

XBOF0834  
15/01/09

## **BRIDGE OWNERS FORUM**

### **MINUTES OF MEETING BOF26: TUESDAY 16 SEPTEMBER 2008 AT KINGS COLLEGE, CAMBRIDGE**

#### **PRESENT**

Campbell Middleton	CHAIRMAN University of Cambridge
Brian Bell	Network Rail
Graham Bessant	London Underground
Peter Brown	CSS
Graham Cole	CSS
Albert Daly	National Roads Authority-Ireland
Paul Foskett	Department for Transport - morning only
Peter Hill	Large Bridges Group
Rod Howe	British Waterways
Robert Humphreys	CSS Wales
John Menzies	TECHNICAL SECRETARY
Graeme Muir	Society of Chief Officers of Transport in Scotland (SCOTS)
Stephen Pottle	Transport for London
Tudor Roberts	Welsh Assembly
Bill Valentine	Transport Scotland
Ronnie Wilson	DoRD(NI)
Paul Fidler	Cambridge University Engineering Department (CUED)
Andrew Jackson	CUED PhD student
Dr Yusuke Kobayashi	Railway Technical Research Institute, Japan

#### **Invitees for parts of the Agenda**

Eric Greveson	Yotta – for Agenda item 10
Simon Topp	Yotta – for Agenda item 10
Martin Brown	Safety Director, London Rail – for Agenda item 11
David Moffat	Balfour Beatty – for Agenda item 11
Tom Breen	For Agenda item 11

#### **APOLOGIES FOR ABSENCE**

Apologies were received from:	
Edward Bunting	Department for Transport
John Clarke	BRB (Residuary) Ltd
Martin Dils	(now working for Scottish and Southern Energy)
Neil Loudon	Highways Agency (HA)
Richard McFarlane	LoBEG
Jim Moriarty	London Underground
Andy Phillips	Welsh Assembly

#### **1. INTRODUCTION**

The Chairman welcomed BOF members to the meeting. Since Paul Foskett (PF) was only able to be present for the morning, he asked him to brief the Forum on DfT highway

maintenance activity and the DfT procurement of BOF Research Projects before other items on the Agenda.

## **2. STATUS OF BOF RESEARCH PROJECTS**

Paul Foskett began by outlining the remit of the DfT Highway Maintenance Team. The Team is small – five people – and has two main roles. One role is to manage capital funding allocations to local authorities for highway maintenance. The other role is to develop and implement policy for local authority highway maintenance in England. As a whole, the budgets for these areas are very large, and consequently their management represents a significant proportion of the team's workload. The Team has also taken the lead role for the Department in the cross-Government response to last year's floods. As a result over £40m had so far been allocated to local authorities in the affected areas to assist them to repair damage to their roads and structures.

PF indicated that, in its policy role, the Team has been reviewing its strategy in a few areas. Over the last two years, a review had been carried out into the structure and functions of the UKRLG and its boards. UKRLG had participated in both reviews. The first part of the review was at a high level and included an examination of the relationship between UKRLG and its stakeholders. The second was a detailed study of functionality of UKRLG and how its activities and those of its boards were delivered. The studies resulted in recommendations to restructure UKRLG and its Boards.

This year the Department invited its Boards to prepare business plans aimed at identifying their key objectives and how they proposed to achieve those objectives. The business plans will in the future provide a steer to other organisations such as BOF on the support that the Boards might get from them.

PF also advised that in the autumn of 2006 the Department and HM Treasury commissioned the Chartered Institute of Professional Accountants (CIPFA) to undertake a review of accounting, management and financial mechanisms for local authority transport infrastructure assets. The review team published their report this summer, and it is available on the CIPFA website. The highway maintenance team has taken the lead role at the Department on this work. The report recommends that an asset management approach be adopted for maintenance of local road networks.

To assist authorities develop an asset management approach the Department has recently announced that £23m will be made available to assist local authorities to improve their inventories. The highway maintenance team has agreed to give a presentation on this policy at five events during September 2008.

