

Eden District Council Planning (by email: planning.services@eden.gov.uk)

18 April 2022

Dear Sir/Madam

Ref 22/0254 Great Musgrave bridge

We are writing to object to the above planning application which seeks permission to retain the infill at the disused railway bridge at Great Musgrave, Cumbria (known as EDE/25).

In December 2020, Highways England (HE) (renamed National Highways (NH) in August 2021) issued a list of 134 legacy railway structures earmarked for infilling or demolition. Of these, ~18 were 'overbridges' with a masonry arch construction; the one at Great Musgrave was identified within the company's works programme as Priority 2 - "action required within five years".

Highways England notified the relevant Local Planning Authorities (LPA) that infilling work at four of these ~18 bridges would take place under Schedule 2 Part 19 Class Q of the Town & Country Planning (General Permitted Development) (England) Order 2015, indicating that their condition threatened serious damage to human welfare or the environment; in other words, infilling was needed "to prevent an emergency arising". However, 18 months later, no work has yet taken place at any of these four structures. There was no evidence of an impending emergency; the powers were being abused. In three cases, the LPA rejected the use of Class Q, asserting instead that planning permission must be obtained.

Only two of the ~18 structures have subsequently been infilled and all-but-one of the remainder have since been removed from National Highways' Major Works programme. This reflects the fact that masonry arch bridges deteriorate very slowly, provide considerable reserves of strength and do *not* suddenly collapse without extreme abnormal loading.

At Great Musgrave, Eden District Council (EDC) initially told Highways England that infilling could proceed as Permitted Development. The work took place in May/June 2021. As a result of the controversy surrounding the project, EDC asked Highways England to pause infilling whilst further consideration was given to the planning requirements; however HE refused and continued its infilling work under Class Q, claiming that the works "were required to prevent the failure of the bridge and avert a collapse." The company had not previously asserted that the works were urgent and its inspection reports do not support any such claim. By default, Class Q powers only apply to *temporary works* remaining in situ for no more than 12 months.



Great Musgrave bridge photographed in April 2021.



Great Musgrave bridge photographed after infilling in September 2021.

National Highways subsequently conducted an internal review of its decision to infill Great Musgrave bridge and the report was considered at a meeting of the company's new Stakeholder Advisory Forum on 8 October 2021. It concluded that:

- no weight restriction had been applied despite the structure having been assessed in 1998 as having a capacity of only 17 tonnes
- Cumbria County Council allegedly noted that the bridge was on an emergency diversion route for the A66 and a weight restriction would have removed this option
- EDC's Local Plan contained no policies specifically safeguarding former railway lines
- the bridge's condition worsened between 2017 and 2020
- infilling avoided any disruption to the highway and the services carried by the bridge
- infilling reduced long-term liabilities and removed the risk from traffic overloading
- infilling has preserved the structure until a long-term purpose for it is found.

Weight restriction

The 1998 structural assessment - which was used by Highways England as part of its asset management decision-making - found that Great Musgrave bridge had a capacity of 17 tonnes. An inspection recorded "random open joints" across 10% of the arch barrel towards the crown - likely to be a consequence of water percolation through the structure - and local spalling of five stone blocks. No evidence was recorded of defects associated with overloading.

The assessment recommended that the open joints should be repointed which would be "satisfactory for full 40 tonne assessment loading". Repairs costing £10,645 were undertaken in 2012, including pressure pointing of the arch and replacing missing/spalled stones. It is likely therefore that the bridge's capacity had increased following these repairs.

Great Musgrave bridge carries the B6259 which is sufficiently wide for two cars to pass carefully along much of its length, but is narrower in places, incorporating several sharp bends and humped crossings over watercourses. It is not passable by vehicles over 12 feet 3 inches (3.73 metres) in height due to a railway bridge at Sandford. East and north of Great Musgrave bridge, the narrow lanes to Brough and the A66 are not suitable for larger vehicles.

The A685 runs in a north-south direction to the east and south of Great Musgrave, connecting the A66 at Brough to the M6 at Tebay. To the north of Kirkby Stephen, the road is subject to an 18-tonne weight limit which prohibits most HGVs from entering the town. The B6259 forms a junction with the A685 immediately to the north of Kirkby Stephen. Advanced warning of the weight restriction is provided on all approaches to Great Musgrave bridge. As a result, it is not permissible for most vehicles over 18 tonnes to make through journeys via the bridge.

Its 17-tonne capacity therefore resulted in no meaningful limitation to its asserted role as part of an emergency A66 diversion as a section of the route is already prohibited to vehicles over 18 tonnes. Furthermore, given the constraints associated with the B6259 and other local roads, there is no practical prospect of larger vehicles being able to use it for diversionary purposes.

Example constraints to use of B6259/Great Musgrave bridge as A66 diversionary route



B6259: An often-struck rail bridge at Sandford.



