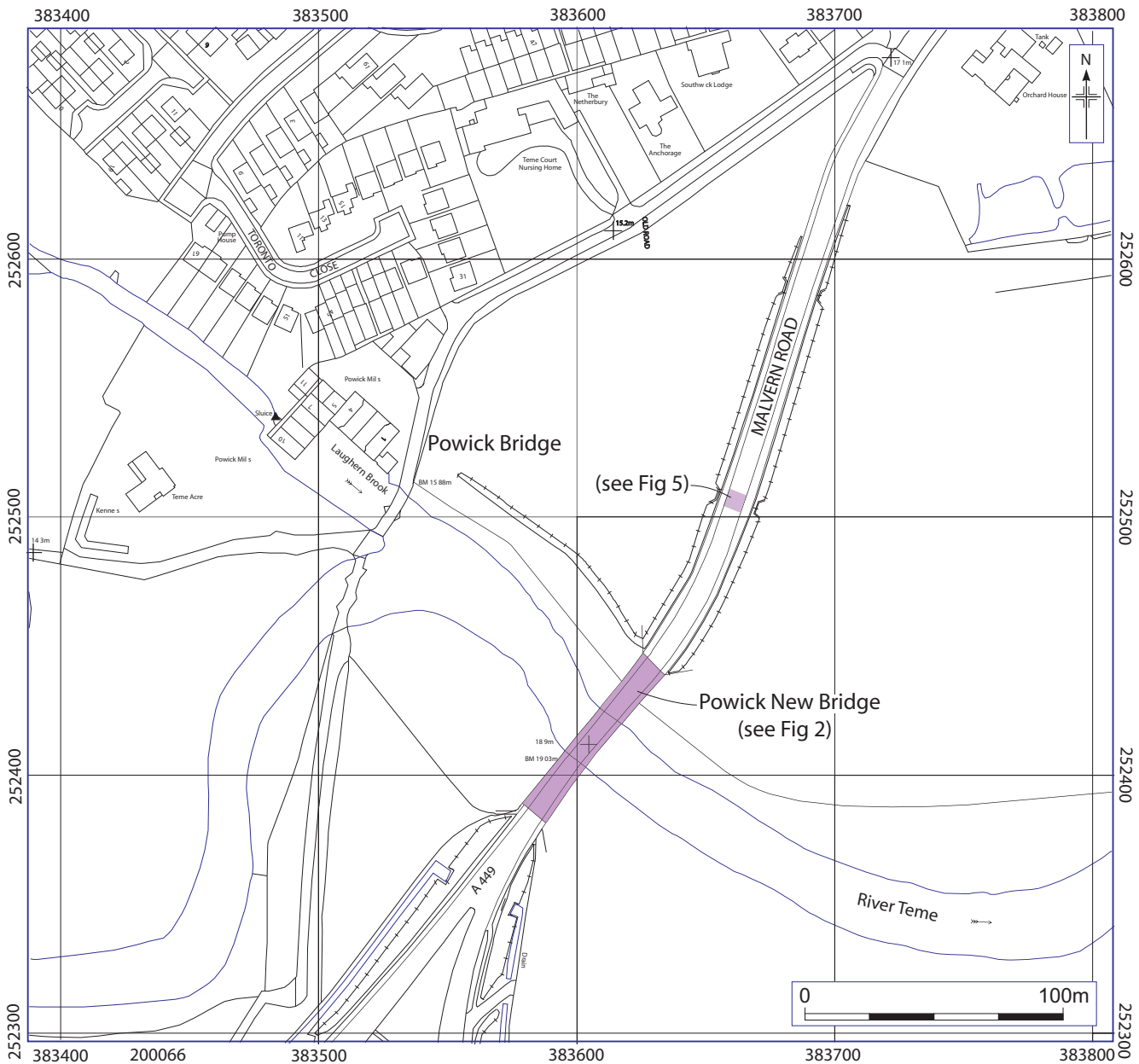
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