Environmental Statement

Volume 2i: Scheme-wide Assessment

Chapter 6: Historic environment

Contents

6. HISTORIC ENVIRONMENT 6-3

Summary of principal findings 6-3

6.1 Introduction 6-6

6.2 Legislative and policy context 6-6

6.3 Assessment methodology 6-13

6.4 Baseline 6-26

6.5 Potential effects 6-36

6.6 Mitigation measures 6-42

6.7 Residual effects 6-48

6.8 Cumulative effects 6-55

Tables

Table 6-1 Legislative and policy context summaries 6-8
Table 6-2 Value of heritage assets 6-15
Table 6-3 Magnitude of impact 6-17
Table 6-4 Classification of effect 6-19
Table 6-5 Stakeholder comments and outcomes/agreements 6-21
Table 6-6 Value of online non-designated heritage assets identified in the historic environment baseline 6-30
Table 6-7 Value of offline designated heritage assets identified in the historic environment baseline 6-31
Table 6-8 Value of offline non-designated heritage assets identified in the historic environment baseline 6-32
Table 6-9 Baseline broad historic landscape types identified in the historic environment baseline 6-33
Table 6-10 Construction and operation impacts for all Route Sections 6-36
Table 6-11 Heritage assets with mitigation measures embedded within design 6-44
Table 6-12 Summary of residual effects 6-49
Table 6-13 Potential inter-scheme cumulative effects 6-56

6. HISTORIC ENVIRONMENT

Summary of principal findings

This chapter presents the assessment of historic environment effects associated with the construction and operation of the Huddersfield to Westtown (Dewsbury) section of the Transpennine Route Upgrade (TRU) Programme. This chapter covers the assessment of the entirety of the Huddersfield to Westtown (Dewsbury) Route (the Scheme. The historic environment assessment is broken down into six Route Section Assessments in Volume 2ii of this Environmental Statement (ES) which provide additional detail to this chapter. This summary has been broken down into these Route Sections for ease of the reader.

Route Section 1

During construction of the Scheme there will be a permanent Moderate adverse effect on Huddersfield Station (Grade I Listed, NHLE 1277385), due to physical changes to the historic fabric of the station. Mitigation and compensation will include historic building recording of the trainshed roof and tea rooms as well as a programme of monitoring of the tea rooms during dismantling and reconstruction. The residual effect, following this mitigation would remain a permanent Moderate adverse effect, which is significant.

Huddersfield Station (Grade I Listed, NHLE 1277385) will also experience a temporary Large adverse effect during construction, due to construction activity affecting the setting of the station. Mitigation for this will include measures to minimise the environmental effect of construction activity which will be incorporated within the Construction Code of Practice (CoCP). The residual effect, following this mitigation is temporary Large adverse, which is significant.

The whole length of Huddersfield Viaduct is Grade II Listed (NHLE 1223531). The Viaduct is comprised of multiple spans, which are considered in this assessment as one asset; with the exception of Huddersfield Viaduct (Span 1) Underbridge (MVL3/92(1)) which is deemed to be of Medium value independently. Permanent Moderate adverse effects are anticipated for both Huddersfield Viaduct (Span 1) Underbridge (MVL3/92(1)) and Huddersfield Viaduct as a result of impacts to:

- Huddersfield Viaduct (Span 29) Underbridge (MVL3/92(9)); and
- Huddersfield Viaduct (Span 4) Underbridge (MVL3/92(3)).

Compensation will include historic building recording; however, the residual effect will remain the same.

The Empire Cinema (Grade II Listed, NHLE 1288963) and Sportsman and the Marhaba Takeaway (Grade II Listed, NHLE 1464388) will experience temporary Moderate adverse effects during construction following mitigation. Mitigation measures will be included in the CoCP and will be supplemented with Toolbox talks for the construction staff.

During operation of the Scheme, the following assets will still experience significant effects:

- Huddersfield Station which will experience a permanent Moderate adverse effect due to changes to the Station's setting. There is no mitigation available to reduce this effect and therefore the residual effect will remain Moderate adverse and significant.
- Huddersfield Viaduct as a whole which will experience a permanent Moderate adverse effect also due to setting changes. The mitigation for this will include historic building recording, including recording of setting.

As a result of the changes required to the Grade I Listed Huddersfield Station and Grade II Listed Huddersfield Viaduct, both of these are subject to Listed Building Consent applications and have accompanying Heritage Assessments.

Route Section 2

There are no significant effects in the construction or operation of the Scheme within Route Section 2.

Route Section 3

Within Route Section 3, during construction a permanent Large effect will occur on Wheatley's Overbridge (MVL3/103) (Grade II Listed, NHLE 1450537). Compensation measures have been provided for this which include historic building recording and the incorporation of heritage interpretation in the replacement bridge design. Although measures are provided to compensate for the works, the residual effect will remain permanent Large adverse and significant.

As a result of the changes required to the Grade II Listed Wheatley's Overbridge (MVL3/103) is subject to Listed Building Consent application and has an accompanying Heritage Assessment.

Route Section 4

During construction of Route Section 4, permanent Large adverse effects are anticipated for B6118 Bridge Road Overbridge (MVL3/107) (Grade II Listed, NHLE 1450265) and permanent Moderate adverse effects for Heaton Lodge Footbridge (MVL4/4). Compensation measures have been identified which include undertaking historic building recording and incorporating heritage interpretation in the replacement bridge designs. The residual effect will remain the same for both bridges.

As a result of the changes required to the Grade II Listed Structure, B6118 Bridge Road Overbridge (MVL3/107) is subject to Listed Building Consent application and has an accompanying Heritage Assessment.

Temporary effects of a Moderate adverse significance will occur on Number 2 Lock (Grade II Listed, NHLE 1313801). During construction protective measures will be installed to protect the structure and a traffic programme will be agreed and implemented to minimise construction traffic crossing. Measures to minimise visibility of construction activity and reduce dust and noise will also be implemented. The residual effect on Number 2 Lock will be Moderate adverse.

During operation, without mitigation there would be permanent Moderate adverse effect on Number 2 Lock. However, with planting of vegetation to screen the railway line and Bradley PSP from Number 2 Lock the residual effect is reduced to a permanent Slight adverse effect which is not significant.

Route Section 5

During construction, significant Moderate adverse effects of a temporary nature are expected to occur on:

- Mirfield Viaduct Underbridge (MVN2/192) (Grade II Listed, NHLE 1313676); and
- Wheatley's Underbridge (MVN2/196) (Grade II Listed, NHLE 1450703);

Although mitigation, including historic building recording and toolbox talks, would be completed the residual effect would remain the same.

As a result of the changes required to Grade II Listed Mirfield Viaduct Underbridge (MVN2/192) and Wheatley's Underbridge (MVN2/196) both of these are subject to Listed Building Consent applications and have accompanying Heritage Assessments.

Ledgard Bridge (Over River Calder) (Grade II Listed, NHLE 1183989) is also expected to experience temporary Moderate adverse effects during construction. To mitigate this, protective panels, warning signs, traffic management and measures to minimise the visibility of construction activity would be implemented. However, the residual effect would remain significant at Moderate adverse, albeit it would be temporary in nature.

Route Section 6

During construction, presence of a construction compound would result in temporary Moderate adverse effects on:

- Calder & Hebble Canal Underbridge (MDL1/6) (Grade II Listed, NHLE 1183783); and
- River Calder Underbridge (MDL1/8) (Grade II Listed, NHLE 1313646).

No mitigation has been identified for this, and therefore the residual effect would remain the same. During operation, both of these Grade II Listed Buildings would result in a permanent Moderate adverse effect as a result of the impact on their setting which cannot be mitigated.

Though the Scheme does not result in physical changes to Calder & Hebble Canal Underbridge (MDL1/6) and River Calder Underbridge (MDL1/8), a Heritage Assessment has been produced which provides more detail on the nature of impacts on the setting of the structures and the design development process around the Scheme at this location. This is appended to this Environmental Statement, in Appendix 6.5.

Permanent Moderate adverse effects are anticipated on the following assets which would be mitigated through historic building recording:

- Occupation Underbridge (MDL1/10) (Grade II Listed, NHLE 1450702); and
- Station Footbridge (MDL1/4) (non-designated).

The historic building recording would be a means of recording the negative change to the significance of an historic asset therefore the residual effect would remain Moderate adverse and permanent.

As a result of the changes required to Grade II Listed Occupation Underbridge (MDL1/10), this asset will be subject to a Listed Building Consent application and accompanying Heritage Assessment. Two other Grade II Listed structures within Route Section 6 are also subject to Listed Building Consent applications and accompanying Heritage Assessments, though the resultant effects on these have not been identified as significant: Toad Holes Underbridge (MDL 1/12) and Ming Hill Underbridge (MDL 1/14).

6.1 Introduction

6.1.1 This chapter presents the assessment of historic environment effects associated with the construction and operation of the Huddersfield to Westtown (Dewsbury) section of the Transpennine Route Upgrade (TRU) ("the Programme"). This chapter covers the assessment of the entirety of the Huddersfield to Westtown (Dewsbury) Route (herein referred to as the 'Scheme'). The Historic environment assessment is further broken down into six Route Section Assessments in Volume 2ii of this Environmental Statement (ES) which provide additional detail to this chapter.

6.1.2 This chapter is set out as follows:

- Legislative and policy context – relevant international, national and local policy requirements, legal requirements and guidance which have been used to define the assessment approach are outlined;
- Assessment methodology – the methodology the assessment follows is defined including the justification for the study area and the approach for determining significance of effects;
- Baseline – a summary of the historic environment baseline within the study area is provided;
- Potential effects – the potential impacts and effects (both beneficial and adverse) during construction and operation are characterised;
- Mitigation measures – agreed avoidance, mitigation, compensation and enhancement measures are described;
- Residual effects – the significance of residual effects (both beneficial and adverse) following the implementation of mitigation measures are assessed; and
- Cumulative effects - the potential likely significant cumulative effects of the Scheme are described.

6.1.3 A detailed description of the Scheme is provided in Chapter 2 (Scheme description) of this ES and all appendices and figures referred to in this chapter are provided in Volumes 3 and 4 of this ES respectively.

6.1.4 Designated heritage assets include World Heritage Sites, Listed Buildings, Scheduled Monuments, Registered Parks and Gardens and Conservation Areas. Non-designated heritage assets are those not afforded statutory protection, but which are recorded on the West Yorkshire Historic Environment Record (HER), or which have been identified during the baseline assessment (e.g. historic maps) as being potentially affected by the Scheme and/or identified as having a degree of significance by the local planning authority meriting consideration in the planning process.

6.2 Legislative and policy context

6.2.1 The following legislation and policies govern the treatment of the historic environment and have been consulted in preparing the historic environment assessment chapters, with the relevant portions summarised in Table 6-1:

- Ancient Monuments and Archaeological Areas Act 1979, amended by the National Heritage Act 1983 and 2002;
- Planning (Listed Buildings and Conservation Areas (Act 1990);
- National Planning Policy Framework[1];

[1] NPPF, 2019

- National Planning Practice Guidance (Historic Environment[2]); and
- The Kirklees Local Plan, adopted February 2019.

[2] NPPG, 2019

Table 6-1 Legislative and policy context summaries

Legislation/ Regulation/Policy	Summary of requirements
National	
Ancient Monuments and Archaeological Areas Act (1979)	The Act provides protection to scheduled monuments or ancient monuments which, can comprise 'any other monument which in the opinion of the Secretary of State is of public interest by reason of the historic, architectural, traditional, artistic or archaeological interest attaching to it'. Monuments are defined in Section 61 as: a) any building, structure or work, whether above or below the surface of the land, and any cave or excavation; b) any site comprising the remains of any such building, structure or work or of any cave or excavation; and c) any site comprising, or comprising the remains of, any vehicle, vessel, aircraft or other movable structure or part thereof which neither constitutes nor forms part of any work which is a monument within paragraph (a) above; and any machinery attached to a monument shall be regarded as part of the monument if it could not be detached without being dismantled. The Act requires any works within a scheduled monument to receive Scheduled Monument Consent. The Act also gives powers to the Secretary of State to designated 'Areas of Archaeological Importance.'
Planning (Listed Buildings and Conservation Areas) Act (1990)	Provides protection to listed buildings and conservation areas of 'special architectural or historic interest'. Section 66 of the Act states that 'when considering whether to grant permission for development which affects a Listed Building or its setting, [decision makers] shall have special regard to the desirability of preserving the building or its setting'. Section 17 of the Act addresses listed building consent, which outlines powers to impose conditions on the granting of listed building consent. Section 72 of the Act also addresses conservation areas, for which decision makers must 'pay special attention to the desirability of preserving or enhancing the character or appearance'.
National Planning Policy Framework	The NPPF specifies that heritage assets 'should be conserved in a manner appropriate to their significance, so that they can be enjoyed for their contribution to the quality of life of this and future generation (Paragraph 184). The following paragraphs are of particular relevance to this chapter: • Paragraph 189: Applicants for planning permission should 'describe the significance of any heritage assets affected, including and contribution made by their setting. The level of detail should be proportionate to the assets' importance and no more than is sufficient to understand the potential impact of the proposal on their significance. As a minimum the relevant Historic Environment Record should have been consulted and the heritage assets assessed using appropriate expertise where necessary. Where a site on which development is proposed includes or has the potential to include heritage assets with archaeological interest, local planning authorities should require developers to submit an appropriate desk-based assessment and, where necessary, a field evaluation. • Paragraph 192: 'In determining planning applications, local planning authorities should take account of:

Legislation/ Regulation/Policy	Summary of requirements
	a. The desirability of sustaining and enhancing the significance of heritage assets and putting them to viable uses consistent with their conservation; b. The positive contribution that conservation of heritage assets can make to sustainable communities including their economic vitality; and c. The desirability of new development making a positive contribution to local character and distinctiveness.' • Paragraph 193: 'When considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset's conservation (and the more important the asset, the greater the weight should be). This is irrespective of whether any potential harm amounts to substantial harm, total loss or less than substantial harm to its significance.' • Paragraph 194: Any harm to, or loss of, the significance of a designated heritage asset (from its alteration or destruction, or from development within its setting) should require clear and convincing justification. Substantial harm to or loss of: a. grade II listed buildings or grade II registered park or garden should be exceptional; b. assets of the highest significance, notably scheduled monuments, protected wreck sites, battlefields, grade I and II* listed buildings, grade I and II* registered parks and gardens, and World Heritage Sites, should be wholly exceptional.' Footnote 63: 'non-designated heritage assets of archaeological interest, which are demonstrably of equivalent significance to scheduled monuments, should be considered subject to the policies for designated heritage assets.' • Paragraph 195: Where a proposed development will lead to substantial harm to (or total loss of significance of) a designated heritage asset, local planning authorities should refuse consent, unless it can be demonstrated that the substantial harm or loss is necessary to achieve substantial harm or total loss is necessary to achieve substantial public benefits that outweigh that harm or loss, or all of the following apply: a. The nature of the heritage asset prevents all reasonable uses of the site; and b. No viable use of the heritage asset itself can be found in the medium term through appropriate marketing that will enable its conservation; and c. Conservation by grant-funding or some form of not for profit, charitable or public ownership is demonstrably not possible; and d. The harm or loss is outweighed by the benefit of bringing the site back into use' • Paragraph 196: 'Where a development proposal will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal, including, where appropriate, securing its optimum viable use.' • Paragraph 197: 'The effect of an application on the significance of a non-designated heritage asset should be taken into account in determining the application. In weighing applications that affect directly or indirectly affect non-designated heritage assets, a balanced judgement will be required having regard to the scale of any harm or loss and the significance of the heritage asset.'

