

BRIDGE OWNERS FORUM

MINUTES OF BOF 64: TUESDAY 26 MAY 2020 ZOOM MEETING

PRESENT:

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

Guests:

Nilushi Perera	Welsh Government
Ian Firth (part)	Consultant
David Cebon (part)	CUED
Julie Bregulla (part)	ICE
Mark Hansford (part)	ICE
Andy Hodgkinson (part)	Steel Bridge Group
Richard Day (part)	Concrete Bridge Development Group

1. Welcome

The Chairman welcomed everyone to the first ever virtual BOF meeting and posed the question as to whether such meetings might be the new normal once we emerge from the Covid-19 pandemic. He reflected on the extraordinary times that the world is facing both with the tragic loss of life and the economic consequences of lockdowns but hoped that there might be some positive outcomes in terms of more innovative ways of working.

He also briefly explained the protocol of the meeting using the Zoom tools to pose questions or raise a hand to request to speak.

2. Introductions and Apologies

Rather than the usual round the table introductions, the Chairman invited substitute or guest members to briefly introduce themselves.

Andrew Arundel was substituting for Trish Johnson for the Big Bridge Group. Andrew is the Chief Operating Officer at the Humber Bridge where he is responsible for all aspects of managing the bridge, reporting directly to the Board. Some 75% of his career has been in bridges, initially employed by Humberside County Council before it was disbanded in 1996, then working for consultants and contractors before being seconded to the Humber Bridge and later joining as a permanent member of staff. His current pressing issue is the impact of the pandemic and the consequential reduction in toll income. Humber, however, has a healthy ongoing maintenance programme (although big bridges equal big problems) and, looking to the future, Andrew is keen to embrace the benefits of digital technology with real time information from sensors on the bridge.

Nilushi Perera was attending not only to present on the M4 emergency closure (Agenda Item 5) but also as this meeting's additional guest. She is on a two-year secondment from Atkins to the Welsh Government working with Jason Hibbert but specifically covering the management of the network in south east Wales. Nilushi started her career as a civil engineering apprentice and achieved Chartered status in 2019.

Richard Day is the Head of Technical Services at the Concrete Society and had also taken over as the Executive Secretary of the Concrete Bridge Development Group (CBDG) at the end of 2019. Richard is a concrete technologist, having previously been a civil engineer. He noted that the impact of the pandemic had led to the CBDG's annual conference being postponed and now all of its meetings were taking place virtually. Richard was attending this meeting as an observer but also to provide a balanced view on agenda item 9 "Designing for Maintenance".

Jim Booth was substituting for Sue Threader. Jim is the Service Manager at the Rochester Bridge Trust. Unfortunately, technology issues prevented him joining the meeting at this item and so he was unable to give a personal introduction.

Jasdeep Bhachu is responsible for Structures, Flood and Water Management at Ealing Council and is also the Vice Chair of LoBEG. Following discussions at the Annual Bridge Conference in March, Jasdeep had expressed an interest in being the LoBEG representative on BOF and was attending part of this meeting as a guest/observer. He had not been able to join the meeting for this item so was unable to give a personal introduction.

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

Henry Dempsey ¹	SCOTS
Kevin Dentith ¹	ADEPT
Nicola Head ²	TfL
Trish Johnson ³	Big Bridge Group
Sue Threader ⁴	Rochester Bridge Trust

¹Both had hoped to attend for at least part of the meeting but urgent work commitments had prevented this.

²Philip Gray was substituting for Nicola Head.

³Andrew Arundel was substituting for Trish Johnson.

⁴Jim Booth was substituting for Sue Threader.

He also noted that there had been no response at all from some BOF members so presumed that they had been furloughed as a consequence of the pandemic.

2a. Coping with the Covid Pandemic

NB. This item was actually taken on completion of item 3b but recorded here as it was not part of the BOF business meeting.

Before dealing with the substantive agenda items, the Chairman invited BOF members to share how their organisations were coping with the imposed restrictions during lockdown.

For Network Rail, Colin Hall reflected that there were both pros and cons: the latter included problems associated with keeping up to date with examinations, not least complying with social distancing advice, and maintaining connections with the supply chain. For the former, the fact that fewer trains were running enabled improved access to the network although this too presented issues with social distancing. Colin also noted the success of virtual meetings, with the recent UKBB MS Teams meeting being a good example.