The team is also responsible for the Department's programme of PFI street lighting schemes and the development of PFI highway maintenance schemes. Currently there are 19 signed PFI street lighting schemes supported by £540m of Government PFI credits. In addition there are 10 more projects in procurement supported by £870m PFI. There is one signed PFI highway maintenance contract in Portsmouth which is supported by £121m of PFI credits. There is one further highways maintenance project in procurement, managed by Birmingham City Council and supported by £588m PFI credits. It is currently expected that the Birmingham contract will be signed around summer 2009.

The team has recently concluded the management of a bidding round for PFI credits. This has resulted in three authorities – Isle of Wight, Sheffield and Hounslow - being awarded pathfinder status and invited to prepare a business case for the development of a PFI highway maintenance scheme. Currently it is expected that these schemes will be supported by £1.2bn of PFI credits.

Broadly these PFI schemes are designed to run for a 25 year period, the first 5-7 years being used to bring the assets up to the required condition, this condition then being maintained for the remaining time. PF explained that the Team had also managed the appointment of Atkins to act as a ‘transactor’ over these three pathfinder PFI highway maintenance projects.. The transactors will ensure that awareness is made of lessons learnt across all three projects. BOF members expressed concern that these PFI schemes may not result in assets in good condition at the end of the period. PF explained that contracts include a clause covering the condition assets are to be in at the end of the contract.

The team is also responsible for the allocation of capital funding for highway maintenance under the Local Transport Plan process. Under this process, around £700m is allocated to 116 local authorities each year. In November 2007 the team managed a three year settlement covering 2008/09 to 2010/11. This was the first time that a settlement had covered three years.

In addition the team manages the process of assessing business cases for exceptional maintenance and major maintenance schemes. As an example, the Department had announced today that funding had been approved for a £80m scheme to strengthen the Bidston Moss viaduct which is jointly operated by Wirral Council, Merseytravel and the Highway Agency. The team was currently considering a number of other schemes.

The Team has ‘looked at’ the BOF research projects that await DfT commissioning. PF announced that the contract for the ‘Training’ project has now been let and that the specifications for the ‘Automated bridge inspection’ and the ‘Scanning’ projects had been passed by the team to BOF for consideration and advice. The Department had procedures for the clearance of single tender action (STA) requests. As BOF had asked for STAs on the Heriot Watt and Queens University projects these would have to be considered under these procedures. Following Nick Bisson’s meeting with the chairs of the Bridges Board and BOF on 27 August, the Department had asked for further information from BOF on their selection process so that they could consider the case for STA. This information had been provided on 12 September. PF indicated also that he hoped the ‘Masonry parapets’ project could also be progressed now. Brian Bell and the Technical Secretary are currently developing the Specification.

ACTION: Brian Bell

PF drew attention to the policy paper ‘Towards a Sustainable Transport Policy’ published by the DfT in October 2007 (available on the DfT website), that had influenced thinking on which projects should be selected for 2008/09.

PF introduced papers which had been sent to the Chairs of the Boards to seek their comments on how bids should be submitted for research projects in 2009/10. The DfT will set out the resulting policy direction at the UKRLG November meeting which will be fed to the Boards. The Bridges Board will be able to make the information available to BOF, so that projects could be considered at the BOF January meeting. He enumerated

some of the factors that UKRLG would take into account when considering research proposals next year:

- Relationship to policy direction
- Evidence of information gaps
- Benefits
- How quickly results will arise and where they will impact
- Experience elsewhere
- What proportion of highway assets are likely to be affected by the research and why
- How the research will be carried out
- Key deliverables
- Estimated costs and remuneration rates
- If STA proposed, why?

He indicated the DfT is keen on partnerships in research since this not only helps to achieve more from the DfT budget but also shows that those promoting and contributing towards the research value the work.