Legislation/ Regulation/Policy	Summary of requirements
	• Paragraph 198: 'Local planning authorities should not permit the loss of the whole or part of a heritage asset without taking all reasonable steps to ensure the new development will proceed after the loss has occurred.' • Paragraph 199: 'Local planning authorities should require developers to record and advance understanding of the significance of any heritages to be lost (wholly or in part) in a manner proportionate to their importance and the impact, and to make this evidence (and any archive generated) publicly accessible. However, the ability to record evidence of our past should not be a factor in deciding whether such loss should be permitted.
National Planning Practice Guidance (Historic Environment)	Planning Practice Guidance (PPG) gives further information on how national policy is to be interpreted and applied locally. The PPG includes particular guidance on matters relating to protecting the historic environment. The PPG for historic environment was significantly updated in 2019 to reflect the changes made in 2018/19 to NPPF policy.
Local	
The Kirklees Local Plan, 2019 Policy LP35: Historic environment	Policy LP35 of The Kirklees Local Plan (2019) sets out the council's policy for the protection and enhancement of the historic environment through appropriate management of development within or adjacent to heritage assets. 1. Development proposals affecting a designated heritage asset (or an archaeological site of national importance) should preserve or enhance the significance of the asset. In cases likely to result in substantial harm or loss, development will only be permitted where it can be demonstrated that the proposals would bring substantial public benefits that clearly outweigh the harm, or all of the following are met: a) the nature of the heritage asset prevents all reasonable uses of the site; b) no viable use of the heritage asset itself can be found in the medium term through appropriate marketing that will enable its conservation; c) conservation by grant-funding or some form of charitable or public ownership is demonstrably not possible; and d) the harm or loss is outweighed by the benefit of bringing the site back into use. 2. Proposals which would remove, harm or undermine the significance of a non-designated heritage asset, or its contribution to the character of a place will be permitted only where benefits of the development outweigh the harm having regard to the scale of the harm and the significance of the heritage asset. In the case of developments affecting archaeological sites of less than national importance where development affecting such sites is acceptable in principle, mitigation of damage will be ensured through preservation of the remains in situ as a preferred solution. When in situ preservation is not justified, the developer will be required to make adequate provision for excavation and recording before or during development. 3. Proposals should retain those elements of the historic environment which contribute to the distinct identity of the Kirklees

Legislation/ Regulation/Policy	Summary of requirements
	area and ensure they are appropriately conserved, to the extent warranted by their significance, also having regard to the wider benefits of development. Consideration should be given to the need to: a) ensure that proposals maintain and reinforce local distinctiveness and conserve the significance of designated and non-designated heritage assets; b) ensure that proposals within Conservation Areas conserve those elements which contribute to their significance; c) secure a sustainable future for heritage assets at risk and those associated with the local textile industry, historic farm buildings, places of worship and civic and institutional buildings constructed on the back of the wealth created by the textile industry as expressions of local civic pride and identity; d) identify opportunities, including use of new technologies, to mitigate, and adapt to, the effects of climate change in ways that do not harm the significance of heritage assets and, where conflict is unavoidable, to balance the public benefit of climate change mitigation measures with the harm caused to the heritage assets' significance; e) accommodate innovative design where this does not prejudice the significance of heritage assets; and f) preserve the setting of Castle Hill where appropriate and proposals which detrimentally impact on the setting of Castle Hill will not be permitted.

Other guidance documents

6.2.2 There is no statutory guidance on assessing impacts on the historic environment, therefore the assessment of the effects of the Scheme has been based on guidance in the Design Manual for Roads and Bridges (DMRB) LA104 Environmental assessment and monitoring (Aug 2020) and LA106 Cultural heritage assessment (Jan 2020)[3] issued by Highways England. Although the DMRB guidance was designed for highways projects, its methodology is commonly used for reporting historic environment impacts within an Environmental Impact Assessment (EIA) context. It is therefore relevant to the Scheme as DMRB guidance was designed for assessing large scale linear infrastructure projects and, accordingly, has been used to guide this chapter.

6.2.3 This assessment has also been undertaken in accordance with the standards and guidance as set out by:

- Chartered Institute for Archaeologists (CIfA) (2017) Standard and Guidance for commissioning work or providing consultancy advice on archaeology and the historic environment[4]
- Historic England (2015) Historic Environment Good Practice Advice in Planning Note 2: managing significance in decision-taking in the historic environment[5]
- Historic England (2015) Historic Environment Good Practice Advice in Planning Note 3: The setting of heritage assets[6]
- Historic England (2008) Conservation Principles, Policies and Guidance for the Sustainable Management of the Historic Environment[7]
- Historic England (2016) Historic Environment Good Practice Advice in Planning Note 1: conservation area designation, appraisal and management[8]
- Historic England (2016) Advice Note 7: Local Heritage Listing[9]
- Historic England (2016) Preserving Archaeological Remains Decision-Taking for Sites Under Development[10]
- Historic England (2016) Understanding Historic Buildings, A Guide to Good Recording Practice[11]

[3] Available online at: https://www.standardsforhighways.co.uk/dmrb/
[4] Available online at: https://www.archaeologists.net/sites/default/files/CIfAS%26GCommissioning_2.pdf
[5] Available online at: https://historicengland.org.uk/images-books/publications/gpa2-managing-significance-in-decision-taking/
[6] Available online at: https://historicengland.org.uk/images-books/publications/gpa3-setting-of-heritage-assets/heag180-gpa3-setting-heritage-assets/
[7] Available online at: https://historicengland.org.uk/images-books/publications/conservation-principles-sustainable-management-historic-environment/conservationprinciplespoliciesandguidanceapril08web/
[8] Available online at: https://historicengland.org.uk/images-books/publications/conservation-area-appraisal-designation-management-advice-note-1/heag-268-conservation-area-appraisal-designation-management/
[9] Available online at: https://historicengland.org.uk/images-books/publications/local-heritage-listing-advice-note-7/heag018-local-heritage-listing/
[10] Available online at: https://historicengland.org.uk/images-books/publications/preserving-archaeological-remains/heag100a-preserving-archaeological-remains/
[11] Available online at: https://historicengland.org.uk/images-books/publications/understanding-historic-buildings/heag099-understanding-historic-buildings/

6.3 Assessment methodology

Study area

6.3.1 The assessment used a series of spatial study areas to collect data on heritage assets and to inform the assessment. These have been defined using the professional judgement of competent heritage experts with a proven track record of delivering projects of this nature, based on understanding of the historic environment in the area, and likely impacts of the Scheme, and are in keeping with best industry practice[12]. The study area has also been discussed and agreed with statutory consultees, taking into account consultee responses to the Environmental Scoping Report (ESR), (copy of scoping response included in Appendix 4-2).

6.3.2 A provisional study area of 500m around the existing extent of the Scheme boundary was identified in the ESR. Having undertaken the following process, a revised study area of 250m has been established as being appropriate for identifying relevant designated and non-designated historic environment assets that potentially could be affected by the Scheme. This is as a result of:

- The assessment of the overall significance and character of the Scheme in the Route-wide Statement of Significance (Alan Baxter 2019)[13]. This was produced to characterise the overall heritage significance of the Transpennine Route as a whole, and is included in Appendix 6-1 of this ES;
- The visibility of the Scheme, identified through an assessment of the Zone of Theoretical Visibility (ZTV), produced to inform Chapter 10 (Landscape, townscape and visual) of this ES (Figure 10-5);
- The archaeological context of the Scheme, as understood from HER data and consultation with West Yorkshire Archaeology Advisory Service (WYAAS) undertaken to inform the ES chapter; and
- The design of temporary construction works for example, compound areas, haul routes etc.

6.3.3 As well as the 250m study area, the ZTV has been used to identify designated historic environment assets, located within 2km of the Scheme boundary. The ZTV map illustrates the Scheme's visibility viewed from a height of 1.8m above ground level to be representative of approximate adult eye height. It has been compiled using LiDAR data comprising spot heights and contours (within a 5m resolution) to produce a Digital Terrain Model (DTM) which was overlain on a 1:25000 Ordnance Survey (OS) base map.

6.3.4 The ZTV assisted the assessment by identifying the assets which have a theoretic visibility of the Scheme. These assets were then screened to identify those with potential for impacts on value as a result of changes to their setting during either construction or operation of the Scheme. Where the potential for impact has been identified, these designated assets have been included in the baseline.

6.3.5 In addition, two designated heritage assets located beyond 2km from the Scheme, comprising the Scheduled Monument of Castle Hill (NHLE 1009846) and its associated Grade II Victoria Tower (NHLE 1210385), have been included in the baseline. The inclusion of these designated assets has been agreed with Historic England and Kirklees Council, as requested by them in their consultation responses to the ESR (as summarised in Table 6-5).This is due

[12] DMRB (2020) 'LA 106 Cultural heritage assessment' includes guidance on study areas (paragraphs 3.5 to 3.7), which states that the study area should include any land within and outside the footprint of the Scheme containing "heritage assets which could be physically affected" and also should "include the settings of any designated or other cultural heritage resource in the footprint of the Scheme or within the zone of visual influence or potentially affected by noise".
[13] Alan Baxter Associates, 2019. *TransPennine Route Upgrade Route-wide Statement of Significance*.

to their prominence in the landscape and the views to, from or across them, changes to which could alter the value derived from their sensitive setting.

Approach and guidance

6.3.6 This assessment considers both designated and non-designated heritage assets, derived from the Historic England National Heritage List for England (NHLE), West Yorkshire HER and other historic environment data sources. A heritage asset is defined as a building, monument, site, place, area or landscape identified as having a degree of significance meriting consideration in planning decisions, because of its heritage (historic, architectural, archaeological or artistic) interest[14].

6.3.7 The methodological approach within this ES has been discussed and agreed with stakeholders, including Historic England and Kirklees Council (see paragraph 6.3.22 and Table 6-5).

Data sources

6.3.8 The establishment of the historic environment baseline and assessment of impacts within this ES has been informed by a comprehensive desk-based review of data from the following sources:

- The TransPennine Route Upgrade Route-wide Statement of Significance (Alan Baxter, 2019), produced to characterise the overall heritage significance of the Transpennine Route as a whole, and included in Appendix 6-1 of this ES;
- The TransPennine Route Upgrade Huddersfield Station Statement of Significance (Atkins, Network Rail, August 2018), produced to identify and analyse the heritage significance of the station, including the contribution made by individual elements to the station's overall significance. This is included as a supporting document to the Listed Building Consent application [NR17], which is being submitted alongside the TWAO submission;
- The TransPennine Route Statement of History and Significance: West of Leeds (Alan Baxter, 2017);
- The National Heritage List for England (NHLE) maintained by Historic England, for information on Listed Buildings, Scheduled Monuments, Registered Parks and Gardens and Registered Historic Battlefields[15];
- West Yorkshire HER maintained by West Yorkshire Joint Services (WYJS), for both designated and non-designated historic environment assets, findspots and previous investigations;
- Information from site visits;
- Kirklees Council for information on Conservation Areas, including Conservation Area Appraisals, where completed;[16]
- The Kirklees Historic Landscape Characterisation Project for information on historic landscape character;[17]
- Historic mapping and aerial photography, including that held by WYJS archives and record offices;
- Results of any Ground Investigation works;
- Historic Environment Research Agendas for West Yorkshire[18]; and

[14] NPPF, Annex 2, page 67.
[15] Available online at: https://historicengland.org.uk/listing/the-list/
[16] Available online at: https://www.kirklees.gov.uk/beta/trees-listing-and-conservation/conservation-area-maps.aspx
[17] Available online at: https://www.wyjs.org.uk/archaeology-advisory/historic-landscape-characterisation/
[18] Available online at: https://www.wyjs.org.uk/archaeology-advisory/

- The ZTV produced to inform Chapter 10 (Landscape, townscape and visual) of this ES.

Assessment criteria

Assessment of heritage value

6.3.9 Annex 2 of the NPPF defines significance (for heritage policy), (hereafter referred to as heritage value) as *"the value of a heritage asset to this and future generations because of its heritage interest"*[19]. The NPPF identifies that heritage interest may be archaeological, architectural, artistic or historic. The NPPF also identifies that significance can be derived from the asset itself, its physical presence, and from its setting.

6.3.10 Assessing the value of heritage assets leads to an understanding of what elements contribute to or detract from its significance, helping to identify opportunities and constraints for change. By understanding which features, fabric, setting or intangible characteristics of an asset contribute to or detract from an asset's value, one can identify whether a specific change to the asset or its environment will alter the asset's significance.

6.3.11 The DMRB environment value methodology (LA104)[20] has been used as a basis for determining the level of value of heritage assets identified within the study area. Professional judgement has been applied in developing Table 6-2. This has resulted in describing the value of each heritage asset or groups of heritage assets as defined in Table 3.2 Environmental Value (sensitivity) and descriptions[21]. The heritage examples of these values and the unknown value category have been established by professional knowledge and experience.

Table 6-2 Value of heritage assets

Value	Description	Heritage example
Very High	Very high importance and rarity, international scale, with very limited potential for substitution.	World Heritage Sites, or heritage assets recognised as being of international importance.
High	High importance and rarity, national scale and limited potential for substitution.	Grade I and II* Listed Buildings, Grade I and II* Registered Parks and Gardens, Scheduled Monuments, Protected Wreck Sites, Registered Historic Battlefields, Conservation Areas with notable concentrations of heritage assets, Grade II Listed Buildings of exceptional interest, and undesignated assets of national importance and/or rarity. Historic landscapes of national importance and/or rarity.
Medium	Medium or high importance and rarity, national or regional scale, limited potential for substitution	Grade II Listed Buildings, Grade II Registered Parks and Gardens, Conservation Areas and undesignated assets of national or regional importance. Historic landscapes of national or regional importance.
Low	Low or medium importance and rarity, local scale.	Locally Listed Buildings and undesignated heritage assets of local importance. Historic landscapes of local importance. Can also include degraded

[19] NPPF, Annex 2, page 71.
[20] Design Manual for Roads and Bridges (DMRB), 2020, *LA104 Environmental assessment and monitoring (3.1 – 3.2)* and DMRB, 2020, LA106 Cultural heritage assessment
[21] Design Manual for Roads and Bridges (DMRB), 2019, *LA104 Environmental assessment and monitoring p.13*

		designated assets that no longer warrant designation.
Negligible	Very low importance and rarity, local scale.	Undesignated heritage assets of very low or limited importance. Can also include highly degraded designated assets that no longer warrant designation.
Unknown	The importance of the asset has not been ascertained. This could include, or be related to: • Potential archaeological sites for which there is little information • Assets for which the importance of the site cannot be determined based on current knowledge • Isolated findspots, place names or cropmarks identified on aerial photographs with no known information at present Heritage assets of unknown value may include sites of potential national significance.	

Setting assessment methodology

6.3.12 The setting of each asset has also been assessed, in accordance with Historic England's *The Setting of Heritage Assets: Historic Environment Good Practice Advice in Planning Note 3*[22]. An assessment of the setting of each heritage asset identified within the baseline has been carried out, to understand the contribution of setting to the asset's value. This is summarised in the gazetteers of heritage assets, appended to each Route Section Assessment. Assessing a heritage asset's setting, minimising harm and mitigating impacts involves the following steps:

- Identifying the heritage asset and understanding its heritage value;
- Identifying the existing setting and historic setting of the heritage asset, to understand how its setting has changed over time;
- Assessing whether, how and to what degree the existing setting makes a contribution to the value of the heritage asset;
- Assessing the impact of the Scheme on the heritage asset's setting, and the resulting implications for the value of the heritage asset; and
- Maximising enhancements to the significance of heritage assets and minimising harm through mitigation

6.3.13 Various features of a heritage asset's setting can contribute to the value and understanding of the asset. Historic England's Good Practice Advice document outlined in paragraph 6.3.12 provides a list of potential attributes to consider, when assessing how an asset derives value from its setting, and how this may be impacted by changes to this setting. These are listed in in Appendix 6-2.

Impact assessment methodology

6.3.14 The impact upon a specific heritage asset considers the level of change to the significance of an asset and its setting.

6.3.15 The magnitude of impact on an individual asset is determined according to the scale included in Table 6-3. The magnitude of impact is identified by the degree of change that would be experienced to the significance of the asset and its setting if the Scheme were to be

[22] Available online at: https://historicengland.org.uk/images-books/publications/gpa3-setting-of-heritage-assets/heag180-gpa3-setting-heritage-assets/

completed as compared with a 'do nothing' situation.

