

DESK-BASED ASSESSMENT
AT
TIPTON BROOK, TIPTON, WEST
MIDLANDS



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Desk-based assessment at Tipton Brook, Tipton, West Midlands

Richard Bradley and Simon Woodiwiss

Summary

A desk-based assessment for the historic environment was undertaken on behalf of The Environment Agency along part of the route of the Tipton Brook, Sandwell (NGR ref SO 96676 92917). The Environment Agency intend to improve the brook by altering its course and undertaking landscaping works.

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.

Whereas there is some possibility of there being Bronze Age remains or deposits that contain environmental indicators (that help reconstruct past vegetation), these are not known for certain.

Of greater interest is the site of the Horseley Iron Works which was founded in 1792 and is recognised as the factory which produced the world's first iron steam boat, the 'Aaron Manby', in 1822. It also produced a myriad of other iron and steel products such as locomotives, piers, munitions, gasworks, pipes and in particular, bridges. The works was one of the most prolific manufacturers of canal bridges in the West Midlands. The works are shown in detail on maps dating to 1837 and 1849. The works moved to a new site in 1866.

Report

1 Background

1.1 Reasons for the project

A desk-based assessment was undertaken on land at Tipton Brook, Tipton, West Midlands (National Grid Reference SO 96676 92917). It was undertaken on behalf of the Environment Agency, who propose realignment of a section of the brook. This is considered to have the potential to affect heritage assets with archaeological interest, the significance of which will be explored in this assessment.

The project conforms to a project proposal (including detailed specification) that was produced by Worcestershire Archaeology (WA 2013).

The project also conforms to the *Standard and guidance for historic environment desk-based assessment* (IfA 2012).

1.2 Planning background

It is not known if the Environment Agency requires planning permission for these works but the process is assumed to apply here as it provides a framework on which to base informed decisions.

Present government planning policy is contained within the *National Planning Policy Framework* (DCLG 2012). This is supplemented by detailed guidance which had related to earlier government policy but which is at least partially still relevant to the present policy (DCLG/DCMS/EH 2010).

Local authorities also adopt more region specific guidance within the framework provided by the government planning information. In this instance, the Black Country planning authorities, incorporating Dudley, Sandwell, Walsall and Wolverhampton, have produced a jointly authored Black Country Core Strategy document, adopted in February 2011 (Black Country 2011). In relation to the historic environment, this emphasises that development proposals should aim to sustain, reinforce and conserve the historic aspects of the following locally distinctive elements of the Black Country:

- The network of now coalesced but nevertheless distinct small industrial settlements of the former South Staffordshire Coalfield, such as Darlaston and Netherton;
- The civic, religious and commercial cores of the principal settlements of medieval origin such as Wolverhampton, Dudley, Wednesbury and Walsall;
- Surviving pre-industrial settlement centres of medieval origin such as Tettenhall, Aldridge, Oldbury and Kingswinford;
- Areas of Victorian and Edwardian higher density development which survive with a high degree of integrity including terraced housing and its associated amenities;
- Areas of extensive lower density suburban development of the mid 20th century including public housing and private developments of semi-detached and detached housing;
- Public open spaces, including Victorian and Edwardian municipal parks, often created upon and retaining elements of relict industrial landscape features;
- The canal network and its associated infrastructure, surviving canal-side pre-1939 buildings and structures together with archaeological evidence of the development of canal-side industries and former canal routes
- Buildings, structures and archaeological remains of the traditional manufacturing and extractive industries of the Black Country including glass making, metal trades (such as lock making), manufacture of leather goods, brick making, coal mining and limestone quarrying;

- In addition to statutorily designated and protected historic assets particular attention should be paid to the preservation and enhancement of:
 - locally listed historic buildings and archaeological sites;
 - historic parks and gardens including their settings;
 - locally designated special landscape areas and other heritage based site allocations.

2 Aims

The general aims and scope of this desk-based assessment are to:

- Collect relevant information relating to the historic environment potential of the proposed development area:
- Assess the potential significance of any heritage assets;
- Assess the potential impact of the proposed development on these heritage assets.

A specific exclusion from this desk-based assessment was that:

- The project will only assess heritage assets which are of archaeological interest and will not include consideration of Listed Buildings and Conservation Areas.

3 Methods

3.1 Personnel

The assessment was undertaken by Richard Bradley (BA (hons.); MA; AlfA), who joined Worcestershire Archaeology in 2008 and has been practicing archaeology since 2005, and Simon Woodiwiss (BA (hons), MIFA), who joined Worcestershire Archaeology in 1982 and has been practicing archaeology since 1980. The project manager responsible for the quality of the project was Tom Vaughan (BA (hons.); MA; AlfA). Illustrations were prepared by Carolyn Hunt.

3.2 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 the Sandwell Sites and Monument Record (SMR). Historic maps, archives and published sources were consulted at Dudley Archives and Local History Service on 31 January 2013. Other sources were obtained from the Environment Agency (eg plans of the proposed works).

The results are mapped on Figure 10 and the details of individual features of the historic environment are given in Appendix 1. Event records have been omitted where this would repeat information in other record types, and would not materially affect the assessment. SMR references have been used throughout this assessment.

3.3 List of sources consulted

Cartographic sources

- 1798 W. Yates 'The county of Stafford'
- 1837 John Woods' 'Plan of the parish of Tipton'
- 1849 William Fowler's 'Plan of the parish of Tipton in the county of Stafford'
- 1883 Dudley Poor Law Union mapping of Tipton
- 1890 Ordnance Survey 1st edition 1:2,500 (25")
- 1904 Ordnance Survey 1:2,500 (25")

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- 1919 Ordnance Survey 1:2,500 (25")
 - 1931-35 Land utilisation survey of Great Britain
 - 1938 Ordnance Survey 1:2,500 (25")
 - 1955 National Grid 1:10560 (6")
 - 1967 National Grid 1:2500 (25")
 - 1987 National Grid 1:10000
 - 1992 National Grid 1:10000
 - Google Maps: accessed 30 January 2013

Not all maps are reproduced in this report, but those that are not reproduced will not contain significant additional detail.

Aerial photographs

- Aerial photographs dated 1945, 1963, 1999, 2001, 2004, 2006, 2007, 2009 and 2011, available online at <http://qismo.dudley.gov.uk/public/historic/locateform.asp>

Documentary sources

- Birmingham Archaeology 2006 *Former Corus Steelworks, Bloomfield Road, Tipton: An archaeological impact assessment (Phase 1)*, Birmingham Archaeology project **1461**
- BGS (British Geological Survey) 2012 *Geological Survey of Great Britain (England and Wales) Solid and drift sheet, 167, 1:50,000*
- Black Country Archaeology Service 2009 *The Black Country: An historic landscape characterisation*, English Heritage Project **3638**
- Black Country Bugle 2004 *'Bridging the generation gap to the heyday of Tipton's Horseley Ironworks'*, news article
- Black Country 2011 *Black Country Core Strategy*, Black Country
- 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
- Duignan, W H, 1902 *Staffordshire place names*, London
- Ehrenberg, M R, 1991 'Some aspect of the distribution of burnt mounds', in Hodder, M A, and Barfield, L H (eds.) *Burnt mounds and hot stone technology, Papers from the second international burnt mound conference Sandwell, 12th – 14th October 1990*, Sandwell Borough Council
- English Heritage 2011 *The setting of heritage assets*, English Heritage
- Hawkins, A, and Rumble, A, 1976 *Domesday Book - Staffordshire*, Chichester
- Hodder, M A, 2002 'Burnt mounds and beyond: the later prehistory of Birmingham and the Black Country', *West midlands regional research framework for archaeology, seminar 2*

- IfA 2012 *Standard and guidance for historic environment desk-based assessment*, Institute for Archaeologists, updated 16 November 2012
- Mills, A.D, 1998 *A Dictionary of English place-names*, Oxford
- Parsons, H, 1986 *The Black Country*, London
- Ragg, J M, Beard, G R, George, H, Heaven, F W, Hollis, J M, Jones, R J A, Palmer, R C, Reeve, M J, Robson, J D, and Whitfield, W A D, 1984 *Soils and their use in midland and western England*, Soil Survey of England and Wales, **12**
- Robson-Glyde, S, 2006 *Historic building recording of Tipton Police Station, Sandwell, West Midlands*, Worcestershire Archaeology, Worcestershire County Council, report **1402**
- WA 2013 *Proposal for an archaeological desk-based assessment at Tipton Brook, Tipton, West Midlands*, Worcestershire Archaeology, Worcestershire County Council, unpublished document dated 21 January 2013, P4061
- White, W, 1851 *History, gazetteer and directory of Staffordshire*, Sheffield

3.4 Other methods

A site visit was undertaken on 31 January 2013 to assess the current land-use and to consider the visibility and setting of the site.

