The annual Bridges conference and exhibition drives technical knowledge, debate and discussion at the heart of Europe’s bridge community. The conference will focus on delivering a number of informative sessions detailing all the latest thinking through a number of technical sessions and case studies.

Speakers Include:

- Lee Franck, Realtyimpact
- David Knight, Cake Industries
- Francis Guinchard, Vinci Construction Grands Projets
- John Collins, Roughan & O’Donovan
- Kevin Dentith, Devon CC
- Donald Pearson Kirk, WSP
- Keith Harwood, Hertfordshire CC
- Sjoerd Vrieswijk, Friesland Province, The Netherlands
- Michael Smith, Arup
- Bart-Jan Van Der Graag, Royal HaskoningDHV
- Hazel McDonald, Transport Scotland
- Richard Fish, Bridge Owners’ Forum
- Andrew Hodgkinson, Hewson Consulting
- David Clegg and Richard Parfitt, Dorset CC
- Professor Xiaolin Meng, University of Nottingham
- Andy Davison & Martyn Bentham, Jacobs
- Andrew Arundel, Humber Bridge Board
- Chris Hendy, Atkins and more

Register today at bridges.tn-events.co.uk
Bridges 2020
12th March | The Ricoh Arena, Coventry, UK

For 27 years, the Bridges conference has driven technical knowledge, debate and discussion at the heart of Europe’s bridge community.

The conference programme for Bridges 2020 will serve a wide variety of challenging case studies, cutting-edge technologies as well as the latest developments in bridge construction, inspection, maintenance and structural health monitoring.

Who should attend:
The annual Bridges conference and exhibition regularly attracts more than 400 attendees from all facets of the bridges industry and would be of benefit to:

- Bridge owners and managers
- Local authority bridge specialists
- Consultants
- Contractors
- Bridge specialists
- Architects

How you will benefit:

- Learn more about how key bridge projects have been planned, designed, implemented and maintained. Successful and practical case studies will also be presented
- Review the management of safety critical fixings – new CIRIA guidance.
- Listen to talks from internationally-renowned bridge engineers discussing state of the art in design and construction of bridges large and small

“Excellent networking and knowledge sharing opportunity, everyone who works in bridges should be there!”
Liz Kirkham, Gloucestershire County Council

“Fantastic opportunity to meet and discuss with peers in the industry, see the industry trends and hear about some very interesting schemes.”
Keith Williams, Arcadis

Follow Bridges 2020 | @bdebridgeweb | #BridgesConference20
8.30 Registration and exhibition hall open

9.10 Introduction from Chair
Jose Maria Sanchez de Muniain, Editor, Bridge design & engineering

9.15 Keynote 1: Sustainability and the carbon footprint: what can bridge engineers do?
• The magnitude of the structural engineer’s impact in the current climate crisis
• Is being structurally efficient enough? How ‘business as usual’ is no longer an appropriate response
• Widening the picture: a framework of questions and considerations at different stages of the design and construction process
• The bridge engineer of the future
Lee Franck, Chartered Structural Engineer and Founder, RealtyImpact
David Knight, Chartered structural engineer, Cake Industries

9.50 Nouvelle Route du Littoral, building France’s longest offshore viaduct in the Indian Ocean
Francis Guinchard, Vinci Construction Grands Projets

10.25 Bridge Scour Assessments – focussing on debris-induced scour at bridge piers: applications and case studies
• Debris accumulations at bridges may exacerbate scour depth
• A methodology based on experimental studies estimates size of debris and effects on scour
• Applications of the methodology show that scour risk can be significantly increased
• Low risk sites can be identified to reduce need for post-flood inspections
Kevin Dentith, Chairman, ADEPT Bridges Group and Bridge Owner’s Forum, Chief Engineer (Bridges & Structures), Devon County Council
Dr Diego Panici, Postdoctoral Researcher, University of Exeter

10.50 Morning Coffee Break and Exhibition Viewing

Stream A

11.20 Pecha Kucha innovation in bridge management
• A series of timed presentations showcasing innovations from conference sponsors and exhibitors as well as local authorities
• Reviewed and curated by a panel of independent bridge experts
Keith Harwood, Head of Profession - Bridges and Structures, Hertfordshire County Council

