



# Queensbury Tunnel

Objection to the planning application for abandonment

J U L Y 2 0 1 9



## The case for abandonment

Whilst it is accepted that around 20% of Queensbury Tunnel is in Poor condition, it is the view of many experienced tunnel and mining engineers that the associated short-term risk to the community - which the Applicant (Highways England)(HE) uses to justify the proposed abandonment scheme - has been considerably overstated.

In an email to the Department for Transport on 5 October 2016, the Applicant asserted:

*“There is a risk, which grows daily, that one of the two known areas of collapse could unravel the tunnel lining back to one of the shafts [a distance of at least 110 metres] causing a risk to properties above those shafts. It is impossible to put a timescale on that risk materialising but it is a risk that we know about and so we cannot professionally or legally ignore it.”*

Such a scenario would be unprecedented and involve failure propagation mechanisms that conflict with accepted understanding of how load paths work within brick/masonry tunnels. The two existing partial collapses south of Queensbury Tunnel’s midpoint - which occurred in 2013 and 2014 - have not fundamentally changed in structural terms, although the void at the larger one has doubled in size over six years due to small periodic rock falls. There are currently no other defects within this section of the tunnel that share the same characteristics as those which developed where the partial collapses subsequently occurred.

The threat to the community is largely defined by the condition of those ventilation shafts which emerge within the populated part of Queensbury. These are recorded as being in Fair condition - as are their support structures - with little/no squatting of the arch or defects indicative of high compressive stress. Much of the load from the shaft linings is transferred into the surrounding ground through friction or, in the case of No.3 shaft, via seven reinforced concrete frames.

In June/July 2018, local Councillors sought written technical evidence from Highways England to support its press statements about the short-term threat to the community posed by the tunnel. It was unable/unwilling to provide any.

Furthermore, in the Applicant’s *Queensbury Tunnel Coal Mining Risk Assessment*, produced by Jacobs in September 2018, it is stated that “The effects from the collapse of ventilation shafts from the deterioration and failure of their linings is a minor risk...”

In its *Planning Statement*, the Applicant asserts that the two partial collapses are “major collapses” and that there are “large areas of brickwork loss”; it goes on to say that “Any failure within the shaft lining or base would have the potential to propagate to the surface where a ‘sink hole’ may form within the ground.”

These statements are indicative of the Applicant's persistent inability or unwillingness to assess and communicate risk in a proportionate manner. In a mining context, the partial collapses are not "major" whilst the areas of brickwork loss are small and have little impact on structural capacity. No attempt has been made to determine the likelihood of a shaft failure or potential timescales.

Recording defects and inventing an implausible associated worst-case scenario does not constitute competent risk assessment.

In 2019, Queensbury Tunnel presents no meaningful threat to the community, despite its locally poor condition. Whilst it is clearly incumbent on the Applicant to take effective action to prevent any *future* threat, it should do so on the basis of a clear understanding of how such a threat might arise. This would allow an appropriate scheme to be developed, subject to the requisite funds being available.

It should be recognised that abandonment is not the only approach whereby the Applicant could meet its obligations to the Department for Transport (DfT), which requires it "To seek to reduce the liabilities for the Secretary of State in terms of individual structure safety" (Clause 5.10 (1) of the HE/DfT Protocol Agreement).

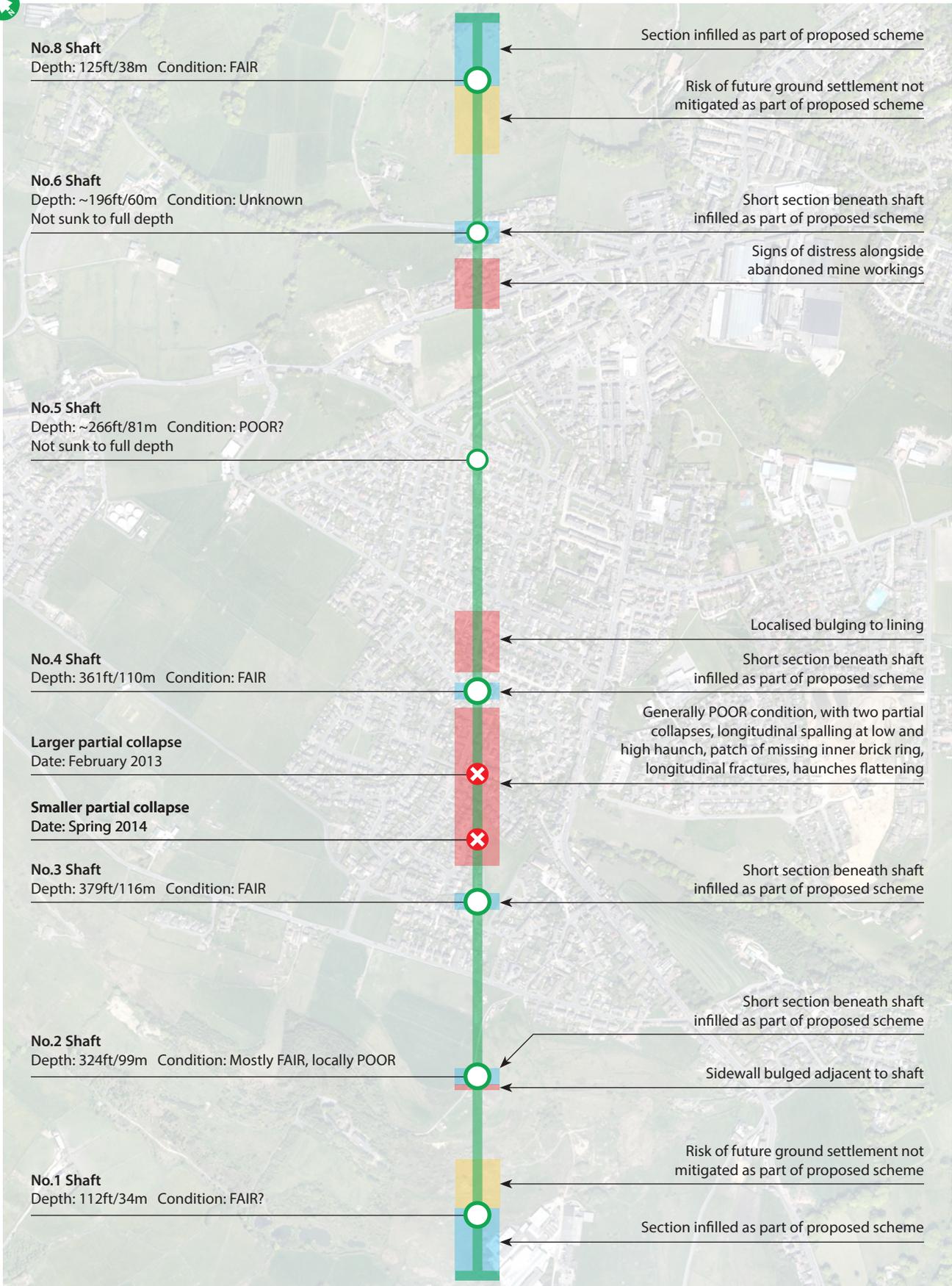
A programme of repairs targeting the poorest sections of the tunnel would significantly improve its risk profile. From an asset management perspective, many engineers would regard this approach to be preferable as it would allow the continuation of an inspection regime. However, the Applicant's consulting engineers did not even consider a targeted repair scheme when developing its *Queensbury Tunnel Options Report* in 2015/16.

