

BRIDGE OWNERS FORUM

MINUTES OF BOF 65: TUESDAY 27 OCTOBER 2020 ZOOM MEETING

PRESENT:

Jasdeep Bhachu (part)	LoBEG
Bill Bryce	SSE
Nick Burgess (part)	TfL/LUL
Malcolm Cattermole	Forestry England
Liam Duffy	Transport Infrastructure Ireland
Andy Featherby	Canal and River Trust
Richard Fish	Technical Secretary
Colin Hall	Network Rail
Jim Hall	CSS Wales
Keith Harwood	ADEPT
Nicola Head	TfL
Daniel Healy	Infrastructure Northern Ireland
Jason Hibbert	Welsh Government
Trish Johnson	Big Bridge Group
Neil Loudon	Highways England
Hazel McDonald	Transport Scotland
Campbell Middleton	Cambridge University Engineering Department (Chairman)
Ian Norriss	Environment Agency
Paul Thomas	Railway Paths Ltd.
Sue Threader	Rochester Bridge Trust
Paul Fidler	CUED

Guests:

Jeremy Porter (part)	Laing O'Rourke
Carmen Muriana-Cobo	TfL
Tom Sanders	Railway Paths
Nick Trump	Welsh Govt (Secondee from Mott MacDonald)

1. Welcome

The Chairman welcomed everyone to BOF 65, the second virtual BOF meeting. He remarked on the excellent attendance level and noted that virtual meetings offered the opportunity to have more than one “junior” member attending, as was the case today.

He also drew attention to the new agenda format, both in terms of the split into Strategic, Operational, and Information items and the linking of items to Grand Challenge numbers.

The Chairman then outlined the, by now tried and tested, protocols of virtual meetings using the Zoom tools to raise a hand to request to speak. The use of the chat box was also encouraged.

(NB where relevant, these minutes also record discussion or comments made on the Zoom chat box but not necessarily picked up by the whole meeting.)

2. Introductions and Apologies

The Chairman invited the three guests to introduce themselves:

Carmen Muriana Cobo is a TfL Highways Structures Engineer, working in Nicola Head's team providing engineering, technical services and advice to asset operations, asset management, project managers, third parties and clients across TfL. She is responsible for the implementation of the interim measures for structures in Central London and has also worked on the Westminster Bridge Load Assessment.

Tom Sanders works with Paul Thomas and is a senior engineer with Railway Paths Ltd. Before this he was self employed as a both a builder and an historic building surveyor.

Nick Trump works for Mott MacDonald but since January 2020 has been seconded to the Welsh Government, working with Jason Hibbert. His focus is on asset management and producing forward management plans for structures.

Although he was unable to attend until later in the meeting, the Chairman noted that Jasdeep Bhachu from Ealing Council and Vice Chair of LoBEG had recently been confirmed as that organisation's representative on BOF.

Richard Fish noted that apologies had been received from the following:

Kevin Dentith	ADEPT
Tomas Garcia	HS2
Osian Richards	CSS Wales

The Chairman welcomed the return to BOF of Jim Hall who was substituting for Osian Richards.

Richard Fish noted that no replies to emails ahead of this meeting had been received from Steve Berry or Gary Kemp at DfT.

3. BOF 64 Minutes

a. Accuracy

The minutes were accepted as a true record by the meeting although Richard Fish noted that he had received some suggested changes by email and, once those amendments have been made, they can be uploaded to the BOF website.

ACTION 1: Paul Fidler

b. Matters Arising

Actions were covered using the Action Update sheet that had been issued with the agenda. All those actions now completed are not listed below.

Action 3: Eastham Bridge Collapse

Although not able to attend this meeting, Kevin Dentith had provided the following response to this action, which the meeting accepted: *“No success with Jacobs engineers so recommend abandoning this discussion. Will review feedback from RACF and if bridges collapses have been identified and the owners are happy to discuss KD will make contact”*.

Action 4 (& 25): Grand Challenges and BOF in the media

Richard Fish reported that he had spoken to Helena Russell who unfortunately was too busy to help at the moment. He reported, however, that he had had an offer of a possible feature in CIHT’s Transportation Professional magazine which he would follow up.

ACTION 2: Richard Fish

Action 5 (& 8): TRIB Presentations

Richard Fish reported no success in contacting Asher Lawrence-Cole at DfT but the Chairman agreed to try to re-establish contact as he is a member of the TRIB working party.

ACTION 3: Chairman

Action 6: BOF Website

The Chairman reported that his previous idea on resourcing an upgrade of the BOF website had fallen through but he agreed to continue to try to resolve this issue.

ACTION 4: Chairman

Action 9: BOF/Grand Challenges “White Paper”

Neil Loudon reported that he had shared the BOF Grand Challenges document with the National Composites Group of which he is a member. There had been a positive response and it will be used to help with the formulation of their forward planning road map.