6.3.16 The magnitude of impact is measured for both the construction and operational phase of the Scheme. Construction impacts can be both permanent and temporary:

- Permanent impacts arise from proposed physical changes to heritage assets (e.g. online railway bridges) to modify/adapt or remove as part of the Scheme's requirements. This can include infilling; widening; attaching fixings; demolition; partial removal; and
- Temporary impacts arise from construction works within proximity to heritage assets such as to affect the significance of their settings. This can include; works compounds, construction traffic, increase in air or noise pollution.

6.3.17 Operational impacts are permanent. These assess the change to assets once the Scheme is in place and in use. This can include:

- changes to significance of heritage assets' settings from new structures within the landscape; and
- additional equipment along the route (e.g. Overhead Line Equipment associated with electrification).

Table 6-3 Magnitude of impact

Magnitude of impact (change)	Typical description	Heritage example
Major adverse	Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements.	Substantial harm to, or loss of, an asset's significance due to changes to its physical form or setting. For example, this would include demolition, removal of physical attributes critical to an asset, loss of all archaeological interest or the transformation of an asset's setting in a way that fundamentally compromises its ability to be understood or appreciated. The scale of change would be such that it could result in a designated asset being undesignated or having its level of designation lowered.
Moderate adverse	Loss of resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements.	Less than substantial harm to an asset's significance as a result of changes to its physical form or setting. For example, this could include: • physical alterations that remove or alter some elements of significance, but do not substantially alter the overall significance of the asset; • notable alterations to the setting of an asset that affect the appreciation of it and its significance; or • the unrecorded loss of archaeological interest.
Minor adverse	Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements.	Limited harm to an asset's significance as a result of changes to its physical form or setting. For example, this could include: • physical changes that alter some elements of significance but do not noticeably alter the overall significance of the asset; and • small-scale alterations to the setting of an asset that hardly affect its significance.
Negligible adverse	Very minor loss of detrimental alterations to one or	Very limited harm to an asset's significance as a result of changes to its physical form or setting, which would

Magnitude of impact (change)	Typical description	Heritage example
	more characteristics, features or elements	not materially affect the understanding or appreciation of the asset. For example, this could include: • physical changes that alter isolated elements of significance but do not noticeably alter the overall significance of the asset; and • very small-scale alterations to the setting of an asset that result in negligible impacts upon the asset's significance.
No change	No loss or alteration of characteristics, features or elements; no observable impact in either direction	No appreciable change to an asset's significance.
Negligible beneficial	Very minor benefit to or positive addition of one of more characteristics, features or elements	Very limited improvement to an asset's significance as a result of changes to its physical form or setting, which would not materially affect the understanding or appreciation of the asset. For example, this could include: • physical changes that reveal or conserve elements of significance but do not noticeably alter the overall significance of the asset; and • very small-scale alterations to the setting of an asset that improve our ability to appreciate it.
Minor beneficial	Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring.	Limited improvement of an asset's significance as a result of changes to its physical form or setting. For example, this could include: • physical changes that reveal or conserve some elements of significance but do not noticeably alter the overall significance of the asset; or • small-scale alterations to the setting of an asset that improve our appreciation of it.
Moderate beneficial	Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality.	Notable enhancement of an asset's significance as a result of changes to its physical form or setting. For example, this could include: • physical alterations that conserve or restore elements of significance; • notable alterations to the setting of an asset that improve our appreciation of it and its significance; or • changes in use that help safeguard an asset.
Major beneficial	Large scale or major improvement of resource quality; extensive restoration; major improvement of attribute quality.	Substantial enhancement of an asset's significance as a result of changes to its physical form or setting. For example, this could include: • major changes that conserve or restore elements of high significance; • alterations to the setting of an asset that very substantially improve our appreciation of it and its significance; or

Magnitude of impact (change)	Typical description	Heritage example
		• changes in use that safeguard an asset, e.g. by taking it off the At-Risk Register.

Assessment of environmental effects

6.3.18 Once the level of the heritage asset's value has been identified (in accordance with Table 6-2) and the magnitude of the impact upon the asset's significance has been determined (in accordance with Table 6-3, and paragraphs 6.3.15 and 6.3.16), the likely level of significance of the environmental effect can be determined, using the matrix in Table 6-4. Environmental effects are classified as Neutral, Slight, Moderate, Large or Very Large, and can be either beneficial or adverse. For the purpose of this assessment, only those effects that are identified as either Moderate, Large or Very Large are considered significant in line with EIA Regulations.

Table 6-4 Classification of effect

		Magnitude of impact (beneficial or adverse)				
		No change	Negligible	Minor	Moderate	Major
Level of asset's heritage value	Very high	Neutral	Slight	Moderate/ Large	Large/ Very Large	Very Large
	High	Neutral	Slight	Slight/ Moderate	Moderate/ Large	Large/Very Large
	Medium	Neutral	Neutral/ Slight	Slight	Moderate	Moderate/ Large
	Low	Neutral	Neutral/ Slight	Neutral/ Slight	Slight	Slight/ Moderate
	Negligible	Neutral	Neutral	Neutral/ Slight	Neutral/ Slight	Slight

6.3.19 This methodology aligns with paragraph 193 of the NPPF which states: "When considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset's conservation (and the more important the asset, the greater the weight should be".

6.3.20 Where two potential values of significance of effect are identified (as shown in Table 6-4), professional judgement has been used to assign the value, based on understanding of details of both the magnitude of impact and value of the asset.

6.3.21 Mitigation and/or compensation has been considered for all adverse effects, although increased importance of mitigation has been given to compensate for more significant effects. This takes into account the consultation response from Historic England to the ESR as reported in Table 6-5 and considers where mitigation and/or compensation may be applied for heritage assets which experience Slight adverse (not significant) effects as a result of the Scheme.

Consultation

6.3.22 Consultation has been undertaken with the following consultees identified in paragraphs 6.3.23 and 6.3.24 on the methodological approach within this ES.

6.3.23 The following statutory and technical historic environment consultees have been consulted:

- Historic England;
- Kirklees Council;
- WYAAS;
- Railway Heritage Trust; and
- The Victorian Society.

6.3.24 In addition to the consultees listed above, comments on the historic environment were also received in the consultation responses from:

- Canal & River Trust;
- Huddersfield Civic Society; and
- Huddersfield Railway Circle.

Scoping

6.3.25 The ESR and the subsequent Scoping Opinion informed the approach to the assessment reported in this ES. Comments raised by stakeholders have been considered in the historic environment assessment. Consultation has been ongoing throughout the EIA process. Table 6-5 outlines these comments, with a response detailing how this has been addressed in the ES is provided.

Table 6-5 Stakeholder comments and outcomes/agreements

Date	Type	Organisation	Key issues/outcomes	Outcomes/agreements
30 July 2019	Scoping Opinion	Historic England	The ES should consider Heritage assets beyond the 500m buffer zone (defined in the ESR), considering that the project passes through an area of the country where the topography and landscape character plays an important role in understanding how setting can contribute to the significance of heritage assets. Those assets considered should be identified where the nature of the asset makes them sensitive to changes within their settings e.g. their height, prominence, designed dominance etc.[23]	The assessment within the ES clearly demonstrates the extent of the proposed study area is of appropriate size to ensure that all heritage assets likely to be affected by this development have been included and can be properly assessed.
30 July 2019	Scoping Opinion	Historic England	The assessment should take account of the potential impact which associated activities (e.g. construction, servicing and maintenance, and associated traffic) might have upon perceptions, understanding and appreciation of the heritage assets in the area. The assessment should also consider, where appropriate, the likelihood of alterations to drainage patterns that might lead to in situ decomposition or destruction of below ground archaeological remains and deposits and can also lead to subsidence of buildings and monuments.	Temporary impacts from construction activities and associated traffic and temporary and permanent impacts from servicing and maintenance activities on the historic environment have been considered in the impact assessment section of this ES (see Section 6.5 of this chapter and Section 6.3 of the Route Section Assessment chapters in Volume 2ii).
30 July 2019	Scoping Opinion	Historic England	The assessment considers mitigation measures for minor or moderate adverse impacts resulting in slight (not significant) adverse effects, contrary to the stated proposed approach included in paragraph 5.6.2 of the ESR, to	The mitigation and compensation measures suggested in this ES have taken into account assets which will experience impacts resulting in slight (not significant) adverse effects and also

[23] Historic England identified a non-exhaustive list of assets which they suggested should be included in the assessment on this basis. These included Kirklees Park Grade II Registered Park and Garden, Castle Hill Scheduled Monument and Birkby, Huddersfield, Conservation Area.

Date	Type	Organisation	Key issues/outcomes	Outcomes/agreements
			address the legal requirements set out in the Planning (Listed Buildings and Conservation Areas) Act 1990 [24]and the policy requirements in the NPPF.[25]	assets where adverse effects result from impacts on their settings (see Section 6.6 of this chapter and Section 6.4 of the Route Section Assessment chapters in Volume 2ii).
30 July 2019	Scoping Opinion	Historic England	Great weight be given to the conservation of heritage assets - including development within their setting - when considering the impact of the project on their significance [26], irrespective of whether any potential harm amounts to substantial harm, total loss or less than substantial harm to its significance. Furthermore, any harm to the significance of a designated heritage asset requires a 'clear and convincing justification.[27]	Historic England and Kirklees Council have been consulted over the heritage assets which are included within the assessment in this ES.
30 July 2019	Scoping Opinion	Historic England	Any potential design-based mitigation measures consider all aspects which contribute to the significance of heritage assets, including setting, as well as physical fabric, based on a thorough understanding of the significance of heritage assets affected by the proposals. This comment was made in response to Section 5.6.3 (3rd bullet point) of the ESR which states that design-based mitigation measures may include minimising the loss and harm in relation to "elements of fabric which contribute to the station's [Huddersfield] significance"	Historic England and Kirklees Council have been consulted over the heritage assets which are included within the assessment in this ES.

[24] Planning (Listed Buildings and Conservation Areas) Act 1990, sections 16, 66 and 72.
[25] NPPF (Revised February 2019), Chapter 16.
[26] Historic England identified that this request is in line with paragraph 193 of the NPPF.
[27] Historic England identified that this request is in line with paragraph 194 of the NPPF.

Date	Type	Organisation	Key issues/outcomes	Outcomes/agreements
30 July 2019	Scoping Opinion	Historic England	Opportunities to deliver enhancements to the significance of designated and non-designated structures along the line of the Scheme are identified[28] – Historic England welcomed the aspiration to do so set out in paragraph 5.6.7 of the ESR.	Opportunities to deliver enhancements to the significance of designated and non-designated heritage assets both online and within the study area have been identified (see Section 6.6 of this chapter and Section 6.4 of the Route Section Assessment chapters in Volume 2ii.
30 July 2019	Scoping Opinion	Historic England	Given the number of designated heritage assets within the area, discussions are held with Historic England to agree the key sites and setting issues which will need to be addressed within the EIA.	The ZTV has been used to identify heritage assets which lie up to 2km from the proposed Scheme but which fall within the ZTV, and where there is potential for impact on value as a result of changes to their setting resulting from construction or operation of the proposed Scheme. This includes, but is not limited to, the assets suggested by Historic England.
19 November 2019	Scoping Opinion	West Yorkshire Archaeology Advisory Service (WYAAS)	There is the potential for non-designated heritage assets associated with the railway that should be considered in the ES.	Historic OS mapping was analysed as part of the assessment, and the locations of potential heritage assets identified by this process were marked and added to the site gazetteers of each Section assessment as outlined by WYAAS.
18 July 2019	Scoping Opinion	Kirklees Council	The proposed works will have an impact on a significant number of listed buildings/structures which are located close to this section of the railway route. It may therefore be appropriate to consider the use of a Local Consent Order or similar mechanism rather than the submission of individual applications for Listed Building Consent.	This was discussed with Kirklees Council and a decision was made to proceed with separate Listed Building Consent applications.

[28] Historic England identified that this request is in line with paragraph 200 of the NPPF.

Date	Type	Organisation	Key issues/outcomes	Outcomes/agreements
25 October 2019	Scoping Opinion	Canal and River Trust	The canal network should be regarded as a non-designated heritage asset within the assessment. Both the Huddersfield Broad Canal and Calder & Hebble Navigation contain bridges, locks and structures which are listed. The EIA will need to include an assessment of the heritage and archaeology and the proposed works on these heritage assets and their setting and how the proposals would impact on them in terms of physical and visual impacts on views, setting and appearance. Any impacts would need to be mitigated accordingly to avoid harm to significance.	The Huddersfield Broad Canal and Calder & Hebble Navigation have been considered as non-designated heritage assets in the assessment, and the assessment has considered potential impacts on these as outlined by the Canal & River Trust.

Cumulative effects

6.3.26 Cumulative effects can include Intra-Scheme impacts and Inter-Scheme impacts. Intra-Scheme impacts are where in-combination impacts arise from the Scheme. Inter-Scheme impacts occur due to impacts from more than one Scheme.

Intra-Scheme cumulative effects

6.3.27 Intra-Scheme cumulative effects are the combination of multiple activities associated with the Scheme itself. With regards to construction, cumulative effects would include multiple construction activities occurring simultaneously at or close to the same location.

Inter-Scheme cumulative effects

6.3.28 Reasonably Foreseeable Future Projects (RFFP) that have the potential to affect or be affected by the Scheme are detailed in Chapter 22 (Cumulative effects) of this ES.

6.3.29 The potential construction and operational inter-Scheme cumulative effects have been assessed based on available information and professional judgement and additional mitigation has been considered, where applicable.

Embedded Mitigation

6.3.30 Embedded mitigation, through design, has been considered as an integral part of the Scheme proposals and has therefore been included in the assessment of potential effects. Examples of embedded mitigation can include:

- Developing design approaches to minimise the loss of historic fabric where practicable;
- Design which introduces development in ways which are sympathetic to, or where possible enhance, the setting of a heritage asset;
- Design of new elements to reflect the character or aesthetics of a heritage asset, where this retains or enhances the value of the asset;
- Design of new elements which reflect the character of material or styling of historic features that will be lost;
- Use of materials which better reveal the value or historic associations of a heritage asset; and
- Reuse of reclaimed historic fabric in the reconstruction or replacement of a heritage asset.

6.3.31 Appropriate additional mitigation measures to reduce and, wherever possible, avoid identified adverse effects will be explored and discussed within this ES chapter.

6.3.32 Any residual effects of the Scheme on the historic environment following the inclusion of mitigation measures will be identified.

6.3.33 Further detail is provided in Section 6.6 (Mitigation measures) of this ES.

Assumptions and limitations

6.3.34 The assessment of impacts and effects on the historic environment contained within this chapter and the accompanying Route Section Assessments takes into account a number of assumptions and limitations. These have arisen from the extent of the Scheme design, including construction design, knowledge and understanding of the historic environment and responses from stakeholders.

Assumptions

6.3.35 The understanding of extent, survival and value of non-designated heritage assets (both identified on the HER and from historic maps) has been based on available information and professional judgment.

6.3.36 The ABA report (TransPennine Route Statement of History and Significance: West of Leeds, 2017) was used as a basis to inform the online structures baseline.

6.3.37 An understanding of the value of the historic canals (and associated structures) has been based on professional judgment, and a Medium value has been assigned to all surviving elements of the Calder & Hebble Navigation, and the Huddersfield Broad Canal as they are significant surviving elements of the 18th and 19th century transport network along the Colne valley, with the significance being enhanced by the canals still being in use. The canals also draw significance from their historical associations with the surrounding historic townscapes of the settlements they pass through.

6.3.38 Broad historic landscape types have been taken from the Kirklees Historic Landscape Characterisation and have considered their current use and how this reflects historic character. The value of each broad historic landscape type within each route section has been based on professional judgment.

6.3.39 The Conservation Implementation Management Plan (CIMP) will further define mitigation and compensation measures for historic buildings. This will be secured as a condition of the Listed Building Consents and will be agreed with the appropriate historic environment stakeholders (Historic England and Kirklees Council).

Limitations

6.3.40 The HER data and information contained therein relating to each non-designated heritage asset is reliant on WYAAS for its accuracy.

