

**BRIDGE OWNERS FORUM**  
**MINUTES OF BOF 70: WEDNESDAY 15 JUNE 2022**  
**in THE BRIDGE CHAMBER,**  
**ROCHESTER BRIDGE TRUST, ROCHESTER**

**PRESENT:**

Bill Bryce	SSE
Hugh Brooman	LoBEG
Kris Campbell	Department for Infrastructure - Northern Ireland
Andy Featherby	C&RT
Paul Fidler	CUED
Richard Fish	Technical Secretary
Tomas Garcia	HS2
Colin Hall	Network Rail
Jim Hall	CSS Wales
Keith Harwood	ADEPT
Nicola Head	TfL
Neil Loudon	National Highways
Steve Pattrick	Big Bridge Group
Martyn Thomas	SSE
Paul Thomas	Railway Paths Ltd.
Sue Threader	Rochester Bridge Trust

**Guests:**

Abdullah Elgayer	TfL
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## 1. Welcome

This meeting coincided with a visit to Australia by BOF Chairman, Cam Middleton, as part of his sabbatical year and, as it was being hosted by the Rochester Bridge Trust (RBT), it had been agreed that Sue Threader, RBT's CEO, would be chair.

This was the second of a two-day visit and the attendees had enjoyed an excellent day one, with the highlights being a boat trip on the River Medway, focussing on bridges and local history, a walking tour of the RBT bridges and an evening dinner, all hosted by RBT. The meeting expressed their gratitude to Sue, her team, and the RBT trustees, for an excellent day.

Sue reiterated her welcome of yesterday but noted that she was continuing her campaign to net zero carbon by calculating the full carbon footprint for the meeting, including the exact travel arrangements made by each member to and from Rochester. The figure was to be announced at the end of the day.

## 2. Introductions and Apologies

In keeping with tradition, those new members, substitutes and guests were invited to give a short introduction.

Hugh Brooman was attending this meeting as a representative of LoBEG. Hugh noted various changes in senior positions in LoBEG and, until new chairs etc. had been appointed, he had agreed to attend BOF on their behalf. He is now semi-retired, having spent 30 years with the Surrey County Council bridges team.

Kris Campbell is the new BOF representative for the Department for Infrastructure (DfI) in Northern Ireland following a change of role for Daniel Healy. Kris heads the Highway Structures Unit with responsibility for about 7,000 structures. He has worked for the DfI for over 11 years, having previously worked in a private consultancy carrying out underwater inspections on bridges and port quay facilities with trained engineer divers. Kris has a long-standing interest in bridges and a passion for heritage structures. He is also undertaking a part-time PhD project with Queens University of Belfast looking at managing scour at bridges.

Abdullah Elgayer works with Nicola Head at TfL and was attending this meeting as a second invitee guest. He has 15 years' experience and currently works primarily on asset management systems, including BridgeStation.

Having attended BOF 66 on Zoom, Steve Patrick was attending his first face-to-face BOF as a substitute for Trish Johnson representing the Big Bridge Group. Steve is the Structures Asset Manager for Connect Plus M25 with the Dartford Crossing among his responsibilities. He had worked on the design and construction of the QE2 bridge before joining the, then, Dartford River Crossing operating company from where he had been TUPEd a few times to the present agency. Steve had previously worked for Freeman Fox and Cementation/Trafalgar House.

Martyn Thomas had also attended BOF 66 on Zoom but will succeed Bill Bryce as the SSE representative on BOF when Bill retires in July. Martyn grew up near, and was inspired by, Telford's Pontcysyllte aqueduct. He graduated from Loughborough University in 2003 and worked for consultants before joining SSE where he has responsibility for about 400 bridges.

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

Nick Burgess	LUL
Malcolm Cattermole	Forestry England
Graham Cole	Heritage Railways Infrastructure Group
Henry Dempsey	SCOTS
Liam Duffy	Transport Infrastructure Ireland
Jason Hibbert	Welsh Government
Trish Johnson	Big Bridge Group (Steve Patrick substituting)
Gary Kemp	DfT

Apologies (contd.)