Actions 11 (& 23): Investigations into UK Highway Bridge Collapses

Although unable to attend this meeting, Kevin Dentith had previously confirmed that the following questions had been added to this year's RAC Foundation survey:

- 1) *How many bridges under your management collapsed in the last year?*
- 2) *Was it a full or partial collapse?*
- 3) *Would you be happy to share the details with the UK Bridges Board?*

Action 13: Churchill Flyovers, Liverpool

Richard Fish noted that Kevin Dentith had attempted to find more background on these structures through the ADEPT NWABG but with little success. He had supplied the following link which seems to be the best source of information:

<https://www.newcivilengineer.com/archive/report-liverpool-flyovers-catalogue-of-faults-05-03-2019/>

Action 15: Comparison of Bridge Management Systems and Tools

It was agreed that this should still be considered as a topic for a possible future BOF meeting. *[NB This was partly covered in the discussion under item 8 below].*

ACTION 5: Richard Fish

Action 17: BOF 20th Anniversary

The Chairman recognised that, although this was unlikely to take place in the near future, he would still like to celebrate the 20th anniversary in due course.

ACTION 6: Chairman/Richard Fish

Action 29: Virtual Meeting Questionnaire

The results had been issued with the papers for this meeting which showed a clear preference for a split between virtual and face to face meetings post Covid. *[See also Item 4 below].*

4. Covi-19: New Coping Initiatives and Programme Delivery Impacts

The Chairman firstly revisited the conclusions of the questionnaire (as noted in Item 3b) Action 29 above) issued after BOF 64 and, using the Zoom polling tools, invited members to "vote" for their favoured option. The result was an almost unanimous view that the new normal, post Covid, should be two virtual BOF meetings and one face to face meeting in Cambridge (or occasionally another venue as had been the case for BOF 61 in May 2019).

ACTION 7: Chairman/Richard Fish

The Chairman then invited members to highlight any specific points, positive or negative, that their organisation was facing.

Paul Thomas noted that there had been some issues with contractors engaged by Railway Paths, especially those with a workforce working away from home who had struggled to find temporary accommodation with hotels and guest houses etc. closed. This had been resolved by switching work to smaller, local contractors which was seen as a positive outcome. Jim Hall commented that this had also been his experience in Denbighshire.

Nicola Head reported that TfL's position was becoming very difficult as income streams from the capital's public transport had been drastically reduced. Although a rescue package had been discussed, it seemed likely that this would go to the wire and this was having a stressful and demotivating impact on existing staff, as well as making recruitment and retention almost impossible. Nicola's main concern had been in the management of her team, being wary of possible mental health issues and noting that working from home had made it harder to be confident of an individual's wellbeing. She had personally noted that working hours at home had a tendency to increase and strict time management was essential. In terms of project expenditure, Nicola noted that costs were typically doubling due to social distancing and other measures on site as well as in the supply chain.

Jim Hall noted the importance of good signage to inform the public why works were taking longer, and why completion dates were slipping. He also recalled that the first lockdown had come after severe floods in his own authority's area, the impacts of which were still being dealt with at the time.

Jason Hibbert was concerned about the wider costs having to be borne by the Welsh Government and the potential raid from other budgets, including bridge maintenance. He was confident, however, that his earlier work in developing a robust investment strategy and securing strong support from his politicians should mean that his budgets would remain intact. He regretted, however, that there had been no designs on the shelf which could have been more easily implemented when traffic flows had been significantly lower.

Liam Duffy reported that Ireland had seen an earlier lockdown in March, and different guidance and regulations from the UK, when construction sites in the Republic were completely shut down. The country is now in measures dealing with the second wave (Dublin is at the highest level, five out of five) but this time there is a greater emphasis on safety measures to try to keep sites open. The consequence, however, was one of increasing costs for works due to additional PPE, vehicles etc.

Henry Dempsey agreed with earlier observations regarding the use of more local contractors; although that had also meant that some smaller works had been delayed as local contractors were now too busy. As for staff working from home, Henry noted that many did not have the right equipment, broadband connection or useable space. This should be a lesson for the future both in terms of IT and in the development of working from home policies.

Neil Loudon agreed and sympathised with many of the earlier points around home working where his experience had been one of almost back to back MS Teams meetings with little opportunity for “coffee break” type of discussion which were often both valuable and productive. Another frustration of Neil’s laid with consultants who were desperate for work from Highways England and yet had chosen to furlough staff.

Bill Bryce noted that SSE had reduced works to only essential maintenance and he was wary of the significant works backlog which was undoubtedly developing.

Trish Johnson spoke on behalf of tolled bridges such as her own, Clifton, and Humber and Tamar, who had lost toll revenue which was the predominant source of income to fund maintenance. Fortunately, Trish had installed contactless payment at Clifton just before lockdown which had prevented issues around handling cash. Clifton also has very narrow footways, so a one-way system had had to be introduced for pedestrians; but that means it is now impossible to close a footway and therefore maintenance work to the hangers has had to be put on hold.

