



TWENTY65

TWENTY65 is paving the way for a future that delivers sustainable tailored water solutions that positively impact on public health, the environment, the economy, and society.



Welcome to the

TWENTY65 Annual Conference 2018 **Bringing the Water Sector Together**

The annual TWENTY65 conference provides unique opportunities for Researchers, Practitioners, Water Companies, Technology Developers, Policy Makers and Regulators to network and learn together to help pave the way for a future that delivers sustainable clean water for all.

The event will present cutting edge theory and demonstrate how this can be translated into practice to inspire collaborative working within the sector. Multiple topic areas will be presented within the plenary and parallel sessions, with stimulating discussions and feedback — this is an excellent opportunity to interact with regional and international peers.

This brochure contains details on our esteemed Keynote Speakers as well as an insight into our plenary and parallel sessions so you can get the most out of your conference.

Contents

●	Timetable of Events	4
●	Keynote Speakers	6
●	Day 1	
	Parallel Sessions Timetable	10
	Parallel Sessions Detail	12
●	Day 2	
	Parallel Sessions Timetable	32
	Parallel Sessions Detail	34

When it comes to water what divides us is far less than what we all share in common, wherever we are in the world, wherever we are in the UK, we all need to work together to deliver truly sustainable clean water for all. With the Sustainable Development Goals setting the framework that everyone should have access to clean water by 2030, the TWENTY65 project sets out a longer path to not just achieve access for all but to then make that access sustainable and secure into the future. The Scottish Government through its Scotland the Hydro Nation programme is committed to playing a leading role in maximising the value we get from our water resources and ensuring that the use of water is well governed at a global level; being an active participant in the TWENTY65 programme is a key part of realising that ambition.

— Jon Rathjen, *Scottish Government*

Day 1 – 17th April 2018

- 9:30 - 10:00 **Registration and Coffee**
- 10:00 - 10:10 **Introduction – TWENTY65 Joby Boxall**
- 10:10 - 11:00 **Plenary Session: The Values of Water** ●
- MC:** Tony Williams, *Director, British Water & AVW Strategic Consulting*
- Key Note Speaker:** Angela Smith, MP, *Co-Chair of the All Party Parliamentary Water Group* ● p.6
- Key Note Speaker:** Tony Smith, *Chief Executive, Consumer Council for Water* ● p.7
- 11:00 - 11:15 **Discussants**
- Adrian Rees, Ali Browne, Guy Thompson
- 11:15 - 12:00 **Panel Discussion: The Values of Water** ●
- Angela Smith, MP, *Co-Chair of the All Party Parliamentary Water Group*
- Tony Smith, *Chief Executive, Consumer Council for Water*
- Adrian Rees, *Director, AECOM*
- Ali Browne, *Lecturer, Manchester University*
- Guy Thompson, *Managing Director, EnTrade*
- 12:00 - 13:00 **Lunch – Deansgate Foyer**
- 13:00 - 14:30 **Parallel Sessions 1A-5A** ●●●●● p.10
- 14:30 - 15:00 **Break for Coffee**
- 15:00 - 16:30 **Parallel Sessions 1B-5B** ●●●●● p.11
- 19:00 - 22:00 **Evening reception – Nibbles & Drinks in the Iris Lounge, Cloud 23, Hilton Hotel**

Day 2 – 18th April 2018

- 09:00 - 09:30 **Registration and Coffee**
- 09:30 - 09:35 **Introduction – TWENTY65 Vanessa Speight**
- 09:35 - 10:35 **Plenary Session: Personal Data – How it’s used and why** ○
- MC:** Michael Elwell, *Chief Technology Officer, Aliaxis*
- Key Note Speaker:** David Beardmore, *Commercial Director, Open Data Institute* ○ p.8
- Key Note Speaker:** Melanie Oldham, *Chief Executive, Bob’s Business* ○ p.9
- 10:35 - 10:55 **Discussants**
- Martin Mayfield, Paul Rutter, Simon Moore
- 10:55 - 11:40 **Panel Discussion: Personal Data – How it’s used and why** ○
- David Beardmore, *Commercial Director, Open Data Institute*
- Melanie Oldham, *Chief Executive, Bob’s Business*
- Simon Moore, *Director, Hive Logic Ltd*
- Martin Mayfield, *Professor, The University of Sheffield*
- Paul Rutter, *Head of Innovation, Thames Water*
- 11:45 - 12:45 **Lunch – Deansgate Foyer**
- 12:45 - 14:15 **Parallel Sessions 6A-9A** ○●●●○ p.32
- 14:15 - 14:45 **Break for Coffee**
- 14:45 - 16:15 **Parallel Sessions 6B-9B** ○●●●○ p.33
- 16:15 - 16:30 **Closing remarks: Zoe Sofoulis**

MP, Member of Parliament for
Penistone and Stocksbridge

Angela Smith



Day 1 Plenary Session

About Angela

Originally from Grimsby, Angela went to Nottingham University gaining a 1st in English. After studying at Cambridge, she moved to Sheffield where she worked as a Lecturer.

Angela has worked in the NHS, the banking sector and before becoming a full-time politician she was a further education teacher specializing in helping youngsters who wanted a second chance to gain academic qualifications. Angela has been a member of the Labour Party since she was 16, and in 1996 she was elected to Sheffield City Council for the ward of Broomhill, becoming in 1998 the Chair of Finance and in 1999 Opposition Spokesperson for Education.

