

Infrastructure Projects

Northern Programmes



The Network Rail (Huddersfield to Westtown (Dewsbury) Improvements) Order

Occupation Underbridge (MDL1/10) – Heritage Assessment

Network Rail

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1. INTRODUCTION

1.1 Report objectives

- 1.1.1 The Scheme is part of a wider programme of works known as the Transpennine Route Upgrade (TRU) (herein referred to as the 'Programme') which will improve the Transpennine railway between Manchester, Huddersfield, Leeds and York and improve connections between key towns and cities across the north of England; it will contribute to the overall TRU aims of increasing service capacity and offering journey time benefits through:
- Four tracking and upgrading of the existing railway line including track realignment (currently the majority of the railway in the Scheme area has two tracks);
 - Electrification of the line;
 - Increase in line speeds;
 - Provision of sections of new railway;
 - Provision of new grade-separated junction within the Ravensthorpe area;
 - Remodelling of stations including platform extension works at Deighton, Mirfield and Huddersfield; and
 - Provision of replacement station at Ravensthorpe.
- 1.1.2 As well as the works identified above, various other engineering works are necessary including strengthening and replacement of bridge decks (rail and highway); electrification of the line and provision of associated infrastructure will require raising the height, demolition of or replacement of bridge structures.
- 1.1.3 The Transport and Works Act 1992 introduced section 12(3A) into the Planning (Listed Buildings and Conservation Areas) Act 1990, the effect of which is to "call-in" for determination by the Secretary of State applications to the local planning authority for Listed Building Consent where such consent is required in consequence of proposals included in an application for a Transport and Works Act Order (TWAo). The procedures in the Transport and Works Applications (Listed Buildings, Conservation Areas and Ancient Monuments Procedure) Regulations 1992 then apply to the call in of such Listed Building Consent applications.
- 1.1.4 Occupation Underbridge (MDL1/10) was designated as a Grade II Listed building in March 2018. The Historic England list description (included in full in Appendix B) names the listed building as "Railway underbridge MDL1/10, Thornhill Lane". Throughout this Heritage Assessment the structure is referred to as "Occupation Underbridge (MDL1/10)".
- 1.1.5 This Heritage Assessment has been compiled in support of an application for Listed Building Consent by Network Rail in respect of the proposed works on the Grade II Listed MDL 1/10 Occupation Underbridge (NHLE 1450702), Kirklees, West Yorkshire.
- 1.1.6 This Heritage Assessment will seek to:
- Identify and discuss the heritage significance of the listed structure;
 - Present the design requirements of the Scheme at the structure;
 - Present the process of design development and optioneering which has led to the design proposal for the Scheme in relation to the structure;
 - Identify the impacts of the design proposal on the significance of the structure, in the context of current national planning policy and guidance;
 - Discuss any mitigation and/or compensation recommended in relation to the structure; and

- Consider the public benefits to be gained from the design proposal in relation to the structure, weighed against the impact on significance, in line with current national planning policy and guidance.

1.1.7 The construction methodology for the proposals, is set out in the Code of Construction Practice (CoCP). Part A of the CoCP is provided in Appendix 2-1 in Volume 3 of the Environmental Statement (ES) submitted as part of the TWA0 submission. Part B of the CoCP will incorporate a Noise and Vibration Management Plan, a Nuisance Management Plan and a Demolition Methodology Statement. These documents will be submitted to and agreed by the Local Authority as part of a condition to be attached to the deemed planning permission¹ prior to construction works commencing. Specific details of mitigation and compensation measures will be detailed in the Conservation Implementation and Management Plan (CIMP) for the Scheme to be submitted pursuant to a condition attached to the Listed Building Consent.

1.2 Current conditions

- 1.2.1 Occupation Underbridge (MDL1/10) is a single-span accommodation underbridge, located a short distance off Thornhill Road, approximately 1km to the south-west of the centre of Dewsbury, in Kirklees, West Yorkshire. The bridge accommodates a driveway providing access to a property located to the south-east of the railway; this private access is the only access under the bridge, which does not accommodate any public rights of way.
- 1.2.2 The underbridge (Insert 1-1), was constructed between 1845 and 1847, as part of the Leeds, Dewsbury & Manchester Railway, under the oversight of engineer Thomas Grainger. Constructed of quarry-faced sandstone, the bridge survives in largely its original form, with only minor additions, and currently appears in good condition. The underbridge comprises a semi-circular arch flanked by curved wing walls. The underbridge is notable for the detail of its construction, with elements of design which lift it above the purely functional, such as rusticated voussoirs and impost bands.
- 1.2.3 The structure was subject to a visual inspection as part of Network Rail's maintenance regime in 2019, which identified no significant defects to the masonry of the arch, abutments or wing walls.

¹ 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.



Insert 1-1 North-western elevation of Occupation Underbridge (MDL1/10)

- 1.2.4 The bridge carries the railway over the access driveway, with two tracks located on the structure; the Up line to Ravensthorpe and the Down line to Dewsbury. The underbridge is located at National Grid Reference (NGR) SE 2378 2112.

1.3 Summary of proposal

- 1.3.1 In order to deliver the objectives of the Scheme, it is necessary for the track to be realigned at Occupation Underbridge (MDL1/10). This realignment will move the tracks to the north-west of the existing bridge deck and is necessary to deliver the required line speed increase on this section of the railway.
- 1.3.2 It is proposed to infill Occupation Underbridge (MDL1/10). The underbridge will be infilled with a mixture of granular fill and foam concrete under the existing arch. A retaining wall will be constructed on the south-eastern side of the arch comprising a sympathetic masonry-clad retaining wall, slightly recessed from the face of the arch to retain the structure's legibility on that side of the railway. On the north-western side of the structure, a battered embankment of granular fill reinforced by geotextile will be constructed against the structure, completely obscuring the arch face and wing walls.
- 1.3.3 The design development process has included appraisal of various options to identify an approach which delivers the operational requirements, while also minimising impact on the heritage significance of the structure as far as possible. This is outlined below in Section 3.2. The design has been developed alongside consultation with Historic England and the Kirklees Council Conservation Officer; this is detailed below in Section 1.5.

1.4 Legislative and policy context

Legislation

- 1.4.1 The Planning (Listed Buildings and Conservation Areas) Act 1990 (as amended) governs the designation and works to listed buildings in England.
- 1.4.2 The Act states in **s.1 (5)**:
- ‘In this Act “listed building” means a building which is for the time being included in a list compiled or approved by the Secretary of State under this section; and for the purposes of this Act—*
- (a) any object or structure fixed to the building;*
- (b) any object or structure within the curtilage of the building which, although not fixed to the building, forms part of the land and has done so since before 1st July 1948, shall be treated as part of the building.’*
- 1.4.3 Under the Act, no one is permitted to undertake or cause to be undertaken any works that would affect the character of a listed building unless the works are authorised. **Section 16** of the Act identifies that whether such works can be carried out is determined by the local planning authority or the Secretary of State:
- ‘(1) Subject to the previous provisions of this Part, the local planning authority or, as the case may be, the Secretary of State may grant or refuse an application for listed building consent and, if they grant consent, may grant it subject to conditions.*
- (2) In considering whether to grant listed building consent for any works the local planning authority or the Secretary of State shall have special regard to the desirability of preserving the building or its setting or any features of special architectural or historic interest which it possesses.*
- (3) Any listed building consent shall (except in so far as it otherwise provides) ensure for the benefit of the building and of all persons for the time being interested in it.’*
- 1.4.4 In relation to the granting of Listed Building Consent, **Section 17** of the Act stipulates that conditions attached to Listed Building Consent may include those with respect to:
- ‘(a) the preservation of particular features of the building, either as part of it or after severance from it;*
- (b) the making good, after the works are completed, of any damage caused to the building by the works; [and]*
- (c) the reconstruction of the building or any part of it following the execution of any works, with the use of original materials so far as practicable and with such alterations of the interior of the building as may be specified in the conditions’.*
- 1.4.5 It is also defined in s.17 (2) that a condition ‘may also be imposed requiring specified details of the works (whether or not set out in the application) to be approved subsequently by the local planning authority or, in the case of consent granted by the Secretary of State, specifying whether such details are to be approved by the local planning authority or by him’.
- 1.4.6 The Act also states in **s.66 (1)**:

'In considering whether to grant planning permission or permission in principle for development which affects a listed building or its setting, the local planning authority or, as the case may be, the Secretary of State shall have special regard to the desirability of preserving the building or its setting or any features of special architectural or historic interest which it possesses'.