The Chairman thanked Paul Foskett for his introduction. A discussion followed:

1. PF explained that his remit covered English local authorities only, although funding in London is a matter for the Mayor. Therefore, funding for Welsh authorities was a matter for the Welsh Assembly; and the funding made available to help authorities improve their inventories was for English authorities alone. The fund will be allocated in two tranches. An allocation would be made around March and another around June. Although, funding in London is a matter for the Mayor London Boroughs and Transport for London are eligible for the second tranche. PF said the absolute DEADLINE for bids is 19 December 2008.
2. In a discussion of partnership arrangements for research, it was pointed out by Brian Bell that partners must be 'equal' in the procurement process to achieve successful partnership working. Network Rail had a bad experience of partnering with the Highways Agency and they needed reassurances that this would not be repeated before entering into any partnership arrangement for research again. PF explained that if Brian Bell set out the issues of concern to Network Rail, he would raise them with his procurement colleagues.  
ACTION: Brian Bell
3. BOF research proposals: PF indicated that DfT is waiting for two specifications for projects that have been approved for funding.  
ACTION: John Menzies
4. PF said that the 2008/9 BOF research proposals already submitted now need to be re-submitted through the procedures he had outlined earlier.  
ACTION: Chairman
5. PF indicated that all new research proposals to the Bridges Board by BOF should follow the guidance under the new arrangements.
6. Graham Cole pointed out that highways are not managed on a national basis and that each local authority is responsible for its own highways. He suggested that development of the ESDAL system to embrace all highway assets would probably not be practical since bridges represent only 10% of the total highway asset.

7. Decision support tool project – it was pointed out that this project is not included in the list of current projects. PF advised that he would ask colleagues for an update on this work.

ACTION: Paul Foskett

8. It was reported that the Institution of Highways and Transportation (IHT) has been contracted to provide secretariat services to the UKRLG and the Boards starting on 1 October 2008.

The Chairman thanked Paul Foskett for his contributions to the meeting.

**3. PREVIOUS MINUTES – BOF25 13MAY 2008**

The minutes of the BOF25 meeting were accepted subject to correction of the spelling of Robert Humphreys' name. With this correction, members agreed that the minutes may be made public.

ACTION: CHAIRMAN

**4. ACTIONS ARISING FROM THE BOF25 MINUTES**

The actions which were not to be covered by later items of the Agenda were considered by reference to the tabled list:

**2: Actions Arising from Minutes BOF24**

It was agreed to leave these actions for the time being.

**5: Shortlisting of Research Projects 2008/9: Project 15/13**

It was agreed to leave these actions for the time being.

**4: BOF Research Projects**

A note by the Technical Secretary on the lessons learned from the experience of managing BOF research projects had been distributed to members.

**9: Research Update**

The paper presented in China by Richard Fish had been placed on the BOF website.

**Evaluation of projects – Dry Stone Walls; Iron and Steel Bridges**

A note by the Technical Secretary had been distributed to members.

**Item 7:ESDAL Project Presentation**

The presentation had been placed on the BOF website.

**Item 9: BOF Strategic Goals**

A revision of the BOF Terms of Reference prepared by the Technical Secretary had been distributed to members and a further revision with additional text had been tabled by the Chairman. It was agreed these revisions would be considered at BOF27.

ACTION: CHAIRMAN

**Item 12:Any other business**

**(b) Public dissemination of BOF minutes**

The Chairman said that, as had already happened at the beginning of the meeting, he would henceforth ask members at each meeting for their agreement to the minutes of the previous meeting being made public.

ACTION: CHAIRMAN

**5. MEMBERSHIP MATTERS**

**(a) New membership**

It was agreed the Chairman would invite Paul Williams to be a member of BOF representing the London Borough Engineers Group (LoBEG).

ACTION: CHAIRMAN

**(b) Request for membership**

The meeting was asked by the Chairman to consider the request he had received for Mungo Stacy of Parsons Brinkerhoff/ Greater Manchester Passenger Transport Executive (GMPTE). After consideration of the tabled correspondence between Mungo Stacy and the Chairman, it was agreed the request would be declined.