3.5 Impact assessment criteria

Table 1: Impact assessment criteria for heritage assets referred to in the text

<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>

4 The application site

4.1 Location and current land-use

The study area focused upon a defined portion of land around the Tipton Brook covering 19.76ha (Fig 1), although heritage assets were considered within 500m of the site in order to provide a broader understanding of the local context. Within the area are the playing fields of two schools, part of the Tipton cemetery and a later 20th century housing estate. It is bordered by Powis Avenue to the north, housing to the east and west, and part of the cemetery and Alexandra High School to the south. The brook itself runs through public open space.

4.2 Topography, geology and soils

The site generally lies around 130m AOD. Within the site there are marked changes in topography. At the western end the brook is straight and has marked banks either side (Plate 2). The southern bank then continues towards the cemetery, whereas on the north it continues between the brook and the school. These earthworks are very regular and are probably evidence of more recent landscaping (historic maps showing areas of bulk waste from industrial activities, Figs 5-7).

The underlying geology on the site is mapped as sandstone and mudstone of the Etruria Formation, with accessible coal seams in the nearby vicinity (BGS 2012). The overlying soil is unmapped due to this site being in an urban, industrial area, but has been described historically as clayey (Ragg *et al* 1984; Birmingham Archaeology 2006).

4.3 Historic land-use and archaeological character

The study area is part of the urban spread of Tipton, the centre of which is located approximately 1km west of the site. There is little information on the early history of Tipton, but place-name works suggest the name is derived from the Anglo-Saxon personal name *Tibbe* or *Tibba* (Duignan 1902, 153; Mills 1998, 349). It is referenced in the Domesday survey as *Tibintone*, being held by William with land for five ploughs, and the area is known to have once been part of the Royal Forest of Cannock (Hawkins and Rumble 1976; Robson-Glyde 2006, 4). St John's church, dated to the 13th or 14th century but rebuilt in the 17th and 19th centuries, formed the church of the old parish and is located around 1km north-west of the brook (Parsons 1986, 165).

In the medieval and post-medieval periods Tipton was a small rural village until the later 18th century, when the discovery of ironstone and coal in the area and the construction of the Birmingham-Wolverhampton Canal began the industrialisation of the local region (White 1851; Robson-Glyde 2006, 4). The exploitation of the natural resources shaped the character and identity of Tipton and led to massive population growth; between 1801 and 1901 the population had increased eight-fold (Birmingham Archaeology 2006, 3). Iron and subsequently steel working became the basis for the economy in Tipton until the fall in manufacturing output in the later 20th century. Whilst most of the surrounding area remains heavily urbanised, it is occupied by many former industrial sites and the landscape is marked by extensive disused coal and ironstone mines.

Unsurprisingly, historic mapping shows that the area of the site has been heavily affected by numerous episodes of varied industrial activity centred on the iron working and mining industries throughout the 19th and 20th centuries. In the earlier part of the 19th century, this was characterised by extensive areas of canal routes, basins and waterways around the area of the Horseley Iron Works (Figs 3 and 4; AHA1; Appendix 2), which formerly existed in the central part of the study area just to the north of the current location of the brook. This conforms to the known historic character of Tipton, which is recognised to have had a higher mileage of canals at a greater density than any other Black Country area (Black Country Archaeology Service 2009). Whilst the pools and basins in this area underwent many alterations in form, the Birmingham Canal route (with Toll End extension) and the Horseley Branch Canal maintained broadly consistent courses.

The Horseley Iron Works was founded in 1792 and is recognised as the construction site of the world's first iron steam boat, the 'Aaron Manby', in 1822, and a myriad of other iron and steel products such as locomotives, piers, munitions, gasworks, pipes and, in particular, bridges (Black Country Bugle 2004; Parsons 1986, 166). The works was one of the most prolific manufacturers of canal bridges in the West Midlands. This was a result of their signature bridge design which had become popular amongst canal constructors. The design has been replicated more recently, for example in Birmingham during the regeneration of the Gas Street Basin (http://en.wikipedia.org/wiki/Horseley_Ironworks, accessed 10 February 2013). The 1837 and 1849 parish maps (Figs 3 and 4) show that the premises covered a considerable area and were comprised of an extensive range of buildings, some of which occupied land directly adjacent to the canal where the Tipton Brook now runs. Another part of the structure in the south-west range appears to have a small channel routed towards it from a large pool, perhaps acting as a leat or a similar feature to power machinery in the buildings.

The works lie close to the Toll End Communication Canal (AHA 2; Appendix 2) which runs through the development site. This canal was opened in 1809 and this section closed in 1966, being infilled in 1976 (http://en.wikipedia.org/wiki/Toll_End_Communication_Canal, accessed 10 February 2013).

The works changed location and moved away from the site in 1865 down to a position south of the cemetery on the Dixon's Branch Canal and close to the South Staffordshire Railway line. Between this date and the 1880s, a different industrial site was built up in the north-west of the study area, mapped as "Horseley Furnaces". This new site is marked as disused by 1890 (Fig 5) and later became the position of the Locarno Steel Works, in operation from the 1930s until the 1990s when a housing estate took its place (Figs 7-9). The Tipton Brook itself is not clearly shown as a small watercourse in the study area until the 1883 Dudley Poor Law Union mapping (see also Fig 5, the 1890 OS map also show the brook), although with the iron works covering much of the area it was probably culverted underground. A small stretch certainly appears to be visible downstream to the east of the area in 1849 and it was likely to have formerly been part of the large pool and waterway that ran from the west towards the iron works (Fig 4).

The 1st edition Ordnance Survey map (1890 Fig 5) shows that, excepting the main Birmingham Canal, many of the pools and waterways marked on earlier 19th century maps, including the Horseley Branch Canal, have dried up, have become disused or are much reduced in size. The study area mainly consisted of areas of marshland and rough pasture by 1890 (Fig 5). As with the Dudley Union maps, Tipton Brook is also clearly visible as a small managed waterway and Tipton Cemetery, opened in 1873 and still in use today, is shown to occupy the south-east part of the study area (Fig 5). A farm, combined with old colliery shafts, is marked (Fig 5) on the edge of the area in the south-west as Horseley Farm (also referred to as Workhouse Lane Farm) and the north-east of the area seems to have been part of the Cotterill Farm colliery land.

In the early 20th century the course of the brook had been altered slightly and the cemetery had doubled in size, expanding to the north-west (Fig 6). By 1919, Horseley Farm appears to have reopened its colliery working for a short period of time, until the construction of Alexandra High School (previously Tipton County Grammar School) and its associated playing fields on this site in the 1930s (see Fig 7). Tipton cemetery increased in size once again in the 1930s, but did not reach its current extent until the 20th century. Substantial areas of housing also began to encroach upon the site to the north-east from the 1930s, by which time Powis Avenue which borders the study area to the north had been built, and land use surveys from this period characterise the remainder as being dominated by heathland and rough pasture. In the north-east of the area a refuse tip was in existence during the 1960s, but is no longer present after the construction of a primary school on this site in the 1980s (Fig 1). The brook was also altered into its current route during the 1980s, by which time the canal that ran alongside it had been infilled.

Archaeologically, there has been no previous work upon the site and little work has been conducted in the surrounding area. To the north-west a watching brief took place on Edward Road in the late 1980s which uncovered an ashy layer with at least one feature of unknown date (SMR 5724). Five hundred metres to the south, building recording was undertaken at the old Tipton Police Station before its demolition and replacement (SMR MSD5553; Robson-Glyde 2006) and building assessment also took place during upgrading of the late Victorian Great Bridge School, located around 600m south-east of the study area (SMR MSD5426).