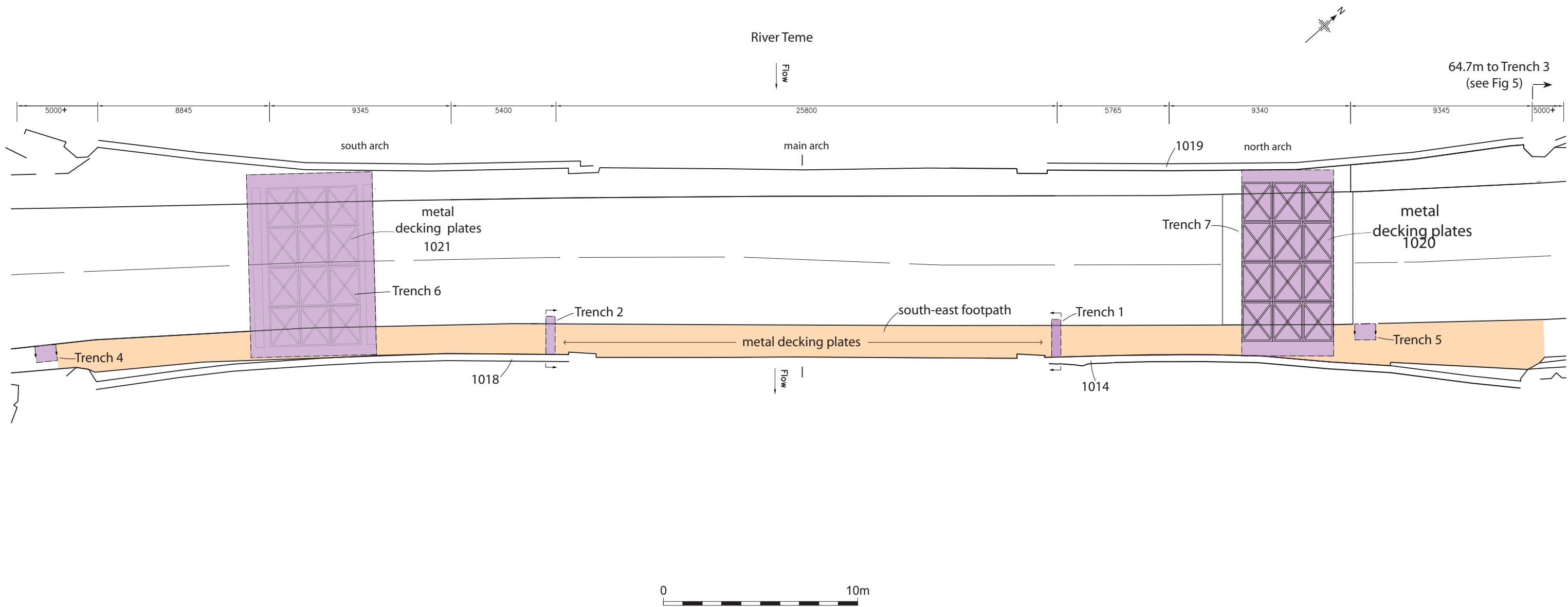
Figures