Stream B

11.20 Identification and management of high-risk post-tensioned bridges – the benefits of BD 54/15
• Unexpected deterioration of post-tensioned concrete structures is a major concern, with inadequate design detailing and construction practices contributing to the deterioration of certain post-tensioned elements
• Safety critical defects in post-tensioned concrete are typically hidden and deterioration can progress with no outward signs of distress right up to the point of structural failure
• BD 54/15 Management of post-tensioned concrete bridges details a process of risk review, risk assessment and risk management and identifies activities that may be needed for the successful risk management of those bridges
• Case studies will demonstrate the improved processes of identifying high risk post-tensioned bridges, prioritising them for any further needed works and the resulting benefits
Dr Donald Pearson Kirk, Technical Director, WSP
11.45 ICE Proceedings Bridge Engineering: understanding maintenance
- Common themes in papers and case studies published in a special issue on bridge maintenance by ICE Proceedings Bridge Engineering are revealed
- What does the research show about current practice and the role of all parties in designing, constructing and maintaining bridges?
  
  John Collins, Principal Engineer, Roughan O’Donovan

12.10 Design for operation and maintenance of steel bridges: best practice and worst culprits
- The bridge operation and maintenance issues that are causing owners the greatest problems have been highlighted by recent industry surveys by the SCI’s Steel Bridges Group
- Excellent guidance is already available from the SCI on the subject – and more is to come
- What measures can be taken in preparing new steel bridge designs to minimise the costs to owners of future operation and maintenance?

  Andrew Hodgkinson, Director, Hewson Consulting Engineers

13.55 Inspections: the good, the bad and the ugly
- Inspections in Transport Scotland
- Could do better?
- Data to decisions
- Future developments

  Hazel McDonald, Chief Bridge Engineer, Transport Scotland

14.20 Wool Old Bridge, restoring an at-risk heritage asset
- Development of a management system that could be used as a national model
- Using archaeological investigations to inform the design process
- Allowing for sustainable maintenance within the restoration process
- Recognising the historical value of our bridge stock within the asset management process
- Working with communities to deliver sustainable outcomes

  David Clegg, Service Manager for Network Operations, Dorset Council
  Richard Parfitt, Project Team Manager, Dorset Council

12.35 Lunch

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**Conference Programme**

**Stream A**

12.10 A SAVI tool for bridge decision-making
- The Structures Asset Valuation and Investment support tool is a multi-functional, condition-based decision support tool that facilitates effective management of local authority bridge stock and provides short-term plans, long-term analysis (120 years) of funding, risk and condition
- SAVI supports strategic priorities and models whole life cost against performance
- SAVI is freely available via UKRLG and CIPFA

  Keith Harwood, Head of Profession - Bridges and Structures, Hertfordshire County Council
  Michael Smith, Infrastructure Advisory, Arup

13.55 Managing our bridges: the Grand Challenges
- The Bridge Owners Forum and bridge management
- The problems facing bridge owners
- The Grand Challenges
- The need for change
- Raising awareness

  Richard Fish, Technical Secretary, Bridge Owners’ Forum

14.20 Building the biobridge – a journey into the unknown world of large-scale infrastructure using bio-based materials
- Engineers, manufacturers, contractors and academics have together successfully constructed a bridge that combines flax fibres and a bio-based resin
- Continuing the journey of using more bio-based materials – all are welcome to join
- Implementation of a multi-project infrastructural programme to enable Friesland Province become a leading European development region in the circular economy in 2025

  Sjoerd Vrieswijk, Friesland Province
  Ir Rinze Herrema, Lead Engineer and Business Unit Manager, Infrastructural Engineering, Witteveen + Bos

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**Stream B**

11.45 ICE Proceedings Bridge Engineering: understanding maintenance
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  David Clegg, Service Manager for Network Operations, Dorset Council
  Richard Parfitt, Project Team Manager, Dorset Council
**CONFERENCE PROGRAMME**

### Stream A

**14.45 Ouse Bridge - the bearings that would not move!**
- A 1.34km multi-girder steel-concrete viaduct carrying the M62 up to 30m above the river
- The original design made no provision for jacking or temporary support of the superstructure
- Following a series of inspections all bearings were recommended for replacement in 2001
- Further deterioration resulted in thermal movement of the deck being accommodated by flexure of the reinforced concrete piers
- The presentation will cover the Jacobs designed replacement scheme, installation of a permanent jacking solution and the key challenges faced