Whilst occurring a considerable distance from the study area, around 1.5km to the west, but still in Tipton, archaeological impact assessment and evaluation was undertaken on the site of the former Corus Steelworks (Birmingham Archaeology 2006). This is of interest in relation to this assessment and any further works in this area as a comparable historically significant iron working site that was in operation at the same time as Horseley Iron Works.

5 Heritage assets

5.1 Designated heritage assets

There are no designated heritage assets in the study area itself, but 600m to the south is the Grade II listed Church of St Martin, built in 1795-7 (SMR 585). This is not visible from the site and will not be considered further.

5.2 Undesignated heritage assets

Within the study area, the only recorded heritage asset is Tipton Cemetery, opened in 1873 and still in use today, though much larger in size (SMR 9634). Many of the heritage assets in the 500m search area are now covered by modern urban expansion and just to the west of the area is the redeveloped site of a former pump house with associated buildings (SMR 5493). This was possibly related to Horseley Colliery (SMR 9635), mapped south of Alexandra Road (formerly Workhouse Lane) in the late 19th century and now also redeveloped. North of Alexandra road was the site of Horseley Farm (SMR 9633), now under the Alexandra High School, and to the south-west of this was Tipton Police Station (SMR 5553). To the north-east of the study area was the site of Cotterill Farm (SMR 9636), to the east was Highmeadow Colliery (SMR 9637) and to the north-west was the site of Hope Works and Hope Colliery (SMR 9630). These were all built over during the 20th century.

5.3 Potential heritage assets

As with much of the vicinity, there is limited evidence of archaeological activity in this study area prior to the industrial period, and heritage assets within the 500m SMR search area are dominated by 19th and 20th century features.

There is no indication of prehistoric activity nearby, but the antiquity of Tipton Brook is unknown and although it has been extensively altered in more recent years, if there has been a watercourse in this locality for a significant period of time it is likely to have attracted earlier activity. The West Midlands region is particularly known for the presence of burnt mounds, these being the most numerous type of prehistoric site identified in Birmingham and the Black Country (Hodder 2002). These enigmatic features of varying interpretations are characteristically middle Bronze Age in date and are frequently found in river or stream side locations, often where these form the focus of urban parkland (Ehrenberg 1991, 53-54). Although any such remains would have had to survive disturbance of the much later industrial activity, this does happen elsewhere in the Black Country and Birmingham areas.

Deposits which contain pollen dating from pre-industrialisation to the present would make an important contribution to understanding of the changing vegetation history and landscape character of the area.

There is also no evidence for Roman remains close to the brook and therefore there is a low potential that any will be encountered during the programme of works.

Tipton in the medieval and early post-medieval period was a small settlement and the area of the brook was likely to have been mainly agricultural fields until the beginning of the 18th century (Parsons 1986, 165). It is highly unlikely that remains of medieval rural activity will have survived the industrial development in the study area and therefore the potential for any heritage assets of this period is considered to be low.

The industrial and modern activity across and surrounding the study area would suggest that there is a high potential for remains of this date to be encountered during the brook re-alignment works. This would be expected to consist of former channels and ponds, though the Toll End Communication Canal (later the Birmingham Canal) is unaffected. The remains of Horseley Iron Works are also likely to exist, and will be affected by the proposed works, though their state of preservation is unknown. Some of the buildings will be directly in the line of the proposed Tipton brook realignment (see Fig 4). As the works changed location and moved away from the site in 1865, their significance could be increased as later use of the site will have affected preservation of the earlier works, the move takes place 43 years after the construction of the 'Aaron Manby'.

6 Assessment of the significance of heritage assets

6.1 Undesignated assets

6.1.1 Sites of archaeological interest

Nature of the archaeological interest in the site

It is possible that deposits of prehistoric date exist within the site, and these are most likely to relate to Bronze Age burnt mounds. If a burnt mound exists deposits containing environmental indicators are also likely to exist and be well preserved in this wet location (most probably in the form of alluvial silts). Though burnt mounds often contain a certain range of features (fire cracked stone, charcoal, and characteristic pits likely to have been tanks for containing water) they also often contain good dating evidence (radiocarbon dating from the charcoal).

It is very likely that remains of the Horseley Iron Works survive. This works played an important part in the development of industry, being the factory that produced the world's first iron steam boat, the 'Aaron Manby', in 1822, as well as many of bridges of the West Midlands' canals.

The proposed development will not physically affect the Toll End Communication Canal, and this asset will not be discussed further, except with regard to its setting.

Whereas theoretically it is possible that archaeological remains of other periods exist within the site this is considered to be beyond reasonable expectation.

Relative importance of the archaeological interest in the site

Any contemporary deposits relating to burnt mounds will increase the importance of the archaeological site. Unless they contain exceptional characteristics, burnt mounds are not usually recognised as being of national importance, but will contain information that will add materially to knowledge of the Bronze Age in the region.

Deposits containing environmental indicators (especially pollen) and especially spanning the period before and during the industrialisation of the area, would be of especial significance as this subject is understood to be little researched to date using this approach.

Local planning documents (see Section 1.2 Planning background) draw attention to the canal network and its associated infrastructure, and the archaeological evidence of the development of canal-side industries and former canal routes, as well as remains of the traditional manufacturing and extractive industries of the Black Country, as being important. This would include the Horseley Iron Works and associated canals.

The importance of the Horseley Iron Works rests on its actual state of preservation, which has not to date been established. Of particular importance would be evidence relating to the development of industrial techniques and deposits that contain environmental indicators of vegetation history. As the works was not subject to later development of its industrial use it seems likely that its preservation may well be good. The site of the works, however, is partially occupied by a modern school and its buildings, which may have affected its preservation. It is noted above that generally, other contemporary industrial sites in the vicinity have been redeveloped, and their importance can be considered to be diminished. The combination of this and the association with a unique moment in the history of industry make this site rare as a criterion for establishing significance. It is potentially a candidate for scheduling under the Ancient Monuments and Archaeological Areas Act (1979), and hence potentially of national importance.

Physical extent of the archaeological interest in the site

The existence and survival of prehistoric deposits has not been demonstrated, though these are likely to be deeply buried and unlikely to be very close to the present ground surface. Their vulnerability to disturbance by any proposed development cannot be assessed with any degree of confidence based on existing information. Should significant prehistoric deposits exist it may be

expected that they are more likely to be in a better state of preservation outside of the known industrial activity areas of the site.

The survival of the Horseley Iron Works also has not been demonstrated, though there is every likelihood that they do exist, and may be well preserved as the works moved to a new site and the old site was not developed further after 1865. The 1890 map (Fig 5) shows the area as waste ground (marsh) and it is entirely possible that very little later activity has disturbed the site after an initial period of demolition. The present watercourse appears to have been cut through any remains without record, but the area affected is relatively small. The preferred option of the proposed realignment is likely to affect any remains of the works (see Fig 4), though were the alternative option to be adopted and the existing route of the brook to be retained, (ie the line marked blue on Fig 4), this would appear to avoid the main buildings of the works. This is a little confusing to follow!

7 The impact of the development

7.1 Sub-surface archaeology

Without further archaeological fieldwork (evaluation) it is not possible to assess the actual (as opposed to potential) significance of any archaeological remains, or to assess the impact of this development, except in the broadest of terms. The impact of the proposed development can therefore only be described as **unknown** (see Table 1), based on the information available. If it is assumed that the proposed works will reach similar depths to the existing watercourse, it does seem likely that they will disturb a proportion of the remains of the Horseley Iron Works and reduce its significance. The proposed works are on a new line and though they are relatively narrow, any adverse effects will be in addition to those already undertaken (and without archaeological recording) for the present brook route. Given the potential significance of the site discussed above the impact of the proposed development may result in a potential impact of **moderate** or **major adverse**.

The proposed development may also have a **minor adverse** impact on any burnt mounds or deposits containing environmental indicators (especially pollen).

