

Archaeological desk-based assessment of Powick Weir, Worcester



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Elizabeth Connolly

Summary

A desk-based assessment for the historic environment was undertaken of Powick Weir, Worcester (NGR SO 83191 52411). It was undertaken on behalf the Environment Agency, who intend to demolish the current modern weir to improve fish passage.

This report describes and assesses the significance of the heritage assets (and potential heritage assets) that are potentially affected by the application. The setting of heritage assets is considered. The potential impact of the application, and the need for further on-site evaluation, is assessed.

Powick Weir (WSM08604; WCM91506) is a structure in the lower reaches of the River Teme, to the south-west of Worcester. The weir feeds Powick Leat (WSM08605, WCM91507) which links the River Teme and the Laughern Brook to serve the nearby Powick Mill complex (WCM91058). In 2000 the weir, which dated to the 18th century, was demolished and replaced by a concrete weir.

In 1086 the study area formed part of the Manor of Wick Episcopi which had two mills; Wick Mill on the Teme, the probable site of the present Powick Mill, and Cut Mill on the Laughern Brook. Around the end of the 13th century another mill was built on the Teme and in 1300 all three were granted to the Prior of Great Malvern. The earliest mention of Powick Leat comes from a document from 1475 in which 'the tenants in Wick Episcopi complained that the prior had dug a canal from the Teme to Wick Mills, greatly to the damage of their land.'

The Powick Mills complex contains the sites of various mills dating to the 18th century; including a slitting mill and a forge. Documentary evidence from 1725 suggests that ironworking was taking place in Powick at this time, and also that the forge was a finery forge, for the conversion of pig-iron into wrought iron for smithing.

A map of c 1795 shows a weir at the location of the current Powick Weir, with a stone upstream face and spillway and an extensive downstream glaciis. This would have served the forge and slitting mill shown on the same map. An extensive deposit of ironworking slag extending c 30m north to south and over 1m deep in places, recorded just to the east of Powick Weir (WSM08603) is likely to have been associated with the above processes.

Powick Weir is located c 200m west of the Registered Historic Battlefield of the Battle of Worcester in 1651 and Powick Bridge in 1642 (list entry number 1000042), and is c 300m west-south-west of Powick Old Bridge, a Grade I listed building and a scheduled ancient monument (list entry numbers 1390030 and 1005268 respectively). The new bridge at Powick (WSM03200), c 200m downstream of the scheduled ancient monument, is a Grade II listed iron bridge, dating to 1837.

In 1894 a Hydro-Electric facility (WSM08606), was constructed at this site; operated by the City of Worcester, it incorporated a steam engine as backup for times of low water. The station worked on water power from the River Teme with a steam auxiliary until 1903.

Demolition of the modern concrete weir is unlikely to have a negative impact on the setting of the Historic Battlefield, or of the listed buildings in the study area. Powick leat might run dry, except in times of flood and it is recommended that efforts be made to preserve the line of the leat as a historic feature, and if possible as a linear pond.

Report

1 Background

1.1 Reasons for the project

A desk-based assessment for the historic environment was undertaken of Powick Weir, Worcester (NGR 383191, 252411). It was undertaken on behalf the Environment Agency, which intends demolition of the current weir to create a pass for the Shad (a notifiable fish for the Severn Estuary SAC) to travel upstream (Alan Jones, 10 February 2015, pers comm).

The proposed development site is considered to include heritage assets and potential heritage assets, the significance of which may be affected by the application (Powick Weir (WSM08604; WCM91056) and Powick Leat (WSM08605, WCM91057)).

The project also conforms to the *Standard and guidance for historic environment desk-based assessment* (CIfA 2014).

The event reference for this project, given by Worcestershire HER is WSM66593 and by Worcester City HER is WCM102084.

Aims

The general aims of this assessment are to:

- establish the nature and extent of the heritage assets;
- assesses the significance of the heritage assets within the application site and affected by the proposed development;
- assess the impact of the application on the heritage assets.

2 Methods

2.1 Personnel

The assessment was undertaken by Elizabeth Connolly MA; who joined Worcestershire Archaeology in 2013 and has been practicing archaeology since 1999. The project manager responsible for the quality of the project was Tom Vaughan MA, ACIfA. Illustrations were prepared by Steve Rigby BA.

2.2 Documentary research

All relevant information on the history of the site and past land-use was collected and assessed. Records of known archaeological sites and monuments were obtained from Worcester City Historic Environment Record (HER) (which included records from Worcestershire HER). Historic maps and published sources were consulted at Worcestershire Record Office.

The results are mapped on Figure 2 and the details of individual features of the historic environment are given in Appendices 1 and 2, with selected event records given in Appendix 3. Event records have been omitted where this would repeat information in other record types, and would not materially affect the assessment.

2.3 List of sources consulted

Cartographic sources

- Plan of c1795 (WRO BA438/111 (xvii)), Fig. 3
- Map of c1825 (WRO BA438/13 (x)), Fig. 4
- 1847 Tithe Map of the Parish of St John in Bedwardine, Fig. 5
- 1st edition Ordnance Survey, 1888, scale 1:2500, Fig. 6

- British Geological Society (BGS), 2015 *Geology of Britain Viewer* consulted at <http://mapapps.bgs.ac.uk/geologyofbritain/home.html> on 10 February 2015

Documentary sources

- ClfA 2014 *Standard and guidance for historic environment desk-based assessment*, Chartered Institute for Archaeologists
- Cook, M, 1996 *Archaeological recording at Powick Weir, near Worcester County* Archaeological Service, Hereford and Worcester County Council, unpublished report, dated November 1996 **P1309**
- DCLG 2012 *National Planning Policy Framework*, Department for Communities and Local Government
- DCLG/DCMS/EH 2010 *PPS5 Planning for the historic environment: historic environment planning practice guide*, Department for Communities and Local Government/Department for Culture, Media and Sport/English Heritage
- Edwards, R and Cook, M, 2000 *Watching brief at Powick Weir, Powick and Lower Wick, Worcestershire*, Worcestershire County Council, unpublished report, dated 31 March 2000, **P1635**
- English Heritage 2011 *The setting of heritage assets*, English Heritage
- Mindykowski, A, Atkin, M, Hancox, E, and Rogers, T, 2010 *Historic environment assessment for the South Worcestershire Joint Core Strategy area*, Historic Environment and Archaeology Service, Worcestershire County Council, report **1672**
- Pevsner, N 1968 *The Buildings of England: Worcestershire*
- VCH III, 1913 *Victoria History of the County of Worcestershire*, accessed online at <http://www.british-history.ac.uk/vch/worcs/vol3>
- VCH IV, 1913 *Victoria History of the County of Worcestershire*, accessed online at <http://www.british-history.ac.uk/vch/worcs/vol4>
- WCC 2010 *Standards and guidelines for archaeological projects in Worcestershire*, Planning Advisory Section, Worcestershire Archive and Archaeology Service, Worcestershire County Council unpublished report **604**, amended July 2012
- Worcester City Council 1999 *Statement of standards and practices appropriate for archaeological fieldwork in Worcester*, Appendix 3 in Supplementary Planning Guidance Number 8: Archaeology and Development, Worcester City Council, document revised June 1999

2.4 Other methods

A site visit was undertaken on 12 February 2015.

This assessment is limited to consideration of heritage assets and potential assets that are relevant to the application site.

2.5 Impact assessment criteria

The criteria cited in Table 1 have been used.