Hazel McDonald	Transport Scotland
Campbell Middleton	CUED (Chairman)
David McKeown	Environment Agency
Osian Richards	CSS Wales (Jim Hall substituting)

Richard also noted that an invitation had been sent to Mark Cox at DfT but he had not responded.

### **3. Matters Arising from BOF 69 Minutes**

The Chair confirmed that the accuracy of the BOF 69 minutes had been approved by email and that they were now on the BOF website.

She then referred to the BOF 69 Action Update sheet that had been issued with the agenda:

#### **Action 3: CROSS**

Neil Loudon noted that both National Highways and Network Rail had strengthened ties with CROSS and were working on improvements to sharing mechanisms between parties on structural and fire safety issues.

#### **Action 5: TII Sustainable Procurement Guidance**

It was agreed that this should be presented at a future meeting.

ACTION 1: Liam Duffy/Richard Fish

#### **Action 6: A465 mutual Investment Procurement Model**

It was agreed that this should be presented at a future meeting.

ACTION 2: Jason Hibbert/Richard Fish

#### **Actions 7 & 8: BridgeCat**

Keith Harwood reported that attempts to find out more about BridgeCat had come to naught, but he agreed to keep trying.

ACTION 3: Keith Harwood

*Post meeting note: At the UKBB meeting on 23<sup>rd</sup> June, Gary Kemp (DfT) reported that he had met with Gaist about possible further use of BridgeCat and they had agreed to come back to DfT with a costed proposal. It is assumed that progress will be reported at UKBB meetings for onward transmission to BOF.*

#### **Action 9: AustRoads Task Force – Bridge Technology Task Group**

It was agreed that this item should be deferred until the BOF Chairman returned from his sabbatical.

ACTION 4: Chairman

**Action 10: BCI Review**

Nicola Head advised that this work was continuing but was not ready for wider circulation as yet. She agreed to issue a progress report as soon as possible for discussion at BOF 71.

ACTION 5: Nicola Head

**Action 12: Clifton Bridge Carbon Counting**

It was agreed that this should be presented at a future meeting.

ACTION 6: Trish Johnson/ Richard Fish

**Action 13: Suicide Prevention**

It was agreed that an agenda item reviewing current best practices should be programmed for BOF 72.

ACTION 7: Trish Johnson/All/ Richard Fish

**Actions 16 & 17: Use of UAV with Thermal Imaging Camera**

It was agreed that these items should be considered at BOF 71.

ACTION 8: Jason Hibbert/Graham Cole/ Richard Fish

**Actions 24 & 25: DfT**

Attempts to engage with DfT to continue.

ACTION 9: Hazel McDonald/ Richard Fish

**Action 30: Blade Bridge**

Possible presentation at a future meeting to be discussed.

ACTION 10: Liam Duffy/ Richard Fish

**Action 31: HVMC Catapult**

After some discussion it was agreed that this topic should not be pursued at this stage.

**Action 33: Technical Approval and Carbon Reduction**

NAA work to be shared at a future meeting.

ACTION 11: Jason Hibbert/ Richard Fish

**Action 34: Lightweight Material Options for Infilling Structures**

Some further discussion and any ideas still welcomed.

**Action 36: QUB Scour Research**

Kris Campbell referred to earlier email exchanges between Myra Lydon at QUB and Daniel Healy and suggested that a presentation at a future BOF might be worthwhile.

ACTION 12: Kris Campbell/ Richard Fish

Richard Fish noted that discussions had also taken place between Myra and a QUB research colleague, both with him and Hazel McDonald on bridge performance

indicators. It was agreed that Hazel and Richard should discuss a possible presentation on this topic at a future BOF meeting.

ACTION 13: Hazel McDonald/ Richard Fish

**Action 38: Working with Local Academia**

After discussion, it was agreed that a proforma should be prepared to capture all such initiatives. Refer also to Item 13.