7.2 Setting of heritage assets

The proposed development will have a **not significant** (see Table 1) affect on setting for any designated heritage assets, and on any potential buried remains of Bronze Age burnt mounds, or deposits containing environmental indicators (especially pollen).

There is however, potential to argue for a **beneficial** effect on the setting of the non-designated heritage assets of the Horseley Iron Works and the Toll End Communication Canal, albeit that these heritage assets are not visible, and their location is not marked on site in any way. This situation may change in the future and a more attractive form for the brook, presently described as an "open drain" in Wikipedia (http://en.wikipedia.org/wiki/Toll_End_Communication_Canal accessed on 10 February 2013), would be a positive change. This does, however have to be balanced against a significant change in nature that gets further from the most significant phase of historic land use. The proposed form of the brook as more meandering may be described as more "natural", but the industrial phase was one of more straight alignments. However, attention may be drawn to the previous existence of a number of pools or ponds during the industrial phase and this does present the potential to reinstate these as an element in the landscape.

The cemetery is shielded from the development area by a wall and a fence. Should the visible links between the cemetery and the site change to become more inter-visible there would be a **beneficial** effect given a more attractive setting than at present.

Implementation of the mitigation proposed below 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**.

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).

7.3 Unknown impacts

The existence of significant remains of Bronze Age burnt mounds and the 19th century Horseley Iron Works has not been determined, however, circumstantial, and to a greater degree, map evidence suggests that their existence may be a reasonable expectation.

- For burnt mounds and environmental deposits. Whereas it is common practice to undertake field evaluation to locate significant sites; this may not be appropriate in this case. Aside from burnt mounds or prehistoric deposits containing environmental indicators there is no evidence to suggest that there is any other settlement site of any period. A cost effective approach may be to undertake a watching brief on any geotechnical investigation and the construction groundworks, together with a period of up to one week to be built into the construction contract to allow for archaeological recording should significant deposits be located.
- For the Horseley Iron Works. Should either of the two alternative schemes be adopted, field evaluation would be appropriate, prior to a decision to implement the scheme (along the lines of the guidance in NPPF, DCLG 2012, 128), and should significant remains be identified that would contribute to the attribution of a national level of importance, the impact may be considered to be at the level of **major adverse**. Should no significant remains be identified the impact may be considered to be **not significant**.

Any site investigation works or watching briefs required would be concluded by production of an archaeological report (and appropriate publication) and archive to be deposited for public consultation with an appropriate 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.

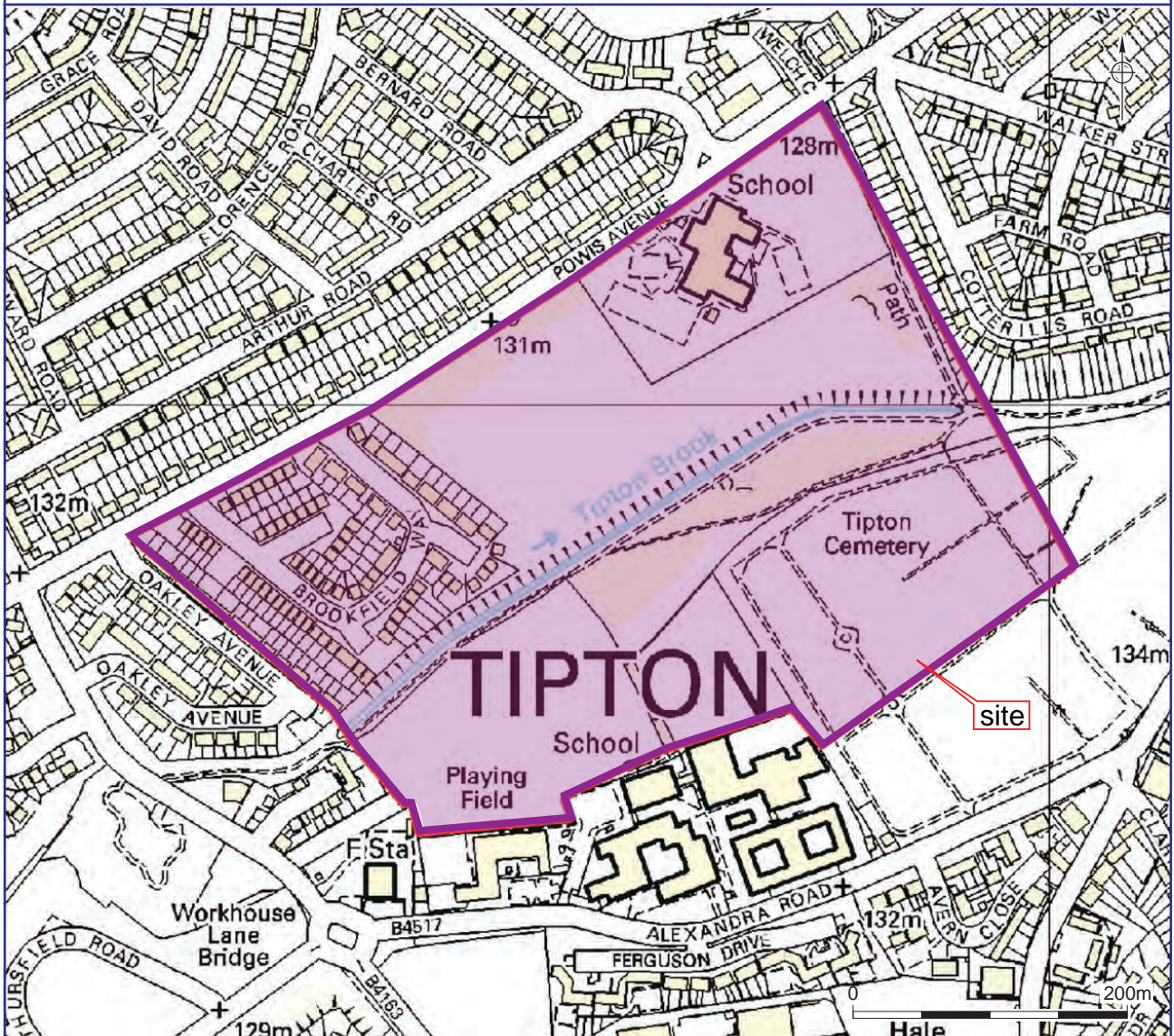
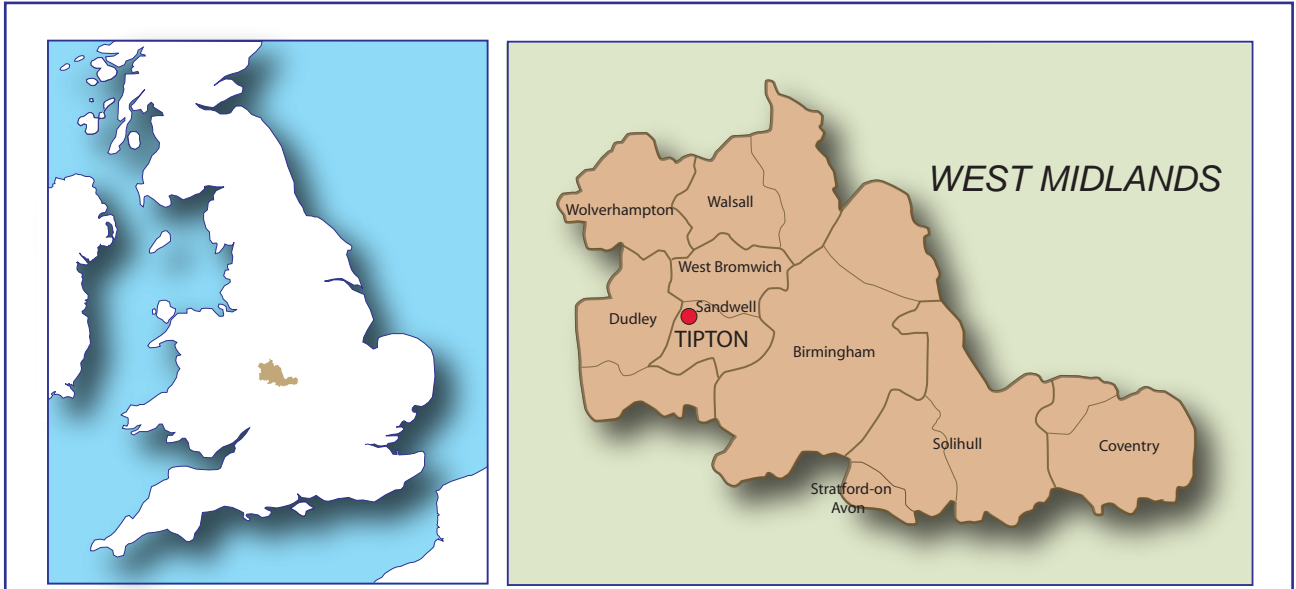
A desk-based assessment for the historic environment was undertaken on behalf of the Environment Agency along part of the route of the Tipton Brook, Sandwell (NGR ref SO 96676 92917). The Environment Agency intend to improve the brook by altering its course and undertaking landscaping works.