National policy

- 1.4.7 The National Planning Policy Framework (NPPF, 2019) provides the Government's national planning policy on the conservation of the historic environment, supported by the Planning Practice Guidance (updated July 2019). It was published in March 2012 and revised in February 2019. This Heritage Statement aims to address relevant policy within the NPPF in relation to Section 16 'Conserving and enhancing the historic environment' and includes an assessment of significance of the heritage assets and their setting that may be affected by the proposed works, in compliance with paragraphs 189-202.
- 1.4.8 The following paragraphs as set out in the NPPF include key provisions considered of particular importance to this application.
- **Paragraph 189** - *In determining applications, local planning authorities should require an applicant to describe the significance of any heritage assets affected, including any 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.*
 - **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 parks or gardens, should be exceptional;
 - b) assets of the highest significance, notably scheduled monuments, protected wreck sites, registered battlefields, grade I and II* listed buildings, grade I and II* registered parks and gardens, and World Heritage Sites, should be wholly exceptional.
 - **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 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 directly or indirectly affect non-designated heritage assets, a balanced judgment will be required having regard to the scale of any harm or loss and the significance of the heritage asset.*

- 1.4.9 The National Planning Practice Guidance (Historic Environment) (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 policy

- 1.4.10 The Kirklees Local Plan was adopted in February 2019 and is now the statutory development plan for Kirklees providing a set of planning policies.
- 1.4.11 Kirklees Council recognises that *heritage assets are an irreplaceable resource and should aim to conserve them in a manner appropriate to their significance*². Section 14.1 of the Local Plan sets out **Policy LP35** relating to the historic environment, which is reproduced below.

Policy LP35 Historic Environment

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 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:
 - e) ensure that proposals maintain and reinforce local distinctiveness and conserve the significance of designated and non-designated heritage assets;

² Kirklees Council, Kirklees Local Plan Strategy and Policies, 2019, 141. <https://www.kirklees.gov.uk/beta/planning-policy/pdf/local-plan-strategy-and-policies.pdf>.

- f) ensure that proposals within Conservation Areas conserve those elements which contribute to their significance;
- g) 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;
- h) 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;
- i) accommodate innovative design where this does not prejudice the significance of heritage assets;
- j) preserve the setting of Castle Hill where appropriate and proposals which detrimentally impact on the setting of Castle Hill will not be permitted

1.5 Consultation

- 1.5.1 Historic England and Kirklees Council have been involved in ongoing stakeholder consultation with Network Rail through the development of the Transpennine Route Upgrade between Huddersfield and Westtown (Dewsbury).
- 1.5.2 Regular meetings with both these historic environment stakeholders have been held to discuss structures of heritage significance on the alignment of the railway which are subject to impacts during the construction or operation of the proposed Scheme. The first of these meetings was held in September 2019³, with subsequent meetings held approximately every six to eight weeks, each meeting covering a group of structures (with not every structure discussed at every meeting). Each meeting is referred to as a 'round' of consultation in the bullet point list below.
- 1.5.3 The design development of the Scheme in relation to MDL 1/10 Occupation Underbridge was discussed during meetings with the statutory historic environment stakeholders on the following dates:
 - 4 September 2019 - W3 Bridges and Structures – Historic England / Kirklees Council (Conservation) Engagement (1st round);
 - 17 October 2019 - W3 Bridges and Structures – Historic England / Kirklees Council (Conservation) Engagement (2nd round);
 - 5 December 2019 - W3 Bridges and Structures – Historic England / Kirklees Council (Conservation) Engagement (3rd round);
 - 10 March 2020 - W3 Bridges and Structures – Historic England / Kirklees Council (Conservation) Engagement (5th round);
 - 16 April 2020 - W3 Bridges and Structures – Historic England / Kirklees Council (Conservation) Engagement (6th round); and
 - 24 June 2020 - W3 Bridges and Structures – Historic England / Kirklees Council (Conservation) Engagement (8th round).
- 1.5.4 The context and scheme requirements around Occupation Underbridge (MDL1/10) were introduced at the meetings on **4 September 2019** and **17 October 2019**. The significance of the underbridge was explained, along with an introduction of the issues around the proposed track alignment and constraints of adjacent properties and access, as well as the necessary requirement to widen the structure. An explanation was provided of possible options being considered for either widening or infilling the structure. Discussion was had as to how a

³ Meeting held on 4 September 2019 in Leeds.

widening option could minimise impact on the existing structure, through material choices (using masonry instead of steel) or reducing the depth of the deck to retain legibility of the existing arch face.

- 1.5.5 The meeting on **5 December 2019** focussed on further development of these design options and understanding of the constraints around the structure (these are discussed in further detail below in Section 3.2). A secondary widening option was also presented which took the form of a masonry arch to match the existing structure, rather than a steel deck. There was discussion around this approach, particularly the use of precast concrete FlexiArch system and their benefits for constructability; this could be clad in stone on the outside of the structure and would reference the character of the existing underbridge. This was identified as the preferred approach at that point, although there was an understanding that further assessment around constructability and requirements for landowner access needed to be done.
- 1.5.6 The further design development around the options and constructability was initially presented at the meeting on **10 March 2020**. It was explained that the construction sequence which had been developed for the preferred widening option had highlighted considerable issues regarding the disruption of the landowner access (see below, paragraphs 3.2.4 to 3.2.7). The length of time for this disruption would be considerable, likely to total well over the amount Network Rail would consider acceptable, necessitating Network Rail to purchase the property. It was explained that this would be the case for any widening option, and that the preferred option was therefore being reassessed. If this was the case, then the structure would be redundant. It was discussed that infilling the structure would provide a more cost-effective approach, and could be done in a way to retain as much of the significance of the Listed underbridge as possible. Historic England and Kirklees Council expressed that any proposal to infill the structure would require strong justification and requested further assessment of potential public benefits around whole life costs and operational use. It was agreed that further work on this would be presented at the next meeting.
- 1.5.7 The proposed design approach to infill the structure was formally presented to Historic England and Kirklees Council at the meeting on **26 April 2020**. This included presentation of the information requested at the previous meeting regarding whole life cost, and the sensitive design approach to retain elements which contribute to the structure's significance (discussed below in paragraphs 3.2.8 to 3.2.9 and 4.3.7). These elements comprise constructing a masonry retaining wall recessed slightly to the south-eastern face of the arch to retain the structure's legibility, as well as retaining the south-eastern wing walls and decorative elements of the arch, which contribute to the underbridge's architectural interest. The representatives of both historic environment stakeholders⁴ were receptive to the proposed infilling, appreciating the design development process which had been undertaken including the optioneering exercises and assessment of whole life costs and constructability (see below, Section 3.2). At this meeting, both stakeholders stated that the proposal to infill the structure would be considered at the very upper end of less than substantial harm in line with the NPPF. Though the proposed treatment of the infill on the south-eastern face of the structure to retain legibility of the style and form of the bridge was welcomed, it was requested that consideration be given as to whether a similar approach to at least memorialise the underbridge on the north-western side of the infill could be practicable.
- 1.5.8 An overall summary of the design approach and preferred design was presented to Historic England and Kirklees Council at the meeting on **24 June 2020**; this included presenting the work undertaken to consider the design of the north-western side of the infill as requested at

⁴ The representatives at the meetings where MDL 1/10 Occupation Underbridge were discussed were Kerry Babington, Inspector of Historic Buildings and Areas at Historic England and Nigel Hunston, Group Leader, Conservation at Kirklees Council.

the previous meeting (discussed in more detail below in 3.2.11). It was agreed that such an approach which would involve the construction of a faux infilled arch in the north-western side of the infill would not be feasible or beneficial; there were considerable construction issues associated with it, and the approach was considered not to be honest to the change occurring to the structure's significance, particularly considering the sensitive design retaining the south-eastern arch face. The representatives from both Historic England and Kirklees Council were content with the overall proposals and that due consideration had been given to alternative approaches. Historic England and Kirklees Council reiterated that the infilling of the structure was regrettable, but appreciated that it was necessary to deliver the Scheme, and that the design realises the retention of the structure's legibility and elements of its heritage significance.

- 1.5.9 Engagement with Historic England and Kirklees Council with regards to Occupation Underbridge (MDL1/10) will continue throughout the period of submission and determination of the TWAO and subsequently into the discharge of conditions to be attached to the Listed Building Consents.

2. HERITAGE ASSETS AND THEIR SIGNIFICANCE

2.1 Occupation Underbridge (MDL1/10) (Grade II Listed, NHLE 1450702)

Historic background

History of the Transpennine Route

- 2.1.1 The Transpennine Route between Huddersfield and Westtown (Dewsbury) 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 railways⁵.
- 2.1.2 Between Huddersfield and Westtown (Dewsbury), 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.
- 2.1.3 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.
- 2.1.4 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 Dewsbury, already underway as a result of the growth of textile, mining and maltings industries.
- 2.1.5 Occupation Underbridge (MDL1/10) is located on the section of the Transpennine Route constructed by the Leeds, Dewsbury & Manchester Railway between 1845 and 1847. This line was constructed during the Heroic Age of railway building (1841-50), a period of commercial confidence and expansion in the railways⁶. Opening in stages between 1846 and 1849, when railway mania was at its height, the Leeds, Dewsbury & Manchester Railway was constructed under the oversight of the principal engineer Thomas Grainger. Grainger was one of the leading railway engineers in Scotland at this time, working on Pioneering Age (1825-41) railways such as the Monkland and Kirkintilloch Railway (1824-1826) and the Glasgow and Garnick Railway (1826-1831), which he delivered in conjunction

⁵ Alan Baxter Associates, 2019. TransPennine Route Upgrade Route-wide Statement of Significance. 14.

⁶ Alan Baxter Associates, 2019. TransPennine Route Upgrade Route-wide Statement of Significance. 14.

with the engineer John Miller. He is best known in England for his work on lines including the Leeds, Dewsbury & Manchester Railway (1845-1848), the East and West Yorkshire Junction Railway (1846); and the Leeds & Thirsk Railway (1845-1852). Grainger's work is notable for the imaginative way in which he tailored these lines to the difficult surrounding terrain and his bold masonry and iron bridge designs⁷.