In 2005 Angela was elected to Parliament for the constituency of Sheffield Hillsborough and in 2010 re-elected for the new seat of Penistone & Stocksbridge, she again won the constituency for Labour at the 2015 general election. Between 2005–08 Angela was PPS to Yvette Cooper in CLG and the Treasury. In 2010 she became an Assistant Opposition Whip, a post she held until 2011. Between 2011 and 2014 she was Shadow Deputy Leader of the House. In April of 2014 Angela moved to the Shadow DEFRA team as the Shadow Minister for Water, the Marine Environment, Fisheries and Animal Welfare. In September 2015 she stood down from the opposition front bench to concentrate on environmental issues on the EFRA Select Committee. For eight years she was Chair of the APPG for Conservation and Wildlife and is currently chair now of the APPG for Water. In her spare time, she enjoys walking and watching her favourite football team of Sheffield Wednesday. She lives in the north of Sheffield with her husband.



CEO, Consumer Council for Water

Tony Smith

Day 1 Plenary Session

About Tony

Tony joined the Consumer Council for Water in December 2005 as Chief Executive.

Under Tony's leadership, CCWater has successfully prompted a transformation in regulation and price setting in the water sector, getting companies and regulators focused firmly on customers and value for money. It has also encouraged water companies to produce a 60% reduction in complaints.

His early career was in strategy and marketing, implementing business turnarounds in oil, aerospace, automotive and fast moving consumer goods businesses.

Later Tony joined the utility sector where he has worked at senior level in electricity and as a director in the water industry and the rail sector. During his career in the utilities, he has led strategy, customer service and communication, delivery of investment programmes and gearing up for new competitive markets.

His last job was with the water regulator Ofwat, as Director of Competition and Consumer Affairs, where he was responsible for consumer issues in the lead up to and through the 2004 price review.

Commercial Director,
The Open Data Institute

David Beardmore



Day 2 Plenary Session

About David

David leads the commercial, business development and marketing activities for the Open Data Institute.

His 20 years in data-driven insight and marketing have seen him work with many leading brands in multiple sectors and countries. In addition to working for some of the largest players in the data world such as Experian, Callcredit and Telefonica, David also ran his own boutique data insight business, Thinkdata, for 5 years before its acquisition by Bertelsmann. David's work is characterised by passion, pragmatism and a fierce determination to deliver measurable value to clients.

The Open Data Institute has been instrumental in developing sector-wide programmes designed to openly share data in order to bring about change. It played a key role in developing the Open Banking Standard at the request of HM Treasury; it is in the second year of leading an open data programme across the sport and physical activity sector working with Sport England; it is working with The Wellcome Trust in developing an open data programme to publish antibiotic resistance data to inform clinicians and pharmaceutical companies. After speaking at the launch of OFWAT's data strategy in summer 2017, David has been working with OFWAT to help the water sector use open data to address issues of concern.

Originally a classically trained musician, David has a Masters from Cambridge University and an MBA in Marketing. Ever the optimist, he continues to hold a season ticket at Nottingham Forest Football Club.

CEO, Bob's Business

Melanie Oldham



Day 2 Plenary Session

About Melanie

Melanie Oldham is the founder and CEO of Bob's Business Ltd, an award winning and leading cyber security awareness training and phishing simulations provider.

Bob's Business deliver training to organisations of all shapes and sizes, from 10 users through to 70,000 users. Melanie has racked up over 10 years experience in the cyber security sector and has become a reputable and well-respected force within the industry.

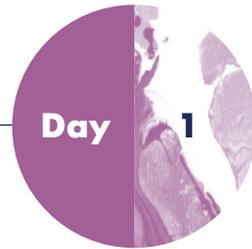
Melanie developed the solutions to demystify the subject of cyber security, often thought of as inaccessible and dry. The use of animation and humour is key to the approach and is proven to change employee behaviours and instill a secure culture.

Melanie is also the founder and chair of the YCSC (Yorkshire Cyber Security Cluster). The YCSC is a collaborative group that works together to reduce cyber security within the region. The cluster brings together local businesses, academics, the police and experts to discuss, collaborate and educate on the key issues facing the region.