6.3.41 The assessment of the impact of the strengthening works to Huddersfield Station's retained train shed roof has been based on a current understanding of the agreed approach to the strengthening and current known extent of required work. This has been agreed with Historic England and Kirklees Council, and the exact extent of strengthening (i.e. the number of individual elements requiring intervention) will be agreed as a condition of the TWAO.

6.3.42 Assessment of impact on the setting of heritage assets due to the visibility of Overhead Line Equipment (OLE) has been based on an understanding of the indicative design regarding the nature and extent of OLE, using professional judgment based on experience of similar impacts elsewhere.

6.3.43 No archaeological evaluation investigations have been undertaken to inform the historic environment assessments, in agreement with WYAAS. Assessment of archaeological potential has been based on desk-based assessment and will be supplemented by archaeological investigations and any associated mitigation and compensation prior to construction.

6.4 Baseline

6.4.1 This section provides a summary of the characterisation of the historic environment, forming the baseline conditions of the assessment within this ES. This historic environment baseline has been established through desk-based assessment, walkover survey and consultation, as described above in Section 6.3.

6.4.2 The detailed characterisation of the historic environment baseline is provided in Chapter 6 (Historic environment) of each Route Section Assessment in Volume 2ii of the ES, supported by additional information presented in the gazetteers of heritage assets in Appendix 6-3 and accompanying Figures 6-1 to 6-4.

Prehistory and early history

6.4.3 There are no existing HER records within the study area that date to the Palaeolithic and Mesolithic period with the earliest human activity in Kirklees recorded dating to the Neolithic period[29]. The Archaeological Research Agenda for the Palaeolithic and Mesolithic in West Yorkshire[30] outlines that the county plays a key role within the study of the Mesolithic, and the county boasts the highest integrity of recorded artefact distributions (best preserved in terms of artefact movement) in the world, one of the key sites at the Mesolithic-Neolithic transition, and the earliest known upland early Mesolithic site.

6.4.4 Kirklees is rich in flint finds, but there is a notable lack of activity off the hilltops and moors, and known activity relies on spot finds (David Hunter, WYAAS, email, 14/05/20). There are a number of early prehistoric sites immediately outside the study area (indicated by HER entries 18, 19, 20, 03926 and 03927) which relate to Bronze Age and later prehistoric settlement activity; and recent archaeological investigations at Granny Lane, Mirfield (around 1km to the south-west of the eastern end of Route Section 4) have uncovered likely prehistoric activity characterised by shallow pits containing charcoal and heat shattered pebbles; and at Woodward Court, Mirfield (around 1.7km to the north-east of the Route Section) where a number of Bronze Age cremation burials were recently excavated (David Hunter, WYAAS, email 14/05/20). Within the study area itself there is no Neolithic evidence or activity recorded, the HER records for the study area show no Bronze Age activity or findspots also. Close to Bog Hall to the south of Route Section 4, is the recorded findspot of an Iron Age beehive quern (HER 2105). Beehive querns were used from late prehistory through to the Roman period (c200BC – 400AD) and their presence within the baseline indicates the potential for activity within the study area at this time. Also contained within the study area is; a cropmark believed to be of a Prehistoric or early Roman (Iron Age/ Romano-British) ditched enclosure (HER 18324), and a possible Prehistoric enclosure in land south of Ravensthorpe Road, Thornhill (HER 642)

6.4.5 There is little evidence of Roman activity in West Yorkshire31. Datable items are rarer in the county than in other locations. Within the study area, evidence for the Iron Age and Romano-British period is found in the following HER records; cropmarks thought to be prehistoric or early Roman ditched enclosure (HER 18324), a findspot of a Roman brooch in the Huddersfield area (HER 1737), the aforementioned beehive querns of indeterminate Iron Age/ Roman date, the supposed site of a small Roman fort at Cleckheaton (HER 2310).

6.4.6 Within West Yorkshire there has been historically little evidence for the end of the Roman period in the county with limited excavations around historic settlements and little conclusively datable evidence from rural sites. Several rural sites may have potential for occupation in this period and late Roman phase occupation (4th-5th C BC)[32] has been identified at the fort at Castleford. Occupation in the post-Roman period is referenced by Bede, in the Domesday book, and in the Tribal Hidage, a list of 35 tribes compiled in Anglo-Saxon England at some point between the 7th-9th Centuries[33] with inscribed gravestones and place-names supporting the proposed history and land division. Within the study area there is no recorded evidence of

29 West Yorkshire Archaeology Advisory Service – Historic Environment Record
30 West Yorkshire Archaeology Advisory Service and Penny Spikins, 2010
31 West Yorkshire Archaeology Advisory Service and Blaise Vyner, 2008
32 West Yorkshire Archaeology Advisory Service and Blaise Vyner, 2008
33 https://en.wikipedia.org/wiki/Tribal_Hidage

post-Roman/ early medieval archaeology or findspots.

6.4.7 There is no evidence within the study area or its immediate environs for the early medieval period; however, Mirfield was recorded in the Domesday Book, and was the site of an impressive motte & bailey castle. In addition, the area of Helm Farm is noted as having evidence for 15th century settlement activity; and West Mill (HER 13978) is first mentioned in 1517 in an act for the sale of the manor of Mirfield, indicating that there was small-scale industrial activity going on within Mirfield at the cusp of the Industrial Revolution.

6.4.8 At the beginning of the 18th century, the historic county of West Riding had appeared to be predominately agricultural but in fact held a wide and diversified local economy. In the west of the county this comprised a combination of pastoral farming and textile manufacture. The rise of textile production as the local industry of choice was based on the quantity and quality of the locally available resources - local wool, an abundance of soft water for the washing of both wool and cloth, and of water-power for the mechanised finishing processes. Initially, cloth manufacture was carried out by a large number of individuals for their own benefit.[34]

6.4.9 Later changes to this process included influxes of large-scale entrepreneurs employing outworkers to produce cloth in quantity for sale in bulk, there was influx of imported raw materials. The balance between farming and manufacture in some areas of the Calder valley was particularly skewed towards textile production. The scale of local production encouraged the formation of 'public water-powered mills to full cloth - these mills were privately owned and provided a public service to anyone able to pay. During the course of the century, local retail markets or 'Piece Halls became commonplace in the major towns - one of the largest constructed being the Piece Hall at Halifax, a secure site built in 1779 to display and market the wares of more than 300 individual merchants.[35]

6.4.10 Toward the east of the county, the mixed economy comprised a combination of arable farming with activities such as small-scale mining and iron manufacture. Here, too, the choice of industry was at least partly attributable to the available resources. The south-eastern portion of the county contained many local surface seams of coal, which had long been exploited for domestic fuel. The area also contained an abundance of wood for charcoal, and of ironstone associated with the available coal seams. Initial local infrastructure and transport links were poor and limited this economic activity. However, a burgeoning national demand for coal at the end of the 17th century encouraged local entrepreneurs to finance a series of attempts to improve the regions waterways to facilitate export. After the success of the Aire and Calder Navigation in opening Leeds and Wakefield to the Humber Estuary in 1702/03 and proving the principle of canal working as sound, the foundation was laid for other later canal ventures within the county. Inland waterway travel allowed local producers to ship their product further afield without incurring the tax levied on coal sent by sea from the North East of England, allowing them to be highly competitive across markets served by waterways feeding into the Humber.[36]

6.4.11 By the late 18th Century new powered milling techniques developed in Derbyshire were coming to the fore of bulk thread production. Public mills initially serviced this new process but over time these were complemented by private mills built by consortiums of industrialists, and by the 19th Century many individual textile manufacturers were producing their products in purpose-built mills they solely owned and controlled.[37]

6.4.12 Moving into the 19th century the textile trades saw a continuation of the trends established by

[34] West Yorkshire Archaeology Advisory Service, 2005
[35] West Yorkshire Archaeology Advisory Service, 2005
[36] West Yorkshire Archaeology Advisory Service, 2005
[37] West Yorkshire Archaeology Advisory Service, 2005

1830. This refinement of techniques and methods led to improvement in quality and production volume increases across the regions industries. This is met with a corresponding intensification in dependence on external markets and raw materials from sources beyond the region. The powered mechanical techniques used in the textile industry were first developed in cotton before being introduced to the worsted and woollen cloth industries, eventually passing to the reclaimed fibre shoddy and mungo trades. Correspondingly the number and types of mills in West Yorkshire dramatically expanded in this period. Ultimately there were nearly two thousand individual mills within West Yorkshire with tens of thousands of buildings and premises associated with the mills and their trades. Textile production prevalent in West Yorkshire comprised worsted cloth in Bradford, flax spinning in Leeds, and, blanket production in the Heavy Woollen district centred on Ossett, Dewsbury, and, Batley. It was in the Heavy Woollen district that the process of recovering fibres from wool waste was pioneered, creating the Shoddy and Mungo trades which augmented imported wool stocks within the region. Financial recession, material availability, and overseas competition led to a dramatic impact on West Yorkshire's fortunes during 1860-70 but adaptation and diversification into other forms of textile manufacture regained stability in the area by the beginning of the 20th Century.[38]

Development of the Transpennine railway

6.4.13 The Transpennine Route between Huddersfield and Westtown was constructed and opened between 1836 and 1849. The route today comprises sections of rail line developed by different railway companies, characteristic of the wider Transpennine Route between York, Selby and Manchester. The complex chain of companies and projects is a typical product of the "Railway Mania" of the mid-1840s, the height of a period of commercial confidence and expansion in the railways[39].

6.4.14 Between Huddersfield and Westtown, the Transpennine Route is made up of sections of:

- The Manchester & Leeds Railway, constructed 1836-39, between Ravensthorpe and Heaton Lodge;
- The Leeds, Dewsbury & Manchester Railway, constructed 1845-47, between Westtown (Dewsbury) and Ravensthorpe; and
- The Manchester & Huddersfield Railway, constructed 1846-49, between Heaton Lodge and Huddersfield.

6.4.15 The line formed a new, more direct route to the West Riding from Manchester, in competition to the earlier Manchester & Leeds Railway which had been constructed through the Calder Valley in the late 1830s. The more direct route was enabled partly through the advances in tunnel construction and large-scale engineering technology, notably realised through the construction of the 3-mile Standedge Tunnel under the Pennine watershed to connect the line between the Upper Thame and Colne Valleys. Between Huddersfield and Westtown (Dewsbury), the line is partly characterised by such examples of large scale and/or pioneering engineering structures, including tunnels, viaducts and both masonry and cast-iron bridges.

6.4.16 The development and expansion of the railways and their associated infrastructure during the first half of the 19th century, was characterised by the considerable influence on those towns which experienced the development of this new mode of transport. The railways resulted in place-making and industrial growth, as towns benefited from the connections and influences which they brought with them. The Transpennine Route between Huddersfield and Westtown (Dewsbury) certainly had an influence on towns, forming an additional infrastructure element of the expansion of settlements such as Mirfield already underway as a result of the growth of

[38] West Yorkshire Archaeology Advisory Service, 2005
[39] Alan Baxter Associates, 2019. *TransPennine Route Upgrade Route-wide Statement of Significance*. 14.

textile, mining and maltings industries. The prime example of this is seen through Huddersfield Station, a magnificent exercise in architectural patronage, which itself influenced the growth and development of the town centre and shaped the character of Huddersfield's architecture. Other stations along the route are more minor examples and have been altered or rebuilt during their lifetime.

6.4.17 With the continued growth of the network and expansion in volume of passenger and freight traffic during the second half of the 19th century, the LNWR embarked on widening the Transpennine Route between Ravensthorpe and Stalybridge during the 1880s and 1890s. A number of the stations and structures along the Route were altered during this period to accommodate the widening of the line.

6.4.18 The history and significance of the Transpennine Route is discussed at more length in the Route-Wide Statement of Significance (Alan Baxter, 2019), included in Appendix 6-1 of this ES.

Online designated heritage assets

6.4.19 Online designated assets identified in the historic environment baseline are characterised as the 'online' structures, designated as listed buildings, that are located on the alignment of the Transpennine Route, within the Scheme boundary.

6.4.20 There are 20 online designated assets located between Huddersfield and Westtown (Dewsbury) which are displayed on Figure 6-1 in Volume 4 of this ES. These include the Grade I Listed Huddersfield Station; and 19 Grade II listed bridges.

6.4.21 The Grade I Listed Building Huddersfield Station (NHLE 1277385) is considered to be of High value, based on its historic significance as a nationally important building. The 14 Grade II Listed bridges within the Scheme are considered to be of Medium value. A number of the online designated heritage assets are located within or interface with offline heritage assets, for example where online assets are located within conservation areas. Such occurrences are identified within the relevant Route Section Assessment in Volume 2ii of the ES.

Online non-designated heritage assets

6.4.22 Online non-designated assets identified in the historic environment baseline are characterised as structures that have no formal designation but are recorded in the HER and have been identified through historic map regression and are located on the alignment of the Transpennine Route, within the Scheme boundary.

6.4.23 There are 63 non-designated online heritage assets identified including underbridges, overbridges, pipe bridges, tunnel portals and culverts. These are identified on Figure 6-1 in Volume 4 of this ES.

6.4.24 The majority of the non-designated online heritage assets are considered to be of Low value, based on their limited heritage significance, the extent to which they've been altered and extent of survival of historic fabric. The total of online non-designated heritage assets considered to be of each value are listed in Table 6-6.

Table 6-6 Value of online non-designated heritage assets identified in the historic environment baseline

Designation	Value	Total
Online Non-Designated Heritage Assets	High	0
	Medium	0
	Low	33

Designation	Value	Total
	Negligible	29
	Unknown	1

6.4.25 A number of the online heritage assets are located within or interface with offline heritage assets, for example where online assets are located within conservation areas. Such occurrences are identified within the relevant Route Section Assessment in Volume 2ii of the ES.

Offline designated heritage assets

6.4.26 Offline designated heritage assets identified in the historic environment baseline constitute all designated heritage assets identified within the 250m study area, and those identified through the ZTV where their setting is considered to be sensitive to change from the Scheme, in line with the methodology described above in Section 0.

6.4.27 There are 296 offline heritage assets identified within the historic environment baseline between Huddersfield and Westtown (Dewsbury). Of these, 259 offline designated heritage assets lie within the 250m study area. A further seven heritage assets lying outside the 250m study area have been identified for inclusion in the historic environment baseline using the methodology discussed in Section 6.3. The location of these designated assets are shown in Figure 6-2 in Volume 4 of this ES.

6.4.28 The offline designated heritage assets within the historic environment baseline comprise:

Table 6-7 Value of offline designated heritage assets identified in the historic environment baseline

Designation	Value	Total
Scheduled Monument	High	1
Grade I Listed Building	High	1
Grade II* Listed Building	High	12
Grade II Listed Building	High	1
Grade II Listed Building	Medium	274
Grade II Listed Building	Low	2
Grade II Registered Parks & Gardens	Medium	1
Conservation Area	Medium	4

6.4.29 There are no World Heritage Sites or Registered Battlefields identified within the study area for this ES.

6.4.30 The majority of the offline designated heritage assets identified in the historic environment baseline date from the post-medieval period, largely from the 18th and 19th century. This reflects the historic development of settlements such as Huddersfield during this period; the density of Listed Buildings in the centre of Huddersfield in particular evidences the historic growth of the town and the historic survival of this townscape. The character of the designated heritage assets also reflects the development of the region during the 18th and 19th centuries, with buildings of industrial, commercial and civic character surviving throughout the area. A small number of the designated heritage assets identified within the historic environment baseline pre-date the 18th century: notable examples include the Scheduled Monument of Castle Hill (NHLE 1009846), which evidences continued settlement activity from the late Neolithic through to the 19th century, and the complex of buildings including the Grade I Listed Thornhill Lees Hall (NHLE 1313642), of various dates from the 15th to the 18th century.

6.4.31 There are 15 offline designated heritage assets identified in the historic environment baseline

which are considered to be of High value; these comprise the Scheduled Monument, and the Grade I and Grade II* Listed Buildings. The rest of the offline designated heritage assets, comprising Grade II Listed Buildings, Grade II Registered Parks and Gardens and Conservation Areas are considered to be of Medium value. The total numbers of offline designated heritage assets considered to be of each value are listed in Table 6-7.