Whereas there is some possibility of there being Bronze Age remains or deposits that contain environmental indicators (that help reconstruct past vegetation), these are not known for certain.

Of greater interest is the site of the Horseley Iron Works which was founded in 1792 and is recognised as the factory which produced the world's first iron steam boat, the 'Aaron Manby', in 1822. It also produced a myriad of other iron and steel products such as locomotives, piers, munitions, gasworks, pipes and in particular, bridges. The works was one of the most prolific manufacturers of canal bridges in the West Midlands. The works are shown in detail on maps dating to 1837 and 1849. Although other areas of the site have subsequently been developed and altered, the immediate site of the Horseley Iron Works appears not to have been disturbed after its demolition.

9 Acknowledgements

Worcestershire Archaeology would like to thank the following for their kind assistance in the successful conclusion of this project, Sam Todd, Lorna Durose and Ed Wilson of the Environment Agency and Alison Bishop (Sandwell Metropolitan Borough Council).



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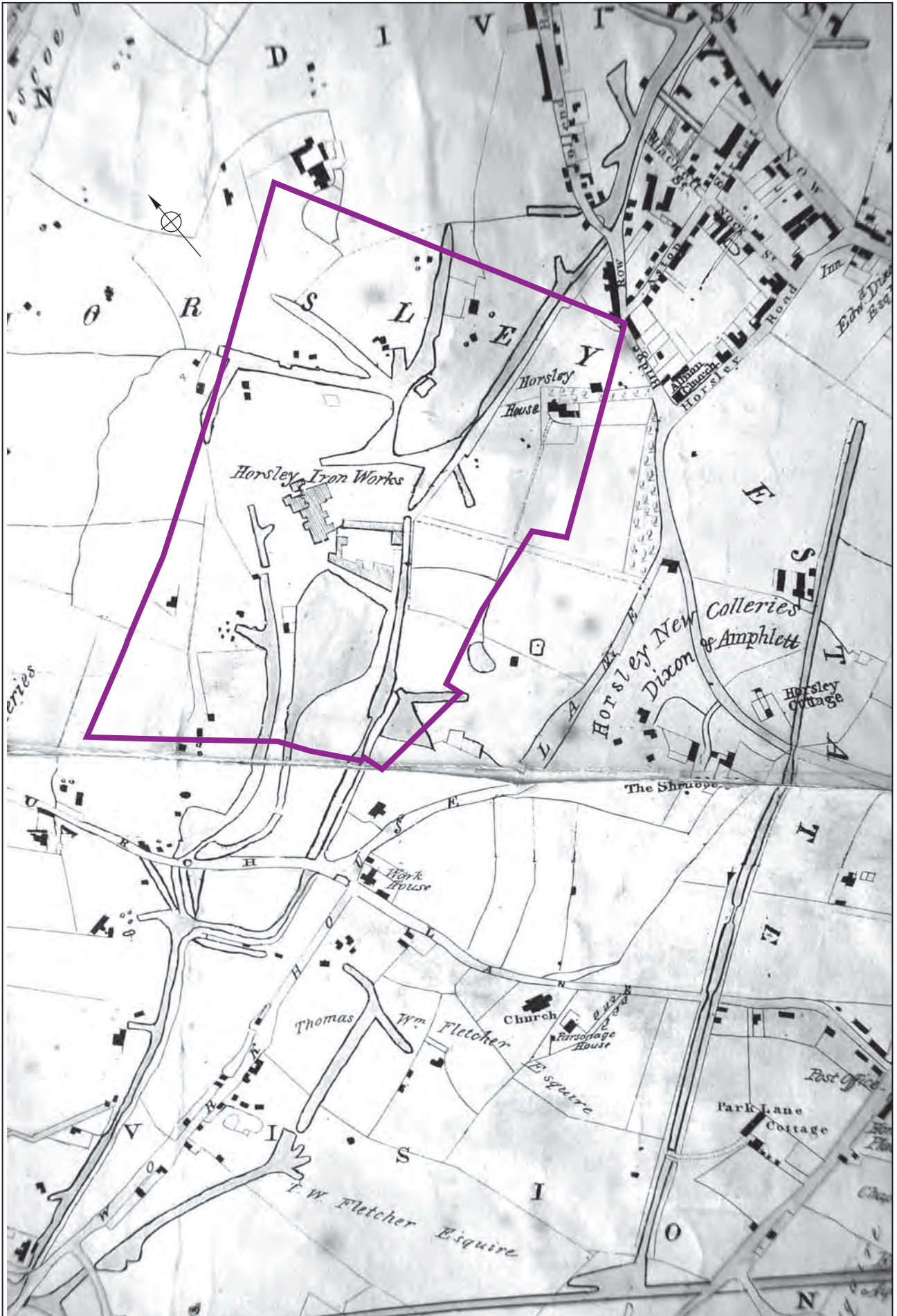
Location of the site