Sue Threader reported that RBT had been nine months into an 18-month bridge refurbishment contract (with lane and footway closures in place) when lockdown was imposed in March. Her consultant had furloughed staff, including the contract Supervisor without notice, so Sue had had to lead the job remotely herself, without being able to visit site as she was self-isolating, being in a vulnerable group. This had required some innovative ways of working from which Sue believed that useful lessons could be learned for future remote working options.

The Chairman then asked how many of the solutions to the issues could be captured for use in the “new normal” post Covid. He also questioned whether there might consequently be some enhanced capacity in organisations to consider the bigger issues such as carbon and climate change.

Paul Thomas suggested that improved communications through IT – such as today’s BOF meeting – and establishing working relationships in that way, should be seen as a bonus for future working methods. On the issue of carbon, Paul pointed out that Sustrans were ahead of the game as their *raison d’être* was to encourage walking and cycling and hence reduce carbon and improve air quality. He noted that, as a consequence of lockdown, there had been a huge demand for cycling in order to exercise as well as for commuting etc. which had seen pop up cycle lanes in urban areas; although unfortunately there now seemed to be a backlash against making many of these permanent.

In terms of procurement of works, Bill Bryce suggested that framework contracts with well understood and mutually supportive working relationships were the way forward. Nicola Head agreed as these had worked well in London in terms of coping with the consequences of the pandemic.

The Chairman thanked everyone for their contribution to the debate and suggested that a post-Covid BOF Action Plan document might be helpful, highlighting positives and negatives. It was agreed that this idea should be developed and might even serve to be another way to promote BOF in the technical media.

ACTION 8: Chairman/Richard Fish

From the chat box for this item:

Jim Hall suggested that part of the post-Covid response should be a review of risk registers. He also questioned whether framework contracts were sufficiently flexible to deal with unforeseen events and suggested that a hybrid approach might be better.

5. Linking BOF to UN SDGs and 6. Net Zero Carbon Initiatives

Although two separate agenda items, the discussion ranged across both and so they are recorded here as a single item.

Firstly, the Chairman outlined the United Nation Sustainable Development Goals (UN SDGs). He suggested that this would be a good way for BOF to map out ideas from the presentations by Ian Firth and Dave Cebon at BOF 64 and the urgent need to work towards net zero carbon. He also referred to the Stern Review, The Economics of Climate Change, which had been published in 2006 and concluded that an investment of only 1% of GDP could at least slow the warming of the planet.

The Chairman also suggested that future BOF agendas might be structured by also linking SDG numbers to BOF agenda items much as today's had been matched to Grand Challenge numbers. He noted that Cambridge University were now linking research and learning initiatives to at least one SDG. He also suggested that the Covid pandemic had shown that change is possible in that the profession has quickly adopted modified processes in order to remain effective.

Richard Fish noted that a brief summary document on the UN SDGs had been issued with the agenda for this meeting. He also described how he had been drawn to this subject having mentored a graduate who had completed her ICE CPR written exercise by describing how the SDGs could be linked to bridge maintenance. Together they had later co-authored a paper which had been accepted for the 2020 International Cable Supported Bridge Operators Conference, although unfortunately this had been postponed due to the pandemic. From that paper he had mentioned the example of the Koror-Babelthuap bridge in Palau in his presentation to the Bridges Conference in March. This post-tensioned box girder had collapsed in 1996 and the findings of the investigation report suggested that higher temperatures had led to additional creep which had contributed to the collapse. Although the bridge had been replaced, even this was thought to be under threat as sea levels rise.

Richard also suggested that sustainability in its true sense was effectively what bridge maintenance was all about: making infrastructure last longer and ensuring that transport

networks remain open; all by using innovative ideas and methods and working on economic models which recognised the whole life value of a bridge.

The Chairman suggested that these points, as well as the need to introduce carbon saving in procurement, should be given priority in business plans and option evaluations. He then invited comments and questions.

Paul Thomas repeated the point he had made under item 4 above regarding Sustrans' commitment to sustainability and their contributions to encouraging exercise and subsequent improvements to health and wellbeing. He also suggested that Railway Paths had shown that structures can last well beyond their theoretical design life often with only minimal intervention.

Neil Loudon quoted John Carpenter's three Ps (people, product and process) and added a fourth - procurement - and suggested that they might form a test for which areas we could influence or otherwise. He also referred to comments at previous BOF meetings on whether the Technical Approval process might have questions incorporated into AIPs on carbon and sustainability but reported no progress as yet. Neil also noted that he is a member of the ICE Research and Development Group where discussions are taking place on how carbon should be measured.

Keith Harwood recognised that there was an immediate issue with reducing budgets; it was very difficult to do anything without cost implications and carbon saving would inevitably cost money in the short term.

Nicola Head reported that TfL are considering carbon on the London Underground and she is starting to work on this for surface transport infrastructure. She pointed out the improvements in air quality during lockdown and suggested that now would be a good time to start conversations around carbon reduction and sustainability. Carmen Muriana-Cobo had been working with Nicola on this and endorsed earlier points about the need to agree how to measure carbon and the link between carbon saving and money. She concluded that carbon should be seen as an essential element of whole life value calculation, not as a bolt-on extra: it needed to be central to decision making and a consideration throughout a project's life.