Day 1 – 17th April 2018

	13:00	13:30	14:00	14:30	15:00	15:30	16:00	16:30						
<p>Session 1A</p> <p>Innovation</p> <p>p.12</p> <p>Room: Deansgate 1</p>	<p>Shop window – building our future business now</p> <p>Ghislain Juvanon, Nick Sexton, Andy Smith, <i>Anglian Water</i></p> <p>13:00 - 14:30</p>				<p>Session 1B</p> <p>Innovation</p> <p>p.22</p> <p>Room: Deansgate 1</p>				<p>Water efficiency potential: A long term perspective</p> <p>Tom Handysides, <i>Ofwat</i></p> <p>15:00 - 16:30</p>					
<p>Session 2A</p> <p>Water Efficiency</p> <p>p.14</p> <p>Room: Deansgate 2</p>	<p>Beyond behavioural change for water</p> <p>Claire Hoolohan & Alison Browne, <i>University of Manchester/TWENTY65</i></p> <p>13:00 - 13:30</p>		<p>Water efficiency and behaviour change rapid evidence assessment (REA): insights and challenges</p> <p>Clare Twigger-Ross, Stacy Sharman, <i>Defra</i></p> <p>13:30 - 14:00</p>		<p>Mapping water efficiency initiatives using the MAC model of communicative water practices</p> <p>Fatima Ajia, <i>The University of Sheffield</i>, Tim Wagstaff</p> <p>14:00 - 14:30</p>		<p>Session 2B</p> <p>Infrastructure at the Household Scale</p> <p>p.24</p> <p>Room: Deansgate 2</p>		<p>Smart water metering: worth the effort?</p> <p>Rizwan Nawaz, <i>TWENTY65</i></p> <p>15:00 - 15:30</p>		<p>Potential of obtaining renewable energy from water systems</p> <p>Fei Liu, <i>TWENTY65</i></p> <p>15:30 - 16:00</p>		<p>New approaches to forecasting water use</p> <p>Rob Lawson, <i>Artesia Consulting Ltd</i></p> <p>16:00 - 16:30</p>	
<p>Session 3A</p> <p>Global Issues</p> <p>p.16</p> <p>Room: 2/3/4</p>	<p>Can changing cropping patterns increase water efficiency in India's Krishna Basin?</p> <p>Anjali Jain Figueroa, <i>Massachusetts Institute of Technology</i></p> <p>13:00 - 13:30</p>		<p>Water Cremation – The environmentally sustainable future</p> <p>Sandy Sullivan, <i>Founder and Director, Resomation Ltd</i></p> <p>13:30 - 14:00</p>		<p>The state of water security in South Africa: A local government perception analysis</p> <p>Richard Meissner, <i>Council for Industrial Scientific Research</i></p> <p>14:00 - 14:30</p>		<p>Session 3B</p> <p>Treatment</p> <p>p.26</p> <p>Room: 2/3/4</p>		<p>Trends in water treatment</p> <p>Mark LeChevallier, <i>Dr. Water Consulting, LLC</i></p> <p>15:00 - 15:30</p>		<p>Novel stannous reagent generation approach with online Cr monitoring system provides affordable and reliable Cr(VI) reduction</p> <p>Tom Williams, <i>Enebio Ltd</i></p> <p>15:30 - 16:00</p>		<p>Water and beyond: Innovation and the convergence of the water and waste water sectors</p> <p>Dena Fam, <i>University of Technology Sydney</i></p> <p>16:00 - 16:30</p>	
<p>Session 4A</p> <p>Robotics</p> <p>p.18</p> <p>Room: 8&9</p>	<p>A series of talks and workshops on the theme of Robotics and the water sector – innovations and applications</p> <p>Chaired by Kirill Horoshenkov, <i>TWENTY65</i></p> <p>For more details, see page 18</p>				<p>Session 4B</p> <p>Robotics</p> <p>p.28</p> <p>Room: 8&9</p>				<p>A series of talks and workshops on the theme of Robotics and the water sector – innovations and applications: continued</p> <p>Chaired by Kirill Horoshenkov, <i>TWENTY65</i></p> <p>For more details, see page 28</p>					
<p>Session 5A</p> <p>Catchments</p> <p>p.20</p> <p>Room: Deansgate 3</p>	<p>A series of talks and workshops on the theme of Modelling of natural organic matter transport and fate in water supply catchments</p> <p>Chaired by Nigel Graham</p> <p>For more details, see page 20</p>				<p>Session 5B</p> <p>Catchments</p> <p>p.30</p> <p>Room: Deansgate 3</p>				<p>A series of talks and workshops on the theme of Modelling of natural organic matter transport and fate in water supply catchments: continued</p> <p>Chaired by Jo Clark</p> <p>For more details, see page 30</p>					

Parallel Session 1A

Innovation**Chair:** Tony Conway

Deansgate 1

Shop window – building our future business now

The Shop Window is a unique initiative in a real live catchment. Come explore and help us achieve our 7 aspirational goals.

Through an interactive presentation and simultaneous workshops have you got the solution or an idea that can be developed to solve future challenges now, in the Shop Window?

**Day 1**

13:00 - 14:30

Speakers:

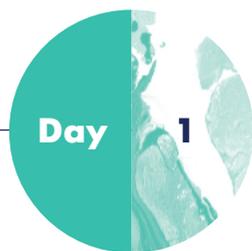
Ghislain Juvanon,
Nick Sexton, Andy Smith,
Anglian Water



“The spirit of TWENTY65 is collaboration and innovation, bringing together technical and academic experts to push forward for a sustainable sector that is fit for the future. Being involved is a two-way street, as a Leadership Board member I can help to shape this process, whilst also keeping up-to-date with leading-edge work – something that has improved and inspired my thinking on a range of topics.”

— Dani Jordan, WWF

Parallel Session 2A
Water Efficiency



Chair: Dani Jordan
Deansgate 2

Beyond behavioural change for water: Designing a toolkit to support interventions in household practices and sustainability

Introducing a toolkit to support the formulation of policies and interventions informed by theories of practice.

The toolkit provides a systematic approach to designing intervention, guiding the user to explore the multiple social and material influences on behaviour so as to identify opportunities for intervention, both inside and outside the home.

Day 1
13:00 - 13:30

Speakers:
Claire Hoolohan & Alison Browne, *University of Manchester / TWENTY65*

Water efficiency and behaviour change rapid evidence assessment (REA): insights and challenges

Understanding and evaluating evidence around behaviour change and water efficiency is key to designing successful interventions to support sustainable water use.

This paper presents and discusses the findings of a Defra funded Rapid Evidence Assessment. Whilst interventions are being carried out more work is needed to establish their effectiveness.

Day 1
13:30 - 14:00

Speakers:
Clare Twigger-Ross, Stacy Sharman, *Defra*

Mapping water efficiency initiatives using the MAC model of communicative water practices

Achieving water efficiency requires measures with implications for public engagement in the water utility.

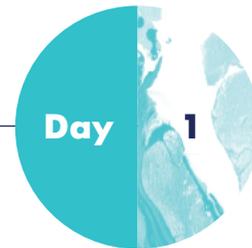
Engagements tend to focus on the dominant water user in an engagement space, with other related roles and spaces minimised. Substantiating the links between the various people and channels involved in water efficiency initiatives can help address this.

Day 1
14:00 - 14:30

Speakers:
Fatima Aija, *The University of Sheffield*, Tim Wagstaff

Parallel Session 3A

Global Issues



Chair: Richard Laikin

Room: 2/3/4

Can changing cropping patterns increase water efficiency in India's Krishna Basin?

Water and food. Discussing options for increasing water efficiency by switching crops.

The work presented will focus on reallocating limited land and water resources to improve efficiency and increase benefits. We model changing crop choices in India's Krishna river basin to get "more crop per drop."