B6259: Narrow section through Warcop.



B6259: Narrow bridge with sharp bend.



B6259: Very narrow section.



B6259: Sharp bend at Great Musgrave bridge.



B6259: Humped river bridge and sharp bend.



Musgrave Lane: Narrow section.



Alternative route: Low rail bridge at Warcop.

The bridge's condition

The 2017 Detailed Examination (DE) of Great Musgrave bridge recorded the structure as being in Fair condition, presenting “no significant risk” to public safety. “Minor masonry repairs and pointing” were “desirable”, “attention to the waterproofing” arising from “evidence of water ingress to the stonework below the verge areas”, and some open joints. Localised stonework deflection of $\leq 4\text{mm}$ was identified in the crown region, relating to stone blocks 450mm deep (i.e. less than 1%). It should be noted that some stonework deflection may have occurred during construction when the centring was removed.

The 2020 Visual Inspection (VI) recorded the structure's condition as Fair, presenting “no significant risk” to public safety. £5K of repointing to “very deep open joints to soffit” was recommended. Deflection of individual stone blocks was noted at the crown and high haunch, “up to **approx** 15mm where accessible” (3.3%). Given the challenges of reaching the crown during a VI, it is not clear whether this figure can be relied upon as accurate.

A number of joints within the soffit showed mortar loss up to 170mm (38%), “where accessible”, compared with $\leq 40\text{mm}$ in the 2017 DE.

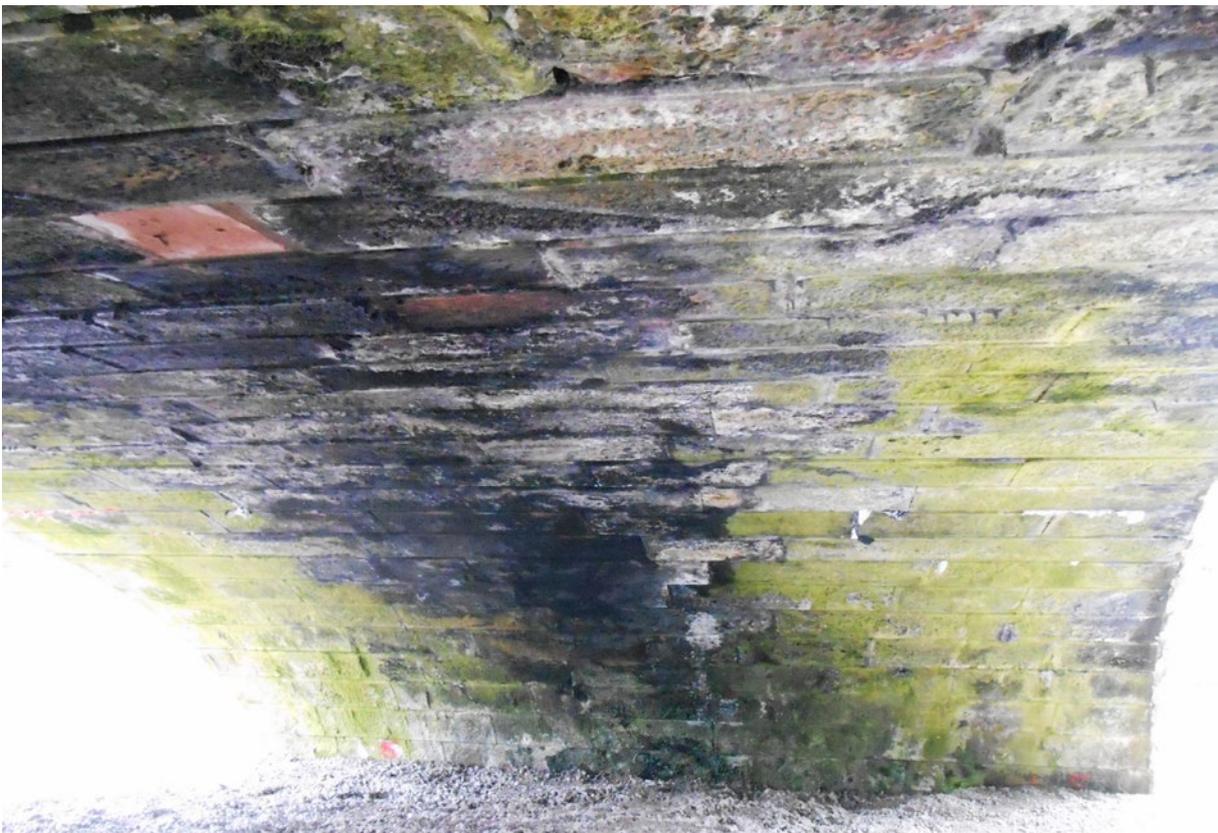
The 2021 VI also recorded the structure's condition as Fair, with “general masonry repairs required to the arch soffit”. It identified no new defects and no changes to existing defects. Only two photographs of the arch were included, one being a partial general view and the other a close-up of a stepped open joint. There were no measurements of the stone block deflections. Despite this, the engineer's scoring matrix has been changed since infilling to record the risk to public safety as “high”.