Jim Hall suggested that the implications of sea level rise should be factored into new designs and also be extended to all aspects of infrastructure. This point was also reflected in the record from the chat below.

The Chairman concluded this item by restating its high priority and noting that, although many organisations had carbon reduction strategies, these tended to be too complex and a common standard was needed. He asked BOF members to consider their own initiatives and good practice for sharing at BOF 66.

ACTION 9: All

From the chat box for this item:

Jim Hall noted that we need to make existing infrastructure last longer; we need to consider climate change and are we wasting millions on strengthening structures that will not be big enough to cross what will one day become an estuary; look at highway protections. Why do we insist on maintaining historic routes that are not valued, by the majority?

Nicola Head: It would be good to agree between us what works best, rather than everyone doing their own thing.

7. Climate Change and Resilience

The Chairman introduced this item as a natural progression to the previous items and also embracing Jim Hall's point noted above. He invited comments.

Neil Loudon reported that the new Highways England standards all have resilience considerations included. Some of these were more obvious practical guidance, such as ensuring correct temperature settings for bearings and expansion joints during construction. Neil also noted that the new scour standard was still being finalised. *[Neil later confirmed in the chat box that the replacement for BD 97 was to be CS 469 which would hopefully be released in the spring of 2021].*

Ian Norriss noted that Environment Agency forecasting was predicting milder but wetter winters together with hot, dry summers, although the latter were likely to see an increase in the number of extreme rainfall events. The EA had also concluded that their own flood defence assets will overtop more frequently and need to be resilient to this. This reflected how design standards had changed since a climate change allowance was first embedded in new designs around 15 years ago. Once a climate change is added, a 1 in 100-year flood event is often approximately equivalent to a 1 in 200-year event (depending on the catchment). Ian noted, however, that even those levels of increase had been exceeded in the 2015 floods which had been rated at 1 in 500-year events. He identified the most ubiquitous EA flood assets as flood embankments where failure of these can be catastrophic with limited opportunity for rapid recovery.

As an aside, Ian also noted that the EA were in the process of a bridge management transformation. This had previously been managed at the regional or area level and there were some inconsistencies of approach. There was to soon to be national standard policy and the EA had also recruited some Chartered Engineers with bridges experience.

Regarding the prediction for wetter milder winters, Malcolm Cattermole noted that this was a real problem for Forestry England's unbound forest roads. Timber harvesting has to continue through the winter months as sawmills work on a just-in-time delivery basis. With generally colder winters, frozen roads could cope but prolonged rainfall was regularly making them unusable.

On the subject of scour, Colin Hall reported that Network Rail had carried out research into scour performance using a PhD student. The conclusion was that major structures were generally safe, but the more significant risk is for those smaller structures with little or no flows under normal conditions.

Paul Thomas felt that there was a problem in getting adequate warnings of forthcoming flood events, especially in more remote areas. *[NB Ian Norriss' response to this and relevant flood warning websites were added to the chat box during the meeting – see below].*

Before concluding this discussion, the Chairman noted Malcolm's Forestry England problem as an example of climate change having unforeseen consequences. He also suggested that new designs should be more flexible, building in allowances for future modifications.

From the chat box for this item:

Ian Norriss, in response to Paul Thomas' point above: I've asked a colleague about the best options for Paul with regard to getting flood warnings for remote assets. It might be that the Flood Warnings for Infrastructure (FWFI) or Targeted Flood Warning Service (TFWS) are the best options. I'll share any information I get back.

Neil Loudon: Highways England are in discussions with the EA about FWFI and TFWS; and links to Met. Office forecasts.

Flood warning sites, as provided by national governments' representatives:

England: <https://flood-warning-information.service.gov.uk/warnings>

Wales: <https://flood-warning.naturalresources.wales/>

Scotland: <https://www.sepa.org.uk/environment/water/flooding/>

N. Ireland: <https://dfi-ni.maps.arcgis.com/apps/webappviewer/index.html?id=fd6c0a01b07840269a50a2f596b3daf6>

Ireland: <https://opw.hydronet.com/>

Ian Norriss: This link gives live river and sea levels in England:
<https://flood-warning-information.service.gov.uk/river-and-sea-levels>

Jim Hall: Although many main rivers have flood sensors, smaller local watercourses do not.

Keith Harwood: Whilst modern design standards might be an issue, existing structures designed to very old standards are of more concern.

8. Digital

The Chairman introduced this item, by recounting recent developments in machine learning and Artificial Intelligence which now had a high profile in various sectors. He saw this as a progression from BIM which should only be seen as a good start towards embracing digital technology. He also noted that data collection and storage were becoming more straightforward although the question of what to do with the vast amounts of data was a bigger issue. He invited comment:

Jim Hall agreed that the biggest problem was one of data storage, especially for smaller bridge owners. Keith Harwood noted that even when digital models had been produced, accessibility by the bridge owner was problematic as there were too many formats. His vision was something like Google Earth where all attributes of an asset could be accessed via a map-based system.

