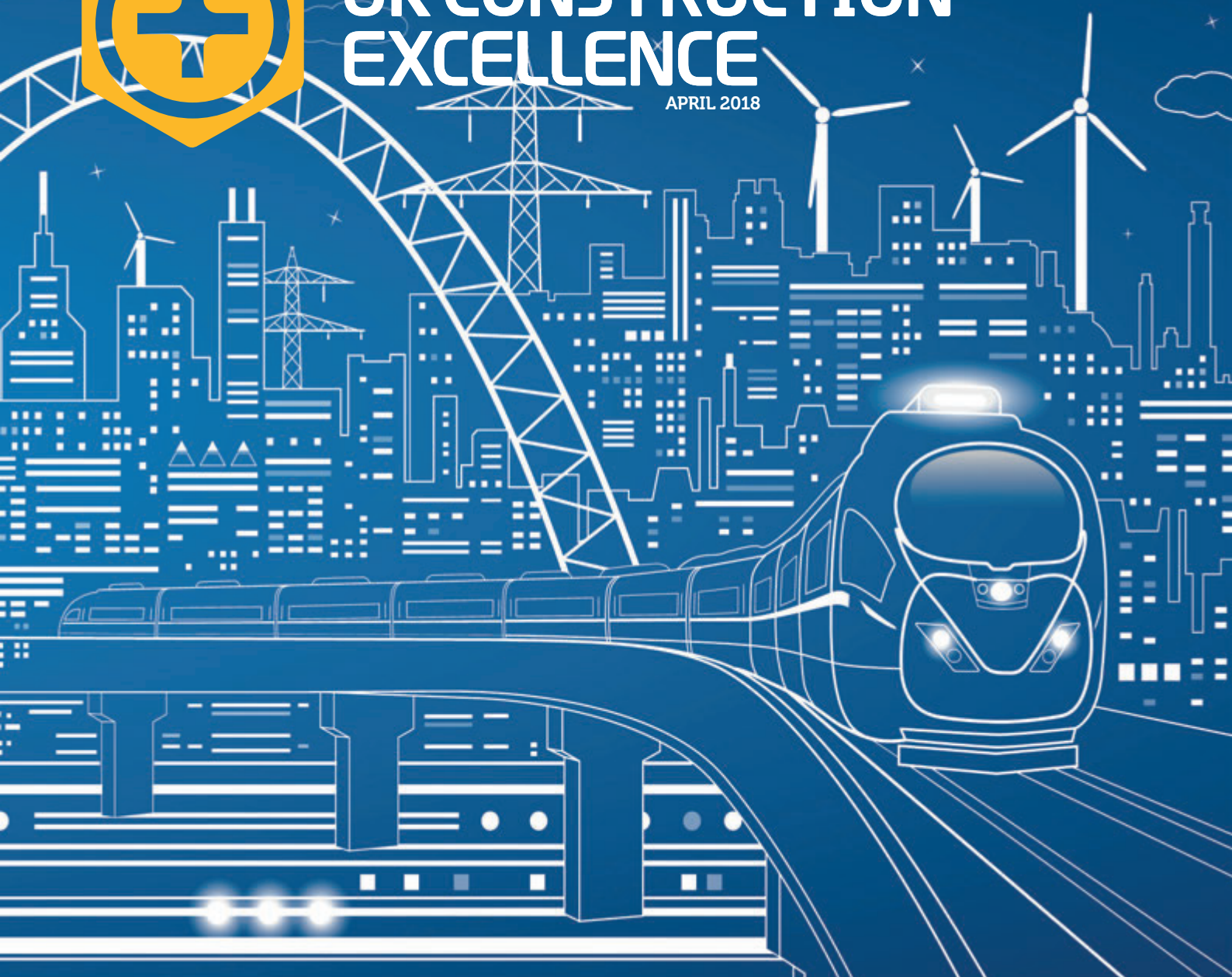




# UK CONSTRUCTION EXCELLENCE™

APRIL 2018



**UK** the  
**INFRASTRUCTURE**  
SHOW 2018  
Constructing the Future  
17 APRIL 2018 - NEC, BIRMINGHAM

THE UK'S LEADING  
INFRASTRUCTURE, HOUSING  
& SUPPLY CHAIN EVENT

22 **TRANSFORMING  
INFRASTRUCTURE**

30 THE FUTURE  
IS DIGITAL

36 PROTECTING THE UK'S  
NATIONAL INFRASTRUCTURE  
FROM CYBER THREATS

# **UK** the **INFRASTRUCTURE** SHOW 2018 Constructing the Future

# The UK's Leading Infrastructure, Housing & Supply Chain Event

17 April 2018 – NEC, Birmingham  
[www.ukinfrastructureshow.co.uk](http://www.ukinfrastructureshow.co.uk)

For exhibition and sponsorship opportunities  
please contact 0845 270 7066 or email:  
[exhibitions@ukinfrastructureshow.co.uk](mailto:exhibitions@ukinfrastructureshow.co.uk)

OFFICIAL PROJECT PARTNERS



# WELCOME

## from the editor

**WELCOME** to this issue of UK Construction Excellence, where we take an in depth look at infrastructure. From roads, rail and transport to utilities, housing and digital requirements, infrastructure is key to keeping Britain moving. The latest Infrastructure Pipeline confirms £600Bn of investment across

the country, and with massive projects like HS2 underway, the UK is ripe for opportunities. This month, the NEC also hosts the UK Infrastructure Show, where a wealth of procurement opportunities will be on show. In this edition, we take a closer look at some of these ongoing infrastructure projects, such as Tideway's super sewer

across the Thames, and speak with experts in the sector on how planning infrastructure investments are key to tackling the nation's housing crisis.

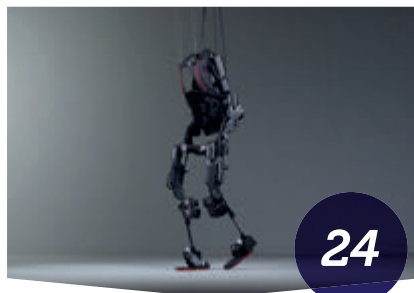
**Victoria Maggiani**

# CONTENTS

## inside the latest issue



**Common Sense 6  
– Smash & Grab 0**



**Exoskeletons for  
Construction Workers  
Are Marching Onsite**



**RMD Kwikform: the  
role of Temporary  
Works is changing**

**Publications Editor**  
Victoria Maggiani

**Designer**  
Seamus Norton



**CONSTRUCTION  
MEDIA**  
ISSN 1461-1279

Follow us on...



UK Construction Media, Pacific House, Pacific Way, Digital Park, Salford, M50 1DR  
**0845 5571316 • enquiries@promarkmedia.co.uk • www.ukconstructionmedia.co.uk**

© Copyright Promark Media 2018. All rights reserved. No part of this publication may be copied, reproduced or transmitted in any form without the prior permission of Promark Media. Views expressed in this magazine are not necessarily those of the publisher.

IN ASSOCIATION WITH



MEDIA PARTNER



## Keynote Arena

10.25 - 10.45

**Opening Keynote Address**



**BOB SLEIGH OBE**

*Deputy Mayor of West Midlands*

10.45 - 11.05

**Transforming Infrastructure Performance**



**KEITH WALLER**

*Commercial Advisor, Infrastructure and Projects Authority*

11.05 - 11.25

**HS2: Building Britain's Railway**



**LORNA PIMLOTT**

*Director of Sponsorship & Policy, Phase 2, HS2 Ltd*

11.25 - 11.45

**Tideway: A Project Overview and Supply Chain Opportunities**



**ROGER BAILEY**

*Asset Management Director, Tideway*

11.45 - 12.05

**Keynote Address**



**HENRI MURISON**

*Director, Northern Powerhouse Partnership*

12.05

**CLOSE**

OFFICIAL SPONSORS



## Agendas >>>

### Housing Zone

10.30 - 11.00

**Creating a Good Tender Specification**

**Eddie Regan**, Principal PASS Consultant

11.00 - 11.30

**Effective Evaluation**

**Eddie Regan**, Principal PASS Consultant

11.30 - 11.55

**Regeneration Programmes in Westminster - an overview**

**Samantha Rogers**, Category Manager, Procurement Services Westminster Council

12.00 - 12.25

**Effective Routes to Compliant Procurement**

**Tracy Harrison**, Deputy Chief Executive, Consortium Procurement

12.30 - 12.55

**Contract Management**

**Kevin Lewis**, Client Relationship Manager

13.30 - 13.55

**Managing Risks on Brownfield Sites**

**Jon Freeman**, Regional Technical Director, CELTIC Technologies Ltd

14.00 - 14.25

**Working Together, Smarter not Harder!**

**Keith Armstrong**, MD & Company Secretary, Procurement For All

# Your On Day Event Guide

**8** PROJECT PARTNERS

**1000+** DELEGATES

**5** KEYNOTE SPEAKERS

**20+** TRAINING OR SUPPLY CHAIN SESSIONS

**1** DAY

**50+** EXHIBITORS

## Moving Zone

10.45 - 11.10

### Developing a Long Term Infrastructure Pipeline for the North

**Jonathan Spruce**, Interim Strategy Director, Transport for the North

11.15 - 11.40

### Crossrail 2 - Supporting Growth in the South East

**Representative**, Transport for London

11.45 - 12.10

### Supply Chain Opportunities with HS2

**Robert Slater**, Supply Chain Analyst, HS2

13.15 - 13.40

### Putting Transport Users First - why measuring satisfaction matters

**Anthony Smith**, CEO, Transport Focus

14.15 - 14.40

### East West Rail - Phase 2 (Bicester to Bedford/Milton Keynes to Aylesbury)

**Dominic Baldwin**, Alliance Director, Network Rail

Agendas are subject to change

## Powering Zone

11.25 - 11.50

### Delivering Wylfa Newydd Power Station and Supply Chain Opportunities

**Ivor Sheppard**, Commercial Director, Construction, Horizon Nuclear Power

11.55 - 12.20

### The Hub - creating Europe's best-connected destination for leisure, living and business

**Huw Lewis**, Managing Director, Urban Growth Company

12.25 - 12.50

### Supply Opportunities with SSE

**Nolan Miller**, Strategic Supplier Manager, SSE

13.30 - 13.55

### Digital Infrastructure - unlocking the true value for your project

**Ralph Pullinger**, International Technical Manager, ALLPLAN UK

14.00 - 14.25

### Midlands Connect - Powering the Midlands Engine

**Representative**, Midlands Connect

## Skills Development Zone

13.00 - 13.30

### Tenderers' Common Mistakes

**Eddie Regan**, Principal PASS Consultant

13.45 - 14.15

### What exactly does 'Added Value' mean?

**Eddie Regan**, Principal PASS Consultant

14.30 - 15.00

### CompeteFor: Opening the Supply Chain for Local and SME Suppliers

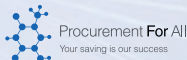
**Mary Carmichael**, Senior Customer Relationship Manager, CompeteFor

15.00 - 15.30

### Tips to improve your Tender Responses

**Eddie Regan**, Principal PASS Consultant

OFFICIAL PROJECT PARTNERS



OFFICIAL PARTNERS

IN ASSOCIATION WITH

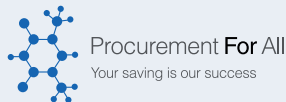


MEDIA PARTNER



## Our Project Partners

We are delighted to be working with some of the largest infrastructure projects currently under way across the UK. Each of the Project Partners below will have a dedicated exhibition Pavilion within the Product Showcase at the UK Infrastructure Show 2018. Come along and meet with representatives from each organisation to find out about supply chain opportunities available.



OFFICIAL SPONSORS



### CompeteFor Advice & Support Hub

Following CompeteFor's successful use by the London 2012 Games authorities and their supply chains, the service continues to be used in the supply chain of major capital infrastructure projects, such as Crossrail and the upcoming HS2 project. The CompeteFor Advice & Support Hub is the go-to place for any organisation looking to improve their procurement capability, get a complimentary profile check-up or have your questions answered.



### Delta eSourcing Pavilion

The Delta e-Sourcing team will be on hand to demonstrate the latest Contracts Manager module, change manager and performance manager and how they simplify life cycle costing for public sector buyers.

Visit us at the Delta eSourcing Pavilion and chat to public sector procurement specialists and experts, learn about how new legislation will affect procurement in your organisation. It's also a great networking opportunity and a chance to meet suppliers and other buyers face to face, generate interest and understand future UK government policies.



### UK Construction Online

UK Construction Online is one of the UK's largest communities of key decision makers for Construction, Infrastructure and Industry. Providing up to date news and insight, UK Construction Online allows organisations to engage directly with a range of sector-based solutions, designed specifically to enhance your knowledge and understanding of this ever-evolving marketplace.

