

TRANSPORT AND WORKS ACT 1992
TRANSPORT AND WORKS (INQUIRIES PROCEDURE) RULES 2004
PROPOSED NETWORK RAIL
(STALYBRIDGE TO DIGGLE (SADDLEWORTH) ENHANCEMENTS) ORDER

Proof of Evidence

-of-

Peter Simpson MEng GMICE

Canal & River Trust

LIST OF APPENDICES

OBJ211/PS/4.3 – Email 02.12.2024 - TRU Stalybridge to Diggle (Saddleworth) Scheme - Standedge Tunnel proposals for C&RT comment

OBJ211/PS/4.4a - Email 17.01.2025 from Sarah Ginn Network Rail - Standedge Tunnel proposals for Trust comment

OBJ211/PS/4.4b – Email 04.02.2025 - TRU Stalybridge to Diggle (Saddleworth) Scheme - Standedge Tunnel proposals for C&RT comment

OBJ211/PS/4.4c – Email Attachment 04.02.2025 - RE TRU Stalybridge to Diggle (Saddleworth) Scheme - Standedge Tunnel proposals for CRT comment

OBJ211/PS/4.4d – Ciria C671 Extract

OBJ211/PS/4.5a - 25.03.24 - MVL3-39A - C&RT Presentation

OBJ211/PS/4.5b – Historic Maps Extracts

OBJ211/PS/4.6 - Email 16.05.2025 - RE_ RU Stalybridge to Diggle (Saddleworth) Scheme - Standedge Tunnel proposals for review

OBJ211/PS/4.7 - Letter - Canal & River Trust 2025.07.22 - NR, Standedge Canal Tunnel Confirmation of Works

OBJ211/PS/4.20 - DMRB CG300 Technical Approval of Highway Structures Extracts

OBJ211/PS/5.5 - Meeting Minutes – TRU Canal River Trust_24032025

1. INTRODUCTION

Qualifications and Experience

- 1.1. My name is Peter Simpson, I am the Principal Engineer for Tunnels and Culverts for the Canal & River Trust (the **Trust**), I have a Master of Engineering Degree in Civil Engineering from Loughborough University, and I am a Graduate member of the Institute of Civil Engineers. I have been the Trust's lead for Tunnels and Culverts for 6 years and prior to that worked within their Bridges Team for 2.5 years. Prior to joining the Trust I have approximately nine years' experience working for a consulting engineering firm which included almost a year of site placements. Within my current role I am the Trust's technical lead for all 57 Tunnels owned by the Trust, with 52 of these tunnels predating the first railway tunnel.
- 1.2. I will provide evidence in relation to Standedge Tunnel and the interface between the proposed Network Rail (Stalybridge to Diggle (Saddleworth) Enhancements) Order (**Order**) scheme and the tunnel.
- 1.3. I have represented the Trust at one meeting between Network Rail and the Trust and have had limited direct communication with Network Rail in respect of the Order scheme, with the majority of communication having gone through Tim Bettany-Simmons, and as such within my evidence I will be making reference to his evidence OBJ211/TBS/1 at times.

2. Scope of evidence

- 2.1. In my evidence I will set out both the history of the discussions to date with Network Rail with which I have been involved and also the Trust's standpoint in relation to works impacting our tunnels in general and in particular the proposed works forming part of the Order scheme,
- 2.2. The evidence that I have prepared and provide for this inquiry in this proof of evidence is true and I confirm that the opinions expressed are my true and professional opinions.

2.3. This evidence addresses matter 5 of the Statement of Matters.

3. The Trust's approach to development on or around its tunnels

3.1. The Trust defines a tunnel within its Mandatory Standard: Asset Inspection Procedures (AIP 2024) as a structure whether operational, closed or abandoned designed to carry a waterway through a physical obstruction such as a hill. A tunnel asset includes but is not limited to the following elements; the tunnel, portals, emergency access, ventilation shafts/system, traffic lights, communication systems, and signage. Most of the tunnels in the Trust's ownership predate rail tunnels and sewerage tunnels which followed later in the 19th century. For reference, the original construction of Standedge Tunnel, was completed in 1811, although subsequently extended circa 1893 to accommodate the construction of the 'live' railway tunnel; the first UK road tunnel was not constructed until 1823, and the first railway tunnel was constructed between 1826 and 1829. Only 6 canal tunnels have been constructed since 1829.

3.2. The Trust has a consistent approach to development over and/or around tunnels. The Trust's Infrastructure Services Team manage all authorised work undertaken by third parties (via the Trust Code of Practice (CoP) as set out in Sean McGinley's evidence (OBJ211/SM/1)) in close liaison with the Tunnels Team. Typically, work is discouraged within the zone of influence (the CIRIA definition of zone of influence is provided in the appendices to this evidence OBJ211/PS/4.4d) and where this cannot be avoided the Trust will insist on pre and post work inspections along with monitoring of the tunnel.