Bill Bryce cited a specific example within the SSE infrastructure in the regulation of reservoirs with no relaxation of enforcement requirements. Moving specialist engineers around the country had been problematic and SSE had also employed a buddy system for lone workers.

Paul Thomas reported that Railway Paths had put all inspections on hold until recently when they had restarted with inspection teams managing social distancing. There had been a problem, however, with a large increase in the number of people using the network for their daily exercise, often not complying with the two-metre rule. Paul was also frustrated by the Government advice which seemed difficult to pin down and was constantly being amended.

Andy Featherby noted a similar issue on tow paths which had hindered operation and maintenance works. On a particular point, C&RT use a small inflatable boat for inspections, normally with a two-man team which meant that social distancing compliance was impossible.

The Chairman asked if full PPE hoods could be used? The general view was that these might be acceptable for inspections but impracticable for works although Andrew Arundel noted that current Government advice was that medical PPE should not be used for any other purpose. Andrew also understood that the HSE had received a number of calls regarding personal welfare from workers deemed to be “essential” but not given adequate guidance or protection.

Hazel McDonald advised that there were no exceptions to physical distancing in Scotland but Principal and General Inspections had been accepted as essential works and had continued throughout.

Philip Gray reported that TfL’s revenue had dropped dramatically with the reduction in the use of public transport in the capital. Their only strategy now seemed to be one of sweating the assets with many bridges being considered as provisionally sub-standard in compliance with BD 79 (now CS 470) and with various interim measures. Philip suggested that this policy might be worth a more detailed look at a future BOF meeting.

ACTION 1: Richard Fish

Colin Hall agreed with Philip and noted that Network Rail were in a similar position: balancing risks and sweating assets.

Keith Harwood also pointed out problems which were being encountered on major sites both with main contractors and their supply chains. As an example, a £25m contract underway in Hertfordshire could potentially cost another £6m due to increased labour costs, lower productivity and programme slippage. Neil Loudon noted that Highways England had attempted to keep works going as much as possible, but this had been hindered by some consultants furloughing staff.

From Ireland, Liam Duffy reported a similar situation although lockdown had started on 14th March and restrictions were now being eased with some sites restarting on 18th May but with new risk assessments. Principal Inspections, for example, were not considered to be essential activities and guidance was currently being sought from government and the contractors’ federation.

Concluding this impromptu item, the Chairman hoped that there would be some positives when the pandemic was over such as works being accelerated to stimulate the economy. Neil Loudon noted that Highways England had started their new control period on 1st April (RIS2) with £27bn to be spent over the next five years. Paul Thomas also pointed out the possible future benefits with more cycling in urban areas and networks being adapted to cope with that modal shift.

3. BOF 63 Minutes

a. Accuracy

Item 3b, page 4, Action 11: Replace “CUED” with “Laing O’Rourke Centre for Construction Engineering and Technology”.

Once the above amendment has been made, the minutes can be uploaded to the BOF website.

ACTION 2: Paul Fidler

b. Matters Arising

Actions were covered using the Action Update sheet that had been issued with the agenda.

Action 2: Eastham Bridge Collapse

Kevin Dentith to be contacted regarding progress on a meeting with Worcestershire County Council and Jacobs.

ACTION 3: Richard Fish/Kevin Dentith

Action 3: Grand Challenges and BOF in the media

Richard Fish agreed to contact Helena Russell.

ACTION 4: Richard Fish

Action 4: TRIB Presentations

Richard Fish agreed to contact Asher Lawrence-Cole.

ACTION 5: Richard Fish

Action 5: BOF Website

The Chairman reported that he was hoping to start work on updating the BOF website in the near future, using the new Comms employee in the Laing O’Rourke Centre.

ACTION 6: Chairman

Action 6: BOF LinkedIn Group

Keith Harwood noted a poor uptake of membership with only 11 BOF members joining. Richard Fish reported that the latest number of followers on the BOF Twitter account was 370.

Action 7: BOF in the Media

Helena Russell’s presentation still to be located and uploaded. Richard Fish will contact Helena as Action 3 above.

ACTION 7: Richard Fish/Paul Fidler

Action 8: TRIB and Grand Challenges

It was agreed that liaison with Asher Lawrence-Cole and TRIB at DfT regarding Grand Challenges should continue and Richard Fish will make contact as Action 4 above.