ACTION 14: Richard Fish

**Action 41: Additional Attendees at BOF Meetings**

It was agreed that this practice should continue irrespective of meetings being in person or virtual.

ACTION 15: All

**4. Review of Uncompleted Actions from Previous BOFs.**

Richard Fish had prepared a summary sheet which tabulated all uncompleted actions going back to BOF 63 in January 2020. The Chair used this to review each action in turn.

**Action 63/2: Eastham Bridge Collapse**

Richard Fish recalled that Eastham Bridge in Tenbury Wells, Worcestershire, had collapsed, without warning, in May 2016. It had been hoped that results of a Worcestershire County Council investigation would have been shared, especially within ADEPT circles. Nothing had been forthcoming and eventually Richard had asked for this under an FoI request. Although Richard had advised that the information he had obtained could not be shared widely, he had intimated that the investigation was not as detailed as might have been hoped; the WCC Committee report just said that the cause was “fast flowing water”. Kevin Dentith had agreed to try again, and this was the BOF 63 Action. Keith Harwood believed that nothing more had been received but he agreed to approach WCC once more.

ACTION 16: Keith Harwood

**Action 63/3 & 64/4: Grand Challenges and BOF in the media**

See Action 63/5 below

**Action 63/4 & 63/8: TRIB**

Neil Loudon gave some background information on TRIB (Transport Research and Innovation Board) noting also that the Chairman has a position on it. It was agreed that BOF should no longer proactively pursue any TRIB issues but would respond to any specific initiatives.

**Action 63/5: BOF Website**

It was noted that a recurring action from BOF meetings had been to upgrade the BOF website, but this had proved difficult due to a lack of resources at CUED. Paul Fidler gave a brief account of how the site had been established and how it was now managed.

The Chair recounted that when she had broached the idea of RBT hosting a BOF meeting with her Senior Warden who, when he researched BOF via our website, had remarked how much the site was in need of improvement. Discussions had then taken place which established that such an upgrade was eligible for RBT support as it fell within one of the aims of Trust’s charitable status. It was agreed that this idea should be developed and led by a small working group of Sue Threader, Richard Fish, Paul Fidler and Keith Harwood.

ACTION 17: Sue Threader/ Richard Fish/Paul Fidler/Keith Harwood

Sue also offered to contact the Chairman to seek his approval for this proposal.

ACTION 18: Sue Threader

*Post meeting note: Sue duly emailed Cam on 16<sup>th</sup> June 2022 stating that this was the will of the meeting and that she would proceed unless he objected. By 4<sup>th</sup> July 2022, no reply had been received so the upgrade is going to progress as outlined above.*

**Item 63/6: BOF LinkedIn Group**

Now well over two years since being set up, the BOF LinkedIn Group had a grand total of 12 members (although this slightly increased as the meeting progressed!) The general consensus was that it was potentially a useful platform but also that it should be reviewed at BOF 73, in about a year’s time

ACTION 19: Richard Fish

**Item 63/9: BOF “White Paper”**

It was agreed that this remained a good idea and should be linked to the Grand Challenges and programmed for the launch of the new website. Richard Fish will prepare a draft.

ACTION 20: Richard Fish

**Item 63/11: Vehicle Overloading**

Neil Loudon reported that this was a research project which was originally to have been funded jointly by DfT, National Highways, Transport Scotland and the Welsh Government. It seemed that DfT funding had yet to be confirmed but research was still needed. Neil understood that Transport Scotland had made some progress and it was agreed that this should be discussed at UKBB.

ACTION 21: Neil Loudon/Hazel McDonald

Neil also reported on the potentially more significant issue of an increase in Gross Vehicle Weight to up to 60 tonnes that was being mooted in Whitehall. This had seemingly arisen in discussions between government and the road haulage sector as an

option to boost the economy and reduce congestion. It appeared, however, that no thought had so far been given to the effects on infrastructure.