<p>Major Beneficial: Demonstrable improvement to a designated heritage asset of the highest order (or its setting), or non-designated asset (or its setting) of archaeological interest of demonstrable significance equal to that of a scheduled monument. Designated assets will include scheduled monuments, grade I/II* listed buildings, grade I/II* registered parks and gardens, registered battlefields, protected wrecks or World Heritage Sites. Improvement may be in the asset's management, its amenity value, setting, or documentation (for instance enhancing its research value). It may also be in better revealing a World Heritage Site or Conservation Area's significance.</p>
<p>Beneficial: Demonstrable improvement to a designated heritage asset (or its setting), or non-designated asset (or its setting) of archaeological interest such that the level of improvement will demonstrably have a minor affect the area and its heritage resource, either at a local or regional level. For instance grade II listed buildings, Conservation Areas and undesignated heritage assets important at a sub-national level. Improvement may be in the asset's management, its amenity value, setting, or documentation (for instance enhancing its research value).</p>
<p>Not Significant: Impacts that have no long-term effect on any heritage asset.</p>
<p>Minor Adverse: Minor harm to a designated heritage asset (or its setting), or non-designated asset (or its setting) of archaeological interest such that the level of harm will demonstrably have a minor affect the area and its heritage resource, either at a local or regional level. For instance grade II listed buildings, Conservation Areas and undesignated heritage assets important at a sub-national level.</p>
<p>Moderate Adverse: Minor harm to a designated heritage asset (or its setting) of the highest significance, or non-designated asset (or its setting) of archaeological interest of demonstrable significance equal to that of a scheduled monument. For instance scheduled monuments, grade I/II* listed buildings, grade I/II* registered parks and gardens, registered battlefields, protected wrecks or World Heritage Sites.</p> <p>Harm to a designated heritage asset (or its setting), or non-designated asset (or its setting) of archaeological interest such that the level of harm will demonstrably affect the area and its heritage resource, either at a local or regional level. For instance grade II listed buildings, Conservation Areas and undesignated heritage assets important at a sub-national level.</p>
<p>Major Adverse: Harm to a designated heritage asset (or its setting) of the highest significance, or non-designated asset (or its setting) of archaeological interest of demonstrable significance equal to that of a scheduled monument. For instance scheduled monuments, grade I/II* listed buildings, grade I/II* registered parks and gardens, registered battlefields, protected wrecks, World Heritage Sites or harm to a building or other element that makes a positive contribution to the significance of a Conservation Area as a whole.</p> <p>Substantial harm to, or loss of, a designated heritage asset (or its setting), or non-designated asset (or its setting) of archaeological interest such that the level of harm or loss will demonstrably affect the area and its heritage resource, either at a local or regional level. For instance grade II listed buildings, Conservation Areas and undesignated heritage assets important at a sub-national level.</p>
<p>Severe Adverse: Substantial harm to, or loss of, a designated heritage asset (or its setting) of the highest significance, or non-designated asset (or its setting) of archaeological interest of demonstrable significance equal to that of a scheduled monument. For instance scheduled monuments, grade I/II* listed buildings, grade I/II* registered parks and gardens, registered battlefields, protected wrecks, World Heritage Sites or the loss of a building or other element that makes a positive contribution to the significance of a Conservation Area as a whole.</p>
<p>Unknown: Where there is insufficient information to determine either significance or impact for any heritage asset, or where a heritage asset is likely to exist but this has not been established, or where there is insufficient evidence for the absence of a heritage asset. For instance where further information will enable the planning authority to make an informed decision.</p>

Table 1: Impact assessment criteria for heritage asset

3 The application site

3.1 Location and size

The study area included the application site (Fig. 1), although heritage assets were considered within 500m of the weir in order to provide a broader understanding of the local context.

Powick Weir is located c 700m north of Powick village, c 300m south-west of the suburbs of Worcester. The weir is on the River Teme, with a leat from the weir towards Powick Mill, c 300m to the north-east. The A4440 (Hams Way) runs c 60m to the south-west of the weir.

Powick Weir is located c 200m west of the Registered Historic Battlefield of the Battle of Worcester in 1651 with Powick Bridge in 1642 (List entry number 1000042), and c 300m west-south-west of Powick Bridge, a Grade I Listed Building and a Scheduled Ancient Monument (List entry numbers 1390030 and 1005268 respectively).

3.2 Topography, geology and soils

The site is located on the Sidmouth Mudstone Formation with bedrock being composed of sedimentary rock formed approximately 217 to 250 million years ago in the Triassic Period. Superficial deposits of alluvium; clay, silt, sand and gravel were formed up to 2 million years ago in the Quaternary Period (BGS, 2015).

3.3 Current land-use

Powick Weir (Plates 1 and 2, Fig. 1) is situated on the River Teme, c 750m north of the village of Powick, on the south-western outskirts of Worcester. The weir is now made of concrete. A leat (Plates 3 and 4) is fed by the weir and joins the Laughern Brook c 260m to the north. The A440, Worcester by-pass (Hams Way) runs within 60m to the south-west of the weir. The land immediately around the weir is the flood plain of the River Teme. Currently under rough pasture, it appears mainly to be used by recreational dog walkers, following a network of paths around the river and the leat. Powick Leat itself is a deep linear waterway defined by a fine growth of vegetation along its length (Plate 5). Some erosion of its banks has taken place in recent years.

3.4 Historic land-use and archaeological character

The Historic Landscape Characterisation of Powick Weir is within HWR3, Rivers Severn and Teme Water and Valley Floor - Natural Open Water and it is adjacent to the characterised area of HWR132, minor dispersed settlement.

The stretch of river in which the weir lies forms the boundary between the parishes of Powick and St John in Bedwardine. The immediate study area is agricultural but formerly included rural industry; corn milling in the medieval period, moving towards ironworking in the post-medieval period.

Several place names in the area including the name Powick itself, indicate that settlements here could date from the early medieval period. Evidence of a holloway (WSM37248) is recorded on the HER east of Powick Old Bridge. In Powick parish, the VCH mentions a tithe barn which had been pulled down by 1585. The manor of Wick Episcopi, in which the site is located, belonged to the church of Worcester before the Conquest. The manor was said to have been granted by Offa, King of the Mercians, to Bishop Milred before 775.

In 1086 the Manor of Wick Episcopi had two mills; Wick Mill on the Teme and Cut Mill on the Laughern Brook. Around the end of the 13th century another mill was built on the Teme and in 1300 all three were granted to the Prior of Great Malvern. According to the VCH, Cut Mill was demolished in the 1760s and the mill pond was filled in.

Powick Mill leat diverges from the Teme immediately north of Powick Weir. It links the Teme and the Laughern Brook to serve Powick Mills. The earliest mention of the leat comes from a document from 1475 in which 'the tenants in Wick Episcopi complained that the prior had dug a canal from the Teme to Wick Mills, greatly to the damage of their land' (VCH III, 3).

Powick Old Bridge was the scene of two important Civil War battles; the first and second battles of Worcester. The first skirmish, on 23 September 1642, also known as the battle of Wick Field, ended with the routing of the Parliamentarians. During the second battle, which took place on 3

September 1651, the two piers on the St John's side of the bridge were destroyed by the Royalists. During this battle the Scots were routed and driven from Worcester.

Research quoted in Edwards and Cook (2000) throws light on the industrial complex at Powick Mills. A forge was erected at Powick, presumably in the 1720s or early 1730s, just south of an 'ancient' corn mill, built on the Laughern Brook, and shown on a survey plan from the Hampton Estate papers of c 1800 (not depicted). The plan shows a complex of buildings and yards, all now demolished: forge, slitting and rolling mill, charcoal barn, blacksmiths shop, two warehouses, carpenter's shop and yard, pig wharf, coal yards and charcoal yard, as well as a house, three blocks of tenements, and extensive gardens. The forge was taken over by Sampson Lloyd in around 1759, who soon added a rolling and slitting mill. A 1784 watercolour (not depicted) of a view of Powick iron works and Nehemiah Lloyd's house (the riverbank here revetted with hearth bottoms) is in the Burney Collection at Worcestershire Record Office.