The Chairman enquired about LiDAR; Keith Harwood had some BIM and some LiDAR models but none on the same bridge. Colin Hall noted that Network Rail have about 70 in total, seven of which are high quality. *[NB This was part of Colin's presentation under item 14].*

Neil Loudon reported that Highways England have a LiDAR survey of all of the strategic road network but only through the use of forward-facing cameras; mainly for the benefit of pavement engineers. The model could be used for headroom checks and, indeed, had been used for this purpose to check the headroom under the footbridge over the M20 in Kent which had been demolished in 2016 by an over height vehicle.

Hazel McDonald noted that most of her bridge management information is held by operating companies and the data is transferred when contracts change. It was not possible for Transport Scotland to hold the information due to the Scottish Government's IT security and software limitations.

The chairman moved the discussion on to the subject of bridge management systems and invited observations:

Nicola Head noted that TfL and LoBEG use BridgeStation. She considered this to be a good tool for data collection and storage but less so when it came to maintenance and whole life costing. Keith Harwood agreed, noting that local authorities were probably 50/50, BridgeStation/AMX. His own view was that BridgeStation was becoming dated but, in the chat, mentioned Agile Assets, used by Connect Plus, which appears to be ahead of the others. Also in the chat, Jim Hall reported on CSS Wales: 16 out of 22 use AMX, one uses BridgeStation and two use Symology. Colin Hall advised that Network Rail have their own bespoke system which has been under continuous development for the last ten years and it seemed very difficult to get everything working as it should.

In Scotland, both Hazel McDonald and Henry Dempsey use the WDM system, mainly as a result of this being favoured by roads colleagues. Hazel noted that a replacement system was being procured but again mostly to suit the interests of roads colleagues. Liam Duffy reported that TII's system is only good for data storage and hasn't really changed since it was introduced in 2001. In Northern Ireland, Daniel Healy advised that the normal practice had been to develop data management systems in-house; this was the present position with a new system being designed, on this occasion with some help from Queens University, Belfast. Ian Norriss noted that the Environment Agency had recently invested in AMX for all assets. For Highways England, Neil Loudon reported that their system is Bentley, although this is not a dedicated bridge management system. Andy Featherly noted that CR&T currently use a SAP based system to schedule and record routine asset management tasks to their infrastructure, however it is not tailored to bridge management and is therefore not as efficient as it could be.

[Post meeting note: Andy Featherby has added the following: "I did not raise the following issues at the meeting, however we are continuing to develop a series of asset health and degradation models for our various asset types. These are being developed in house with the assistance of an external consultant organisation, Decision Lab. We have discussed the use of a proprietary bridge management system, however the approach we are taking is to enable us to prioritise and programme works to across our entire asset portfolio".]

Nick Trump observed that a consistency of approach between systems for all assets should be promoted to make best use of the data held in the various systems. The Chairman agreed and restated his dream of a national bridge database. In the meantime, once the BOF website has been updated, he would like to have a reference to the system used by each member added to it.

ACTION 10: Chairman/Paul Fidler

The Chairman proposed to continue this discussion at subsequent meetings, encouraging everyone to move towards improved databases and systems. Paul Thomas pointed out that the only source of income for upgrades was the bridge maintenance budget which was already under pressure. Jim Hall agreed, noting that being able to convince politicians for long term investment did not sit well with their short-term election cycles. Jim also noted that his bridge maintenance budget amounted only to about £50 per bridge per annum.

Finally, the Chairman also mentioned ESDAL. Neil Loudon advised that its use for Abnormal Load movements was not exclusive and Jim Hall noted that there is no requirement for all bridge data to be in the system, adding that the police in North Wales are not supportive of its use.

From the chat box for this item:

LiDAR:

Jason Hibbert: One of our two Trunk Road Agents in Wales has done a LiDAR survey. I don't know where it is stored.

Colin Hall: We have LiDAR of our network from flying a helicopter but does not capture under the bridge. we have tried using it to identify substandard height parapets.

Daniel Healy: a) None for bridges but a few LiDAR surveys for slopes and rock faces in Northern Ireland and b) Processing power to use the LiDAR models is also an issue for standard government PCs, especially the larger ones

Keith Harwood: a) In Hertfordshire we don't use LiDAR often as it doesn't generally give good data for inspection. Photogrammetry surveys are more helpful. That said, we LiDAR surveyed 180 structures for headroom measurement, some for landslips on embankments and b) And difficulties also with data access when working from home with large files.

Nick Trump: From a consultant's point of view we often find clients don't have the means to open or use the point cloud models. Or the space to store the files. We've found the real added benefits from annotated point cloud models for baseline deterioration are then lost by having to include screenshots of the model in a PDF report.

Jim Hall: I can't keep a bridge free from trees, let alone have a 3D model

Bridge Management Systems:

Malcolm Cattermole: Limited asset data is stored in GIS system designed by ESRI for Forestry. Maintenance planning is by spreadsheet.

