

## Archaeological Impact Assessment

For

**JBA Consulting**

On behalf of

**Network Rail**

Concerning

**Barnard's Lock**

**Railway Bridge**

**Marsh Benham**

**West Berkshire**

September 2016



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*Cover: View north-northwest of Barnard's Lock railway bridge*

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## 1 Executive Summary

This Archaeological Impact Assessment of proposed engineering works affecting an existing railway bridge at Barnard's Lock near Marsh Benham (West Berkshire), undertaken by Border Archaeology Ltd (BAL), has reached the following conclusions regarding the potential archaeological impact:

The new channel will *very likely* cut through undisturbed palaeoenvironmental remains dating from prehistory. Cultural remains may possibly be present. The two new ponds may possibly remove undisturbed environmental and cultural remains. The access tracks and holding areas will not permanently affect heritage features.

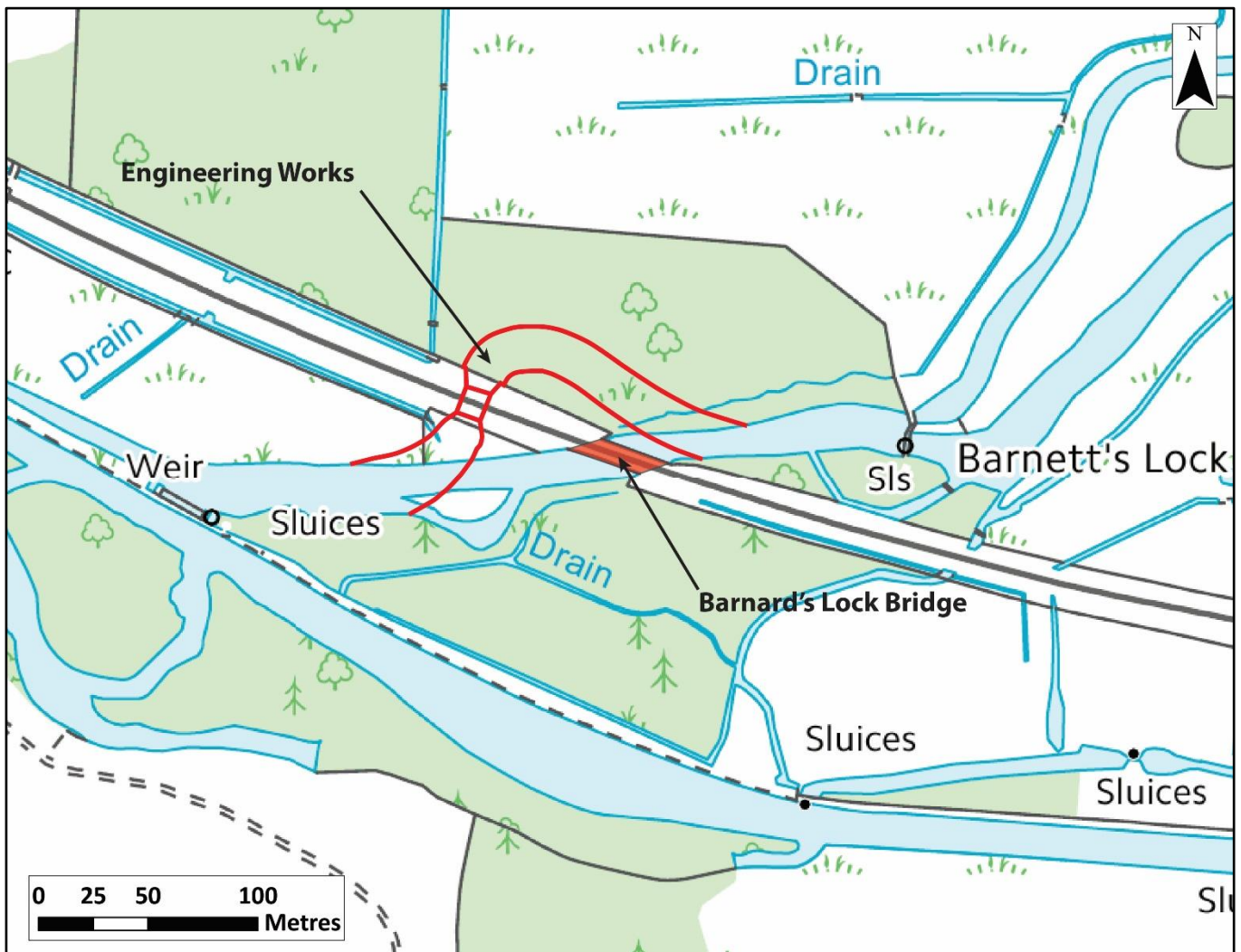
The table below summarises the likely effects of the proposed engineering works upon heritage assets, as well potential mitigation strategies:

<b><i>Effect of Engineering Works upon Heritage Assets &amp; Potential Mitigation Strategies</i></b>				
<b>Heritage Item</b>	<b>Significance</b>	<b>Impact</b>	<b>Description</b>	<b>Mitigation</b>
Palaeoenvironmental and potential cultural remains below new channel and two ponds	Medium	Major adverse	Peat, alluvial sequence and potential human artefacts may be present. Possible destruction of palaeoenvironmental and potential cultural remains	During excavation, allow for an environmental archaeologist to record and sample for: C14 dates Pollen, insect, plant analysis of peat if found Recording of archaeology if found
Railway bridge	Low	Major adverse	19 <sup>th</sup> -century bridge. To be demolished	Written and photographic record
Benham Park – GII Listed Landscape Park	High	Neutral	Benham Park post-medieval Grade II listed park, new channel constructed will have minimal impact	N/A
Two WWII pillboxes	Medium	Neutral	Proposed engineering works pass close but features remain intact	N/A



## 2 Introduction

This Archaeological Impact Assessment was undertaken by Border Archaeology Ltd (BAL) in response to an Instruction from JBA Consulting as part of an Environmental Statement on behalf of Network Rail regarding proposed engineering works affecting the existing railway bridge named Barnard's Lock, near Marsh Benham (West Berkshire; *fig. 1*).



*Fig. 1: Site location plan with proposed new channel in red*

### 2.1 Site Description

The proposed engineering works relate to Barnard's Lock Railway Bridge on the Great Western Railway, which crosses the River Kennet and the stream connecting the Kennet. Barnard's Lock Bridge is located approximately 500m SSE of Marsh Benham (West Berkshire) at NGR SU 43400 66756. It should be noted that the bridge is

indicated as 'Barnard's Lock Bridge' on documentation supplied by Network Rail although the actual lock structure situated about 100m to the E of the railway bridge is shown on OS mapping as 'Barnett's Lock'.