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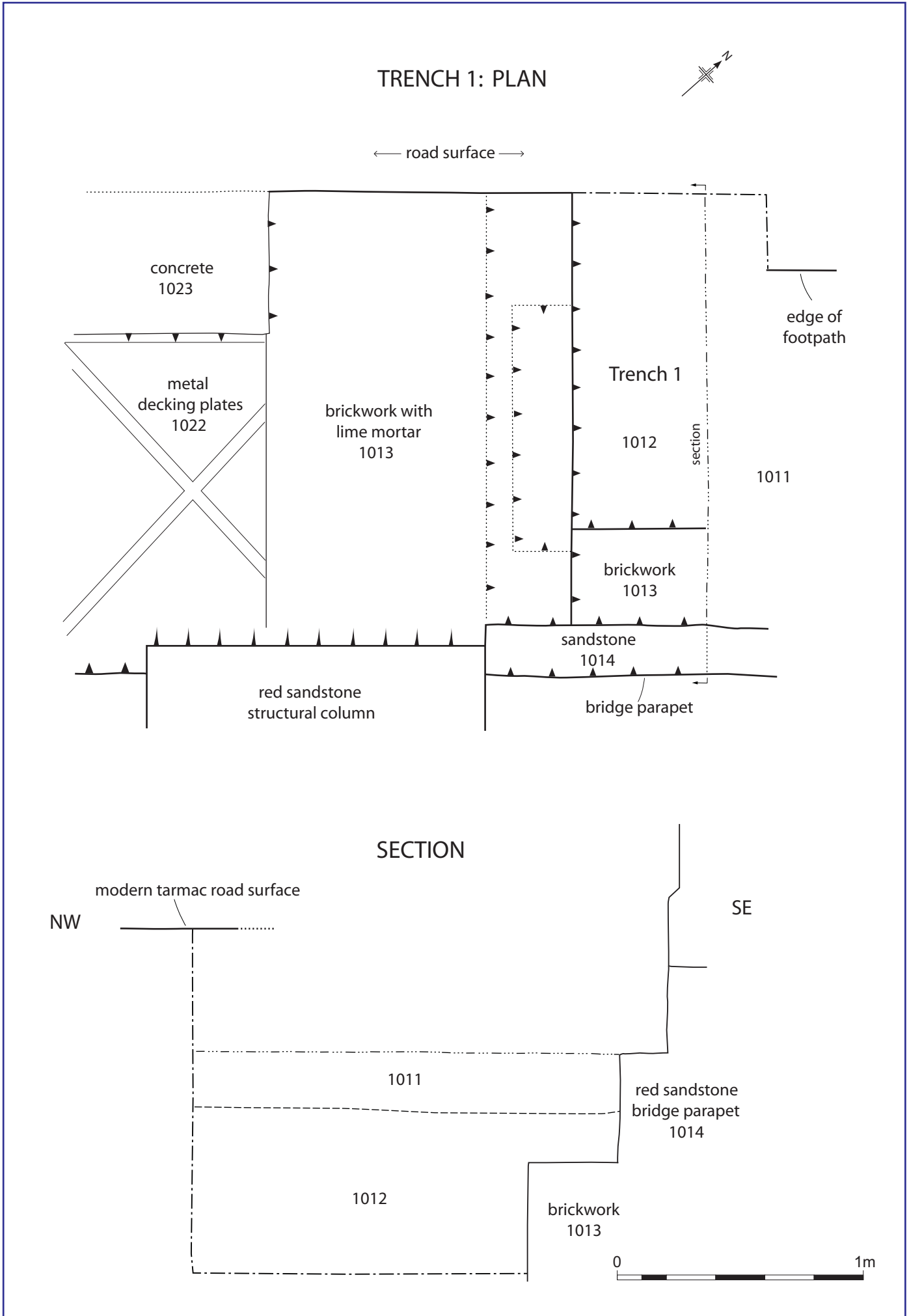
Location of Powick New Bridge