- 2.1.6 In 1847, the Leeds, Dewsbury & Manchester Railway along with the Huddersfield and Manchester Railway were absorbed into the London and North Western Railway (LNWR), providing a more direct route from Manchester to the West Riding and enabling the LNWR to access the textile and coal industries of West Yorkshire. By 1851, the LNWR was the most prominent railway company of the period, with over 800 miles of track and was the largest joint-stock concern of its time, capitalised at £29 million⁸.
- 2.1.7 The history and significance of the Transpennine Route is discussed at more length in the Route-Wide Statement of Significance (Alan Baxter, 2019). This was produced to characterise the overall heritage significance of the Transpennine Route as a whole, and is included in Appendix 6.1 of the ES for the Scheme.
- 2.1.8 Occupation Underbridge (MDL1/10) Occupation Underbridge (MDL1/10) was constructed between 1845 and 1847, under the oversight of the principal engineer Thomas Grainger. The bridge forms one of a number of Grainger-engineered accommodation underbridges on the railway between the River Calder and Dewsbury Station, and was constructed to provide access under the railway between Fall Lane and the properties and fields to the south-east; originally, the domestic building to the south-east of the line comprised a pair of semi-detached cottages (Insert 2-1). Though the other underbridges on this section of the railway were engineered with similar cast iron decks and architectural detailing, Occupation Underbridge (MDL1/10) was constructed differently, with the entire construction of masonry.



Insert 2-1 First Edition Ordnance Survey Six-inch map of Yorkshire (surveyed 1850-51, published 1855) showing Occupation Underbridge (MDL1/10) (in blue circle).

⁷ Alan Baxter Associates, 2017. MDL 1/6 & MDL 1/8 Bridges Statement of Significance. 13.

⁸ Alan Baxter Associates, 2017. Transpennine Route Statement of History and Significance: West of Leeds. 5.

- 2.1.9 It appears that the underbridge has undergone few alterations since its construction. Unlike other sections of the Transpennine Route, the section between Ravensthorpe and Leeds was not widened with additional tracks, and consequently the structure has never been widened or reconstructed. Historic mapping indicates that the access driveway underneath the structure has been realigned on the north-western side, with its current arrangement likely dating from the 1970s. There have been a small number of minor alterations and additions around the structure in recent years relating to its use as access to the adjacent dwelling; these include the construction of an electronic access gate on the south-eastern side of the underbridge, as well as security lights and associated cabling.

Description

- 2.1.10 Occupation Underbridge (MDL1/10) is an accommodation bridge which survives, as noted above, in largely unaltered form, located approximately 1km to the south-west of Dewsbury town centre. The railway is located on an embankment at this point, and the structure is set into a section of masonry retaining wall (see below, 2.1.12).



Insert 2-2 North-western elevation of Occupation Underbridge (MDL1/10)

- 2.1.11 As noted above, the underbridge is constructed in coursed quarry-faced Pennine Lower Coal Measures sandstone, comprising a semi-circular arch flanked by curved wing walls (Inserts 2-3 and 2-4). The bridge is a well detailed structure, with the arch being formed of rusticated V-jointed voussoirs, the uppermost of which are blunted, springing from a squared ashlar impost band. The structure features deeply-curved wing walls on either side, which are raked and constructed of the same squared quarry-faced sandstone. The faces of the structure on either side above the arch are topped by an ashlar moulded string course, but the coping to the wing walls on either side is plainer, comprising simpler squared ashlar.
- 2.1.12 The wing walls of the underbridge form part of the longer retaining walls of the railway, particularly on the south-east side of the line; these are constructed in the same squared quarry-faced stone and on the south-eastern side extend approximately 35m to the south-west. On the north-western side of the structure, the embankment north of the access track encroaches on the wing wall (visible in Inserts 2-2 and 2-4), while a secondary retaining wall has been constructed between the railway and the original retaining wall, extending south-west from the structure (see Insert 2-3). The two railway tracks pass over the structure on a

ballasted track bed, of approximately 800mm depth from track to the top of the crown of the arch. Atop the structure is a modern concrete parapet fence which sits on the track bed on either side of the railway; though aligned along the inside of the bridge parapet and wing walls, it is not considered to form part of the listed structure.



Insert 2-3 South-eastern elevation of MDL 1/10 Occupation Underbridge. Note the later additions of the gates and security light.

- 2.1.13 Today, the structure accommodates an access track to a property to the south-east of the railway; this U-shaped entrance driveway drops down from Thornhill Road, passing under the structure and to the property. The access track is not paved, comprising of compressed gravel fill. The south-eastern side of the bridge has had an electronic security gate added, the hinges and fixings for which have been attached to the edge of the arch face (see Insert 2-4). The dwelling itself comprises a single house (an amalgamation of two historic semi-detached cottages) with gardens and outbuildings to its south-east elevation. On the north-western side of the structure, the access road drops down from Thornhill Road, with the access road faced on its northern side by an embankment.
- 2.1.14 The setting of Occupation Underbridge (MDL1/10) is largely localised due to the topography of landscape surrounding the structure. Positioned with the bridge deck at a similar height to Thornhill Road to the north-west, and the access road passing under the structure dropping down from the round and curving to pass through the structure, visibility of the structure is highly limited (see Inserts 2-4 and 2-5). Filtered views towards the north-west side of the structure are glimpsed only briefly from Thornhill Road, with the structure itself only visually experienced clearly by those using the private access road. At present, the south-east side of the structure is only visible to those living in or visiting the property to the south-east of the railway. The relationship with the railway also contributes to the asset's setting, though again the limited visibility of the structure limits the degree to which this can be understood. Similarly, though the embanked railway alignment over the structure provide a fortuitous view for train passengers down onto the adjacent property, such a view is only briefly

glimpsed and does not enhance understanding of the structure itself.



Insert 2-4 View towards north-western elevation of MDL 1/10 Occupation Underbridge along access driveway. Note the later retaining wall added atop the historic retaining wing wall to the right of the photo.



Insert 2-5 View towards north-western elevation of Occupation Underbridge (MDL1/10) from entrance to access driveway off Thornhill Road. Note the lack of visibility towards the structure.

Significance

- 2.1.15 Occupation Underbridge (MDL1/10) is of significance as a largely unaltered example of an 1840s accommodation underbridge, dating from the Heroic Age of railway building. The bridge derives significance from its association with the historic railway, and engineering of Thomas Grainger, as well as the quality of architectural expression in its design.
- 2.1.16 The Historic England list description⁹ identifies the following elements of significance from which the structure is considered to have special interest:
- Historic interest:
 - constructed during the Heroic Age (1841-50) of railway building and a little altered example of an 1840s accommodation underbridge on what is now one of the main railway lines in northern England;
 - designed by the notable Scottish railway engineer Thomas Grainger.
 - Architectural interest:
 - although a simple, small accommodation bridge, the use of rusticated voussoirs, impost bands and a moulded ashlar string course lift its design above the purely functional.
- 2.1.17 The overall significance of the bridge is largely derived from its historical value as an element of historic railway infrastructure from the period of great railway construction during the 1840s, as well as its historic association with the engineering of Grainger, and the Leeds, Dewsbury & Manchester Railway and LNWR. As noted by Historic England, the bridge dates to the Heroic Age (1841-50) of railway building, associating it with the rapid expansion of the network during the years of so-called 'railway mania'. Its association with Grainger also contributes to its significance, considering his own stature and historic importance, though, being wholly of masonry construction (with no cast iron elements), the bridge does not sit in as clear a group of similar historic Grainger structures along the route (see below, 2.1.22).
- 2.1.18 The underbridge also derives some significance from the aesthetic value of its architectural quality; Grainger's approach to constructing a masonry accommodation underbridge which incorporated styled elements such as the rusticated voussoirs have the effect of elevating the architectural expression of the structure. The understanding of the quality of this design and the craftsmanship of its execution, which is evident today when approaching or passing through the bridge, contributes to its overall significance.
- 2.1.19 The significance of the underbridge is enhanced by the fact that the bridge has undergone little alteration since its construction, ensuring the continued legibility of its historic design; this is particularly the case for those elements of notable aesthetic value such as the voussoirs and wing walls. That the bridge continues to form part of the operational railway, providing access to the property to the south-east of the railway, also contributes to its significance.
- 2.1.20 Occupation Underbridge (MDL1/10) does not derive particular significance from its setting. The structure is located in a relatively secluded position, with very limited visibility from public roads or footpaths. Currently and historically the structure is only experienced by those passing underneath it along the entrance driveway to the private property. Similarly, though it has a relationship with the railway, the legibility of this cannot currently be widely understood, either from within the surrounding landscape, nor for those traveling by train

⁹ Historic England List Description, 'Railway underbridge MDL1/10, Thornhill Lane'. <https://historicengland.org.uk/listing/the-list/list-entry/1450702>. Accessed 7 September 2020.

over it, and this doesn't contribute to the underbridge's overall significance.