Figure 1



John Yates map, 1798

Figure 2

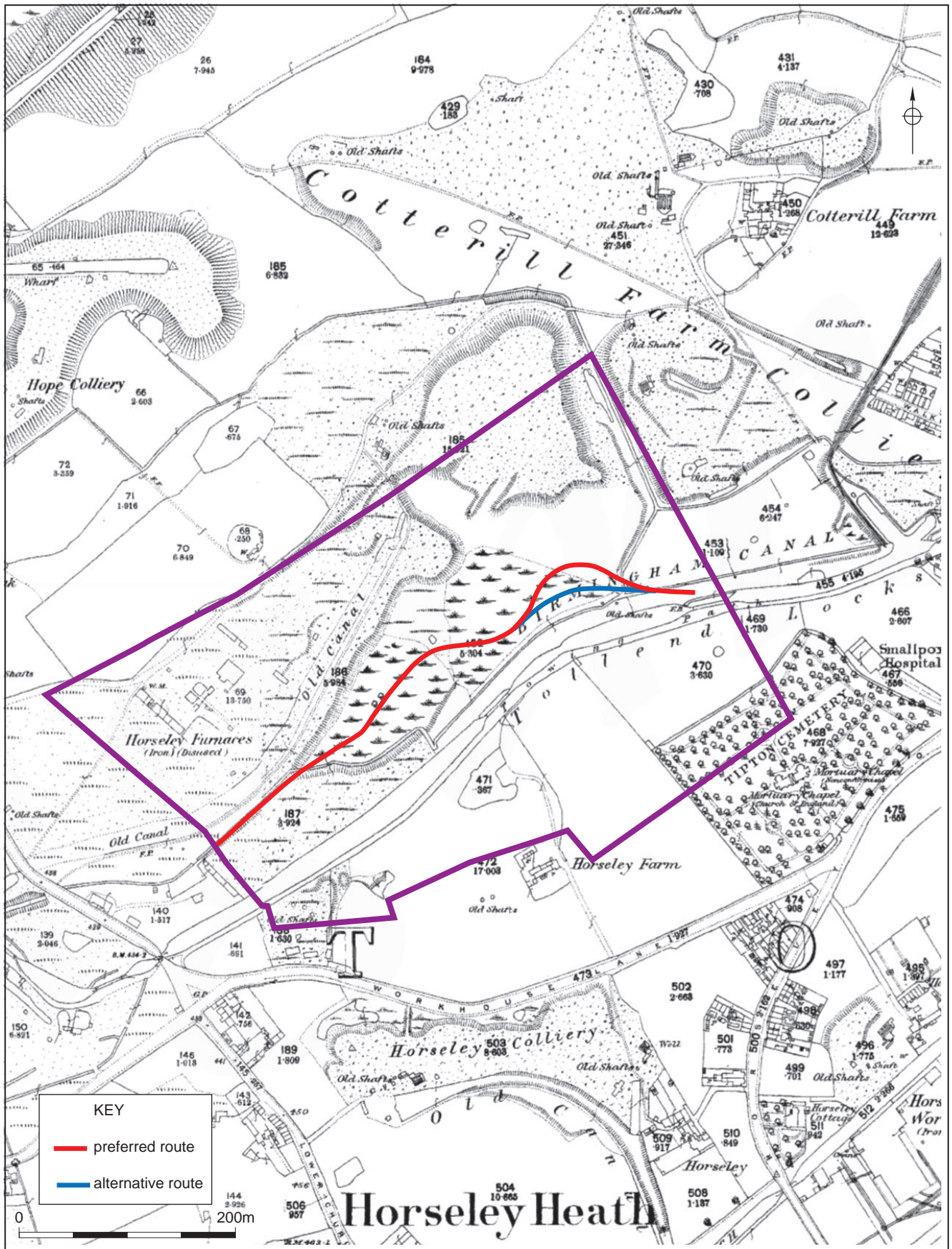


Location of the site overlain on 1837 parish map

Figure 3

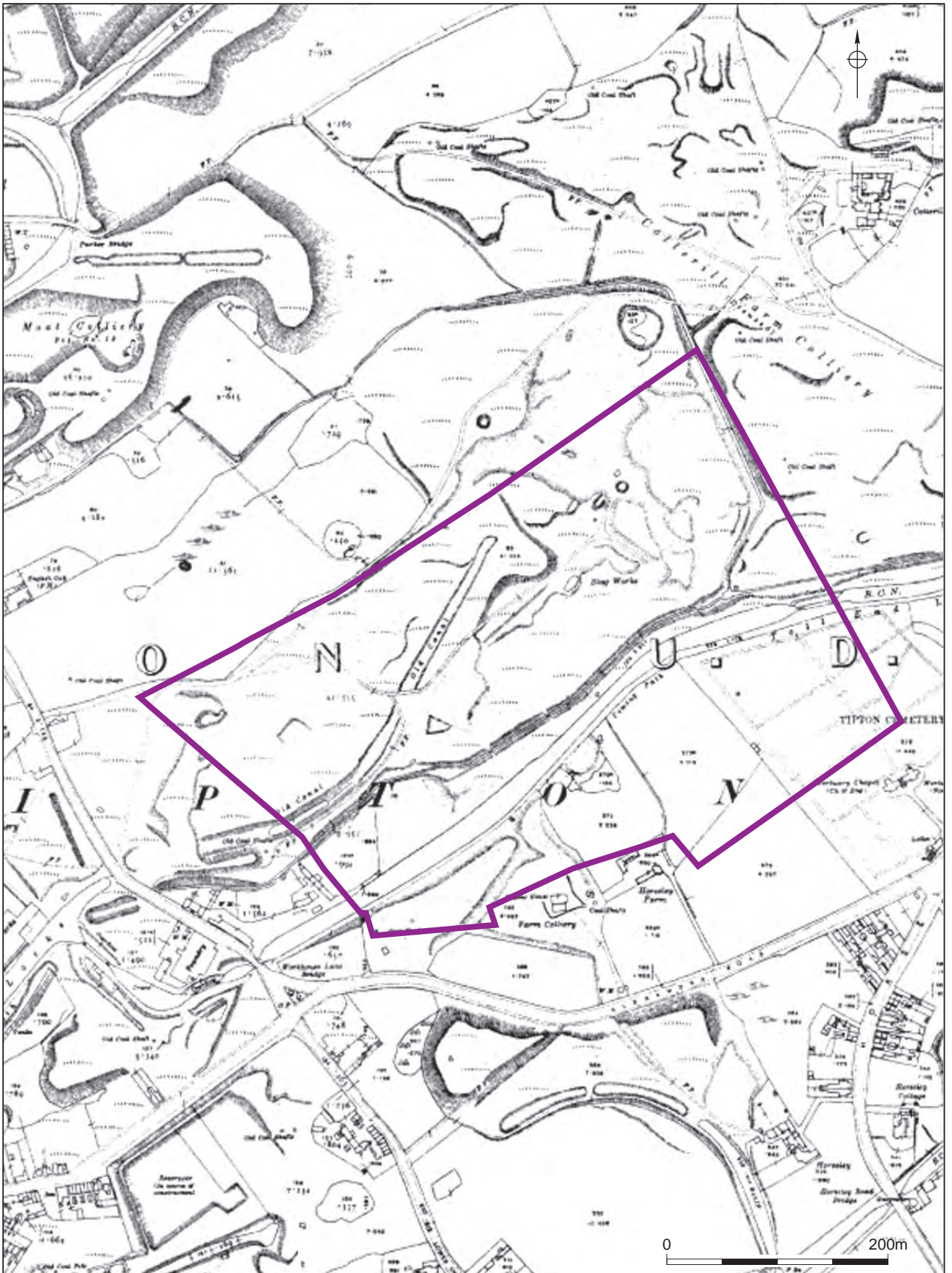


Location of the preferred and alternative routes overlain on 1849 parish map *Figure 4*



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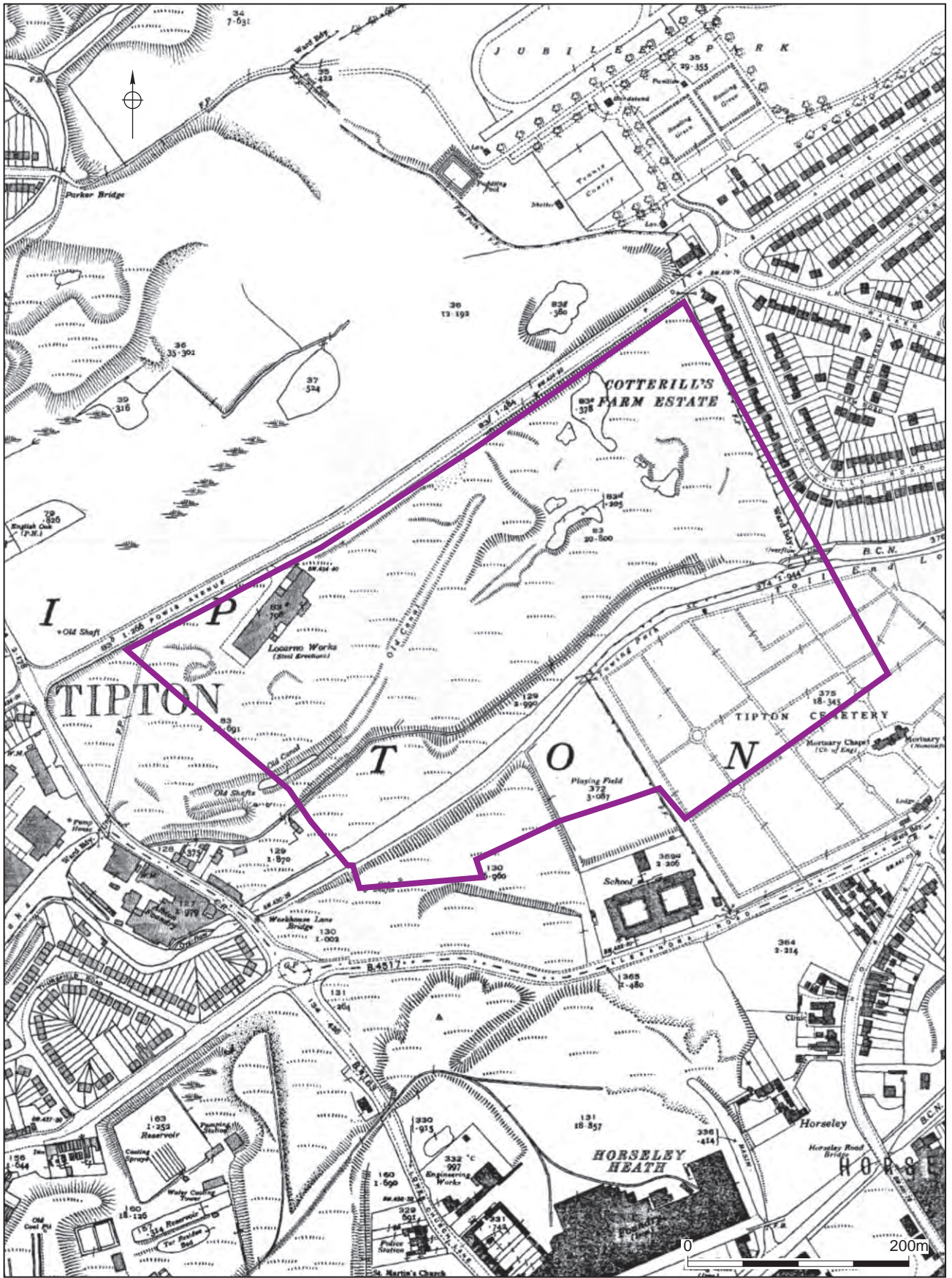
Location of the preferred and alternative routes overlain on 1890 1st edition OS map Figure 5