The Applicant is seeking to walk away from Queensbury Tunnel - managing it with its eyes closed and fingers crossed - unable to gain entry if a future issue arises. The proposed abandonment scheme, whereby 85% of the tunnel is left to collapse over time, inflicts permanent uncertainty on those who live above it.

Within the tunnel's 'zone of influence' - as defined by the Applicant's consulting engineers - are around 440 residential properties, 70 of which are within 10 metres of the tunnel's centreline. The owners of those properties have a right to absolute confidence that all the risks associated with the scheme have been identified, carefully assessed and fully mitigated.

The Council should reject the planning application unless it also has absolute confidence.

For clarity, we have included an aerial photograph showing the line of the tunnel, the extent of housing above it and those areas (in red) where collapses can be expected in the medium/long term.



## The value of the tunnel

Queensbury Tunnel establishes a broadly flat route through a ridge (approximately 430 feet/ 131 metres in height) which separates the valley systems of the River Calder and the River Aire. Without it, any possibility of a cycle route being developed to connect Bradford/Keighley with Halifax is significantly diminished.

Therefore the long-term implications of this planning application for future sustainable transport provision in the area should not be underestimated. The cost of constructing a tunnel to replace the existing one would run into tens of millions of pounds which, in the prevailing climate, is an unsustainable sum for 1.4 miles of cycling infrastructure. So the tunnel should clearly be regarded as an asset.

In 2017, a study by Sustrans, *Estimating the economic impact of reopening walking and cycling routes around Queensbury Tunnel*, found that a network of paths linking Bradford/Keighley to Halifax via Queensbury Tunnel would drive a 50% increase in the Annual Usage Estimate for commuting/leisure trips on foot or bike through these corridors, from 425,256 currently to 638,429.

The study also indicated that this network could generate £37.6 million of environmental, health, transport and tourism benefits over 30 years. The tourism element amounted to almost £11 million and it was recognised that most of this sum was directly attributable to the inclusion of Queensbury Tunnel. If reopened, it would become a nationally significant landmark on the country's cycle network, drawing visitors to the area.

In its *Statement of Community Involvement*, the Applicant misrepresents the estimated Benefit:Cost Ratios associated with a cycle route passing through the tunnel by choosing to exclude tourism benefits.

Using a recent costing for repairing the tunnel, Bradford Council has estimated that a Bradford-Halifax Greenway would generate £2.31 in benefits for every £1 invested in it. This is regarded as High value for money.

Despite its disused status, Queensbury Tunnel still has the potential to fulfil a valuable role, contributing to the economy, improving connectivity and helping to tackle the emerging social challenges facing us.

Although Queensbury Tunnel is not landscape defining or listed, the significance of the tunnel as a heritage asset should be recognised. It was the 11th longest railway tunnel in the country when it opened in 1878 and is arguably the largest engineering work ever constructed in this part of West Yorkshire, taking four years to build at a cost of ten men's lives. It has been designated as a Historic Engineering Work by the Institution of Civil Engineers.

## The Local Plan

Through the establishment of appropriate policies, Bradford's Local Plan sets out a number of objectives and policies relating to the provision of cycling infrastructure and the protection/reuse of heritage assets. Relevant references are too numerous to include fully within these comments, however key extracts are set out in Appendix A.

Notably, Section 5.2 (Transport and Movement) states that:

### **Policy TR1: Travel Reduction and Modal Shift**

The Council through planning and development decisions and transport policies will aim to reduce the demand for travel, encourage and facilitate the use of sustainable travel modes, limit traffic growth, reduce congestion and improve journey time reliability. These will include:

- E Identify, protect and develop appropriate facilities and high quality infrastructure for active travel modes (walking, cycling and horse riding). Including identified strategic routes and networks as well as local routes and links where opportunities arise, linking into national and regional routes...