**Item 63/19 & 63/20: Investigation into UK Highway Bridge Collapses**

Richard Fish summarised the current situation and noted that this was a high priority on the UKBB research list. No word, however, had been received from UKRLG or DfT on funding allocations. It was agreed that this should continue to be supported and that discussions should continue at UKBB. It was also agreed that collapses, and the need for detailed investigations and knowledge sharing, should both feature prominently on the new BOF website and be linked to Well Managed Highways (Part C).

ACTION 22: Richard Fish

**Item 63/22: Procurement Issues**

It was agreed that, although this remained an important issue, it was recognised that this was a much broader issue than just bridges. Richard Fish reported that he (together with Neil Loudon, Hazel McDonald and Tomas Garcia) had been invited to attend the IABSE Henderson Colloquium in Cambridge in July which was focusing on carbon and procurement. Although Chatham House rules would apply, it was agreed that some anonymised feedback could be given at BOF 71.

ACTION 23: Richard Fish/Neil Loudon/Hazel McDonald/Tomas Garcia

**Item 63/26: Structures Toolkit**

Keith Harwood confirmed that the toolkit had been formally approved by CIPFA.

**Item 63/27 & 66/17: Comparison of Bridge Management Systems and Tools**

It was agreed that a meeting dedicated to comparisons of existing systems would be of limited benefit. It was felt, however, that ideas on how to future-proof systems with respect to data management might be of wider interest. Colin Hall agreed to lead on an item on the linking of data management to operational management at BOF 71.

ACTION 24: Colin Hall/Richard Fish

**Item 64/1: TfL Sub-Standard Bridge Management Strategy**

It was considered that this would still be of interest and Nicola agreed to present on the subject at BOF 71.

ACTION 25: Nicola Head/Richard Fish

**Item 64/26: Staffordshire Rail Bridges Monitoring**

Paul Fidler reported that he was still involved in this project and considered that it would be of interest. He agreed that a presentation could be arranged for BOF 71 or BOF 72.

ACTION 26: Paul Fidler/Richard Fish

**Item 65/8: Learning from Lockdown**

The meeting agreed that this item was no longer needed.

**Item 65/19: International BOF**

It was agreed that this should be a decision left to the Chairman on his return from sabbatical. It was also agreed, however, that any such meeting should be focussed on a particular theme.

ACTION 27: Chairman

**Item 66/9: IABSE Group looking at Bridge Collapses**

As this group was being led by Russia, future collaboration looked doubtful. It was agreed, however, that this should be checked with Alastair Soane who had first raised the issue.

ACTION 28: Richard Fish

**Item 66/14: UK Bridge Governance**

It was noted that this topic was under discussion at UKBB.

**Item 66/23: HoloLens communication System**

It was agreed that this could be presented at BOF 71 or BOF 72.

ACTION 29: Richard Fish/Sue Threader

**Item 67/9: TII Sustainable Procurement Guide**

See Action 1 above.

**Item 67/11: Carbon Grand Challenge**

It was agreed that the Grand Challenges, although only launched in 2020, needed a specific reference to carbon as an over-arching challenge which should be central to the new BOF website. The appropriate working title of Grand Challenge Zero was proposed and agreed. Richard Fish offered to review the existing document and to draft GC Zero for consideration at BOF 71 and before a re-launch.

ACTION 30: Richard Fish

**Item 67/12: BOF Carbon Working Group**

It was acknowledged that this proposal had not really materialised. The fact that BOF has aligned itself with the Net Zero Bridge Group was thought to be an appropriate position.

**Item 67/23: A465 Sustainable Procurement Model**

See Action 2 above.

**Item 67/27: Bridge Inspection Collaboration with France**

This had been a Kevin Dentith initiative but was considered not to remain as part of BOF's business.

**Item 68/14: Design Life of Critical Elements**

Neil Loudon offered to present on this topic at BOF 71 or BOF 72.

ACTION 31: Richard Fish/Neil Loudon

**Item 68/21: Possible BOF Agenda Items on Monitoring and/or a Future Themed Meeting**

It was agreed that an item should be added to the BOF 72 agenda. Paul Fidler suggested that the Staffordshire Rail Bridge Monitoring (see Action 26 above) could also be included in such an item.