Trish Johnson: Maintenance planning on spreadsheet. Long term records in ARchive ATOM.

Keith Harwood: IBM Maximo being used by TfL?

Nicola Head: Bits of LU use Maximo, and the intention is to use it for roads assets come April, but not structures

Bill Bryce: SSE use MAXIMO for all of our assets

9. Competency Frameworks and BICS

The Chairman introduced this item, linking BICS with the recently published BSI draft Competency Framework document.

Neil Loudon reported on a meeting from the previous day that he and Hazel McDonald had held with LANTRA. LANTRA had suffered during the pandemic and some key staff had had to be furloughed so recent progress had been poor. However, an update to the system was to be introduced from 4th November which would simplify on-line registration. Other improvements included the implementation of the modularisation, automated payment and links to CPD. An assessor standardisation day is to be held in December. Although both she and Neil had asked for communications to be improved, Hazel added that the overall feeling was that LANTRA were beginning to turn things around and she was hopeful of further improvement going forward. A further bonus was that on-line interviews were much more efficient and that the assessors were becoming more consistent. Hazel also reported that UKBB had agreed to issue a survey to gather information on attainment levels and asking for any other feedback. She noted that this had yet to happen but, once completed, the results would be considered by the BICS Steering Group.

The Chairman mentioned the draft Building Safety Bill and the competency requirements incorporated therein. Hazel replied that this was the reason for the BSI Competency Framework which could be applied to other industry sectors; she noted, however, that BICS meets all the current requirements. (NB Hazel sits on the BSI Committee CB2, Engineering Design and Construction, which had been consulted on the Competency Framework)

Using the Zoom polling tool, the Chairman asked for those organisations using BICS: of those responding there was one yes, eight saying no, three not yet and four using their own competency system. Neil Loudon suggested that this was to be the point of the UKBB survey which should give slightly more rigorous feedback.

Jim Hall reported that CSS Wales had developed their own scheme and currently have 45 candidates from Welsh authorities. Inspectors are assessed by senior staff from neighbouring authorities. Although it was based on BICS, Jim was critical of the latter, suggesting that it was too broad, contained too many management descriptors which were not needed for inspectors and was based on an outdated Bridge Inspection Manual. Regarding the last of these, Neil Loudon rejected Jim's assertion that the Manual was 30 years out of date, pointing out that it was published in 2007. Neil added that a review of the Manual was expected to start in 2021.

Hazel McDonald responded to Jim's view about the need for management tests within BICS: it was important that inspectors could safely plan inspections as well as providing a career path which was one of the Scheme's original objectives.

The Chairman concluded the discussion with a plea that BICS should be seen as the exemplar and encouraged its use. Jim Hall agreed to issue the CSS Wales scheme to BOF members.

ACTION 11: Jim Hall/Richard Fish

From the chat box for this item:

Paul Thomas posed a question to Hazel or Neil - in previous meetings you mentioned that LANTRA were concerned that slow take up of BICS meant that they were considering their future regarding continuing to run the scheme. Are they committed for the long term? [Post meeting Note: Hazel McDonald has replied that there is no indication from LANTRA that they are not committed to running BICS for the longer term.]

Hazel McDonald, on the subject of BICS costs: This is something we will discuss at Steering Group. The cost is in the time and travel for the assessors. If the assessors aren't travelling and we continue with online assessments, there is a case to reduce costs. LANTRA don't make any money on this.

10. Bletchley Viaduct Presentation

The Chairman welcomed Jeremy (Jez) Porter who had been the Laing O'Rourke Project Leader for the replacement/refurbishment of the Bletchley Viaduct, a 600 metre multi-span part RC and part post-tensioned structure built in 1959, as part of East-West Rail Project. Jez gave a presentation on the project, which was as much about the collaborative working as it was about the engineering, and agreed that it could be uploaded to the members only section of the BOF website

ACTION 12: Paul Fidler

The Chairman thanked Jez for the presentation, noting the impressive innovations throughout the project, and invited questions.

Jim Hall asked about the condition of the half-joints. Jez replied that roller bearings at the free end had almost seized and there had been some notable horizontal displacements once they were released.

The Chairman questioned the alliance model for delivery. Jez replied that he considered collaborative working to be preferable to transactional contract relationships when it came to complex projects. He suggested that innovations arose from individuals rather than any procedural process. In this case the whole project had been managed by the alliance from cradle to grave so there was a level of ownership from the outset.

The Chairman concluded the discussion and thanked Jez for his presentation.

11. Temporary Bridge Database

Neil Loudon presented on this topic which had been on BOF agendas over the last few years. He reprised the background and recent history of the work to establish the database which was intended for use by any bridge owner who needed a temporary bridge as a result of an emergency situation. Neil explained the many variables from the five UK suppliers to the various design codes (Eurocode, BS 5400, permissible

stress etc.) associated with each type. The DfT have commissioned BJSS as a technology partner and all the information is now on a spreadsheet which will eventually be accessed through a web portal. Highways England have been working with DfT procurement and it is hoped that the final system will be ready for use in mid-2021.