3.3. The Trust looks to make its position clear from the planning application stages and where possible during the pre-planning stage of any development. To protect the long-term stability of our tunnels we will oppose most developments built directly above the tunnels (and within the zone of influence), unless the developer can prove that the development will not have an impact on the tunnel. In some instances, this has led to the development being built on piled foundations with the piles extending

below the invert of the tunnel. An example of this is where the M65 crosses Gannow Tunnel. The motorway and junction 10 which is also situated above the tunnel are supported independently of the tunnel.

- 3.4. Unauthorised vehicle movements also present a risk to tunnels. Many tunnels carry public roads or access tracks or both over them. The Trust has similar load carrying obligations over tunnels as it does for bridges. The greatest risk to tunnels in this scenario is where there is a low depth of cover, comparable with the depth of fill over a bridge. Typically, this is where roads or access tracks cross close to the portals, in these instances there is also a risk to the portals from parapet impacts as well as the surcharging from vertical live loads increasing the horizontal earth pressures acting on the portal headwall. There is potentially a greater risk from access tracks as there is less control of the vehicles using them, as all but 3 tunnels were constructed before the time of motorised transport then the tunnels would only have been designed to take the equivalent today of 3 tonnes gross vehicle weight.
- 3.5. It is this approach that I use as a starting point when dealing with all proposed developments over and/or around the Trust's tunnels and which formed my starting point for discussion relating to the proposed concrete relieving slab over Standedge Tunnel.

4. Standedge Tunnel and proposed relieving slab

- 4.1. This section sets out the history of discussions involving the relieving slab from my perspective and my involvement with those discussions in chronological order.
- 4.2. The first time I became aware of any proposals for work above the southwestern end of Standedge Tunnel was 18 September 2024 when I received an email from Tim Bettany-Simmons as part of our internal planning process, containing an attachment titled "Stalybridge Station to Diggle TWA0 Book of Plans", with the email highlighting that Page 20 showed proposed works in the vicinity of Standedge Tunnel southwest portal (drawing 167037-NWR-2BC-MVL3-DRG-T-LP-000021 Rev. P01). However, as the drawing showed a hatched area labelled as "Temporary construction access route

alternate car park solutions to be ascertained”, with only a small area of the hatching covering a small part of the tunnel, and with the hatched area seemingly applied to all areas within boundary fences to the roads and car park, and no reference to any works specifically linked to the tunnel (crossing or strengthening it) I returned no comments..

4.3. Following this I was asked to provide comments on a proposal for saddling the tunnel (a concrete slab cast over the arch to strengthen it, “this method relies upon the concept of creating a composite structure from the existing brick arch and the new concrete saddle”¹) which had been shared with the Trust in a presentation given by Network Rail on 8 November 2024. My feedback was provided by email to Network Rail on 2 December 2024 by Tim Bettany-Simmons (OBJ211/PS/4.3)

4.4. This email raised my concerns in relation to proposal to construct a concrete saddle and reiterated our position that we would not want any works within the zone of influence around the tunnel and would not support any works or loading within this area. It went on to convey my requirement that any temporary access/structure to be provided spanning the tunnel would need to be self-supporting and to not put any additional loading on the tunnel and included my suggestion that a Bailey bridge/independent structure, with a deck bridging over the tunnel, would be more appropriate than, say, a concrete saddle to guarantee that there is no detrimental impact on the tunnel.

4.5. On 17 January 2025 Network Rail requested details about “why the Trust’s position is that you would not want any works within the ‘zone of influence’ of the tunnel?” (OBJ211/PS/4.4a), which the Trust responded to on the 4 February 2025 with Tim Bettany-Simmons forwarding an email from myself answering this questions. (OBJ211/PS/4.4b for the email to Network Rail and OBJ211/PS/4.4c for the attachment to the email)