Group value

- 2.1.21 Masonry railway bridges across the Transpennine Route to the west of Leeds have been characterised as being of local or regional interest, depending on their architectural quality, contribution to wider historical interest of the route, and their group value; it has been noted however that, as a group, they are not of substantial national interest due to their dating from a period of railway development when thousands of similar structures were erected¹⁰.
- 2.1.22 Occupation Underbridge (MDL1/10) is one of a number of underbridges constructed by Grainger for the Leeds, Dewsbury & Manchester Railway which share some common design language. Grainger's bridge engineering on the line more commonly revolved around the use of cast iron, as opposed to the masonry construction of Occupation Underbridge (MDL1/10). Examples of this can be seen a short distance down the line towards Dewsbury, in the similarly-styled construction of Toad Holes Underbridge (MDL 1/12) (Grade II Listed, NHLE 1450704), MDL 1/14 Ming Hill (Grade II Listed, NHLE 1451887) and George Street (MDL 1/16) (Grade II Listed, NHLE 1451888). Though Occupation Underbridge (MDL1/10) does derive some significance from group value with these structures, the most notable comparator examples on the route are Howley Mill Lane Underbridge (MDL 1/35) (Grade II Listed, NHLE 1452199) and MDL 1/39 Churwell Underbridge (MDL1/39) (Grade II Listed, NHLE 1451051). These examples, also of Grainger design, are similar masonry underbridges which incorporate the same elements of architectural expression, such as rusticated voussoirs and striking curved wingwalls.
- 2.1.23 The group value of Occupation Underbridge (MDL1/10) makes some contribution to its overall significance. The bridge comprises one element of the wider surviving group of structures associated with Grainger on the railway between Leeds and Ravensthorpe.

2.2 Other heritage assets

- 2.2.1 The location of the heritage assets discussed below are shown in Appendix A.

Listed Buildings

- 2.2.2 There are no other designated heritage assets located within the immediate vicinity of Occupation Underbridge (MDL1/10). The closest other Listed Building is the Grade II Listed Church of St Matthew (NHLE 1313641), located approximately 100m north-west between the A644 Huddersfield Road and Cemetery Road. Three other Grade II Listed Buildings are located within 250m of the bridge: 120 Huddersfield Road (NHLE 1134695) and the Church of St Paulinus (NHLE 1134723), both located approximately 150m north of the bridge; and Toad Holes Underbridge (MDL 1/12) (NHLE 1450704), located approximately 200m further north-east along the railway line. Of these other Listed Buildings, only Toad Holes Underbridge (MDL 1/12) has any relationship with Occupation Underbridge (MDL1/10) (see the discussion of group value above in paragraph 2.1.22).

Non-designated heritage assets

- 2.2.3 The ES (Chapter 6 in Volumes 2i and 2ii) produced for the Scheme has identified one non-designated heritage asset located in close proximity to Occupation Underbridge (MDL1/10). This comprises the Former St Matthew's Infants School, located approximately 50m west of the bridge.
- 2.2.4 The former school dates to the second half of the 19th century and consists of the former infants' school to the north-west, and girls and boys' school to the south-east. Both are

¹⁰ Alan Baxter Associates, 2019. TransPennine Route Upgrade Route-wide Statement of Significance. 37.

constructed of stone and designed in a Gothic style. The building is considered to be of local importance, due to its historic interest as a mid-19th century school and its architectural interest as a mid-19th century gothic revival structure. The setting of the school is dominated by Huddersfield Road which, following modern widening, rises directly above the buildings and dominates its setting. Views of the buildings are now visible only from the south-west and make a limited contribution to the asset's significance. Though there is some limited inter-visibility between Occupation Underbridge (MDL1/10) and the former school, the bridge does not contribute to the setting of the non-designated asset, and neither asset derives significance from proximity to, or relationships with, the other.

3. PROPOSALS

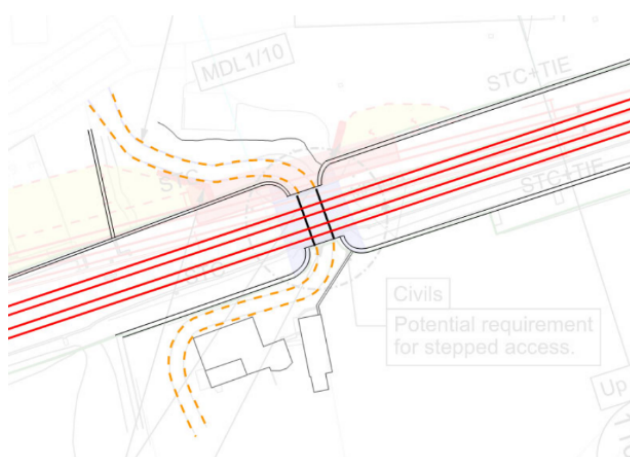
3.1 Background to proposals

- 3.1.1 To achieve the TRU Programme objectives, the Scheme requires alteration of the railway alignment at the location of Occupation Underbridge (MDL1/10). This is to facilitate the increase in track speed from the current 60/75mph to 100mph.
- 3.1.2 The realignment at this location is part of the wider remodelling of the railway alignment in the area between Westtown and Ravensthorpe. The alteration to the track alignment is required to remove the existing reverse-S curvature of the line between Westtown and the crossing of the River Calder and Calder & Hebble Navigation (over Calder & Hebble Canal Underbridge (MDL 1/6) and River Calder Underbridge (MDL 1/8)) (shown below in Insert 3-1).

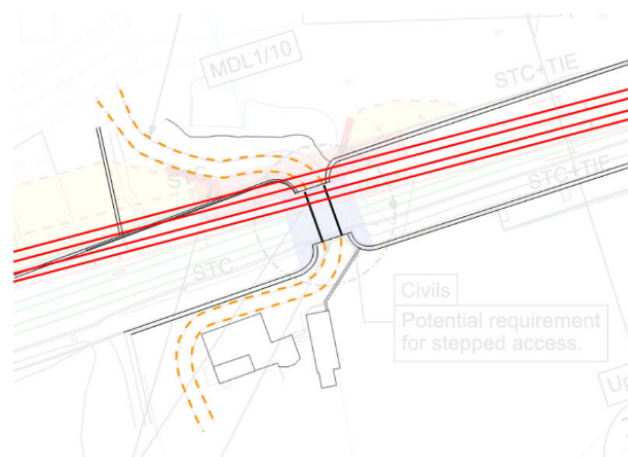


Insert 3-1 Current alignment of the railway in vicinity of Occupation Underbridge (MDL1/10) (shown with red circle), note the reverse-S curvature around the structure.

- 3.1.3 The proposed alignment of the railway to meet this requirement results in one track being aligned beyond the footprint of Occupation Underbridge (MDL1/10) (see Insert 3-2). This necessitates the widening of the Grade II Listed Bridge to the north-west in order to support the new tracks.



Existing P-way arrangement



Proposed P-way arrangement and changes

Insert 3-2 Plan showing the existing (left) and proposed track alignment (right). Note that the proposed track alignment sits to the north of the existing structure.

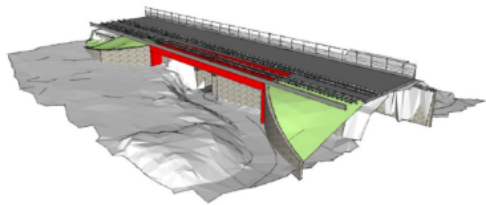
3.2 Design development and justification

3.2.1 A number of possible design options were considered to achieve the new track alignment (shown below in Insert 3-3):

- Option A – To widen the structure with a new long span (>25m);
- Option B1 – To widen the structure with a new short span (<25m) comprising an integral slab bridge with a similar span to the existing structure;
- Option B2 – To widen the structure with a new short span (<25m) comprising an integral slab bridge and precast arch units with a stone or brick clad face; and
- Option C – To infill the bridge, either with or without a new alternative access route to the adjacent property from the south.

Option A

Long span bridge with no access track re-alignment

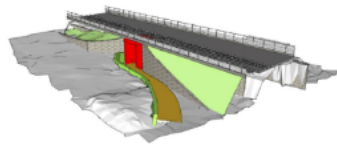


Option B

Short span bridge with access track re-alignment

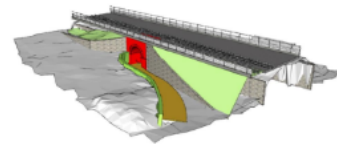
Option B1

Integral bridge



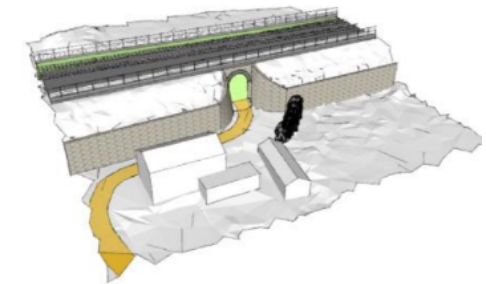
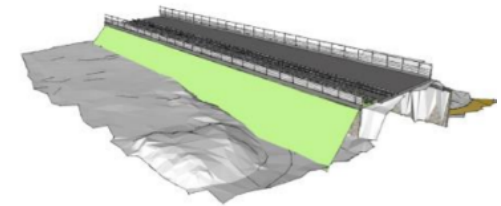
Option B2