### **Policy TR4: Transport and Tourism**

The Council through planning and development decisions and transport policies will support sustainable access to tourist destinations, heritage and cultural assets and leisure uses, through the following measures:

- D Acknowledge the contribution of, and support the maintenance and development of, 'transport based' leisure attractions including but not exclusively heritage railways, waterways, towpaths, cycle and walking trails and bridleways along with the leisure coach market. Protect opportunities for the development of such facilities e.g. disused railway lines, especially where these can contribute to high quality local routes.

Section 4.4 (Sub Area Policies: South Pennine Towns and Villages) states that:

### **Sub Area Policy PN1: South Pennine Towns and Villages**

- E Transport
- 4 Improve public transport, cycling and walking access as appropriate between the South Pennine Towns and Villages, the Regional City of Bradford and neighbouring Principal Town of Halifax.

Section 5.4 (Planning for Places - Environment) states that:

**Policy EN3: Historic Environment**

The Council, through planning and development decisions, will work with partners to proactively preserve, protect and enhance the character, appearance, archaeological and historic value and significance of the District’s designated and undesignated heritage assets and their settings.

This will be achieved through the following mechanisms:

- H Encourage heritage-led regeneration initiatives especially in those areas where the historic environment has been identified as being most at risk or where it can help to facilitate the re-use or adaptation of heritage assets.

The Queensbury Tunnel Society believes that this planning application conflicts with the objectives and policies set out in the Local Plan and should be rejected. At very least, determination should be deferred until any possibility of the tunnel’s reuse for public benefit has been definitively ruled out. This would involve stakeholders having time, space and funding to undertake a feasibility study into the prevailing issues.

## National Planning Policy Framework

The National Planning Policy Framework sets out Government planning policies for England and how these should be applied. It provides a structure within which locally-prepared development plans are produced and is a material consideration in planning decisions.

The 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.” The proposed abandonment of Queensbury Tunnel compromises that ability by putting a potentially valuable transport asset beyond use.

The Framework goes on to assert that “the planning system has three overarching objectives”, these being economic, social and environmental. Again, Queensbury Tunnel has demonstrable potential to deliver benefits in respect of all three, but not if it is abandoned.

As a general principle, the NPPF makes clear that “Where a planning application conflicts with an up-to-date development plan (including any neighbourhood plans that form part of the development plan), permission should not usually be granted.”

Section 9 of the Framework (Promoting sustainable transport) states:

(102) Transport issues should be considered from the earliest stages of plan-making and development proposals, so that:

- a) the potential impacts of development on transport networks can be addressed;
- b) opportunities from existing or proposed transport infrastructure, and changing transport technology and usage, are realised...
- c) opportunities to promote walking, cycling and public transport use are identified and pursued;

(104) Planning policies should:

- c) identify and protect, where there is robust evidence, sites and routes which could be critical in developing infrastructure to widen transport choice...
- d) provide for high quality walking and cycling networks...

(110) Within this context, applications for development should:

- a) give priority first to pedestrian and cycle movements...
- c) create places that are safe, secure and attractive – which minimise the scope for conflicts between pedestrians, cyclists and vehicles...

Section 16 of the NPPF (Conserving and enhancing the historic environment) states:

(185) 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:

- a) the desirability of sustaining and enhancing the significance of heritage assets, and putting them to viable uses consistent with their conservation;
- b) the wider social, cultural, economic and environmental benefits that conservation of the historic environment can bring;

(191) 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.

## Statement of Community Involvement

It is the view of the Queensbury Tunnel Society that the Applicant's *Statement of Community Involvement* is flawed in one key respect and misleads the reader in others.

Section 2.2 Clause 16:

*"Since the launch of the Society's campaign... all requests for information from the Society... have been responded to by HEHRE."*

Since July 2018, about a dozen requests for relevant documentation and correspondence have been submitted to the Applicant under the provisions of the Freedom of Information Act (Fol).

In several cases, the Applicant has redacted or withheld relevant documentation without identifying a legitimate Exemption or carrying out a public interest test. Furthermore, given the cost, complexity and difficulties associated with the ongoing works in Queensbury Tunnel, the Society believes that the number of documents provided under these requests falls well short of the total that should have been included.

The Information Commissioner's Office is currently investigating the Applicant's responses to these Fol requests.

Section 2.2 Clause 18:

*"City of Bradford MDC subsequently published a report including an assessment of the Benefit Cost Ratios (BCR) of various potential cycle routes used in the Sustrans study. Once estimated repair costs from the independent study of the tunnel's condition and viability for reopening were obtained, the best performing route incorporating the tunnel returned a BCR of 1.43:1 (excluding tourism benefits). By comparison, the best performing route that did not include the tunnel in the route returned a BCR of 3.8:1 (excluding tourism benefits)."*

By quoting BCRs that exclude tourism benefits, the Applicant misrepresents Queensbury Tunnel's value and future potential. Using a tunnel repair figure recently developed by consultants commissioned by Bradford Council, it has been estimated that the Benefit:Cost Ratio of a Bradford-Halifax Greenway via the tunnel is 2.31:1. This is regarded as High value for money.

Section 3 Clause 23:

*"Every opportunity has been given for other parties to take ownership and responsibility for the tunnel in order to pursue their aspirations for it..."*

In 2015, the Applicant commissioned Jacobs, its consulting engineers, to produce a study that would be used to inform future asset management decisions. A draft version of this study - the *Queensbury Tunnel Options Report* - was received by the Applicant in February 2016.

The statement quoted above fails to recognise the significant negative impacts of the Applicant's failure to discharge its management responsibilities in respect of the report to an appropriate professional standard.