# Your on the Day Event Guide

**8** PROJECT PARTNERS

**1000+** DELEGATES

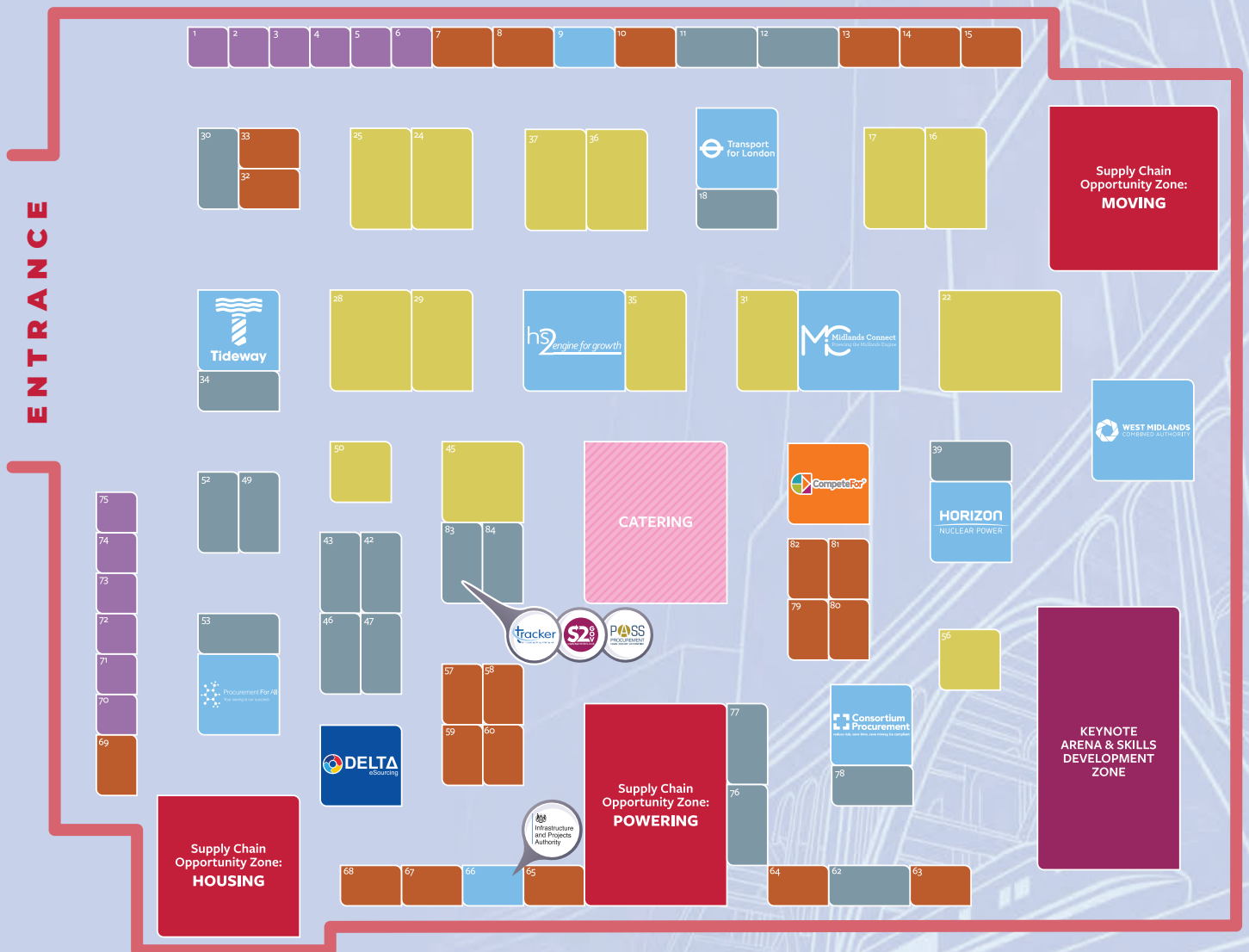
**5** KEYNOTE SPEAKERS

**20+** TRAINING OR SUPPLY CHAIN SESSIONS

**1** DAY

**50+** EXHIBITORS

## Floor Plan





## RAPID EXPANDS ITS HOISTS RANGE

After investing over £1 million in 24 new powered access machines and two delivery vehicles, Rapid Platforms has followed this up by substantially expanding its hire range of goods and passenger hoists.

The Hertfordshire based company has taken delivery of 20 new hoists, ranging from Bumpa elevator hoists with payloads of 80kg through to Geda goods and passenger hoists with lifting capacities of up to 850kg.

Rapid Platforms provides an end to end service, from initial site survey through to hoist set up and removal, including provision of temporary power. The company also provides service and inspection for clients' own Geda hoists.

*"This latest investment represents a substantial expansion of the range and type of hoists that we supply and is due to an increase in demand from all areas of the construction sector. The Geda hoists are particularly popular because they can be dismantled into small components for the smallest access restrictions and erected directly against a wall or a designed scaffold".*

Rapid Platforms Hoist and Transport Manager  
Paul Moss

## RAPID GAINS FORS SILVER ACCREDITATION

Rapid Platforms has been awarded FORS (Fleet Operator Recognition Scheme) Silver accreditation for its good working practices in the way it operates its powered access machine delivery and service van fleets.

FORS is a membership scheme set up to establish industry benchmarks and acknowledge operational efficiency within the freight industry. Through encouraging and recognising the good working practices of individual operators, the scheme aims to improve all areas of freight distribution in London and the UK.

To progress from FORS Bronze to Silver, Rapid Platforms had to demonstrate to FORS assessors that its commitment to safety, reducing CO<sup>2</sup> emissions, congestion, collisions and operator costs included areas such as staff training, fleet performance measurement, fleet safety equipment, and incident and collision reporting.





**HIRE  
HOISTS  
SALES  
SERVICING  
TRAINING**

*Rapid*  
**PLATFORMS**

Call 01279 501 501 Visit [rapidplatforms.co.uk](http://rapidplatforms.co.uk)

## Lendlease lands HS2 Euston role

HS2 has confirmed Lendlease will be responsible for constructing the line's gateway to London through its Euston development.

Lendlease has been appointed as Master Development Partner (MDP) by the Secretary of State for Transport and Network Rail. The company behind the 2012 Athletes' Village and the new International Quarter, gateway to the Queen Elizabeth Olympic Park, will lead the planning and development of Euston. They will work with GLA and LB Camden to develop a 54 hectare masterplan, which is expected to unlock up to 1,700 new homes and 19,000 jobs around the wider station site with sustainable mixed-use developments, once station construction is complete.

Welcoming the appointment, HS2 Minister Nusrat Ghani, said: "Confirming Lendlease as our intended major partner is an exciting and important moment as we drive forward the regeneration of Euston. We are setting out a strong vision for creating new homes and jobs, stimulating economic growth and building a modern development that will match the ambition and scale of HS2.

"Crucially, as we build Britain's future railway we will ensure that communities are at the heart of our plans and share the transformative economic benefits on offer."

HS2 Chief Executive Mark Thurston, said: "The arrival of HS2 gives us a unique opportunity to transform the wider Euston station site, opening up the station to the surrounding community with new streets and public realm as well as opportunities to unlock thousands of new jobs and homes, anchored around a common masterplan vision.

"It was great to see such a strong competition and I'm pleased to welcome Lendlease to the team. Their experience of delivering some of the world's most challenging transport and development projects will be vital as we move forward with this exciting new phase in the story of Euston station."

David Biggs, Managing Director Network Rail Property, said: "Network Rail has a successful history of creating great places and we're excited to use this expertise to work with stakeholders, landowners, and our new development partner to establish a visionary masterplan for Euston.

"Like our award-winning work at nearby King's Cross, which attracted £2.2Bn of private investment including new offices, jobs and homes, we will work to transform Euston station to meet modern needs and act as a catalyst for wider regeneration. With this transformation and the arrival of HS2, Euston station quarter will become a new thriving London destination which meets the needs of passengers and local communities."

Lendlease are already working on a masterplan for International Quarter London, at the gateway to the Queen Elizabeth Olympic Park. Development of land here intends to create some 25,000 jobs centred around some of the best transport connections anywhere in the country. Like Euston, the development of the Olympic Park shows how infrastructure investment can help areas live up to their full potential, delivering new jobs, homes, shops and leisure opportunities. In the six years since the Games, the area has been transformed, with new neighbourhoods created and work ongoing to integrate the new development into the surrounding community with new streets, public spaces and leisure facilities.

Lendlease worked with a broad consultant team including Prior and Partners, Grimshaw, Arup, BIG, AHMM, Haworth Tomkins, Asif Khan and AECOM.

Dan Labbad, Lendlease Chief Executive Officer International Operations, said: "We are proud and excited to be selected as preferred bidder to deliver the Euston OSD in partnership with HS2, Network Rail, London Borough of

Camden, GLA and wider stakeholders. "We believe this is a fantastic project in a key area of London which will provide opportunity for all and act as a catalyst for wider UK growth."

The appointment of Lendlease as MDP allows for a coordinated approach with Network Rail, and a unified approach to long-term development, which could unlock up to 4.84M sq ft of development space.

Jules Pipe, London's Deputy Mayor for Planning, Regeneration and Skills, said: "Euston has the potential to be much more than just a transport hub, and we look forward to working with Lendlease to make it into a real public space, which benefits local people, drives business growth, and unlocks some much-needed housing.

"As one of our capital's main stations, it must seamlessly connect HS2, national rail, the Tube and, in the future, Crossrail 2."

The new HS2 station will be designed with input from local communities, using best practice principles from stations around the world, and guidelines and specifications endorsed by an independent panel of leading architects and designers.

The project will include a new interchange with the London Underground, combining Euston and Euston Square for the first time and including provision for a future connection to a potential Crossrail 2. HS2 Ltd recently announced a shortlist of bidders in the running to build the station, and appointed Engineers Ove Arup & Partners, working with Grimshaw Architects, to take forward the design. The main construction phase is due to begin in 2019 with the first HS2 services arriving in 2026.

**Don't forget to visit HS2 Ltd at UKIS 2018 to discuss their procurement opportunities: Book now.**

Image © HS2/Grimshaw



## First BREEAM infrastructure certificate awarded to HS2

Image © HS2/Grimshaw

A BREEAM Infrastructure (pilot) Scheme Certificate has been awarded to HS2 in recognition of its hugely ambitious sustainability strategy.

The landmark assessment – a first for UK infrastructure – helps demonstrate HS2 Ltd's commitment to environmental protection and the economic and social impacts associated with development. Considerations include working with communities, being a good neighbour, prioritising safety and wellbeing, and building sustainable economic benefit for Great Britain – better skills and career opportunities for the next generation.

"We are very pleased to receive this BREEAM Infrastructure certificate," said Peter Miller, Environment Director for HS2. *"Our goal with HS2 is to design and build the most sustainable high-speed railway of its kind in the world, working in partnership with our supply chain and local communities to leave a positive legacy for future infrastructure projects both in the UK and beyond. This certificate is a testament to our sustainability commitments and to the lasting benefits of the HS2 project."*

BREEAM Infrastructure forms part of the international BREEAM family of sustainability standards for buildings and infrastructure. Later this year the best in BREEAM Infrastructure – together with sustainable infrastructure initiative, CEEQUAL – combine to provide an international scheme for the future, imaginatively titled CEEQUAL (2018). The CEEQUAL (2018) development process will include feedback and learning from BREEAM Infrastructure's HS2 implementation.

Chris Broadbent, Director of Infrastructure at BRE, added: *"From 2014 HS2 was the first project to engage with BRE in the development of BREEAM Infrastructure working with us to pioneer a new approach to a sustainability strategy which applies right across the entire HS2 project. This is a first for the UK and it will set the standards for future infrastructure projects around the world."*

## PM launches planning reforms

The Prime Minister has launched a set of planning reforms aimed at tackling the housing shortage and delivering homes for everyone.

The reforms mark a major overhaul to the National Planning Policy, focusing on maximising the use of land, strengthening protections for the Green Belt, and placing a greater emphasis on converting planning permissions into homes.

The government is determined to tackle the housing shortage and has already implemented a number of measures to secure new housing developments. With government support, 2017 saw the biggest increase in housing supply in England – over 217,000 new homes – for almost a decade. However the government aim is to deliver 300,000 homes a year by the mid-2020s. In order to achieve this, more planning permissions need to be fast tracked to allow both first time buyers access to the housing market, and increase the supply of appropriate housing to the older.

It is to this end that the Prime Minister is conducting the first major overhaul to the National Planning Policy Framework in six years. The reforms provide a comprehensive approach for planners, developers and councils to build more homes, more quickly, in the places people want to live. Councils and developers will now be required to work with community groups to ensure those affected by new developments will have a say on how they look and feel.

It will focus on the following areas:

**Greater responsibility:** Local authorities will have a new housing delivery test focused on driving up the numbers of homes actually delivered in their area, rather than numbers planned for. Developers will also be held to account for delivering the commitments, including affordable housing and the infrastructure needed to support communities.

**Maximising the use of land:** Local authorities will be allowed to make the most of existing brownfield land for housing, while using redundant retail or industrial land will be encouraged, with more flexibilities given to extend upwards.

**Maintaining strong protections for the environment:** Ensuring developments bring environmental benefits where possible, as well as increasing the protection given to ancient woodland.

**Ensuring the right homes are built:** Delivering more affordable homes that meet the housing needs of everyone such as: first time buyers, build to rent homes,

guaranteed affordable homes for key workers, and adapted homes for older people.

**Higher quality and design:**

Introducing new quality standards for well designed new housing.

**More transparent planning process:** Local authorities will be encouraged to work together and continue to close the gap between planning permissions granted and homes built.

Housing Secretary, Sajid Javid, said: *"An entire generation is being locked out of a broken housing market as prices and rents race ahead of supply. Reforming the planning system is the crucial next step to building the homes the country needs. This government is determined to fix the broken housing market and restore the dream of home ownership for a new generation. There is no silver bullet to this problem but we're re-writing the rules on planning so we can take action on all fronts."*

*"In moving to a more integrated society, the focus for everyone, whether a developer or a neighbourhood group, must be to come together to build the homes our communities deserve."*

John Acres, MRTPI, President, The Royal Town Planning Institute, said: *"We are delighted to be co-launching the consultation on the new National Planning Policy Framework today and we encourage the planning profession and others who care about planning and what it can do, to feed back to government."*

*"The RTPI will be holding a series of round table sessions for our members around the country to discuss its contents."*

*"Planners are critical to and passionate about building vibrant and connected neighbourhoods, towns, cities and wider areas; at the heart of which we need to ensure we build enough good quality homes that fit the needs of all."*

*"A clear, concise and consistent policy context can help to deliver this. We applaud the government's focus on homes and planning and in revising the framework."*

These planning reforms are part of a wider package of housing reforms designed to tackle the housing shortage; including a £5Bn Housing Infrastructure Fund which has already seen £866M allocated to 133 council led projects to fund key local infrastructure including new roads, cycle paths, flood defences and land remediation work, all essential ahead of building the homes.