National Highways asserts that Great Musgrave bridge was added to its potential infill list in 2019 and its condition worsened in 2017 and 2020. Yet it was not one of the 34 structures subject to Class Q (emergency) notifications in 2020 and no deterioration was recorded during the 2021 inspection.

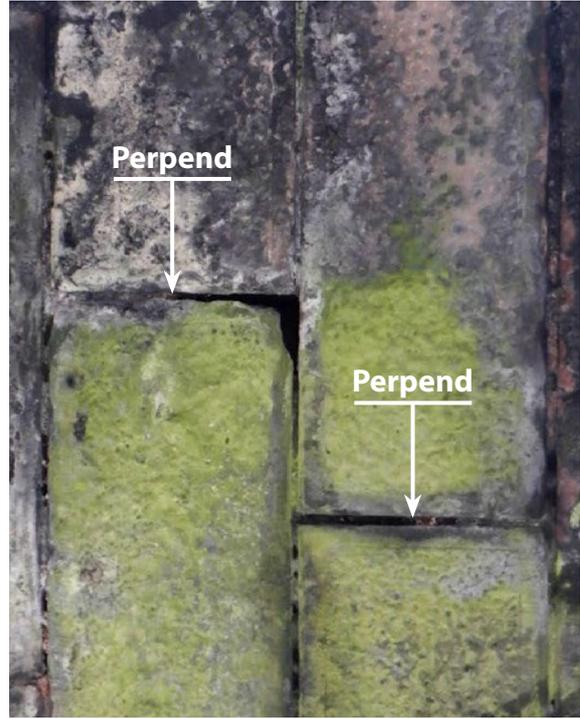
In his email to EDC of 24 June, National Highways' engineer claimed that:

- “the structure continued to be utilised and damaged by vehicles in excess of 17 tonnes”, however there is no evidence to support this statement
- “the bridge was being overloaded and...works were required to prevent the failure of the bridge and avert a collapse”, however there is no evidence of overloading and such a catastrophic failure would be unprecedented for a masonry arch bridge
- “mitigation works were required as a priority to “prevent” a collapse”, however there is no evidence to suggest *any* threat of collapse.

Appended to this document are two appraisals of the bridge's condition from experienced civil engineers, based on National Highways' inspection reports, the structural assessment and email exchanges with EDC.