Day 1

13:00 - 13:30

Speaker:

Anjali Jain Figueroa,
Massachusetts Institute of Technology

Water Cremation – The environmentally sustainable future

With a growing global population that is increasingly aware of its environmental footprint - in life and in death - more people are seeking a greener choice at the end of life.

Water cremation is the new alternative to flame cremation and burial and this presentation will explore the environmental benefits this process can offer the funeral industry in the UK.



Day 1

13:30 - 14:00

Speaker:

Sandy Sullivan,
Founder and Director, Resomation Ltd

Exhibitor



The state of water security in South Africa: A local government perception analysis

This paper reports on a stakeholder analysis conducted in two South African municipalities to determine their state of water security.

We investigated how people, from different lifestyles, perceive water security in the Greater Sekhukhune District Municipality and the eThekweni Metropolitan Municipality. We specifically asked respondents if water security had been achieved in the areas.



Day 1

14:00 - 14:30

Speaker:

Richard Meissner, *Council for Scientific and Industrial Research and the Centre for Water Resources Research, University of KwaZulu-Natal*

Parallel Session 4A

Robotics**Chair:** Kirill Horoshenkov

Room: 8&9

Robotics and the water sector – innovations and applications

Learn about the latest developments in robotics for the water industry and the potential applications.

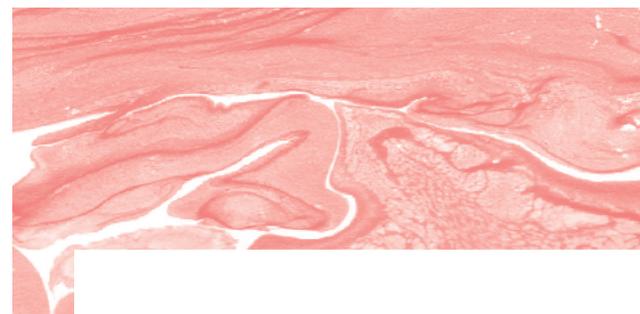
This informative and interactive session will provide insight into cutting edge research and innovations and give you the opportunity to 'ask the experts' directly .

Talks under this session include:**Autonomous Sensing for Buried Pipe Infrastructure**Kirill Horoshenkov, *TWENTY65***Innovation and the "Whole hole"**Wez Little, *Synthotech***Autonomous Robots for Water Pipeline Inspection**Christopher Parrott, *TWENTY65***Review of Acoustic Sensing Solutions for Pipeline Inspection**Zhengwei Li, *University of Sheffield***Day 1**

13:00 - 14:30

Speakers:

Kirill Horoshenkov, et al



"I LOVE the research themes of TWENTY65. In my view they are pushing in all the right areas to genuinely enable future generations to enjoy a resilient, affordable and sustainable water world."

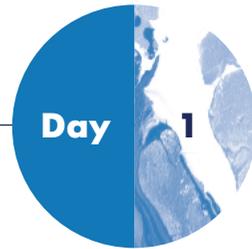
— Bob Stear, *Severn Trent*

Parallel Session 5A

Catchments

Chair: Nigel Graham

Room: Deansgate 3



Modelling of natural organic matter transport and fate in water supply catchments

This workshop will include all aspects of natural organic matter modelling (sources, transport, transformations, etc.), experiences and comparison between current and emerging models (e.g. INCA-C, SWAT, etc.), and modelling of future conditions (changing temp/rainfall/land-use).

Talks under this session include:

DOM prediction in Scottish Water's upland catchments (project FREEDOM)

Don Monteith, *Centre for Ecology & Hydrology*

Catchment water quality modelling: utility, complexity and organic nutrient forms

Andrew Wade, *University of Reading*

Pattern visualisation for complex high frequency multivariate water quality data

Josie Ashe, *University of Exeter*

Day 1

13:00 - 14:30

Speakers:

Nigel Graham, et al

Exhibitor



Virtalis is a world-leading Virtual Reality (VR) and advanced visualisation company. Our products and systems enable detailed understanding of information and data, with 3D interactivity giving every project a new dimension.

Many clients including Yorkshire Water have experienced rapid ROI, often running into £millions within a couple of years. Through wider stakeholder engagement and increased virtual prototyping, design and maintenance issues can be identified earlier and fixed at lower cost.

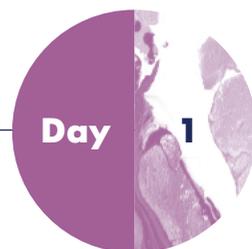
With hundreds of man years' experience, we're a trusted advisor to our clients across multiple industries. We look forward to working with you throughout your visualisation journey.

To find out more:

www.virtalis.com

Parallel Session 1B

Innovation



Chair: Issy Caffoor

Room: Deansgate 1

Water efficiency potential: A long term perspective

This workshop is an opportunity to contribute to Ofwat's forward looking work on the long-term potential for improvements in water efficiency and demand management.

After hearing the results of our recent study, participants will break into groups to discuss and comment on the study, and its implications for the water sector.

Day 1

15:00 - 16:30

Speaker:

Tom Handysides, Ofwat

Key Supporter



CIWEM Chartered Institution of
Water and Environmental
Management

Invoking, Informing, Inspiring.

CIWEM is the leading independent Chartered professional body for water and environmental professionals, promoting excellence within the sector.

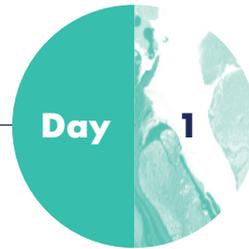
At CIWEM we:

- Grant professional recognition and Chartered qualifications to scientists, engineers and environmentalists
- Provide Continuing Professional Development (CPD) opportunities – delivering training, seminars and technical guidance
- Facilitate networking and knowledge sharing through local branches and a range of special interest groups
- Influence UK and European policy development
- Lead debate through conferences, events and publications
- Work with governments, NGOs and other stakeholders, recommending a holistic approach to environmental issues
- Are a trusted source of independent advice for government, academia, the media and general public
- Celebrate outstanding environmental performance through our esteemed awards portfolio

To find out more:

www.ciwem.org email: admin@ciwem.org +44 (0)20 7831 3110

Parallel Session 2B

Infrastructure at the Household Scale**Chair:** Joby Boxall

Room: Deansgate 2

Smart water metering: worth the effort?