¹ CIRIA C656 Masonry Arch Bridges: Condition Appraisal and Remedial Treatment

- 4.6. To summarise: my response focused on the Trust only offering right of support from its tunnels to the natural land above or to any structures that were present at the time of the construction of the tunnel. This applies to all land within the zone of influence of the tunnel. As well as highlighting that although saddling a tunnel may provide additional strength, it would also subject the tunnel to additional dead load as well as the live loading that the saddle has been designed to take. I also emphasised that the Trust would look to see that any structure built over our tunnels does not impart any loading onto the tunnel itself and is not supported by the ground within the zone of influence.
- 4.7. Myself and other colleagues were invited to a MS Teams meeting on 24 March 2025 for Network Rail to present their latest proposals for crossing the tunnel. A post meeting copy of the slides that were presented was shared with the Trust, although it had the actual predicated loads presented in the meeting removed, it kept the 3% increase in permanent and temporary loading statement. A copy of the slides shared with the Trust is included in the appendices (OBJ211/PS/4.5a). During the meeting Network Rail presented the original saddling proposal and highlighted the feedback previously given by the Trust, before going on to present the updated proposal of a relieving slab (Slide 9 in the presentation). Based on my notes from the meeting Network Rail informed us that they were working to a maximum axle load for any vehicles using the relieving slab of 12t and that the relieving slab would only be used for the duration of the works on or around Ward Lane and Station Road, and was primarily required to allow access for cranes. It was during this discussion that I advised Network Rail that the biggest cranes do not always have the highest axle load and so they needed to consider all vehicles that would be crossing the relieving slab as part of the assessment.
- 4.8. As a side note, it is a common misconception that bigger cranes are going to have a bigger loading impact on assessing bridge or in this case a relieving slab, but my

experience from working in the Trust's bridges team prior to my current role has taught me that axle loads and configurations are more critical than the overall vehicle weight.

Current risks to Standedge Tunnel

4.9. Network Rail during its presentation in the meeting on 24 March 2025 put forward that the relieving slab would provide long term protection to the tunnel. Although this is a reasonable assumption, the tunnel within this section (defined by its construction type) is in a good condition and to the best of our knowledge has had very little work undertaken to it during the approximately 130 years since it was constructed. This is due to the management approach of Trust and its predecessors, which we have been looking to follow in relation to the Order scheme. Typically, maintenance work of our tunnels has been required due to external influences or due to historic construction defects, the main ones include (but are not limited to): the effects of mining, development and changes to the surface, disturbance of the tunnel lining (including repair work), and boat impact. Whilst not all these external influences will be relevant in this scenario, they are worth considering here:

4.9.1. The effects of mining – Typically the Trust's tunnels that have suffered from the impacts of mining are in large coal mining areas. The Standedge Tunnel has no reported defects linked to mining activity. Although we do see movement within other parts of the tunnel which has been linked to the railway tunnels, and the canal tunnel has been strengthened in the past as part of the works associated with the construction of the railway tunnels, this section of tunnel is beyond the railway tunnels and so continues to not be impacted by them.

4.9.2. Development and changes to the surface – Since the construction of the extension to Standedge Tunnel circa 1893, to our knowledge there has been no development over the surface for this section of the 1893 extension to the tunnel. (See OBJ211/PS/4.5b for historic maps extracts.) As a result, the forces/loads acting on the tunnel have remained fairly consistent for the last 130 years.

4.9.3. Disturbance of the tunnel lining – The Trust has a recorded history of issues caused due to disturbance to the lining of its tunnels, whether this is due to work undertaken to the tunnel, or other factors such as boat impact.

4.9.4. Boat impact – Due to the narrow nature of this section of the tunnel, only just wider than a standard boat, the chances of a forceful impact are low, with the most likely damage that could be caused being scrapes within a few hundred millimetres of the waterline, the types of impacts that can cause significant damage would only be possible with a wider tunnel. It should also be noted that the boats transiting the tunnel have a chaperone and so boaters are likely to be more sensible and, due to the location of the tunnel, helms are likely to be experienced due to the route taken to get to the tunnel. There is likely to never be any damage to the roof of the tunnel due to boats needing to meet a strict gauging requirement before being allowed into the tunnel, with boats being checked as part of the booking and chaperone process. This section of the tunnel is higher and wider than the smallest parts of the tunnel.

4.9.5. Given the current condition of this section of the tunnel, if left to operate as it is currently and as it has been for the last 25 plus years with no new external factors then based on experiences of our other tunnels it is highly unlikely that any works would be required in at least the next 25 years.

Additional considerations

4.9.6. It needs to be considered that hydrostatic pressure can be a concern for tunnel owners and to date based on the communication with Network Rail, I don't believe that any consideration has been given to what impact if any might be caused by the presence of the slab and the potential waterproofing, to a structure that due to its age is unlikely to have any waterproofing, certainly not to the levels of modern waterproofing. Although I don't currently foresee it causing any issues, it would have been appropriate to see some consideration of this.

4.10. In my opinion the approach to date from Network Rail seems to be that of tackling this as work to a road bridge and not what it is, which is works to a tunnel with no current live loading to the structure (albeit with a similar construction as an arch bridge). Both Network Rail's previous saddling proposal and their currently proposed relieving slab options are standard bridge solutions making use of the existing structure. Network Rail have also been making the assumption that the tunnel side walls in the section of tunnel just along from the location of the proposed relieving slab, i.e, where the railway crosses the tunnel are the same as the tunnel side walls in the location of the proposed relieving slab.