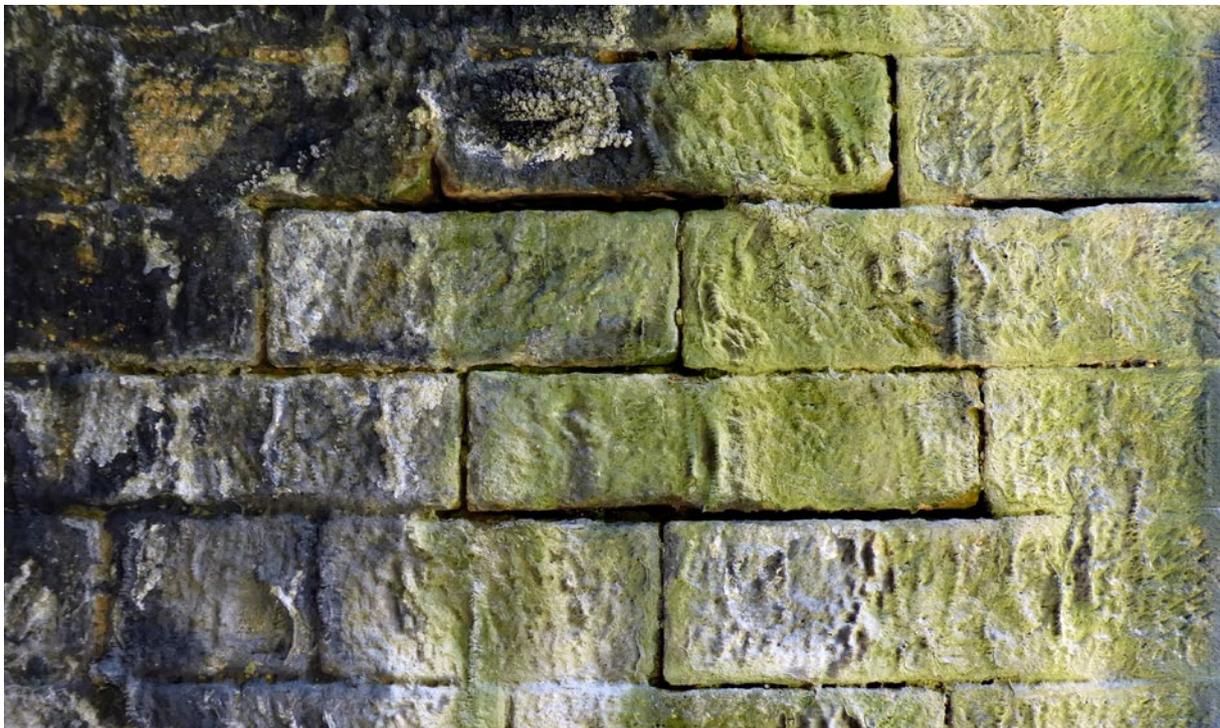


Photos of the arch soffit at Great Musgrave taken on 10 June 2021, during the infilling works and less than a week before the concrete was poured. These show no significant defects.



These are the only two photos of the arch from HE's 2021 Visual Inspection of Great Musgrave bridge. The paucity of images capturing defects within the arch is likely to suggest the inspector had no meaningful concerns about the structure.

A loss of mortar from perpends has little structural significance in terms of load-bearing.



A photo showing more extensive deep open joints (mostly bed joints) at another legacy railway bridge which Highways England intended to infill under Class Q (LPA notified in Sept 2020), but has since been removed from the HRE Major Works programme.

Removing the infill

On 1 July 2021, in response to the controversy surrounding the bridge's infilling, National Highways told the Eden Valley and Stainmore railways that "If the plans to re-open the heritage railway are confirmed, we would be pleased to work with any rail groups and the local authority to remove the infill at no cost to them." This was subsequently clarified to mean that the infill would be removed if "a viable future use for the track bed beneath the bridge is found, that has all necessary approvals and is ready to be delivered."

However, this commitment has no legal status and those in high-level positions at National Highways in 10-20 years' time are unlikely to recognise it as an undertaking to which they have any obligation. Even if the two railways had the will and necessary financial resources, there are no grounds for enforcement through the courts. The offer is a meaningless public relations exercise, designed to diminish the impact of infilling on the aspirations of the two railways. It relies only on trust and National Highways has proven itself to be wholly *untrustworthy* throughout this episode.

Prior to infilling, Great Musgrave bridge was in Fair condition, showing very slow and limited signs of deterioration, and requiring a modest amount of repair work to a handful of minor defects "within five years". These would have restored the structure's load-bearing capacity to 40 tonnes and cost in the region of £20K.

According to the internal review undertaken by National Highways, the estimated cost of removing the infill, repairing any damage and strengthening the bridge could reach £431K, on top of the £124K spent on infilling. However it is the view of our Group and engineers with specialist experience that this figure has been deliberately inflated to support the case for the infill's retention; rehabilitation of the bridge could be delivered at a fraction of this price if proportionately and pragmatically scoped.

Infilling was an opportunistic act of liability reduction, surrounded by deceit, hysteria and questionable competence. It must not be allowed to negatively impact the two heritage railways and their ability to boost the local economy; neither must it inflict undue blight on the environment, cause ecological damage or result in heritage loss.

National Highways has recently developed a new formal review process for major works to legacy structures, taking into account their potential value in terms of heritage rail, railway reopenings, active travel, heritage, ecology and any other relevant factors. It ensures dialogue with affected stakeholders and commits the company to "seek full planning permission for all Major Works as a default position".

Given the identified importance of Great Musgrave bridge as part of a connection between the Eden Valley and Stainmore railways, and its value as a non-designated heritage asset, it seems likely that infilling would not have been approved if National Highways' review process had been in place beforehand. The removal of ~16 similar structures from the Major Works programme (effectively all the remaining masonry arch bridges) supports this view.

Planning

Paragraph 2 of the National Planning Policy Framework (NPPF) states that “at a very high level, the objective of sustainable development can be summarised as meeting the needs of the present without compromising the ability of future generations to meet their own needs”, such as developing a new railway.

The presumption is in favour of *sustainable* development.

Paragraph 81 of the NPPF states that “Planning policies and decisions should help create the conditions in which businesses can invest, expand and adapt. Significant weight should be placed on the need to support economic growth and productivity, taking into account both local business needs and wider opportunities for development.”

The infilling of Great Musgrave bridge materially impacts the ability of the Eden Valley and Stainmore railways to expand and support economic growth through tourism.

Policies relevant to this application from Eden District Council’s Local Plan 2014-2032 include:

- *DEV3 - Transport, Accessibility & Rights of Way*

This policy states that “Development will not be supported where...it would prevent the future opening of any road or rail schemes under consideration”.