Arch bridge with stone cladded face



Option C

Infill of MDL1/10



Insert 3-3 Indicative visualisations of the design options considered

- 3.2.2 The design development process appraised these options, taking into consideration a number of elements around the suitability of the approaches. These included:
- Impact on heritage significance;
 - Requirements for new land take and the realignment of the access track on the north-western side of the structure;
 - The temporary impact on the access track with regard to access and disruption for the property owner to the south-east of the line;
 - Constructability, including any issues posed by construction approach or programme, and health and safety; and
 - Operational suitability, including whole life cost and maintenance.
- 3.2.3 Initial design development identified a preferred engineering approach which also minimised impact on the heritage significance of the structure. This focussed on widening the bridge, rather than infilling it. Option B2 was identified as the initial preferred design, as this extended the bridge in a manner which was sympathetic to the character of the Listed bridge on the north-western side, through its use of a precast concrete arch, clad with a masonry face. This option was considered preferable to Option A and Option B1, as the widening proposed in these options would unsympathetically alter the appearance of the structure. This was particularly the case for Option A, where the size of the span required would mean the deck would infiltrate on the crown of the arch of the Listed underbridge.
- 3.2.4 Further development of the Option B2 identified a number of issues around constructability, access and disruption to the adjacent property owner. Option B2 would require additional land take to cut back the embankment to the north of the access track on the north-western side of the underbridge, due to the need to realign the access track. In order to widen the structure, it would be necessary to install sheet piles within proximity to the track; this work would be undertaken within weekend possessions of this stretch of rail line. The nature of this work posed considerable risks: to track and existing wing walls stability due to the proximity of the piling to the running line; and to the operation of the railway, as there would be potential for the works to over-run introducing considerable disruption to the rail network in the area.
- 3.2.5 The issues around constructability apply for all design options which widen the existing structure on the north-western side of the railway. These constraints would apply to Options A and B1.
- 3.2.6 The design development process identified a considerable issue around access to the property on the south-eastern side of the structure and the associated disruption to this landowner. During construction of any of the four options, the access track under the structure would need to close, which is the only access route into the property. Consequently, the timescales required to construct Option B2 would result in access being heavily disrupted for over five months; this is far beyond the extent of landowner disruption which Network Rail would consider acceptable. Providing an alternative temporary access to the property would not be viable as this would require acquisition of additional land through adjacent businesses. As with the issues around constructability discussed above, the same issues would apply to Options A and B1.
- 3.2.7 The constructability, health and safety and operational risks, combined with the required long-term disruption to the landowner on the south-eastern side of the railway, deem all three options to widen the existing structure to be non-viable. Options A, B1 and B2 were consequently dismissed.
- 3.2.8 The consideration of the viability of Option C demonstrated considerable benefits to pursuing an option for infilling the structure, particularly in terms of constructability and

safety, as well as cost. With regards to constructability, it would be possible to construct Option C without the risks to stability of the track and disruption to the network that were inherent with the construction of a widening option. A whole life cost exercise (discussed in detail below in paragraph **4.3.7**), demonstrated that Option C would also bring with it considerable benefits in terms of future public spending compared to the cost required to maintain and eventually replace a widened structure. Infilling the bridge would entail permanent disruption to the adjacent landowner through closure of their access, however the requirement for Network Rail to have to address this would be no different for Option C than for other options, due to the length of disruption for a widening option. Option C was considered the most viable option as it offers a lower risk approach in terms of construction, safety and operation.

- 3.2.9 The design development of Option C has also taken into consideration ways in which the infilling can be as sensitive as is reasonably practicable to the significance of the Listed structure. Consequently, the design has been shaped to reduce the impact on the appearance and character of the structure on the south-eastern side; this approach aims to retain the existing historic aesthetics of the bridge on this side of the structure. Instead of using a battered embankment infill, the design has been developed to include a masonry-clad retaining wall to face the infilling just inside the south-eastern face of the arch. This ensures that the architectural detail from which the bridge derives some of its significance, such as the rusticated voussoirs and wing walls, on the south-eastern side will be retained, and the historic form of the structure therefore remains legible.
- 3.2.10 The design principles of this approach have also been reflected with other associated structures on the route where infilling is proposed. At Toad Holes Underbridge (MDL 1/12) and Ming Hill Underbridge (MDL 1/14), which share group value with MDL 1/10 Occupation Underbridge, a similar approach has been pursued. Notwithstanding the common principles in designing sympathetic infilling, the significance of each individual structure has also been taken into account, with the approach for all three structures aiming to minimise harm, respond to significance and preserve legibility in the most appropriate and effective manner for each structure.
- 3.2.11 In response to a request from Historic England and Kirklees Council at a meeting on 16 April 2020 (see above, paragraphs 1.5.7 and **1.5.8**), the design development process has also considered whether the design could incorporate a similar masonry-clad structure on the north-western side of the infill with detailing indicating the previous form of the underbridge on that side as well. Though an approach could be designed for this, there are a number of issues which would deem such a design approach impractical:
- The structural detail would be partially hidden by the embankment and the associated topography would make it very difficult for this to be appreciated in any views towards the structure;
 - All structural elements of such an approach would have to be new, as the north-western face of the existing structure would be obscured by construction of the embankment, and as such, there would be considerable construction issues; the approach would be high-cost for an essentially aesthetic detail, while construction would require the same approach as for a widening of the structure, bringing with it the associated risks to track stability and network disruption (see above, paragraph 3.2.4);
 - There would also be whole life cost implications of having to maintain and inspect the short section of masonry-clad wall on this side of the railway; and
 - It was considered questionable whether the effort of constructing an essentially pastiche element to memorialise the structure would result in a particular reduction in the level of impact on the overall significance of the Listed structure.
- 3.2.12 As a result of this exercise, it was decided that such an approach was not viable, and this

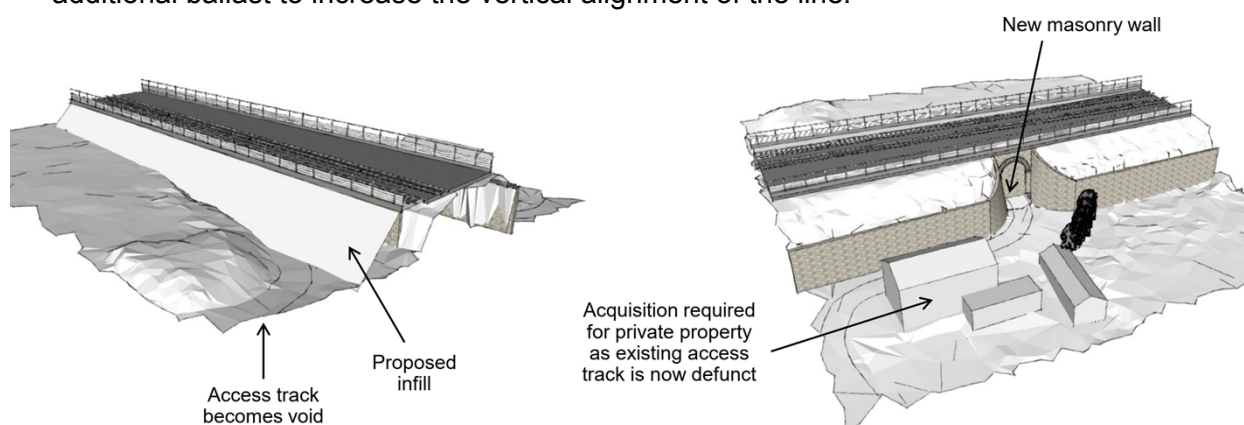
was not pursued further; the historic environment stakeholders accepted this outcome.

- 3.2.13 The proposed design approach therefore comprises Option C: sensitively infilling Occupation Underbridge (MDL1/10) with a masonry-clad retaining wall on the south-eastern side inside the face of the arch, and a new embankment on the north-western side. The proposed design approach has been chosen as it is the most safe, cost-effective and sustainable proposal for the structure, while the sympathetic infilling on the south-eastern side retains the legibility of the form and appearance of the historic underbridge.

3.3 Description of proposals

3.3.1 The proposed works relating to the Grade II Listed underbridge comprise:

- Masonry repairs (if required) necessary to facilitate the infilling of the structure;
- Excavation and casting of a strip footing under the south-eastern arch face of the underbridge as base for blockwork retaining wall;
- Construction of blockwork retaining wall on south-eastern face of the structure to contain foam concrete and granular infill – this wall will be clad in stone masonry sympathetic to the existing style of the structure and recessed slightly to reveal the form of the arch;
- Infilling the structure – the majority of this will be done from the ground up with granular fill from the open sides of the bridge, with the remaining fill at the top under the arch comprising foam concrete;
- Drilling of holes in the top of the arch barrel to facilitate the injection of grout to complete the infilling;
- Construction of battered back embankment on north-western side of the structure with granular fill reinforced by geotextile; and
- Construction of realigned track bed and railway tracks over the infilled structure, with additional ballast to increase the vertical alignment of the line.



Insert 3-4 Indicative visualisations of the proposed design for infilling the bridge. Note that on the south-eastern side (right), a new masonry wall slightly recessed within the arch preserves the historic appearance of this side of the structure.