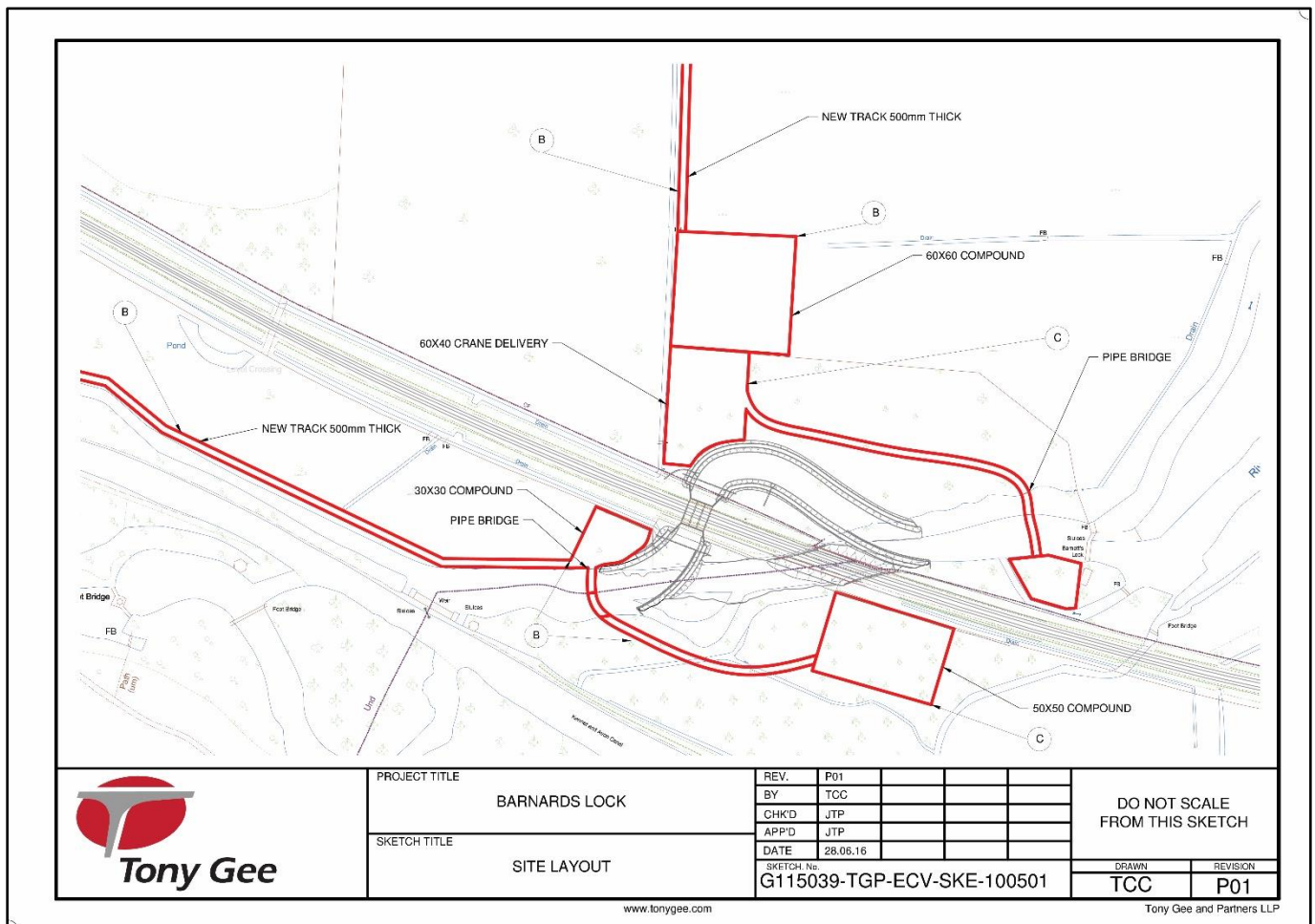


Fig. 2: Engineering Plan supplied to BAL by client

### 2.1.1 Soils & Geology

The site comprises chalky and gravelly river alluvium of the FROME series (812a) composed of shallow calcareous and non-calcareous loamy soils over flint gravel, with small areas of peat (SSEW 1983).

## 3 Assessment Approach

### 3.1 Methodology

#### 3.1.1 Assessment of Significance

The significance of the heritage assets likely to be affected by the engineering works is defined according to the following scale, which has been adapted from standard sources in the literature:

<b>Table 1: Table for Measuring Significance of Heritage Assets</b>	
<b>Significance</b>	<b>Description</b>
Very High	World Heritage Sites Assets of acknowledged international importance
High	Scheduled Ancient Monuments Listed buildings Registered Historic Parks and Gardens Historic Battlefield Assets that can contribute significantly to acknowledged national research objectives
Medium	Local Authority designated sites, e.g. Conservation Areas and their settings Undesignated sites of demonstrable regional importance
Low	Sites with significance to local interest groups Sites of which the significance is limited by poor preservation and poor survival of contextual associations