4.11. At the location where the railway line crosses the tunnel, this section of tunnel has historically always been of a different construction, previously wrought iron or early steel girders, which at some point has been replaced by a reinforced concrete slab. Whereas the location of the proposed relieving slab has always had a brick arch which has as far as we are aware remained unchanged since construction of the tunnel extension. Network Rails assumption that the side walls in the section of tunnel of tunnel below the railway are the same as the side walls in the section of tunnel in the location of the proposed relieving slab is quite a big assumption to take, especially as historic tunnels tend to have variations in barrel/wall thicknesses along their length even if there is no obvious difference in construction. It is also noticeable that the side walls are taller under the flat deck sections compared to the arch section along this length of tunnel as shown in images below.



Fig. 1 Tunnel at approximately 130m from the Diggle Portal

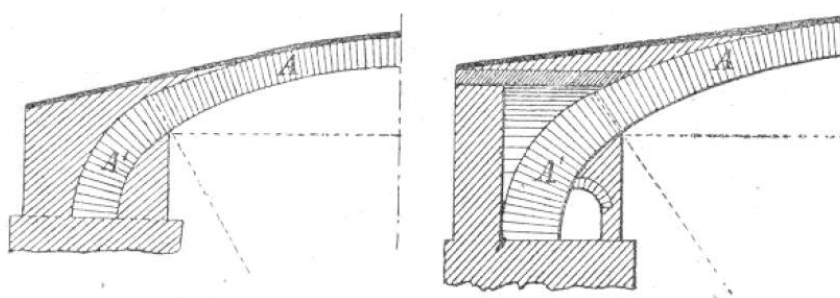


Fig 2, Tunnel at approximately 160m from the Diggle Portal



Fig. 3 Tunnel at approximately 100m from the Diggle Portal looking towards the flat deck²

4.12. Within the proposals from Network Rail to date the saddling proposal implied there was likely backing/haunching behind the arch and the relieving slab proposal implied there was no backing/haunching. But I am not aware of any works having been undertaken to prove or disprove the presence of any backing/haunching. However, the presence of angled backing/haunching will have an impact on the suitability of the slab and how the vertical loads will be transferred into the abutment and if any works are required to the canal tunnel to facilitate the installation of the slab. (See the figure below which shows typical back profiles and the photographs below that show haunching of an arch.)



Typical **backing** of semi-elliptical arches (Baggi, 1926)

Fig. 4 - Figure 2.11 from CIRIA C656³

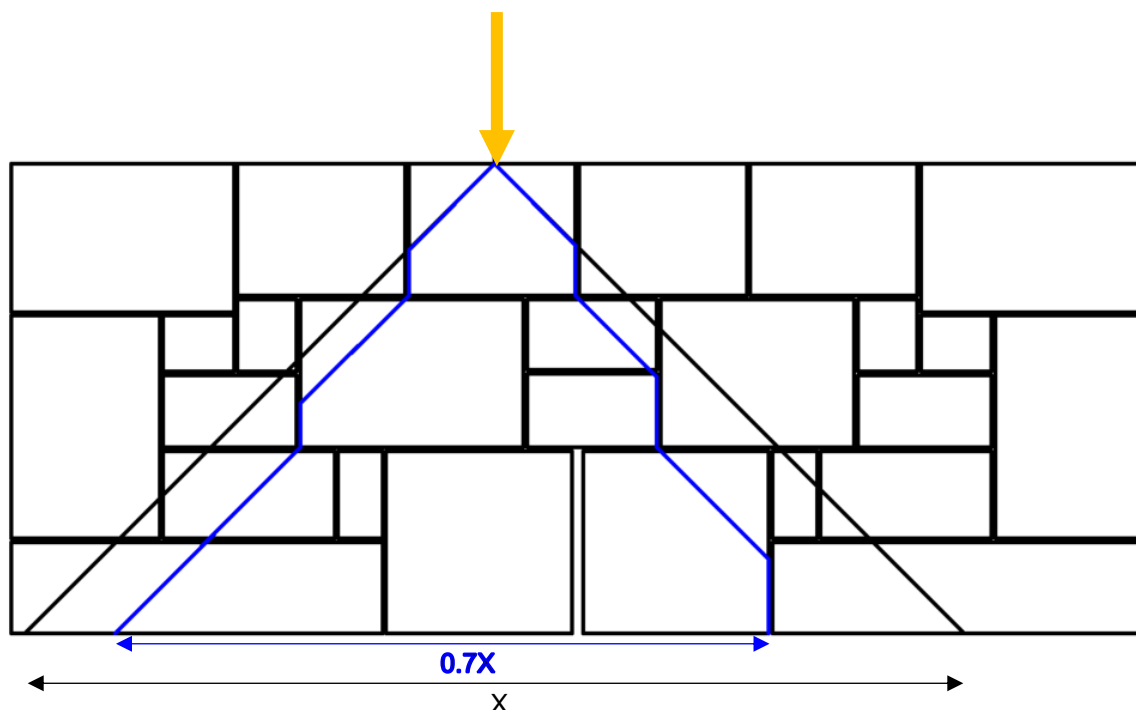
² Screenshot taken from YouTube - [272. The deepest, highest, longest canal tunnel](#)