Reopening of the line between Warcop and Kirkby Stephen has been under consideration since 1995 and both the Eden Valley and Stainmore railways are pursuing this objective, both in terms of progress on the ground and the development of plans to overcome the various physical obstacles.

In a letter to National Highways of 17 January 2022, the two railways made clear that “Both Eden District Council and Yorkshire Dales National Park Authority are aware of and support our objectives”.

As such, the application is in conflict with policy DEV3 of the Local Plan.

Paragraph 106(c) of the NPPF states that “Planning policies should... identify and protect, where there is robust evidence, sites and routes which could be critical in developing infrastructure to widen transport choice and realise opportunities for large scale development.”

- *DEV5 - Design of New Development*

This policy states that “New development will be required to demonstrate that it...

- Shows a clear understanding of the form and character of the district’s built and natural environment, complementing and enhancing the existing area
- Protects and where possible enhances the district’s distinctive rural landscape, natural environment and biodiversity
- Uses quality materials which complement or enhance local surroundings
- Protects features and characteristics of local importance.”

In making the decision to infill Great Musgrave bridge, it is clear that National Highways failed to apply the hierarchy of principles set out in Standard CG 304 (Conservation of Highway Structures) which are recognised as best practice:

- maintaining structures “in their original form and performing the same function”
- “minimal changes to the structure and its appearance”
- modifications involving “no loss in character, minimal loss of historic fabric and minimal adverse effect on the setting”
- “minimal introduction of new material additional to the original fabric”
- “any new materials to be in keeping with the original fabric”
- “all work undertaken using...materials to reflect the appearance and local impact of the structure”.

Options to retain the structure’s inherent quality as part of the Eden Valley’s landscape character were rejected - almost certainly without thought - in pursuit of National Highways’ liability reduction policy.

At a time when redundant railway infrastructure is being reused for sustainable transport, the potential of Great Musgrave bridge has been made costly and difficult to restore. The idea that it has been “preserved” by the concrete and aggregate infill is risible.

As such, the application is in conflict with policy DEV5 of the Local Plan.

Paragraph 130(c) of the NPPF states that “Planning policies and decisions should ensure that developments ...are sympathetic to local character and history, including the surrounding built environment and landscape setting, while not preventing or discouraging appropriate innovation or change (such as increased densities).”

- *ENV1 - Protection & Enhancement of the Natural Environment, Biodiversity & Geodiversity*

This policy states that “New development will be required to avoid any net loss of biodiversity and geodiversity, and where possible enhance existing assets.”

Whilst the railway beneath Great Musgrave bridge has no statutory designation, it remains likely that the dismantled railway serves as a corridor for wildlife dispersal and foraging. Many scientific papers describe the importance of ‘set-aside railway infrastructure’, highlighting the improved connectivity that these linear features offer.

A recent European study highlighted that lineside land and points of connection have a key function in connecting green areas (see Braschler et al., 2020). The potential fragmentation of a natural habitat system by the infilling of railway infrastructure is likely to be significant and all mitigation should be explored. The importance of green bridges and other forms of wildlife passage have been documented repeatedly over the past 25 years (see Canters et al., 1997; van der Grift 1997; Clevenger, 2005).

As such, the application is in conflict with policy ENV1 of the Local Plan.

Paragraph 174 of the NPPF states that “Planning policies and decisions should contribute to and enhance the natural and local environment by...protecting and enhancing valued landscapes, sites of biodiversity or geological value...recognising the intrinsic character and beauty of the countryside...minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures.”

- *ENV2 - Protection and Enhancement of Landscapes & Trees*

This policy states that “New development will only be permitted where it conserves and enhances distinctive elements of landscape character and function. Proposals should take account of and complement...the distribution and form of settlements and buildings within their landscape setting.”

The infilling works have removed and possibly harmed existing trees/vegetation, changed the landscape form around the bridge, as well as the aesthetic and perceived quality of the structure. In the interest of the landscape character, a solution should have been found that retained both a suitable opening beneath the span and its vertical drop.

As such, the application is in conflict with policy DEV2 of the Local Plan.

- *ENV4 - Green Infrastructure Networks*

This policy states that “Development which leads to direct loss, fragmentation or degradation of green infrastructure will be resisted unless there is demonstrable evidence of wider public benefits from the proposal.”

Green infrastructure relates to the active planning and management of networks of multi-functional open space which need to be managed and designed to support local biodiversity and enhance the quality of life for Eden’s residents and visitors. It can help create a sense of place and provide opportunities for recreation such as walking or cycling, including facilitating access to the wider countryside.

Whilst there are currently no active travel proposals for the former Warcop-Kirkby Stephen railway, the infilling of Great Musgrave bridge misfits with this broader aspiration.

As such, the application is in conflict with policy ENV4 of the Local Plan.