*Andy Davison*, Technical Director, *Jacobs*

*Martyn Bentham*, Technical Director, *Jacobs*

### Stream B

**14.45 GeoSHM for structural health monitoring**
- This ESA-funded project aims to deliver the GeoSHM system solution to monitor long-span bridges and other large-scale infrastructure
- Empowered by the GeoSHM Data Strategy and Data Analyst Toolbox, the GeoSHM system enables engineers to understand the displacement and vibration characteristics of the Forth Road Bridge under the effect of wind, temperature and traffic, and to define the baseline performance of the structure
- Innovations included the world’s first integrated receiver containing a GNSS antenna, a GNSS receiver of more than 500 channels, a tri-axial accelerometer and communication modules – all shielded within compact housing

*Professor Xiaolin Meng*, Professor of Intelligent Mobility, *University of Nottingham*

### Schedule

**15.10 Afternoon Coffee Break and Exhibition Viewing**

**15.40 Humber Bridge hanger investigation and replacements**
- The Humber Bridge is an iconic Grade 1 Listed structure and carries the A15 dual carriageway over the Humber Estuary with a main span of 1,410m
- The hangers on many other suspension bridges around the world have been replaced due to deterioration in condition - as this would be a major cost to the Humber Bridge, a robust asset management strategy was required
- The presentation covers the process for choosing three trial hangers to replace and test, and describes the testing regime, the results of the testing and how this informed the strategy for management of the remaining hangers
- This presentation also discusses the design, fabrication and installation of the works involved in replacing the hangers

*Andrew Arundel*, Head of Engineering and Infrastructure, *Humber Bridge Board*

*Chris Hendy*, Technical Director and Professional Head of Bridge Engineering, *Atkins*

**16.10 Closing Keynote - Measuring performance and value in construction**
- New methodology for quantifying the benefits of offsite construction of bridges/bridge elements and its application to future construction projects

*Cam Middleton*, Laing O’Rourke, Professor of Construction Engineering, *University of Cambridge*

**16:45 Close of conference**

Register today at bridges.tn-events.co.uk
WORKSHOP

08.30 - Coffee and Exhibition Viewing

09.25 Introduction from Workshops Chair: the Grand Challenges
Richard Fish, Technical Secretary, Bridge Owners Forum

09.30 Workshop 1: Scour warning and prevention
Chair: Kevin Dentith
Assessing debris-induced scour at piers: applications and case studies in Devon
- Bridges are assessed liable to debris accumulations through a process based on direct and indirect evidence
- Prioritising bridges for scour assessment using a newly defined priority factor inclusive of accumulated debris
- Applications of simplified and rigorous methods through worked examples for calculation of the debris scour factor
- Scour risk assessment including debris effects is applied to several bridges in Devon showing change in risk rating
Kevin Dentith, Chief Engineer (Bridges & structures), Devon County Council
Dr Diego Panici, Postdoctoral Researcher, University of Exeter

10.30 Coffee break

11.00 Workshop 2: Resilience
Chair: Dave Cousins, James Fisher
Quantifying resilience
Sotirios Argyroudis, University of Surrey and Aristotle University (Greece)

Network Resilience
Dr Maria Pregnolato, University of Bristol
Modularity and off-site construction is revolutionising the industry and delivering real improvements in cost-effectiveness, productivity and speed of delivery.
- Recent trends towards modular construction
- The challenges faced when specifying a bridge
- Key features and benefits of modern modular steel bridging solutions vs traditional solutions
- Addressing the increasing need for durability, safety and resilience via modular steel solutions
Nick Iannetta, Mabey Bridge

Case study: Preventing structural failures/extending life in the Peak District National Park
- Assisting with asset management of civil structures along the main park trails including masonry, concrete and steel bridges, tunnels, culverts, retaining walls and Lime Kilns
- Defining repair schedules based on inspection reports and prioritising works within a limited budget
- Innovative methods for heritage and difficult access areas
Tim Grimshaw, Waterman Infrastructure & Environment