³ CIRIA C656 Masonry Arch Bridges: Condition Appraisal and Remedial Treatment



Fig. 5 Photograph of haunching at a canal arch bridge

- 4.13. This also extends to the assumed 45° load distribution that Network Rail are working to, as referenced by their note to the 3% increase in load on Slide 9 in OBJ211/PS/4.5a. as the stone blockwork side walls in the tunnel do not following a typical brick pattern and vertical loads cannot be transferred through a vertical joint. Therefore, as shown in the overly simplified sketch below, for a load on an assumed random blockwork wall (similar to the tunnel sidewalls) a 45° load spread cannot be guaranteed to be achievable, and in fact results in the loaded length at the base of the wall being over a noticeably smaller length, in the example below 70% of the length compared to a 45° load spread. This would result in a larger increase in the foundation loads, then those from assumed from a 45° load spread. In the sketch below the diagonal black lines are there to show a 45° load spread and the blue lines show what the likely load spread will be. This is based on the assumption that the blockwork is only capable of spreading the load at 45° through the block and not for the overall length of the block. If a block can spread the load through its full length then the maximum spread between the blue lines would be greater, however, there has been no testing of the blockwork to prove if this is possible.



- 4.14. During the meeting on 24 March 2025 removal of the concrete relieving slab was raised as an option as it would only be used for the duration of the authorised works and would not have any future use, and on this basis it was agreed that if the relieving slab proposal was approved by the Trust as being acceptable then the relieving slab could be left in place.
- 4.15. Network Rail also confirmed that at this stage there would be no structural work to their tunnels as part of the Order scheme.
- 4.16. In order to try to assist Network Rail, at the meeting on the 24 March 2025 I agreed to take the relieving slab proposal away to senior managers to see if they would be able to accept the updated proposal of a relieving slab, rather than saddling.
- 4.17. Following this meeting I had a number of calls and meetings with colleagues in the Trust to review the proposals and following these it was decided that we could accept the principal of the relieving slab provided a number of criteria were met, which was communicated to Network Rail via email on 16 May 2025. (OBJ211-PS-4.6)
- 4.18. Key areas within this email were the requirement to be provided with copies of any Approval in Principle/Statement of Design Intent documents along with copies of

the design calculations and drawings for us to comment on. Along with the requirement for the design to have a CAT III check and full set of as-built records and a copy of the Health & Safety File within 6 months of completion of the work.

4.19. Network Rail responded to this (see appendices OBJ211-PS-4.7). However, in response to our requirements they choose to lower the checking category from a CAT III check to a CAT II check and also omitted the Trust's requirements to be provided with a copy of any Approval in Principle and/or Statement of Design Intent, and the ability to comment on or approve them.

4.20. Our position on the requirement for the CAT III check is that the works have the potential to impact the operational canal and therefore the safety of our staff and customers who may be using Standedge Tunnel. Consequently, we believe the highest level of fully independent design check is required – which I believe is similar to Network Rail's requirements for when a CAT III check is required, which also aligns with the DMRB⁴ requirements for tunnel structures (see appendices OBJ221-PS-4.20).

4.21. After further communications Network Rail accepted the CAT III requirement in respect of the relieving slab works in an email to the Trust on 13 February 2026, refer to appendices OBJ211-TBS-3.11.

4.22. For works to its Tunnels the Trust requires an Approval in Principle as part of the design process, typically this follows the DMRB¹ template, with some amendments allowed to suit (ie removing highway related elements).

4.23. Given that Network Rail has the Form A Approval in Principle (AiP) as a formal stage within NR/L2/CIV/003 for permanent works, and the slab being left in place would mean that it is permanent works, and with the purpose of an AiP stage being to ensure that the fundamental concept, safety and compliance of a proposed design are accepted before significant time and money are spent on detailed technical

⁴ Design Manual for Roads and Bridges, March 2020

¹ Design Manual for Roads and Bridges, March 2020

development. I would expect them to want us to have sight of this before developing a design which directly interfaces with our structure as rejection of the detailed design by the Trust, per para 46 of protective provisions in Schedule 17 to the draft Order, could potentially cause significant impact to the whole of their project given the reported criticality of the relieving slab. Especially given that within their process a Form A Approval in Principle is signed off by their Asset Manager. As the asset owner of Standedge Tunnel and given the interface between the relieving slab and the tunnel and the importance of the tunnel, particularly given the work is to facilitate construction rather than for railway infrastructure, I believe that it is appropriate that the Trust has final approval on what is or is not the acceptable proposal for the relieving slab, I understand that, as currently drafted, the Order provides that the Trust must give its approval to any plans proposed in relation to installation of the relieving slab. I would suggest that the easiest way to document this and agree this is through the requirements we sent to Network Rail in May 2025 (Evidence OBJ221/PS/4.6), starting with the acceptance of an Approval in Principle and culminating in the acceptance of the detailed design. At this current time the Trust has only agreed to the concept of a relieving slab, but this is subject to a lot of areas to be confirmed, which may ultimately end in the relieving slab not being an acceptable solution.