# HAMPSHIRE PLANT & ACCESS MAKES FURTHER £1 MILLION INVESTMENT

After completing a £1 million investment programme in 2017, Hampshire Plant & Access (HPA) is investing another £1 million this year to further update and expand its powered access and plant hire fleet. The latest investment includes the following additions to the HPA fleet:

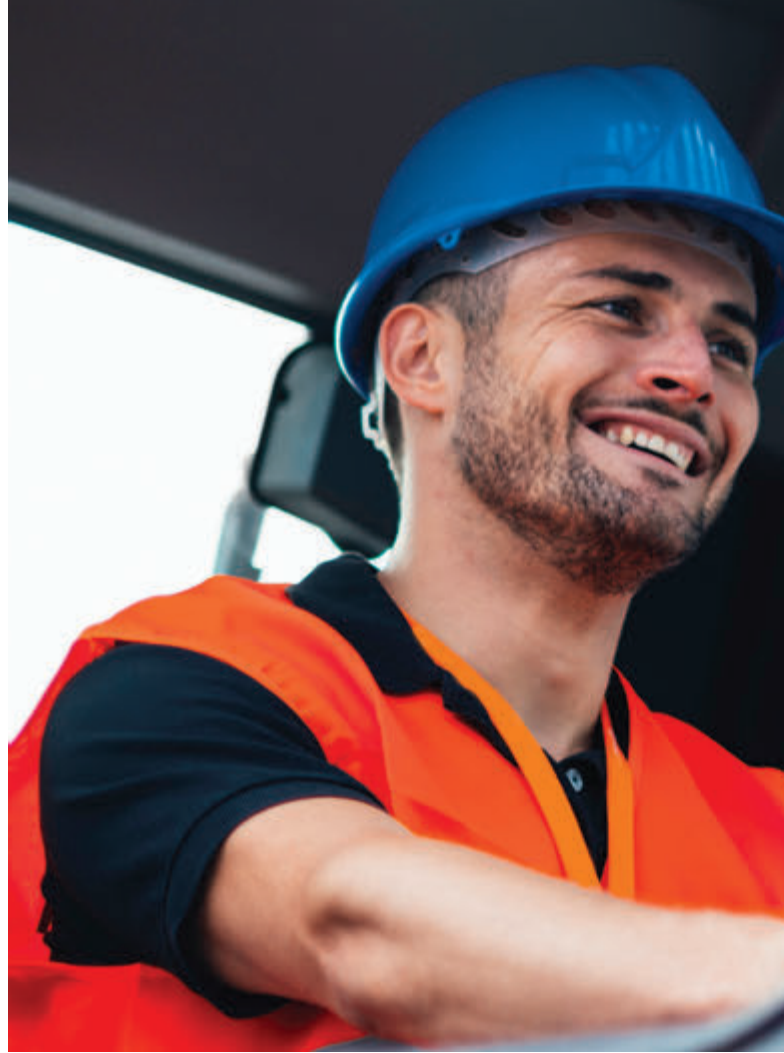
- Six JCB excavators, ranging from the 8008 micro excavator through to the JCB 131 14 ton machine
- Two tool compressors
- Two one ton hi tip JCB dumpers
- Two Gehl TD80 tracked dumpers
- Four Manitou telehandlers, from 6m to 10m
- Nine electric scissor lifts and eleven boom lifts, from 10m to 19m.

HPA has recently launched a new website to provide customers with a new look, easy to navigate site with smartphone and tablet friendly functionality.

HPA offer an unrivalled service in plant and access hire throughout the southern counties, with a reputation for quality, excellent customer service, and an extensive product range of over 600 plant and powered access machines within their fleet.

Operating from depots in Winchester, Southampton and Salisbury.

Visit [hampshireplantandaccess.co.uk](http://hampshireplantandaccess.co.uk)  
Call 01962 851 155





## PLANT HIRE & ACCESS EQUIPMENT

[hampshireplantaccess.co.uk](http://hampshireplantaccess.co.uk)



## Work begins on £5M Isle of Wight Flood Scheme

Work has begun on a scheme which will protect more than 300 local properties in Ryde from flooding. The first day of Spring saw the Environment Agency contractors begin the £5M scheme, in partnership with the Isle of Wight Council and the Southern Regional Flood and Coastal Committee. When completed, the scheme will significantly reduce flood risk to properties in the area.

The scheme is being undertaken as the Monktonmead Brook, which drains a catchment of approximately ten square kilometers via an outfall at Ryde, regularly blocks due to tidal sands accumulating. This sand migrates up the culvert towards the sea wall restricting flow through the outfall. Despite an automatic increase in pumping, the restriction of flows causes water to back up in the Brook, leading to an increase in flood risk to Ryde. Work at the site will be carried out in stages, with the first stage comprising the construction of a new outfall pipe from the sea wall. This will allow clear outfall to be maintained and more water discharged into the sea during heavy rainfall, meaning a significant reduction in river overflows flooding land and properties in Ryde.

The second and final stage is the construction of a flood wall around Simeon Street Recreation Ground, Marymead Close and the river boundary of the BT depot. These works are planned to start in June 2018 and be completed by October 2018.

Environment Agency Manager John O'Flynn said: "We are delighted to be launching this multi-million pound scheme on the island, which includes over £1M of partner contributions that will benefit so many local homes and businesses. A sensible approach to funding and a good relationship with our partners has allowed us to begin the work in early spring. We'll now be able to minimise disruption to the beach in the summer, avoid environmental constraints (including overwintering birds) and deliver a completed scheme that will reduce the flood risk by the autumn."

Environment Minister Thérèse Coffey said: "We are investing £2.6Bn to better protect the country from flooding, including over 1,500 flood defence schemes which will better protect 300,000 homes by 2021. The Isle of Wight scheme is an important step in building our resilience, protecting more than 300 homes and businesses locally and giving people all important peace of mind."

Cabinet member for environment and heritage Councillor John Hobart, said: "Together with our partners, we are making great progress on flood prevention measures for Ryde and we are working alongside the Environment Agency and the Southern Regional Flood and Coastal Committee to reduce the risk of floods in the long term. We are excited to see this work beginning early spring to further strengthen flood measures for the residents of Ryde and surrounding habitat."

## New research shows rail is vital to the UK economy



New economic research, recently published by the Railway Industry Association (RIA) and its partners, has shown that the economic value of the UK rail network is significantly higher than previously thought. Figures currently used by the government do not take into account the wider rail network,

including metro services and catering and retail at stations, which the new research has shown is vital to rail's contribution and has increased rail's economic importance.

New figures, from Oxford Economics, show that the UK's rail system:

- Contributes over £36Bn annually to the UK economy (a greater economic impact than the food, drink and tobacco manufacturing and the chemical and pharmaceutical industries);
- Provides around 600,000 jobs (employing more people than the entire workforce of Birmingham);
- Generates £11Bn annually in tax revenue; and
- Generates £2.20 of income from every £1 spent on the rail network.

The Government is currently using figures that show the UK rail sector employs 240,000 people and has an

economic value of rail at £10.4Bn.

On the publication of the report, Darren Caplan, Chief Executive of the Railway Industry Association, said:

"The report published today shows that the economic value of rail to the UK is considerably bigger than previously thought. These new figures of around £36Bn GVA and 600,000 jobs take into account the full impact of the rail industry and include areas such as metro services, rail stations and related catering and retail, which are often not included in other studies. The implications of this report are clear. The UK rail system should not be seen just as a vital mode of travel – connecting businesses, friends and family, and visitors to the UK – but also as a key industry for the economy in its own right. We urge the Government to consider and use the findings of this report when developing its Industrial Strategy agenda, negotiating trade deals with other countries once we have left the EU, and when promoting our world-class exports offering overseas generally."

Steve Cocliff, Managing Director, VolkerRail Group – one of the ten supplier partners to the report – said: "We welcome the findings of the report today. At VolkerRail, the work we undertake creates a significant number of job, training and business opportunities either directly or through our supply chain, with a large proportion of the revenue generated feeding back into the local communities we work in. It is therefore very positive to see the economic benefits companies in the rail sector set out so clearly in this research"

Stephen Joseph, Chief Executive, Campaign for Better Transport, said: "Rail is a low carbon and highly skilled industry. This new research highlights just how big a contribution it makes to the economy. There is a very strong case for the Government to build on this strength with a long-term investment strategy, including support for a long-term electrification programme, to promote rail as a pillar of the UK economy."

**There's never been a  
better time to start winning  
construction tenders**



**Become the superhero  
of your company  
today!**

---

**Register for FREE – [www.supply2govtenders.co.uk](http://www.supply2govtenders.co.uk)**



# UK Rail Research and Innovation Network

In a ground breaking partnership between the rail industry and Higher Education, the UK Rail Research and Innovation Network (UKRRIN) has been launched.

UKRRIN has been established following a successful £28M bid to the Higher Education Funding Council for England to create rail Centres of Excellence, backed by commitment from the rail industry to invest more than £60M in research, development and innovation activities at these Centres over the next ten years.

The partnership will deliver four world-class Centres of Excellence covering rolling stock, infrastructure, digital systems and testing, giving the industry access to purpose-built world leading facilities and skills in a range of areas to support research, development and innovation for new technologies and products.

In order to maintain the UK's position at the forefront of rail technology, the centres will help deliver new products and technology to the market at an advanced rate, supported by industrial partners, using advanced purpose-built development, simulation and testing facilities.

- Key objectives of UKRRIN are: Support and build UK rail sector capacity and capability to develop, deliver and deploy new technologies;
- Deliver a step change investment in rail innovation through a world-

leading network of UK- based research and testing centres;

- Radically increase UK rail productivity and performance by delivering transformational innovations and accelerating its uptake;
- Develop new strategic relationships with the small – medium sized enterprise supply chain, rail industry and wider transport sector.

Jo Johnson MP, Rail Minister, says:

*"We are investing in the biggest modernisation programme of our railways since Victorian times, delivering what passengers want – more frequent trains and quicker and more comfortable journeys.*

*"In doing so, we are utilising a range of new technologies across the network and Britain is now at the cutting edge of digital signalling, high speed transport and railway infrastructure.*

*"New centres of excellence, bringing together experts, universities and the wider rail industry will be essential in achieving our ambition to get all diesel-only trains off the track by 2040 as well as delivering the advanced railway network that passengers deserve."*

Professor Clive Roberts, Director of the Birmingham Centre for Rail Research and Education at the University of Birmingham, commented: *"UKRRIN gives universities and rail industry partners the opportunity to shape the global future of railways. This launch is*

*the official beginning of an innovative partnership, and we look forward to reinforcing the UK as the world-leading centre of rail innovation."*

Jo Binstead, Head of Innovation at Siemens Rail Systems and Chair of the UKRRIN Steering Group, said: *"The launch of UKRRIN marks a ground-breaking partnership for innovation in UK rail and a step change in industrial research investment. By bringing together leading UK universities and industry, we can ensure that developments being made through academic research can be commercialised to deliver transformative changes across our railway network."*

David Clarke, Technical Director of the Railway Industry Association said: *"The Railway Industry Association (RIA) is proud to be a key supporter of the establishment of UKRRIN, a new initiative that will bring universities together with the supply chain in a new collaborative partnership, in order to spur innovation in the sector.*

*"UKRRIN will bring together some of the UK's leading academics with businesses who work every day on the railway – with the potential of unlocking innovations that could radically change our rail system, to the benefit of passengers and freight services. We look forward to seeing what this powerful partnership can do in driving new thinking over the next ten years."*





## New bridge opens as part of UK's biggest road infrastructure initiative

The A14 Integrated Delivery Team – comprising Balfour Beatty, Costain and Skanska – has completed the second of 34 new bridges and structures as part of the UK's biggest road infrastructure initiative. It's another major milestone for the £1.5Bn Highways England orchestrated road infrastructure improvement programme. As part of the works a 21 mile stretch of the A14 between Cambridge and Huntingdon is to be upgraded from two to three lanes in both directions, while a brand new 17 mile bypass will be built just south of Huntingdon.

The new bridge, which connects Brampton and Grafham in Cambridgeshire, is 50m longer than the previous structure in order to accommodate the widened A1 and forthcoming A14 – totalling ten lanes of carriageway in all. The old bridge will be demolished by excavators, with any and all concrete recovered crushed and reused elsewhere on the project. According to Mike Evans, Highways England's Senior Stakeholder Manager for the A14 Cambridge to Huntingdon: *"The Brampton Road bridge is an important link for communities living across the A1 and A14 just south of Huntingdon and we are delighted that many turned up to mark the occasion and open the new bridge to traffic with us."*

*"Now that the new bridge is opened we can get on with demolishing the old bridge and continue building the new A1 and A14 carriageways at this location and keep to the project's challenging timetable to open the new A14 to traffic by the end of 2020."*

## February falls flat for construction

IHS/CIPS UK Construction PMI data has been released for February, which shows subdued growth for construction. The figures show marginal rises in the sector, with a decline in new work and strong inflation combining to create difficult conditions in the sector. Data collected during February reflects a continuation of market conditions which have prevailed since December. Total business activity increased only marginally during the latest survey period, while new work decreased for the second month running. Respondents to the survey highlighted fragile business confidence and ongoing political uncertainty as key factors in holding back client demand, with strong input cost pressures, higher raw material prices, fuel bills and staff wages noted as contributing factors. February's data logged 51.4 in the Index, slightly up from January's four-month low of 50.2. These figures show just a marginal increase in construction output during February, and are lower than the average 2017 figure of 52.3.

Looking more closely at the data, civil engineering emerged as the worse performer, with activity falling at the sharpest pace for five months. The figures have also no doubt been affected by a lull in house building, which logged in at its weakest rate since Q3 2016. Commercial construction, which has been lagging recently, provided a bright spot in the figures, with an upturn in this sector growing at the fastest rate since May 2017. Although new business volumes fell during February, the rate of decline was only marginal and slightly slower than seen at the start of the year.