The effectiveness of smart meters is subject to continued debate despite a number of large-scale trials.

In this talk, an overview of findings reported in the literature on the effectiveness of smart meters, particularly smart water meters is presented. Suggestions are then made as to ways in which the benefits from smart water meters may be maximised.

Day 1

15:00 - 15:30

Speaker:Rizwan Nawaz,
TWENTY65**Potential of obtaining renewable energy from water systems**

The study's aim is to examine whether renewable energy within the water system can replace a city's non-renewable energy.

A modelling study has demonstrated that it is possible to obtain sufficient quantities of renewable energy from urban water systems to replace residential gas demand for most months in the year.

Day 1

15:30 - 16:00

Speaker:

Fei Liu, TWENTY65

New approaches to forecasting water use

This presentation will review the established approach to micro-component forecasting, based on estimating the ownership, frequency of use and volume per use of water using devices in the home.

This is compared with an improved approach that has been. The pros and cons of the methods will be discussed and recommendations are made for future data collection and for consumption forecasting in general.

Day 1

16:00 - 16:30

Speaker:Rob Lawson,
Artesia Consulting Ltd

Parallel Session 3B

Treatment**Chair:** Vanessa Speight

Room: 2/3/4

Trends in water treatment

The water industry is in a period of unprecedented change, with global drivers like climate change and changes in customer's expectations for water quality – all causing water professionals to rethink future trends in water treatment.

This presentation will examine these challenges through the lens of climate change, infrastructure integrity, and water quality expectations and call for innovative solutions by water professionals.

**Day 1**

15:00 - 15:30

Speaker:

Mark LeChevallier,
Dr. Water Consulting, LLC

Novel stannous reagent generation approach with online Cr monitoring system provides affordable and reliable Cr(VI) reduction


While stannous chloride has been shown as a highly effective approach to reduce Cr(VI) to Cr(III), conventional stannous reagent dosing methodology is not without disadvantages.

An innovative approach to generate a stannous ion reagent in-situ via an electrolytic process has been developed to eliminate the pitfalls of conventional dosing and aid in the delivery of an affordable and reliable hexavalent chromium remediation process. Small water systems that previously relied on conventional dosing approaches associated with high capital and operational costs will benefit by learning about this new affordable and reliable chromium remediation process.

Day 1

15:30 - 16:00

Speaker:

Tom Williams, *Enebio Ltd*

Water and beyond: Innovation and the convergence of the water and waste water sectors


Innovation in the water sector has seen decentralization, emergence of third party utilities and more recently the convergence of the water and waste sectors where commodification of waste streams is driving business opportunities across sectors.

While opportunities exist so do risks where integrated policy and regulation lags behind innovation and practice.

Day 1

16:00 - 16:30

Speaker:

Dena Fam,
University of
Technology Sydney

Parallel Session 4B

Robotics



Chair: Kirill Horoshenkov

Room: 8&9

This session carries on from the morning session 4A (more details on p.19).

Robotics and the water sector – innovations and applications: continued

Learn about the latest developments in robotics for the water industry and the potential applications.

This informative and interactive session will provide insight into cutting edge research and innovations and give you the opportunity to 'ask the experts' directly .

Talks under this session include:

Application of Robotics in the Nuclear Industry

Barry Lennox, *University of Manchester*

Planning Algorithms for Autonomous Water Pipeline Inspection

Richard Molyneux, *University of Sheffield*

Robots for Resilient infrastructure

Robert Richardson, *University of Leeds*

Discussion

Day 1

15:00 - 16:30

Speakers:

Kirill Horoshenkov, et al

Exhibitor



Grease Guru Ltd, with its new Head Office base in Leeds West Yorkshire is the brainchild of Peter McGowan in conjunction with Graham Tattersall.

Both Peter and Graham are from a drainage maintenance background with over 50 years of drainage experience between them. Graham being one of the co-founders of the Lanes Group plc back 1992, leaving the Lanes Group in February 2014 to pursue other business opportunities.

Grease Guru Ltd has the ambitions to lead the way in the field of Fats, Oils and Grease Management.

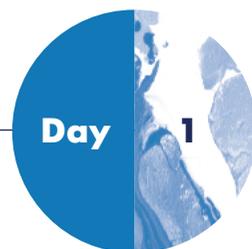
Grease Guru Ltd can offer the full FOG management service; Capital Sales of passive grease separation units; Dosing units; Full grease recovery units, designing systems to meet the strict requirements of the Water Utility Companies BS EN 1825.

Working closely with the Water Utilities Companies, Grease Guru Ltd are developing best practice solutions to the issues caused by Fats Oils and Grease mismanagement by food retail outlets, recently working with United Utilities at their Knowledge Sharing Event at Lingley Mere, Warrington.

Grease Guru Ltd has its first main strategic goal set to be the Powerhouse for Total Grease Management Systems, supplying hire, sales and service to Drainage Service Companies, and all food related retail outlets.

Parallel Session 5B

Catchments



Chair: Jo Clark

Deansgate 3

This session carries on from the morning session 5A (more details on p.20).

Modelling of natural organic matter transport and fate in water supply catchments: continued

This workshop will include all aspects of natural organic matter modelling (sources, transport, transformations, etc.), experiences and comparison between current and emerging models (e.g. INCA-C, SWAT, etc.), and modelling of future conditions (changing temp/rainfall/land-use).