Offline non-designated heritage assets

6.4.32 Offline non-designated heritage assets identified in the historic environment baseline comprise all those non-designated heritage assets recorded on the West Yorkshire HER within the 250m study area and also any non-designated assets identified from historic mapping within the 250m study area using professional judgement, as discussed above in Section 6.3.

6.4.33 There are 361 offline non-designated heritage assets located within the 250m study area identified within the historic environment baseline. Of these, 96 are assets recorded on the West Yorkshire HER, with the additional 265 assets identified from historic mapping. The location of these in relation to the Scheme, are shown in Figure 6-3.

6.4.34 The offline non-designated heritage assets identified within the historic environment baseline include historic buildings or structures and the sites thereof, buried archaeological remains, and evidence relating to place names or historic mapping suggesting archaeological potential. The non-designated heritage assets are primarily of post-medieval date, largely dating to the 18th and 19th centuries, though there are also assets dating to the Iron Age, medieval and 20th century periods. There are no non-designated assets identified within the baseline dating to the early prehistoric, Romano-British or early medieval periods. Based on current understanding, there are eight non-designated assets identified which are of unknown date.

6.4.35 The majority of the non-designated assets identified in the historic environment baseline are considered to be of Low or Negligible value, based on their heritage significance, local interest and extent of survival. Three non-designated assets are considered to be of Medium value, all of which relate to the Calder & Hebble Navigation and Huddersfield Broad Canal. The total numbers of offline non-designated heritage assets considered to be of each value are listed below in Table 6-8.

Table 6-8 Value of offline non-designated heritage assets identified in the historic environment baseline

Value	Total
Medium	7
Low	90
Negligible	260
Unknown	4

6.4.36 The Calder & Hebble Navigation (ATK300) runs through the Colne Bridge and Battyeford (Route Section 4); Mirfield and Lower Hopton (Route Section 5); and Ravensthorpe and Westtown (Route Section 6) Route Sections within the study area. The Navigation was constructed from the late 1750s, opening as far as Sowerby Bridge by 1770, with further extensions and additions made over the following decades. The Navigation comprises a series of canals cut to bypass weirs and loops in the Rivers Calder & Hebble, enabling navigation along the rivers and shorten these journeys. Within the study area, surveying and construction of the route was overseen by the eminent civil engineer John Smeaton, who is recognised as a highly influential engineer of this time, and who was responsible for innovative designs for mills, steam engines, bridges, harbours and canals. Improvement of communications along the River Calder was both integral to and driven by the development of industry in the surrounding area and provided local manufacturers with a direct link between the Northern Pennines and the Humber Estuary. The Navigation today remains in use and

retains a high degree of historic legibility. Considering its historic interest and association with John Smeaton, the Calder & Hebble Navigation has been assessed to be of Medium value.

6.4.37 The Huddersfield Broad Canal (or Sir John Ramsden Canal) (HER 18486) extends through the Huddersfield (Route Section 1), Hillhouse and Fartown (Route Section 2), Deighton and Bradley (Route Section 3) and Colne Bridge and Battyeford (Route Section 4) Route Sections. Authorised in 1774, the canal extends for 6km between the Calder & Hebble Navigation at Cooper Bridge and the Apsley Basin in Huddersfield, where it connects with the Huddersfield Narrow Canal (ATK302). Development of the canal was funded by Sir John Ramsden, Lord of the Manor of Huddersfield, and a member of the influential Ramsden family who fostered Huddersfield's development as an industrial centre during the 18th and 19th centuries. Construction of the canal provided the growing town with a vital communications route for import and export of goods, facilitating its growth as an industrial centre. The canal remains in use today and has been assessed to be of Medium value.

6.4.38 Within the study area, the setting of both the Calder & Hebble Navigation and the Huddersfield Broad Canal are constrained to the canal corridors and the immediately surrounding land and makes limited contribution to their significance. Numerous listed buildings, including locks, and lock keeper's houses, are present along both canals. These all have their own settings and are discussed under the relevant route section assessments.

6.4.39 The West Yorkshire HER records a number of archaeological findspots considered to have been removed or destroyed. These sites are not considered heritage assets in themselves, as there cannot be impacts on archaeological finds which have been removed. However, they provide evidence of the potential for as yet unknown archaeological deposits within the study area.

Historic landscape

6.4.40 As noted in paragraph 6.3.8, the *Kirklees Historic Landscape Characterisation Project Final Report* (January 2017) has been used to identify and characterise the historic landscape within the historic environment baseline. This existing study includes the identification and analysis of both broad and narrow historic landscape character types, based on historic development of the Kirklees area. For this ES, broad historic landscape types, located within the 250m study area between Huddersfield and Westtown (Dewsbury) have been identified.

6.4.41 There are 11 broad historic landscape character types which have been identified in the historic environment baseline between Huddersfield and Westtown (Dewsbury). The location of these, relative to the Scheme are shown in Figure 6-4. These are described and their value defined in Table 6-9.

Table 6-9 Baseline broad historic landscape types identified in the historic environment baseline

Asset Number	Broad historic landscape type	Description	Value
HLC1	Commercial	Business areas characterised by commercial activities. These can include urban and suburban commercial cores, warehousing, modern retail centres, offices.	Low to Medium
HLC2	Communications	Transport corridors and infrastructure, such as bus depots, canal wharfs, rail depots and sidings, car parks and motorways.	Low to Medium
HLC3	Enclosed Land	Land that has been enclosed for agricultural purposes. This includes piecemeal	Negligible to Low

Asset Number	Broad historic landscape type	Description	Value
		enclosure, agglomerated fields, and meadows.	
HLC4	Horticulture	Large scale commercial gardening enterprises such as major orchards, nurseries and market gardens.	Low
HLC5	Industrial	Areas characterised by industrial buildings and uses. These can include textile mills, metal trades, engineering and dyeworks.	Negligible to Medium
HLC6	Institutional	Areas (with or without buildings) connected to large establishments, associations and organisations such as schools, church, hospitals, cemeteries and local government.	Low to Medium
HLC7	Open Land	Unimproved land and open land including moorland, and urban areas reverting to scrub like flora.	Negligible
HLC8	Parkland and Recreational	Designed ornamental landscapes and those used for recreational purposes. This type includes allotments, sports facilities, playing fields, private and public parks.	Low to Medium
HLC9	Residential	Areas characterised by the presence of residential buildings. These include urban and suburban housing (e.g. terraced houses, residential estates, high-rise flats and detached houses and villas), and rural housing including farms.	Negligible to Medium
HLC10	Water bodies	Large water bodies including reservoirs and lakes. Does not include smaller millponds (characterised as Industrial)	Negligible
HLC11	Woodland	Areas of woodland including ancient and semi-natural woodland.	Negligible to Medium

6.4.42 All six Route Sections contain nine of the 11 broad historic landscape types. HLC4 Horticulture is only identified in the Deighton and Bradley Route Section, and HLC10 Water Bodies is only identified in the Mirfield and Lower Hopton and Ravensthorpe and Westtown Route Sections.

6.4.43 The historic landscape character areas identified in the study area result predominantly from development in the post-medieval and modern periods and reflect the development of the Calder Valley as an industrial, commercial and residential centre during this period.

6.4.44 The Industrial type is focussed particularly to the east of the study area along the banks of the River Calder and is dominated by historic textile mills and engineering works, as well as modern industrial uses. Within the Huddersfield route section, the prevailing type is Commercial, focussed particularly on the historic core of the city where it is characterised by 19th century commercial buildings. Within the Deighton and Bradley (RS3), Colne Bridge & Battyeford (RS4), and Ravensthorpe and Westtown (RS6) route sections, this broad type is characterised principally by modern commercial uses such as business parks and distribution centres. Closely associated with both the Industrial and Commercial types is Communications. Including uses such as canal wharfs, railway sidings and bus stations and carparks, this type developed in tandem with the commercial and industrial uses, facilitating their operation through transport of materials, goods, and people.

6.4.45 The Residential type is found across the study area and is focussed particularly to the north of

the Scheme. This broad type includes villas, terraced housing and farms of 18th and 19th century date, as well as later 20th and 21st century housing. Interspersed with the residential type are Institutional types, such as schools and churches; as well as pockets of woodland, open land, parkland and recreational, and horticultural land. Large areas of enclosed land are present to east of study area and south of the railway as Scheme runs along the edge of the urban conurbation, taking in meadows, irregularly shaped fields resulting from piecemeal enclosure and larger amalgamated fields.

Potential for buried archaeological remains

6.4.46 Throughout the majority of the Scheme study area it is likely that 19th century developments, notably the construction of the Huddersfield Broad Canal, and later, the Transpennine railway, are to have resulted in considerable ground disturbance and made ground, which limits probable survival of buried archaeology from earlier periods.

6.4.47 Within Route Section 1, there may be the potential for buried remains associated with the former railway goods yard (HER 6525) at Huddersfield Station, though the potential value of such remains is not clear, and the extent of ground disturbance is unknown. Towards the eastern and western ends of Route Section 1, there may also be the potential for buried archaeological remains associated with a non-designated site of historic industrial activity, Union Dyeware Mills (HER 6671), to the north of Longroyd Lane within the vicinity of Longroyd Lane construction compound.

6.4.48 Within Route Section 2, there may be the potential for buried remains associated with historic railway infrastructure within the extent of the former Hillhouse Sidings, including the site of the White Stone Engine Shed (HER 18375). As at Huddersfield Station, the potential value of such remains is not clear, and the extent of ground disturbance is unknown.

6.4.49 Within Route Section 4, the area of the Heaton Lodge Cutting, including the Paul Lane compound, does not appear to have been subject to significant ground disturbance in the past, and as it is located within an area that would likely have been an attractive place for seasonal hunting and settlement activity in the later prehistoric period there is the potential for archaeological remains associated with this to survive. In addition, there are a number of recorded sites associated with coal mining and quarrying close to Heaton Lodge Cutting, and there is also the potential for archaeological remains associated with these to survive.

6.4.50 Kirklees is rich in flint finds, but there is a notable lack of evidence for activity off the hilltops and moors, and known activity relies on spot finds. There are a number of early prehistoric sites within the vicinity of the Scheme, comprising flint scatter findspots within Kirkheaton parish[40]. Within Route Section 4 is the recorded findspot of an Iron Age beehive quern (HER 2105). Beehive querns were used from late prehistory through to the Roman period (c.200BC – 400AD) and their presence within the baseline indicates the potential for nearby settlement and small-scale industrial activities, which indicates that there is a potential for the presence of associated archaeological remains in this area.

6.4.51 Within Route Section 6, there is evidence of earlier activity represented in the study area, comprising an undated cropmark on greenfield site to west of study area (HER 642) and the listed buildings of Thornhill Lees Hall and the associated area of medieval settlement (HER 2636). Towards the western end of the Route Section 6 area, historic mapping shows mine working and spoil tips to have been present during the 19th and 20th centuries which may have impacted upon the survival of any unknown archaeological remains; however the presence of the cropmark site to the southwest of Ravensthorpe Road (HER 642) may indicate potential

[40] These assets lie outside the study area and are not recorded in the accompanying gazetteer or figures. (WYAAS HER PRNs 18, 19, 20, 03926 and 03927)

for other archaeological remains to survive in this area.

6.4.52 Prior to any works in the above areas, confirmation will be agreed in writing with the LPA in consultation with West Yorkshire Archaeology Advisory Service (WYAAS) as to whether a WSI is required further detail is outlined in Section 6.4 of each Route Section Assessment).

6.4.53 The remaining Route Sections have limited archaeological potential and areas / sites deemed to have some archaeological interest have been noted. However, the nature, character, extent and significance of any archaeological remains in these areas are not fully understood at this time. Therefore, it is difficult to be precise about the level of impact on any buried archaeological remains and it has been recommended that further consultation with West Yorkshire Archaeology Advisory Service takes places prior to any works commencing.

6.5 Potential effects

6.5.1 As per the assessment methodology (see above Section 6.3), impacts on the historic environment as reported in this ES are defined as the degree of change that would be experienced by the asset and its setting if the Scheme were to be completed as compared with a 'do nothing' situation. Potential effects arising from the Scheme have been assessed taking into account embedded mitigation within the design of the Scheme (see Section 6.6).

6.5.2 Table 6-10 identifies the number of permanent and temporary construction and operational impacts, both significant and not significant, for each Route Section.

Table 6-10 Construction and operation impacts for all Route Sections

Route Section	Construction		Operation
	Permanent	Temporary	Permanent
1 – Huddersfield	5	54	17
2 – Hillhouse and Fartown	4	7	0
3 – Deighton and Bradley	7	8	1
4 – Colne Bridge and Battyeford	8	3	1
5 – Mirfield and Lower Hopton	9	7	7
6 – Ravensthorpe and Westtown	11	16	6

6.5.3 Potential significant effects (i.e. Moderate, Large or Very Large) on historic environment assets, are reported below. All potential impacts on the historic environment are presented in the Route Section Assessments and the impact tables in Appendix 6-4.

Construction

6.5.4 The significant effects on heritage assets within each of the route sections area discussed as follows and listed within Table 6-10. These include significant effects which are permanent and/or temporary.

Route Section 1

6.5.5 The permanent changes at Huddersfield Station (NHLE 1277385) will result in the loss of historic fabric and the permanent alteration of elements of the station which contribute to its overall significance. Taking into account the extent to which the station derives significance from those elements affected, the permanent impact will constitute notable change to the station's overall significance. This will constitute a permanent moderate adverse impact to the asset as a result of construction of the Scheme. Considering that the loss of historic fabric is partly offset by the strengthening of the retained historic roof and the reinstatement of the lantern, this will result in a permanent **Moderate adverse** effect.

6.5.6 Construction of the Scheme will also result in temporary impacts on Huddersfield Station, due to construction activity infiltrating on the setting of the structures. The construction works within and around the station will temporarily form a prominent element of the setting of the station, affecting appreciation of the station in views from the north, south and west, as well as altering the experience of the historic environment within the station itself. This will include construction compounds and potential infiltration from noise, dust and vibration. The construction activity will form a notable alteration to the setting of the station for the duration of the construction phase. This will constitute a temporary moderate adverse impact, which will result in a temporary **Large adverse** effect.

6.5.7 The construction of the Scheme will involve the following impacts to the Listed Huddersfield Viaduct:

- The replacement of the deck of Huddersfield Viaduct (Span 1) Underbridge (MVL3/92(1));
- The replacement of the deck of Huddersfield Viaduct (Span 29) Underbridge (MVL3/92(9));
- Small-scale physical alterations to Huddersfield Viaduct (Span 4) Underbridge (MVL3/92(3)); and
- Alterations to the fabric of the Viaduct for construction of OLE and a signal gantry.

6.5.8 For the Huddersfield Viaduct (Span 1) Underbridge (MVL3/92(1)), the existing historic metallic spans will be replaced with a new metallic deck, which will project beyond the existing footprint of the span on the eastern side. The replacement deck has been designed to reflect the historic character of the existing deck, particularly in the design of the parapets, which will match the detailing of the existing. The loss of the historic fabric of the structure will notably change it, even though this is slightly offset by the degree to which the design of the replacement responds to and is sympathetic to its historic character and significance. This will constitute a permanent Moderate adverse impact on Huddersfield Viaduct (Span 1) Underbridge (MVL3/92(1)), resulting in a permanent **Moderate adverse** effect.

6.5.9 For the Huddersfield Viaduct as a whole, the permanent physical alterations to the Viaduct will result in loss of historic fabric along the length of the structure, including the existing historic metallic spans that will be replaced with a new metallic deck (Span 1) and new prestressed concrete decks on Huddersfield Viaduct (Span 29) Underbridge (MVL3/92(9)) which will project beyond the existing footprint of the span. The design of the changes has been shaped to reflect the historic character of the Viaduct and respond to its significance. The small-scale physical alterations to Huddersfield Viaduct (Span 4) Underbridge (MVL3/92(3)) will comprise of repair work to strengthen the north-western abutment of the span. Considering the extent of permanent change to the Listed Viaduct and the permanent impact on the its significance, this will constitute a permanent Moderate adverse impact on Huddersfield Viaduct, resulting in a permanent **Moderate adverse** effect.