Maintenance and monitoring

- 4.24. The future risks to the tunnel posed by the proposed relieving slab remaining in place, after completion of the Order scheme will depend on: whether the slab is used again; whether the original loading on the tunnel is restored after construction; and failure of the slab. With the last two being linked. The slab while functioning (and assuming that the final design takes on board and addresses the points made earlier in the proof of evidence as well as any comments made during the AiP and design stages) should ensure that no load is transferred to the arch, with the dead load from the reinstated ground being taken by the relieving slab and this load along with the

dead load from the self-weight of the slab being transferred to the tunnel side walls, along with any live load from people accessing the reinstated land over the tunnel. However, failure of the slab would produce a higher dead load than the equivalent volume of earth (approximately 800 to 900 kg/m³ more). This is assuming a favourable failure of the slab with multiple failure points and a fairly uniformly distributed load being applied to the arch beneath. Although in reality there is a high probability of a single point of failure which would then lead to a point loading of the arch, which in this scenario has the potential to cause a structural failure of the arch leading to a tunnel collapse.

4.25. Accordingly, it would be important/sensible to avoid future impacts on the tunnel by proactive monitoring/inspection of the relieving slab being undertaken and for mechanisms to be put in place for the Trust to be able to check (and reject if required) any future proposed use of the slab.

4.26. If it is decided that the slab is going to be removed, then the Trust would need full details and involvement in the process, for similar reasons for involvement in its construction and use, in order to satisfy ourselves that our infrastructure is protected at all times and that the tunnel is returned to a condition that is the same as its current condition or an improvement on its current condition.

4.27. To conclude I do not believe that Network Rail have considered fully the topics covered in 4.8 to 4.25 to date which is why I believe it is correct that the Trust has the protection of final approval of any proposed works that has the potential to impact the tunnel.

4.28. The Trust's approach to this has been to ensure that its asset is protected and to ensure that it has a say in reducing as much as reasonably possible the potential for something to go wrong and/or have a negative impact on its asset/navigation. The implications of which are broken down below.

4.28.1. Long-term weakening of the tunnel – This would result in increased inspection and monitoring of the tunnel. Due to the nature of the tunnel particularly with the

absence of towpaths access is difficult and needs to be planned, with additional associated resource costs, both in terms of time but also equipment (eg. boats). This would therefore increase the operating costs that are put upon the Trust which is a Charitable Trust with limited income streams and reduction in government funding.

4.28.2. Increased maintenance / repair / refurbishment frequencies – The section of tunnel currently is deemed to be in a good condition with no works planned and no known works undertaken to this section of tunnel. The external influences covered in section 4.9 all have the potential to increase these frequencies, which comes at a cost to the Trust, in its current condition no work is planned for this section of the tunnel both in the short and long term, as the rate of deterioration is very slow. However, for example disturbance of the ground above the tunnel, particularly the ground in contact with the tunnel as the potential to change this, if water finds a new path through and starts to wash out the mortar between the brickwork in the arch.

4.28.3. Overloading of the side walls – loading within the zone of influence could lead to increases in horizontal earth pressures that the tunnel walls are unable to resist causing them to move and in a worst-case scenario fail. But even a relatively small movement of the side walls could lead to a failure of the arch. Whereas the flat deck/slab sections of the tunnel under the live railway can act as a prop to transfer the horizontal loading on the side walls from one side wall of the tunnel to the other, an arch cannot act as a prop and transfer these horizontal loads and so the side walls of the tunnel cannot be expected to act in the same way as they do for the sections of tunnel under the railway. The relieving slab proposals provided do not show how horizontal loads will be addressed, which puts the tunnel side walls at considerable risk at this current time.

4.28.4. Risk of collapse – All the risks and concerns identified within this evidence have the potential to develop into a collapse. A collapse of the tunnel could be limited

to the localised punching out of several bricks from the arch, to a total collapse of that section of the arch. A total collapse of the arch could be over a short length, or it could have the potential for the arch to unravel back to the next construction joint in either direction along the arch. Both extents of collapse have been seen in canal tunnels previously. In the event of collapse the tunnel would then be closed for at least a year (based on experience of previous canal tunnel collapses), potentially longer depending on if the Trust was in the position to be able to afford to rebuild the tunnel straight away. Due to the relative shallow depth of the tunnel a collapse of the tunnel would lead to effectively a sinkhole appearing at the surface.