ACTION 32: Richard Fish

**Item 68/24: BCI Review**

See Action 5 above.

**Item 68/26: Clifton Bridge Carbon Counting**

See Action 6 above.

**Item 68/24: Suicide Prevention**

See Action 7 above.

**Item 4 Summary**

Richard Fish noted that it may not be possible to fit all of the above into the allotted meetings, but he agreed to work with presenters in the preparation of agendas.

ACTION 33: Richard Fish

**5. Net zero Initiatives – next steps for BOF?**

The Chair introduced this item, referring to the paper from Brian Duguid, the Chair of the NZBG, that had been issued with the agenda for this meeting. She noted Brian’s reference to the current PAS 2080 public consultation but, when she had attempted to view this, she had found the route to the web page required consultees to have a log-in code. She also recommended PAS 2060 which she had used for the RBT refurbishment project.

The Chair guided the meeting through the bullet points on Brian’s paper and noted her personal interest in the Carbon Data sub-group and the RBT experience of significant carbon being expended on workforce travel and diversion routes.

Neil Loudon noted that there was also a consultation on the Built Environment Carbon Database (BECD) and reflected on the large number of net zero initiatives running in parallel.

Rather than BOF attempt to formulate a collective response, it was agreed that member organisations should respond individually to Brian’s paper.

ACTION 34: All

With regard to standards, Neil Loudon reported that he had been in touch with the NZBG. He also noted much activity in this area both with new materials and in identifying research needs. One of these was low-carbon concrete, although Neil warned of the, as yet unknown, longer term durability and performance issues. He also

acknowledged the design implications and the need for National Highways to review CG 300, CD 350 and other standards. The Chair expressed concern that the lead-in times needed to develop new products could be at the expense of other carbon initiatives.

Tomas Garcia noted the inconsistencies that were creeping into HS2 carbon considerations with contractors promising varying CO2e reductions for similar concepts. He also reported that he had received a proposal which had mooted the removal of future maintenance facilities in order to save carbon! The Chair suggested that the hierarchy of need for any new build should be 1) fit for purpose, 2) carbon, and 3) cost. Design for maintenance was implicit in being fit for purpose.

Discussion returned to PAS 2080 and the meeting questioned whether it should become mandatory. Neil Loudon replied that National Highways had a team working on carbon but obtaining explicit guidance was difficult, especially in maintenance and renewal projects where more advice was needed.

Lastly, the Chair drew attention to the draft carbon KPI clause X29 which could be added to contracts. She recommended including it as a z clause in an ECC contract.

## **6. BICS Update**

As none of the other members of the BICS Steering Committee (Hazel McDonald and Graham Cole) were able to attend BOF 70, Neil Loudon gave a short presentation which he agreed could be uploaded to the BOF website.

ACTION 35: Paul Fidler
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Neil reprised the background to the scheme as well as updating on progress. He emphasised the fact that BICS was a Quality Assured scheme and required potential inspectors to be independently assessed; both will be a mandatory requirement for any competency scheme in the next version of CS 450. Neil also drew attention to the Building Safety Bill and its explicit requirement to demonstrate competence; Neil considered that this made the case for BICS even stronger. He also understood that professional competence issues were being considered by bodies such as ORR and NAO.

From National Highways point of view, Neil pointed out the importance of inspections in determining asset valuations, future interventions and works programmes, all of which would feed into the RIS3 period (2025 to 2030). To this end, National Highways were auditing 10% of their 11,000 annual inspection reports and providing feedback to managing agents. For TfL, Abdullah Elgayer agreed: all asset management and systems are totally reliant on inspection data.

Neil also commented on recent developments with BICS which had been delivered following industry feedback, particularly modularisation. National Highways had also commissioned WSP to assist with the Scheme administration. Neil acknowledged that

there was still room for further improvement but was encouraged by LANTRA's commitment to being more customer focussed.