The effects of the Proposed Development upon heritage assets are defined according to the following matrix:

<b>Table 2: Table for Measuring Impact of Development upon Heritage Assets</b>	
<b>Impact</b>	<b>Description</b>
Major Adverse	Heritage feature is destroyed
Moderate Adverse	Heritage feature is partially destroyed
Minor Adverse	Heritage feature is slightly compromised
Neutral/not significant	No effect on heritage feature
Minor beneficial	Heritage feature is slightly improved
Moderate beneficial	Heritage feature is enhanced
Major beneficial	Heritage feature is greatly preserved and enhanced

### 3.2 Legislative & Policy Framework

#### 3.2.1 Legislation

Archaeology is covered by parliamentary acts and planning laws; the main ones are listed below.

The Ancient Monuments and Archaeological Areas Act 1979 consolidates earlier legislation on the definition and protection of Scheduled Monuments and authorisation of works affecting Scheduled Monuments, as well as providing for rescue excavation in designated Areas of Archaeological Importance.

Planning (Listed Buildings and Conservation Areas) Act 1990: (England and Wales) covers the designation of Listed Buildings and Conservation Areas and the authorisation of works by local planning authorities.

No Scheduled Monuments or Listed Buildings lie within the Application Site.

### 3.2.2 Planning Guidance

The National Planning Policy Framework (NPPF published 27 March 2012) advises Local Authorities to create a positive strategy for the historic environment in their Local Plan.

**In line with the National Planning Policy Framework, local authorities should set out in their Local Plan a positive strategy for the conservation and enjoyment of the historic environment. Such a strategy should recognise that conservation is not a passive exercise. In developing their strategy, local planning authorities should identify specific opportunities within their area for the conservation and enhancement of heritage assets. This could include, where appropriate, the delivery of development within their settings that will make a positive contribution to, or better reveal the significance of, the heritage asset.**

**The delivery of the strategy may require the development of specific policies, for example, in relation to use of buildings and design of new development and infrastructure. Local planning authorities should consider the relationship and impact of other policies on the delivery of the strategy for conservation (Paragraph 004 NPPF).**

The NPPF states that appropriate conservation of heritage assets forms one of the Core Planning Principles that underpin the planning system.

Paragraph 040 (Ref ID 18a-040-20140306) of the NPPF categorises heritage assets into those that are nationally important and are treated under legislation, and those (the much larger category) that are less important. This latter group is still subject to the conservation objective within the NPPF.

**Decision-taking regarding such assets requires a proportionate response by local planning authorities. Where an initial assessment indicates that the site on which development is proposed includes or has potential to include heritage assets with archaeological interest, applicants should be required to submit an appropriate desk-based assessment and, where necessary, a field evaluation. However, it is estimated following an initial assessment of archaeological interest only a small proportion – around 3 per cent – of all planning applications justify a requirement for detailed assessment (Para 039).**

The National Planning Policy Framework broadly incorporates principles published in earlier Planning Policy Guidances (PPGs) issued in the 1990s. Those relevant to archaeology are given below.



PPG 12, 1992: (England) Covers the preparation of development plans by local authorities including the role of environmental assessments in plan preparation.

PPG 15, 1994: (England) Explains the role of the planning system in the protection of historic buildings, conservation areas and other elements of the historic environment.

PPG 16, 1990: (England) Advises on assessing the archaeological implications of development and early consultation with HERs (Heritage Environment Records) in assessing the impact of planning applications on archaeology.