Figure 1



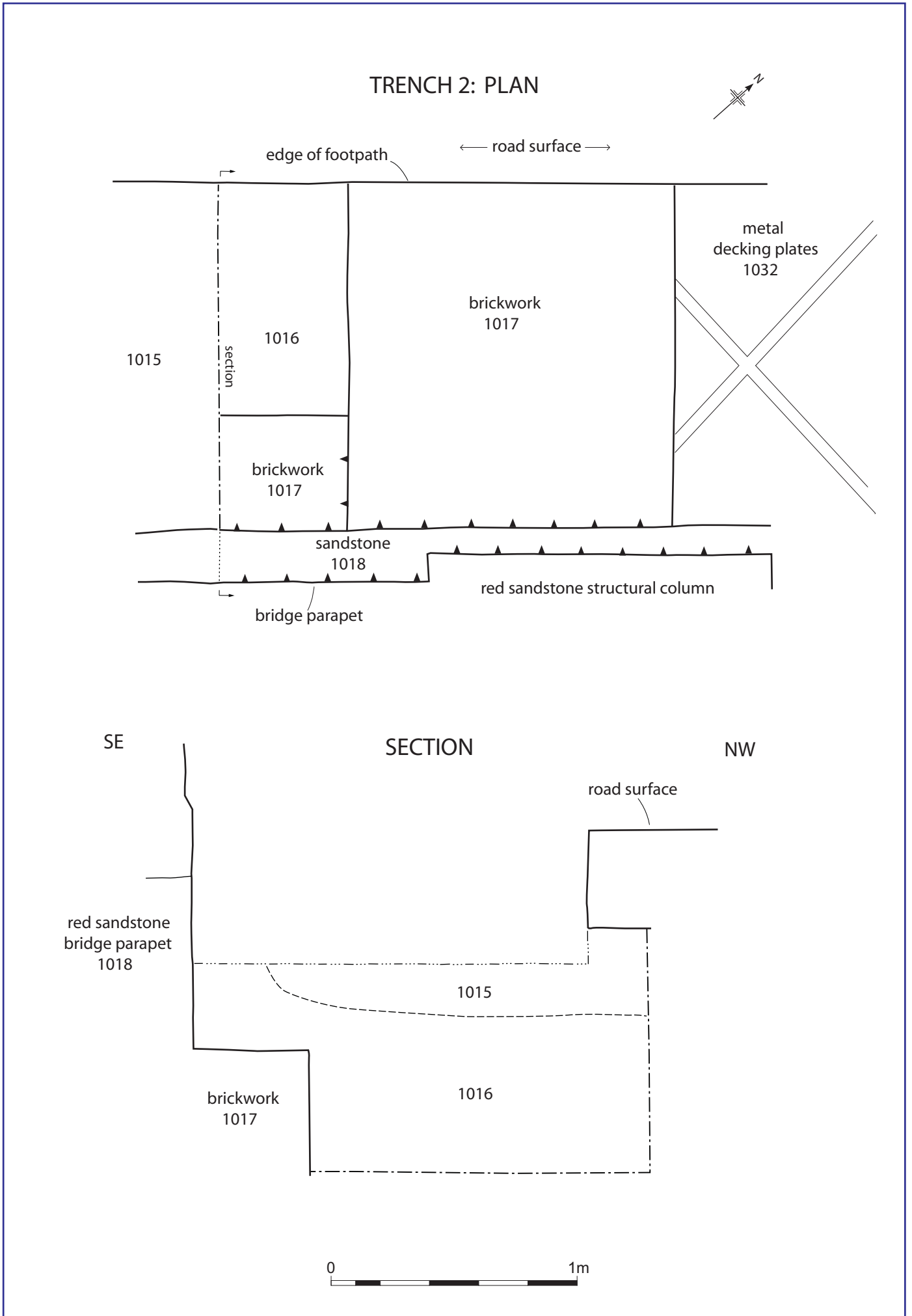
Location of archaeological works (based upon Worcestershire Highways Drg.No. TK/WBBB/640/105)