Comments Tim Moore, Associate Director at IHS Markit and author of the IHS



Markit/CIPS Construction PMI®: *"The construction sector endured another difficult month during February, with fragile business confidence, entrenched political uncertainty and softer housing market conditions all factors keeping growth in the slow lane. Residential work appears on track to experience its weakest quarter since Q3 2016, suggesting that house building is losing its status as the main engine of construction growth. "Civil engineering activity was the worst performing category in February, with survey respondents again commenting on a shallow pool of work to replace projects reaching completion. While subdued house building and infrastructure work acted as a brake on the construction sector, this was partly offset by a sustained turnaround in commercial building. "The increase in work on commercial projects during February was one of the strongest seen over the past two years. Some construction firms noted that greater industrial demand, alongside structural changes in consumer spending habits, had contributed to new project opportunities. "Despite pockets of resilience in the UK construction sector, there was little sign of an imminent turnaround in overall growth momentum. Reflecting this, total volumes of new work dropped for the second month running in February and business optimism was among the weakest recorded by the survey since 2013."*



# Highways England apprentice scheme

As part of Apprenticeship Week, which ran 5th – 9th March, Highways England urged people to sign up and become one of the dozens of apprentices the company plans to recruit this year. Managing England's motorways and major trunk roads, Highways England is responsible for some of the country's biggest construction projects, and works with numerous apprentices across its projects. In the next few months, Highways England will take on up to 75 apprentices, with places made available through its website. Highways England's apprenticeship scheme supports the government goals to create 30,000 apprenticeships in road and rail by 2020. New recruits will be helping to play a part in modernising England's strategic road network by developing and delivering technically advanced projects. These include schemes such as the A303 Stonehenge improvements and The Lower Thames Crossing. The company currently offers apprenticeships in business

administration, IT, electrical engineering and civil engineering and Human Resources. It is planning to extend the list to include accounts, quantity surveying, transport planning and project management. This year's Highways England apprentice of the year, project manager Amelia Kirwan, aged 19, said: "I urge anyone in my position to see what Highways England has to offer. "The opportunities available to me are huge. Highways England supports my learning and I am able to explore different areas of a varied sector. Our roads are an important part of everyone's day-to-day lives and are heavily relied upon and therefore my role is really important. "Completing my apprenticeship will result in me achieving a Diploma in Project Management that is recognised worldwide – the possibilities are endless!" San Johal, Highways England Human Resources Director said: "This is a great time to join our team. We are investing

in the next generation, and our apprenticeships are open to all and are a real alternative to traditional routes like university. "With the UK needing an extra 20,000 engineering graduates a year, Highways England is taking part in the Year of Engineering. This national campaign is all about showing young people what an engineer is, and what they can achieve. "For Highways England we need a continuing pipeline of young engineers to help deliver the massive investment planned for our motorways and major A-roads, benefitting the economy and improving people's lives." Highways England continues to develop strong relationships with schools and colleges as part of a wider 'early talent' recruitment plan, to encourage children to continue the study of STEM (Science, Technology, Engineering and Mathematics) subjects, helping to inspire the engineers and construction professionals of tomorrow.



# CompeteFor<sup>®</sup>

In association with



The National  
Supply Chain  
Portal for major  
buying programmes

[www.Competefor.com](http://www.Competefor.com)

CompeteFor  
is supported by:



# COMMON SENSE 6 – SMASH & GRAB 0

When the drafting committee of the Local Democracy, Economic Development & Construction Act 2011 saw the fruits of their efforts come into force on 1 October 2011, I very much doubt that they expected the changes they made to the interim payment regime under relevant construction contracts would be interpreted in the way that they have. The approach of the Courts to date, who have in effect sanctioned a 'smash and grab' culture which has, until now, infiltrated and damaged so many contracting relationships in our industry, felt very 'un-British' to me and at last we now have a decision from the Technology and Construction Court which, I believe, puts our industry back on the right track. The case I am referring to is *Grove Developments Ltd v S&T (UK) Ltd* [2018] EWHC (TCC) ["Grove -v- S&T"].



## What do I mean by 'smash and grab'?

Various decisions of the Courts bring us to the start of 2018, pre- Grove -v- S&T, with a number of notions fixed firmly in our minds.

- a) The lack of response to a valid contractor's interim application for payment by way of a valid payment or pay less notice meant that the contractor's application for payment had to be paid in full without any deduction or set off because the contractor's application had become the default payment notice.
- b) Even if this meant that the contractor was completely overpaid, this interim position could not be challenged and only subsequent valuations or the last payment becoming due could right this wrong.
- c) In the case of interim payments, there was no right to adjudicate on the true value of the actual work done in order to combat the absence of a valid payment or pay less notice.
- d) The lack of response to a valid contractor's final application for payment by way of a valid payment or pay less notice meant that the contractor's final application for payment had to be paid in full without any deduction or set off because the contractor's application had become the default payment notice.
- e) The true value of the contractor's final application could be adjudicated upon.

As a result of the decision of Mr Justice Coulson in Grove -v- S&T things have now changed. The judgement lists six reasons why, contrary to the position believed by all to prevail, Mr Justice Coulson decided that an adjudicator does have the power and jurisdiction to decide

the 'true value' of a contractor's right to payment at any time:

- 1) Just as a court has the inherent power to open up and decide upon the 'true value' of any certificate, notice or application, so too has an adjudicator.
- 2) There is no limitation on the nature, scope and extent of a dispute that can be referred to adjudication. Section 108(1) of The Housing Grants, Construction and Regeneration Act 1996 and paragraph 20 of the Scheme for Construction Contracts are expressed in the widest language. An adjudicator would therefore have the power and jurisdiction to determine the 'true value'.
- 3) A dispute concerning the 'true value' of a contractor's application is a different dispute to one which addresses whether a valid payment notice or pay less notice has been issued in time and/or is valid.
- 4) CT contracts differentiate between 'the sum due' and the 'the sum stated as due'. The former refers to the mechanism designed to determine a contractor's precise entitlement and the latter the amount included in the contractor's application which will be payable in the absence of a valid payment and/or pay less notice. These two things are not the same.
- 5) Just as an Employer might serve a payment notice or pay less notice at a value less than an amount applied for by the contractor, resulting in an adjudication to determine the true value, it would be unfair to deny an Employer the same right where a late or invalid payment notice or pay less notice had been served by him or on his behalf.

6) There was no contractual basis for differentiating between the position concerning an interim application for payment and the final payment.

For me this judgement returns us to an equitable position where any short-lived advantage gained from a successful unjust 'smash and grab' adjudication can be rectified by a subsequent adjudication to determine the true value of a contractor's entitlement. This very clear judgement is a 'must read'. It contains a thorough and comprehensive review of all relevant case law and can be found at:

<http://www.bailii.org/cgi-bin/format.cgi?doc=/ew/cases/EWHC/TCC/2018/123.html&query=%28grove%29+AND+%28developments%29>

**Peter Vinden is a practising Arbitrator, Adjudicator, Mediator and Expert. He is Managing Director of The Vinden Partnership and can be contacted by email at [pwinden@vinden.co.uk](mailto:pwinden@vinden.co.uk). For similar articles please visit [www.vinden.co.uk](http://www.vinden.co.uk).**





# CONTRACT

## Terminating contracts: The common pitfalls

As is well documented now, construction giant Carillion went into liquidation in January 2018. At the time of liquidation, the company's debts were estimated at around £1.5Bn. It was the UK's second biggest construction company. One of the key lenders to Carillion, Barclays, voted to provide more money to the company alongside HSBC. But with other banks refusing to lend, the firm was forced to wind up. This has caused uncertainty and legal issues for some companies and provided opportunities for others. In the aftermath of the collapse, termination of contracts is a more prominent issue than ever. The issues surrounding repudiatory breaches and when companies can terminate contracts has once again been put in the spotlight in a recent case. Whilst not a construction case, the issues regarding termination are to be recognised by the construction industry and companies should take note of the impact.

The recent case of *Phones 4U Ltd (in administration) v EE Ltd [2018]* emphasises that getting the correct termination clause in a contract is a common risk. The case goes to show that prior to terminating a contract a party must analyse the full extent of the provisions to ensure it is not in breach.

The case revolved around EE terminating a trading agreement. *Phones 4U (P4U)* was to sell consumer pay-monthly contracts. P4U ceased to trade in September 2014. Clause 14.1 of the agreement gave either party the right, at any time, to terminate with immediate effect by giving notice in writing if there was a material breach committed to the other. EE sent a termination letter to P4U.

Clause 14.1.2 allowed for termination if any party is 'unable to pay its debts or takes any steps to: initiate a composition, scheme, or other arrangement with any of its creditors.' It was understood that the

appointment of administrators gave EE the right to terminate in writing. However, P4U was also not under a breach of contract or involved in a breach if administrators were appointed.

Following termination of the contract, P4U brought proceedings against EE seeking unpaid commission fees. EE counterclaimed, and stated that P4U's inability to continue trading amounted to a common law repudiatory breach, allowing it to terminate on the grounds of repudiation and further entitled it to a claim in damages. P4U had failed to engage in normal trading activity as authorised seller of EE products and EE stated this was a repudiatory breach. The amount was in the region of £200M.

The case of *Hong Kong Fir Shipping Co. Ltd v Kawasaki Kisen Kaisha Ltd [1962]* established that a repudiatory breach of contract will usually "go to the root of the contract", "frustrate the commercial purpose" of the contract or "deprive the party not in default of substantially the whole benefit" of the contract. It is usually argued where there has been a fundamental breach of contract.

However, whether this amounted to a repudiatory breach of contract was not really the issue in the P4U case. The issue is what they said in the notice. P4U argued that EE's counterclaim was unjustifiable because the wording in the original termination letter referred to a contractual right of termination, clause 14.1.2 of the contract, which therefore precluded the right to terminate on the common law grounds of repudiatory breach of contract. The court agreed with P4U and stated that the termination letter was an express communication of contractual termination, unrelated to the common law right to terminate arising out of repudiatory breach. EE had to show that the contract was terminated by the exercise of its common law right to terminate for a

repudiatory breach and it could not.

The letter sent by EE only communicated the contractual termination and it did not matter that EE could have terminated for other reasons. The judge held: "...it communicated unequivocally that EE was terminating in exercise of, and only of, its right to do so under clause 14.1.2, a right independent of any breach. *Phones 4U* was not accused of breach."

The judge also commented in his judgment: "...but what EE cannot do is re-characterise the events after the fact and claim that it terminated for breach when that is simply not what it did. Nor can it say that it treated *Phones 4U*'s renunciation (as now alleged) as bringing the contract to an end when that, again, is just not what actually happened."

This case, whilst not about a construction contract, shows once again in the wake of the Carillion collapse that termination of contracts can become a contentious issue. Where there are differences in a party's stance, a terminating party cannot rely upon both contractual and common law termination rights.

Termination grounds are mutually exclusive, and the notice must clearly define which grounds are relied upon. In circumstances such as the P4U case and in many construction cases where there is both a contractual and the common law right to terminate, the terminating party must consider which method of termination will provide them with the best result. Parties can face further disputes should the notice not be supplied in the correct way, or if a party wrongly purports to terminate a contract, which may itself sometimes amount to a repudiatory breach of contract.

**Mark James, Partner –  
Dispute Resolution, Coffin Mew**

# Discover more UK construction contracts & project leads with Tracker Intelligence

Bringing buyers and suppliers together for over 30 years



Try Tracker for free:

[www.trackerintelligence.com/ukc](http://www.trackerintelligence.com/ukc)





# Transforming Infrastructure

A new National Infrastructure and Construction Pipeline was published at the end of 2017, which confirmed over £600Bn of private and public investment in UK infrastructure.

Published by the government's Infrastructure and Projects Authority, it came hot on the heels of the Chancellor's Autumn Statement in which he promised investment into infrastructure and construction skills through a £23Bn National Productivity Investment Fund. Government investment is supporting some 40% of projects included in the pipeline, which is the largest and most comprehensive ever, with private finance making up more than half of the pipeline to 2020/21. The pipeline will help deliver important local projects across the country including transport, broadband, flood defence, and housing.

Major projects featured in the pipeline include, Thames Tideway Tunnel, the rollout of smart meters, and the upgrading of the A14.

Through the pipeline, UK infrastructure investment is set to reach a record high. The investment fund includes infrastructure investments of over £2.6Bn to improve transport networks; a multimillion-pound package to accelerate the future of broadband, and £7.2Bn to support the construction of new homes. Over 720 projects and programmes across transport, housing and digital to fire up the nation's infrastructure are featured within the pipeline, with around 20 new schemes added to the pipeline since March 2016,

including the Oxford to Cambridge Expressway.

Investing in better infrastructure is at the heart of the government's ambitious plans to close the UK's productivity gap, and the NPIF is designed to boost productivity in the long term. If the UK raised its productivity by one percentage point every year, within a decade it would add £240Bn to the size of the economy; £9,000 for every household in Britain. Chief Secretary to the Treasury David Gauke said: *"This record infrastructure pipeline is set to make a real difference to people's lives from quicker and easier journeys, to better broadband access, and building more homes for people who need them in high demand areas.*

*"It is clear proof that we are absolutely committed to ensure our infrastructure is fit for the future, which is at the heart of our ambitious plans to close the UK's productivity gap and build a fair economy for everyone.*

*"It builds on our strong record of delivering the modern infrastructure this country needs for the twenty-first century."*

Chief Executive of the Infrastructure and Projects Authority (IPA), Tony Meggs:

*"Creating the IPA has enabled us to produce a more comprehensive pipeline. Having the visibility and certainty of a pipeline of construction and infrastructure investment allows industry to invest strategically for the market, not just tactically for the project.*

*"We will continue this comprehensive approach, working with industry to deliver the pipeline.*

*"It is an important step in the IPA's mission to deliver important infrastructure projects successfully, so we can raise people's living standards, boost our productivity and grow our economy."*

Alasdair Reisner, Chief Executive of the Civil Engineering Contractors Association (CECA), said: *"If the UK infrastructure sector is to plan for the investment in skills and innovation that will be required to deliver world-class infrastructure in the coming years, it is vital that companies are able to strategically allocate funding on a basis of projected need.*

*"The pipeline is a crucial tool that enables companies to plan ahead and deliver optimal outcomes for clients, taxpayers, and communities."*

Nick Bayestock, Director General of the Institution of Civil Engineers (ICE), commented: *"Infrastructure services enable balanced economic growth and thriving communities.*

*"This updated National Infrastructure and Construction Pipeline sets out the value of infrastructure to the economy and provides long term visibility to industry.*

*"ICE welcomes the government's commitment to infrastructure delivery and a more strategic approach to addressing the UK's infrastructure needs."*

Complementing the pipeline, the government launched new report findings: Transforming Infrastructure Performance. The Transforming Infrastructure Performance report is the government's plan to increase the effectiveness of investment in infrastructure by improving productivity. This includes both economic





infrastructure such as transport and energy networks, and social infrastructure such as schools and hospitals. Aimed at revolutionising British infrastructure and boosting the construction sector's productivity, the report estimated that £15Bn in savings could be made every year through its implementation.