### 3.2.3 Scoping Criteria:

In 2015, BAL undertook an Archaeological Desk-Based Assessment in order to investigate the potential effects of the engineering works upon the archaeology of the site (Border Archaeology 2015). This study found Barnard's Lock bridge lay in an area of archaeological interest covering many periods. The river valley of the Kennet preserves both environmental and cultural remains from the Mesolithic to the post-medieval period. Preserved organic remains dating from prehistory are very likely to be present and flint scatters and other cultural remains from prehistory to the post-medieval period may be present. Rivers also preserve navigation features, fish-traps, bridge and mill remains and their presence here cannot be ruled out.

The site encroaches on the Listed post-medieval landscape park of Benham Park but will have minimal effect on it.

## 4 Assessment

### 4.1 Baseline Conditions

The proposed development will create a new channel of approximately 70m × 7m wide to a depth of below the present water course and will block a short section of the river. The railway bridge will be removed. In addition, temporary access tracks and holding areas will be created either side of the river. Two ponds to relocate newts of approximately 18m in length and 1.4m depth will also be dug about 150m to the W of the site

The proposed development site lies on the river Kennet either side of a railway line. The Kennet and Avon canal is adjacent on the south. Both the railway line and the canal will have substantially disturbed the ground both in its construction and maintenance. However, despite the location of the railway and canal, the new channel at lower levels will *very likely* pass through undisturbed deposits which date to prehistory when river valleys in the Thames Valley built up to their present levels.