ACTION: CHAIRMAN

**6. PROPOSAL TO REVISE BOF TERMS OF REFERENCE**

Paper with suggested minor alterations to the BOF terms of reference prepared by JBM was tabled. CRM had suggested adding Item 6 stating that BOF would provide technical support to the DfT however Paul Foskett didn't feel this was appropriate for the BOF terms of reference. Members were asked to consider these proposals and a vote will be held at the next BOF meeting.

ACTION: ALL MEMBERS & CHAIRMAN

**7. BOF RESEARCH PROJECTS UPDATE**

*Dry Stone Retaining Walls Project (PSG Chair: Ronnie Wilson)*

Paper submitted by Ronnie Wilson gives update on this project. Final draft of report was received on 1<sup>st</sup> September 2008 and a meeting of the funder representatives has been scheduled for 26<sup>th</sup> September 2008 when it is hoped that the report can be signed off ready for publication..

*Older Metal Bridges Project (PSG chair: John Clarke – not in attendance)*

The Chairman advised that this report has now been published by CIRIA as *Iron and steel bridges: condition appraisal and remedial treatment (C664)*.

*Inspector Qualifications Project (PSG Chair: Stephen Pottle)*

This project has now been let. Stephen Pottle advised that the inaugural meeting plus one further meeting had now been held and questionnaires had been sent out to relevant parties. These are due to be returned by 22<sup>nd</sup> September and the information obtained will then be processed. A written progress report from contractor (Atkins) was tabled.

*Other research projects recommended by BOF*

The Chairman updated members on the current status of all other projects that had been submitted to the Bridges Board and then UKRLG and the DfT.

**8. PROJECT STEERING GROUPS – MEMBERSHIP**

The project steering groups for current and impending BOF research projects were updated and appointed as detailed in Appendix 1 to these minutes. (*Appendix 1: Summary of BOF PSG's Oct 2008*).

**9. WHOLE LIFE ASSET PLANNING (WLAP)**

Graham Bessant gave a presentation on WLAP – see BOF website.

In the subsequent discussion it was pointed out that professional engineers had not been party to the drafting of PPP contracts. It was considered that public sector engineers should have a strong influence on such contracts. BOF members expressed concern about the long-term costs to the public purse arising from PFI contracts.

**10. ASSET MANAGEMENT USING COMPUTER VISION TECHNOLOGY**

The Chairman welcomed Eric Greveson and Simon Topp of Yotta to the meeting and invited them to make their presentation.

Eric Greveson and Simon Topp described the developments in computer vision technology relating to asset management that are being made by Yotta. They showed the capture of data on roads and roadside assets from moving road vehicles. The vehicles carry the Yotta information retrieval systems and are currently operating for local authority clients in several areas of the UK – see presentation on the BOF website.

A discussion followed with questions from BOF members on the operation of the systems and the measurements obtained.

The Chairman thanked Eric Greveson and Simon Topp for their presentation and explanations during the discussion.

**11. REPORT ON THE GE19 PARTIAL BRIDGE FAILURE**

The Chairman welcomed Martin Brown - Safety Director of London Rail – and David Moffat and Tom Breen representing Balfour Beatty to the meeting and invited them to make a presentation – see BOF website.

Martin Brown began by describing the East London Railway Extension and the investigation of the unexpected movement incident of the GE19 bridge that occurred during installation. He outlined the most probable causes of the incident and the mechanisms involved. David Moffat and Tom Breen talked about the movement mechanisms and the options for preventing incidents of this type occurring. A discussion followed in which emphasis was given to the problems in incidents of this type that often are found to be associated with the temporary works. The design of temporary works is often done ‘at the last minute’ and it was agreed that more attention should be given to them.

The Chairman thanked Martin Brown, David Moffat and Tom Breen for their presentation and their contributions to the meeting.