- 3.3.2 The existing historic masonry architectural features and wing walls on the south-eastern side of the structure will be retained, with no alterations to these as a result of the works (see Insert 3-4). The existing parapet fence located atop the structure on the south-eastern side will also be retained.
- 3.3.3 In order to facilitate the proposed works to the underbridge, it may be necessary for Network Rail to acquire the adjacent property, the access track to which is accommodated by the bridge, or negotiate provision of a new access for the property. This is as a result of the closure of the track during the construction process and as a result of the infilling, as

discussed above in paragraphs **3.2.6** to **3.2.8**. Engagement and discussions between Network Rail, the property landowner and surrounding businesses are ongoing.

3.3.4 The proposed works to Occupation Underbridge (MDL1/10) are shown in the following drawings which accompany this application:

- Location plan (1:1250);
- Existing and proposed plans (151667-TSA-35-MVN2-DRG-T-LP-163800);
- Existing and Proposed Elevation (North side) (151667-TSA-35-MVN2-DRG-T-LP-163801)
- Existing and Proposed Elevation (South Side) (151667-TSA-35-MVN2-DRG-T-LP-163802); and
- Existing and proposed sections (151667-TSA-35-MVN2-DRG-T-LP-163803).

4. IMPACT OF PROPOSALS

4.1 Impact on heritage assets

Impact on Occupation Underbridge (MDL1/10)

- 4.1.1 The proposed works will involve the permanent infilling of the Grade II Listed underbridge. This will alter the form and function of the structure, though elements of its appearance and legibility which contribute to its significance will be retained through sympathetic design of the proposals.
- 4.1.2 The infilling of the bridge would permanently alter the nature of the structure, which will lose its identity as an operational accommodation underbridge. The physical impact on the structure would comprise the infilling of the underbridge beneath the barrel of the arch, along with the construction of a battered embankment on the north-western side in front of the existing face, and a stone retaining wall installed slightly recessed within the south-eastern face. The existing historic fabric of the bridge would not itself undergo any notable alterations, beyond the drilling of holes through from the track level to the barrel of the arch to facilitate the infilling; the rest of the fabric would be encased within the infilling.
- 4.1.3 The overall impact of the infilling would be a permanent change in the character of the Grade II Listed structure. The underbridge will no longer perform its historic function, with no through access being accommodated by the structure. From the north-western side, the battered embankment will mean that none of the current elements of the historic bridge would be visible. However, the sympathetic infilling of the south-eastern face with a stone retaining wall, would retain legibility of the structure, both in terms of understanding its form and function as an underbridge, and also appreciating the architectural style of the structure. The wing walls and details of the arch, such as the voussoirs and moulded string course, would all be retained on the south-eastern side.
- 4.1.4 As detailed above in Section 2.1, Occupation Underbridge (MDL1/10) derives significance from its association with the historic railway and engineer Thomas Grainger, as well as the quality of architectural expression in its design. While the permanent physical impact on the structure will degrade its significance through the change in form and character of the structure, notable elements which contribute to its significance will be retained, particularly by the sympathetic infilling on the south-eastern side. Though the structure would no longer perform its historic function, this will still be legible when viewing the structure from the south-east.
- 4.1.5 The historical value which the listed structure derives from its associations with the Heroic Age (1841-50) of railway building, the engineering design of Thomas Grainger and with the Transpennine Route itself would all still be understood in spite of the change in form, and would still contribute to the structure's overall significance. Though the battered embankment on the north-western side would result in the north-western elevation of the structure being completely obscured, the design of the infill on the south-eastern side ensures that the architectural elements of the structure such as the rusticated voussoirs, impost bands and moulded string course, which Historic England¹¹ identify as lifting the design above the purely functional, would be retained. Consequently, the architectural interest of the structure, contributing to its aesthetic value, would still be appreciated and understood across this elevation.
- 4.1.6 As identified above in paragraph **2.1.20**, the listed bridge does not derive particular significance from its setting. The secluded position of the structure and surrounding

¹¹ Historic England List Description, 'Railway underbridge MDL1/10, Thornhill Lane'. <https://historicengland.org.uk/listing/the-list/list-entry/1450702>. Accessed 7 September 2020.

topography limits visibility towards it, reducing the extent to which the structure can be appreciated and understood. The localised setting of the structure would be altered by the embankment on the north-western side, where any current views towards it would be removed on account of the loss of visibility of the face of the bridge. Similarly, it would not be possible to experience the structure by moving underneath it along the access track, though this is already limited by the nature of the private access which it currently accommodates.

- 4.1.7 The proposed works will have some impact on the group value which MDL 1/10 Occupation Underbridge derives from relationships with other structures on the Transpennine Route, though this won't appreciably alter the overall significance of the structure. Though the infilling will mean that the underbridge no longer performs its historic function and that its visibility from the north-west will be lost, the group value which particularly contributes to its significance is drawn from its identity as a Thomas Grainger structure sharing common design language with others along the route. The retention of the legibility of its design on the south-eastern side through the sympathetic design of the infilling will ensure that the group value around these elements continues to be understood. The similarities in design between Occupation Underbridge (MDL1/10) and other masonry Grainger-designed underbridges such as Howley Mill Lane Underbridge (Grade II Listed, NHLE 1452199) and Churwell Underbridge (MDL 1/39 (Grade II Listed, NHLE 1451051) will still be able to be appreciated, and the structures will still form a group of three bridges recognisable for their common architectural form (see above, paragraph **2.1.22**). Similarly, though the Scheme will result in changes to other Grainger structures, such as Toad Holes Underbridge (MDL1/12) and Ming Hill Underbridge (MDL1/14), the value of the Grainger-designed structures as a group will not be appreciably diminished. As noted above in paragraph 3.2.10, the design approach for the infilling of these structures has been developed with an appreciation for their group value, both ensuring the appearance of the infilling is consistent while taking into account their own individual character and significance. The extent to which other similar structures on the route derive group value from their relationship with Occupation Underbridge (MDL1/10) will not be reduced by the proposals.
- 4.1.8 Though the proposals will permanently alter the form and function of the Grade II Listed underbridge through the infilling, the character and historic function of the structure will still be legible on the south-eastern side due to the sympathetic design of the proposals in this area. Some elements of the significance of the underbridge will be degraded, however a number of the key elements from which it derives architectural and historic significance will be retained; the overall significance of the bridge will not be substantially altered. The group value of the structure will only be slightly degraded, while the proposals will not alter the extent to which the asset derives significance from its setting.
- 4.1.9 The proposals would result in less than substantial harm in line with National Planning Policy within the NPPF. And meet the test of achieving substantial public benefits in line with Kirklees Council Local Plan Policy LP35.

Impact on other heritage assets

- 4.1.10 The proposals would have no impact on any other designated heritage assets.
- 4.1.11 Though the proposals will alter the appearance of the landscape to the south-east of the Former St Matthew's Infants School, this will not appreciably alter the extent to which the non-designated heritage asset derives significance from its setting. The former school does not derive significance from any intervisibility with Occupation Underbridge (MDL1/10), and overall derives very limited significance from a setting which has already been altered by the proximity of the A644 Huddersfield Road to the north-west. The only views towards the former school, from the south-west, which make a limited contribution to the asset's significance, will not be affected by the proposals.

- 4.1.12 As such, the proposals satisfy the National Planning Policy within the NPPF and the Local Planning Policy within the Kirklees Local Plan Policy LP35.

4.2 Mitigation and compensation

- 4.2.1 Mitigation has been used in three separate ways: embedded mitigation; additional 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 Monitoring¹².
- 4.2.2 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. Embedded mitigation is discussed as part of the design development (see above, Section 3.2).
- 4.2.3 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.
- 4.2.4 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

- 4.2.5 The design of the proposals has been shaped to incorporate elements which mitigate potential impacts to the Listed structure as far as possible. These elements have been developed in discussions with Historic England and Kirklees Council. Additional information with respect to these elements of design development is included above in Section 3.2.
- 4.2.6 Elements which contribute to the structure's significance and historic character will also be retained through sensitive design. The design of the infilling on the south-eastern side of the structure has been developed in a manner which seeks to retain the legibility of the bridge's historic form and function. Taking into account the historic and architectural interest of the form of the bridge, the approach of infilling the arch with a stone retaining wall, set slightly back from the arch, would retain visibility of this special interest. By installing a masonry-clad retaining wall to the south-eastern face of the structure, the legibility of the architectural design of the bridge's face would be retained, thereby reducing the overall impact on the significance of the structure.
- 4.2.7 The ES (Chapter 6 in Volumes 2i and 2ii) produced to support the TWAO application for the Scheme has identified further mitigation measures which aim to reduce potential impacts on the significance of heritage assets arising as a result of the Scheme. These additional mitigation measures would be secured by way of conditions to be attached to the deemed planning permission for the Scheme, including the CoCP and the Construction Traffic Management Plan (CTMP), and the Listed Building Consent for the Scheme. In the case of Occupation Underbridge (MDL1/10), the additional mitigation measure would comprise:
- Toolbox talks to disseminate best practice for reducing potential impacts in relation to construction activity associated with the underbridge, for example to help avoid accidental damage.

¹² Design Manual for Roads and Bridges, LA 104, Sustainability & Environmental Appraisal, Environmental assessment and monitoring. Revision 1 (August 2020).