Figure 2



Trench 1: plan and section

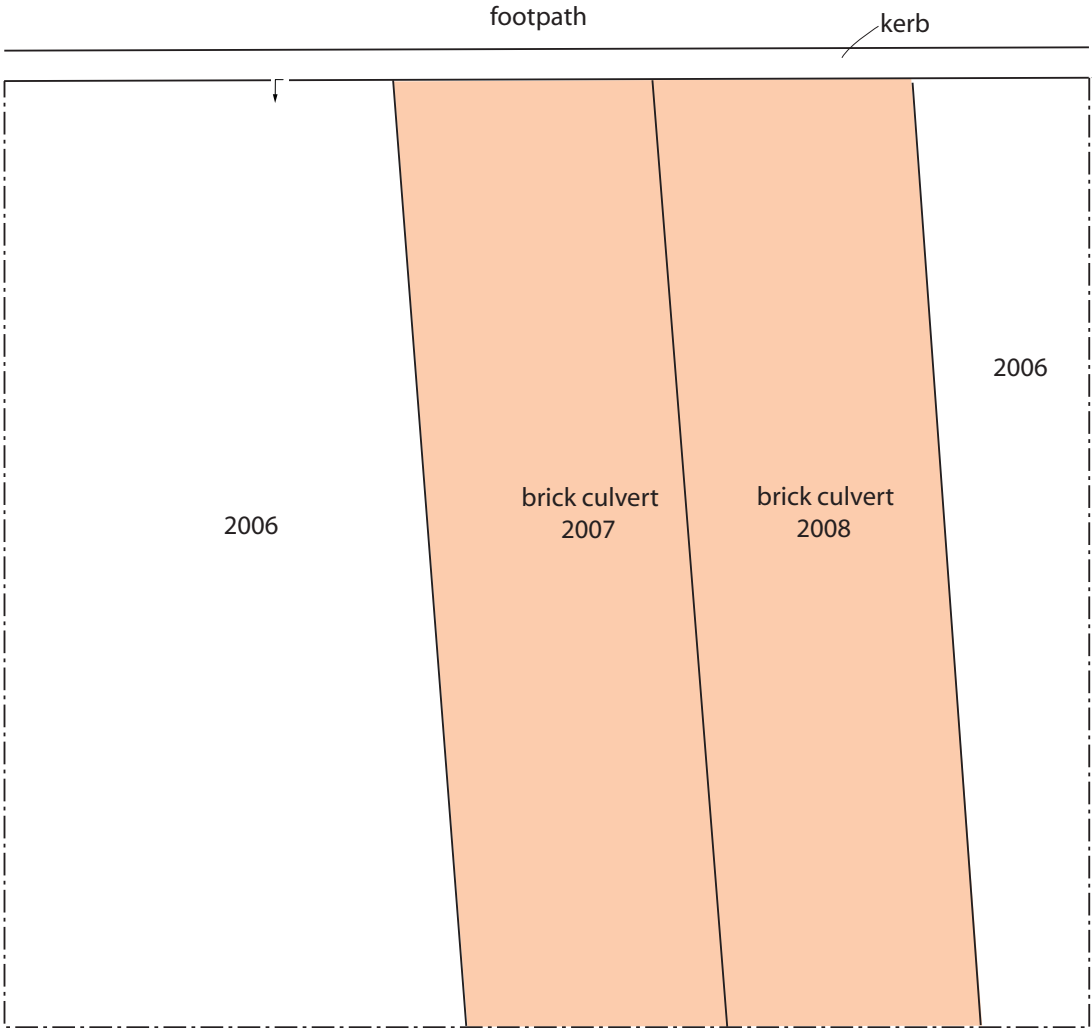
Figure 3



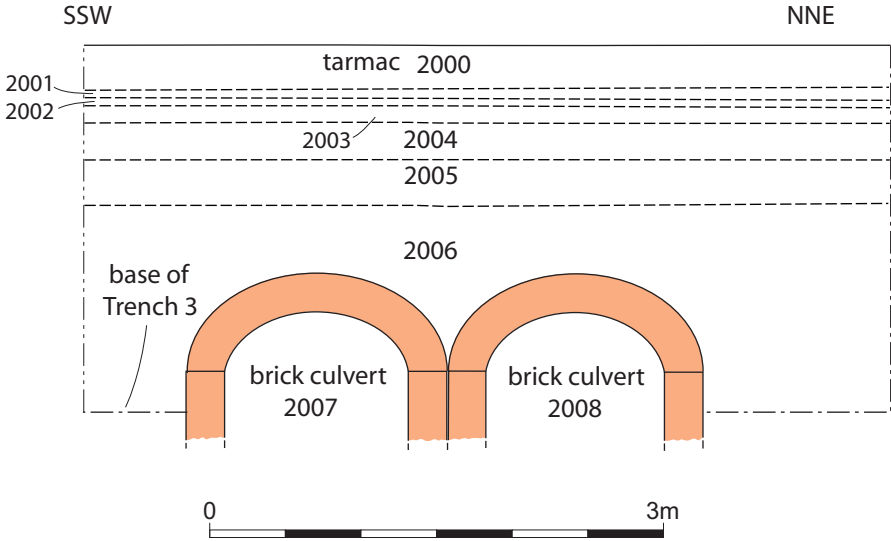
Trench 2; plan and section

Figure 4

TRENCH 3: PLAN



SECTION



Trench 3: Plan and section

Figure 5

Plates



Plate 1, Sample section through southwest footpath edge (Trench 4), view north



Plate 2, Edge of metal plate 1022 and brickwork 1013 adjacent to Trench 1 in southwest footpath, view southeast



Plate 3, Blue lias kerbstones 1009 in Trench 5, in southwest footpath to northeast of main arch, view northwest



Plate 4, Brick base 1013 in Trench 1, in southwest footpath to northeast of main arch, view northwest



Plate 5, Decking plates 1022 in southwest footpath over main arch, view southwest



Plate 6, Parapet foundations 1018 to southwest of main arch, view southwest



Plate 7, Decking plates 1020 in southwest footpath over north arch, view northeast



Plate 8 Parapet foundations 1018 to southwest of main arch, view northeast



Plate 9, Detail of parapet foundation 1018 and decking plates 1021 over south arch, view south