A plan of c 1795 (Fig. 3) shows the weir on the 'old main river of Team' with the 'New Team', the leat, almost immediately north of the weir. A stand of alder is depicted by the weir. The field immediately east of the weir is described as 'Team new Meadow, belonging to Mr Bund', and a path is depicted going north-east from the weir to Mill Orchard; the field immediately south of the location where the leat and the Laughern Brook meet. The 'New Team bridge' is shown crossing the leat. Three buildings are shown straddling the millstream at the location of the current Powick Mill complex. These are described in the key as the 'old corn mill', 'new erected forge' and the 'new erected slitting mill'.

Further industrial buildings including a charcoal barn, warehouse, carpenter's shop and blacksmith's shop are depicted on a survey of 1825 (Fig. 4). The large field to the east of the weir is still indicated as 'Teme Meadow', with the dotted line of a footpath running from the weir to a more established-looking track which runs from the mill complex to the bridge over the leat. This divides the fields south-east of the leat and west of the mill complex into 'Great Orchard and Little Orchard'. The bank of the Teme, south-east of the weir is depicted with willows.

The 1847 Tithe map of the Parish of St John in Bedwardine (Fig. 5) shows slight changes in the building layout of the mill complex although it remains approximately the same size. The condition of the map is poor, and detail of the surrounding landscape is not clear although much of the land south and west of the weir appears to be commonage.

On the 1st edition Ordnance Survey map (Fig. 6) a large area of market gardening or orchard is indicated to the north of the weir and the apparent commonage of Powick Hams. The leat is shown as tree-lined and Powick Mills are indicated as 'Powick Mill (corn)'. The land immediately west of Powick Mill is shown as orchard while some land west of the River Teme is indicated to be marshy.

4 Heritage assets

4.1 Designated heritage assets

Powick Bridge (WSM00239; WCM91053) is Grade 1 listed (1349275) and a Scheduled Ancient Monument (1005268). It is also within the designated Historic Battlefield of the Battle of Worcester, in 1651 with Powick Bridge in 1642 (List entry 1005268). The bridge dates to the 16th century with later restorations. Constructed of sandstone ashlar, it is partly restored in red brick, with pinkish-brown brick and ashlar copings. The bridge has five arches, three with skew segmental arches and cutwaters, and two round arches. It is surmounted by a balustrade approximately 1m high.

Powick Bridge dates at least to the 15th century, with one of its arches spanning Powick Leat, and the other five spanning the River Teme. During the Civil War, in 1642, a skirmish took place at Powick Bridge when Prince Rupert engaged with Parliamentary forces. During the second battle of Powick in 1651, some of the fiercest fighting at the Battle of Worcester took place at Powick Bridge. The two arches on the Worcester side were broken down, and although they were fixed later in the 17th century, the bridge remained in a dilapidated state.

The bridge was bypassed downstream in 1837 by the New Powick Bridge (WSM03200; Grade II listing 1166981), a cast iron bridge with 'an iron arch of the Telford type' (Pevsner 1968).

Powick Mills Hydro Electric Power Station (WCM91055, WSM08606) is also a Grade II Listed Building (listing 1390029). This was built on the site of the mill complex by Powick Bridge, in 1894. For many years this was Britain's largest hydro-electric station for public supply. The building is now divided into residential units (Plate 6).

Teme Court (WCM98930; Grade II listing 1390032), a former 19th century villa, is now a nursing home.

4.2 Undesignated heritage assets

Details of all undesignated heritage assets within the study area are presented in Appendix 1 and 2 and selected events are recorded in Appendix 3.

The earliest record on the HER within the study area is a single lithic implement (FWR4278) recovered during fieldwalking (WSM29659).

In 1954 a Roman coin from AD 71 was found near Powick Bridge; a Dupondius of Vespasian (WCM100690).

The site is located some way between the known early medieval settlements of Powick and St Johns, with cartographic evidence of a road (WSM37248) running some way to the east of Powick Old Bridge southwards towards Powick, where it was depicted on the 1st edition Ordnance Survey as a holloway.

The study area is defined by the River Teme and the ancient leat which runs in a curve from just north of Powick Weir to rejoin the river just beyond Powick Bridge (Plate 7). It has a long history of milling; harnessing and utilising the river's power in a variety of ways from medieval corn mills to early industrial ironworking to an early hydro-electric power station. In 1086 it formed part of the Manor of Wick Episcopi which had two mills; Wick Mill on the Teme and Cut Mill on the Laughern Brook (VCH). Around the end of the 13th century another mill was built on the Teme and in 1300 all three were granted to the Prior of Great Malvern. In 1626 a survey of the Manor of Powick was carried out, which refers to a windmill and a corn mill, the latter of which was in decay. Cut Mill was demolished in the 1760s and the mill pond filled in (Cook 1996).

Research cited in Edwards and Cook (2000) suggests that the earliest evidence for ironworking at Powick dates from 1725, with documentary evidence for the sale of pig iron to John Wheeler of Powick. Not only does this suggest that ironworking was taking place at this time, but that the type of work was finery rather than bloomer, i.e. the conversion of pig iron to wrought iron, rather than the manufacture of iron from iron ore. Archaeological recording of Powick Weir (WSM08604, WCM91056) was carried out in 1996. Cook (1996) identified three visible phases of the weir dating from at least c 1795 to recent times, but no evidence for a weir pre-dating this period was found. The earliest elements comprised the remains of two adjacent spillways of ashlar separated by the remains of an upstream cutwater and a downstream glacis surfaced with pitched stone and iron-working hearth bases. The fragmentary remains of a spillweir were also present. The remaining phases comprised repairs carried out in the 19th and 20th centuries.

A map of c 1795 shows the stone upstream face and spillway with the extensive downstream glacis. This would have served the forge and slitting mill shown on the same map. A record in 1796 indicates that in that year the forge only produced 80 tons having previously produced 180 tons; these figures are appropriate to a forge of two fineries. By c 1790 a list shows that there were three fineries and a slitting mill.

The 1819 land assessment indicates that there was still a forge at Powick but it was converted to another use soon after that. The waste material from these processes is likely to be that now known to lie in an extensive deposit (WSM08603) on the southern bank of the mill leat, just to the

east of Powick Weir (Cook 1996). The deposit was 30m in length and 1m deep, covered by 0.7m of alluvium. The slag was of the pre-blast furnace type (*ibid*).

The addition of hearth bases to the downstream glacis may have been a later repair (*ibid*). Hearth bottoms were a by-product of water driven finery forges.

Powick Leat (WCM91057) links the River Teme and the Laughern Brook to serve Powick Mills. The earliest mention of the leat comes from a document from 1475 in which 'the tenants in Wick Episcopi complained that the prior had dug a canal from the Teme to Wick Mills, greatly to the damage of their land' (VCH III). The leat had subsequently been widened and deepened to serve the 18th and 19th century ironworks and hydro-electric power station.

Several training activities took place in the land within the study area during the Second World War; details of which can be found in Appendices 1 and 2.

4.3 Potential heritage assets

There is the potential for the existence within or immediately adjacent to the proposed development site for the sub-surface remains associated with the previous weir. There is also a potential for the sub-surface remains of further industrial waste spreads to exist in the areas adjacent to the development site.

5 Assessment of the significance of heritage assets

5.1 Designated assets

5.1.1 Scheduled ancient monument

Scheduled ancient monuments (SAMs) are designated as nationally important monuments. Powick Old Bridge is a scheduled ancient monument and a listed building (Grade I). There is no intervisibility between Powick Weir and Powick Old Bridge (Plate 8). The setting of Powick Old Bridge is not contingent on the presence of the weir. The impact of the demolition of the concrete weir on the bridge is considered to be **Not Significant**.