ACTION 8: Richard Fish

Action 9: Grand Challenges “White Paper”

It was agreed that this should remain under consideration.

ACTION 9: Chairman/Richard Fish

Action 20: Vehicle Overloading

Neil Loudon reported that discussions on possible changes to C&U vehicle loading and the identification of strategic routes was now on hold due to the Covid pandemic.

Hazel McDonald also noted that little progress had been made with Transport Scotland’s discussions regarding potential trial routes from a particular haulier’s depot to rail heads. Hazel also advised on some PIARC work on vehicle overloading but this seemed to be focussing more on the effects on road pavements.

Action 23: Temporary Bridge Database

Neil Loudon understood that the idea of using the BOF website to host the database had been dropped but there could be links between the two. He also reported that he was due to catch up with colleagues in Highways England and DfT and would report further at BOF 65.

ACTION 10: Neil Loudon

Actions 15 to 18: Grand Challenges

The Chairman congratulated Keith Harwood and Richard Fish for producing the final document in time for distribution at the Annual Bridge Conference in March. Both noted that they still had plenty of hard copies, in part due to the reduced numbers at the Conference in advance of the official lockdown.

Actions 19 and 21: Investigations into UK Highway Bridge Collapses

Richard Fish reported that he was lobbying for an independent body to undertake such investigations at every opportunity and noted that it would also be part of Agenda item 8 of this meeting. It was agreed that the action for Kevin Dentith to discuss the inclusion of questions on failures in the next RAC Foundation survey should be carried over.

ACTION 11: Kevin Dentith

Action 22: Procurement Issues

It was agreed that, in Sue Threader's absence, this item would be added to the BOF 65 agenda.

ACTION 12: Richard Fish

Action 24: Churchill Flyovers

It was agreed that, in Kevin Dentith's absence, this item would be added to the BOF 65 agenda. Richard Fish noted, however, that Kevin was now working part-time for Devon CC and a condition for doing so was that he should relinquish some of his extra-curricular memberships which might include BOF.

ACTION 13: Kevin Dentith

Action 25: ORR Presentation

Richard Fish agreed to contact Luisa Freitas at ORR.

ACTION 14: Richard Fish

Action 26: Structures Toolkit

Keith Harwood reported that CIPFA approval had now been received.

Action 27: Comparison of Bridge Management Systems and Tools

The Chairman requested that this item should remain under consideration for a future BOF meeting.

ACTION 15: Richard Fish

Action 29: UAV Trial

Colin Hall agreed to present on this trial at BOF 65.

ACTION 16: Richard Fish

Action 32: BOF 20th Anniversary

Although the easing of lockdown had been announced, the Chairman suggested, and the meeting agreed, that a celebration would have to wait until at least 2021 but options would continue to be considered.

ACTION 17: Chairman/Richard Fish

4. BICS Update

Neil Loudon reported that a meeting between the BICS Steering Committee (of which he was a member, as was Hazel McDonald) and LANTRA was long overdue but had been complicated by LANTRA staff being partially furloughed. Hazel understood that Emma Baskerville, LANTRA's BICS coordinator, had recently returned to work but also noted that LANTRA's IT performance had not been good and this had added to the frustrations of applicants in the system. She also noted that UKBB had discussed BICS and a survey was shortly to be issued to try to determine the extent of the likely uptake of BICS or other competency systems.

Hazel also pointed out that the annual Assessor standardisation meeting, which was a requirement of the BICS management strategy, should have taken place in November 2019 and was yet to be arranged. She also noted that the modularisation of the system was being introduced but still needed some improvement (Graham Cole was still involved with BICS and had been working on this).

By this point, Ian Firth had joined the meeting and, for his benefit, the Chairman gave a brief history of BICS and how it had originated from early discussions at BOF. Neil Loudon summarised the current position, noting the wider issue of professional competency coming to the fore post Grenfell. He repeated often made allegations that BICS was considered by some to be too onerous a test and too expensive.