5. Observations on Network Rail's Statement of Case for the Application – Section

7.2.2.15 MVL3/39A Standedge Canal Tunnel

5.1. Further to the evidence in Section 4, I have the following observations on Network Rail's Statement of Case (NR30).

5.2. To the best of my knowledge the section of canal tunnel was built as an extension to the existing tunnel circa 1893 due to the development of the railway and construction of the current 'live' tunnel and not due to the development of the local area.

5.3. Within the "Optioneering and option development" section there is the following statement *"A review was carried out based on the information available of the load increase at abutment foundation level when the controlled construction movements across the access track occur, and they are in the region of 5%".* This is an increase in loading that is greater than Network Rail have communicated to us and used in discussion previously advising us it would be 3%, which is the basis upon which have made our previous decisions, see para 4.7 above.

5.4. The "Optioneering and option development" section then goes on to state that *"Further site investigation is to be carried out to validate these assumptions and agree details with Canal and River Trust."*, however as covered above in paras 4.18 to 4.23 a mechanism to agree details with the Trust has yet to be agreed.

5.5. Within the “Project proposals” Network Rail have referred to the relieving slab being cast in-situ. They have not previously discussed the slab as being cast in-situ. At the meeting on the 24 March 2025, as referenced in the minutes (appendix OBJ221/PS/5.5) they told the Trust that they *“now propose that a concrete relieving slab is installed over the masonry arch, using the existing abutments to support it. A compressible board would be installed between the existing arch barrel and the proposed relieving slab, such that the existing barrel is not loaded”*.

5.5.1. I would have expected if they had been intending to use an in-situ concrete slab that they would have referred to a concrete slab being constructed over the masonry arch and not installed.

5.5.2. Additionally, by pouring an in-situ concrete slab the existing arch barrel would be subjected to additional loading from the ‘wet’ concrete and any steel reinforcement used in the slab while the concrete cured.

5.5.3. With an in-situ slab Network Rail within their detailed design will need to calculate the compression that will have already occurred to the compressible board from the construction of the in-situ slab and will need to ensure that sufficient compressibility remains within the board to accommodate any deflections of the slab under loading so as to avoid loading the arch. The purpose of the compressible board as I understood it when Network Rail presented their proposal on 24 March 2025 is to ensure that there are no open voids that debris could fall into and create a means for a point load to be applied to the arch by the slab deflecting (a large enough point load applied to the arch could cause damage and even failure of the arch). Therefore, if there is not sufficient compressibility remaining in the board to accommodate the maximum possible deflection of the slab a similar risk remains.

5.6. Additionally, within the “Project proposals” Network Rail have stated that *“Devegetation will be required over the extents of the saddling and access route”*. I have assumed that this is a typo and that Network Rail are not looking to keeping

saddling as an option as this has previously been rejected by the Trust (paras 4.3 to 4.6 above).

5.7. Similar to section 5.6, but within the “Construction sequence” section there is the following stage *“Backfill the area over the reinforced tunnel arch”*, which would suggest saddling the arch, again I have assumed that this an error with the wording, but it does create contradictions within the proposal as only in the bullet point above they are talking about the relieving slab.

Declaration: The evidence that I have prepared and provide for this inquiry in this proof of evidence is true and I confirm that the opinions expressed are my true and professional opinions.

Signed:



Peter Simpson

Dated: 12 May 2026

SUMMARY PROOF OF EVIDENCE

of PETER SIMPSON

Canal & River Trust

1. My evidence and its appendices sets out the history of discussions between Network Rail and Canal & River Trust (**Trust**) in terms of the Trust's position regarding works affecting its tunnels, specifically those works proposed under the draft Order.
2. The Trust adopts a precautionary and consistent approach to development near its tunnels, most of which predate modern design standards and were constructed to accommodate historic surface loads only. The key principles that the Trust maintains include:
 - a. avoidance of works within the tunnel's zone of influence wherever possible;
 - b. where unavoidable, the Trust requires inspections, monitoring, and proof that no detrimental impact will occur
 - c. the Trust generally opposes development directly above tunnels unless it can be shown that the tunnel is not relied upon for support; and structures above tunnels are expected to be self-supporting and independent of the tunnel and surrounding ground.
3. Standedge Canal Tunnel is an asset of the Trust's, a 5.2km canal tunnel which carries the Huddersfield Narrow Canal constructed in 1811 and extended circa 1893.
4. As part of the Order scheme, Network Rail had proposed strengthening the tunnel, in relation to works at the Diggle compound site, by constructing a concrete saddle above it.
5. During discussions with Network Rail between November 2024 and February 2025, and in feedback offered by the Trust in relation to this proposal, the Trust highlighted its concerns with this proposal. In summary, the concerns were:
 - a. The Trust only provides a right of support to the natural ground and structures existing at the time the tunnel was built;
 - b. New structures within the zone of influence risk altering load paths, increasing load on the tunnel walls and/or crown, and causing settlement or damage; and
 - c. Saddling introduces new dead load and transfers live loads through the historic structure, which is undesirable for a canal tunnel of this age