2017 saw construction bodies repeatedly citing infrastructure and civil projects as holding back growth in the industry, the pipeline secures infrastructure development across the country and will encourage the sector to invest in the right technology and skills to meet this demand. The Transforming Infrastructure Performance (TIP) programme sets out how the government will ensure these projects are delivered swiftly and efficiently. This ambitious plan aims to transform infrastructure delivery over the long-term, using the government's influence to drive modern methods of construction so Britain can lead the world in high-tech building. The Transport Infrastructure Efficiency Strategy sets out how these lessons will be applied to drive efficiency and productivity in transport. Upon launching the TIP, Andrew Jones MP, Exchequer Secretary to the Treasury, said: *"We are backing Britain with a record amount of infrastructure investment as we build an economy fit for the future. That's why we're working with the industry to skill up and scale up for the challenges ahead."*

*"Investing in infrastructure boosts productivity for the economy as a whole. The scale of the investment we are talking about here will deliver a step change for our country."*

Transport Secretary Chris Grayling said: *"We're undertaking the most ambitious improvements in our transport network this country has seen for decades. But we must also drive forward plans to ensure these*

*infrastructure projects are completed on time and on budget.*

*"World-leading projects such as Crossrail, the Ordsall Chord and the huge investment programme in our major roads show that Britain can deliver on time and on budget, boosting jobs and growth and creating new opportunities across the nation. But we want to do better. This strategy shows the way and sets out our standards for how we will do more and better in future."*

Nearly a quarter of all construction projects in the UK come under the government's remit. This gives them the purchasing power to ensure modern methods of construction are used within the sector, driving innovation and skills training at the same time.

Off-site manufacturing is a major area the government would like to pursue, with benefits of reducing waste and speeding up delivery times making it very attractive. For example, a school that typically takes a year to build could be done in just over four months by using offsite construction methods.

The TIP and pipeline will help tackle some of the industry's issues head on, giving the sector the certainty to start investing in the right technology and skills.

Tony Meggs, Chief Executive of the Infrastructure and Projects Authority (IPA), said: *"Publishing our Transforming Infrastructure Performance (TIP) programme demonstrates our commitment to tackling the annual £15Bn productivity gap in construction."*

*"The IPA has a significant role to play in helping to create a more productive and innovative sector."*

*"We want to maintain confidence in the sector and will work alongside industry, using our purchasing power to drive the adoption of modern methods of construction in both new and existing infrastructure. The scale of ambition*

*is great but by aligning our initiatives we can work with industry to deliver transformation for the sector."*

Andrew Wolstenholme, Co-Chair of the Construction Leadership Council (CLC), said: *"The Transforming Infrastructure Performance programme presents a huge opportunity for the industry and government to reap the economic gains from improving productivity during the delivery of the UK's £600Bn infrastructure pipeline. Transport is a huge part of that. I am delighted that the IPA, DfT and CLC are working closely to encourage construction clients to procure on the basis of whole life value, deliver more industry led innovation, develop the skills we need for the future and give the UK a competitive advantage in exporting new technologies and expertise."*

*"I am proud to chair the Transport Infrastructure Efficiency Taskforce which will ensure these strategies are brought to life across the transport sector."*

*"It all adds up to better economic and social infrastructure, as well as more homes, delivered quicker, at better value and more sustainably than ever before, underpinning the UK's growth and providing jobs all over the UK."*

Director General of ICE Nick Baveystock said: *"Productivity, quality of life and the ability to face future challenges depends on the right high-performing infrastructure assets being managed in a coordinated way. Through the Transforming Infrastructure Performance (TIP) programme, Department for Transport's Infrastructure Efficiency Strategy and the commitment to £600Bn investment over the next ten years, government has made a long-term, strategic commitment to an infrastructure system for a modern economy."*



# Exoskeletons for Construction Workers Are Marching Onsite

For construction workers of the not-so-distant future, the term “suit up” may refer to sporting a metal exosuit – an exoskeleton for construction workers – which provides robotic strength, even if it doesn’t quite bestow them with the powers of Iron Man.

The exosuits, or exoskeletons used within the construction industry are ripe for growth, says Dan Kara, who until December led research focusing on robotics at ABI Research, a technology business research firm.

ABI Research predicts the robotic exoskeleton market alone will reach \$1.8 billion in 2025, up from \$68 million in 2014. This year, about 6,000 suits will be sold, mainly for rehabilitation. By 2025, ABI expects to see about 2.6 million on the market.

While a number of companies make exoskeleton suits for construction and manufacturing use, they’ve made limited headway as of yet in the construction field and few, if any, construction companies have adopted them. Meanwhile, builders can keep tabs on manufacturers who are giving the robotic suits a test run to determine how they can translate to use within the construction industry.

## What are robotic exosuits?

The exosuits are metal frameworks fitted with motorised muscles to multiply

the wearer’s strength. Also called exoskeletons, the robotic suits’ metal framework somewhat mirrors the wearer’s internal skeletal structure.

The suit makes lifting objects feel much lighter, and sometimes even weightless. And the construction industry will be taking to these wearable powered or unpowered robotic exosuits in great numbers, at least according to one analysis.

## Fewer Injuries

In construction, manufacturing, agriculture, and other industries that are adopting the robotic structures, the exosuits augment human motion to allow for more lifting strength and for improved production on repetitive tasks like squatting, bending, or walking, Kara says. And construction workers rack up more than their fair share of overexertion injuries. In fact, they have some of the highest rates of musculoskeletal disorders per capita, according to the Bureau of Labor Statistics. Those type of injuries reduce the number of years construction workers can do their jobs and may even cause permanent injury.

## Suits the task

Some construction companies are working closely with exosuit developers to ensure the suits meet their needs. For example, in November, Gammon, a Hong Kong construction company, announced it purchased 10 Assist Suit Exoskeletons. Gammon will be conducting trials of the suit on its construction site for the developers, Panasonic subsidiary Atoun Inc. and Shun Hing Systems Integration Co. Ltd. The construction company will give feedback to developers with the intent to help further improve construction safety, efficiency, and productivity.

Kara claims that the growing construction industry will be adopting these types of exoskeletons in greater numbers. The recent advances in technology will help to make the construction site a safer and more efficient place.

*Jean Thilmany is a freelance writer living in St. Paul who frequently writes about engineering, robotics, and construction*

# Trimble Field Link for MEP

Trimble Field Link for MEP enables one person to handle layout faster and more accurately than two people using a tape measure, reducing labour costs and eliminating mistakes that lead to costly re-work.



## Robotic Total Station

Provides continuous measurement information for the accurate layout of your design data. One person can accurately layout hundreds of points in a single day.


## Field Tablet & Software

Reduce errors by exporting hanger points or cable tray attachment locations from your models to the field software for easy field location and staking.



[mep.trimble.co.uk](http://mep.trimble.co.uk)  
0800 028 28 28





# Five trends in data centre construction and design

by John Hunt, Senior Market Advisor,  
Construction, Enterprise Ireland



*According to a new Enterprise Ireland White Paper, produced in conjunction with the Data Centre Dynamics Group, the population's insatiable appetite for secure, connected, mobile information has led to the evolution of 'hyperscale facilities', which has important implications for data centre procurement, design and construction. Here, John Hunt, Senior Market Advisor at Enterprise Ireland, explores the trends which will affect the future of data centre construction and design.*

Ireland has a competitive edge as one of the principal data centre hubs for many of the world's technology giants, including Microsoft, Amazon, Google, Dell EMC, Yahoo, IBM, HP, Facebook, Equinix and Digital Realty.

With the rise of technologies in an ever-connected world, data centres are also evolving into larger, denser, more converged and scalable facilities than ever before. Some of the companies we support are increasingly flagging important issues and trends which will affect the sector moving forward. Here are a few, in particular, to watch out for, to ensure success:

**1) The rise of larger facilities due to 'digital twinning'**

As cloud-based technologies, the

Internet of Things and 5G continue to drive demand, 'digital twinning' between the real and cyber world will continue to grow. In turn, this will be beneficial for smart communities, towns and cities, highlighting an increase in the value of data and demand for larger data facilities.

**2) Opportunities for collaboration between hyper-scale facilities and smaller data centres**

Make sure you capitalise on parallels between smaller and larger data centre facilities, such as the importance of the cloud and new smarter technologies. There may also be opportunities for collaboration and shared knowledge to be considered.

**3) Digital transformation and edge computing**

Edge computing has risen to the forefront of the debate in recent years as smart cities, the Internet of Things and 'connected everything' place a focus on not only the speed at which data is analysed, but also how and where that secure capacity is processed and delivered. With edge quickly gaining traction, build sector companies should ensure they are

prepared for a new era of digital transformation.

**4) Changing business needs**

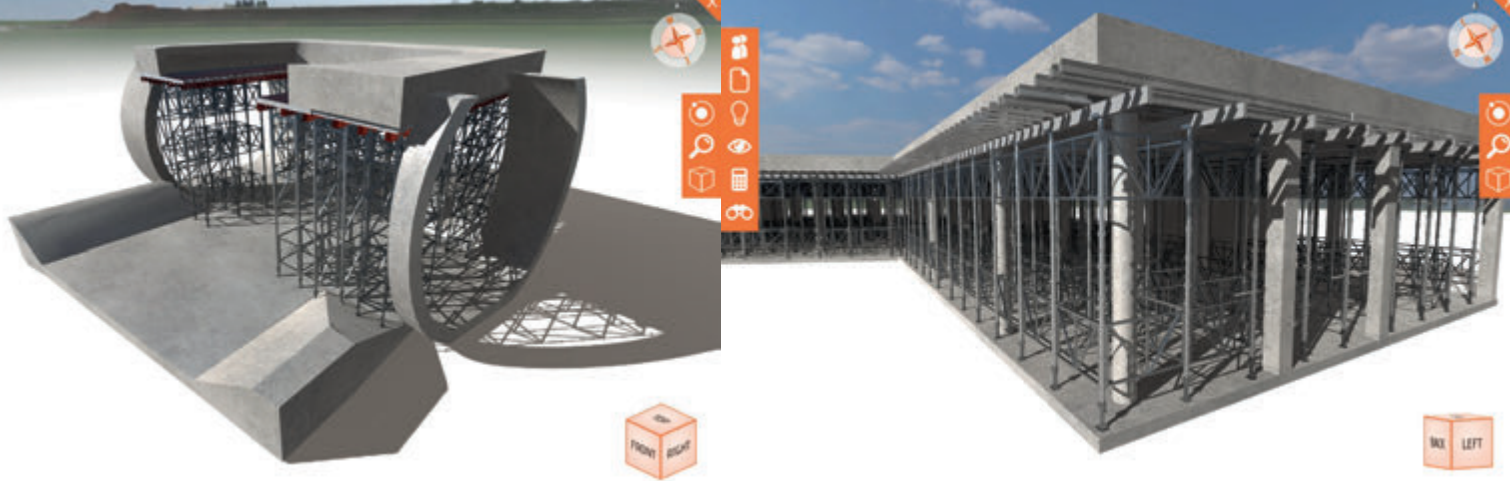
Whether looking to support critical applications or simply manage day-to-day operations, the needs of every company vary. Implement processes to better manage facilities and better juggle in-house and outsourced processes. This will help future-proof facilities.

**5) The importance of collaboration**

Data centres are in a state of constant flux, so working with flexible and responsive partners is key to success. Build strong relationships and value your suppliers. Find businesses which are leaders in their specialist areas and which can advise you on innovative technologies. For instance, off-site construction and BIM are gaining momentum, and we're increasingly seeing UK companies turn to Irish specialists in these areas.

This year and beyond, make sure you keep an eye on the above trends, which will help shape your strategy. In a rapidly evolving sector, stay flexible and adaptable, and success will follow.





# RMD KWIKFORM: THE ROLE OF TEMPORARY WORKS IS CHANGING

In recent years, the roles of suppliers have changed as client and main contractors require more visibility and data from their construction sites. Due to the requirements of BIM and the adoption of digital processes, it is no longer the role of a temporary works business to simply provide formwork and shoring

**At RMD Kwikform, it is now our responsibility to interact with the entire supply chain to support the overall method of construction, including its design and processes.**

Simon Dowd, Major Project Manager at RMD Kwikform, said: "We recognised some years back that the industry would move away from 2D drawings. It has been a slow trend; but as we work closer with customers, particularly on larger infrastructure projects, it's clear that 3D drawings should now be standard practice. We quickly learned that in order to service our customers, and by extension their clients better, we must evolve and work smarter alongside them."

RMD Kwikform has since evolved its 3D capabilities and designed solutions to automate highly realistic rendered 3D models, using an in-house developed visualisation tool, LocusEye. These models can be viewed on a PC, iPad or mobile phone, providing customers with a realistic model of how any solution looks on site. Flexible in functionality, LocusEye allows for changes to be made instantly and for solutions to be re-examined.

Simon Dowd, continues: "The industry needs smart solutions, and with the growing adoption of BIM and the mandatory aspect of it in major projects, our customers are now demanding IFC BIM compliant models of our temporary works solutions. In response

to our customer's needs, we're now building, automating and converting 3D AutoCAD models into IFC BIM compliant models. Through this system, on site clashes can be detected plus data can be captured to better manage equipment and plan construction phasing."

RMD Kwikform's new visualisation tool - LocusEye - has already been used across a number of national and international projects; including the UK's Mersey Gateway and University College London Hospital, Australia's Ventilation Facility and a number of Access Towers in Saudi Arabia.