While there is no intervisibility between the SAM and the weir, there is a strong physical relationship between the leat and the SAM, and it could be said that the setting of the bridge is influenced by the nature of the watercourses running beneath it. It spans the river Teme to the south with the two northernmost arches spanning the combined waters of Powick leat and the Laughern Brook. Demolition of the weir is likely to cause drying-up of the leat except in times of high flood waters (Alan Jones pers comm). However the original width and depth of Powick leat as it was at the time of construction of Powick Old Bridge was likely to be less than it is now, since it was presumably deepened and widened in the 18th century to provide sufficient power for the iron working at Powick mill. It is noted in the HER that the flow from the leat was not consistent, with the leat being 'completely dry' on the day of a visit to it in 1989. It is considered that reducing the strength of the water flow to that of the continuing flow of the Laughern Brook will have a **Not Significant** impact on the setting of scheduled ancient monument and listed building of Powick Old Bridge.

5.1.2 Listed building

The proposed development is not considered to have an impact on the setting of Teme Court.

The distinctive chimney of Grade II listed Powick Mills hydro-electric station is partially visible from Powick Weir, while Powick Weir is not visible from the building itself from ground level. Demolition of the current weir is considered to have a **Not Significant** impact on the setting of Powick Mill Hydro-electric station.

There is no intervisibility between Powick New Bridge and Powick Weir. The flow of water downstream from Powick Old Bridge comprises a re-joining of the water from the leat and the joining of the flow from the Laughern Brook. The reduced flow in the water will be less discernible

under the new bridge and so it is considered that the proposed development will have a **Not Significant** impact on Powick New Bridge.

5.1.3 Registered battlefield

The site of the proposed development is c 200m west-south-west of the extent of the Registered Battlefield of the Battle of Worcester in 1651 with Powick Bridge in 1642 (list no 1000042). The site is not visible from the battlefield. The battle centred around Powick Bridge, but the flow of water and the presence of the leat are not considered materially central to the interpretative experience of the battle. Therefore it is considered that the development will have a **Not Significant** effect on the setting of the registered battlefield.

5.2 Undesignated assets

Nature of the archaeological interest in the site

Powick Weir forms a part of an industrial complex which operated in this location from the medieval period to the 20th century. The actual structure of the weir is modern and not in keeping with its historic form. However the nature of the archaeological interest in the building comprises the continuity of the structure and its function in feeding Powick Leat.

Relative importance of the archaeological interest in the site

Powick Weir is an undesignated asset and as a structure alone has no archaeological or architectural significance. However, the continuity of a weir in this location as a feature in the landscape related to former industry may be viewed as locally significant.

Physical extent of the archaeological interest in the site

The physical extent of the archaeological interest in the site is not known. The weir at Powick was demolished in 2000 before the current concrete weir was built. It is possible that submerged remains of the 18th century or earlier weir may survive. A spread of industrial waste associated with the nearby 18th century iron-working mills was recorded immediately east of the weir. It measured 0.70m deep and 30m wide. It is possible that more waste from the same processes may exist in the vicinity.

6 The impact of the development

The leat which runs from the weir at Powick is a distinctive landscape feature. It carries water from the Teme in an arc, and joins with the Laughern Brook before running towards Powick Mills and Powick Old Bridge, beyond which it rejoins the Teme. The removal of the weir could cause the leat to run dry, which would thus reduce the water flow at the Mill Complex and reduce the flow of water under the Worcester-side arches of Powick Old Bridge. A significant reduction in the flow of water at the Mill Complex could result in the buildings being experienced in a different way.

There is a possibility that demolition of the weir could disturb 18th or earlier parts of the weir which survived the remodelling of the structure carried out in 2000.

6.1 Impacts during construction

Demolition of the concrete weir may require the use of heavy machinery, either to aid in the demolition itself or to carry away the waste concrete. The use of heavy machinery may have an adverse impact on the site of the Registered Battlefield, or Powick Old Bridge, should this be used for access.

6.2 Impacts on sustainability

The NPPF emphasises the importance of sustainability (DCLG 2012, section 131).

The demolition of the concrete weir at Powick will remove a visible reminder of the industrial past. It will also have an effect on the flow of water through Powick leat. However, maintenance of the leat in the form of a linear pond as a historic feature along with the creation and erection of

information boards could enhance rather than destroy Powick leat as a historic resource, and the boards could replace the current physical weir with a depiction of the historic weir which would itself enhance rather than destroy the historic amenity of the site.

The historic environment is a non-renewable resource and therefore cannot be directly replaced. However mitigation through recording and investigation also produces an important research dividend that can be used for the better understanding of the area's history and contribute to local and regional research agendas (cf NPPF, DCLG 2012, section 141).

6.3 Residual impacts

Powick weir was demolished in 2000. The current weir at this location is built of concrete. The removal of the concrete weir will enhance the amenity value of the area as it currently stands. It is considered that the development will have a **Not Significant** effect on the setting of the site of the former weir. Creating an information board at the location of the former weir, explaining its historic significance and its relationship to the leat and to the wider complex of historic mill buildings and former mill sites could have a **Minor Beneficial** effect.

Powick Leat is a substantial waterway running between the Teme from just north of the weir and curving round to join with the Laughern Brook and provide a waterway to run past Powick mill and beneath two of the arches of Powick Bridge. Mentioned in a document of 1425, the leat has a strong presence in the landscape of the study area. Demolition of the weir, even though the current weir is modern, will have an impact on the flow of water in the leat, possibly causing it to dry up, apart from during episodes of flooding. The impact of demolition of the weir would therefore be described as **Minor Adverse**. However it may be possible to mitigate the impact on the leat of this development. Measures could be taken to preserve the leat as a historical feature, taking action to repair the erosion to the banks, and enhancing the effect of flooding to create a linear pond which could also be a haven for wildlife. An information board could be erected, interpreting the leat for the general public as well as putting it in the context of the wider historic landscape including proximity to the SAM and Registered Battlefield and within the more specific historic context of mills and mill sites. The above measures could mitigate somewhat the adverse effects of the proposed development, and reducing the impact to **Not Significant** or **Minor Beneficial**.

*Implementation of the mitigation proposed above should ensure that there are no residual effects on the historic environment and archaeological resource from the proposed development. Mitigation should ensure that adverse impacts are restricted in scope to **Not Significant**.*

7 Recommendations

It is recommended that, should the development proceed, measures should be taken to preserve the leat as a historic feature, such as utilising flood water to create a linear pond, thus preserving the historic feature. This, combined with the use of information boards for the general public could reduce the impact of demolition of the weir to **Not Significant** or **Beneficial**.

Should the demolition proceed, it is recommended that any excavation works required after demolition in the vicinity of or beneath the site of the current weir should be subject to an archaeological watching brief.

Care should be taken prior to demolition that a plan for the operation of machinery be drawn up to avoid the passage of machinery in the area of the Registered Battlefield, and access via Powick Old Bridge.

The exact scope and specification of mitigation works should be agreed with the Archaeological Officer, Worcester City Council and the Historic Environment Planning Officer, Worcestershire County Council. Any site investigation works or watching briefs required, would be concluded by production of an archaeological report (and appropriate publication) to be deposited for public consultation with the HER and a project archive to be deposited at a local museum.

8 Publication summary

Worcestershire Archaeology has a professional obligation to publish the results of archaeological projects within a reasonable period of time. To this end, Worcestershire Archaeology 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 desk-based assessment for the historic environment was undertaken of Powick Weir, Worcester (NGR SO 83191 52411). It was undertaken on behalf the Environment Agency, who intend to demolish the current modern weir to improve fish passage.

Powick Weir (WSM08604; WCM91506) is a structure in the lower reaches of the River Teme, to the south-west of Worcester. The weir feeds Powick Leat (WSM08605, WCM91507) which links the River Teme and the Laughern Brook to serve the nearby Powick Mill complex (WCM91058). In 2000 the weir, which dated to the 18th century, was demolished and replaced by a concrete weir.