The Trust also noted that access routes and/or temporary structures must be independent of the tunnel. The Trust suggested alternative solutions to saddling.
6. In March 2025, Network Rail proposed an alternative solution to saddling, being a concrete relieving slab. However, the Trust was equally concerned about the potentially negative impacts on the tunnel from a relieving slab. This was in part due to the increase in loading on the existing side walls of the tunnel and the loading from vehicles approaching and leaving the slab within the zone of influence. But also how the slab might interact with the tunnel when in use as well as post project with its long-term ongoing maintenance and future potential impacts on the tunnel as well as use of the slab.
7. While Network Rail suggested the slab could provide long-term protection for the tunnel, the tunnel is already in good condition due to the management approach of the Trust, which we have been following in relation to the Order scheme. Typically, work

to our tunnels has been required due to external influences, including but not limited to:

- a. The effects of mining – No mining (or tunnelling) related damage has been recorded within this section of the tunnel;
 - b. Development and changes to the surface - Since the construction of this section of tunnel there has been no development over the surface of this section of tunnel; and
 - c. Boat impact – The risk here is minimal due to restricted clearances elsewhere in the tunnel, controlled passage and strict gauging.
8. If undisturbed, the tunnel is unlikely to require intervention for at least 50 years; new loading and development on the surface could alter this.
9. Network Rail have been using assumptions on the tunnel construction based on the section of tunnel underneath the railway rather than the section over which the strengthening works are to take place. Historic tunnels tend to have variations in barrel/wall thicknesses along their length even if there is no obvious difference in construction and that under the railway, the tunnel has always had a “flat deck” top to the tunnel whereas the section under the proposed slab has always been an arch. The tunnel side walls in the “flat deck section” are taller than in the arch section. In addition, load transfer assumptions made by Network Rail using a 45° distribution may not be valid due to the random blockwork construction, potentially concentrating loads.
10. However, by May 2025, the Trust had accepted the principle of a relieving slab based on what had been presented and subject to criteria communicated by Network Rail. These criteria included provision of an Approval in Principle (AiP), design information and a CAT III design check. In responding, Network Rail choose to lower the checking category from a CAT III check to a CAT II check and omitted the Trust’s requirements to be provided with a copy of an Approval in Principle, and the ability to comment/reject them.
11. Whilst Network Rail accepted the CAT III requirement by February 2026, it did not agree to the AiP requirement. As the slab constitutes permanent works, I believe an AiP is required under Network Rail’s own procedures, and this aligns with the Trust’s approach for works to its tunnels. I would expect Network Rail to want us to have sight of an AiP prior to developing a design which directly interfaces with our structure as rejection of the detailed design by the Trust, per para 56 of protective provisions at Schedule 17 to the draft Order, could potentially cause significant impact to the whole of their project given the reported criticality of the relieving slab.
12. Given the interface with the Trust’s asset and the criticality of the slab to the Order scheme, I consider that the Trust having final approval rights would be reasonable and consistent with best practice.
13. Although the Trust has agreed in principle to installation of a slab, I am concerned about long-term effects of the slab – whether it is to remain in situ, or be removed. If retained, the slab may increase inspection and maintenance burdens and introduce long-term failure risks, including potential tunnel collapse and prolonged closure. If the slab is removed, the Trust requires full involvement to ensure the tunnel is returned to an equivalent or better condition.
14. My evidence also includes a number of observations on Network Rails Statement of Case (NR30), in which I have identified the following inconsistencies and concerns:

- a. References to higher load increases, around 5% stated compared to the 3% presented to the Trust, that the Trust based its decision in relation to the relieving slab on;
 - b. Claims that further investigation and agreement with the Trust are required, without a clear mechanism to achieve this being agreed;
 - c. Conflicting terminology is used suggesting both saddling and relieving slab options were proposed;
 - d. Introduction of in-situ construction method which hasn't previously been discussed in detail, which brings with it additional considerations/risks.
15. In conclusion, I believe that Network Rail has not fully addressed the structural, geotechnical, construction and long-term risks associated with the relieving slab, nor provided a clear mechanism to protect the Trust's asset. The Trust's requirement for final approval is reasonable and consistent with industry practice.