In October 2016, the Department for Transport commissioned London & Continental Railways to review the *Options Report* and its management by the Applicant. L&CR found that:

- ▶ “[the Applicant] released the Jacobs report much too early” and there should have been “a further rework of the contents before publication to a wider audience”
- ▶ the contents were not “subject to the usual review by [the Applicant]”
- ▶ “the report was weak” on the interpretation of the faults within the tunnel, its methods of construction, analysis of the tunnel lining and estimates of cost
- ▶ the proposed £35.4M cost for the tunnel’s repair was described as “simply too high to be credible”
- ▶ the report was written with the intention of demonstrating “that reopening was too expensive and that abandonment should be pursued”.

The Applicant submitted the £35.4M repair cost for Ministerial review with a note stating that “the final estimate would only go upwards” due to no provision having been made for a cycle path, lighting, ventilation or emergency communications system. In fact, the figure *did include* these items at a cost of £5.9M.

On the basis of flawed advice, the Minister determined that the tunnel’s repair was unaffordable and, since then, the direction of travel has been towards abandonment.

During a meeting at the Applicant’s offices on 31 March 2016, representatives from Bradford Council made it clear that they would not consider taking on a structure with £35.4M of associated liabilities.

Therefore, the statement that “Every opportunity has been given for other parties to take ownership for the tunnel” completely disregards the need to overcome the substantial damage caused by the Applicant’s failures around the *Options Report* and the need to convince Bradford Council that Queensbury Tunnel’s proposed reuse *is viable* in cost terms, contrary to the impression contrived by the Applicant.

General context

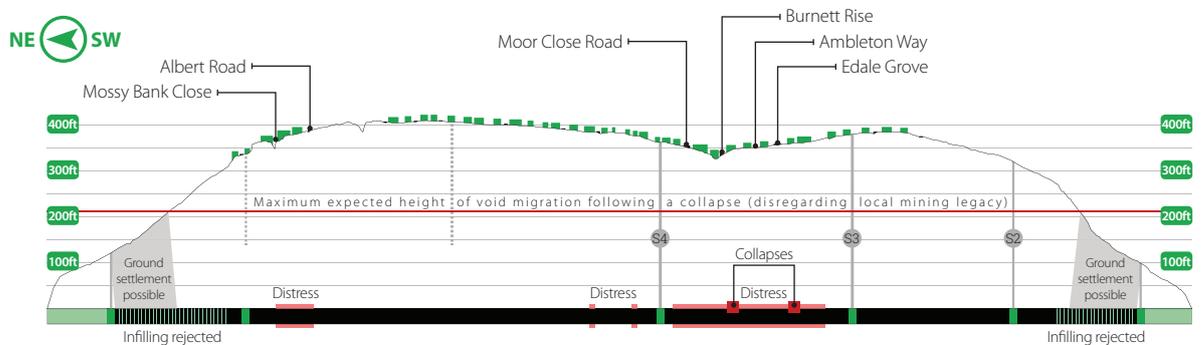
Development has transformed Queensbury in the 140 years since the tunnel was opened. As stated previously, there are now 70 dwellings with all or a substantial part of their footprint within 10 metres of the tunnel’s centreline. Several dwellings are located close to the seven shafts sunk during construction. The tunnel’s ‘zone of influence’ - as set out in the Applicant’s *Queensbury Tunnel Coal Mining Risk Assessment* - contains around 440 dwellings.

It is recognised that the tunnel lies between 340-420 feet/104-128 metres below the populated part of Queensbury. This is a considerable depth. However it should also be recognised that abandonment means the withdrawal of the tunnel’s inspection and maintenance regime as entry becomes impossible on completion of the works. There is only one chance to get abandonment right.

One section of the tunnel (below Moor Close Road, Burnett Drive, Ambleton Way and Edale Grove) is currently in Poor condition. Two partial collapses have occurred and adjacent sections could do so in the medium/long term, despite the recent installation of RamArch reinforcement. Other defects are developing elsewhere in the tunnel (particularly below Albert Road and Mossy Bank Close). The Applicant is not proposing any works to infill these parts of the tunnel: around 2,000 metres of it will simply be allowed to collapse over time.

Adopting accepted mining convention, if a worked coal seam (pillar and stall working) collapses, falling material ‘bulks’ as the crown hole extends upwards, limiting its propagation to a point where choking eventually occurs. The maximum height to which a crown hole would normally propagate is approximately ten times the thickness of the seam.

Thus, if part of Queensbury Tunnel collapsed (taking its height to be 21 feet/6.4 metres), ground settlement might eventually be expected above those sections where the depth of overburden is less than 210 feet/64 metres (excluding any superficial material that overlies the rock or overhead mine workings). These sections extend inwards to a point approximately 218 metres from the south-west portal and 254 metres from the north-east portal.



## Infilling of the tunnel's end sections

In 2017, Highways England's consulting engineers carried out ground investigations to inform decision-making around the design of the abandonment scheme. The preliminary recommendations were that:

*"... the tunnel is plugged with a suitable infill material over a minimum length of 270m from the south-west portal (between Shaft 1 and 2) and 360m from the north-east portal (close to Shaft 6) in accordance with guidance outlined in CIRIA SP32 (2002), to reduce the risk of a void reaching the surface to an acceptable level should the tunnel be allowed to collapse on its own accord."*

This view was supported by AECOM, consulting engineers commissioned by Bradford Council, who stated that:

*"... with the combination of shallow cover (30m to 40m), coupled with the large tunnel diameter (8m), drill & blast construction methods and the potential for adjacent overhead mine workings, any ravelling following tunnel collapse could migrate to the surface and remains a real risk."*

As submitted, the planning application identifies that infilling will only take place over a distance of about 125 metres from each end.

In determining the planning application, the Council should consider:

- ▶ what new evidence was obtained to justify the significant reduction in the lengths of the infilled sections
- ▶ whether the threshold for what constitutes 'an acceptable level of risk' in relation to ground settlement was lowered
- ▶ to what extent budgetary constraints have driven decision-making on the lengths of tunnel to be infilled.