In 1086 the study area formed part of the Manor of Wick Episcopi which had two mills; Wick Mill on the Teme, the probable site of the present Powick Mill, and Cut Mill on the Laughern Brook. Around the end of the 13th century another mill was built on the Teme and in 1300 all three were granted to the Prior of Great Malvern. The earliest mention of Powick Leat comes from a document from 1475 in which 'the tenants in Wick Episcopi complained that the prior had dug a canal from the Teme to Wick Mills, greatly to the damage of their land.'

The Powick Mills complex contains the sites of various mills dating to the 18th century; including a slitting mill and a forge. Documentary evidence from 1725 suggests that ironworking was taking place in Powick at this time, and also that the forge was a finery forge, for the conversion of pig-iron into wrought iron for smithing.

A map of c 1795 shows a weir at the location of the current Powick Weir, with a stone upstream face and spillway and an extensive downstream glacis. This would have served the forge and slitting mill shown on the same map. An extensive deposit of ironworking slag extending c 30m north to south and over 1m deep in places, recorded just to the east of Powick Weir (WSM08603) is likely to have been associated with the above processes.

Powick Weir is located c 200m west of the Registered Historic Battlefield of the Battle of Worcester in 1651 and Powick Bridge in 1642 (list entry number 1000042), and is c 300m west-south-west of Powick Old Bridge, a Grade I listed building and a scheduled ancient monument (list entry numbers 1390030 and 1005268 respectively). The new bridge at Powick (WSM03200), c 200m downstream of the scheduled ancient monument, is a Grade II listed iron bridge, dating to 1837.

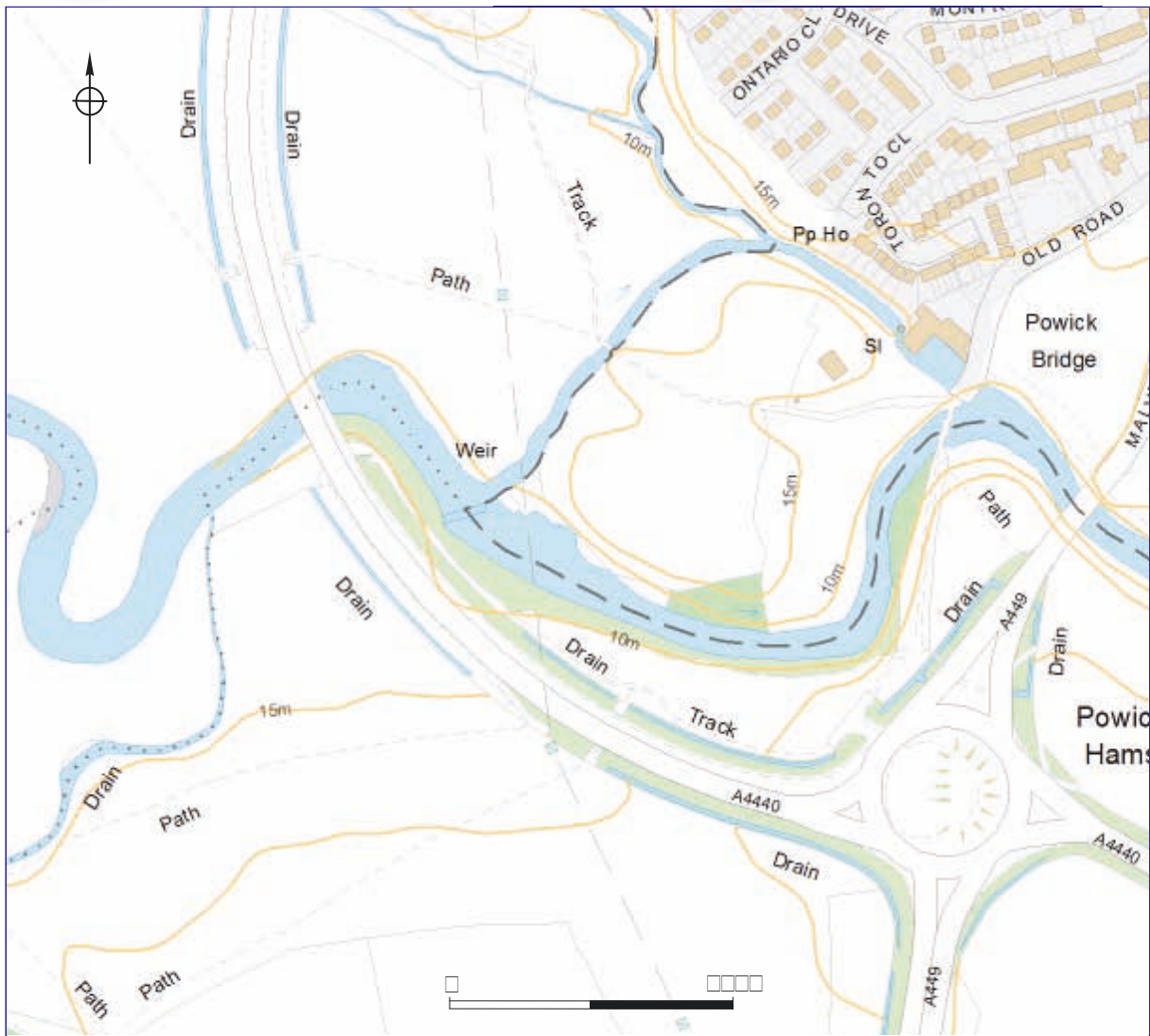
In 1894 a Hydro-Electric facility (WSM08606), was constructed at this site; operated by the City of Worcester, it incorporated a steam engine as backup for times of low water. The station worked on water power from the River Teme with a steam auxiliary until 1903.

Demolition of the modern concrete weir is unlikely to have a negative impact on the setting of the Historic Battlefield, or of the listed buildings in the study area. Powick leat might run dry, except in times of flood and it is recommended that efforts be made to preserve the line of the leat as a historic feature, and if possible as a linear pond.