#### 4.1.1 Archaeological Background

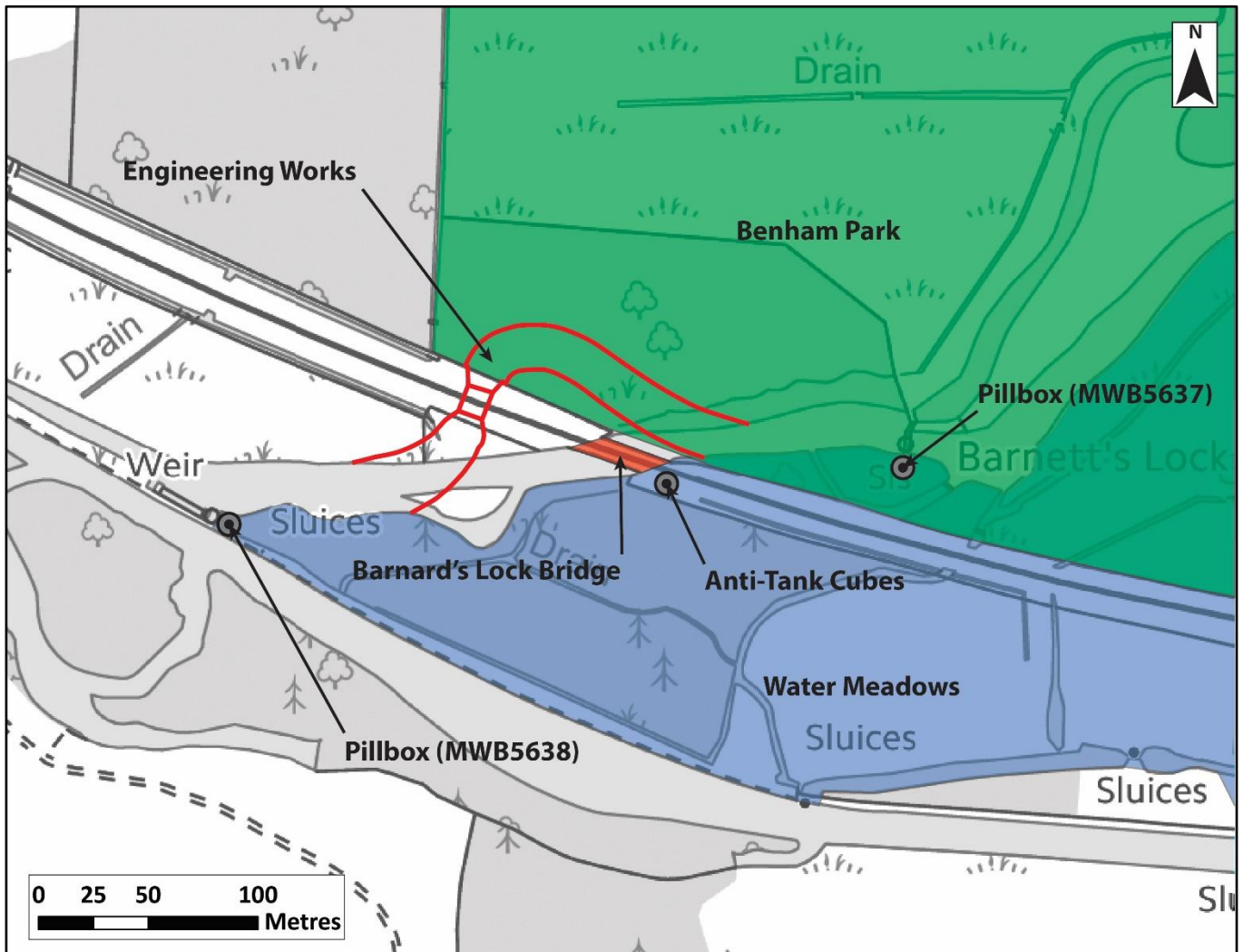


Fig. 3: Identified Heritage Assets in the vicinity of the engineering works

Fig. 3 shows the identified heritage assets in the vicinity of the engineering works.

**Potential palaeo-environmental and prehistoric remains, with particular reference to Mesolithic archaeology.** There is significant potential for encountering palaeo-environmental remains in this area with below ground work. River channels shift and move and the abandoned channels fill with alluvium. When this happens organic remains (and human artefacts if present) are buried and due to their excellent preservation are particularly valuable for research relating to the wider drainage basin environment. Borehole testing as part of this project found peat in cores in the vicinity at levels of 0.5m to 1.7m below ground (CC Ground Investigations 2015). Organic remains are therefore *very likely* to be present in the new channel.

There is also potential for human artefacts and occupation levels to be present. Mesolithic to Iron Age sites do occur in river valley sites. The Council's Archaeology Service has advised that the proposed area of ground works

is within an area of high and highest potential for Mesolithic archaeology, as defined by a predictive model developed by the University of Reading, Wessex Archaeology and the West Berkshire Council Archaeology Service (Wessex Archaeology 2015). The area around Kintbury has yielded nationally significant archaeological sites of this nature in the past, so any ground works have the potential to damage further artefactual or palaeo-environmental evidence.

The proposed ponds to be constructed as part of the engineering works lie between the lines of the railway and the canal: it is therefore likely that the soil between these two features was heavily disturbed during their construction.

As the potential Mesolithic remains present within the Kennet Valley have been part of a wider project working towards a methodology for predicting areas of archaeological potential, any remains encountered would be of regional importance and can therefore be assigned a **Medium** significance as a heritage asset. Furthermore, due to the nature of engineering works (particularly the excavation of the channel), any potential Mesolithic archaeology preserved is likely to be destroyed during the works; therefore, the engineering works are likely to have a **Major Adverse** impact upon the heritage asset.

**Railway Bridge.** Barnard's Lock Bridge constitutes an unlisted 19<sup>th</sup> -century railway river bridge to the W of Barnett's Lock (HER MWB20219) on the line of the Great Western Railway (GWR) branch line between Reading and Hungerford, opened as the Berks & Hants Line in 1847 (HER MWB6063). This line remains in use as part of the Reading-to-Taunton line.

As the 19<sup>th</sup> -century railway bridge at Barnard's lock is unlisted, but recorded on the West Berkshire HER, its significance as a heritage asset must be assessed as **Low**. However, as the proposed engineering works will involve the destruction of the bridge, the impact upon the asset is assessed as **Major Adverse**.