Paragraph 20 of the NPPF states that “Strategic policies should set out an overall strategy for the pattern, scale and design quality of places, and make sufficient provision for...conservation and enhancement of the natural, built and historic environment, including landscapes and green infrastructure, and planning measures to address climate change mitigation and adaptation.”

- *ENV10 - The Historic Environment*

This policy states that “The Council will attach great weight to the conservation and enhancement of the historic environment, heritage assets and their setting” and that “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 judgement will be required having regard to the scale of any harm or loss and the significance of the heritage asset.”

Great Musgrave bridge is a non-designated heritage asset, acting as a physical reminder of an important railway which served the area until 1975. It holds archaeological, architectural and historic interest as a fine example of masonry bridge construction and as a reminder of a past way of life. The structure forms part of our built heritage and contributes positively to the landscape and the area’s character. No evidence has been provided that other, more appropriate options were meaningfully explored before infilling was chosen.

Although the railway track and other infrastructure no longer survive, it is still possible to discern the path of the railway within the landscape. The visual relationship between the bridge and the route under this important historic connection has been lost through infilling. This identified harm and that of infilling’s visual impact on the wider historic environment was not considered.

As such, the application is in conflict with policy ENV10 of the Local Plan.

Paragraph 190 of the NPPF states that “Plans should set out a positive strategy for the conservation and enjoyment of the historic environment, including heritage assets most at risk through neglect, decay or other threats. This strategy should take into account...the desirability of sustaining and enhancing the significance of heritage assets, and putting them to viable uses consistent with their conservation...the wider social, cultural, economic and environmental benefits that conservation of the historic environment can bring...the desirability of new development making a positive contribution to local character and distinctiveness...and opportunities to draw on the contribution made by the historic environment to the character of a place.”

Paragraph 196 of the NPPF states that “Where there is evidence of deliberate neglect of, or damage to, a heritage asset, the deteriorated state of the heritage asset should not be taken into account in any decision.”

The infilling of Great Musgrave bridge was widely regarded as an act of cultural vandalism, lacked any meaningful engineering or public safety justification, and materially damaged the longstanding aims of the Eden Valley and Stainmore railways to boost the local economy. Highways England lied about having prior dialogue with the two railways and contrived a distorted reality around the condition of the structure.

Policies adopted within the Local Plan and the provisions of the National Planning Policy Framework provide clear grounds to reject the planning application for retention of the infill and we trust the Council will do so.

Yours sincerely



on behalf of The HRE Group

The HRE Group is an alliance of walking, cycling and heritage campaigners, engineers and greenway developers who regard the Historical Railways Estate's 3,000+ structures to be strategically valuable in the context of future rail and active travel provision.

GREAT MUSGRAVE BRIDGE INFILLING

INITIAL VIEW by ALAN HAYWARD FREng CEng FICE FStructE Updated 30th October 2021

I am a retired civil and structural engineer with over 50 years experience in design, construction, assessment and inspection of bridges. On the basis of information as listed this initial view is given in good faith, but with no professional responsibility. My views would need to be ratified through professional certification.

1. THE EXISTING BRIDGE

1.1 Great Musgrave bridge is an attractive single span sandstone masonry arch carrying the B6259 road over a disused single track railway between Penrith and Kirkby Stephen. The line opened in 1862 and finally closed through Musgrave in 1976, but the heritage Eden Valley Railway reopened from Warcop north of the bridge and apparently has long term ambitions to reopen through Musgrave. The arch is elliptical, skewed about 11 degrees with span of 8.45m and rise of 2.30m. Width over parapets is 6.57m with carriageway 5.63m wide and no kerbs or footways.

1.2 From the inspection reports I can see no evidence of movement of the abutments, excessive cracking or weathering of masonry, deformation or significant loss of cross section of the 450mm thick arch barrel, separation or bowing of the spandrels and parapets. This is in consideration of the bridge being in a region of high rainfall. The comparatively minor faults observed of mortar loss at joints, parapet damage and damp penetration would all have been rectifiable to ensure continuation in service. **My view is that prior to being infilled the bridge was in good condition.**

2. INFILLING OF THE BRIDGE

2.1 From 24th May 2021 the bridge was infilled by Highways England apparently on grounds of safety. The structure currently remains buried, precluding any through way beneath. The parapets remain exposed.