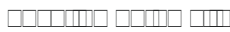
9 Acknowledgements

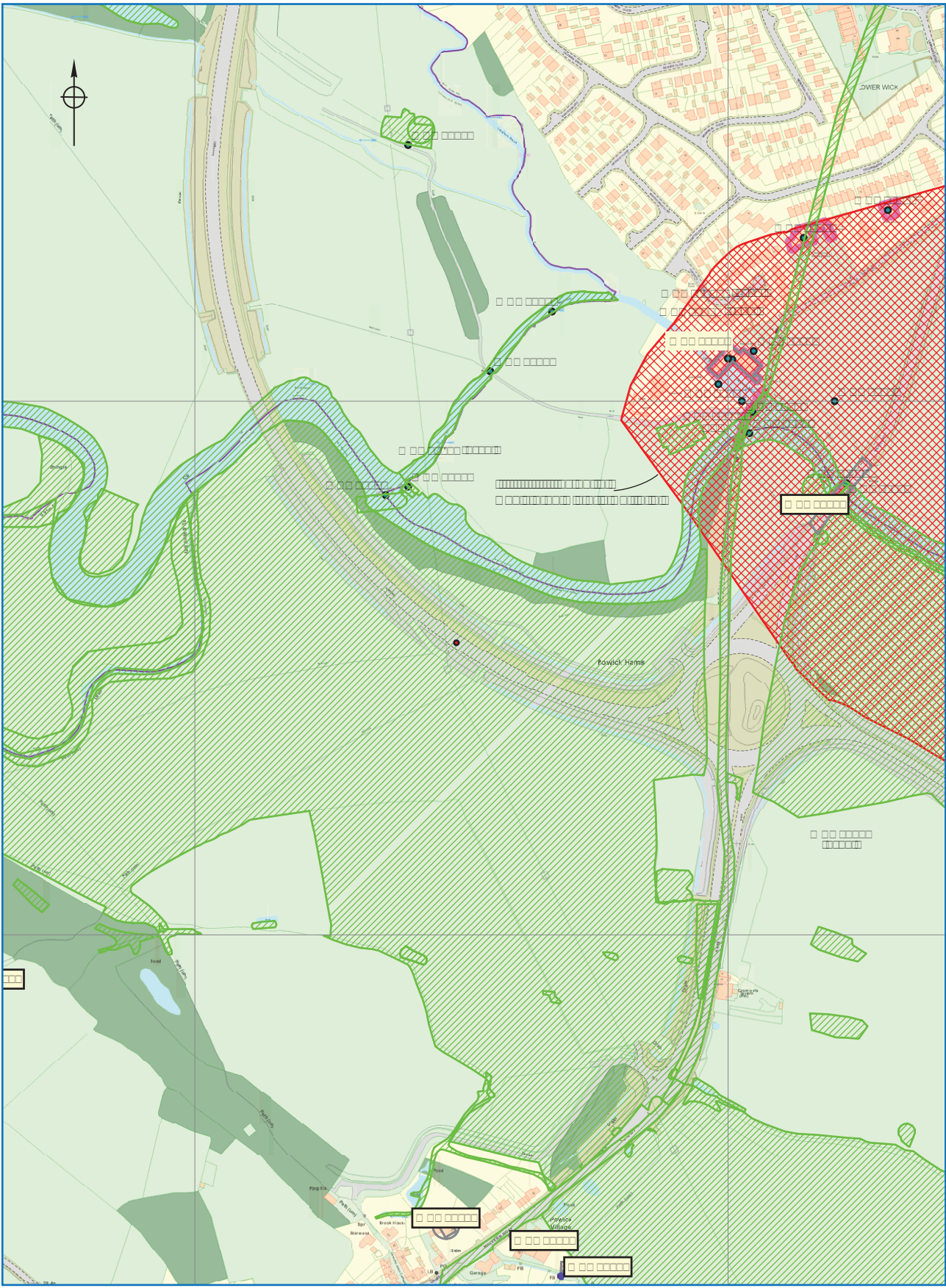
Worcestershire Archaeology would like to thank the following for their kind assistance in the successful conclusion of this project, Alan Jones (Project Manager, the Environment Agency), Ed Wilson (Archaeologist, the Environment Agency), Sheena Payne-Lunn (Historic Environment Record Officer, Worcester City Council).