6.5.10 Construction of the Scheme will result in temporary impacts on two offline designated heritage assets of Medium value located in proximity to Huddersfield Viaduct. These comprise:

- The Empire Cinema (Grade II Listed Building, NHLE 1288963); and
- The Sportsman and Marhaba takeaway, 1 St John's Road (Grade II Listed Building, NHLE 1464388.

6.5.11 Construction activity will infiltrate on their setting as both buildings are located with views towards or from them which contain Huddersfield Viaduct (Span 1) Underbridge (MVL3/92(1)) as prominent elements. The presence of construction compounds and works around the Viaduct will be visible in these views and degrade this aspect of the assets' settings. Considering the notable alteration to their setting and the extent to which they derive significance from such visual relationships, for both assets this will constitute temporary moderate adverse impacts, resulting in temporary **Moderate adverse** effects.

Route Section 2

6.5.12 No significant construction effects.

Route Section 3

6.5.13 In order to construct the Scheme, it is necessary to remove the Grade II Listed Wheatley's Overbridge (MVL3/103) (NHLE 1450537), an asset of Medium value. The track alignment through Route Section 3 conflicts with the existing northern abutment and central pier of the double arched bridge. Design development has taken into consideration potential alterations to the Scheme design to attempt to avoid or reduce the impact.

6.5.14 The construction of the Scheme will consequently result in the loss of the Grade II Listed bridge, as well as impact on its group value as an A. S. Jee structure on the Transpennine Route. The loss will constitute a permanent major adverse impact, resulting in a permanent **Large adverse** effect**.**

Route Section 4

6.5.15 In order to construct the Scheme, it is necessary to partially demolish and rebuild the Grade II Listed B6118 Bridge Road Overbridge (MVL3/107) (NHLE 1450265), an asset of Medium value. To achieve 100mph line speed at this location there is a clash with the proposed horizontal alignment and the central pier of the bridge; and for the electrification of the line there is a significant vertical clash between the soffits of the arches and the proposed location of the OLE equipment. Design development has taken into consideration the value of this asset, and the proposals include the retention of part of the bridge's historic fabric.

6.5.16 The construction of the Scheme will consequently result in the loss of the majority of the Grade II Listed Bridge's significance. The nearly complete loss will constitute a permanent Major adverse impact, resulting in a permanent **Large adverse** effect.

6.5.17 In order to construct the Scheme, it is necessary to remove Heaton Lodge Footbridge (MVL4/4), an asset of Low value. The bridge has an inadequate load carrying capacity, and there is insufficient vertical clearance beneath the bridge soffit to allow OLE and insufficient gauge from the running edge to support the sub-structure. The footbridge will be removed and replaced with a Network Rail standard detail structure on the same alignment. This will constitute a permanent Major adverse impact, resulting in a permanent **Moderate adverse** effect.

6.5.18 The construction of the Scheme will result in a temporary adverse impact on Calder & Hebble Navigation Number 2 Lock / Sir John Ramsden's Canal Number 2 Lock (Grade II Listed Building, NHLE 1313801), an asset of Medium value. Number 2 Lock derives significance from its setting within the Huddersfield Broad canal and within the Calder & Hebble Navigation, and will experience temporary Moderate adverse impacts due to increased noise levels in its setting from the presence of the compound, as well as works to B6118 Bridge Road Overbridge (MVL3/107)in proximity to the asset. Such impacts can degrade the extent to which Number 2 Lock derives significance from its setting, resulting in a temporary **Moderate adverse** effect.

Route Section 5

6.5.19 Construction works, including scaffolding, hoardings and plant, will temporarily alter the appearance of Mirfield Viaduct Underbridge (MVN2/192) (Grade II Listed, NHLE 1313676), and will be visible in views towards and across the bridges, while compounds will be located adjacent to the structures. This will temporarily detract from the extent to which the structures derive significance from their setting as the temporary works will at points physically obscure

the distinctive faces of the structures and will heavily intrude into views of the structures. This will constitute temporary Moderate adverse impacts on both assets resulting in temporary **Moderate adverse** effect.

6.5.20 Construction works, including scaffolding, hoardings and plant, will temporarily alter the appearance of Wheatley's Underbridge (MVN2/196) (Grade II Listed, NHLE 1450703) and will be visible in views towards and across the viaduct, while compounds will be located adjacent to the it. This will temporarily detract from the extent to which the structure derives significance from its setting as the temporary works will at points physically obscure the distinctive faces of the structure. This will constitute a temporary moderate adverse impact, resulting in a temporary **Moderate adverse** effect.

6.5.21 The construction of the Scheme will result in a temporary adverse impact on the Grade II Listed Ledgard Bridge (NHLE 1183989) an asset of Medium value, due to construction activity infiltrating on the asset's setting. Construction work associated with Mirfield Viaduct Underbridge (MVN2/192) will be present within the immediate vicinity of the listed bridge; hoardings and plant will be visible in views to, from and across Ledgard Bridge, while noise and dust will also be present within its setting. Considering the extent to which the asset derives significance from its setting, this will constitute a temporary moderate adverse impact, resulting in a temporary **Moderate adverse** effect.

Route Section 6

6.5.22 Construction of the Scheme will result in a permanent impact on the Grade II Listed structure of Occupation Underbridge (MDL1/10) (NHLE 1450702). In order to accommodate the realignment of the railway track, the bridge arch will be infilled with concrete foam and faced to the south with a stone retaining wall of sympathetic materials and construction to the historic bridge, which will be slightly recessed from face of the bridge to aid the legibility of the historic bridge arch. A new embankment will be constructed across the north elevation, obscuring the bridge from view. This will adversely impact upon the value of this structure as a largely unaltered Heroic era (1841-50) railway bridge. The infilling of the bridge arch will prevent movement under the bridge, ceasing the asset's historic function as an accommodation bridge and altering the way in which the bridge is experienced. The construction of the Scheme has been assessed to result in a permanent moderate adverse impact on Occupation Underbridge (MDL1/10)**,** resulting in a permanent **Moderate adverse** effect.

6.5.23 The setting of Calder & Hebble Canal Underbridge (MDL1/6) (NHLE 1183783) and MDL 1/8 River Calder (NHLE 1313646) will be temporarily affected during the construction phase due to the presence of the main works compound within Ravensthorpe Triangle to the southwest of Calder & Hebble Canal Underbridge (MDL1/6), and extensive construction works associated with the construction of Baker Viaduct (RBA/2) to the south. This will require the presence of construction plant and activities, such as piling rigs, cranes, scaffolding, and earthworks construction associated with the proposed viaduct. The main works compound will include the presence of a large semi-permanent office building, storage cabins, a substation, effluent tanks, materials stockpiles and car parking. These would result in noticeable noise and visual intrusion on the setting of Calder & Hebble Canal Underbridge (MDL1/6)and River Calder Underbridge (MDL1/8) for the duration of the four-year construction phase, intruding on views to and from the bridges on their southern side, and intruding on appreciation of their architectural form and value. This has been assessed to result in a temporary moderate adverse magnitude of impact and temporary **Moderate adverse** significance of effect.

6.5.24 Construction of the Scheme will result in the removal of Station Footbridge (MDL1/4) Ravensthorpe Station footbridge which has been assessed to be of Low value. The magnitude of this impact has been assessed to be permanent major adverse, and the significance of effect has been assessed to be permanent **Moderate adverse**.

Operation

6.5.25 The significant effects on heritage assets during the operational phase of the Scheme, are discussed below for each route section. These significant effects are permanent.

Route Section 1

6.5.26 The operation of the completed Scheme will result in permanent impacts on the Grade I Listed Huddersfield Station (NHLE 1277385). The permanent changes will result in notable alterations to the station's setting which contribute to its overall significance. Taking into account the extent to which the station derives significance from those areas of its setting affected, the permanent impact will constitute a permanent moderate adverse impact as a result of operation of the completed Scheme. Considering that the infiltration of new elements into the setting of the station is partly offset by the way the design of such elements responds to the station's setting and significance, along with the improvements to the experience for those using the station and their ability to appreciate its significance as a result, this will mean a permanent **Moderate adverse** effect.

6.5.27 The operation of the completed Scheme will result in permanent impacts on the Grade II Listed Huddersfield Viaduct (NHLE 1223531), an asset of Medium value, which includes Huddersfield Viaduct (Span 1) Underbridge (MVL3/92(1))and Huddersfield Viaduct (Span 29) Underbridge (MVL3/92(9)). This will be as a result of permanent alterations to the setting of each asset from the presence of OLE and the signal gantry and will constitute a notable alteration to the asset's setting, affecting the appreciation of the asset's significance. This will result in a permanent moderate adverse impact, and a permanent **Moderate adverse** effect.

Route Section 2

6.5.28 No significant operational effects.

Route Section 3

6.5.29 No significant operational effects.

Route Section 4

6.5.30 The operation of the Scheme will result in a permanent adverse impact on the setting of Number 2 Lock (Grade II Listed, HNLE 1313801), an asset of Medium value. The presence of the proposed Bradley Principal Supply Point (PSP) directly to the north-west of the asset, and the removal of screening vegetation to the south of the railway and associated OLE will alter the existing enclosed character of the area that has a focus on the canal. It is noted that views will be improved from Number 2 Lock to the south-west taking in the Huddersfield Broad Canal and the Canal Bridge Taking Colne Bridge Road (Grade II Listed, NHLE 1221180); however the increased presence of the railway in the views and associated OLE, as well as the modern buildings to the north-west will dominate the asset's setting. This will constitute a permanent moderate adverse impact, resulting in a permanent **Moderate adverse** effect.

Route Section 5

6.5.31 No significant operational effects.

Route Section 6

6.5.32 The new structure of Baker Viaduct (RBA/2) will form a major new element in the setting of Calder & Hebble Canal Underbridge (MDL1/6) and River Calder Underbridge (MDL1/8) and a dominant feature in views towards the bridges from the southeast. The new structure has, however, been designed to reduce impacts on the settings and views of the Listed Buildings

as far as possible, through the selection of design features such as:

- Crossing the River Calder with a 55m span, enabling use of a thinner bridge deck which avoids the use of a bulky and thick span across the river;
- Matching spacing of the viaduct piers to the abutments of River Calder Underbridge (MDL1/8) as it crosses the River Calder;
- Incorporation of a back span to the new structure, enabling views of Calder & Hebble Canal Underbridge (MDL1/6) from the south to be framed by the new viaduct;
- Design of the viaduct piers to comprise a large central column flanked by a smaller column to either side, reducing their visual impact and providing visual permeability through the structure;
- Visibility of the arrangement of weathered steel girders supporting the viaduct, reminiscent of the cast iron girder construction of Calder & Hebble Canal Underbridge (MDL1/6) and River Calder Underbridge (MDL1/8);
- Use of a slightly arched spans to the viaduct, echoing the arched form of Calder & Hebble Canal Underbridge (MDL1/6) and MDL 1/8 River Calder; and
- Use of concrete and weathered steel for construction of the new structure, which will be visible to users of the public rights of way (PRoW) under the structure, enabling understanding of its form and construction, in a similar way to visibility and legibility of the construction of the Listed bridges when viewed from the PRoW.

6.5.33 In consideration of the design measures incorporated to preserve views and respect the settings of Calder & Hebble Canal Underbridge (MDL1/6) and River Calder Underbridge (MDL1/8) the magnitude of impact on these assets of High value has been assessed to be permanent moderate adverse and the significance of effect has been assessed to permanent **Moderate adverse**.

Scheme-wide impacts

6.5.34 The Scheme will impact on the group value of the bridges designed by A.S. Jee on the Transpennine Route, such as Wheatley's Overbridge (MVL3/103), and B6118 Bridge Road Overbridge (MVL3/107). The loss of these bridges would remove an element of this group of 22 bridges designed by A.S. Jee, which are constructed of good quality stone, while being typical and conventional structures of the era [41]. The bridges designed by Jee derive part of their value from their group relationship, and the significance of the unaffected bridges would therefore be slightly diminished by the removal of some of their number. The group would, however, substantially survive and the impacts to other bridges would amount to considerably less than substantial harm.

6.5.35 The Scheme will impact on the group value of the masonry underbridges designed by Grainger, with impacts on Occupation Underbridge (MDL1/10), which has group value alongside MDL 1/35 Howley Mill Lane (Grade II Listed, NHLE 1452199) and MDL 1/39 Churwell (Grade II Listed, NHLE 1451051). Although there will be changes to Occupation Underbridge (MDL 1/10), its value alongside the other structures will continue to be able to be appreciated, and the structures will still form a group of three bridges recognisable for their common architectural form. Similarly, though the Scheme will result in changes to other Grainger structures, such as Toad Holes, Dewsbury Underbridge (MDL1/12) and Ming Hill Underbridge (MDL1/14), the value of the Grainger-designed structures as a group will not be appreciably diminished.

6.5.36 Temporary impacts on the Calder & Hebble Navigation (Asset ATK300) will result from the

[41] Alan Baxter Associates, 2019, Transpennine Route Upgrade Route-Wide Statement of Significance, 37.

construction of the Scheme. This will be greatest in the Ravensthorpe to Westtown Route Section, due to the works for the construction of Baker Viaduct (RBA/2). Noise and visual intrusion on the setting of the canal will result from construction works for the viaduct and the presence of a large construction compound flanking the canal to the east of Calder & Hebble Canal Underbridge (MDL1/6), and the temporary placement of a bailey bridge over the canal to facilitate construction access. These works will result in noticeable noise and visual intrusion on the canal and dominate its setting in this area, detracting from appreciation of the canal's relationship with the historic railway bridge Calder & Hebble Canal Underbridge (MDL1/6). Temporary closure of the Navigation will also be required in this area to facilitate construction, temporarily detracting from its legibility. Noise and visual intrusion from construction works may also infiltrate on the setting of the Navigation at the Cooper Bridge Intersection and Lowlands Road in Mirfield, although of lesser severity in this area.

6.5.37 Construction of the Scheme will result in temporary impacts on the Huddersfield Broad Canal (HER 18486), an asset of Medium value, at multiple locations within the study area. Works to Huddersfield Broad Canal Underbridge (MVL3/108) and Huddersfield Broad Canal Underbridge (MVL3/108S) at the east end of the canal will result in temporary disruption to navigation along the canal, and result in temporary noise and visual intrusion on its setting. Infiltration of noise and visual intrusion on the asset's setting will also occur as a result of the compound site located at Ridings Underbridge (MVL3/99) and works along the Transpennine Route where the canal runs in proximity to the railway in the area west of Whitaker Street.

6.6 Mitigation measures

6.6.1 Mitigation has been used in three separate ways in this environmental assessment: embedded mitigation; mitigation measures and compensation. These are briefly described below and have their basis in the hierarchy of mitigation as detailed in *LA 104 Environmental Assessment and Monitoring*[42].

6.6.2 Embedded mitigation occurs within the design stage and is intended to include elements within the design that avoid or substantially reduce negative change to the significance of a historic asset. It can also include elements where loss of historic significance is compensated through high quality new design and use of materials. There may also be changes that enhance or improve the historic asset.

6.6.3 Additional mitigation measures are applied post-design stage and are intended to include processes and activities that will reduce the level of negative change to the significance of an historic asset.

6.6.4 Compensation measures are applied post design stage and recognise that the impacts cannot be removed or reduced. These measures are intended as a means of recording the negative change to the significance of an historic asset; enabling future dissemination of information about this change.

Mitigation embedded in design

6.6.5 The Scheme has been developed through an iterative design process (see Chapter 3 (Consideration of alternatives) of the Scheme-wide ES (Vol 2i)), including involvement of historic environment specialists and consultation with statutory historic environment stakeholders (see above, Section 6.3), in order to avoid or reduce potential impacts on historic environment assets.