"Some of the feedback we've already had is around the responsiveness of the models and how easy they are to interrogate. However, more importantly we've seen how much of a positive impact this has had in allowing main contractors to visualise the overall management, build ability, and future planning of the site.

"Any construction site needs to be flexible; it's just the nature of the job, the site demands change. With BIM compliant models, and through LocusEye, our customers are able to see what impact said change will have on a site. How does this change and affect planned phasing; how does it impact delivery of equipment? As the models are already embedded into the BIM model, our customers are able to manipulate processes, change phasing,

and target specific elements of any model. This puts the control back in the contractor's hands and grants complete visibility.

"With BIM compliant packages, and the added advantage of LocusEye, customers can use their own tacit knowledge to look at practicalities for delivery, erection and dismantling of kit; where access and egress can be placed, and how the temporary works solution accommodates for other works on site. It's all about the better management of the site in order to ensure even safer working practices, and ultimately reduce time and costs."



**Formwork, falsework and specialist solutions, including façade retention, are all part of the RMD Kwikform armoury, supported by our comprehensive product range and ability to design and supply unique supporting equipment.**

For information visit:  
[www.rmdkwikform.com](http://www.rmdkwikform.com)

# The future is digital





Propelled by the BIM mandate, technology within construction is taking leaps and bounds into the future. With construction traditionally seen as a slow moving beast, it's evolution since the introduction of digital technology has been rapid, with companies seeing the benefit of investing in these emerging technologies.

Mott MacDonald is a leader in the sector and keen to enhance the digitisation of construction where it can be.

We spoke to Mert Yesugey, Senior Project Manager at the company, about the developments in technology and how Mott MacDonald is applying the techniques.

Mott MacDonald is an engineering, management and development consultancy involved in solving some of the world's most urgent social, environmental and economic challenges. The firm also helps governments and businesses plan, deliver and sustain their strategic goals, responds to humanitarian and natural emergencies and improves people's lives.

Mert currently leads on the Thames Tideway East project, which won Mott MacDonald's internal BIM Award in 2016 and Bentley's Be Inspired Award for BIM Advancements in Project Delivery this year. He has extensive management experience in design delivery and collaborating with both clients and contracting organisations in the global design and build environment. A keen promoter of innovation, Mert's work on the Thames Tideway digital delivery design project saw him win Mott MacDonald's internal Group Project Manager of the Year Award for 2017. He also represents the consultancy on i3P, the UK Infrastructure Industry Innovation Platform.

We asked Mert about the developing use of technology in construction.

*"Construction has always been reliant upon technology in some way or another," he says, "whether that be advanced materials, construction vehicles or tunnel boring machines. However, because construction projects take place over such long timescales they carry enough residual risk to mean they rarely drive transformational technology. The pace of technological development in consumer-facing industries is far more rapid."*

What about the newer technologies that are emerging, such as virtual and augmented reality?

*"We are using VR on live projects, largely to look at the operational use of infrastructure during the design phase. On Thames Tideway East, this has been with Thames Water's operations and maintenance teams, while we have*

*also been looking at the end users on a major metro project in Australia. All our work is undertaken with a view to create better outcomes for society, not just looking for ways to streamline the delivery process."*

Such is the take-up and interest in the emerging technology, the company is currently deploying VR facilities across its major global offices, such as London, Singapore, Dubai and New Jersey, as well as a number of others across the globe. In the UK, many teams and offices are adopting the technology in different ways, from dedicated suites in Bristol and Blackburn to more agile deployments within some of the delivery teams.

The investment is a direct response to the reaction of clients, who have been highly receptive to the technologies deployed on projects, explains Mert. While there are often front-end challenges, such as demonstrating measurable benefits and identifying areas to maximise the return on investment, once these are overcome, the company sees significant uptake from clients and increased upskilling of the teams involved. With every new project delivered, these technologies are becoming the norm.

And what are the benefits that are gained from VR and 'virtual construction' technologies?

*"When targeted to specific construction challenges, there has been great benefit in demonstrating the feasibility of complicated construction methodologies during design development," says Mert. "On Thames Tideway East, VR was used to appreciate the scale and complexity of the construction of very large precast concrete sections, which was time dependant. This aided the design development of connection details where access is limited by tidal windows. The key challenge of VR is making sure it is deployed in a timely fashion during the feasibility phase of a project to maximise its benefits."*

And the more it is used, the less it is seen as a gimmick.

*"The drive from the consumer market is so much bigger and the level of immersion is far more compelling than it was even a year ago," adds Mert. "Immersion is not just visualisation. By adding elements such as spatial sounds and temperature changes, the brain is tricked into believing that what it is experiencing is real, to the point where the user is not only seeing the world from the cab of a crane, but feeling what it is like to be the crane driver. The user experiences vertigo, can see but not hear the banksman. This true sense of reality ultimately generates far more*

*value to the overall outcome than a 3D model on a screen can."*

The adoption of these new technologies is going hand in hand with the development of BIM and the ability to run at higher levels, he says. "Immersive technologies offer a much more intuitive and natural way to interact with information and digital assets than computer monitors and drawings. The opportunities for enhanced engagement with non-engineering stakeholders is clearly a vector for the demand for BIM from infrastructure owners and operators. It provides a much more tangible and impactful way to demonstrate and deliver the value of BIM to ultimate end users."

By embracing the BIM Mandate, both consultants and contractors are able to forge ahead with the digitisation of construction.

Mert continued: *"This is typical of the wider digital transformation effort, however, and adoption of new technologies is just one indicator of innovative and future-facing businesses. I don't think we require a separate, concerted effort to cause a wholesale shift in culture across the supply chain, market forces will see to that."*

And it's not just the larger companies that should be pursuing this integration.

*"SMEs and smaller businesses are well placed to embrace VR and AR," he says. "The nature of their leadership and smaller breadth of internal communications can allow rapid adoption, should their leadership choose to embrace it. The cost of equipment is also dropping rapidly, which, combined with the democratisation of software, is removing barriers to entry. At the same time, these organisations are potentially limited in wider application by their own boundaries. However, SMEs and smaller businesses can work with organisations such as Mott MacDonald to understand the benefits and help each other progress. As a larger organisation, Mott MacDonald can operate at different speeds, making sure projects are successfully delivered to standard processes while at the same time innovating by utilising new technologies on a global scale to maximise adoption and boost the expertise of staff."* And it's not just pre-construction stages that are benefiting from the development of technologies. Sensor technology is starting to come into play, giving facilities managers and engineers information that would not be available otherwise.

Mert agreed: *"I think there is still great potential in sensor technology. Our industry has a long way to catch up*

compared to others when it comes to collecting data and I feel that this is preventing productivity from being improved when delivering built infrastructure. As designers, we get limited feedback from the actual assets we have designed and built. However, there is great potential in sensor technology to provide us with the appropriate data to improve the way we design, build and operate. I would like to think that one day, our designs will be based on real-world data rather than empirical and dated design codes and standards."

When talking about the digitisation of construction, it is impossible to avoid mentioning the BIM mandate. Whether the mandate has been successful can be determined by the steps the industry is taking, rather than the full adoption of higher levels.

Mert explains: "Was the BIM Mandate successful? It depends on how you view success. If it means that we are now using BIM level 2 by default throughout the value chain, that all three million people in the UK construction industry are fluent with BIM ways of working and that we are seeing the step change in efficiency that was hoped for, then it hasn't been wholly successful. However, if it is viewed as the UK construction

industry taking meaningful steps towards a more progressive, digital future and is leading the world in the adoption of a structured approach to information management through the delivery of capital projects, then I think it has been very successful."

The government is pushing for higher levels across all public sector projects, whether this will further drive the change remains to be seen.

"Change is most effective when there is a compelling need for it," says Mert. "Sharing positive stories about real savings that have been achieved will certainly help. However, perhaps there also needs to be a stick to follow on from the carrot for those not making the necessary changes.

"We have all the technologies we need to make BIM level 2 a reality," he continued, "it is the mindsets and behaviours we lack. There could certainly be improvements in the way the leading software providers' products interact with each other, but this should not prevent us from making significant progress with the technology that is already available. For SMEs such as product manufacturers, there is a burning need for industry-wide product data templates so that they can provide

the same information to each client. There also needs to be a consensus on a realistic amount of graphical detail that is needed so that their products are adequately represented spatially. But again, these are not technological barriers."

The benefits of BIM to the design process are well known, with 3D models allowing for supreme optioneering, which streamlines the delivery process and brings efficiency savings in materials, time and costs to the construction process. However, project-centric BIM can only go so far as the majority of an asset's costs fall within its operational life.

Mert explained: "Asset lifecycle information management sees the physical, operational asset complemented by active management of information-rich models. This virtual asset uses intelligent data to streamline maintenance and optimise performance."

He concluded: "The future is smart infrastructure. Assets are interconnected to each other and all other information sources, everything from social media and ticketing data to weather forecasts and traffic information, to optimise the performance of all infrastructure for the benefit of the ultimate customers."



# Tree Services and Land Clearance

*for the construction sector*

More info: [www.gristwoodandtoms.co.uk](http://www.gristwoodandtoms.co.uk)

## Tree Contractor for Thames Tideway

Gristwood and Toms are proud to provide arboricultural services supporting the Thames Tideway Tunnel Project.

Methodology included:

> installation of vehicle tracking and 14m ground protection to prevent damage to grassed areas from tree works.

> installation of acoustic fencing to prevent noise pollution.

> provision of logs and woodchip to local nature reserves.

> FORS accredited vehicles used fitted with safety equipment and cameras to Silver standard.



## Professional Services



Tree Contracting



Land Clearance



Development Site Surveys.



# Thames Tideway Tunnel benefits from a digital strategy

Mott MacDonald provided innovative leadership on the UK's largest-ever water industry infrastructure project by enabling a going-digital strategy for the CVB JV project team (a joint venture of Costain, Vinci Construction Grands Projets, and Bachy Soletanche). The Thames Tideway Tunnel project sets the standard for construction projects around the world, as it connects diverse teams and improves collaboration. The project's primary objective was to reduce sewerage overflows into the River Thames, improve water quality, and create new infrastructure that will last at least 120 years while meeting strict European environmental standards.

An additional objective was meeting the UK government's goal of adding 182,000 new engineers by 2022.

Mott MacDonald was the lead designer for the CVB JV responsible for the East contract from Chambers Wharf to Abbey Mills, as well as a connection tunnel from Greenwich to central London. Its responsibility included 10km of tunnel works located 70m below the city of London, with six publicly visible shaft sites. Faced with coordinating 12 design disciplines and numerous participating firms spread across Europe, Mott MacDonald had to ensure the coordination and collaboration of all stakeholders. Some of the challenges included reducing the number of deliverables on the project (over 50,000), controlling the vast amount of data,

standardising processes, reducing rework, and streamlining the review process.

By adopting Bentley's building information modelling (BIM) methodology, Mott MacDonald ensured 3D digital engineering models would provide the immersive environment to support the planning and design phases. Project participants also took advantage of a connected data environment, leveraging an Azure cloud platform for improved collaboration and access to the right data at all times.

For this £4Bn project, Mott MacDonald and the CVB JV venture leveraged Bentley applications for design and construction. The adoption of Bentley's BIM methodology, which included 3D collaborative software, enabled better communication among the project disciplines to make informed decisions. Using ProjectWise, team members could access all deliverable information faster than on similar projects. This advantage reduced the total number of deliverables on the project. Using Bentley Navigator, project participants could review models, secure approvals, identify issues, and reduce rework. This helped complete design time six months ahead of schedule. Among the BIM processes adopted was COBie standards compliance for handover of project data to the owner-operator. BIM models were exchanged using iModels, saving 22.5 hours per week. With all data stored in a cloud-enabled connected data

environment, and all project participants adhering to the BS 1192 compliance workflow, the team saved 80% in project information delivery time and ensured everyone had access to the right data at the right time. Moreover, the 3D models leveraged an automated visualization method to identify potential hazards, ensuring data given to the field was fully compliant to desired safety standards. Mott MacDonald drove significant change in process and culture, which was key to achieving these project results. By adopting BIM processes and a going-digital strategy, the project team improved collaboration and cooperation with the supply chain and stakeholders. 3D digital engineering models enabled immersive simulation for review and approvals, and provided engineering-ready data required for handover. Mott MacDonald and the CVB JV utilised Bentley applications to ensure a 32% saving on developed design.

*"The project common data environment, hosted on ProjectWise, allows us to easily access the latest information and has improved and simplified design approvals. Bentley ProjectWise provided the tool to coordinate over 80,000 documents totalling 685 gigabytes of data to give 300 users across 12 design disciplines the latest controlled information on which to base design and construction decisions."*

**Article supplied by Michael Gaunt, BIM Manager, Mott MacDonald**

## REINFORCING YOUR AMBITION

Realise a fully collaborative digital experience. Allplan Engineering is the ultimate solution supporting the entire BIM process for engineers, structural detailers and construction companies. ALLPLAN reinforces your ambition with a superior and productive workflow.

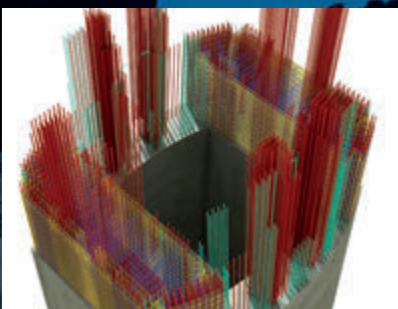
### DIGITALISE YOUR EXPECTATIONS:

- > Powerful BIM functionality for an efficient workflow
- > Model complex geometry with highly adaptive reinforcement
- > Fast production of quality drawings and deliverables

 **ALLPLAN  
ENGINEERING**

ALLPLAN UK here to support  
your engineering needs.

+44 (0)1530 560126  
sales.uk@allplan.com  
allplan.com



" Thanks to the detailed 3D reinforcement modelling there have been zero issues – the complete reinforcement has been delivered with precise dimensions, collision-free and on time to the Queensferry Crossing construction site." **Andreas Hartung, CHP Constructions**

## SECURITY BREACH

# Protecting the UK's national infrastructure from cyber threats

The threat of a serious cyber security incident has become a major concern for most organisations after two years of an almost constant stream of high-profile attacks hitting household names. However, while these attacks are bad news for the affected companies and their customers, a much bigger threat comes in the form of attacks targeting critical national infrastructure, explains Israel Barak, CISO at Cybereason.