Day 1

15:00 - 16:30

Speakers:

Nigel Graham, et al

Talks under this session include:

Using statistical models to understand the sources and transport of organic matter and pesticides in a lowland river catchment

Charlotte Hawkins, *University of Reading*

Forecasting metaldehyde levels in drinking water catchments following rainfall events

Alemayehu Asfaw, Keiron Maher, *Severn Trent Water*,
James Shucksmith, *University of Sheffield*

Panel Discussion

Exhibitor



Innovate UK

Knowledge Transfer Network

Knowledge transfer network

The Knowledge Transfer Network (KTN) helps businesses get the best out of creativity, ideas and the latest discoveries, to strengthen the UK economy and improve people's lives. KTN links new ideas and opportunities with expertise, markets and finance through our network of businesses, universities, funders and investors. From agri-food to autonomous systems and from energy to design, KTN combines in-depth knowledge in all sectors with the ability to cross boundaries.

KTN is a network partner of Innovate UK.

Day 2 – 18th April 2018

	12:45	13:15	13:45	14:15	14:45	15:15	15:45	16:15
<p>Session 6A</p> <p>Innovation</p> <p>p.34</p> <p>Room: Deansgate 1</p>	<p>Catalysing market adoption of innovations in the water sector: Developing the UK Water Accelerator Programme</p> <p>Caroline Wadsworth – TWENTY65, Henri Lambert – Apsara Capital, Kamal Birdi – TWENTY65</p>				<p>Session 6B</p> <p>Innovation</p> <p>p.44</p> <p>Room: Deansgate 1</p>	<p>Potential routes to financing blue-green infrastructure in the UK</p> <p>Anna Kenyon – University of Sheffield</p> <p>14:45 - 15:15</p>	<p>Towards high performance innovation</p> <p>Clive Reynolds, Colin Siddle – Strategic Capability Ltd</p> <p>15:15 - 16:15</p>	
<p>Session 7A</p> <p>Engagement</p> <p>p.38</p> <p>Room: Deansgate 2</p>	<p>Partnership working: Time, trust and two-way communication</p> <p>Phiala Mehring – National Flood Forum/ Reading University</p> <p>12:45 - 13:15</p>	<p>Mobilising publics for resilient water services</p> <p>Emma Westling, Liz Sharp, Alison Browne, Martina McGuinness – TWENTY65</p> <p>13:15 - 13:45</p>	<p>Water poverty in the United Kingdom and South Africa: A comparative analysis</p> <p>Richard Meissner – CSIR, South Africa, Fiona Calder – The University of Sheffield</p> <p>13:45 - 14:15</p>	<p>Session 7B</p> <p>Water Futures</p> <p>p.46</p> <p>Room: Deansgate 2</p>	<p>Exploring alternative water systems from the end-user’s perspective</p> <p>Paul Raven – The University of Sheffield</p> <p>14:45 - 16:15</p>			
<p>Session 8A</p> <p>Water Infrastructures</p> <p>p.40</p> <p>Room: 2/3/4</p>	<p>Case studies on reducing water loss through use of partially corrugated stainless steel service pipe</p> <p>Nigel Ward – Nickel Institute University</p> <p>12:45 - 13:15</p>	<p>Using advances in genetics for countering the effects of climate change in drinking water systems</p> <p>Isabel Douterelo – The University of Sheffield</p> <p>13:15 - 13:45</p>	<p>Monitoring and analytics to improve service: Innovation for the Global South</p> <p>Louise Walker – Environmental Monitoring Solutions Ltd</p> <p>13:45 - 14:15</p>	<p>Session 8B</p> <p>Behavioural Innovation</p> <p>p.48</p> <p>Room: 2/3/4</p>	<p>Behavioural innovation for sustainable water solutions</p> <p>Ali Sims, Alex McCluckie – DJS Research, Garry Sanderson – Visualyse Solutions/London School of Economics</p> <p>14:45 - 16:15</p>			
<p>Session 9A</p> <p>Sustainable Urban Drainage</p> <p>p.42</p> <p>Room: 8&9</p>	<p>A series of talks and workshops on the theme of Valuing SuDS</p> <p>Chaired by David Butler</p> <p>For more details, see page 42</p>				<p>Session 9B</p> <p>Infrastructure – Waste Water</p> <p>p.50</p> <p>Room: 8&9</p>	<p>How can user experience drive adoption of innovative wastewater monitoring?</p> <p>Paul Dickenson – Nuron</p> <p>Laura Williams – Uscreates</p> <p>14:45 - 15:15</p>	<p>CENTAUR: Smart utilisation of existing wastewater network storage for urban flood alleviation</p> <p>Sonja Ostojin – Environmental Monitoring Solutions Ltd</p> <p>15:15 - 15:45</p>	<p>Wastewater blockage detection using evolutionary artificial neural networks</p> <p>Michele Romano – United Utilities</p> <p>Talia Rosin – University of Exeter</p> <p>15:45 - 16:15</p>

Parallel Session 6A Innovation



Chair: Bob Stear

Room: Deansgate 1

Catalysing market adoption of innovations in the water sector: Developing the UK Water Accelerator Programme

Join us at this interactive workshop to learn about the new UK Water Technology Accelerator Programme, how to get involved, and help us to ensure the programme has the greatest impact possible.



Day 2

Speakers:

Caroline Wadsworth,
TWENTY65,
Henri Lambert,
Apsara Capital,
Kamal Birdi, TWENTY65



"TWENTY65's Conference in 2017, 'Bringing the Water Sector Together', was well worth going to. EMS is a leading provider of water monitoring, air monitoring, environmental management and environmental training solutions. We are an SME focussed on close to market innovation which invariably involves working on EU Horizon 2020 and Innovate UK funded projects.

For example, we are an industrial partner on CENTAUR (Cost Effective Neural Techniques for Alleviating Urban Flood Risk). The opportunity to present the project and the progress made provided the opportunity to engage directly with end users.