Protecting structures in a marine environment: refurbishment and protection of the A9 Cromarty Bridge
- Designing and selecting the optimum repair solution to meet the minimum 20-year design life of a structure situated within a chloride-rich environment
- Meeting client requirements for the system to be durable and extendable in the future for the remaining 60 piers, as well as easily maintainable
Christopher J Spence, General Manager/Laboratory Manager, Corrosion Control Services

Designing steel bridges that will perform better
Andrew Hodgkinson, Hewson Consulting Engineers

13.00 Lunch
14.00 Workshop 3: Bridges and overloaded vehicles
Chair: Richard Fish
Vehicle overload – we’re on the road to nowhere
• Brief history of load models
• Recent research on the effects of overloaded vehicles on roads and bridges
• Challenges to current policy
Hazel McDonald, Chief Bridge Engineer, Transport Scotland

Leveraging technology to protect structural assets from abnormal load vehicles
• Abnormal load management process for structural assets - extending or limiting life?
• Using and analysing notification data effectively
• Technology for robust abnormal load management - Kent County Council
• A glimpse of the future
Clare Waterfall, Sales and Marketing Director, Cascade Software

14.30 Workshop 4: Climate change & sustainability
Chair: Richard Fish
UN Sustainability Goals and bridge construction: common ground?
• The 17 UN sustainable development goals
• Climate risks to bridges
• Reducing consumption
• Sustainable materials
• Futureproofing
Richard Fish, Technical Secretary, Bridge Owners’ Forum

15.00 Coffee Break

15.30 Workshop 4 (continued)
Arcadis Net Zero KPIs
• Definitions
• Measuring and using KPI
• Business KPI’s
• Net zero buildings- 15 years on lessons learnt
• Net zero bridges
• Cost and carbon
Dave Collings, technical director, Arcadis

Reducing carbon embodiment in bridge design and bridge rehabilitation through alternative materials
• Why always use steel and concrete for bridge construction?
• FRP composite materials can help reduce the carbon footprint in the bridge industry and these materials are successfully used in all other industries such as automotive, aeronautical and marine.
• Local councils such as Kent CC, Gloucestershire CC and Cardiff CC are seeing the benefit – and Transport for London will be installing an FRP composite bridge this year.
John Drewett, Concrete Repair

16:15 Conference close by the Chair
SPEAKER PROFILES

Andrew Arundel
Head of Engineering and Infrastructure
Humber Bridge Board

Andrew Arundel is currently Head of Engineering and Infrastructure at the Humber Bridge Board and responsible for ensuring this engineering icon is maintained in a safe and serviceable condition. Andrew has over 29 years’ experience in the industry with the majority involved with bridge engineering. This has included time spent working as a client in local government, for a main contractor and in both a small and large consultancy practice.

Martyn Bentham
Bridges Technical Director
Jacobs

Martyn Bentham is a Technical Director in the Jacobs Leeds Office with more than 20 years’ experience specialising exclusively in bridges. He has worked on a wide variety of highway and railway schemes in both the UK and Ireland. Martyn’s project portfolio includes the design of many new steel or steel-concrete composite structures, including large span tied-arch bridges and multi-span flyovers on major highway schemes, and several significant railway structures carrying the Manchester Metrolink tram system. Martyn is passionate about using his current knowledge and experience to develop a first-rate solution to any new engineering challenge.

David Clegg
Network Operations Service Manager
Dorset Highways

David is the Network Operations Service Manager at Dorset Highways. He studied River and Coastal Engineering at the University of the West of England before starting his Career in Civil Engineering with the Environment Agency. In 2013 he moved to Dorset Highways as a Site Agent to initially manage their Structural Maintenance programme before moving onto manage the Authority’s Bridges and Structures programme. In his current role as Network Operations Manager, David directs all contractual and commercial management activities within the Highway Service.

John Collins
Principal Engineer
Roughan & O’Donovan

Kevin Dentith is Chief Engineer with Devon County Council’s Engineering Design Group (EDG) and Chairman of ADEPT Bridges Group. He is a chartered engineer and fellow of the Institution of Civil Engineers.

EDG manages a large portfolio of structures with a team of 35 engineers, inspectors and technicians. Four teams cover structures asset management, capital maintenance and structural design. The group undertakes all inspection services with their own trained divers, confined space specialists and rope access technicians to manage the largest stock of local highway bridges in the UK (3,215) and over 1,700 retaining walls with a combined asset value of well over £1.3 billion.