More broadly, to ensure public confidence, formal written evidence should be sought from Highways England demonstrating that the risks associated with further collapses and an unravelling of the tunnel beneath the populated parts of Queensbury have been properly assessed. The depth of overburden is not - in itself - sufficient justification.

It should also be recognised that the 'ten times rule' does not take into account overhead/adjacent mine workings and is not relevant around shafts.

The obligation to produce plans of mine shafts/workings prior to their abandonment did not exist until 1872 and even after that date, plans were often inaccurate or incomplete. Mining had been ongoing around Queensbury and Ambler Thorn for many years by that time. The potential therefore exists for unrecorded workings to interact with the tunnel - in a state of collapse - and result in void propagation that would not otherwise be expected.

In May 2018, the Applicant submitted a request for an Environmental Impact Assessment (EIA) screening opinion to Bradford Council. The original documentation did not make a single reference to Queensbury's extensive mining legacy or the possibility of collapses leading to ground settlement.

### Arrangements at the north portal

Under the conveyance of former railway land at the north end of Queensbury Tunnel, the Applicant enjoys a right of access through the cutting immediately beyond the portal; however the land is privately owned and currently leased to a third party.

Both the *Planning Statement* and the accompanying drawings indicate that the proposed abandonment arrangements at this end would extend onto this private land by a distance of approximately 15 metres. They include a maximum 3.82-metre deep stepped layer of compacted Class 6C fill, Class 6N structural fill banked up to and above the tunnel's headwall, topsoil, two sections of fencing and a bat habitat.

The Applicant has not discussed these proposals with either the landowner or the tenant, or entered into negotiations in respect of the required land. On the basis of their stated support for the tunnel's reopening as a cycle path, it seems unlikely that either the landowner or tenant would agree to the Applicant's proposals.

## The 'shaft plugs'

In its *Planning Statement*, the Applicant asserts that:

*"The areas within the tunnel identified as having potential to pose a safety risk are the Shafts and the two entrances of the tunnel. Any failure within the shaft lining or base would have the potential to propagate to the surface where a 'sink hole' may form within the ground. Whilst unlikely, such a sink hole could cause significant property/infrastructure damage and affect lives."*

If the Applicant believes this scenario is genuinely possible, it is clearly a serious and long-term risk over which no chances could be taken.

In 2009, prior to the partial collapses occurring, the Applicant's consulting engineers produced a *Feasibility Study of Future Asset Management* options for Queensbury Tunnel. It recommended that critical elements within the tunnel should be infilled, including the provision of mass concrete plugs (approximately 13 metres in length) below each of the shafts which "would then support the loading originally carried by the sidewalls, preventing the shaft lining from collapse".

Like abandonment, concrete plugs would effectively last forever and offer considerable capacity in terms of vertical loading. The full scheme associated with these proposals was costed at £5.125 million.

In May 2018, the EIA screening request included outline plans which also identified mass concrete plugs below the shafts, 17 metres in length. This scheme was subsequently costed by the Applicant's contractor at approximately £7 million.

Based on the *Queensbury Tunnel Options Report*, the Applicant's budget for abandonment was originally set at £2.72 million. It accepted a tender of £3.57 million from AMCO-Giffen in August 2018, with the work split into two phases. Phase 1, which involves localised strengthening of the tunnel's lining for the purposes of safe access, was costed at £560,000 but had increased to £1.97 million by early May 2019 due to the loss of a pumping station at the south end of the tunnel. The available budget for Phase 2, for which planning permission is now sought, is £3 million.

Contrary to the Applicant's previously stated intentions, mass concrete plugs are no longer proposed to support the shafts; instead ballast-filled steel cages - known as RamWall - would be used to form enclosures between which a lightweight granular fill would be placed. Although engineering drawings of the proposed arrangements have recently been provided, the descriptions around installation remain vague.

Only 9.4 linear metres of the tunnel's full profile would be filled below the shafts. The primary purpose of the adjacent 500mm wide bands of sprayed concrete is to act as a seal. The exposed 2.4-metre long sections of RamArch (steel mesh strengthening panels) either side of the shaft plugs

can be disregarded in terms of long-term load-bearing capacity. Unless it is encapsulated within sprayed concrete, RamArch only offers limited, temporary support.

It is stated that the lightweight granular material - Lytag Geo fill® - would be tipped from the surface and that initial batches would be cement infused for bonding purposes. Contrary to the impression given in the drawings, it is likely that voids would form at the crown/high haunch, between the shaft opening and RamWall enclosures. It is not stated how the Applicant would confirm whether the material settles/compacts in such a way that it provides sufficient support or the extent to which the bonding has been successful. Both these factors would impact on the ability of the support arrangements to withstand load.

It is not stated how the ballast would be placed into the RamWall cages immediately below the arch or the nature of the materials associated with the quadrant infill sections between the cages and intrados.

It is also not stated how the granular material will be placed between the enclosures at No.6 shaft (which was not sunk to tunnel level) or how the issue of future settlement here would be managed.

RamWall cages and RamArch are formed of galvanised reinforcement bars and the manufacturer's specifications states that they have a design life of 120 years. In the context of permanent abandonment, this timescale is fractional.

Moreover, in wet or soaked environments, the zinc layer on galvanised steel is likely to be degraded within 10 years; in environments with high relative humidity (such as a sealed tunnel), degradation is likely within 30-40 years. This will result in corrosion of the underlying steel. In considering the suitability of the proposed shaft support structures, it must be recognised that at least three of them are likely to be sitting permanently in water and it is possible that all six will be submerged.