2.2 Reasons for infilling of the bridge appear in an email from Highways England of 24th June 2021: **"....the structure continued to be utilised and damaged by vehicles in excess of 17 tonnes.....a measured loss of 38% of the mortar in the joints compared with a loss of less than 10% in such a short period is significant. This combination of defects indicates a structure that is suffering from being continually overloaded..... works were required to prevent failure of the bridge and avert a collapse.....Without intervention those defects would continue to develop and disruption to the network through the closure of the road over the bridge would be the "best case" scenario".**

2.3 The evidence for this reasoning appears to be based on loss of joint mortar to the arch barrel and a very local displacement of maximum 15mm at individual stones. Inspection

reports merely state that a “number” of joints had mortar loss without mention of quantity, location, direction, frequency or if on more than one side of any stone. This would only be a concern if the loss of mortar was in a pattern suggesting failure propagation, for example if weakened transverse stones existed over a significant width. A reduction in capacity would be insignificant from isolated degradation. I do not see any evidence which might suggest that heavy vehicle loads caused damage of the arch. I would not agree that a 38% loss of mortar in a joint is “significant”. If I was to suspect that heavy vehicles might be the cause of joint degradation in such a bridge I would expect to monitor for vibration [including close touch], signs of movement or audible evidence.

2.4 I am not aware if a structural analysis based on the measurements of joint degradation, or monitoring of the structure, was carried out on behalf of Highways England to confirm that the infilling was necessary “...to deal with an emergency...”. I consider that such investigation would have been essential. The “permitted development right” exacted by Highways England applies, I understand, only to deal with an emergency. My view is that the condition of the bridge would not have constituted an emergency situation.

2.5 In my experience a far more likely reason for degradation of joints in masonry and brick arch bridges is water percolation. Inspection reports noted water ingress to the arch soffit. Pertinent in this case is the absence of road hump, footways or kerbs meaning that rainwater would be likely migrate from the road to the parapets and percolate down through the arch. I noted the vegetation growth at the road edges which suggests a persistent dampness.

2.6 To my knowledge no masonry or brick arch bridge has collapsed in service under normal conditions. Arches have proved to be highly durable compared with other bridge types. The only failures have been in floodwater conditions leading to foundation scour or direct hydraulic action. Examples include the severe flooding experienced in Cumbria in 2009 and the Ness railway bridge washout of 1989. A small number of arches have failed during demolition from unbalanced fill removal or misuse of plant.

3. CONSEQUENCES OF THE INFILLING

3.1 A letter from Jacobs [under HRE Frameworks] of 23rd April 2020 to Eden District Council stated that the infilling would comprise a layer of 6C free draining material with HDPE pipes laid on top of current ground level, with the remaining fill of 6N structural fill and foamed concrete. Isometric views were shown, but without any drawings which I might have anticipated specifying the details.

3.2 Total volume of the infill including the embankments might have been up to 1,000 m³ which is a significant quantity. Its weight could cause settlement, together with deflection within the infill. As a result support to the arch could be eroded and water ingress to the

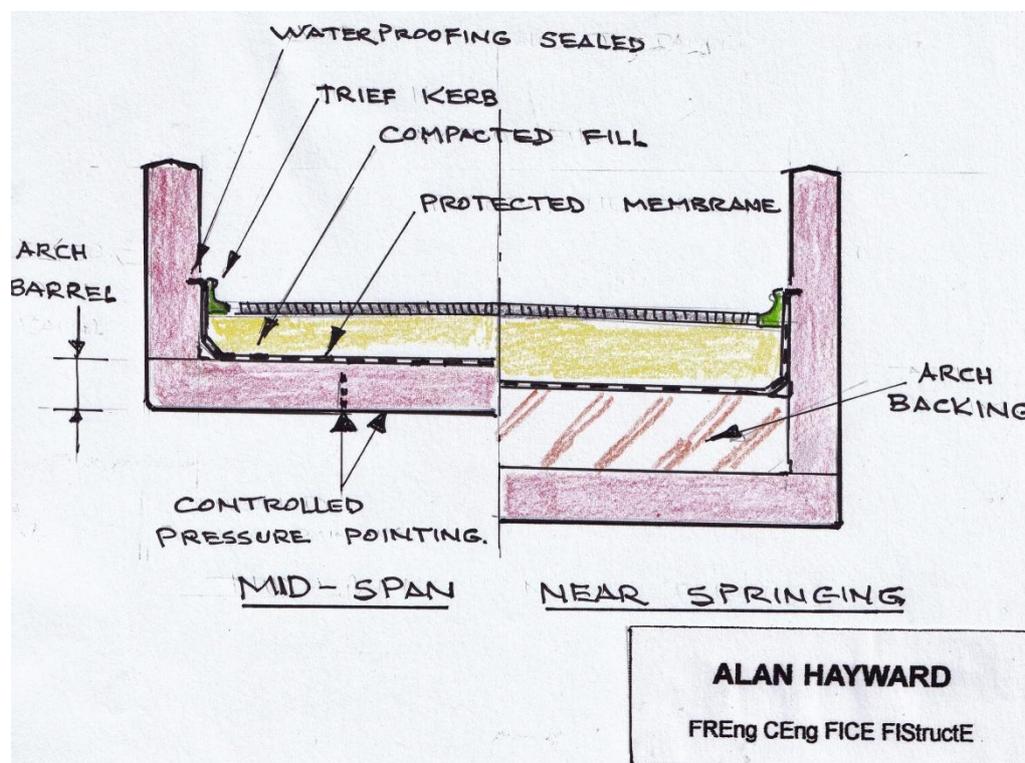
arch could cause further degradation. Impact on the parapets would continue to demand integrity with the arch. My view is that long term the arch is likely to be called on to resist traffic loads, with no access for inspection or maintenance. The infilling may prove to be of little use. My view is that it should be removed.