**Benham Park.** Benham Park is a Grade II Registered Historic Park occupying an area of 150ha surrounding the mansion of Benham Park, of which the railway forms the S boundary (HER MWB6280). The park was laid out in 1775 by the noted landscape designer Lancelot 'Capability' Brown, on the site of an existing park, and comprises an ornamental garden and landscaped grounds. Subsequent alterations were made in the late 19<sup>th</sup> century by W.A. Nesfield and the landscape of the S portion of the park seems to have been established in its present form during the late 19<sup>th</sup> century. The S portion of the park is characterised by pasture, interspersed with single trees and small blocks of woodland, and is traversed by several drainage ditches and the principal course of the Kennet. A number of these drainage ditches are crossed by ornamental iron bridges.

As the landscape park at Benham constitutes a Grade II Registered Historic Park, it must be assessed as **High** in terms of significance as a heritage asset. However, the engineering works will have minimal impact upon the landscape of Benham due to their location on the S fringes of the park.

**WWII pillboxes.** Evidence of WWII defensive structures have been recorded in the immediate vicinity of the railway bridge, forming a line of anti-tank cubes positioned adjacent to the railway bridge itself at SU 43422 66747 (EH Ref. 1423175) constructed in 1940 as part of GHQ Stop Line Blue (Foot, 2009). One of the pillboxes,

situated immediately S of Barnett's Lock at NGR SU 43530 66751 is a rectangular Type 28 (FW3/28) pillbox, partially concealed by dense undergrowth (HER NMWB5637), while the other, situated to the W of Benham Weir on the Kennet and Avon Canal at NGR SU 43211 66731, is a Type 24 shellproof pillbox, hexagonal in form with splayed loops for heavy machine guns and rifle loops flanking the entrance (HER MWB5638).

As the WWII defences present at Barnard's Lock represent part of GHQ Stop Line Blue, which bisected the country from Bristol to Reading, they are assessed as being of regional importance and therefore of being of **Medium** significance as heritage assets. However, whilst the proposed engineering works pass close to the WWII defences, the planned work do not affect these heritage assets.

## 4.2 Assessment of Likely Significant Effects

The table below gives the significance of the features and the effect on them of the development:

<i>Table 3: Effect of the Proposed Engineering Works upon Heritage Assets</i>			
Heritage Item	Significance	Impact	Description
Palaeoenvironmental and potential cultural remains below new channel and two ponds	Medium	Major adverse	Peat, alluvial sequence and potential human artefacts may be present. Will be destroyed
Railway bridge	Low	Major adverse	19 <sup>th</sup> -century bridge. To be demolished
Benham Park – GII Listed Landscape Park	High	Neutral	Benham Park post-medieval Grade II listed park, new channel constructed will have minimal impact
Two WWII pillboxes	Medium	Neutral	Proposed engineering works pass close but features remain intact
Kennet & Avon Canal	High	Neutral	Although the canal is close to the site of railway bridge, the proposed engineering works will not affect the fabric of the waterway

## 5 Mitigation & Enhancement

### 5.1.1 Mitigation by Design

Restoration of access tracks and holding bays to present day conditions.

### 5.1.2 Additional Mitigation

Mitigation by Record



Table 4: Mitigation

Feature	Impact	Mitigation
New 70m channel	Destruction of palaeoenvironmental and potential cultural remains	During excavation, allow for an environmental archaeologist to record and sample: 3 days C14 dates (2 to 10) Pollen, insect, plant analysis of peat found Recording of archaeology if found
Two new ponds to W of bridge	Destruction of palaeoenvironmental and potential cultural remains	During excavation, allow for an environmental archaeologist to record and sample: 2 days, <i>if undisturbed deposits found</i> C14 dates (2 to 10) Pollen, insect, plant analysis if peat found
19 <sup>th</sup> -century railway bridge	Destruction of feature	Written and photographic record
Access roads and compounds	No impact	Restore after completion of project

**Enhancements:**

None

**Cumulative & In-Combination Effects:**

None

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## 6 Copyright

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