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Location of the site overlain on 1919 OS map

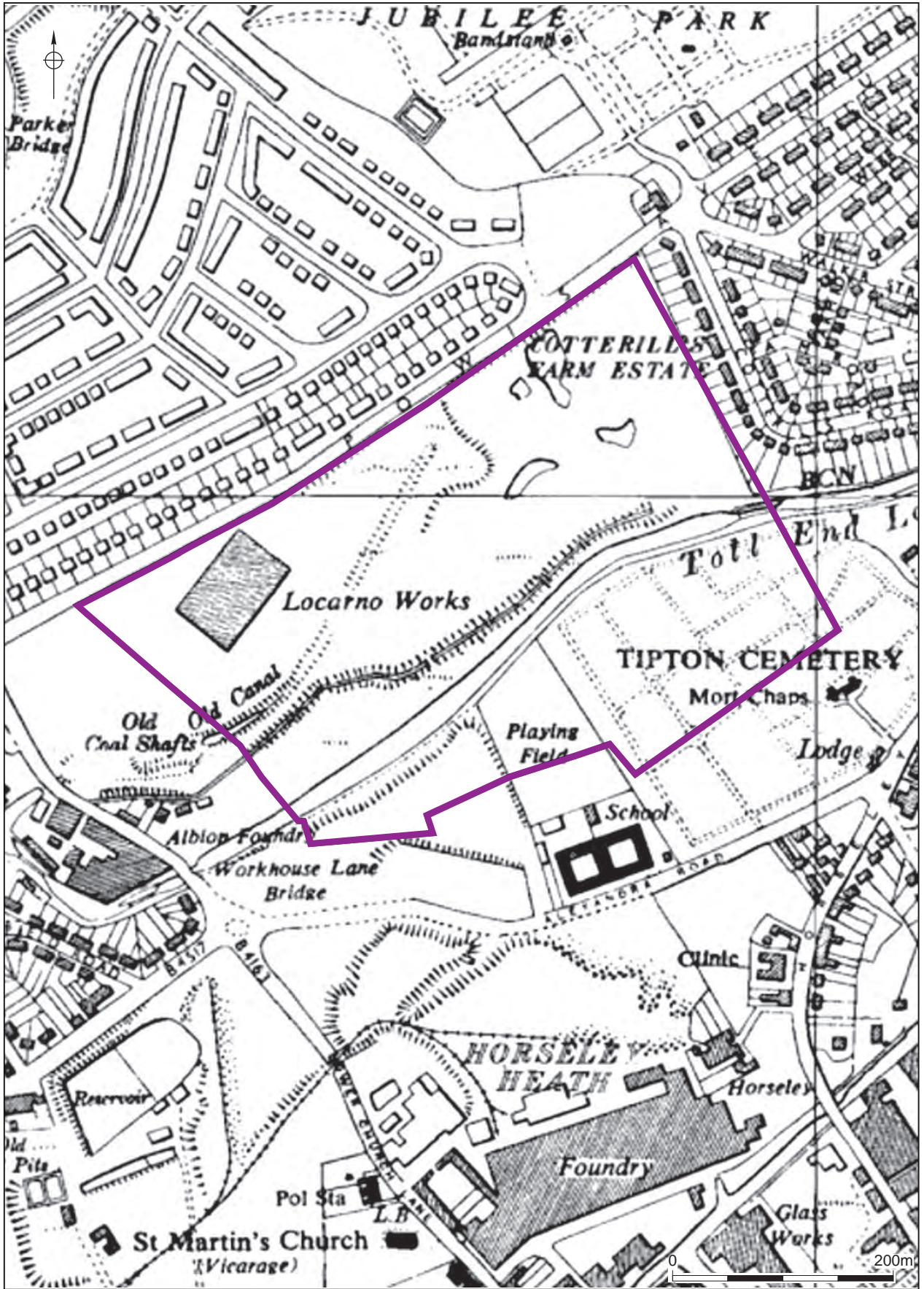
Figure 6



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Location of the site overlain on 1938 OS map