Recognising Ian as a past-President of the IStructE, the Chairman asked for his views: Ian suggested that the issue of proving competency was broader than just that for bridge inspectors and agreed that the fallout from Grenfell might even extend to formal registrations. He challenged the Professional Engineering Institutions (PEIs) to take a top-down lead but also encouraged clients, especially Governments and other public sector bodies, to insist on only using professionals whose competency was proven. He also suggested that the role of SCOSS and CROSS could be extended to help push all competency initiatives.

The Chairman noted that BICS was owned by UKBB and urged the Board to insist on its uptake. Neil and Hazel agreed to provide an update once the BICS Steering Committee had met with LANTRA.

ACTION 18: Neil Loudon/Hazel McDonald

5. M4 Emergency Closure

Despite some IT issues, but ably assisted by Nilushi Perera, Jason Hibbert set the context for this presentation which he had previously mentioned at BOF 62. He agreed that the presentation could be uploaded to the members only section of the BOF website.

ACTION 19: Jason Hibbert/Paul Fidler

Jason gave a brief summary of the Welsh Government's bridge stock on their Motorway and Trunk Road network: 1171 bridges with a gross asset value of £19.4bn, mostly built in the 1960s to 1990s. Of these, there were 16 bridges with concrete hinges and 27 with half-joints; there were 83 post-tensioned bridges. The Welsh Government had developed bridge management strategies, structure management plans and life cycle plans to manage the stock.

The bridge in question carries the M4 over the River Tawe just north of Swansea. It is a three-span structure with half-joints in the centre span which were the limiting factor in the bridge's restricted ALL of 23 Units of HB. The condition of the half-joints had deteriorated to the point where intervention was needed in the form of 35 m² of concrete repairs. No day time lane closures are permitted on the M4 so works had to take place at night under localised lane closures and phased accordingly.

A pre-works inspection, including hammer testing, had revealed that the area of de-laminated concrete was more extensive than had been thought so a change of method of concrete removal was introduced, using hydro-demolition. Unfortunately, more concrete was removed than had been intended which compromised the load carrying capacity of the bridge and meant that the lane closures had to be in place until such time as full repairs had been completed.

Nilushi Perera summarised the lessons to be learnt from this event:

- Poor communication
- Complacency, mainly by the hydro-demolition contractor (who was sub-contracted to another sub-contractor)
- Over complicated RAMS
- The need for clear visual, diagrammatic instructions

With permission from the Chairman, Ian Firth asked about procurement and supervision arrangements. Paul Thomas also questioned whether the hydro-demolition team had been made aware of the constraints. In response, Jason Hibbert suggested that there was a loss of control by the Supervisor when the supply chain became over extended and, similarly, procurement usually focussed on the main contractor or maintaining agents and less so on sub-contractors.

Hazel McDonald and Philip Gray asked about the condition of the half-joints and how they were monitored. The problem was mainly in the free half-joint where longitudinal movement could take place and the internal faces of the half-joints were almost impossible to inspect, let alone repair. Monitoring was mostly visual although some crack gauges had been fitted. The bridge had been classified as provisionally sub-standard in accordance with BD 79.

The Chairman thanked Jason and Nilushi for presenting on what was not an easy subject matter but pointed out the value of knowledge sharing after mistakes had been made.

6. Future Bridges?

The Chairman introduced Ian Firth, formerly of Flint and Neill/COWI and past President of the IStructE. Ian is an internationally recognised bridge expert and, since leaving full time employment is now a consultant, both in his own right and also with COWI. Ian had presented at the NCE Future of Bridges in November 2019 and had accepted an invitation to give a similar message to BOF. Ian agreed that his presentation could be uploaded to the BOF website.

ACTION 20: Richard Fish/Paul Fidler

Ian began with a reflection on the collapse of Cleddau Bridge in 1970, as well as other similar box girder bridges which failed around the same time, including Westgate Bridge in Melbourne, and the consequential Merrison inquiry. He cited Sir Alec Merrison's report and recommendation on the need for independent checking which was as pertinent as ever. Ian also raised the wider issues of competence and the need to better manage risk transfer through procurement, especially in design and build projects in which funding for checks and scrutiny was often cut in order to be seen as more competitive.

Ian then looked at the issue of carbon and climate change, noting the statistic that 39% of carbon being discharged into the atmosphere was attributed to the construction sector. He suggested that we, as engineers, need to recognise that we are part of the problem and start to measure carbon in our structures. There was also a need to address the carbon issue in procurement: the quality aspect of tenders needed to include carbon management and price must include predicted long-term maintenance.