The conference also provided the opportunity to learn more about latest research projects and technologies, and explore new and develop existing opportunities for collaboration.

I look forward to another great event!"

— Kieran Williams, EMS

Exhibitor



At HiveLOGIC we enable the water sector to make faster, better, decisions by managing digital and physical risks across the entire business infrastructure, including SCADA.

We do this by integrating next generation technologies, artificial intelligence, human analysts and machine learning.

Our services are a compelling alternative to those offered by large traditional System Integrators.

Contact details:

www.hivelogic.co.uk email info@hivelogic.co.uk
07793425112

Exhibitor



The Advanced Manufacturing Research Centre is the place where digital meets manufacturing: a vibrant collaborative space where industry and engineering research combine to drive step changes in productivity, performance and quality in manufacturing.

Yorkshire Water is a leading UK utility company that is exploring how advanced, digital technologies can help us drive improvements in the way we design, build and maintain our assets to deliver the best level of service to our customers.

Exhibitor



Unlock the value of your IP

At Inngot, we specialise in helping organisations realise value from all their intellectual property.

We offer unique online tools that provide a simple, cost-effective way to identify and rate your intangibles, and tell you what they're worth.

We can audit and evaluate your innovations at any stage of development, and help you exploit your IP assets via finance, sale, licence or acquisition.

Get in touch, and see how much value we can unlock in your business.

Contact details:

Contact Dr Alison Orr at alison@inngot.com for further details of our tools and services.

www.inngot.com +44 (0)333 800 80 90

Parallel Session 7A

Engagement**Chair:** Margaret Cobbold

Room: Deansgate 2

**Partnership working:
Time, trust and two-way communication**

All communities are unique and therefore a 'one size fits all' approach to engaging them will at best fail and at worse alienate communities from flood risk management.

This presentation demonstrates that the historical top down and technocratic ways of managing flood water still prevail and the negative impact this has on community engagement; how poor engagement techniques actually add to the stresses of living at risk of flooding and describes the advantages of good engagement approaches.

**Day 2**

12:45 - 13:15

Speaker:

Phiala Mehring,
National Flood Forum/
Reading University

Mobilising publics for resilient water services

This presentation explores how water organisations 'mobilise' publics to take action towards more sustainable and resilient water services.

Drawing on the initial research on mobilisation in a water utility, we conclude by examining how an extensive account of different initiatives enables critical engagement with the nature and extent of 'transformation' towards a more engaged and hence more resilient form of water management.

Day 2

13:15 - 13:45

Speaker:

Emma Westling, Liz Sharp,
Alison Browne, Martina
McGuinness, TWENTY65

**Water poverty in the United Kingdom
and South Africa: A comparative analysis**

Water poverty is a growing issue in both the United Kingdom and South Africa. By 2033, 35% of households in England and Wales are likely to be suffering from water poverty.

This paper is a comparative study of water poverty, comparing the countries' framing of water rights and mechanisms for water poverty alleviation.

Day 2

13:45 - 14:15

Speaker:

Richard Meissner,
CSIR, South Africa,
Fiona Calder,
The University
of Sheffield

Parallel Session 8A

Water Infrastructures**Chair:** Tom Flood

Room: 2/3/4

Case studies on reducing water loss through use of partially corrugated stainless steel service pipe

Most leaks from water systems occur in service pipes. To reduce water loss, pipes should have the fewest connections possible and be made of a strong, durable and corrosion-resistant material.

This paper will describe the large-scale replacement of service pipes in Tokyo and Taipei using partially corrugated stainless steel pipe.

**Day 2**

12:45 - 13:15

Speaker:

Nigel Ward,
Nickel Institute

Using advances in genetics for countering the effects of climate change in drinking water systems

The effects of climate change will affect biological and physio-chemical processes from water source to final tap, and will force water companies to modify the way they deliver water.

Understanding how climate change will affect drinking water distribution systems is therefore essential to guarantee safe water supplies in the future.

Day 2

13:15 - 13:45

Speaker:

Isabel Douterelo,
The University of Sheffield

Monitoring and analytics to improve service: Innovation for the Global South

A successful collaboration between SMES, NGOs and academics to develop context-appropriate innovation to improve water service provision in the Global South.

A reflection on the challenges of technology transfer across cultures and the twin necessities of trust and funding to make it happen.

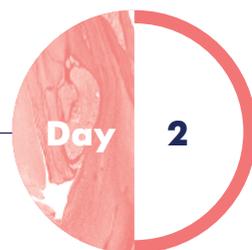
Day 2

13:45 - 14:15

Speaker:

Louise Walker,
Environmental Monitoring Solutions Ltd

Parallel Session 9A

Sustainable Urban Drainage**Chair:** David Butler

Room: 8&9

Valuing SuDS

On paper, valuing SuDS involves understanding their design objectives and appraising these against performance metrics.

However, installations are infrequently monitored and thus the true value of SuDS (be that quantity control, water quality, biodiversity, amenity or water re-use) remains under-reported. What challenges does the industry face? What opportunities could fit? And how can we value these systems in the future?

**Day 2**

13:00 - 14:30

Speakers:

David Butler, et al

Talks under this session include:
Delivering the dominant benefits of Blue Green infrastructure through an adaptive pathways approach
Leon Kapetas, *University of Cambridge*
Cost benefit assessment issues when comparing retrofit sustainable drainage with conventional investment options
Fergus O'Brien, *Welsh Water/DCWW*
Valuing SuDS in 2065
Pete Melville-Shreeve, *TWENTY65*
Panel Discussion

Parallel Session 6B

Innovation



Chair: Caroline Wadsworth

Room: Deansgate 1

Potential routes to financing blue-green infrastructure in the UK

This presentation offers an exploration of where Blue Green Infrastructure (BGI) adds value and using this to identify how those values might be translated into new funding avenues in the future.