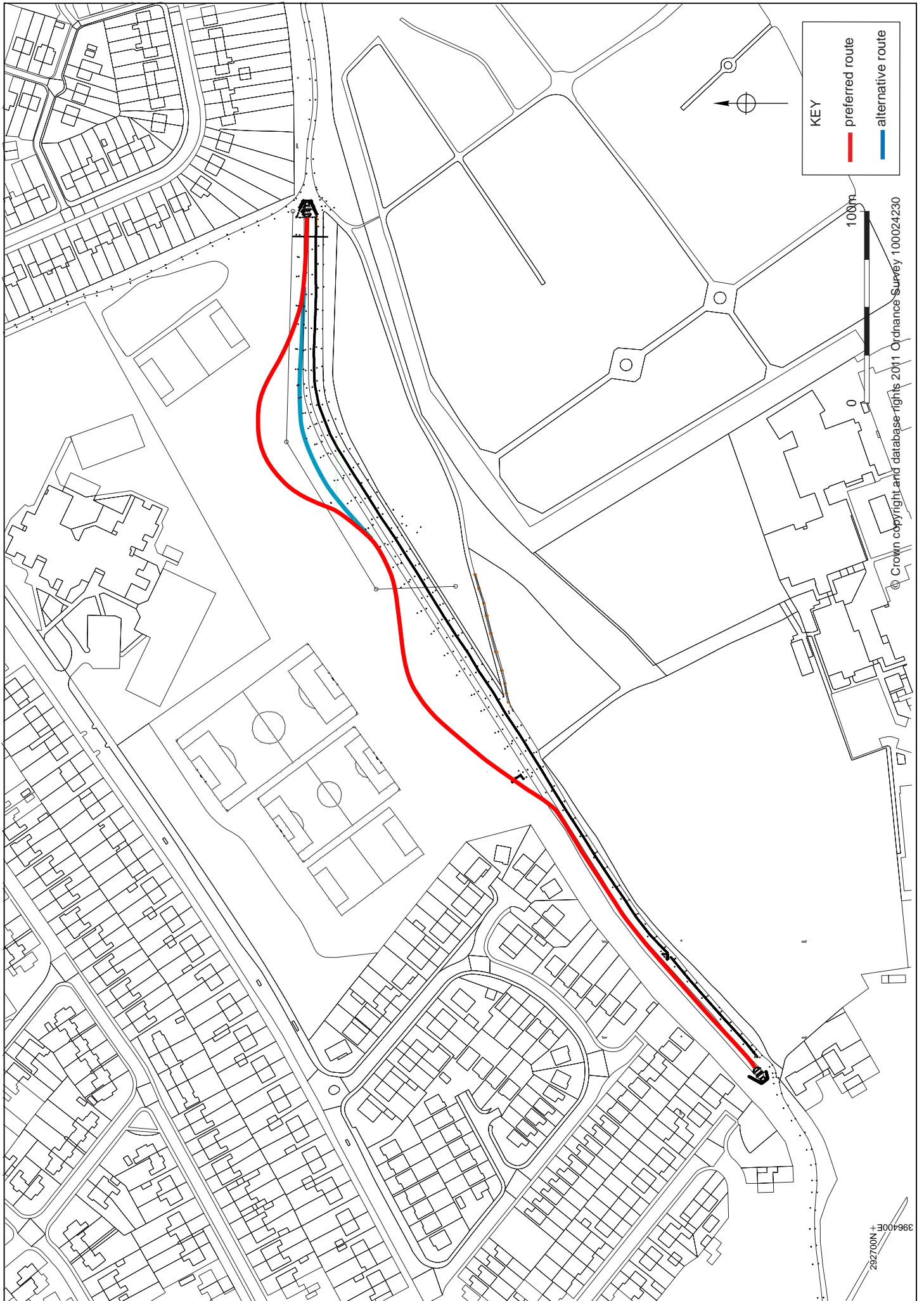
Figure 7



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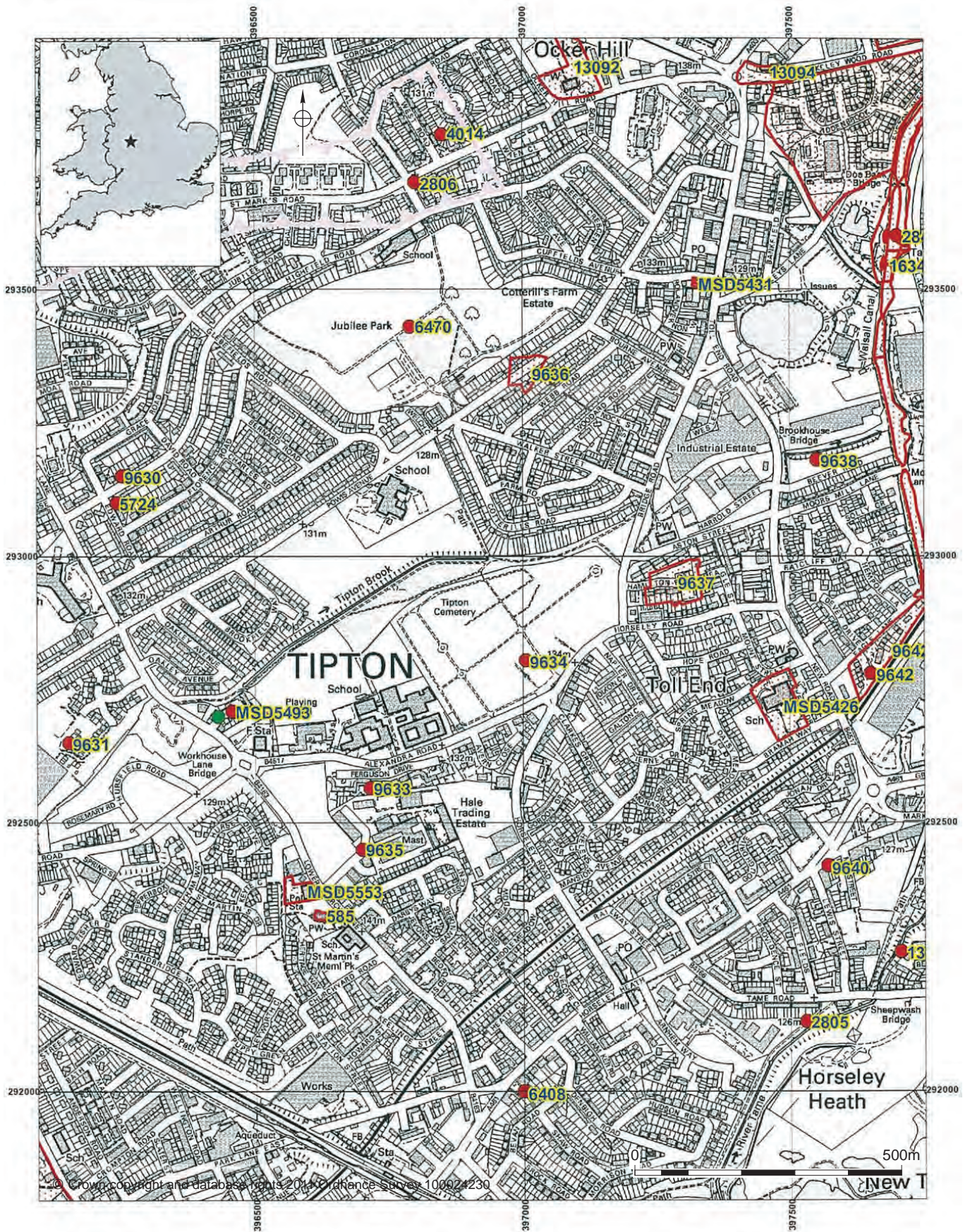
Location of the site overlain on 1955 OS map

Figure 8



Location of the preferred and alternative routes (based upon WSP Group plc Drg No 0480-SK-01)

Figure 9



SMR sites

Figure 10

Plates



Plate 1: The site from the eastern edge of the study area, facing west



Plate 2: Tipton Brook facing north-west



Plate 3: Tipton Cemetery, facing south-east

Appendix 1 Heritage assets registered with the Site and Monuments Record (those within or adjacent to the application site are indicated in bold)

SMR number (and legal status)	Site name	Grid reference	Record type	Date	Description
SMR5724 MBL3023	15 Edward Road, Tipton	SO 9624 9310	Monument	Post-medieval to modern	Thin ash layer with on feature cut into it. No recent material
SMR585 MBL3040 Listed building II	Church of St Martin, Tipton	SO 9663 9233	Building	Built 1795-7 with later additions	Partly rebuilt in 1960s after damage by subsidence
SMR6470 MBL3117	Jubilee Park, Tipton	SO 9679 9343	Monument	1934	Established by Tipton Council
SMR9630 MBL3235	Hope Colliery	SO 9625 9315	Monument	Post-medieval	Hope works and Hope Colliery. Shown on map of 1887. 3 buildings 2 shafts, canal basin with wharf
SMR9631 MBL3236	Horseley Colliery	SO 9615 9265	Monument	Post-medieval	Shown on map of 1887, now covered by engineering works. 2 shafts, large winding house, small buildings and canal basin
SMR9633 MBL3238	Horseley Farm	SO 9671 9256	Monument	Post-medieval	Farmhouse
SMR9634 MBL3239	Tipton Cemetery	SO 9700 9280	Building	Post-medieval	Cemetery extended over smallpox hospital
SMR9635 MBL3240	Horseley Colliery	SO 9670 9245	Monument	Post-medieval	"Old canal" formed south side
SMR9636 MBL3241	Cotterill Farm	SO 9701 9334	Monument	Post-medieval	Farm survived among collieries. Shown on 1890 OS map
SMR9637 MBL3242	Highmeadow Colliery	SO 9725 9290	Monument	Post-medieval	Now built over
MSD5426	Great Bridge Primary	SO 97480	Building	1796	Boards school built in

SMR number (and legal status)	Site name	Grid reference	Record type	Date	Description
	School, Tipton	92720		onwards	1874
MSD5493	Depot, Upper Church Lane, Tipton	SO 96457 92709	Building	Post-medieval to modern	Shown on first edition OS map 1890, may relate to Horseley Colliery

Appendix 2 Additional heritage assets identified by the desk-based assessment (those within the application site are indicated in bold)

Additional heritage asset	Site name	Grid reference	Source	Date	Description
AHA 1	Horseley Iron Works	SO 966 928	http://en.wikipedia.org/wiki/Horseley_Iron_works , accessed 10 February 2013	Post-medieval	See source for full description
AHA 2	Toll End Communication Canal	SO 965 925	http://en.wikipedia.org/wiki/Toll_End_Communication_Canal , accessed on 10 February 2013	Opened in 1809	See source for full description