**12. UPDATE ON TECHNICAL REVIEW SUBJECTS**

**Clyde Bridge cable failure**

For information Graham Muir provided a statement that had been issued by the Regional Design Engineer of Edmund Nuttall Ltd to the SCI Steel Bridges Group in April 2008. The statement read:

*“In the light of recent experiences relating to the design and construction of bridges using tension stays as primary structural members it is considered appropriate to make the following observations – albeit I should stress that these statements are based on the investigations made to date, which are not yet complete, and that nothing which I say should be taken as pre-empting the outcome of those investigations, in particular with regard to the actions or conduct of those involved”*

**Statement 1**

***“When contemplating the use of tension stays as structural members engineers need to give particular consideration if intending to use cast components to form the end connections. Assurance of the suitability of these components requires confidence in their composition and material properties that may be difficult to obtain for the installed items.”***

**Statement 2**

***“ When specifying the connections between tension stays and the rest of the structure, or other stays, the fit-up between connection components may require particular dimensional relationships and the components may require particular mechanical characteristics in order for the connections to function as intended.”***

**Minnesota Bridge Collapse**

The Chairman said that reports had now been published on investigations into this collapse but the final report of the investigations is not yet available. Graham Cole agreed to send information to the Chairman. It was agreed to consider whether BOF might prepare a position paper on the collapse and the lessons learned once the final report of the investigations is published.

ACTION: Graham Cole  
ACTION: CHAIRMAN

**Shear capacity of RC slabs**

The Chairman referred to the question about the adequacy of EC2 rules for shear that had been raised by Professor Michael Collins at the Institution of Structural Engineers earlier in the year following his work on the causes of the Montreal collapse. In the subsequent discussion doubt was expressed as to whether the design for shear was inadequate and the principal cause of the collapse. Rather the principal cause was thought to arise mainly from poor workmanship and concrete quality. It was agreed that Brian Bell’s comments on the summary of the Montreal collapse report – email to Chairman: 2 June 2008 – would be distributed to BOF members and the subject would be included on the Agenda for BOF27. The possibility that BOF might a position paper on this subject was mooted.

ACTION: CHAIRMAN

**13. BRIDGE RESEARCH UPDATE**

**a. Network Rail**

Brian Bell tabled update information as follows:

*Recent publications*

CIRIA – Intelligent monitoring of concrete structures

*Recent finishes*

- Edinburgh University – Radar on arches (awaiting PhD viva)
- Newcastle University – Management of shallow mine workings (writing up in hand)



- CIRIA – Unexploded ordnance

*Recent starts*

- NPL – Concrete monitoring demonstrator
- CIRIA – Noise and vibration
- CIRIA – Culvert design and operation guide
- CIRIA – Flood resilience and resistance for critical infrastructure
- UWE – Fatigue in masonry arch bridges (EPSRC funded: Advisory group – Brian Bell, Graham Cole, Rod Howe)

*About to start*

- Surrey University – Corrosion in elderly metallic bridges

*New submissions*

- EPSRC Infrastructure call  
Newcastle University – passed initial sieve  
Birmingham University – passed initial sieve  
Nottingham University – failed initial sieve
- Marie Curie Initial Training Network 2008 call  
Smart Management for Sustainable Human Environment (Cyprus Technical University)  
Disruption and Damage to Critical Transport and Power Infrastructure (Birmingham University)
- European Commission FP7 – Effective Bridges

*Possibilities*

- CIRIA – Risk and value management
- European Commission Security call  
Extreme events on critical infrastructure (Bath University)
- European Commission Lead Market Initiative  
Construction procurement (International Construction Client Forum)
- European Science Foundation Research Networking Programmes 2008
- Masonry arch bridges (University College, Dublin)

*Other activities*

- Invited paper on use of FRPs in railway civil engineering submitted to ICE Journal Engineering and Computational Mechanics
- With Neil Loudon, invited to prepare a paper for Thomas Telford publication Magazine of Concrete Research on ‘FRP strengthening of concrete structures’.

**b. London Underground Ltd (LUL)**

No change was reported.

**c. Transport for London**

No developments since BOF25 were reported.