The Chairman thanked Ian for his informative presentation and noted that much of his subject matter had featured on recent BOF agendas. Neil Loudon picked up one of Ian's points and confirmed that AIPs might be modified to consider carbon and sustainability within the technical approval process.

7. Decarbonising Road Freight

The Chairman introduced Professor David Cebon, also from CUED, a Mechanical Engineer but with a message that should be of interest to bridge engineers on a number of levels, including carbon reduction and heavy vehicle loading. David's presentation will be uploaded to the BOF website.

ACTION 21: Paul Fidler

David expanded on some of Ian Firth's presentation and the urgent need to address global temperature rises, recognising that, come 2028, it will be too late to keep below the current target of 1.5°C. Considering a number of fuel technology options, David gave a rigorous analysis of the costs and benefits, and ultimately the practicalities, of switching fuels for commercial vehicles. This included blue or green hydrogen, seen by some as the panacea for addressing carbon, which David demonstrated as being unfeasible with current technology and within the necessary timeframe.

David considered that the “low hanging fruit” in starting to make progress in addressing the carbon issues were the use of electric delivery vehicles in urban areas and the introduction of high capacity commercial vehicles (up to 50t) on strategic routes, combined with an improved management system designed to minimise the amount of time that trucks were returning empty having completed a delivery.

The Chairman invited questions and Paul Thomas queried the practicality of optimising the load carrying time, citing supermarket deliveries which had to return at best with only packaging for recycling. David recognised that this would have some limitations (he noted fuel tankers as an example) but noted that a much higher level of collaboration was needed than presently exists.

The chairman thanked David for his thought-provoking presentation and suggested that bridge engineers needed to be alert to the almost inevitable issue of increased vehicle weights.

8. Infrastructure Safety – Links with ICE

The Chairman welcomed Mark Hansford, recently appointed as Director of Knowledge at the ICE and formerly NCE editor, and Julie Bregulla of BRE and a member of the ICE Council. Julie had been part of Peter Hansford’s “In Plain Sight” team and was continuing to take a key role in the ICE’s drive to ensure that our infrastructure remained safe. She had been a member of a Panel (along with Dame Judith Hackitt and BOF member Hazel McDonald) for an on-line ICE Strategy Session on this subject in April. Julie and Mark agreed that their presentations could be uploaded to the BOF website.

ACTION 22: Paul Fidler

Julie began by discussing some of the emerging lessons from the Grenfell Tower fire around governance, professional competence and knowledge sharing and the implicit trust that the public needed to have in the safety of all infrastructure. She also noted the relevance of the topic to bridge engineers as Hazel McDonald had pointed out during the ICE Strategy Session. Mark went on to consider the ICE role especially with regard to ensuring that CPD was not only being undertaken but was also relevant.

The Chairman thanked Julie and Mark for their presentation and agreed that there was a significant overlap between discussions at BOF and at the ICE. He invited questions:

Richard Fish expanded on this point, citing specific areas of concern expressed at BOF meetings in the recent past such as the need for engineering input into procurement, whole life valuation, the need for supervision on site, the risks of relying of self-certification and knowledge sharing. On the last of these, he repeated BOF calls for an independent body charged with investigating highway bridge failures along the lines of the RAIB for rail bridges. The Chairman linked this to one of Ian Firth’s points from earlier in the meeting regarding the need for designs to be checked. He went on to ask who should take the lead in all of this: ICE, Construction Leadership Council (CLC) or

even the National Infrastructure Commission (NIC)? Mark Hansford replied that ICE were working closely with the CLC. Julie Bregulla noted that regulatory and investigatory bodies in most other sectors had initiated within that profession rather than being imposed externally. She also confirmed that there was no statutory role for the HSE in these situations but only one of facilitation. Julie also made a comparison to the ICE's role in the Reservoirs Act and an extension of this type of arrangement might be considered.

Referring to wider competence issues, the Chairman reprised the background and reasons for BICS and suggested that proving professional competence should not be optional. Richard Fish agreed, noting that IStructE have mandatory CPD recording and, in the event that a member has not submitted records, this is noted both on the website and on their membership card. Mark Hansford considered that this would very likely be the outcome for ICE and might also extend to a formal mid-career Review; a number of options on this were now under consideration.