Plate 10, steel reinforced concrete and iron rail adjacent to southwest footpath on southwest side of bridge, view northwest



Plate 11, Brick base 1017 in Trench 2, in southwest footpath to southwest of main arch, view northeast



Plate 12, Decking plates 1021 in Trench 6 over south arch, view north



Plate 13, Decking plates 1021 in Trench 6 over south arch, view northeast



Plate 14, Detail of decking 1021 in Trench 6 with brick pier 1025 partially exposed to left



Plate 15, Culverts 2007 and 2008 in Trench 3, view west northwest



Plate 16, Culverts 2007 and 2008 in Trench 3, view north northeast



Plate 17, Sample south section of Trench 3, view south southwest

Appendix 1 Technical information

The archive

The archive consists of:

10	Fieldwork progress records AS2
3	Photographic records AS3
114	Digital photographs
1	Drawing number catalogues AS4
2	Permatrace drawing sheets
4	Annotated paper Worcestershire Highways drawings
3	Context number catalogues AS5
1	Computer disk

The project archive is intended to be placed at:

Worcester City Museum and Art Gallery
Foregate Street
Worcester
WR1 2PW

Tel. Worcester (01905) 25371

Appendix 2 Trench descriptions

Trench 1 Southwest footpath to northeast of main arch

Maximum dimensions length: 1.80m width: 0.60m depth: 1.40m

Main deposit description

Context	Classification	Description	Depth below ground surface (b.g.s) – top and bottom of deposits
1011	Layer	Stony, orange brown silty clay containing kerbstones, equivalent to 1015	0.50-0.74m
1012	Layer	Orange brown clay with CBM and occasional small to medium stones, equivalent to 1016	0.72m+
1013	Structure	Red brick base adjacent to structural column north of main arch, bedded in lime mortar, equivalent to 1017	c 0.34m+
1014	Structure	Red sandstone bridge parapet, equivalent to 1018 and 1019	n/a
1022	Structure	Cast iron decking plates with diagonal reinforcing bars; partially observed; equivalent to 1032	c 0.34m+
1023	Structure	Concrete overlying decking plates 1022, and sealed by tarmac road surface	c 0.15-0.34m

Trench 2 Southwest footpath to southwest of main arch

Maximum dimensions length: 1.84m width: 0.52m depth: 1.39m

Main deposit description

Context	Classification	Description	Depth below ground surface (b.g.s) – top and bottom of deposits
1015	Layer	Stony, orange brown silty clay containing kerbstones, equivalent to 1011	0.40-0.77m
1016	Layer	Orange brown clay with CBM and occasional small to medium stones, equivalent to 1012	0.55m+
1017	Structure	Red brick base adjacent to structural column south of main arch, bedded in lime mortar, equivalent to 1013	c 0.34m+
1032	Structure	Cast iron decking plates with diagonal reinforcing bars; partially observed; equivalent to 1022	c 0.34m+
1018	Structure	Red sandstone bridge parapet, equivalent to 1014 and 1019	n/a

Trench 3 On raised road causeway to north of bridge (to expose culverts)

Maximum dimensions length: c 7.20m width: c 6.60m depth: 2.47m

Main deposit description

Context	Classification	Description	Depth below ground surface (b.g.s) – top and bottom of deposits
2000	Modern road surface	Black tarmac overlying dark grey black compacted gravel; overlying 2001; equivalent to 1000, 1005, 1028 and 1029	0.00-0.29m
2001	Foundation layer	Compact light grey gravel	0.29-0.35m
2002	Foundation layer or road surface?	Medium to large rounded pebbles; foundation layer or metalling for earlier road surface?	0.35-0.40m
2003	Layer	Compact mid orange brown clay; small to large pebbles	0.40-0.52m
2004	Layer	Compact mid orange brown silty clay; occasional small pebbles and manganese flecks	0.52-0.76m
2005	Layer	Compact mid orange brown clay; frequent pebble gravel	0.76-1.06m
2006	Layer	Compact mid orange brown silty clay; occasional small pebbles and manganese flecks; redeposited natural?	1.06m+
2007	Structure	Brick culvert, bonded with 2008 to northeast; bright orange handmade bricks; 76-8x119x235mm, bedded in off-white lime mortar; 1.70m wide; base not exposed	c 1.50m+
2008	Structure	Brick culvert, bonded with 2007 to southwest; bright orange handmade bricks; 76-8x119x235mm, bedded in off-white lime mortar; 1.70m wide; base not exposed	c 1.50m+