Andy Davison
Technical Director
Jacobs

Andy Davison is a Technical Director for Jacobs in Leeds. As a Chartered Engineer with the Institution of Civil Engineers Andy has worked with Jacobs for 6 years, having previously spent time with other large consultancies both on site and in the design office. Andy has spent his career to date working throughout the UK, with both local and national highway authorities. Working on schemes varying from individual bridges, to nationally significant multi-disciplinary projects, Andy has developed expertise in various areas of highway structures engineering including design, assessment, inspection, maintenance, refurbishment and strengthening. Andy has a thirst for working with clients and contractors to develop the best solutions to the most complex problems.

Richard Fish
CEng FICE FIStructE FCIHT MIAM FRSA

Richard Fish is an Independent Consultant specialising in bridge asset management and has worked with many private and public sector clients both in the UK and overseas. He has been the Technical Secretary of the Bridge Owners Forum (BOF) since 2009 and has been closely involved with a number of BOF research initiatives notably the improved understanding of scour, masonry arch behaviour and bridge inspector competency. BOF represents all UK and Ireland Bridge Owners and is recognised as a sub-group the UK Bridges Board (UKBB). Richard previously worked in the public sector, mostly with South West County Councils, almost all of which was in the design, construction and maintenance of bridges. From 1994 to 2002, he was client Project Manager for the award-winning project to strengthen and widen the Tamar suspension bridge. He is an Assessor for the Bridge Inspector Certification Scheme (BICS) and is a past chair of the UKBB and the CSS (now ADEPT) Bridges Group.
Lee Franck
Independent Consultant

Lee Franck is a structural engineer with over 10 years’ experience having worked on award-winning projects for Arup in London and Guy Nordenson and Associates in New York. She is now an independent consultant and project manager helping clients deliver fully integrated projects by promoting close collaboration, the effective use of technology and the understanding of context. She has been a guest lecturer at Princeton and Columbia University amongst others and built bridges with communities in Rwanda and Panama. She is the founder of the conference series the ‘Future of Design’ and the proptech startup RealtyImpact which helps clients connect with the designers and makers of the future.

Keith Harwood
Head of Profession – Bridges
Hertfordshire County Council

Keith Harwood is Head of Profession – Bridges for Hertfordshire County Council and a member of UK Bridges Board, Bridge Owners Forum and ADEPT National Bridges Group. With over 30 years experience in bridge design and management both in the UK and overseas, his particular interests are in taking advantage of innovative and digital techniques to the benefit of our bridge stock.

Chris Hendy
Transportation Technical Director and Professional Head of Bridge Engineering
Atkins

Chris is Professional Head of Bridge Engineering in Atkins where he has led some of their most complex bridge projects. In 2012 he was awarded the Royal Academy of Engineering Silver Medal and was elected a Fellow of the Royal Academy in 2013. He was awarded the Institution of Civil Engineer’s Gold Medal in 2016. He is Chairman of the BSI bridge committee, the UK’s Steel Bridge Group and fibUK. He is a Project Team member for the next generation Eurocodes EN 1993-1-5, EN 1993-2 and EN 1993-1-11 which deal with plate buckling, steel bridge design and cable-supported structures respectively.

Andrew Hodgkinson
Chartered Engineer and Director
Hewson Consulting

Andrew is a chartered engineer and director of the bridge design firm Hewson Consulting. Over his 25-year career he has worked on numerous bridge projects in Asia, the Middle East and Europe leading engineering teams and providing design and construction engineering advice. He has been involved with a number of notable projects including the Øresund Link, Taiwan High Speed Railway, Stonecutters Cable Stayed Bridge in Hong Kong and Izmit Bay Suspension Bridge in Turkey. Andrew is lead author of the structural dynamics chapter in the ICE Manual of Bridge Engineering and is an active member of the SCI’s Steel Bridges Group, where he currently chairs a working group on the design of bridges for operation and maintenance.

David Knight
Chartered Structural Engineer

David is a chartered structural engineer with over a decade’s experience as a design consultant. He has managed and designed a variety of projects on both a large and small scale, including being lead designer for Greenwich Reach Swing Bridge (winner of the Pedestrian Bridge category at the 2015 Structural Awards), Taplow Footbridge (commended at the 2019 Structural Awards) and Montgomery Bridge in Canary Wharf. He was the lead structural designer for the international competition winning scheme to bridge across the Thames between Pimlico and Nine Elms in 2016. He delights at working closely with architects and artists to design and project manage bridges, buildings, sculpture and moving structures. David is now Director of Design and Engineering at Cake Industries, a combined design and fabrication business.