Furthermore, RamWall is typically used for applications where the loading is mostly horizontal, such as retaining walls. It is therefore an appropriate product to form the enclosures for the granular fill. However there is less available data regarding its ability to withstand vertical ground loading. As far as we can determine, Queensbury Tunnel represents an untested use for RamWall.

In determining this application, consideration should be given as the suitability of RamWall/ballast/granular fill against mass concrete for the shaft support structures, and the extent to which the recent change of materials was driven by the Applicant's budgetary constraints.

As entry into the tunnel would be impossible after abandonment, there is no possibility of monitoring the effectiveness of the shaft support arrangements or dealing with any consequential impacts from a failure.

## Groundwater/flooding implications

Queensbury Tunnel is subject to high levels of water ingress. For the past 40 years, this has caused flooding through the southern half of the tunnel due to its 1:100 falling gradient and the infilling of Strines cutting at the Halifax end which effectively acts as a dam. The remaining part of the cutting immediately in front of the tunnel portal - about 40 metres in length - is recorded as a body of water on Ordnance Survey maps. However, in 2016, a pumping station was commissioned to keep the tunnel dewatered.

In documentation submitted for the EIA screening opinion, the Applicant stated that, after abandonment, "the current pump station will be retained to assist with the drainage." As a consequence, it was asserted that "the drainage of the tunnel will operate as it does currently. Therefore, it is considered that the proposed works will not increase flood risk. The potential effect on drainage and flooding is therefore not considered to be significant."

In September 2018, the pumping station was shut down due to the Applicant never having paid the £50 annual rent for the land on which it is sited. This resulted in the forfeiture of a lease which, in turn, triggered a clause in an associated legal agreement - agreed by the Applicant - entitling the landowner to infill the remaining part of Strines cutting up to the tunnel portal. The pre-existing right of access asserted by the Applicant in its email to the Council of 2nd July 2019 was thereby extinguished (see Appendix B).

Between 2006-2016, the depth of floodwater in the cutting typically reached 37.6 feet (11.45 metres) during winter months. The level fell by 2-3 metres in the summer, primarily through evaporation (estimated at 274 gallons per typical day using Stiver & Mackay principles) and filtration through the surrounding rock. The old railway track drainage, which discharged into Ovenden Beck more than 1km further south, is now buried below landfill and unmaintainable. Occasionally, water is observed emerging from the ground - under hydraulic pressure - along the line of the former railway between 150-350 metres south of the tunnel portal.

In its *Queensbury Tunnel Flood Risk Assessment (QTFRA)*, submitted with the planning application, the Applicant states that "To maintain existing flow paths, 4no 300mm diameter perforated pipes would be installed through the blocked entrances". This arrangement would result in water continuing to discharge into the cutting.

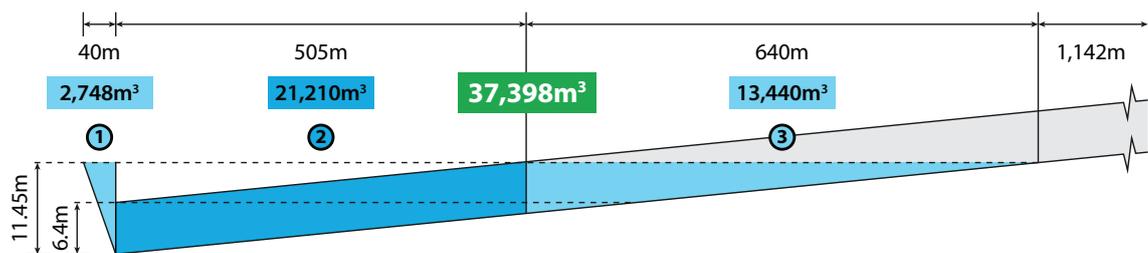
However, no such discharge would be possible if/when the landowner exercises his right to infill the remaining section of cutting. It could also be argued that any such discharge - the intentional flooding of property not owned by the Applicant - would constitute an actionable trespass or nuisance (see *Rylands v Fletcher*, 1868).

In QTFRAs, the Applicant asserts that:

*“Residual risks associated with the development relate to the potential blockage or failure of the proposed drainage system at the portal entrances and below shafts, as this is key to maintaining flow paths. As a closed system the likelihood of blockage is extremely low, and the provision of multiple conduits provides redundancy in the system in case of issues, therefore, residual risks are predicted to be the same as existing.”*

In considering its suitability, it must be recognised that the proposed drainage system is absolutely unmaintainable and that considerable quantities of aggregate will be placed around the drainage pipes associated with infilling at the entrances and shafts. In the long term, this could cause blockages due to corrosion/failure of the RamWall enclosures. There is also the potential for future collapses of the tunnel to block the passageway, particularly between Nos. 3 & 4 shafts to the south of its midpoint.

After the pumping station was switched off, it is estimated that 37,398m<sup>3</sup> of floodwater entered the tunnel, reaching its midpoint, between September and December 2018 - a rate of 3.61 litres/second.



- ① Remaining section of Strines cutting
- ② Fully flooded section of tunnel
- ③ Partially flooded section of tunnel

The tunnel has a capacity of 96,000m<sup>3</sup>, but this would reduce to approximately 84,000m<sup>3</sup> due to the partial infilling. If no water was able to escape - due to a failure/blockage of the drainage system or complete infilling of the cutting - it is possible that the tunnel could completely fill with water in 12-18 months. There would be little/no evaporation from within the sealed tunnel; any subsequent escape of water would rely on infiltration through the lining and surrounding rock, or via the legacy track drainage. Neither would reduce water levels to any great extent; however ingress would remain at historic rates.

In the *Queensbury Tunnel Options Report*, the Applicant’s consulting engineers discuss the risks of sealing the tunnel and allowing it to collapse. They state that “The largest risk associated with this option is the continuing collapse of the tunnel caused by high stresses imposed on the lining, groundwater flow and flooding.”