4. PROPOSAL TO PRESERVE THE BRIDGE

4.1 My view is that the infilling of the bridge should be carefully removed and the structure made good. A through way under the bridge for future rail or other use would thus be available.

4.2 Repairs should then be undertaken to ensure capacity of the arch barrel by controlled pressure grouting of any weakened joints. The mortar should be compatible with that existing. Lime mortar may well have been used originally. Other repairs including the parapets should be carried out.

4.3 For long term integrity of the bridge by the arrest of water percolation I would suggest that a suitably protected waterproof membrane is applied, following investigation to determine condition of any existing waterproofing and arch backing. The membrane would be returned up the inside face of the parapets and sealed, behind Trief kerbs to arrest traffic collision. The membrane would be turned down at ends of the bridge to drainage outlets. See sketch attached.



4.4 It may be noted that following detailed investigations, a waterproofing membrane was applied during refurbishment of the Ribblehead Railway Viaduct from 1990, for similar reasons and rainfall conditions.

References

1. Cumbria county Council assessment 1998 and BRB 1993
2. Carillion inspection 2017
3. Balfour Beatty inspection 2020
4. Balfour Beatty inspection 2021
5. Highways England and Eden District Council emails 2021
6. Jacobs letter 23rd April 2020
7. Ribbleshead Viaduct refurbishment, ICE paper Feb. 1995

Alan Hayward Updated 30th October 2021

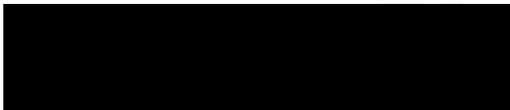
**Heritage Railway Estate Group
Great Musgrave Railway Bridge
Structure No. 25**

Comments by Charles Blackett-Ord CEng FICE CARE

1. The bridge was inspected by Cumbria County Council in August 1996 (but the report is dated November 1998), then by Carillion for Historic Railway Estate in August 2017 and by Balfour Beatty in February 2020 for Highways England, and again in January 2021.
2. The CCC Report in 1996 assessed the load capacity of the bridge to be 17 tonnes, and noted that re-pointing would restore the full 40 tonne capacity, but little work has been done since and the load capacity has not been re-assessed.
3. The latest report (2021) recommended parapet repairs and “general repairs to the arch soffit” None of the reports have suggested any urgency for the work.
4. If the bridge was assessed as safe for 17 tonnes load in 1996 why was no action taken at that time to either strengthen the bridge (by pointing the arch soffit) or imposing a weight restriction?
5. What evidence is there that (HE email to EDC 24th June 2021) “the structure continued to be utilised and damaged by vehicles in excess of 17 tonne”? Have the other structures on the B6259 road between Warcop and Kirkby Stephen all been assessed as capable of carrying a vehicle weighing 40 tonnes? The parapet could have been damaged by a vehicle of any weight.
6. The only reason why an “emergency” has arisen after twenty five years from the initial assessment is the lack of maintenance and the failure to point the arch soffit.
7. The same email (24th June 2021) implies that the arch had been re-pointed and that this “provided only a short period of respite”. The arch was clearly not fully pointed as confirmed by references to isolated repairs etc. in the 2017 Report on Sheet 6, and there are no subsequent references to repairs.

No new defects were noted in 2021. Pointing would normally do better than to provide a short period of respite.

8. There is confusion between depth and width of open joints. The opening up (40mm with an average of 25mm), refers to depth not width, and so does not give a fair indication of width opening up, which is the relevant measurement, and which is obviously very much less.
9. Noted that the downward movement of the arch was recorded as 4mm in 2017. How was this measured and how can such a small movement be recorded on such a structure? How was the downward movement re-assessed at 15mm? Was it measured in the same place?
10. The proposed measures of infilling would not prevent damage occurring to the structure, although they would prevent a catastrophic collapse. The fill will inevitably settle slightly leaving a small gap between the fill and the arch soffit. The abutment walls will be subject to a lateral force from the backfill, which could move them outwards. This outward spread would allow the arch to settle (and possibly rest on the fill). Should the arch structure fail as a result, the load from the road will be applied to the fill, which has possibly not been designed to carry it.
11. If the bridge is in danger of collapse more stringent action should have been taken to impose a weight limit.



Charles Blakett-Ord
September 2021.