Hazel McDonald suggested that there could be a strengthening of SCOSS and CROSS, referring to Alastair Soane's previous presentations at BOF when he had emphasised the need to identify precursors. Philip Gray questioned whether the ORR might have a wider role, recalling that they had been supportive when attending BOF 63 in January. Richard Fish replied that, although ORR support would be useful, they were unlikely to take a lead.

In terms of reporting failures and sharing knowledge, Keith Harwood suggested adding some guidance on best practice in Well Managed Highways or even the DMRB. Jason Hibbert suggested that questions on collapses, failures, investigations and knowledge sharing might be included in the next survey to be undertaken by the RAC Foundation. It was agreed that this should be raised with them.

ACTION 23: Kevin Dentith

The Chairman thanked Julie and Mark for their presentation and contribution to the discussion.

9. Designing for Maintenance

The Chairman welcomed Andy Hodgkinson of Hewson Consulting Engineers (HCE), representing the Steel Bridge Group of the SCI. Andy had presented on the findings of a recent survey in which BOF members had been asked to participate at the Bridges 2020 conference and this was an opportunity to drill a little deeper into some of the outcomes. As operation and maintenance (O&M) problems were likely to be similar for concrete bridges, Richard Day of the CBDG had also been invited to participate in the debate. Andy reprised his presentation from the conference, including some background to the survey and information on the SBG, which he agreed can be uploaded to the members only area of the BOF website.

ACTION 24: Paul Fidler

The fundamental questions which the survey had posed were to ask for opinions on the causes of maintenance issues, such as design, specification, workmanship, lack of maintenance etc. and to identify the issues which were most problematic and costly in terms of interventions in the last five years.

The top five were as below:

1. Corrosion protection systems (especially corners and edges which might imply that stripe coats are not being applied correctly)
2. Accessibility
3. Waterproofing
4. Hidden critical elements
5. Expansion joints.

Root cause analyses had shown that design shortcomings had a significant role in all of the above (apart from number 1). The figures also suggested that operation and maintenance were only taken into account in the design stage for about 53% of bridges. Andy suggested that this might need to be considered in any redrafting of the AIP form, also a recommendation in the CIRIA Report 764 on Hidden Defects. He also asked whether more guidance was needed for O&M.

Before inviting questions, the Chairman asked Richard Day to comment. Richard replied that there were probably very similar issues in the concrete bridge sector and the outcomes of the SBG survey were unlikely to be significantly different if another was to be conducted by the CBDG. Hazel McDonald who is the current chair of the CBDG, noted that there was guidance available, such as the old BD57 Design for Durability, but questioned whether it was in widespread use.

Referring to Technical Approval, Philip Gray noted that TfL tended to address all O&M questions before the AIP stage. Jim Booth suggested that integral bridges should be more widely used with no bearings or joints. Andy Hodgkinson agreed, referencing a multi-span bridge in Wales that HCE had designed. Neil Loudon highlighted the bigger issues currently facing Highways England which were fatigue details, water management in the round and the competence issue that had been raised throughout this meeting.

The Chairman concluded the discussion by thanking Andy and Richard for their contributions.

10. Grand Challenges – What Next?

The Chairman congratulated Keith Harwood on his efforts to get the Grand Challenges document into shape and ready for launching at the Bridges 2020 conference in March.

Discussions then centred on what should happen next and it was agreed that the Grand Challenges document – either the A5 booklet or the pdf – should be sent to as many

contacts as possible. Richard Fish agreed to include Grand Challenges in his action to contact Helena Russell and it was agreed that others should look for any opportunity that may arise with other parties.

ACTION 25: Richard Fish/All

The debate then focused on GC5: “Securing a Competent and Diverse Workforce” with the emphasis on competence and its relevance to BICS. Hazel McDonald suggested that one of the problems in the poor take-up was the number of rival schemes which were seen as an easier (and cheaper) alternative. The Chairman asked the meeting what their policy was for ensuring that inspectors were competent. As previously, the response was mixed with some (eg Transport Scotland and TfL) fully committed to require BICS as standard in the next round of inspection contracts. Others (eg Canal and River Trust and Forestry England) are still relying on using experienced inspectors for low risk bridges and external consultants for the more complex structures.