Despite this, the Applicant has provided no assessment of possible flood risk or changes to the local groundwater regime in the event of the tunnel completely filling with water and being unable to escape.

## Traffic management/Station Road

The Applicant's *Outline Construction Traffic Management Plan* (OCTMP) provides no indication of access arrangements at the south portal or to No.1 Shaft, and only sketchy details elsewhere.

However LOCATION-PLAN-5494792, which is not included in the Plan, suggests that a minimum of 195 wagons (plus other service vehicles) carrying materials for the infilling works at the southern entrance would reach it via Holmfield Industrial Estate and the infilled former railway cutting. Here, a works compound is identified, together with an access route up the hillside to No.1 shaft.

As previously stated, the landowner at the south end of the tunnel is now entitled to infill the remaining part of Strines cutting up to the tunnel portal, thus preventing entry. As a result, the Applicant no longer enjoys a right of access at this end of the tunnel. The landowner has made it clear to the Applicant that he would not cooperate with any works resulting in the tunnel's abandonment, either in terms of access or land for a compound. Therefore the proposed arrangements for this part of the scheme can, at best, be regarded as dubious.

The landowner is supportive of the proposal to reopen the tunnel as a cycle path. He has consistently made clear his willingness to accommodate a route across his land and, in such circumstances, would forego his right to infill the remaining cutting.

As a result of imposed constraints, it is likely that all traffic required for worksites inside the tunnel will have to access/egress at the north end - that's a minimum of 692 wagons and potentially thousands of other service vehicle movements. To reach the southern infilling site, wagons would have to reverse for 1.4 miles through the tunnel.

It should be noted that the Applicant's *Planning Statement* makes consistent reference to bulk materials being brought to site "via large articulated wagons", whereas the OCTMP describes "Anticipated access routes and corresponding swept path analysis for a 10m rigid vehicle". Despite this conflict, the quoted number of movements is identical for both vehicle types. It can be presumed therefore that one set of figures is incorrect.

Station Road connects the village of Queensbury with the Great Northern Railway Trail and the tunnel's northern approach cutting. It is a public right of way, but has been privately owned since 1970 and is currently in a very poor state of repair. The Deed of sale obligates the owner of the tunnel to make good any damage caused to the road as a result of works in the tunnel. This responsibility now rests with the Applicant.

Previous repairs to the road - notably those carried out by Hammonds ECS in 2012/2015 and by AMCO-Giffen in 2018-19 - have involving the placement of fill which has washed out in heavy rain. This has allowed water and freeze/thaw action to affect the sub-base over several winters and large quantities of loose stone are now scattered across the road, making the surface particularly hazardous for users on foot or bike. As shown in the photographs below, there are deep ruts and potholes; car owners have reported punctures and damaged wheel hubs.



As a condition of any planning permission, the Applicant should be required to fully and properly resurface Station Road prior to any works taking place.

As proposed, the abandonment plans represent a compromise version of a compromise version of how they would look if the Applicant could afford it. This suggests that safety is not the key driver here. It must be recognised that abandonment is not the only asset management option available to the Applicant; it is certainly not the best and probably no longer the cheapest.

The issue of whether the plans are safe is obviously crucial, but so is that of public confidence. The Applicant is choosing to walk away from Queensbury Tunnel, leaving those who live within its zone of influence to reflect on whether the long-term risks of allowing 85% of it to collapse beneath them have been robustly assessed and mitigated. Is it reasonable to inflict permanent uncertainty on them?

Over the past three years, the Applicant has been responsible for several substantial and costly failures. It had intended to provide mass concrete plugs to support the shafts, but neglected to cost them realistically. It wanted to keep the tunnel dewatered, but forfeited the opportunity to do so by failing to pay £50 annual rent. It misled a government Minister over the cost of repairing the tunnel. It did not even recognise the potential for interaction between the tunnel - in a state of collapse - and Queensbury's extensive mining legacy until the Coal Authority pointed it out.

So what are the alternatives?

The Applicant could use the £3 million earmarked for abandonment to implement permanent repairs to those parts of the tunnel strengthened during its Phase 1 works, and invest the remainder on improvements to other vulnerable areas. This approach would greatly enhance the tunnel's risk profile. Or the Applicant could become a positive partner in the proposal to reopen Queensbury Tunnel as a sustainable transport corridor.

The Local Plan and National Planning Policy Framework set out clear objectives to expand our cycling infrastructure and make the best possible use of heritage assets. Queensbury Tunnel is a strategic connector between two districts, presenting a unique opportunity to link emerging networks in the Aire and Calder valleys, benefitting local communities and future generations. It must not slip through our fingers.

The planning application should be rejected.

## Appendix A: Extracts from the Local Plan

### 3 Spatial Vision, Objectives & Core Policies

#### **Strategic Core Policy 1 (SC1): Overall Approach and Key Spatial Priorities**

- B Planning decisions as well as plans, strategies, programmes and investment decisions should seek to:
- 10 Ensure that transport management and investment decisions support and help deliver the spatial strategy, in particular sustainable patterns of development, inclusive access to jobs and facilities, and shift to sustainable forms of movement.

#### **Strategic Core Policy 6 (SC6): Green Infrastructure**

- A Planning decisions as well as plans, policies, strategies and investment decisions will support and encourage the maintenance, enhancement and extension of networks of multi-functional spaces, routes and key areas of Green Infrastructure, as an integral part of the urban fabric and to improve urban and rural connectivity.
- C At a district level, Green Infrastructure is considered to be land which already contributes towards, or has the potential to contribute towards the following:
  - 6 Improving opportunities for walking, cycling and horseriding, establishing strategic green links and enhancing the rights of way network in urban and rural parts of the district.