In terms of use, a “customer” will be able to filter all available information, including mostly completed AIPs and some departures from standard. The procurement of the temporary bridge and the contractual arrangements, however, will be a transaction between the individual bridge owner and the temporary bridge company.

Neil agreed that his presentation could be uploaded to the members only section of the BOF website.

ACTION 13: Paul Fidler

12. Procurement – RBT Approach

Sue Threader presented on the refurbishment contract for the Rochester bridges, covering her overall approach rather than simply procurement.

Sue recognised that she was fortunate in that RBT were not governed by public sector procurement rules but had always been concerned by clients being driven by lowest first capital cost. She confessed that she was not a fan of collaborative working and alliances as, in her experience, risk always seemed to end up with the client. There was also the issue of how the success of a contract is measured: usually on time and out-turn price but generally at the expense of quality. The RBT works had therefore been planned in terms of values, with whole life principles being at the forefront. Sue had wanted her consultant and contractor to recognise the community value of the link and the focus had been on minimum disruption to the traveling public.

An NEC 4 contract had been used but with no z clauses and the emphasis had been on project costs rather than tender costs. In Sue’s view, in the past there had been too much transfer of risk to contractors when it was the clients who were better placed to manage some of those risks. The natural corollary to this was a strong technical client. Among the innovations introduced had been the concept that during any lane closure, there had to be obvious signs that work was taking place. And, from the safety point of view, any notifiable near miss resulted in a donation to a local charity.

The Chairman thanked Sue for presenting and invited questions. Paul Thomas applauded the way in which Sue had ensured strong links with the community and asked whether there was a “friends” group. Sue confirmed that there was no group as such but, as the bridges are central to the community, she considered that all users were friends. Finally, Sue agreed that her presentation could be uploaded to the BOF website.

ACTION 14: Paul Fidler

13. Fatigue Prone Structures

Neil Loudon presented on fatigue prone structures; along with post-tensioned bridges, half-joints and scour, fatigue is considered to be a significant area of risk in the Highways England stock. Neil noted that HE has 8,858 bridges and large culverts, of which 1,482 are steel and of these, 776 were designed before BS 5400 Part 10. The approach that HE would now follow was to be one of proactive risk management, rather than reactive which had recently been the case. The big question was whether Highways England's knowledge was sufficient, both in terms of the extent of the problem and the means to address it. Neil showed examples where there were known fatigue problems on the motorway network, including M25 Gade and M4 Boston Manor viaducts.

The outcome was to be a National Structures Programme for this subject, to identify knowledge gaps and to review testing and repair techniques. There will be different risk-based approaches for bridges designed pre- and post-1985, taking into account ideas from other sectors such as oil and gas platforms and off-shore wind, as well as reviewing work in other countries including the US FHWA. An aim was to develop a fatigue assessment code (compatible with Eurocodes but in advance of the actual Eurocode yet to be published for fatigue assessments). The programme would include dissemination and training.

Nicola head volunteered a case study TfL bridge should Neil be looking for one. Hazel McDonald asked about timing and Neil replied that he hoped it should be available in 2022; he would also continue to advise on progress in the interim. Jim Hall asked about currently available NDT techniques: Neil replied that he was looking at practical rather than theoretical techniques but offered to share the current best practice.

ACTION 15: Neil Loudon

The Chairman thanked Neil for his presentation who agreed that it could be uploaded to the members only area of the BOF website.

ACTION 16: Paul Fidler

From the chat box for this item:

Daniel Healy: Just wanted to ask about the potential to include these NDT tests that are suitable for fatigue in the proposed CIRIA guidance.

Neil Loudon: We are still in the process of gathering information on testing so this may not suit the timescales of the CIRIA work.

14. Network Rail UAV Trials

Colin Hall explained that his presentation was about more than UAVs and suggested a better title of Pan-optic Examinations. He agreed that it could be uploaded to the BOF website.

ACTION 17: Paul Fidler

Colin explained that the trials had been partly funded by an EU grant and a number of systems were appraised against the degree of defects that could be identified and whether the methods were suitable for use on a live railway. Of Network Rail's 40,000 assets, six were chosen: five masonry arches and one concrete bridge.

Data capture utilized UAVs, together with Terrestrial Laser Scanning (TLS) and Thermal Imaging (which in theory might detect defects as easily as hammer testing).

The Chairman invited questions: Paul Thomas asked about the time needed for TLS and Colin replied that it was negligible if used with Examiners on site at the same time. On the subject of cost, Colin suggested that the site costs were about equivalent to a bridge Examination, but the significant costs were in post-processing where the volume of data files was ten times the size of a big Detailed Examination pdf report. Liam Duffy asked about the level of accuracy and whether it could link to previous visual inspections. For the former, Colin stated an accuracy to 1mm and for the latter both relied on changes in defects so were compatible. In summary, he suggested that the trials had shown that these methods provided better results than a Visual Examination but not quite to the standard of a Detailed Examination.