[42] Design Manual for Roads and Bridges, LA 104, Sustainability & Environment Appraisal, Environmental assessment and monitoring. Revision 1 (August 2020)

6.6.6 Descriptions of where mitigation has been embedded in design in relation to heritage assets are provided in the Route Section Assessments and include:

- Retention of and visibility of as much original fabric as possible;
- Definition between old and new material;
- Protection panels/equipment to shield historic fabric
- Infilling of any openings in historic structures to be recessed and with appropriate material;
- New finishes and materials that relate to the character of the area and the historic structure; and
- Avoidance of attaching fixings/new elements to historic structures (e.g. OLE).

6.6.7 Notable heritage assets with mitigation measures embedded within design are outlined in Table 6-11.

Table 6-11 Heritage assets with mitigation measures embedded within design

Route Section	Heritage asset	Embedded mitigation
Route Section 1	Huddersfield Station	The design of the Scheme at Huddersfield Station has been developed in a process which has been informed by the Huddersfield Station Statement of Significance, incorporated historic environment stakeholder engagement and the undertaking of Heritage Impact Assessment. This has led to embedded mitigation both in the overall design approach and with respect to individual elements of the historic station
		The design of the overall platform arrangement and track alignment through Huddersfield Station was developed with input from historic environment specialists and informed by the Huddersfield Station Statement of Significance. The process included optioneering which realised an optimum design-balancing operational requirement, with minimising impacts on the significance of the Grade I Listed Station. In particular, the design approach retained the majority of the main span of the trainshed roof, as well as realising the retention (albeit with required relocation) of the tea rooms on the island platform
		The design development process included assessment of the condition of the extent of the existing historic trainshed roof which will be retained; this informed the design of strengthening work for the retained section of the roof, which will enhance the structure's longevity
		The design of the reinstated lantern on the roof considered the history of the original lantern and how reinstating a lantern can both enhance the significance of the historic roof and also improve passenger comfort within the station environment.
		The design of the new canopies responded to the significance of the station, by being sympathetic to the existing roof and using its scale and form as design drivers. Consequently, the new canopies are of smaller scale than the retained historic roof and include similar geometry, while their design preserves visibility towards and legibility of the historic roof
		The design of the new canopies also responded to the setting of the station by opening up views towards the Listed warehouses and tower in the former goods yard area to the west of the station, thereby enhancing the legibility of the historic connections between these assets and the station
		The design of the new footbridge was developed to minimise the structure's impact on views out from and back towards the historic station platform areas. The structure was designed to be glazed and therefore as visually permeable as is practicable in the context of operational constraints, as well as providing new views towards the roof and out over the surrounding townscape, enhancing understanding of these elements of the station and its setting.
		The design of the works to the tea rooms were developed to retain the historic tea rooms' character and significance, through maintaining the structure's position on the island platform (albeit with a slight movement) and provide a construction methodology which would minimise the risk to the structure during

Route Section	Heritage asset	Embedded mitigation
		construction. The reorientation of the tea rooms was also shaped to respond to its significant elements of its historic function, while maintaining its external appearance.
	Huddersfield Viaduct (MVL3/92)	The design of the replacement deck of Huddersfield Viaduct (Span 1) Underbridge (MVL3/92(1))has been shaped to reflect the historic character of the existing structure, particularly through the design of the parapets to match the detail of the existing.
		The design of the replacement spans at Huddersfield Viaduct (Span 29) Underbridge (MVL3/92(9)) has been shaped to respond to the significance of the structure while also being honest about the loss of historic fabric. The widened abutments will be clad to match the existing appearance of the viaduct, while the parapets of the concrete deck have been designed to reflect the lost metallic spans with patterned relief.
		The proposed reuse of masonry removed during the strengthening works to the north-western abutment at Huddersfield Viaduct (Span 4) Underbridge (MVL3/92(3))to face the strengthened abutment has been defined to maintain the appearance of the structure.
		The design of the signal gantry and OLE across Huddersfield Viaduct have been developed to minimise the visual impact and alteration to historic fabric as far as is practicable in the context of operational constraints. The positioning of OLE has been designed to maintain rhythm along the structure and to position the portals on the deck where possible, while the signal gantry has been designed to avoid the need to attach it to the exterior of the viaduct.
		The required strengthening of the spandrel walls of the viaduct has been designed to be undertaken in a form matching existing historic strengthening, using pattress plates and ties.
Route Section 3	Wheatley's Overbridge (MVL3/103)	The use of materials and finishes for the new bridge span and deck to reflect the area's historic industrial character such as light-weight Weathering Steel.
		The use of new concrete abutments to be clad with stonework that is similar to the historic fabric to reflect original design.
Route Section 4	B6118 Bridge Road Overbridge (MVL3/107)	The desirability to retain part of the existing structure with the exception of the two spans over the railway to maintain the legibility of the former bridge's alignment and use
		The remaining arches would be infilled in a sensitive manner, with a recessed masonry façade sympathetic to the existing structure's aesthetics, thereby retaining the historic character of the surviving elements of the Listed structure.
Route Section 5	Mirfield Viaduct Underbridge (MVN2/192)	The placing of OLE on the deck of the masonry spans, thereby avoiding the need for parapet reconstruction or fixings to the outside of the historic masonry viaduct
		The placing of OLE portals over the piers of the viaduct to retain the rhythm of the structure
	Wheatley's Underbridge (MVN2/196)	The development of the design to avoid attaching OLE to the outside of the viaduct.
		The reconstruction of the parapet to maintain the structure's historic appearance
		The placing of OLE portals as close to the piers as possible to retain the rhythm of the structure

Route Section	Heritage asset	Embedded mitigation
Route Section 6	New Baker Viaduct (RBA/2)	The alignment and height of the viaduct were developed to be almost level with Calder & Hebble Canal Underbridge (MDL1/6) and River Calder Underbridge (MDL1/8) to provide meaningful views from the new viaduct to the historic structures across and to avoid dominating their setting.
		A span of 55m across the River Calder was selected to enable the reduction of the thickness of the viaduct deck as far as possible to enable retained views to the bridges from the south-east.
		The spacing of the viaduct piers to either side of the River Calder was designed to match the abutments of River Calder Underbridge (MDL1/8), respecting the scale and massing of the historic structure and preserving views towards it
		A back span was incorporated into the viaduct design to the west of the Calder & Hebble Navigation, enabling views of Calder & Hebble Canal Underbridge (MDL1/6) from the south to be framed by the new viaduct.
		Design of the viaduct piers to comprise large central column flanked by a smaller column to either side, reducing their visual impact and conveying an understanding of their structural function in the transfer of loading from the viaduct deck to the ground.
		Visibility of the arrangement of weathered steel girders supporting the viaduct, reminiscent of the cast iron girder construction of Calder & Hebble Canal Underbridge (MDL1/6) and River Calder Underbridge (MDL1/8).
		Use of a slightly arched spans to the viaduct, echoes the arched form of Calder & Hebble Canal Underbridge (MDL1/6) and River Calder Underbridge (MDL1/8).
		Use of concrete and weathered steel for construction of the new structure, will present a complementary visual and textural contrast to the historic structures, and enable construction of the viaduct to be understood, similarly to the understanding of Calder & Hebble Canal Underbridge (MDL1/6)and River Calder Underbridge (MDL1/8) which is possible from the PRoW under the structures.
	Occupation Underbridge (MDL1/10), Toad Holes, Dewsbury Underbridge (MDL1/12) and Ming Hill Underbridge (MDL1/14)	The design of the infilling of the structures was developed to retain the legibility of the historic form and character of the bridges on their southern sides, through creating a recessed infill of new masonry.

Additional mitigation and compensation measures

6.6.8 Where the embedded mitigation measures do not fully avoid or mitigate impacts and effects, additional mitigation and compensation measures will be applied.

6.6.9 Additional mitigation measures avoid or reduce negative impacts; compensation measures compensate for negative impacts and recognise the adverse change. Where sufficient embedded or additional mitigation cannot be achieved by physical or operational controls, there is a role for compensation to address the residual effects of the Scheme.

6.6.10 Mitigation measures to be incorporated into the construction process in order to address potentially significant effects are set out in the Code of Construction Practice (CoCP). Part A of the CoCP is provided in Appendix 2-1 and includes mitigation measures to reduce the impact of the Scheme on the environment, in line with industry good practice and include such measures as;

- Screening planting;
- Protective panels;
- Construction traffic plan;
- Noise barriers;
- Compound arrangement;
- Compound barriers; and
- Toolbox talks

6.6.11 Compensation measures can include:

- Historic building recording;
- Archaeological investigation and recording;
- Interpretation; and
- Re-use of historic fabric.

6.6.12 Individual areas of known or potential archaeological remains are discussed in Section 6.4 of the Route Section Assessments. Specific mitigation and compensation measures for the management of these sites are yet to be defined and would be implemented through a condition attached to the deemed planning permission[43] (further details are provided in the Route Section Reports).

6.6.13 Historic building recording will be undertaken in accordance with Historic England's guidance contained within *Understanding Historic Buildings, A Guide to Good Recording Practice* (2016). Typically, historic building recording can include a drawn record, photography and a written record. Levels of recording have been determined based on the significance of the affected structure and the potential impact. The levels are:

- Level 1 – a basic visual record supplemented by the minimum information needed to identify the building's location, age and type;
- Level 2 - a descriptive record, made in similar circumstances to Level 1 but when more information is needed; and
- Level 3 - an analytical record comprising an introductory description followed by a systematic account of the building's origins, development and use.

[43] "On making an order under the Transport and Works Act 1992, the Secretary of State may direct that planning permission shall be deemed to be granted, subject to such conditions (if any) as may be specified in the direction."

6.6.14 The requirement for Historic Building Recording will be carried out under a condition attached to the Listed Building Consents.

6.7 Residual effects

6.7.1 Embedded mitigation, through design, has been considered as an integral part of the Scheme proposals and has therefore already been included in the initial assessment of potential effects.

6.7.2 Residual effects on heritage assets are those effects remaining, as a result of the Scheme, after mitigation measures have been taken into account. The additional compensation measures outlined do not diminish effects on affected assets; these measures acknowledge change or loss and evidences this through mechanisms such as building recording, recording evidence of archaeology, designing/integrating heritage interpretation and re-using historic fabric.

6.7.3 Significant residual effects for historic environment assets within the Scheme, resulting from construction and operation are summarised in Table 6-12.

Table 6-12 Summary of residual effects

Asset	Phase	Pre-mitigation impact and effect	Mitigation/compensation	Residual impact and effect
Route Section 1				
Online designated assets				
Huddersfield Station (Grade I Listed, NHLE 1277385)	Construction	Permanent Moderate adverse impact Permanent Moderate adverse effect	The following compensation measures will be implemented under a condition attached to the Listed Building Consent (for application NR17): • Historic building recording to Level 3 on the trainshed roof • Historic building recording to Level 2 on the tea rooms The CIMP (to be submitted to HE and Kirklees as a condition to the LBC) will include the following measures: • Opportunities for sustainable reuse of materials; • Monitoring of the tea rooms during dismantling and reconstruction; and • Appropriate methodology for tearoom dismantling, storage and reconstruction.	Permanent Moderate adverse impact Permanent **Moderate adverse** effect which is significant
		Temporary Moderate adverse impact Temporary Large adverse effect	The following measures are included in Part A of the CoCP (see Appendix 2-1): • Measures to minimise the environmental effect from construction activity; and • Toolbox talks.	Temporary Moderate adverse impact Temporary **Large adverse** effect which is significant
	Operation	Permanent Moderate adverse impact Permanent Moderate adverse effect	No mitigation/compensation	Permanent Moderate adverse impact Permanent **Moderate adverse** effect which is significant

Asset	Phase	Pre-mitigation impact and effect	Mitigation/compensation	Residual impact and effect
Huddersfield Viaduct (Span 1) Underbridge (MVL3/92(1)) (Grade II Listed, NHLE 1223531)	Construction	Permanent Moderate adverse impact Permanent Moderate adverse effect	The following measures will be implemented under a condition attached to the Listed Building Consent (for application NR18): Historic building recording to Level 2; and • Opportunities for sustainable reuse of materials	Permanent Moderate adverse impact Permanent **Moderate adverse** effect which is significant
Huddersfield Viaduct (Span 29) Underbridge (MVL3/92(9)) and Huddersfield Viaduct (Span 4) Underbridge (MVL3/92(3))(Grade II Listed, NHLE 1223531)	Construction	Permanent Moderate adverse impact Permanent Moderate adverse effect	The following measures will be implemented under a condition attached to the Listed Building Consent (for application NR18): • Historic building recording to Level 2 on Span 29; • Historic building recording to Level 1 on Span 4; and • Opportunities for sustainable reuse of materials.	Permanent Moderate adverse impact Permanent **Moderate adverse** effect which is significant
	Operation	Permanent Moderate adverse impact Permanent Moderate adverse effect	The following measures will be implemented under a condition attached to the Listed Building Consent (for application NR18): Historic building recording to Level 1, including recording of the setting.	Permanent Moderate adverse impact Permanent **Moderate adverse** effect which is significant
Empire Cinema (Grade II Listed, NHLE 1288963)	Construction	Temporary Moderate adverse impact Temporary Moderate adverse effect	The following measures are included in Part A of the CoCP: • Measures to minimise the environmental effect from construction activity • Toolbox talks	Temporary Moderate adverse impact Temporary **Moderate adverse** effect which is significant
The Sportsman and the Marhaba takeaway (Grade II Listed, NHLE 1464388)	Construction	Temporary Moderate adverse impact Temporary Moderate adverse effect	The following measures are included in Part A of the CoCP:	Temporary Moderate adverse impact Temporary **Moderate adverse** effect which is significant

Asset	Phase	Pre-mitigation impact and effect	Mitigation/compensation	Residual impact and effect
			• Measures to minimise the environmental effect from construction activity; and • Toolbox talks.	
Route Section 3				
Online designated assets				
Wheatley's Overbridge (MVL3/103) (Grade II Listed, NHLE 1450537)	Construction	Permanent Major adverse impact Permanent Large adverse effect, which is significant.	The following measures will be implemented under conditions attached to the Listed Building Consent (for application NR19): • Historic building recording to Level 3 • Incorporation of heritage interpretation in replacement bridge design • Opportunities for sustainable reuse of materials	Permanent Major adverse impact Permanent **Large adverse** effect, which is significant.
Route Section 4				
Online designated assets				
B6118 Colne Bridge Road Overbridge (MVL3/107) (Grade II Listed, NHLE 1450265)	Construction	Permanent Major adverse impact Permanent Large adverse effect, which is significant	The following measures will be implemented under conditions attached to the Listed Building Consent (for application NR20): Historic building recording to Level 3; • Incorporation of heritage interpretation in replacement bridge design; and • Opportunities for sustainable reuse of materials	Permanent Major adverse impact Permanent **Large adverse** effect, which is significant
Online non-designated assets				
Heaton Lodge Footbridge (MVL4/4)	Construction	Permanent Major adverse impact Permanent Moderate adverse effect, which is significant	The following measures are included in Part A of the CoCP: Historic building recording to Level 3	Permanent Major adverse impact Permanent **Moderate adverse** effect, which is significant

Asset	Phase	Pre-mitigation impact and effect	Mitigation/compensation	Residual impact and effect
			Incorporation of heritage interpretation in replacement bridge design (materials to be used will be secured through a condition attached to the deemed planning permission) Opportunities for sustainable reuse of materials Opportunities for careful dismantling and resurrection at heritage railway/museum	
Offline designated assets				
Number 2 Lock (Grade II Listed, NHLE 1313801)	Construction	Temporary Moderate adverse impact Temporary Moderate adverse effect, which is significant	The following measures included in Part A of the CoCP: • Installation of protective measures; and • Measures to minimise visibility of construction activity and reduce dust and noise. Agreed construction traffic programme to manage construction traffic crossing as secured through a planning condition.	Temporary Moderate adverse impact Temporary **Moderate adverse** effect, which is significant
Route Section 5				
Online designated assets				
Mirfield Viaduct Underbridge (MVN2/192) (Grade II Listed, NHLE 1313676)	Construction	Temporary Moderate adverse Impact Temporary Moderate adverse effect, which is significant	Toolbox talks secured through Part A of the CoCP	Temporary Moderate adverse Impact Temporary **Moderate adverse** effect, which is significant.
Wheatley's Underbridge (MVN2/196) (Grade II Listed NHLE 1450703)	Construction	Temporary Moderate Adverse Impact	The following measures will be implemented under conditions attached	Temporary Moderate adverse impact