Developing a knowledge base about potential routes to funding BGI may augment innovative approaches to BGI funding in the UK and leverage its uptake in urban development.



Day 2

14:45 - 15:15

Speaker:

Anna Kenyon,
The University of Sheffield

Exhibitor



Nickel Institute and International Molybdenum Association are not-for-profit industry organisation promoting the use of partially corrugated stainless steel, type 316, for service pipes to significantly reduce water loss.

The technology has been demonstrated by its successful application in Tokyo and Taipei, where large scale replacement of service pipes has been undertaken.

Towards high performance innovation

The purpose of this session is to draw together the processes involved with raising organisational innovation capacity and the methodologies, skills and ambition that take innovation capacity to levels which will positively impact investor decision-making into the sector's long-term future.



Day 2

15:15 - 16:15

Speaker:

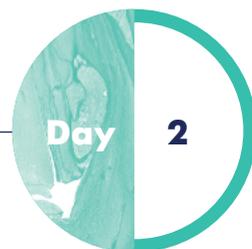
Clive Reynolds,
Colin Siddle,
Strategic Capability Ltd

Parallel Session 7B

Water Futures

Chair: Nicole Ballantyne

Room: Deansgate 2



Exploring alternative water systems from the end-user's perspective

This workshop will present and guide you through the use of a new model for change in infrastructural systems, which reconciles complex network-level changes with the more intimate shifts in domestic consumption behaviours that such reconfigurations will require.

The model accommodates “social” factors alongside issues of technological change and innovation. It will help us address the question: *what changes might be needed at the level of utility companies and regulators to make decentralised treatment a workable reality?*



Day 2

14:45 - 16:15

Speaker:

Paul Raven,
The University of Sheffield

Exhibitor



Fluence Corporation is a leading global provider of fast-to-deploy decentralized and packaged water and wastewater treatment solutions.

Fluence has experience operating in over 70 countries worldwide and employs more than 300 highly trained water professionals around the globe. The Company provides local, sustainable treatment and reuse solutions while empowering businesses and communities worldwide to make the most of their water resources.

Contact details:

www.fluencecorp.com

“TWENTY65 is the ‘fast-track’ route to ‘bridging’ key interfaces across industry sectors, the water value chain and academia, enabling us to ‘connect to win’, to identify profitable and sustainable innovations that can address the civil infrastructure grand challenges that we are facing.”

— Michael Elwell, *Aliaxis*

Parallel Session 8B

Behavioural Innovation**Chair:** Jon Rathjen

Room: 2/3/4

Behavioural innovation for sustainable water solutions

The Water Sector is facing its period of greatest challenge and change. The capability of the sector to adapt quickly enough is in question.

The presenters will illustrate how insights from cutting edge behavioural science and customer engagement will help the water sector to evolve to meet these challenges.

**Day 2**

14:45 - 16:15

Speakers:

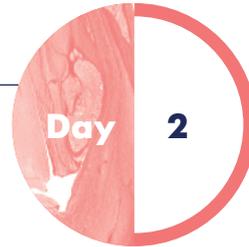
Ali Sims, Alex McCluckie,
DJS Research
Garry Sanderson,
Visualyse Solutions/
London School of
Economics



“TWENTY65 provides a unique melting pot for industry, policy makers and academia to exchange ideas and collaborate in the water sector. Its key tenet of working in partnership to accelerates innovation to positively impact public health, the environment, the economy and society aligns with that of Arup – a global engineering consultancy. One example of this collaboration is Digital Tide. This is an initiative undertaken by TWENTY65, the Economic and Social Research Centre (ESRC) and Arup to co-develop and disseminate an understanding of how digital initiatives will impact the water sector. The aim of the work is to help accelerative the digital transformation of the water sector.”

— Martin Shouler, ARUP

Parallel Session 9B

Infrastructure – Waste Water**Chair:** Louis Brimacombe

Room: 8&9

How can user experience drive adoption of innovative wastewater monitoring?

In a user-centric design project, interviews enabled understanding of the data visualisation and interpretation needs of personnel in wastewater companies across a range of disciplines.

Co-design and prototyping methods captured ideas and brought in expertise from other industries, delivering valuable guidance for the adoption of new monitoring technologies.

**Day 2**

14:45 - 15:15

Speakers:

Paul Dickenson, *Nuron*,
Laura Williams, *Uscreates*

CENTAUR: Smart utilisation of existing wastewater network storage for urban flood alleviation

Water companies need to expand the operational capacity of waste water networks without expensive, space-hungry and disruptive enlargement works.

CENTAUR is an autonomous de-centralised system, acting without the need of a central control fed by a hydrodynamic model. Join us to learn how CENTAUR can transform the efficiency and capability of existing infrastructure with the aim of achieving multiple objectives around capacity, flooding, environmental impact, and energy use.

**Day 2**

15:15 - 15:45

Speaker:

Sonja Ostojin,
Environmental Monitoring Solutions Ltd,
Simon Tait, *TWENTY65*

Wastewater blockage detection using evolutionary artificial neural networks

The widespread introduction of sensors in CSOs provides opportunities for in-depth analysis and modelling of the wastewater system.

An Events Detection System (EDS) has been developed for predicting CSO spills and for the automated detection of blockages and other unusual events in the proximity of, or at, CSOs in near real-time. The EDS is designed to predict CSO spills and detect blockages as they occur.

**Day 2**

15:45 - 16:15

Speakers:

Michele Romano,
United Utilities, Talia Rosin,
University of Exeter

“The work of TWENTY65 will provide exciting insights and opportunities for the future of our water sector, and this conference will build on that by bringing together those who can really ensure we continue to have a sustainable resource for people and the environment. I look forward to seeing the outcomes of these discussions”

— Sarah Hendry, *Defra*