The potential for a major attack on the UK infrastructure, such as the energy supply or the financial services sector, has grown significantly in recent times as both nation states and independent cybercriminals step up the volume and sophistication of their activity. Indeed, in January, Ciaran Martin, Head of the National Cyber Security Centre (NCSC), warned in an interview that he believed it was a matter of *'when, not if'* for a *'category one'* attack, which would cripple key infrastructure. Martin added that he believed the UK would be lucky to make it out of the decade without at least one such incident. Martin's comments came after the NCSC announced in November 2017 that Russian hackers had orchestrated

a number of attacks on UK targets, including the energy, media and telecoms sectors.

The UK has so far been fortunate to escape the wave of major attacks on national infrastructure that has swept the globe in recent years, with the energy sector as a major target.

## The energy sector under attack

A watershed moment came in 2015 when attackers hit the Ukraine's power grid – the first known cyber attack on an energy network. The attack used a malware known as BlackEnergy and resulted in 30 substations being shut off, with around 230,000 people being left without power for up to six hours. The attack took place during the Ukrainian-Russian conflict and is believed to be the work of an advanced persistent threat group working on behalf of Russia. In one of the most recent examples, a major oil and gas company in the Middle East was hit with a malware called 'Trisis', also known as 'Triton'. The malware was specially designed to target Schneider Electric's Triconex safety instrumented system (SIS) and

enables an attacker to force a plant shutdown, or even cause physical damage to a site. The incident was made more notable when Schneider Electric accidentally published crucial code from the malware on GitHub, potentially enabling criminals to replicate the attack.

Attacks on national infrastructure have become much easier to execute as the software and skills needed for high-level attacks become more readily available. BlackEnergy, Trisis, and other previous attacks such as the infamous Stuxnet worm, have all been tailored to attack specific systems by extremely skilled and knowledgeable hackers.

However, the burgeoning cybercriminal economy on the darknet means that such tools, as well as the means to produce them, are increasingly widely available for purchase.

## Advanced tools are becoming more available

A good example of this new paradigm came with last year's WannaCry and NotPetya ransomware attacks, both of which were designed using a

# HACKING DETECTED

47%

74%

vulnerability called EternalBlue, which had been stolen from a cache of NSA tools and publicly leaked online. The availability of high-grade malware and vulnerabilities means that attacks on national infrastructure are no longer limited to elite hackers with the resources of a nation state. Rather, any reasonably competent individual with a laptop can acquire the means to launch a devastating attack on the nation of their choice.

The good news is that attacks on infrastructure are much less enticing than ransomware campaigns or hacks targeting corporate and consumer data. Most criminals are motivated by personal gain and these kinds of attacks offer a clear payoff, whereas taking down a power grid or disabling a plant has no immediate monetary advantage. However, the fact remains that the potential is out there for any would-be terrorist or anarchist to take advantage of.

## How can critical infrastructure be defended?

As with most other nations around the world, the UK has invested heavily in protecting the classified networks used by governmental departments, as well as other vital instruments of national security such as weapons systems. However, when it comes to the critical national infrastructure, security is usually handled directly by individual private organisations. This means that poor practice by an organisation or even a single blind spot in security could lead to a cyber incident with a huge impact on the UK's economy and the safety of its citizens.

To compensate for this security weakness, it is essential that the

Government takes a strong hand in regulating the security of all high priority targets such as energy, transport and finance. Encouragingly, the Government recently published new guidelines for companies to comply with the EU Network and Information Systems (NIS) Directive, which will enter into UK law in May 2018. Organisations deemed 'Operators of Essential Services', which includes most energy, water, transport and health providers, will need to meet the terms of the Directive when it comes into force. The government also announced fines of £17M for firms that are found to have poor security practices, and regulators will be able to inspect companies to assess their cyber security readiness.

The NIS Directive sets out four core security objectives that organisations need to meet: managing security risk, protecting against cyber-attacks, detecting events, and minimising the impact of incidents. Within each of these objectives are many different tasks that will greatly help to reduce the risk of a serious incident.

However, complete security assurance is impossible in the modern IT environment. There are thousands of innovative hackers constantly searching for vulnerabilities that can be exploited to launch an attack. Each of them only needs to be successful once, whereas the organisations in their crosshairs must defend themselves again and again. Indeed, even the NCSC's Ciaran Martin admits that total protection is impossible, stating that some attacks will always get through, in which case cauterising the damage becomes the priority.

## The importance of real time detection

One of the most valuable security capabilities for the organisations that form the UK's critical national infrastructure is the ability to detect threats inside their network in real time. This will enable them to respond quickly and improves the chances of neutralising an attack before it can be escalated to exfiltrate critical data or damage essential operational systems. An important part of real-time detection is moving from signature-based security to behavioural analysis. Most traditional security measures, such as firewalls and antivirus, function by identifying known quantities that indicate an attack, such as particular code from previously identified malware.

A major shortcoming here is that the attack is more likely to be fully under way by the time these signs are visible. Further, most advanced persistent threats (APTs) use previously unseen malware, or attack methods specifically designed not to trigger signature-based detection, such as exploiting scripting programs like PowerShell.

To counter these techniques, organisations need to adopt security measures that use behavioural analysis to spot signs of suspicious behaviour across their IT network. Being able to detect these subtle signs in real time will make it possible to spot an attack before it can truly begin.

By both taking on these more advanced measures and following the essential guidance set out by the NIS Directive, the private organisations responsible for the UK's critical national infrastructure can ensure they are in the best possible position to prevent cyber-attacks from disrupting their essential services.

Article submitted by Israel Barak, CISO at Cybereason



# Transporting infrastructure







When George Osborne set out his plan to create a Northern Powerhouse back in 2014, the former Chancellor identified four “*ingredients that would transform the Northern economy: transport, devolution, innovation and culture*”. Today we can see that there has been progress with three of these elements. City-region mayors have been appointed in Greater Manchester and Liverpool, allowing these cities more autonomy in their future. And last year saw Hull enjoy huge success as the UK’s Capital of Culture, thanks to significant investment from Central Government. But without question, it is transport infrastructure that will have the most transformational impact on the Northern economy. Northern England has a population of over 15 million – more than Greater London. It contains five of the UK’s ten largest cities, and contributes 20% of UK GDP. Earlier this year Transport for the North (TfN), the organisation formed to transform the transport system across the North of England and provide the infrastructure needed to drive economic growth, published a draft investment plan for public consultation. This thirty-year plan is the first of its kind and outlines how transport connections across the North of England need to be transformed by 2050 to drive growth and close the economic gap between the North and the rest of England. These plans are ambitious, and include a new rail line between Liverpool and the HS2 Manchester Spur via Warrington; upgrades to the lines to Hull from Leeds and Sheffield; investment at Newcastle, York and Manchester Piccadilly stations to boost capacity; improvements to the A590 and A595; and work on the M53 junctions 5 to 11. Without substantial investment in transport and transport infrastructure, there can be no Northern Powerhouse. And that means major investment not just in HS2 but in a transport system that will transform connectivity between the key cities in the north: Manchester,

Leeds, Bradford, Liverpool and Hull. As well as HS2, which will connect Manchester and Leeds to the south, regional leaders in the north are recommending Northern Powerhouse Rail to improve east-west connections across the North, cutting journey times between Manchester and Bradford to 20 minutes and bringing ten million people within a two-hour train journey of Manchester Airport. This, they say, will deliver an economic benefit to the north of up to £100Bn. While I applaud these plans, I believe that making the Northern Powerhouse a reality is going to require more than faster trains. As well as connectivity, it is a culture of collaboration, rather than competition, that will be needed between the cities of the north but also between the several departments and sectors involved with NPH – including Transport and Energy, Housing and Manufacture, Education and Business. The question then is who will oversee a balanced, co-ordinated NPH strategy? Whilst key supporters and stakeholders recognise that a united North of England is vital, with the cities working together to develop a robust regional economy, each city also needs to establish its unique position in the market. This vital piece of the puzzle is unlikely to be a priority for central government; Northern cities will need to create their own identity and cultural legacy, engaging the business community and unlocking the economic potential (estimated at over £1Bn) that exists. If we are serious about investing in the North, it is essential to agree that connectivity is needed to deliver the economic plan – the cities need to connect and collaborate with each other physically, economically and culturally in order to comprise a true Northern Powerhouse, with a dynamic infrastructure existing alongside the development of culture, science and skills. In the key Northern cities of Leeds,

York and Manchester, Gensler, along with other architects, designers and engineers, is working to address these questions. We’ve seen first-hand that when foreign investors look to the Northern Powerhouse, they are not only interested in investing in a city with genuine potential to grow, but also in cities that embrace the essential elements of a vibrant community—connected, resilient, inspiring and healthy. Social and transport connectivity need to be of equal standing in a city’s infrastructural agenda, producing buoyant cities that are inspiring and healthy for all. For this to be successful, we need to ensure that the transit authority, the local governing jurisdictions and private developers are all aligned. Vision and leadership will be essential to fully address long-term regional growth trends and needs that should be achievable through genuine collaboration. While there is still uncertainty as to how the UK will fare post Brexit, what is certain is that we need to ensure that each of our key cities in the North is as strong economically and culturally as they can be, working in collaboration with each to create what will indeed be a Powerhouse of the north. A strong central strategy will help overcome this uncertainty and send an emphatic message that the Northern powerhouse is not just a concept but a reality that we will celebrate.

**Hiro Aso is a leading UK-based specialist in the architectural design and delivery of regenerative transport hubs, with more than 20 years of experience. He has led major railway infrastructure projects in the UK, most notably as lead architect overseeing the multi-award winning redevelopment of London King’s Cross Station for Network Rail and Crossrail Bond Street.**



# Understanding the challenges and building the infrastructure necessary to tackle the housing crisis

By Patrick Sweeney, Partner in the projects, infrastructure and construction team at law firm TLT

With Theresa May's housing policy announcements at the start of March, the government once again stated its ambition to address the UK's housing crisis. The attention now paid to housing, whether from the Prime Minister, the Chancellor of the Exchequer or MPs from both sides of the House of Commons, has propelled housing of all types towards the top of the political agenda. This is an encouraging development, but it is important to bear in mind that building homes is an integral part of a far more complex picture.

Many questions remain on infrastructure if we are to truly tackle the housing crisis. The government has pledged to deliver one million new homes between 2015 and 2020, with a further half a million homes by 2022. While it currently looks unlikely that such volumes of delivery will be achieved, these are the government's stated objectives and it is putting a number of components in place to speed up access to planning permission and maximise housing delivery. With an ever-increasing number of developments in the

pipeline up and down the country, developers, local communities and local authorities need to come together to meet the challenges that will arise, particularly on issues ranging from funding to transport to energy and social infrastructure.

## **Funding and understanding local development challenges**

Over the course of the last eight years, central government funding to local government has fallen. The reduction in this support has inevitably challenged

local authorities about how they deliver front line services, how they raise revenue to try and make up for the funding gap, and at the same time develop and regenerate areas in order to provide places in which people will want to live and work.

A number of local authorities and wider public sector bodies have sought to regenerate existing land they own to provide housing (including affordable homes). This has required developers to fund the building of these properties with public sector organisations retaining a stake in the development through retention of a number of units on site (which can then be managed by third party property specialists if no in-house capability exists).

These schemes are not without controversy as opponents of this approach claim the result permanently removes key assets from public ownership and further query the number of affordable or social housing units on such redevelopments. Ultimately, the charge is that such developments can force workers on lower pay out of certain areas.

Proponents of these schemes often defend the approach on the basis that they are doing what they can to address a housing shortage (and seeking to raise additional revenue to support delivery of front line services) within the parameters set by central government.

Beyond the challenges faced by the public sector on developments involving their land, there are a number of other matters which interested parties will need to consider and work on collaboratively to find acceptable solutions for all stakeholders.

### **Transport and service infrastructure**

Given the number of homes experts suggest are required and the number of homes currently being built, a number of different solutions will be needed to meet the future demands.

Inevitably, both brown field and green field sites will be considered for development which will undoubtedly lead to contentious planning applications – a concern the Prime Minister acknowledged in her recent speech.

Provision will need to be made for new developments to be connected to existing infrastructure such as utility services and fibre optic cables, as well as transport routes. This, in turn, could result in the need to build new roads, or even tram and underground stations. In areas undergoing considerable growth, it will be necessary to re-examine the capacity of existing infrastructure as roads and public transport systems become more heavily used as new residents move in. The lead time for such vital work

will also need to be considered by developers and local councillors alike.

### **Energy infrastructure**

These questions are not new and have been grappled with by those involved with the development process for decades. Given the pace of technological change, there is a clear need when planning a development or redevelopment to consider how a major infrastructure project can be future proofed. With the rapid and continued evolution of clean energy technologies, developers need to decide whether developments are built to energy-efficient passivhaus standards and whether they will feature off-grid energy schemes.

As wind, solar, ground-heating and energy storage technologies have developed to become efficient and affordable, it will be interesting to see whether the solutions to the housing crisis will also provide the tools necessary to prevent future energy crises. We have increasingly seen energy generation or energy storage projects feature as part of developments, giving residents off-grid energy capacities and reducing energy costs in the long run, and this will be a trend to watch.

We have also seen a number of local authorities seek to address fuel poverty, carbon targets, the need to find savings and the desire for their areas to become more energy secure by assessing the viability of district heating schemes. Such schemes may yet become more financially viable with the main phase of the Heat Network Investment Fund (HNIP).

There is a clear tension between developers (who may prefer to connect to mains gas supply) and local authorities who, for the reasons set out above, may use planning to require the installation of district heating schemes in a locality. We should therefore expect a certain number of innovative schemes to offer the capability of taking entire communities off-grid. Regardless of the energy infrastructure model chosen, the effects of energy-hungry electric cars will also need to be contemplated.

