

In an effort to justify its destructive and unwarranted actions, National Highways contrived an alternative reality about the condition of Great Musgrave bridge and the circumstances around its infilling. This document examines some of the company's distorted claims.

the Misrepresentations of National Highways

July 2023

Introduction

For more than a year, National Highways (NH) has effectively banned The HRE Group from making Freedom of Information requests, asserting that we misrepresent the evidence obtained to undermine its management of the Historical Railways Estate (HRE). The company claims we are “obsessive” and hold a “personal grudge” against them.

Our campaign to ensure a positive future for the Estate’s 3,100 legacy structures got underway in the autumn of 2020. At that time, we didn’t know the extent of the threat or why National Highways was pursuing its infilling and demolition programme.

We’ve had a steep learning curve to climb and, very occasionally, we have got things wrong. We are human, after all. But every letter we write, every press release we issue, every document we publish and every social media statement we post is carefully researched, based on the best available evidence.

We never misrepresent.

National Highways viewed the HRE as a liability, failing to recognise the Estate’s value as we transition to a greener future. It still shows reluctance to acknowledge the negative ecological, environmental, heritage and cost impacts of its actions.

Due to a lack of oversight, infilling became the easy, default solution to the challenges presented by many structures, rather than being the function of careful, proportionate and informed decision-making. NH did not act in the broader public interest.

All this made life uncomfortable for National Highways when our Group first shone a spotlight on its work. NH was not used to such scrutiny. Emergency permitted development rights had been misused, stakeholders ignored and sustainable transport schemes compromised as its infilling and demolition programme had been driven forward.

As we set out here, evidence was twisted and misrepresented to justify the unjustifiable at Cumbria’s Great Musgrave bridge.



The misrepresentations of National Highways
“...[we] had approached both Eden Valley and Stainmore heritage railway companies who had confirmed that there were no immediate plans for a heritage railway link at Great Musgrave...”

Statement from Highways England to the Daily Mail, 28 June 2021

The headquarters of the Stainmore Railway Company at Kirkby Stephen East station.



The headquarters of the Eden Valley Railway at Warcop station.

Since the 1990s, the Eden Valley (EVR) and Stainmore (SRC) railways have aspired to unite by relaying five miles of track between their operations, passing under the attractive masonry arch bridge at Great Musgrave.

National Highways claimed to have had discussions with the two organisations during which their intention of infilling the structure was discussed. The company cited a meeting held with the SRC and a local councillor in October 2019, but testimony from those involved and the minutes demonstrate that the proposed infilling of another bridge on the line towards Great Musgrave was the only topic for discussion.

In reality, the Eden Valley and Stainmore railways were unaware that the infilling of Great Musgrave bridge was being progressed until a volunteer drove over it and found that National Highways' contractor had set up a works compound.

Musgrave Parish Council and the local highway authority had not been informed either.

The two railways wrote a letter of complaint to NH's Acting Chief Executive expressing "collective dismay and huge disappointment" at the bridge's infilling. In relation to a meeting with the EVR, they asked NH to "provide us with details of where, when and with whom this alleged meeting took place".

A response from NH's Acting Executive Director for Operations errantly asserted that the EVR attended the meeting in October 2019 and claimed it focussed on plans to develop a heritage railway via a route which would not connect the EVR and SRC.

The House of Commons Transport Committee wrote to Minister Baroness Vere on 16 June 2021, stating "We have also been informed that there has been no dialogue with officers from either the Eden Valley or Stainmore railways about [Great Musgrave] bridge. We would be grateful if you could confirm the extent of [NH's] engagement with these two important stakeholders."

In her reply of 7 July 2021, Baroness Vere stated that NH "discussed *the former branch line* with both Eden Valley Railway and Stainmore Railway." Reference to "the former branch line" indicates a recognition that there had been no dialogue about Great Musgrave bridge itself.

At a meeting with The HRE Group on 18 August 2021, the Acting Executive Director for Operations admitted that the company had no "direct" dialogue with either the EVR or SRC about Great Musgrave bridge prior to its infilling, but the Group's request for that statement to be included in the minutes of the meeting was refused.



The misrepresentations of National Highways

“...substantial movement of stones in the arch was identified in 2020.”

Minutes from meeting held between National Highways, Eden District Council and Cumbria County Council, 6 July 2022



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(Photos from National Highways' 2020 inspection report)

Great Musgrave bridge's arch comprises more than 200 stone blocks which, during construction, were laid in 33 courses on timber centring. When the centres were removed, individual blocks would have settled as the load was transferred into the arch.