**d. Japan Rail research**

The Chairman on behalf of Dr Yusuke Kobayashi gave a presentation – see BOF website – on the monitoring of four steel rail bridges in Japan. The monitoring systems are recording stress range and weigh-in-motion data.

**e. Other research**

None was reported.

**14. INTERNATIONAL BRIDGE FORUM (IBF)**

The Chairman advised that the IBF had now been arranged in 14 – 16 September 2009 and invitations to attend had been sent to people he hoped would attend. Details had been placed on the BOF website.

Discussion followed on the form and programme needed for the event in order to ensure that those attending, especially those from abroad, would leave feeling that it had been a useful worthwhile experience, the time being well spent.

ACTION: CHAIRMAN

The Chairman agreed to prepare a paper for the IBF describing the issues facing UK bridge owners. The paper would be written to introduce delegates from abroad to problems in the UK and current UK practice in dealing with them.

ACTION: CHAIRMAN

**15. ANY OTHER BUSINESS**

There was none.

**16. PROPOSED DATES FOR 2008/9 MEETINGS**

BOF27	Tuesday 13 January 2009	King's College
BOF28	Tuesday 12 May 2009	King's college
IBF/BOF29	14 -16 September 2009	King's College

**17.** The Chairman thanked those present for their contributions and closed the meeting.

John Menzies  
Technical Secretary BOF

## APPENDIX 1

### BOF RESEARCH PROJECTS – Project Steering Groups

#### Projects initiated by BOF which have received funding

**2002/03**

**Technical Audit of BA79 – A review of bridge assessment failures on the motorway and trunk road network** – funded by HA – Parsons Brinckerhoff

**Technical Audit of BA79 - The management of substandard bridges** – funded by HA – Parsons Brinckerhoff

**2003/04**

**Masonry arch bridges: condition appraisal and remedial treatment** - CIRIA / Mott MacDonald

**2004/05**

**Dry stone retaining walls: condition appraisal and remedial treatment – joint funding** (CSS, DfT, Network Rail, DRD(NI)) – CIRIA / Mott MacDonald

**Iron and steel bridges: condition appraisal and remedial treatment – joint funding** (DfT, Network Rail, British Waterways, TfL) – CIRIA / Gifford WSP

Contingency Loading for Bridges – funded by HA

**2005/06 - No new projects due to Ministerial moratorium**

**2006/07**

**Training and qualification of bridge inspectors (£50k)**

*Project Steering Group(PSG)*

Chair: Stephen Pottle (TfL)

Members: Brian Bell (NR), Graham Bessant (LUL), Peter Brown (CSS/Oxford), Ian Sandle (HA), Richard McFarlane (LoBEG)

**Revision of BS6779 Part 4 (masonry bridge parapets) (£100k for each of 4 years)**

*Project Steering Group(PSG)*

Chair: Brian Bell (NR)

Members: Graham Bessant (LUL), Tudor Roberts (WAG), Rod Howe (BW), Brian Poole (CSS/Durham)

**Bridge deck slabs with non-metallic reinforcement – (£55k)**

*Project Steering Group(PSG)*

Chair: Ronnie Wilson (DoRD(NI))

Member: Albert Daly (NRA)

**Carbon composites for the strengthening of steel structures – (£65k)**

*Project Steering Group(PSG)*

Chair: Brian Bell (NR)

Members: Graham Bessant (LUL), Martin Dills (BW), Neil Loudon (HA), Peter Brown (CSS/Oxford)

**2007/08**

**Automating Bridge Inspections (£50k)**

*Project Steering Group(PSG)*

Chair: Stephen Pottle (TfL)

Members: Albert Daly (NRA), Paul Williams (to be confirmed) (LoBEG)

**NDT of macalloy bars tying prestressing beams (£146k)**

*Project Steering Group(PSG)* : No appointments as yet

Chair:

Members:

**Scanning of HA Research Reports (£30k) – consultancy project**

*Project Steering Group(PSG)* :

Chair: No chair appointed

Members: Neil Loudon (HA) / Cam Middleton (CUED)