As the government and leading car manufacturers have bought into the electric car revolution over the last couple years, planners, developers and local authorities will have to plan accordingly. Indeed, with the government having announced a ban on diesel and petrol vehicles from 2040, the future of cars appears to be electric. This opens a new set of questions as to whether new developments should come with electric charging points as standard or with the capacity to add them at a later

date. Where homes come with charging points, costs are likely to be included in the price of the property. If, on the other hand, charging points are installed further down the line, someone will have to foot the bill and this could spark disputes between developers, residents and local authorities, or present an opportunity for a new type of 'statutory' service provider to deliver the necessary infrastructure.

### **Social infrastructure**

Beyond the 'hard' infrastructure requirements needed to accommodate the new homes Britain needs, central and local government will have to take into account the need to update the social infrastructure around new developments. The occupiers of the new homes increase demand on existing social infrastructure such as school places, on open space and on doctors' surgery capacity. The current model is for some of these social infrastructure requirements to be delivered through the planning system, while the rest waits for the market to provide. As with all sorts of infrastructure, by meeting these needs local authorities will increase the attractiveness of their communities for would-be residents and encourage faster development and investment.

### **Two halves make a whole**

Whether infrastructure is transport, utilities or service-related, it should not be a secondary consideration. Providing suitable infrastructure for developments with planning permission is crucial to meeting the expectations of residents. Laying down the foundations for improved infrastructure in advance of development is also key to giving developers confidence in their ability to sell or rent out their properties.

Infrastructure construction can only be forgotten to the detriment of housing delivery. The acceleration of housebuilding in the UK should bring fresh opportunities for the infrastructure sector and this drive to deliver homes may well result in an exciting pipeline of new work for those involved in the industry. It's worth remembering that the reverse is also true – areas well-provisioned in infrastructure are more likely to attract future residents, thereby inducing new developments to sell fully. The housing crisis is a long way from being solved, but if local authorities, the wider public sector, developers and the construction industry work holistically, this will benefit everyone and tackle the political issue of our time in the process.



## Freight Transport Association launches 'Leadership in Carbon Reduction' Award

Some of the world's most innovative logistics operators are being invited to compete for the Logistics Carbon Reduction Scheme (LCRS) 'Leadership in Carbon Reduction' award, sponsored by Bridgestone.

The scheme recognises companies which are making increased fuel efficiency and reduced carbon emissions a priority within their fleet operation. LCRS members which are adopting improved operational and technological measures are urged to apply for the award, and celebrate their efforts and achievements.

Last year's winner was a well-known name in home improvements, Howdens Joinery. The firm's National Transport Manager, Charlie Nissen, says it was great to have their innovation recognised:

*"Howdens was delighted to be awarded the LCRS Leadership in Carbon Reduction Award in 2017. This prestigious award is a reflection of our hard work and the ongoing*

*commitment we have, as a business, to improve fuel efficiency, whilst reducing our carbon emissions."*

Managed by FTA, the LCRS was introduced in 2009. The scheme now has more than 130 members nationwide and aims to demonstrate to Government how the logistics sector is working proactively to reduce its impact on the environment, without the need for regulation or additional taxation.

Terry Salter, Truck and Bus Product Manager, Bridgestone North Region, said: *"Bridgestone's association with the Logistics Carbon Reduction Scheme is one of the most significant partnerships that we currently boast. Not only does the LCRS shine a light on key environmental issues in the freight transport industry, but it also celebrates best practice amongst members, who constantly go the extra mile to successfully lower carbon emissions themselves."*

*"As the world's largest tyre manufacturer, we are constantly striving to find ways to measure and reduce emissions and are keen to learn about how other members tackle the challenge of climate change. The LCRS Awards is an important event in highlighting the good work that takes place and an event that we are proud to put our name alongside. Naturally, we are pleased to be able to work closely with the LCRS for another year as we aim to make a big impact in this increasingly significant area."* Efficient logistics are vital to keep Britain trading, directly having an impact on more than eight million people employed in the making, selling and moving of goods. With Brexit, new technology and other disruptive forces driving change in the way goods move across borders and through the supply chain, logistics has never been more important to UK plc.



COMMUNITY



STAKEHOLDER



E-BOOKS



VIDEO



---

# ***WHAT DOES THE CONSTRUCTION INDUSTRY NEED TO KNOW ABOUT YOUR ORGANISATION?***

---

**WITH 110,000 CONSTRUCTION PROFESSIONALS EAGERLY AWAITING YOUR GUIDANCE, WHAT WOULD YOU SHOW THEM TODAY IF YOU COULD?**

For more information please contact us on  
0845 5571316 or email [enquiries@promarkmedia.co.uk](mailto:enquiries@promarkmedia.co.uk)



UK CONSTRUCTION  
ONLINE



PROMARK  
media Ltd  
ENGAGE THE MARKET



## Spring Statement a good step forward, says FTA

The Freight Transport Association (FTA) has welcomed the government's ambitions for infrastructure and transport, as expressed in March's Spring Statement, revealed in Parliament by Chancellor Philip Hammond MP. FTA's Christopher Snelling, Head of UK Policy, says the plans are a welcome boost for a logistics sector under pressure to deliver in testing trading conditions:

*"With rising inflation and Brexit uncertainties placing a strain on logistics operators, the measures announced in yesterday's Spring Statement are an encouraging boost to the sector. Any improvements to infrastructure will support the work of our members in ensuring that Britain keeps trading, and we look forward to learning more from government about how its plans can become reality."*

*"On paper, the Chancellor's Spring Statement has plenty of good news for logistics operators," continued Mr Snelling.*

*"The continuing funds for investment in infrastructure are good news, but we are looking forward to hearing the government's plans for future spending, to ensure that efficient, effective transport networks can be maintained and improved nationwide to benefit industry and the consumer."*

FTA members will also be interested but concerned about the Chancellor's intention to *"help the great British white van driver go green"*.

*"The announcement of a consultation on taxation rates for the least polluting vans is an encouraging move, but one which must not penalise those whose businesses rely on the vehicles they own. Changing vehicles is a long-*

*term business plan, not something which can be implemented overnight. Government needs to provide clear guidance for operators on how the changes can be made, with minimal impact on business planning processes and overheads, to ensure that logistics companies can continue to offer a competitive, effective service to customers."*

The announcement of a bidding process for a share of £840M to deliver local transport priorities is a step which does not go far enough to addressing the problems across the road network which need urgent attention, says Snelling.

*"The local road network is suffering from years of under investment," he says, "and while the announcement of this bidding process will solve some of the country's infrastructure problems, it is disappointing that this fund may not be sufficient to conduct repairs nationwide. Local government estimates that it costs an average of £53 per pothole to effect efficient repairs, and following the recent cold weather and ongoing lack of investment, it is clear that this fund will be insufficient to meet the needs of the ailing road network. To ensure that Britain can keep trading effectively both at home and abroad, a comprehensive programme of road repairs which brings surfaces back to condition is vital if goods are to continue to move freely and efficiently."*

With Brexit, technology and other disruptive forces driving changes in the way goods move across borders and through the supply chain, logistics has never been more important to UK PLC.



## Show success secures future project safety

It was a hands-on success for Hire Association Europe (HAE) as it showcased the latest in virtual reality training software as part of its 12th appearance at the Executive Hire Show in Coventry. Demonstrations attracted such a great deal of interest from visitors and exhibitors alike, that it made it one of HAE's most successful shows to date and gave rise to huge optimism with regard to future project safety.

Created in collaboration with virtual reality experts CleVR, aPriori and Foggy Box, the software, which was originally developed in conjunction with the University of the West of England (UWE), enables users to experience top-level virtual training across a wide range of tools and machinery.

Essential equipment given the virtual treatment included Breakers, Working at Height (Alloy Towers), Diamond Drills, Cut Off Saw, Reciprocating Saw, Angle Grinders, Diggers and MEWPs, Dust, Hand Arm Vibration, Noise, LPG and Electrical Safety and, soon to be released, Plate Compactors.

Show visitors were able to not 'get their hands dirty' and yet experience for themselves the outstanding capabilities of this progressive training equipment. This brand-new Virtual Reality Software offers companies the unique opportunity to deliver high standards of training to new and established employees without the need to go on site.

In addition to showcasing their latest training equipment, HAE were raising awareness of the market place benefits afforded to hire companies who achieve SafeHire Certification. SafeHire is a highly acclaimed, rigorous industry standard which comprises an independent, yearly audit that helps raise standards in health and safety and customer service procedures across the hire sector.

HAE's Managing Director, Graham Arundell, commented: *"We were delighted to see so many people with interest in not just our new VR training software, but also in becoming a member of HAE and gaining SafeHire Certification. As an HAE member, hire firms know how well they are looked after, the significant benefits of membership – and of course – the added reassurance for customers from achieving SafeHire Certification."*

*"One such company was Major Diamond Supplies, Northamptonshire, which was presented with its SafeHire Certification during the show. HAE would like to reiterate its congratulations to Shayne Major and all his team who worked so hard to reach the standards."*

The show also saw the exciting launch of HAE's new 'Hire Industry Trusted Supplier' scheme (HITS). This new scheme, designed to be on a par with SafeHire Certification, provides suppliers with a standard of their own to work towards. Many key suppliers have already committed to the scheme including Morris Site Machinery, Marcris, JCB and InspHire. HAE is keen to help other hire firms get involved on the journey to also become a Trusted Supplier.

In order to be considered for future projects both great and small, it may be worth remembering that many organisations look for hire companies that proactively invest in top level staff training and have achieved industry standard health and safety accreditations. In doing so, project managers are guaranteed peace of mind that they have found a trustworthy supplier who is also not going to land them in health and safety 'deep water'.

# FORWARD FEATURES 2018



**CONSTRUCTION  
MEDIA**

**Construction Media** incorporates the **UK Construction Online** website and **UK Construction Excellence**, along with bespoke media and marketing solutions for those working for or looking to engage with the construction supply chain. Our forward features list for 2018 encompasses the key themes and topics shaping the industry now and for the future.

UK Construction Online is the go-to resource for the latest news and insight for the construction industry. Our content keeps industry professionals ahead of breaking developments and fully informed on the factors influencing this multi-billion pound sector.

UK Construction Excellence is our flagship magazine, which showcases the very best in British building, high-end projects, construction suppliers and influential construction companies.

The publication is credible, vibrant and a voice for the industry. It offers a platform to position our client's company, products and services, and acts as the perfect vehicle to build a business's profile and brand in a publication which is read by the construction industry's leading players.



**UK CONSTRUCTION  
ONLINE**



**UK CONSTRUCTION  
EXCELLENCE**

## May | Sustainability

**Deadline: Editorial - 16/04/18 Artwork – 23/04/18**

Green building & sustainability. With the advent of the Clean Growth Plan – we look at what construction can do to assist in creating a greener society; from sustainable buildings to waste and recycling.

## June | Skills shortage

**Deadline: Editorial - 14/05/17 Artwork – 21/05/18**

Having weathered the economic downturn, the construction industry now contends with a worrisome shortage of skilled workers. This month we reflect on the contributing factors, the implications of the EU referendum for migrant workers, and the ways in which the industry is fighting back. Developing skills across the construction industry is core to ensuring it remains viable and effective.

## July | Health & Safety, legislation, finance, adjudication

**Deadline: Editorial - 18/06/18 Artwork – 22/06/18**

Health & Safety is of paramount importance in the construction industry. From workwear to working at heights, we take a look at what's happening across the industry, together with the latest comments on litigation and adjudication decisions that affect the sector.

## August | Housing

**Deadline: Editorial - 16/07/18 Artwork 23/07/18**

Tackling the housing crisis. Hand-in-hand with the skills shortage, the UK's much-publicised housing shortfall continues to dominate headlines nationwide. The government has pledged to build tens of thousands of homes ahead of 2020, and during August we evaluate what is being done to address this, and what opportunities exist within the construction supply chain.

## September | Technology in Construction

**Deadline: Editorial - 18/08/18 Artwork 25/08/18**

Advances in technology are transforming the construction industry. From digitisation to drones, innovative new technologies are helping to increase quality, reduce costs and improve safety in all areas. This month we focus on the innovations that are moving the dial and helping to shape the construction industry of the future. Themes include software, BIM, UAVs and the Internet of Things.

## October | Education

**Deadline: Editorial - 17/09/18 Artwork – 22/09/18**

As the nation opens its doors to a new school intake, we explore the opportunities for the construction industry arising from the Government's education agenda. From renovations and refurbishments to the building of new and interactive learning environments, what is happening and how can construction play a positive part in improving educational standards?

## November | TBC

**Deadline: Editorial - 15/10/18 Artwork – 19/10/18**

## December | TBC & Annual review

**Deadline: Editorial - 16/11/18 Artwork - 20/11/18**

We take a retrospective look at some of the year's biggest stories.

**Additionally, each month the magazine features a project focus, as well as articles on BIM, construction software, legislation, Health & Safety, sustainability, fleet, and plant.**

Telephone: 0800 6127680

Sales emails to: [enquiries@promarkmedia.co.uk](mailto:enquiries@promarkmedia.co.uk) | Editorial emails to: [vicky.maggiani@promarkmedia.co.uk](mailto:vicky.maggiani@promarkmedia.co.uk)

**INGENIUM**  
Intelligent use of data

**BiP**  
SOLUTIONS

**PROMARK**  
media Ltd  
ENGAGE THE MARKET

CONNECTING THE DEFENCE COMMUNITY WITH  
INSIGHT, INTELLIGENCE & OPPORTUNITIES

# JOIN THE FASTEST GROWING ONLINE COMMUNITY FOR DEFENCE PROFESSIONALS

- Up-to-date UK and International news
- Exclusive features & interviews
- Interactive content & resources
- Engage directly with industry experts and professionals

JOIN US  
**FREE**  
TODAY



**JOIN US FREE TODAY: [WWW.DEFENCEONLINE.CO.UK](http://WWW.DEFENCEONLINE.CO.UK) OR  
TALK TO US ON 0161 413 6170 FOR FURTHER INFORMATION**

DELIVERED BY



POWERED BY