In terms of numbers, these were improving; Neil noted that major clients (National Highways, Transport Scotland, Welsh Government and TfL) were committed to requiring BICS as part of their framework contracts. Other options for improvement were being considered such as formally making BICS a Community of Practice (as well as a National Sector Scheme), further module development, a possible link to a PEI and more support from DfT (which Hazel McDonald has requested via UKRLG).

On completion of Neil's presentation, the Chair invited questions.

Jim Hall questioned the extent of National Highways' audit of inspection reports which amounted to 1,100 checks; he suggested that by halving this number, BICS could be fully funded. Neil Loudon replied that the 10% level of checking had been derived as there was a need to improve overall inspection performance. He also noted that National Highways contribution to BICS to date was not inconsiderable. Jim went on to reprise the argument that the Scheme was too expensive; the fact that local authorities would not cover incurred costs meant that individual inspectors had to pay their own fees etc. Inherent in this premise was the issue of Councils no longer receiving ring-fenced funding, leaving local politicians to allocate budgets as they saw fit. He suggested that a compromise might have to be reached in that there would be one scheme for consultants and another for Local Authority in-house staff. There was also the issue of convincing senior council managers that bridge inspectors were more important than highway inspectors. Finally, Jim felt that asking individuals to pay for BICS was the equivalent of having to pay for a professional qualification without actually having one.

Noting that RBT needs to be sure that its consultants' inspectors are competent and qualified, the Chair asked if a register of inspectors might be helpful and whether bursaries might be used to fund BICS accreditation for individuals. For the former, Neil Loudon replied that this was under consideration. As for the latter, he understood that such an option would not be acceptable as it would replace Local Authority funding for their own obligations.

Paul Thomas suggested that, if BOF and UKBB, continued to push BICS, a tipping point would eventually be reached, and numbers would grow. Keith Harwood agreed, although thought that this might take a long time. Neil Loudon suggested that there was little option other than to keep the momentum going and confirmed that LANTRA would continue to have support from National Highways.

## **7. Swing Bridge Incident**

Following his verbal report at BOF 69, Andy Featherby gave a presentation on this incident which had occurred on the Purton Upper Swing Bridge over the Gloucester

and Sharpness Navigation in November 2021. He agreed that the presentation could be uploaded to the BOF website, but only in the members' area.

ACTION 36: Paul Fidler

For this reason, specific details are not recorded in these minutes, but Andy described the background to the incident which occurred at a time when M&E works were being prepared and reviewed on site. An investigation had been undertaken which had concluded that, although the bridge had been designed to resist overturning when subject to loading of 4.6T on the nose span, the combined effect of the hydraulic slewing cylinder position relative to the pintle, and the presence of two people on the bridge when it had been opened, had led to the tipping.

## **8. DMRB and MCHW Update**

Reporting on progress in this area, Neil Loudon gave a presentation which he agreed could be uploaded to the BOF website.

ACTION 37: Paul Fidler

Neil began by posing the question, why do we have standards? Answer: to ensure both safety and consistency. He noted the occasional allegations that standards inhibit innovation but argued that standards set the baseline that support innovation. Tomas Garcia noted that the former view had often been put to him by consultants working on HS2.

Neil also noted the continuing relationship with Europe, not least the second generation of Eurocodes which were now being prepared. He advised that National Highways takes a leading role in influencing other European countries and also consider any lessons to be learnt from collapses. As an aside, he noted that the process of Technical Approval had arisen from the Merrison inquiry into box girder bridge collapses in the early 1970s.

Turning to the DMRB, Neil recounted the process leading to its republication by March 2020 which had seen 100 standards reduced to 60. Only one remained outstanding – on scour. National Highways were now reviewing the feedback loop: a formal review process which will take place every three to five years to determine if the standards remain fit for purpose and whether any changes are needed. On occasions, this will lead to revisions. Additional factors such as carbon, climate change, data management etc. will also need to be incorporated as necessary.