The Chairman suggested that such technologies were the way forward and looked forward to receiving updates. He invited others to bring any similar innovations to future BOF meetings.

In the chat box for this item:

Nick Trump: To reduce costs per structure have you looked at hand-held camera/DSLR product photogrammetry models that can provide similar benefits as laser scan PC models at much lower cost?

15. Update on Current Bridge issues and/or Research

Before inviting BOF members to give an update on any pressing issues or involvement in research projects, the Chairman drew attention to a clip he had seen on-line of an HS2 bridge construction. It was from Arup and entitled the 8-hour bridge.

a. **Highways England**

Neil Loudon reported that Highways England were considering a long-term vision or "moon-shot" approach to research, including the possibility of self-serviced assets with no need for humans to attend site.

b. Network Rail

Colin Hall reported on some Big data research into scour monitoring working with Southampton University. This was presently on hold, however, due to an overspend in R&D budgets.

c. Transport Scotland

Hazel McDonald reported that Transport Scotland were also engaged on scour research with the Scottish Road Research Board and Strathclyde University, working towards a decision support tool.

d. Clifton Bridge

Trish Johnson reported that she was working with UKCRIC to allow Clifton to be used as a test bed for trialling sensors. This was also linked to work by Leeds University on modelling wind induced movements.

16.Feedback from UKBB 20th May

Richard Fish reported that he had given the Grand Challenges presentation that he had use to brief UKRLG in July. The Chairman noted that past minutes were no longer available on the UKRLG website: Keith Harwood said that CIHT were aware of the problem but offered to chase Justin Ward.

ACTION 18: Keith Harwood

17. BOF International Connections – AustRoads Bridges Task Force

Richard Fish reported that he had attended part of this meeting on 16th July via MS Teams and had also presented on Grand Challenges. This seemed to have been very well received as had the possibility of extended cooperation. The Chairman planned to attend the next AustRoads meeting and suggested that we might consider “associate” BOF members from other countries. He also referred to previous suggestions of an International BOF meeting and was persuaded that during the pandemic might be an obvious time to arrange something.

ACTION 19: Chairman/Richard Fish

18.Bridges 2021 Conference and Awards

Richard Fish reported that the 2021 Bridges Conference dates may slip to 19th and 20th May. For the time being, the March dates (10th and 11th) are also being held by the Ricoh Arena.

ACTION 20: All

Richard also announced that the conference organisers were also introducing an awards scheme which will included a BOF award intended as a recognition of a life-time achievement.

[Post meeting note: Although some immediate recommendations were proposed, after the meeting it was agreed that more information was needed on the eligibility criteria and the voting process. This will follow when available].

ACTION 21: Richard Fish/All

19. BOF Subscriptions

The Chairman noted that a statement of BOF accounts had been issued which showed that there was now a modest surplus which, as Action 4 above, he would use to upgrade the BOF website. He also noted that invoices had been issued for the current year: whilst thanking those who had paid, he asked others to chase payment in their respective organisations.

ACTION 22: All

20. Any Other Business

- a. **Railway Paths Ltd.:** Paul Thomas reported that RPL was approaching the end of its planned life: it had been established to fund the maintenance of structures by selling surplus land and the land bank had now significantly reduced. Other funding mechanisms needed to be explored and Paul asked if a short survey could be issued as part of the consultation. This was agreed.

ACTION 23: Paul Thomas/Richard Fish/All

- b. **BOF Minutes and Presentations:** Keith Harwood reported that the ADEPT Bridges Group had expressed some frustration over the length of time taken for BOF minutes to be approved and accessible on the BOF website, as well as presentations given at BOF meetings. It was agreed that this should be streamlined with a two-week deadline to give any feedback on *accuracy* once meeting minutes were first issued. Similarly, presentations from this meeting should be uploaded without delay.

ACTION 24: Richard Fish/Paul Fidler

- c. **Welsh Government Transportation Strategy Consultation:** Jason Hibbert asked if this consultation could be issued so that a BOF response could be submitted, drawing links to the Grand Challenges. This was agreed.

ACTION 25: Jason Hibbert/Richard Fish

- d. **Research Funding:** Jason Hibbert noted that funding for research projects seemed to be very reliant on the DfT. He suggested that UKBB or UKRLG should look at an alternative, pooling research budgets from all possible sources; the devolved administrations as well as other owners. It was suggested that this should be raised at UKBB.

ACTION 26: Richard Fish/ BOF UKBB Members

- e. **DMRB:** Jim Hall noted that he had found Highways England's webinars very helpful. Neil Loudon said that others were to follow.

21. Next Meetings

BOF 66 has been fixed for 26th January 2021 and will also be virtual – either via Zoom or MS teams.

ACTION 27: All

Dates for other 2021 meetings will be issued in due course.

ACTION 28: Richard Fish

22. Close

The Chairman closed the meeting, thanking everyone for their contributions.

Richard Fish,
BOF Technical Secretary,
26th November 2020