### 4.4 Sub Area Policies: South Pennine Towns and Villages

#### **Sub Area Policy PN1: South Pennine Towns and Villages**

- C Economic Development
  - 3 Promote sustainable tourism that respects the Bronte heritage of Haworth and Thornton, the Bronte Parsonage Museum and the importance of the Keighley and Worth Valley Steam Railway.
- E Transport
  - 4 Improve public transport, cycling and walking access as appropriate between the South Pennine Towns and Villages, the Regional City of Bradford and neighbouring Principal Town of Halifax.

- 5 Support improved transport links within the Pennine towns and villages and to the Regional City of Bradford, the Principal Towns of Keighley, Ilkley, Bingley and Skipton and the Town of Halifax particularly for the Local Growth Areas of Queensbury and Thornton.

### **Sub Area Policy PN2: Investment Priorities for the Pennine Towns and Villages**

To manage change in the Pennine Towns and Villages on a scale that meets needs for housing, employment and renewal, enhances green infrastructure, heritage assets, community facilities and improves sustainable means of transport Partnership working between the public and private sectors, key stakeholder bodies and local communities should focus on:

- A Improving public transport, particularly to Queensbury, Thornton and Haworth, to enhance the ease of movement and improve access to jobs within the Regional City of Bradford, Airedale Corridor and Calderdale particularly for disadvantaged communities
- B Supporting sustainable economic, retail and leisure development where this is of a scale appropriate to the settlement, involves the re-use of an existing building, is located on land of the least environmental or amenity value and provides sensitive enhancement of heritage assets or public realm.

## 5.2 Transport and Movement

### **Policy TR1: Travel Reduction and Modal Shift**

The Council through planning and development decisions and transport policies will aim to reduce the demand for travel, encourage and facilitate the use of sustainable travel modes, limit traffic growth, reduce congestion and improve journey time reliability. These will include:

- E Identify, protect and develop appropriate facilities and high quality infrastructure for active travel modes (walking, cycling and horse riding). Including identified strategic routes and networks as well as local routes and links where opportunities arise, linking into national and regional routes...

### **Policy TR3: Public Transport, Cycling and Walking**

The Council through planning and development decisions and transport policies will safeguard and improve public transport, walking and cycling infrastructure and services through the following measures:

- E To protect sites and routes for heavy rail, light rail transport, bus priority, walking and cycling as identified in the Allocations DPD and Action Area Plan DPDs and the Local Infrastructure Plan.

**Policy TR4: Transport and Tourism**

The Council through planning and development decisions and transport policies will support sustainable access to tourist destinations, heritage and cultural assets and leisure uses, through the following measures:

- B Provide improved sustainable transport access to existing tourist destinations along with cultural and leisure attractions such as theatres, museums and other sites that generate high levels of visitors.
- D Acknowledge the contribution of, and support the maintenance and development of, 'transport based' leisure attractions including but not exclusively heritage railways, waterways, towpaths, cycle and walking trails and bridleways along with the leisure coach market. Protect opportunities for the development of such facilities e.g. disused railway lines, especially where these can contribute to high quality local routes.

**Policy TR5: Improving Connectivity and Accessibility**

Support for improvements to transport provision in the more isolated and poorly serviced areas of the District, (as identified through application of the Accessibility standards in Appendix 3) to address the economic and social problems that these locations experience. Including, but not exclusively:

- A Encourage the development of sustainable transport or other solutions in isolated areas to facilitate access to services.

5.4 Planning for Places - Environment

**Policy EN3: Historic Environment**

The Council, through planning and development decisions, will work with partners to proactively preserve, protect and enhance the character, appearance, archaeological and historic value and significance of the District's designated and undesignated heritage assets and their settings.

This will be achieved through the following mechanisms:

- C Require that all proposals for development conserve and where appropriate, enhance the heritage significance and setting of Bradford's heritage assets, especially those elements which contribute to the distinctive character of the District, specifically:
- 5 The heritage assets associated with transport including historic bridges, and the structures and character of the Leeds and Liverpool Canal.
- H Encourage heritage-led regeneration initiatives especially in those areas where the historic environment has been identified as being most at risk or where it can help to facilitate the re-use or adaptation of heritage assets.

## Appendix B: Landownership

In August 1967, the conveyance of the former railway cutting at the Holmfield end of Queensbury Tunnel reserved on British Railways Board “the full right and liberty with or without workmen plant and materials at all times to enter upon the said property” for the purpose of maintaining the tunnel. This right passed to the Secretary of State for Transport in 2013 and was enjoyed by the Applicant in managing the Historical Railways Estate on his behalf.

In 2014, the current owner of the Holmfield site and the Secretary of State agreed the terms of a Tomlin Order which ended legal proceedings brought against the landowner. Under this Order, the Secretary of State was granted a ten-year lease to install a pumping station and undertake maintenance works within the tunnel, including “infilling in whole or in part”.

Under the terms of the lease - which was agreed in March 2015 - a rent of £50 per annum was set, with responsibility for paying it assigned to the Applicant through its Protocol Agreement with the Department for Transport. However no such payments were ever made and the lease was forfeited in December 2017.

Clause 2.7 of the lease stated that the maintenance works “in any event shall be concluded prior to the expiry of the Term hereby granted”.

Clause 11 of the Tomlin Order states that the landowner “shall be permitted to infill the remainder of the said Cutting up to the opening of the Tunnel at its own expense following the determination of the Lease...”

It has therefore been agreed by the Secretary of State that all works within the tunnel would be completed within the term of the lease and that, thereafter, the reserved right of access to the tunnel would end by permitting the cutting to be infilled.



## Queensbury Tunnel: Objection to the planning application for abandonment (July 2019)

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