In conclusion, the Chairman again encouraged the use of BICS qualified inspectors and, returning to Grand Challenges, repeated his thanks to Keith Harwood.

11. Feedback from UKBB – 20th May 2020

Those BOF members who had also been present at UKBB recalled how well the Teams meeting had worked. The only other item specifically reported was Matthew Gilbert’s presentation on his new masonry arch assessment project. Philip Gray chairs the Steering Group and noted that the final version should be issued to CIRIA ahead of publication by the end of June.

12. Update on Current Bridge issues and/or Research

The Chairman invited BOF members to give an update on any pressing issues or involvement in research projects.

a. **Highways England**

DMRB: Neil Loudon reported that the DMRB re-write had been completed as required by 31st March. There were two exceptions: Structural Safety Reporting and Scour Management, both of which were the subject of ongoing discussions with HE Operations teams. Neil also noted the MCHW was programmed for re-writing next year.

b. **RBT**

Data collection: Referring to earlier discussions on the need for valuable bridge data, Jim Booth argued that it would be worth investigating whether all owners’ databases could be combined to provide a better picture of the national bridge stock.

c. **ADEPT**

SAVI: Keith Harwood confirmed that the SAVI tool had been launched on the day of the Bridges conference and that it was available on the UKRLG website, along with a short explanatory video which was the original conference presentation that he had been planning to give with Mike Smith from Arup.

d. **Railway Paths**

New Masonry Bridge: Inspired by part of Ian Firth's presentation, Paul Thomas questioned whether new masonry bridge designs were a realistic proposition. Osian Richards said that Gwynedd County Council hoped to see one built next year. Discussion then switched to Flexi-Arches and a number of BOF members recounted their experience with their construction. Liam Duffy had encountered significant programme issues with the producer of two flexi-arch bridges in Ireland and noted the concrete units contain an element of steel which requires consideration from a durability perspective.

e. **Network Rail**

Colin Hall reported on the following:

- i. **Retaining Walls:** Prioritisation tool being developed.
- ii. **UAVs:** Ongoing work with Waldeck and Huddersfield University on the use of drones. The Chairman asked if anyone else had experience of UAVs; Hazel McDonald replied that Transport Scotland had been using laser scanning to validate bridge heights on high load routes. She suggested, and others agreed, that the major issue with the use of UAVs was one of data storage.
- iii. **Fatigue:** Assessment programme soon to start and also research into FRP strengthening of fatigue prone details.

f. **CUED**

The Chairman gave updates on the following:

- i. **Scour detection using satellite technology or sensors:** The former is a feasibility study involving Highways England and WSP expanding on earlier work presented at BOF by Sakthy Selvakumaran. The sensors monitor vibration and can also give advanced warning of failure.
- ii. **CDBB:** As reported at BOF 63, the CDBB have been working with the Staffordshire alliance where sensors had been built into two new bridges as well as building digital twin models. This will be presented at a future meeting.

ACTION 26: Chairman/Richard Fish

- iii. **Off-site Manufacturing:** The CIRIA report is to be launched in early in June, based on school construction.

13. BOF Accounts

The Chairman shared a screen showing a spreadsheet of BOF income and expenditure in recent years which showed that the BOF was no longer operating at a deficit. For this reason, there would be no increase in subscription for 2020/21 and invoices would shortly be issued.

ACTION 27: Chairman

The Chairman also asked for a copy of the spreadsheet to be issued with the BOF 64 minutes.

ACTION 28: Richard Fish

14. Any Other Business

- a. **Virtual Meetings:** The Chairman asked for feedback on the use of Zoom for this meeting and also on the number of external presenters. There was a short discussion where it was generally agreed that the format had worked reasonably well but it was also agreed there were additional benefits of face to face meetings which were missing today. Richard Fish agreed to issue a short questionnaire to glean individual feedback.

ACTION 29: Richard Fish

15. Next Meetings

BOF 65: It was agreed that this would be on Tuesday 27th October 2020 and would almost certainly be another virtual meeting.

BOF 66: The date will be arranged for late January 2021 and would hopefully be in Cambridge and possibly combined with a celebration of 20 years of BOF.

16. Close

The Chairman closed the meeting, thanking everyone with the way they had coped /put up with the technology.

Richard Fish,
BOF Technical Secretary,
2nd November 2020