According to the minutes of a meeting held with Cumbria County Council (CCC) and Eden District Council (EDC) on 6 July 2022, an engineer from NH asserted that "Previous repointing of the structure in 2012 has not prevented movement of stones within the structure and a dropping of the arch." They also stated that "substantial movement of stones in the arch was identified in 2020."

In 2017, a detailed examination of the bridge recorded "Slight deflection in stonework sagging up to 4mm at worst in places to the crown region."

In 2020, a visual inspection noted "Long-standing downward alignment defects...along the transverse joint lines of individual stones within the soffit at crown and the east upper haunch" of up to approximately 15mm.

There is no record as to which stones were measured or how. Therefore these two figures cannot be legitimately compared. In any case, given their roughness and chamfered edges, it is not possible to measure any deflection to better than \pm several millimetres.

If there had been concern about ongoing movement, simple methods would have allowed objective measurements to be taken.

A drop of 10mm would have revealed a clean face at the edge of the stone. Damage from mechanical action at the joint would have been immediately visible. The inspection report makes no reference to either.

There is no evidence to indicate that the stones have moved in recent *decades* - "substantially" or otherwise - or that the arch as a whole has dropped.

Variation in measurement between inspectors could easily result in a 10mm deflection being measured as 4mm on one occasion and 15mm on another, with no actual movement taking place.





The misrepresentations of National Highways

“...in the context of an arch barrel that was measured as 450mm thick (by CCC) 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.”

Email from National Highways' engineer to Eden District Council planning officer, 24 June 2021



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(Photos below from National Highways' 2020 inspection report)*

In 1998, Cumbria County Council carried out a BD21 assessment of Great Musgrave bridge's capacity, concluding that it could only carry up to 17 tonnes. It was recommended that the arch should be repointed, raising the capacity to 40 tonnes.

The bridge's previous custodian, British Railways Board (Residuary), carried out this work in 2012.

In 2017, a detailed examination by Carillion found "Degraded mortar joints [in the arch] up to 15mm wide x 40mm {Av 25mm} deep at worst in widespread places, 5.00m² area". For context, the arch has a total surface area of approximately 65m², so 5m² represents just 7.7%.

In 2020, the annual visual inspection found "A number of joints within the soffit showed mortar loss up to 170mm where accessible". This figure related specifically to a single open perpendicular joint (of no structural significance) into which the examiner had pushed a tape measure. The thickness of the arch had previously been established at 450mm, thus 170mm represented 38% of its thickness.

Photographs in the inspection report showed the localised nature of the mortar loss.

During the 2021 infill scheme, Eden District Council sought information from NH as to why the work was being undertaken.

On 24 June, the company's engineer told EDC that "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." However, this statement was misleading as the figure related only to one joint, not a general loss of "mortar in the joints". Furthermore, the 2017 and 2020

figures could not legitimately be compared as there was no evidence that the measurements were taken at the same place in the same joint. Also, the mortar loss involved such a small proportion of the arch that it would have no meaningful impact on capacity. The mortar loss could not reasonably be described as "significant" in any context.





The misrepresentations of National Highways

“On 16 June 2021, once our work to make the bridge safe was substantially complete, EDC asked us to pause work to allow them to conduct a thorough analysis of whether the infilling should have been progressed under permitted development.”

Letter from Duncan Smith, Acting Executive Director for Operations,
National Highways, to the Eden Valley and Stainmore railways, July 2021



A photo capturing the extent of progress with the infill works on 1 June 2021.

From the start of the Great Musgrave bridge infill scheme on Monday 24 May, public concerns prompted Eden District Council's planning team to engage regularly with National Highways in an effort to understand whether the work required planning permission.

In his response to the letter of complaint sent by the EVR and SRC, NH's Acting Executive Director for Operations said "On 16 June 2021, *once our work to make the bridge safe was substantially complete*, EDC asked us to pause work to allow them to conduct a thorough analysis of whether the infilling should have been progressed under permitted development."

He went on to claim that "Unfortunately, by then, the infilling work had progressed to a stage where a pause was no longer possible. As the work was substantially complete and in order to leave the site in a safe manner, work was completed."

A very similar statement was issued to media outlets and was used by the Daily Mail.

In her letter to the House of Commons Transport Committee of 7 July 2021, Baroness Vere stated that "When work to make the bridge safe was substantially complete, EDC recommended that Highways England stop in order that they could conduct a more thorough analysis of the work..."