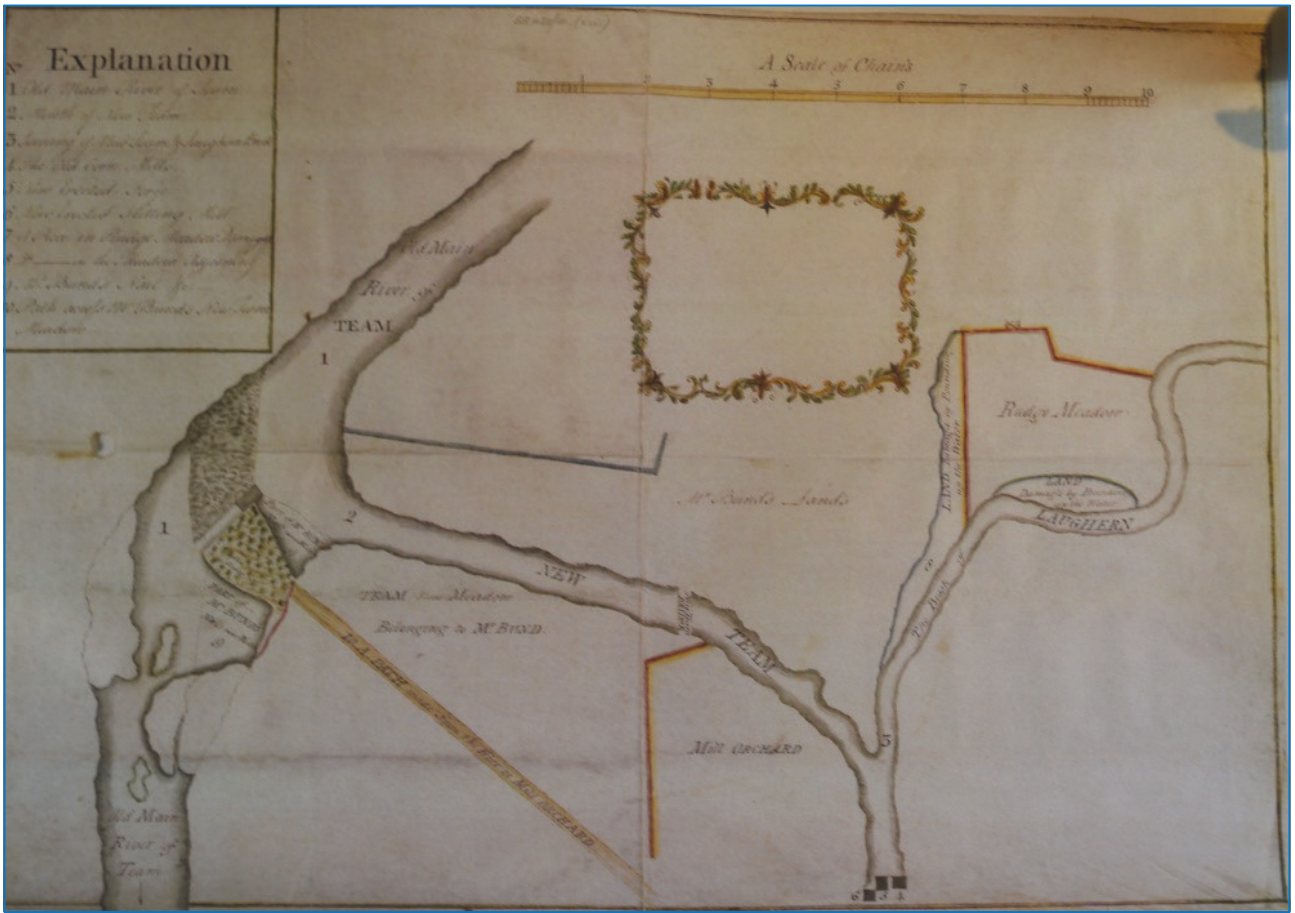
Figures



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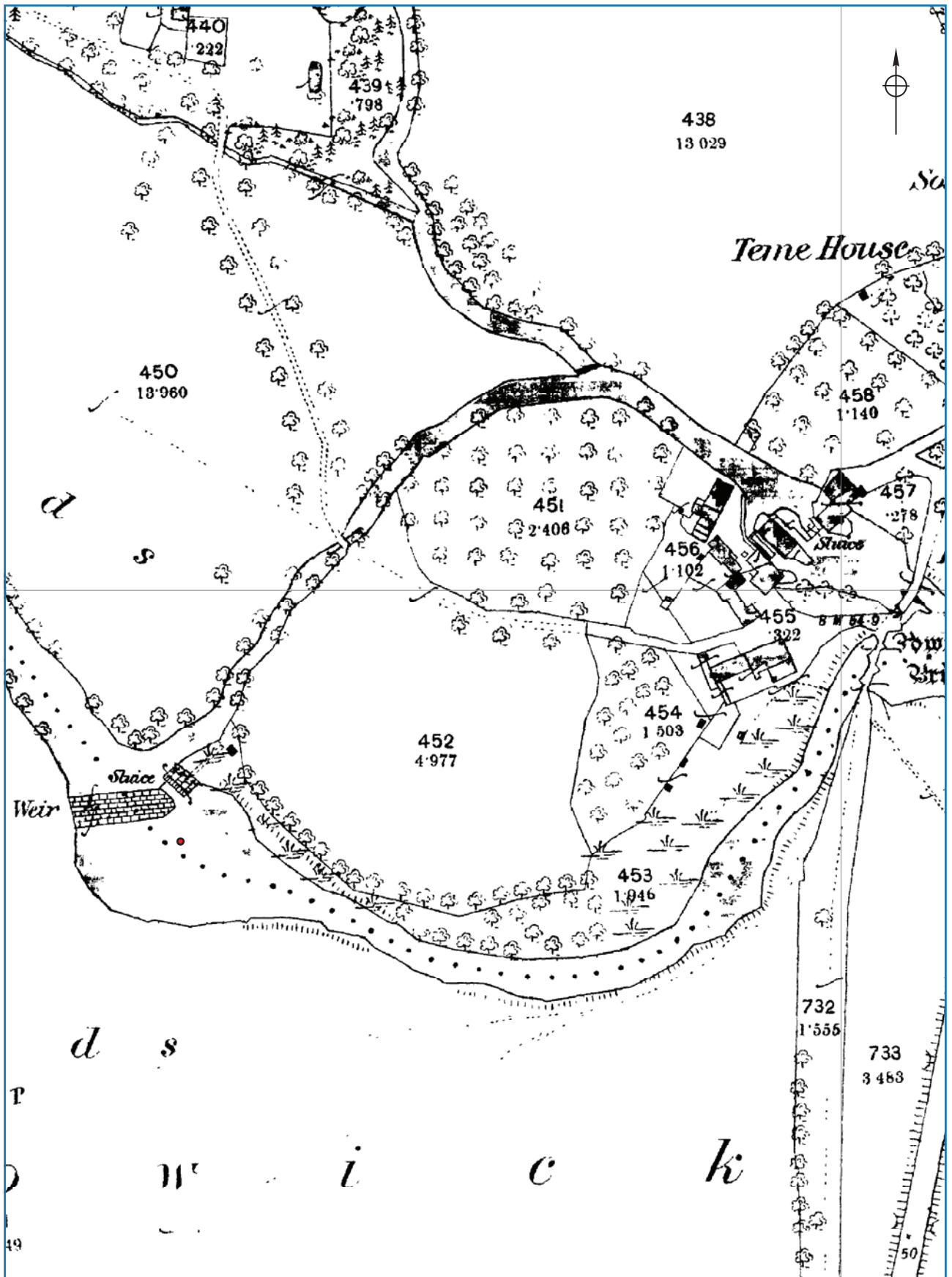








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Plates



Plate 1 View south-west towards Powick weir



Plate 2 View north-west towards Powick weir



Plate 3 View east-north-east along Powick Leat



Plate 4 View north-east along leat, from adjacent to weir



Plate 5 View east over leat, from adjacent to weir



Plate 6 View east towards Powick Mills from weir



Plate 7 View south-south-west towards weir along leat



Plate 8 View west-south-west towards weir from Powick Old Bridge

Appendix 1 Heritage assets registered with the Worcestershire Historic Environment Record (those within the application site are indicated in bold, those which are duplicated by being on both HERs are indicated in italics)

HER number (and legal status)	Site name	Grid reference	Record type	Date	Description
<i>WSM00239</i> Listed Building (I) – 1349275 Scheduled Monument - 1005268	Bridge across River Teme (Old Bridge), Powick	SO 8351 5247	Monument	Medieval	One of the most historic bridge sites in the County. Scene of Prince Rupert's engagement with Parliamentary forces in 1642. Again in 1651 during the second battle of Powick, some of the fiercest fighting at the Battle of Worcester took place at Powick Bridge. The two arches on the Worcester side were broken down. These were rebuilt in the 17th century but the bridge remained in a dilapidated state. Increased traffic over the bridge in the 1830s to Malvern led to Worcester Turnpike Trust building the new single span cast iron bridge in 1837, 200 yards downstream.
WSM03200 Listed Building (II) - 1166981	Powick Bridge	SO 8360 5241	Building	19 th Century	The new bridge is of 1837 & has an iron arch of the Telford type. About 200 yards below the old bridge and built in 1837 as a consequence of the large traffic between Worcester and Malvern. It has a roadway width of 32 feet against the 22 feet of the old bridge.
<i>WSM08604</i>	Weir, River Teme, Lower Wick, Worcester	SO 8318 5290	Monument	15 th – 21 st Century	Weir on River Teme. Must be associated at least in one phase with mill leat WSM08605, which leaves the river immediately upstream of it. There were three visible phases of the weir dating from c.1795 to recent times. Earliest elements comprise remains of two adjacent spillways of ashlar, separated by remains of an upstream cutwater and a downstream glacis surface with pitched stone and iron-working hearth bases.
<i>WSM08605</i>	Mill leat, Lower Wick, Worcester	SO 8329 5301	Monument	15 th Century-21 st Century	Leat, upstream of weir, diverting water from River Teme into Laughem Brook to feed hydro-electricity works and Powick Mills (corn and iron working). Very wide and deep. Photographed on site visit in October 1989 when it was completely dry. Leat is known from 1475, and was subsequently widened and deepened to serve the 18th and 19th century ironworks and power station. Map of circa 1795 shows it as the New Team.
WSM31416	Anti-Tank	SO 8358	Monument	World War	Site anti-tank cylinders during WWII.

Powick Weir, Worcester

	cylinders, south of Powick Bridge, Powick	5241		II	They would have been used for road blocking the bridge.
WSM31432	Aircraft Landing Obstacles, Powick Hams, Powick	SO 8319 5214	Monument	World War II	Aircraft landing obstacles in the form of wooden poles were erected during 1940.
WSM31434	Aircraft Landing Obstacles, south-east of Powick Bridge, Powick	SO 8373 5222	Monument	World War II	Aircraft landing obstacles in the form of wooden poles were erected here in 1940.
WSM37248	Probable course of the original road from Powick up to St Johns	SO 8357 5253	Monument	Late 11 th Century-21 st Century	Map evidence suggests that this was the original route from St Johns to Powick. As both settlements date to at least the early medieval period, the road is likely to be of at least this date as well. The 1742 Map of Worcester shows this route as a trackway for much of its course. By the 1st Edition it is partially down-graded to a footpath, but the southern part where it enters Powick is still depicted as a road and appears to be a holloway. This southern part is still the course of the modern road into Powick, but it has now been completely redeveloped with the addition on a roundabout. The northern part of the route (within the current boundary of Worcester City) is still preserved within the modern housing estate.
WSM08606	Hydro Electric Power Station, Lower Wick, Worcester	SO 8350 5253	Building	19 th Century	Brick built structure of late C19, originally constructed as hydro electric power station, now industrial units. The station operated by the City of Worcester, incorporated a steam engine as backing for times of low water. Worcester Electricity Works. Built 1894, water powered from R Teme with steam auxiliary until 1903. Continued as h-e until nationalisation. Buildings still stand, including chimney, virtually intact.
WSM24756	Possible Site of Powick Forge, Powick Bridge, Worcester	SO 8345 5246	Monument	18 th Century	Forge stood at mouth of Laughern Brook but mainly driven by leat from River Teme. The leat also drove a slitting and a rolling mill; and also a corn mill which was in separate ownership. Goods were brought up to a wharf on the River Teme. There was a floodgate in the weir which may have originally been a flashlock. The mill and forge were probably built between 1717 and 1725 and although