Trench 4 Edge of footpath on southwest side of bridge

Maximum dimensions length: n/a width: 0.50m depth: 0.60m

Main deposit description

Context	Classification	Description	Depth below ground surface (b.g.s) – top and bottom of deposits
1000	Modern road surface	Black tarmac overlying dark grey black compacted gravel; overlying 1001; equivalent to 1005, 1028, 1029 and 2000	0.00-0.17m
1001	Modern road foundation layer	Concrete	0.17-0.28m
1002	Foundation layer	Mid orange sand	0.28-0.32m
1003	Hardcore	Mid brown gravel with bands of black ash	0.32-0.40m
1004	Redeposited natural?	Stony orangey brown clay	0.40m +

Trench 5 Footpath to northeast of north arch

Maximum dimensions length: n/a width: 1.00m depth: 1.40m

Main deposit description

Context	Classification	Description	Depth below ground surface (b.g.s) – top and bottom of deposits
1005	Modern road surface	Black tarmac overlying dark grey black compacted gravel; overlying 1006; equivalent to 1000, 1028, 1029 and 2000	0.00-0.11m
1006	Modern road foundation layer	Concrete mixed with CBM	0.11-0.24m
1007	Layer	Compacted hoggin and gravel; equivalent to 1027 and 1030?	0.24-0.29m
1008	Foundation layer	Brown silty coarse sand	0.29-0.41m
1009	Kerbstones	Line of roughly squared blue lias stones, bedded in 1010, each approx. 0.75m long, 0.08m wide and up to 0.32m thick	0.24- c 0.56m
1010	Redeposited mixed natural	Orangey brown clay sandy silt with frequent small to large stones, fuel ash and charcoal	0.41m +

Trench 6 Over south arch

Maximum dimensions length: c 9.60m width: c 6.60m depth: c 1.00m

Main deposit description

Context	Classification	Description	Depth below ground surface (b.g.s) – top and bottom of deposits
1028	Modern road surface	Black tarmac overlying dark grey black compacted gravel; overlying 1027; equivalent to 1000, 1005, 1029 and 2000	0.00- c 0.20m
1027	Foundation layer	Compact light grey pebble gravel; overlying 1026; equivalent to 1007 and 1030	c 0.20-0.30m
1026	Layer	Reddish brown clay; compact; no inclusions; redeposited natural? Overlying 1021 and 1025; equivalent to 1012, 1016 and 1031	c 0.30m+
1021	Structure	Twelve cast iron decking plates with diagonal reinforcing bars; plates 2.06m by 1.57m; fixed together with three bolts, each square and 40mm thick; bedded on 1025; sealed by 1026	c 0.34m+
1025	Structure	Concrete and brick piers forming north and south foundation for 1021; soft bright orange bricks, without inclusions, machine made?, 75x220x?mm, laid on side; bedded in soft pale yellow lime mortar; >0.75m wide; sealed by 1026	c 0.40m+

Trench 7 Over north arch

Maximum dimensions length: c 10.00m width: c 4.60m depth: c 0.60m

Main deposit description

Context	Classification	Description	Depth below ground surface (b.g.s) – top and bottom of deposits
1029	Modern road surface	Black tarmac overlying dark grey black compacted gravel; overlying 1030; equivalent to 100, 1005, 1028 and 2000	0.00- c 0.20m
1030	Foundation layer	Compact light grey pebble gravel; overlying 1031; equivalent to 1007 and 1027	c 0.20-0.30m
1031	Layer	Reddish brown clay; compact; no inclusions; redeposited natural? Overlying 1021 and 1025; equivalent to 1012, 1016 and 1026	c 0.30m+
1019	Structure	Red sandstone bridge parapet, equivalent to 1014 and 1018	n/a
1020	Structure	Twelve cast iron decking plates with diagonal reinforcing bars; plates 2.06m by 1.57m; fixed together with three bolts, each square and 40mm thick; sealed by 1031; only partially exposed	c 0.34m