Recommended compensation

- 4.2.8 Requirements to undertake compensation in relation to historic buildings, including Listed Buildings, where the proposals of the Scheme would result in physical impacts to them, have been outlined in the ES (Chapter 6 in Volumes 2i and 2ii) for the Scheme. These compensation measures would be secured as conditions of the Listed Building Consent and aim to offset some of the harm which may occur to the assets' significance as a result of the Scheme.
- 4.2.9 A CIMP will be produced which will further define mitigation and compensation measures for historic buildings. Those measures discussed below will be detailed within the CIMP. The CIMP will be secured via a condition of the Listed Building Consent and its contents will be agreed with the Local Authority in consultation with the appropriate stakeholders (Historic England) prior to construction works.
- 4.2.10 **Historic building recording:** recording of Occupation Underbridge (MDL1/10) will be required prior to, or during, the construction of the Scheme, as agreed with the appropriate historic environment stakeholders via the CIMP. This would help to compensate the harm to significance resulting from the infilling by recording of the structure and furthering understanding of its development and value. The historic building recording would be undertaken to Level 2 in accordance with Historic England guidance¹³, and would include:
- A drawn record;
 - Photography; and
 - A written record.

4.3 Public benefit

- 4.3.1 The proposed realignment of tracks, embankment widening and infilling of Occupation Underbridge (MDL1/10) are required to realise the public benefits of the Huddersfield to Westtown (Dewsbury) Scheme.
- 4.3.2 The Scheme, as part of the wider TRU Programme, would directly and indirectly play a role in improving connectivity through journey time, capacity and reliability improvements, alongside particular improvements for Huddersfield Station enhancing some of Britain's busiest rail track.
- 4.3.3 The Scheme is vital in supporting the North of England's long-term, low-carbon economic growth, and better-connecting people to jobs, services, education and leisure. The Kirklees Local Plan (paragraph 10.2) recognises the critical connection between effective transport systems and local business productivity and district prosperity.
- 4.3.4 The proposals at Occupation Underbridge (MDL1/10) are critical to achieving the overall benefits of the Scheme and wider TRU Programme, and without these changes the Scheme would be unable to go ahead. Chapter 21 (Socio-economic) of the ES (Volume 2i Scheme-wide Assessment) has been referred to in identifying these benefits.
- 4.3.5 There are economic and social benefits to be had from the improved Transpennine Route proposals. These include reduction in journey times along this part of the Scheme with the aim of achieving 43-44 minutes between Manchester Victoria and Leeds Central. This will be partially facilitated by enabling line speeds of between 70 -100mph along the Scheme as well as through other projects on the Route. The increase in capacity through more train services and longer trains will reduce congestion, increase passenger comfort and improve journey quality. Future passenger modelling has indicated that the numbers of people using

¹³ Historic England, 2016. Understanding Historic Buildings: A Guide to Good Recording Practice.

the Transpennine Route will increase from 5.33 million to 8.22 million in 2042/43. This would be partially achieved through the creation or enhancement of four tracking along the route, allowing for express trains to by-pass slower trains and freight services. The increased movement of people and goods along this key part of the railway network that connects major cities, towns and transport hubs supports a more economic and socially viable transport solution. It forms part of the West Yorkshire Transport Strategy for harnessing economic prosperity through a better connected transport network.

- 4.3.6 As part of the Scheme, there are environmental and sustainable benefits that arise from the improvements to public transport services and the introduction of more environmentally viable energy solutions. The electrification of the line (through this part of the Scheme) is an investment in ‘greener’ energy technology meeting Network Rail’s Decarbonisation Strategy and bolstering national targets for reducing harmful emissions that cause climate change, which are set out in Government legislation for achieving net zero carbon by 2050.
- 4.3.7 The proposed work to infill Occupation Underbridge (MDL1/10) carries considerable public benefit in terms of whole life cost compared to the alternative approach of widening the underbridge. Notwithstanding the wider issues around any approach to widening (see above, paragraphs **3.2.3** to **3.2.7**), a comparison between the approaches shows a large difference in the whole life cost of constructing, maintaining and eventually replacing a widened underbridge compared to the proposed approach of infilling the structure. It has been estimated that the cost of infilling the bridge (including acquiring the adjacent property) and then maintaining the structure, including regular inspections, over a design life of 120 years, would total c. £615,000. This is compared to a cost of c. £1.56m to construct and maintain a widened bridge over the same period. Based on an assumed design life for the structure of 120 years, were the underbridge to be widened this would then entail a replacement structure to be built at an additional cost of c. £1.17m. Overall, it is estimated that the whole life cost of infilling the structure would be approximately £2m less than were it to be widened¹⁴; this represents a considerable public benefit considering that the construction and maintenance of the structure by Network Rail is undertaken using public funds.
- 4.3.8 The proposed infilling of the Listed bridge also carries considerable long-term benefits with respect to embodied carbon. Both proposals require construction of a new embankment on the north-western side of the structure. However, there would be less embodied carbon associated with the infill than were the structure to be widened. The additional material required to construct the widened structure, maintenance requirements around this structure, and the potential for an entire replacement structure at the end of its design life carries considerable embodied carbon which is not associated with the approach of infilling. Though a benefit associated with long-term future time periods, minimising embodied carbon is nevertheless an important public benefit of the Scheme.

¹⁴ Whole life cost exercise undertaken by Network Rail (2020). Cost of maintenance repairs based on other structures of similar construction (provided by Network Rail); property acquisition costs based on estimates provided by Network Rail property services; and, initial construction and replacement costs provided by TRU Scheme cost estimation team.