					<p>still called a forge in 1819 it probably closed earlier. Part of the forge was replaced by a grinding mill occupied by a pottery manufacturer in about 1820. It was demolished in the late 19th century to make way for a civic hydroelectric plant.</p> <p>The location, monument types, and dates are conjectural.</p> <p>Reused hearth bottoms were recorded during the demolition of the Powick Weir. They are thought to have come from this site.</p>
WSM50127	Pond, North West of Cromwell's Tavern, Powick	SO 8350 5214	Monument	Post Medieval	Pond identified from cartographic sources only.
WSM50235	Meander Loop, North of The Lodge, Powick	SO 8291 5237	Monument	Post Medieval	Meander loop identified from cartographic sources, aerial photographs and LiDAR imagery. This feature is within a field under pasture.
WSM50182	Site of former river meander, River Teme	SO 8287 5230	Monument	Palaeo-channel	Ordnance Survey 1st Edition map shows the parish boundary following a former meander of the River Teme. On an estate plan from the Coventry Estate, dated 1648, this channel is marked as 'former course of the River Teme'. Dates for the record have been input for the possible diversion of the River Teme, not the origin of the river channel itself, assuming that it results from human action. The modern map shows this is still a water channel. The leat for the mill at Powick Bridge (WSM08605) is first mentioned in 1475, it is possible the work on the channel was undertaken at this time.
WSM21074	Flame Fougasse, South of Powick Bridge, Powick	SO 8358 5237	Monument	World War II	Defence of Britain site report form documenting the location of a flame fougasse (flame thrower) at the south side of the bridge and would have been associated with a road block on the bridge.
WSM55875	Meander Movement North of Ham Hill			Undated	Meander Movement. This record has been auto created and is being cleaned as part of the Wetlands project.
WSM56003	Other, River Teme			Undated	Empty record

Appendix 2 Heritage assets registered with the Worcester City Historic Environment Record (those within the application site are indicated in bold, those which are duplicated by being on both HERs are indicated in italics)

HER number (and legal status)	Site name	Grid reference	Record type	Date	Description
<i>WCM91053</i> Listed Building (I) – 1390030 Scheduled Monument - 1005268	Powick Old Bridge	SO 83523 52490	Monument	Medieval- Post- Medieval	Grade I Listed Bridge - C16 with later restorations.
<i>WCM91055</i>	Powick Mills	SO 83524 52547	Monument	19 th Century	Former hydro-electricity works.
<i>WCM91056</i>	Powick weir	SO 83179 52412	Monument	Post Medieval	...comprising spillways and an upstream face of ashlar stone, backed by an embankment constructed with wooden stakes and timber lacing. It is clear that on several occasions in the past it has been necessary to carry out major repairs, the most recent of which consisted of encasing most of the structure in concrete. (Cook, 1996). Weir demolished in 2000, replaced by concrete weir.
<i>WCM91057</i>	Powick leat	SO 83335 52584	Monument	Medieval- post medieval	Mentioned in a document of 1475
<i>WCM91058</i>	Powick mill complex	SO 83504 52539	Monument		
WCM92315	Pillbox, Powick Old Bridge, Malvern Road	SO 8352 5247	Monument	World War II	This pillbox was unusual in that it had no roof and slots in four walls (two to each face), rather than loopholes. The structure was ... square and spanned full width of bridge and utilised the bridge parapets for the side walls. Access was from north side with a protective blast wall. Height was approx 6ft.
WCM91181	Watermill, Powick	SO 8350 5254	Monument	Medieval	Documentary evidence (VCH): medieval watermill belonging to Gt Malvern Priory in 1086, one of two on Laughern Brook.
WCM91182	Corn mill, Powick	SO 8350 5254	Monument	Post- medieval	Documentary evidence
WCM92219	Planned	SO 832	Monument	World War	Documentary evidence of a proposed

	flooding / dam, Laughern Brook, St John's	524		II	tank trap to be achieved by damming.
WCM92460	Obstructed bridge, Nr Powick Bridge	SO 83277 52528	Monument	World War II	This small bridge was obstructed during WW2 to prevent infiltration from the west of the bridge defences around the main road crossing of the R Teme.
WCM98460	Powick Bridge, Riverside Revetment	SO 83513 52500	Monument	Post Medieval	Photograph in monument file WCM 91053 shows surviving revetment to riverside, made up of iron hearth bottoms from the nearby 18th century Powick Iron Works. Hearth bottoms were also used at the nearby Powick Weir on the Teme. A similar revetment is evident on a Burney watercolour of the area, adjacent to the house which stood just to the W of the ironworks.
WCM98461	Powick Ironworks (group no)	SO 8349 5251	Monument	Post Medieval	Group number covering forge, rolling and slitting mill, and other associated features. Forms part of overall Powick Mills complex WCM 91058.
WCM98930 Listed Building (II) - 1390032	Teme Court	SO 83571 52653	Monument	19 th Century	Villa, now nursing home. c1820 with later additions and alterations.

Appendix 3 Summary of relevant events held by the Worcester City Historic Environment Record, and the Worcester City Historic Environment Record

HER number	Site name	Grid reference	Record type	Date	Description
Event WCM100690	Coin of Vespasian Powick Bridge	SO 8353 5250	Findspot		A Dupondius of Vespasian (AD 71) was found near Powick Bridge, Worcester by A E Manton as a child.
WSM08603	Ironworking debris, Lower Wick, Worcester	SO 8321 5242	Findspot		Deposit of ironworking slag (pre-blast furnace period tap slag), extending c 30m N-S and over 1m deep at deepest. Apparently sealed by c 0.70m of alluvial layers and cut into earlier alluvial layers at S end. Tapers out to N, limits not clearly visible. Some building materials (stone, brick) present but these may be reworked from other deposits - the surface seems to have been reworked and there is redepositional slag in the layers above. The deposit is probably out by the mill race (HWCM 08605) and is only present on its eastern side, not appearing in the west.
WSM23930	Salvage Recording in 1996, Powick Booster and Main Supply Deficiency Scheme	SO 8438 5161		Post medieval brick and pottery	Salvage Recording, 1996. The area was scanned with a metal detector, and deposits observed after topsoil stripping. An area of low, indistinct earthworks was recorded. Topsoil stripping showed these were associated with bricks and pottery of 18th to 19th century date, probably on the site of a small 'outfarm'. Elsewhere, adjacent to Teme Cottage, a substantial cut was noted, extending to 2m or more below surrounding ground level. This was identified as the claypit site for a brick kiln that is shown on the Powick Tithe map of 1847.
WSM29659	1993 Evaluation	SO 8270 5335			Desk Based and Field Evaluation, including some trial trenching. Field walking found some prehistoric, Roman & medieval finds, but no high significance sites. Sample excavation revealed 2 post medieval boundary ditches in Rushwick, Worcester, and the earlier settlement on old Claphill lane which was removed in the nineteenth century. Prehistoric finds included late neolithic to Bronze Age scrapers.
WSM29687	Salvage Recording in 1996; Route of the Worcester	SO 8269 5335			Watching brief (P1208) produced evidence of the development of the former lane leading to Powick Bridge, along which two significant actions

	Western Bypass				were fought during the Civil War. No direct evidence for the battles was recovered despite an intensive metal detector survey of those parts of the road-scheme which formed part of the battlefield. The depth of alluvium over the battlefield may have contributed to the absence of positive results.
WSM35033	Unstratified Find of Iron Slag and Oyster Shells Near Powick Bridge.	SO 8358 5247			Unstratified Find of Iron Slag and Oyster Shells Near Powick Bridge. Found whilst digging for a spigot mortar during the Defence of Britain Project.
WSM42106	Watching Brief in 2010, Powick Bridge, Powick	SO 8351 5245			<p>Nine trenches were excavated. The topsoil was observed to between 0.64m and 0.72m in depth, overlying subsoil to an indeterminate depth. At no point was the underlying natural matrix exposed. It was unclear if a red brick recorded at 0.70m depth adjacent to the south abutment of Powick Old Bridge was part of a structure or was construction debris.</p> <p>The soil deposits were interpreted as of naturally occurring origin. No deposits of archaeological significance were observed. Nevertheless the possibility remains that archaeological deposits, survive in areas of the site not disturbed by the present development, or at a greater depth than the present trenches.</p>