On the review of the MCHW, Neil advised that although this was to be completed by March 2025, everything had to be drafted by December 2023. This was a challenging timescale as a considerable amount of resource was needed to meet these deadlines. A knock-on effect of this was to potentially delay DMRB revisions but Neil suggested that the MCHW review was also important in embedding some of the issues noted above.

## 9. Safety Critical Fixings Standard

Neil Loudon reported that he was drafting a standard to complement the CIRIA guidance on this topic, with support from colleagues from Scotland, Wales and Northern Ireland. It is currently being reviewed by National Highways' publication team, but full implementation may also require National Annexes. The next step would be a six-week consultation period before proceeding to publication.

## 10. Performance of FRP/GRP Replacement of Timber Decks

Paul Thomas presented on this topic following on from his reference to it at BOF 69. He agreed that the presentation could be uploaded to the BOF website.

ACTION 38: Paul Fidler

Paul began by noting that trials had only ever taken place on footbridges but both FRP and GRP had been used. The main benefits arose in very rural locations where footbridges might be located under foliage and timber would be subject damp, rot, and tree residue accumulations. He had received alternative tenders for the Bennerley Viaduct deck which had offered FRP but imported from China! Eventually a UK option had been chosen.

Paul advised that some plastic decking uses recycled milk bottles and offers good durability as well as being resistant to vandalism. Such plastics can work well with support spacing of 300 to 400mm. He cited Stobo bridge near Peebles, designed in 2011 by Cass Hayward and Partners, which was still in good condition.

Replying to a question from Jim Hall, Paul advised that plastic compared well with respect to timber and that it was readily obtainable. Kris Campbell asked about pollution concerns with site cutting and Keith Harwood echoed this point, suggesting that the long-term environmental damage was as yet unknown. The Chair asked if there were likely to be any concerns from Conservation Officers. Paul replied that Bennerley Viaduct was a Grade II Listed Building and that they had been very supportive of the material on that project.

## 11. Use of UAV inside a Box Girder Bridge

Having mentioned this at BOF 69, Neil Loudon gave a short presentation on the use of a drone inside box girders on the A38 in Devon; he agreed that this could be uploaded to the members only area of the BOF website.

ACTION 39: Paul Fidler

Neil warned that inspections with UAVs should be *additional* to normal inspections and would continue to have limitations; any critical elements which were difficult to see should always be inspected in accordance with National Highways' requirement of two-yearly inspections. That said, current software enabled defects to be identified automatically, rather than an inspector having to look at hours of drone video footage.

The UAV itself had collision resistant protection but was limited to only ten minutes of flying at any one time. Even so, the inspection had been completed within half a day. The next trial was to use a smaller drone on the Severn Bridge, followed by others on culverts, rock slopes etc.

Tomas Garcia noted that it was possible to pre-program flight paths; Steve Patrick advised that he was aware of this being undertaken on the Great Belt Bridge. Neil Loudon preferred having an operator who could respond to possible defect sightings in real time. Replying to a question from Hugh Brooman, Neil confirmed that image quality was excellent and concluded this item by adding that UAVs would be a very useful addition to inspection regimes.

## **12. HRE Infilling of Bridges: What is BOF's Position on this?**

Richard Fish introduced this item by referring to a note from Graham Cole that had been issued with the agenda for this meeting. This related to the infilling of Great Musgrave bridge which had received much negative press coverage and a retrospective planning application had just been refused. Graham's point was that HRE should be assessing bridges to the DMRB standards, especially CS 454, and also to take into account the recommendations of C800 which will eventually be incorporated into the next revision of CS 454. Richard suggested that there were two choices for BOF: either stay neutral or express an opinion.

Keith Harwood noted that HRE have agreed that this was not their finest hour but had also taken steps to improve their future consultation processes, including the establishment of an Advisory Group of which he is a member.

The Chair suggested that concrete infilling was not an appropriate solution for dealing with a failed assessment in any circumstances, but Jim Hall said that he would never rule it out.