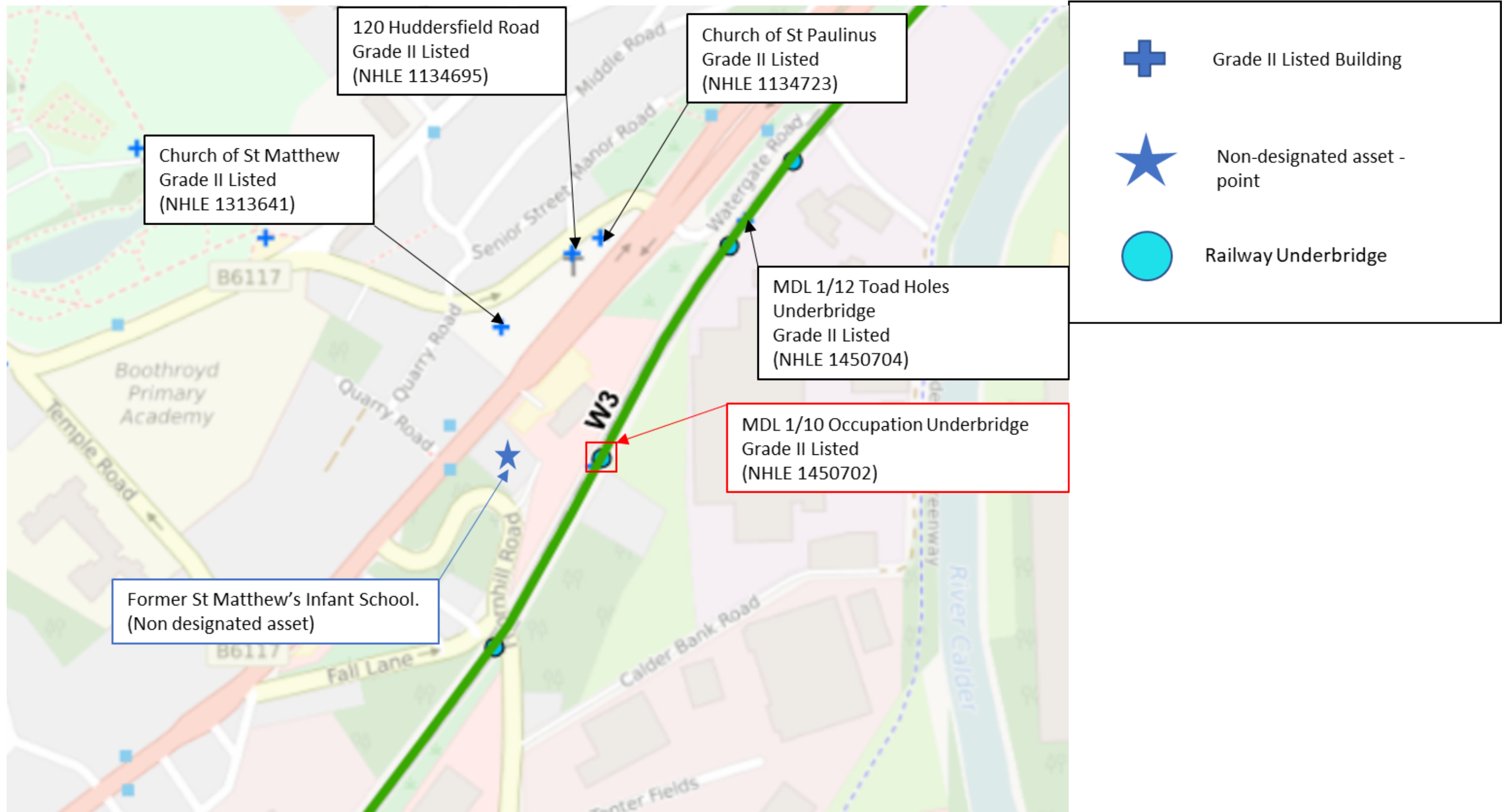
5. CONCLUSION

- 5.1.1 Occupation Underbridge (MDL1/10) is an element of the historic railway infrastructure of the Transpennine Route, still forming part of the operational railway today. The Grade II Listed underbridge is significant as a largely unaltered example of a masonry underbridge, dating to the Heroic Age (1841-50) of railway building. It derives historical value in particular from its association with the engineer Thomas Grainger, and aesthetic value from the quality of its architectural expression, which lifts the structure above the purely functional. The significance of the bridge is enhanced by the fact it has undergone little alteration since construction, particularly to those elements of its design from which it derives architectural interest. Occupation Underbridge (MDL1/10) also derives some significance from its group value with other Grainger-engineered structures on the railway line, forming one element of a wider surviving group of structures associated with the construction of the railway between Leeds and Ravensthorpe. The underbridge does not derive particular significance from its setting.
- 5.1.2 The underbridge currently accommodates an access track under the railway, forming the driveway for the property located to the south-east of the line. This is the only access under the bridge, and visibility towards the structure from the public highway on Thornhill Road is limited by the surrounding topography.
- 5.1.3 The proposals will result in the permanent infilling of the Grade II Listed underbridge. This change is considered to be less than substantial harm, as defined in NPPF.
- 5.1.4 The design development process involved considerable optioneering to arrive at the proposed design approach, which have demonstrated the justification for the infilling. Alternative approaches to retain the structure and widen it are not feasible, due to considerable risks and issues around constructability, operational viability and disruption to the adjacent property. The design development process also took into account the impact to the structure's significance, and embedded mitigation through the sensitive design of the infilling on the south-eastern side. The process involved extensive engagement with the statutory historic environment stakeholders, including working alongside Historic England and Kirklees Council to consider the feasibility of the various possible design approaches.
- 5.1.5 The proposed Option C has been shaped to be sensitive to those elements which contribute to the aesthetic value of the bridge, and therefore will comprise a battered embankment on the north-western side of the structure and a masonry-clad retaining wall inside the face of the arch on the south-eastern side. Though the infilling will permanently alter the form of the structure and remove its function, the sympathetic design of the infilling on the south-eastern side will retain legibility of the structure's design and purpose, with the notable architectural elements such as the rusticated voussoirs and wingwalls retained on this side. Elements of the historical associative value from which the structure derives significance, as well as the contribution of group value with other similar structures to its overall significance, will also be retained via the legibility of the bridge's historic form and function. Though the proposals will harm the overall significance of the structure through its permanent change in function, the sensitive design of the works to retain elements of the structure's significance means that this harm is less than substantial. Measures aimed to partly compensate for the harm to the structure would also be required, including historic building recording.
- 5.1.6 The proposed works to the Grade II Listed underbridge will not impact on the significance of any other designated or non-designated heritage assets. The group value from which other similar structures on the railway derive significance will not be degraded by the proposals.
- 5.1.7 The proposed works to Occupation Underbridge (MDL1/10) carry considerable public benefit, both in terms of the whole life costs and embedded carbon associated with the infilling design, and the wider benefits realised by the TRU project. It is estimated that the

whole life cost saving to the public funds of the proposals compared to widening the structure would be approximately £2m over the next c. 120 years, in terms of continued inspection and maintenance by Network Rail, and the eventual replacement of any widened structure at the end of its design life. The long-term embodied carbon associated with an infilling option is also considerably less than were the structure to be widened. The design approach also avoids major construction risks, including stability issues associated with constructing a widened structure adjacent to the operational railway. As an element of the wider Scheme of interventions, which will bring significant economic, environmental and social benefits across the north of England through the improvements to the rail line between Leeds and Manchester, the required work to the Grade II Listed underbridge is integrally linked to the major public benefit realised by the overall TRU project.

- 5.1.8 The less than substantial harm caused to the significance of Occupation Underbridge (MDL1/10) would be outweighed by the public benefits of the proposed TRU scheme.

APPENDIX A – LOCATION PLAN



APPENDIX B – HISTORIC ENGLAND LIST DESCRIPTION

Overview

Heritage Category: Listed Building

Grade: II

List Entry Number: 1450702

Date first listed: 23-Mar-2018

Location Description: Bridge providing access under the railway line to 41 Thornhill Road, Dewsbury

Location

The building or site itself may lie within the boundary of more than one authority.

Location Description: Bridge providing access under the railway line to 41 Thornhill Road, Dewsbury

District: Kirklees (Metropolitan Authority)

Parish: Non Civil Parish

National Grid Reference: SE2378121124

Summary

Largely unaltered masonry railway accommodation underbridge designed by Thomas Grainger and built 1845-1847 for the Leeds, Dewsbury and Manchester Railway.

Reasons for Designation

Thornhill Lane Bridge (MDL1/10), constructed in the mid-1840s by Thomas Grainger for the Leeds, Dewsbury & Manchester Railway, is listed at Grade II for the following principal reasons:

Historic interest:

* constructed during the Heroic Age (1841-50) of railway building and a little altered example of an 1840s accommodation underbridge on what is now one of the main railway lines in northern England; * designed by the notable Scottish railway engineer Thomas Grainger.

Architectural interest:

* although a simple, small accommodation bridge, the use of rusticated voussoirs, impost bands and a moulded ashlar string course lift its design above the purely functional.

History

In contrast to the main trunk lines of the late 1830s that were constructed by single railway companies the route from Stalybridge to Leeds had fragmented origins and was the work of three different railway companies: the Huddersfield & Manchester Railway, Leeds, Dewsbury & Manchester Railway, and the Manchester & Leeds Railway.

The Huddersfield & Manchester Railway was authorised in 1845 and followed the route of the Huddersfield Narrow Canal for much of its length, including a railway tunnel through the Pennine hills set alongside the earlier Standedge Canal Company tunnel of 1811; in 1846 the railway company also acquired the canal. Joseph Locke and Alfred Stanistreet Jee were appointed to survey and design the new line, the two engineers having already worked together on a major project linking Manchester and Sheffield. Jee became the lead engineer for the Huddersfield line, which passed through challenging terrain, assisted by resident engineers that included his brother Moreland Jee (until 1848) and Herbert F Mackworth. Construction of the line was divided into various contracts, with many contractors being only responsible for a single cutting, viaduct or tunnel portal. The largest contract for the Standedge Tunnel between Diggle and Marsden was let to a single contractor, Thomas Nicholson in 1847. The tunnel's completion in 1849 marked the opening of the line.

The Leeds end of the route, which was also authorised in 1845, was constructed by the Leeds, Dewsbury & Manchester Railway. The engineer was Thomas Grainger who had previously largely worked in Scotland, and the line was completed in 1849.

A short three-mile section of the route between Heaton Lodge Junction and Thornhill Junction near Mirfield was developed by the Manchester & Leeds Railway and was constructed between 1837 and 1840, with George Stephenson as the chief engineer. The structures on this line were designed by Thomas Gooch under the oversight of Stephenson. In 1847 the railway company changed its name to the Lancashire & Yorkshire Railway.

In 1847 the Huddersfield & Manchester Railway and the Leeds, Dewsbury & Manchester Railway were acquired by the London & North Western Railway (LNWR) so that the company could access the city of Leeds and the textile towns of West Yorkshire. This pitted them as rivals to the Lancashire & Yorkshire Railway, although at points on the route the two companies had to work together. By 1851 the London & North Western Railway had an overall mileage of railway track of 800 miles and it became the most prominent railway company in the country and the largest joint-stock concern in the world in the late C19. Although the LNWR had a general manager, Captain Mark Huish, the lines of the Stalybridge to Leeds route still managed their own affairs. LNWR later carried out expansion works, including the widening of tracks and bridges, the construction of additional tunnels, and station alterations. In 1923 the line became part of the London Midland & Scottish Railway, and subsequently part of the nationalised British Railways in 1948.

Thornhill Lane accommodation underbridge, which remains largely unaltered, was built as part of the original construction of the line from 1845 to 1847 to allow access beneath a raised section of the line to a pair of cottages and fields to the east. The civil engineer for the railway line, believed to have been the designer of the bridge, Thomas Grainger (1794-1852), had been a leading advocate and designer

of early railways in Scotland from 1823 onwards, but worked on a number of Yorkshire railways in the 1840s until his death following a railway accident in 1852.

Details

Railway accommodation underbridge, 1845-1847 by Thomas Grainger for the Leeds, Dewsbury & Manchester Railway.

MATERIALS: Pennine Lower Coal Measures Sandstone.

DESCRIPTION: single carriageway arch flanked by deeply curving, raked wing walls retaining the embankments. The arch is semi-circular, formed with rusticated, V-jointed voussoirs that spring from impost bands. The rest of the walling is of course, squared, quarry-faced masonry. The bridge is topped by an ashlar string course and a ramped blocking course without parapets. The wing walls are ramped, terminating with simple pilaster-strips, and are capped with plain, squared ashlar copings. The trackside fencing and the metal gate for the archway are modern.

Sources

Other

TransPennine Route Statement of History and Significance: West of Leeds V3.1. Prepared for Network Rail, March 2017. Alan Baxter Ltd.



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