Asset	Phase	Pre-mitigation impact and effect	Mitigation/compensation	Residual impact and effect
		Temporary Moderate adverse effect, which is significant	to the Listed Building Consent (for application NR22): Historic building recording to Level 1 as secured through Listed Building Consent conditions. Toolbox talks secured through Part A of the CoCP	Temporary **Moderate adverse** effect, which is significant
Offline designated assets				
Ledgard Bridge (Over River Calder) (Grade II NHLE 1183989)	Construction	Temporary Moderate adverse impact Temporary Moderate adverse effect, which is significant	Protective measures, such as protective panels and/or warning signs secured through Part A of the CoCP Agreed construction traffic programme to manage construction traffic to be included in the Construction Traffic Management Plan to be submitted and approved as a condition attached to the deemed planning permission. Measures to minimise the environmental effect of construction activity secured through Part A of the CoCP	Temporary Moderate adverse impact Temporary **Moderate adverse** effect, which is significant
Route Section 6				
Online designated assets				
Calder & Hebble Canal Underbridge (MDL1/6) (Grade II Listed, NHLE 1183783)	Construction	Temporary Moderate adverse impact Temporary Moderate adverse effect, which is significant.	No mitigation/compensation	Temporary Moderate adverse impact Temporary **Moderate adver**se effect, which is significant.
	Construction	Temporary Moderate adverse impact	No mitigation/compensation	Temporary Moderate adverse impact

Asset	Phase	Pre-mitigation impact and effect	Mitigation/compensation	Residual impact and effect
River Calder Underbridge (MDL1/8) (Grade II Listed, NHLE 1313646)		Temporary Moderate adverse effect, which is significant.		Temporary **Moderate adverse** effect, which is significant.
	Operation	Permanent moderate adverse impact Permanent Moderate adverse effect, which is significant.	No mitigation/compensation	Permanent moderate adverse impact Permanent **Moderate adverse** effect, which is significant.
Occupation Underbridge (MDL1/10) (Grade II Listed, NHLE 1450702)	Construction	Permanent Moderate adverse impact Permanent Moderate adverse effect, which is significant.	The following measures will be implemented under conditions attached to the Listed Building Consent (for application NR24): Historic building recording to Level 2 or above	Permanent Moderate adverse impact Permanent **Moderate adverse** effect, which is significant.
Online non-designated assets				
Station Footbridge (MDL1/4)	Construction	Permanent Major adverse impact Permanent Moderate adverse effect, which is significant.	The following measures included in Part A of the CoCP: Historic building recording to Level 2 Opportunities for sustainable reuse of materials	Permanent Major adverse impact Permanent **Moderate adverse** effect, which is significant.

6.8 Cumulative effects

6.8.1 Cumulative effects can include intra-Scheme impacts and inter-Scheme impacts. Intra-Scheme impacts are where in-combination impacts arise from the Scheme. Inter-Scheme impacts occur due to impacts from more than one Scheme.

Intra- Scheme (synergistic) impacts

6.8.2 Potential intra-Scheme effects may occur from interaction with other technical disciplines.

6.8.3 Potential synergistic impacts have been identified that correspond to the Historic environment. These include:

- Noise and vibration – in terms of their impact upon the setting of assets;
- Biodiversity – the potential impact of recommended ecological mitigation and compensation may affect buried archaeological remains; and
- Landscape, townscape and visual – in relation to key views to and from heritage assets, the visibility of the Scheme in the wider landscape, proposed mitigation planting and landscaping Schemes.

6.8.4 Further consideration of cumulative effects is provided in Chapter 22 of this ES (Cumulative effects).

Inter-Scheme effects

6.8.5 Inter-project cumulative effects may occur from interaction with other proposed developments RFFPs located near the Scheme. When combined with the works in the Scheme area these could cumulatively affect sensitive receptors. Inclusion of RFFPs includes their proximity to the Scheme, likely impacts and timing of construction and operation.

6.8.6 In terms of the historic environment, an elevated, cumulative effect (which could be beneficial or adverse), could occur where:

- The construction of the Scheme and RFFPs both have a physical impact upon an above ground or buried heritage asset within the historic environment baseline, that is common to both projects; or
- The construction or operation of the Scheme and RFFPs both have an impact upon the historic character or setting of above ground or buried heritage assets within the historic environment baseline.

6.8.7 The potential inter-Scheme cumulative effects in relation to historic environment are provided in Table 6-13.

Table 6-13 Potential inter-scheme cumulative effects

Route Section	Planning Application ref.	Development description	Location	Planning status	EIA available	Potential cumulative effects	
						Construction	Operation
1 – Huddersfield	2020/90014	Demolition of existing building and erection of car sales and speculative B1/B2 unit with associated parking and access	11, The Triangle, Market Street, Paddock, Huddersfield, HD1 4RN	Conditional Full Permission – March 2020	No relevant environmental assessment information submitted	There will be no impact on any heritage assets which will increase as a result of the construction of the Scheme acting in combination with the RFFP.	There will be no impact on any heritage assets which will increase as a result of the operation of the Scheme acting in combination with the RFFP.
1 – Huddersfield	Strategic highway scheme	Highways improvements to the junction of Huddersfield Ring Road/Southgate/ Northumberland Street.	Kirklees Council	Strategic Scheme	No relevant environmental assessment information submitted	There will be no impact on any heritage assets which will increase as a result of the construction of the Scheme acting in combination with the RFFP.	There will be no impact on any heritage assets which will increase as a result of the operation of the Scheme acting in combination with the RFFP.
1 – Huddersfield	Strategic highway scheme	Highways improvements to the junction of Leeds Road/Lower Fitzwilliam Street/Gasworks Street. The.	Kirklees Council	Strategic Scheme	No relevant environmental assessment information submitted	There will be no impact on any heritage assets which will increase as a result of the construction of the Scheme acting in combination with the RFFP.	There will be no impact on any heritage assets which will increase as a result of the operation of the Scheme acting in combination with the RFFP.
1 – Huddersfield 2 – Hillhouse and Fartown	Strategic highway scheme	A62 Smart Corridor (Leeds Road - Phase 1)	Kirklees Council	Strategic Scheme	No relevant environmental assessment information submitted	There will be no impact on any heritage assets which will increase as a result of the construction of the Scheme acting in combination with the RFFP.	There will be no impact on any heritage assets which will increase as a result of the operation of the Scheme acting in combination with the RFFP.
1 – Huddersfield 2 – Hillhouse and Fartown	Strategic highway scheme	Highways improvements to the junction of Leeds Road/Thistle Street/Hillhouse Lane.	Kirklees Council	Strategic Scheme	No relevant environmental assessment information submitted	There will be no impact on any heritage assets which will increase as a result of the construction of the Scheme acting in combination with the RFFP.	There will be no impact on any heritage assets which will increase as a result of the operation of the Scheme acting in combination with the RFFP.
2 – Hillhouse and Fartown	Strategic highway scheme	Highways improvements to the junction of Leeds Road/Old Fieldhouse Road.	Kirklees Council	Strategic Scheme	No relevant environmental assessment information submitted	There will be no impact on any heritage assets which will increase as a result of the construction of the Scheme acting in combination with the RFFP.	There will be no impact on any heritage assets which will increase as a result of the operation of the Scheme acting in combination with the RFFP.
3 – Deighton and Bradley	2017/91111	Outline application for erection of industrial development for B1 (business), B2 (general industry), and B8 (storage and distribution) uses	Station Road, Bradley, HD2 1UT	Conditional Outline Permission August 2017	No relevant environmental assessment information submitted	The combined impact of the RFFP and the Scheme would result in increased temporary impacts on the Grade II Listed Johnsons Lock (NHLE 1134347) and the non-designated Bradley Viaduct (HER18485), due to construction activity infiltrating on their setting due to increased noise. The likely levels of noise from the construction of the RFFP are not known, therefore the magnitude of these potential cumulative impacts on the assets are unknown at this stage. The combined impact of the RFFP and the Scheme would result in increased temporary impacts on the Grade II Listed Pandam Aram Farmhouse (NHLE 1134289), due to the visibility of construction activity infiltrating on its setting. This would result in a minor adverse cumulative impact, resulting in a **Slight adverse** cumulative effect, which is not significant.	There will be no impact on any heritage assets which will increase as a result of the operation of the Scheme acting in combination with the RFFP.

Route Section	Planning Application ref.	Development description	Location	Planning status	EIA available	Potential cumulative effects	
						Construction	Operation
4 – Colne Bridge and Battyeford	2016/93896	Erection of 4 dwellings and associated works	Site off, Station Road, Bradley, Huddersfield, HD2 1US	Conditional Full Permission – February 2017	No relevant environmental assessment information submitted	There will be no impact on any heritage assets which will increase as a result of the construction of the Scheme acting in combination with the RFFP.	There will be no impact on any heritage assets which will increase as a result of the operation of the Scheme acting in combination with the RFFP.
4 – Colne Bridge and Battyeford	2017/91208	Outline application for erection of industrial development of up to 3684 sqm B1c/B2/B8, with means of access (to, but not within, the site) from Colnebridge Road	Land adjacent to Colnebridge WWTW, Colnebridge Road, Bradley	Conditional Outline Permission – Nov 2017	No relevant environmental assessment information submitted	The construction phase of the Scheme would result in an impact on the setting of three Listed Assets. The application for this RFFP has been submitted in outline form with all matters reserved, except access. The precise impact on the heritage asset is therefore not fully understood at this stage. It is therefore anticipated that the RFFP will consider the effects of the development and the Scheme (including works proposed to upgrade the railway).	No significant effects are anticipated on the three Listed Assets during the operational phase and therefore no significant cumulative effects are anticipated.
4 – Colne Bridge and Battyeford	Strategic highway scheme	A62/A644 Wakefield Road (Cooper Bridge) -	Kirklees Council	Strategic Scheme	No relevant environmental assessment information submitted	There will be no impact on any heritage assets which will increase as a result of the construction of the Scheme acting in combination with the RFFP.	There will be no impact on any heritage assets which will increase as a result of the operation of the Scheme acting in combination with the RFFP.
4 – Colne Bridge and Battyeford	Strategic housing scheme	Kirklees Local Plan Allocation HS11 – housing allocation for 1.460 dwellings with potential for a further 498 dwellings beyond the plan period	Land north of Bradley Road, Bradley		No relevant environmental assessment information submitted	There will be no impact on any heritage assets which will increase as a result of the construction of the Scheme acting in combination with the RFFP.	There will be no impact on any heritage assets which will increase as a result of the operation of the Scheme acting in combination with the RFFP.
6 – Ravensthorpe and Westtown	2017/94119	Demolition of existing building, erection of new building for educational classroom, cafe and toilets, upgraded access road, car parking, cycle parking, picnic and play areas.	Land off Sands Lane, Mirfield, WF14	Conditional Full Permission – May 2018	No relevant environmental assessment information submitted	There will be no impact on any heritage assets which will increase as a result of the construction of the Scheme acting in combination with the RFFP.	There will be no impact on any heritage assets which will increase as a result of the operation of the Scheme acting in combination with the RFFP.
6 – Ravensthorpe and Westtown	2017/90443	Erection of 3 units for B1 (light industrial) and B8 use, erection of two storey office building and alterations to existing building	Ratcliffe Mills, Forge Lane, Thornhill Lees, Dewsbury, WF12 9BU	Conditional Full Permission – Nov 2017	No relevant environmental assessment information submitted	The combined impact of the industrial development and the Scheme would result in increased temporary impacts on Ratcliffe Mill (HER15198), due to the impact of construction activity to the west of the mill buildings. This would result in a minor adverse cumulative impact, resulting in a **Slight adverse** cumulative effect, which is not significant.	There will be no impact on any heritage assets which will increase as a result of the operation of the Scheme acting in combination with the RFFP.
6 – Ravensthorpe and Westtown	2016/94241	Non-Material Amendment to previous permission 2007/91742 for erection of 7 terraced industrial units	Calder Bank Road, Thornhill Lees, Dewsbury, WF12 9QB	NMA Approved – May 2017	No relevant environmental assessment information submitted	There will be no impact on any heritage assets which will increase as a result of the construction of the Scheme acting in combination with the RFFP.	There will be no impact on any heritage assets which will increase as a result of the operation of the Scheme acting in combination with the RFFP.
6 – Ravensthorpe and Westtown	2016/94118	Outline application for residential development	Land off Ravensthorpe Road, Dewsbury	Conditional Outline Permission – April 2017	No EIA but application is supported by environmental assessments.	The housing development and Scheme would result in the total removal of the cropmark HER 642, resulting in a major adverse cumulative impact and **Moderate**	There will be no impact on any heritage assets which will increase as a result of the operation of the Scheme acting in combination with the RFFP.

Route Section	Planning Application ref.	Development description	Location	Planning status	EIA available	Potential cumulative effects	
						Construction	Operation
					A conservation/heritage assessment has also been submitted.	**adverse** (permanent) cumulative effect on the asset, which is a significant effect. The combined impact of the residential development and the Scheme would result in substantial alteration of the character and significance of the Woodland and Enclosed Land historic landscape types. This has been assessed to result in a minor adverse cumulative impact and a **Slight adverse** (permanent) cumulative effect on both historic landscape types.	
6 – Ravensthorpe and Westtown	2016/94117	Outline application for 120 residential units at Lees Hall Road	Land off Lees Hall Road, Dewsbury	Conditional Outline Permission	No EIA but application is supported by environmental assessments. A conservation/heritage assessment has also been submitted.	There will be no impact on any heritage assets within the Scheme which will increase as a result of the construction or operation of the Scheme acting in combination with the RFFP. It should be noted that this development lies within Kirklees Local Plan Allocation HS61; the cumulative effects of this allocation site as a whole are identified below.	There will be no impact on any heritage assets which will increase as a result of the operation of the Scheme acting in combination with the RFFP.
6 – Ravensthorpe and Westtown	2017/94080	Erection of precast concrete production unit, demolition of existing casting shed and ancillary buildings, associated site works to modify external storage areas and installation of gantry cranes – condition to vary plans and specs (2019/92570)	C R Longley And Co Ltd, Ravensthorpe Road, Thornhill Lees, WF12 9EF	Conditional Full Permission – July 2018 (approval of condition November 2019)	No EIA but application is supported by environmental assessments. A conservation/heritage assessment has also been submitted.	The assessment for the production unit concludes that the development would have a slight beneficial effect on Lees Hall Listed asset due to the reduction in noise from the operation process and the relocation of the casting shed and stacks. No cumulative effects are therefore anticipated.	
6 – Ravensthorpe and Westtown	Strategic housing scheme	Kirklees Local Plan Allocation HS61 (Dewsbury Riverside) – housing allocation for 4000 units (1869 units during plan period, with potential for a further 2131 beyond the plan period).	Land off Ravensthorpe Road, Dewsbury		Dewsbury Riverside Masterplan document is available.	The housing development and Scheme would result in the total removal of the cropmark HER 642, resulting in a major adverse cumulative impact and **Moderate adverse** (permanent) cumulative effect on the asset, which is a significant effect. The combined impact of the residential development and the scheme would result in substantial alteration of the character and significance of the Woodland and Enclosed Land historic landscape types. This has been assessed to result in a major adverse cumulative impact and a **Slight adverse cumulative effect** on both historic landscape types.	Affects assessed at the construction stage.

6.8.8 It is anticipated that any developments brought forward will be subject to National and Local Policy as well as legislative requirements and application of best practice measures and will be required to ensure that mitigation and control measures are adopted during construction and operation of the projects.

6.8.9 Moderate adverse cumulative effects (permanent) are anticipated due to the total removal of the cropmark HER 642 when the Scheme is considered in combination with both the Kirklees Local Plan Allocation HS61 (Dewsbury Riverside) and Outline application for residential development on land at Ravensthorpe Road. The RFFP sites are both located on the same lot and therefore it is assumed that only one development can be brought forward, similar effects are anticipated.