The meeting was positive about the forthcoming C800; and Neil Loudon confirmed that it would be incorporated in the DMRB. The general consensus, however, was that HRE were unlikely to have another Great Musgrave episode and, accepting that BOF membership includes government organisations, it was agreed that BOF should not take a formal position on this matter.

## **13. Updates on Current Bridge Issues and/or Research**

In the interests of timekeeping, the Chair proposed, and it was agreed, that this item should not be taken and a proforma issued so that individual organisations could enter the details in their own time. These could then be widely issued between meetings and, as appropriate, added to the following meeting's agenda. Richard fish agreed to prepare a proforma which will be issued with the draft minutes of this meeting.

ACTION 40: Richard Fish
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## **14. Bridges 2022 Conference, Workshops and Awards – Review and Suggestions for 2023**

Richard Fish reported that he was having a series of meetings with José Sanchez (including the previous evening when José had been a guest at the dinner hosted by RBT) to attempt to inform next year's event. The principal issues were the content of the conference presentations, the format of the workshops and the award categories.

The Chair suggested that, if there had to be two streams, one should be for maintenance topics and the other for new builds. She also suggested that the workshops should be more focussed and more explicit in terms of leadership and expected participation. Paul Thomas thought that projects with a story behind them were popular – such as Bennerley and Clifton from last time. Keith Harwood suggested that the preference should be to have good speakers talking about interesting subjects. Jim Hall agreed, adding that the topics should be “inspirational”. Tomas Garcia noted that knowledge sharing should be an important part of the conference. Hugh Brooman suggested that international projects were only of general interest and that the conference should be more UK orientated.

In terms of topics for 2023, the Chair suggested that there should be a focus on the problems being faced in the next 20 years. Tomas Garcia agreed and proposed that the Grand Challenges would be the ideal platform for this. It was also agreed that the Pecha Kucha could be further developed to allow more participation from trade exhibitors.

In terms of the awards, the general feeling of the meeting was that the BOF lifetime achievement award should continue but it was also felt that the awards ceremony should be included in the conference programme rather than held in a noisy bar afterwards.

Richard Fish confirmed that he would relay these thoughts to José Sanchez, although pointed out that BOF influence was only one factor when it came to the conference decisions.

ACTION 41: Richard Fish
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## **15. Looking Ahead: The future of UKBB, BOF etc.**

Richard Fish explained that the purpose of this item was to give a heads-up on decisions which would need to be taken in the next couple of years. He was aware of an ongoing review of the UKRLG and its Boards which would in turn influence BOF's position. Richard also advised that he had given notice that he would be standing down as Technical Secretary no later than towards the end of 2024. He proposed, and the meeting agreed, that future options for BOF should be discussed at future meetings.

ACTION 42: Richard Fish
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## 16. Any Other Business

None was taken, other than Jim Hall proposing, and endorsed without exception, a huge vote of thanks to the Chair and her RBT team not only for an excellent two days but also RBT's welcome and hospitality.

## 17. Next Meetings

**BOF 71:** 22<sup>nd</sup> November 2022 to be held at Cambridge (but probably with hybrid facilities).

**BOF 72:** Although originally noted as 31<sup>st</sup> January 2023, it was proposed that this should be changed to 7<sup>th</sup> February 2023, subject to agreement with the Chairman and Kings College, but also at Cambridge (also probably with hybrid facilities). Richard Fish will confirm as soon as possible.

ACTION 42: Richard Fish
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## 18. Close

Before closing, the Chair gave the results of the carbon calculation that her staff had completed (based on travel information previously provided) while the meeting was in progress. Taking everything into account, including lunches and dinner, this came to 1,680 kg CO<sub>2</sub>e. This was the equivalent of 8.3 trees in line with the RBT sequestration policy. Allowing a contingency of 20% brought the figure to 2,016 kg CO<sub>2</sub>e or 9.9 trees and RBT, therefore, would be planting ten trees to fully offset the meeting's carbon footprint.

The Chair wished everyone a safe onward journey.

Richard Fish,  
BOF Technical Secretary,  
15<sup>th</sup> August 2022