However, on 28 May 2021, five days after site mobilisation but before infilling works had started, EDC made clear that "we are looking to make an assessment as to whether these works constitute Permitted Development or whether planning permission should be sought. As such we would ask that you *do not commence with the works* until such time as we have made this assessment."

Later that day, NH's engineer replied, saying "We consider the works to be permitted development as they will prevent a future collapse and preserve public safety (under class Q*). On this basis I am not going to ask the contractor to stop works."



**Class Q' refers to permitted development rights that are intended for immediate works in emergency events or situations presenting a threat of serious damage to human welfare or the environment. Any work carried out under Class Q has to be reversed within 12 months of the works starting unless written permission for their retention has been granted by the local planning authority.*



The misrepresentations of National Highways

“Our examination process and the recorded failure by 2017 of repairs carried out in 2012 confirmed that the bridge was being overloaded and that works were required to prevent the failure of the bridge and avert a collapse.”

Email from National Highways' engineer to Eden District Council planning officer, 24 June 2021



Bill Harvey Associates, a firm of highly-respected masonry arch bridge specialists, found that CCC's 1998 assessment of Great Musgrave bridge used overly-conservative factors for profile, condition, mortar quality and joint width/depth. If more appropriate factors had been selected, the modified axle load would have been lifted from 7.5 tonnes to 15 tonnes, well over the 11.5 tonnes needed for a 44-tonne vehicle.

According to its website, National Highways recognises that the 2012 repairs were successful in “restoring the bridge to its full live loading capacity”, but this should have been formally confirmed through a new assessment.

As stated previously, the 2020 visual inspection found “A number of joints within the soffit showed mortar loss up to 170mm where accessible” in less than 8% of the arch's surface area. Some of the mortar had been lost from perpendicular joints which have no impact on capacity.

An evaluation using the Archie-M analysis tool suggests there would have been no risk to the bridge even with uniform mortar loss to 170mm depth across the entire arch.

Rather than overloading, the most likely cause of the mortar loss was slow dissolution resulting from water percolating through the stonework.

It is estimated that between 200,000 and 500,000 masonry arch bridges are in daily use in mainland Europe, with a further 40,000 in the UK. They are resilient structures, offering significant reserves of strength. Failures are extremely rare and mostly associated with excessive lateral flood loading or scour from the watercourses they span.

The 2021 inspection report for Great Musgrave bridge - the last conducted before infilling - found it to be in generally Fair condition, with no new defects and no changes to existing defects.

However, in an email to Eden District Council on 24 June 2021, National Highways' engineer

stated that “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.”

They went on to suggest that “Our examination process and the recorded failure by 2017 of repairs carried out in 2012 confirmed that the bridge was being overloaded and that works were required to prevent the failure of the bridge and avert a collapse.”

The engineer concluded that “This reaffirmed that the mitigation works were required as a priority to “prevent” a collapse and thereby an emergency as defined within Class Q.”

Reflections

In 2020, when the deflection of some stones in the arch of Great Musgrave bridge was first recorded at up to 15mm and mortar loss in one perpendicular joint was measured at 170mm, the risk matrix completed by NH's engineer recorded the severity of public risk as zero, i.e. "no significant risk". The 2021 inspection report - carried out four months before the infilling scheme began - described the structure's general condition as Fair, with no new defects and no changes to existing defects.

It is likely that the other 300+ masonry overbridges within the Historical Railways Estate exhibit similar or worse defects.

On the basis of the available evidence, it is not plausible that any civil engineer with a basic understanding of masonry arches could consider infilling to have been necessary in order to prevent "the failure of the bridge and avert a collapse", exploiting permitted development rights applying only to emergency events or situations threatening "serious damage to human welfare" or the environment.

The events at Great Musgrave, and the circumstances around them, say much about the culture within National Highways. The bridge was infilled despite a legitimate prior request from Eden District Council for the works not to start. But NH subsequently implied that EDC's only intervention came *after* the works were "substantially complete".

A claim of prior dialogue with the two heritage railways who had longstanding plans to relay the line under the bridge was untrue, such that a Minister had to carefully word her letter to a Parliamentary committee to avoid repeating it.

At the time of publication, National Highways is beginning to remove the infill from Great Musgrave bridge. However, the company's continued unwillingness to acknowledge the truth about the structure's condition is inflicting considerable disruption on the local community through a 13-week road closure and is expected to burden the taxpayer with a requirement to fund unnecessary strengthening works.



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