Dr Hazel A McDonald
Chief Bridge Engineer
Transport Scotland

Educated at Glasgow and Strathclyde Universities, Hazel has been immersed in maintenance, renewal and asset management of Highway structures for over 25 years, 14 years of this with Transport Scotland. Previous experience with Cumbria County Council and Capita Symonds in inspection, design and maintenance followed a PhD in ‘Temperature Effects in Concrete Box Girder Bridges’ and bridge inspection and assessment for Mott MacDonald. In Transport Scotland, Hazel leads a team of 12 staff managing the inspection, maintenance and improvement of Scottish Trunk Road structures.
Richard Parfitt
Project Team Manager
Dorset Highways

Richard started his career working for an engineering consultancy based in the Midlands before moving to Dorset Highways in 2009. Working in the Bridges and Structures Team Richard gained seven years’ experience of designing, managing and supervising the construction of a wide range of structure types. These include steel, reinforced concrete, timber and masonry structures on highways and footpaths. Richard is now a Project Team Manager where he leads a team of Highway Engineers delivering the objectives of the Local Transport Plan. Richard graduated from the University of Warwick and became a Chartered Member of the Institution of Civil Engineers in 2015.

Michael Smith
Chartered Engineer
Arup

Michael Smith is a chartered engineer within the Infrastructure Advisory team at Arup. Michael began his career as a structural engineer in Australia working in the mining, resources and transport sectors, as a bridge designer for several years. As the resources boom in Australia slowed, Michael’s growing interest in whole life asset management offered a timely opportunity to concentrate on asset investment planning, asset condition and performance monitoring and technical assurance for asset portfolios. Now based in London, Michael works to support asset owners, operators and investors to achieve the highest value and/or level of service from their assets.

Dr Donald Pearson-Kirk
Technical Director
WSP Structures Investigation Group

Dr Donald Pearson-Kirk is Technical Director for the WSP Structures Investigation Group. Donald has worked as a technical advisor to numerous international agencies and governments, and is the author/co-author of over 260 technical papers. He has directed the planning for, and investigations of, over 360 post-tensioned bridges in the UK, Europe, the Middle East and USA. Those bridges have included the Charles River Bridge in Boston, Massachusetts and the A4 Hammersmith Flyover in London. The SIG team has applied the BD 54/15 processes to over 330 post-tensioned bridges in the UK since the Standard was issued.

Professor Xiaolin Meng
Professor
University of Nottingham

Professor Xiaolin Meng is Fellow of the Royal Institute of Navigation, Professor of Intelligent Mobility, and Theme Leader of Positioning and Navigation Technologies at the University of Nottingham. He is the founding director of the Sino-UK Geospatial Engineering Centre – an international centre for satellite technology exchange. He is also a Special Professor at the Chinese Academy of Surveying and Mapping and Wuhan University (China) respectively. He has been leading multi-million ESA and Innovate UK projects on structural health monitoring and driverless vehicles and author of more 300 journal and conference publications. He is the chair of many international associations and a member of the editorial boards for leading international journals.
Join your colleagues at Bridges 2020

2019 attendees included representatives from:
Amey • Arcadis • Arup • Atkins • Cambridgeshire CCI • City of York Council • Coventry City Council • COWI • Dept for Infrastructure • Doncaster MBC • Highway Engineering OU • Hull City Council • Jacobs • Kent CC • Lewisham LBC • Leeds City Council • Leicestershire CCI • Lincolnshire CC • Enfield LBC • Wandsworth LBC • Office of Rail and Road • Pitney Bowes • Rhondda Cynon Taf CBC • Ringway Jacobs Ltd • Rochester Bridge Trust • Skanska • SSE • Surrey CC • Tarmac Highway Services • Tony Gee and Partners • Transport Scotland • Wakefield Council • Waterman Aspen • Welsh Government • West Sussex CC • WFEL Ltd • WSP and many more.

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Phil Raven, Skanska Infrastructure Services

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