Innovation Annual Summary 2020/21

Cadent

Your Gas Network

Beneath your feet runs 200 years of innovation

We play a crucial role in maintaining, repairing and replacing gas pipes across four of the eight gas distribution networks (GDNs) in Great Britain. We strive every day to make things fairer, easier and greener, whilst taking care of an essential and vital public service.

We are responsible for ensuring the safe and reliable flow of energy, now and long into the future. We're proud to be at the heart of heat and work closely with our communities to keep them safe, warm and connected, providing extra care for those who might need it in a gas emergency.

As part of this we also manage the National Gas Emergency Service telephone number on behalf of the gas industry.

We recognise that we have a significant part to play in providing a cleaner, greener and sustainable future, and we are working closely with other gas networks and energy companies to pursue innovation in all aspects of our business.

We know that thinking ahead means a brighter future for customers and for our planet.

Navigating this report

To help you understand the relevance of each case study in this report, we've categorised them as below.

Keep an eye out for our quick reference icons throughout the document.

New project
Refers to a project launched in 2020/21

Project update
The latest news on an existing project

Market ready
Innovations which have progressed to business as usual implementation

Sharing best practice
Industry-leading innovations which we are sharing the benefits of with our partners

Embedded innovation
Employee-led innovation projects, independent of NIA or NIC funding

Contents

Welcome from David Goldsmith

I am delighted to welcome you to our eighth and final Innovation Annual Summary under RIIO-1. In this report, we share our progress on key Network Innovation Allowance (NIA) and Network Innovation Competition (NIC) projects, and how we are working with our industry partners to drive lasting change.

Setting standards our customers love and others aspire to

Last year we introduced our new localised operating model. We have demonstrated that by embedding this model, working collaboratively with our partners and maximising our use of Artificial Intelligence and insights, we can respond in an agile way to changing customer needs, driving continuous improvement and innovative ways of thinking and working.

We have come a long way since the start of RIIO-1, learning each year to refine our innovation vision and how we achieve it. By adjusting our processes and adopting best practice from across our industry and beyond, we have improved the pace at which we deploy innovations, developed more robust ways to measure success, and broadened our thinking to ensure we find the right long-term solutions for the communities we serve. Our learnings to date have set us up to deliver an industry-leading innovation capability in RIIO-2.

Acting for our communities

We continue to go further to make things easier for our customers, particularly those in vulnerable situations. We have built on the success of last year's Dementia – Call 4 Innovation project and our EasyAssist ECV concept, while exploring the possibilities of open innovation with our Connect the Community: Design Challenge.

By expanding the innovation pool to a previously untapped community of innovators, we have invited a fresh impetus to support our commitment to keep people safe, warm and independent in their home.

Tackling climate change

We have continued to work closely with stakeholders to shape credible, evidence-based pathways to net zero and are engaging intensively to ensure no one is left behind in the UK's energy transition. This year we saw £72 million of Government investment in our HyNet North West project, and have been pleased to support Northern Gas Networks with the next phase of HyDeploy. Elsewhere we have led the way on developing the future of low-carbon transport with our Transport pathways research project.

Enhancing customer experience

One of our biggest strengths throughout RIIO-1 has been developing innovations that improve customers' experience – from minimising customers' time off gas, to reducing the time we spend digging in the road. We have brought a number of key projects to a close after successful field trials, such as Duraseal and Kobus, and we were recognised for the benefits of Mechanical Purge End at IGEM's Gas Industry Awards 2021. In RIIO-2, our attention turns to further embedding our customer experience innovation approach into the business, independent of NIA or NIC funding.

Driving real change in the industry

Across all our innovation themes, we have worked to embed a culture of innovation within the organisation. As we did last year, we have included examples of this embedded innovation in each section of the report. We will continue to cultivate an ethos of learning and accountability, enabling us to respond dynamically to the changing needs of our customers, and make a positive contribution to our environment.

David Goldsmith
Head of Process and Innovation, Cadent

RIIO-1 in numbers

Our vision is to set standards that all of our customers love and others aspire to.

Projects completed
144

Reportable projects
214

Total NIA spend
£55.1m

Ideas
651

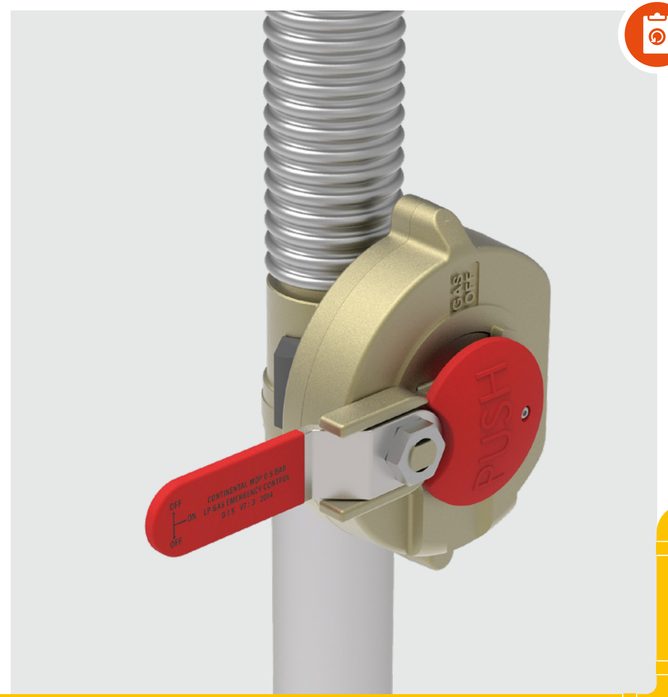
Collaborative projects
123

Total NIC spend
£18.4m

Going further to support customers in vulnerable situations

Anyone can be vulnerable if their circumstances change. Rather than using labels, we prefer to focus on individual needs and what we can do to ensure customers stay safe, warm, connected and independent in their home.

Ensuring that our services are as accessible as possible has continued to be a priority for us, and we have gone further to make things fairer for the people we serve. After introducing our new range of projects to tackle vulnerability last year, we have taken many of these projects to the next level while exploring new opportunities.



Accessibility when our customers need it most: EasyAssist Emergency Control Valve (ECV)

Last year we introduced our EasyAssist ECV project, which is putting customers with mobility and limb weakness challenges at the forefront of our thinking. After developing our working prototype with Oxford Product Design (OPD), this year we have been working through a series of trials and refinements to ensure the technology delivers maximum value to customers in an accessible way.

Our proposed solution is a mechanical device that can be retrofitted over the existing emergency control valve (ECV), resulting in a single button to allow activation with a simple push. We have now added a further safety mechanism with the inclusion of heat activation – meaning that in the case of a domestic house fire, the valve will be activated, and the gas valve automatically switched to off. Meanwhile, we have provided added assurance by embedding override functionality to allow pressure tests as the gas is turned on and off.

The EasyAssist ECV is, by design, both easy to fit and operate. We have considered accessibility on many levels – even including braille on the button to support those who are blind. We have worked closely with OPD to ensure that packaging, user instructions and labels all support ease of access for the widest range of customer needs, and that we use materials in a way that is sustainable and durable.

10 The product is intentionally inexpensive to buy, and takes less than 10 minutes for a qualified gas safe engineer to fit.

Now that we have refined the technology through practical field trials, we will be working at pace to manufacture the product and bring it to market in the next financial year. To bring our industry on the journey with us, we have shared the EasyAssist concept at high profile events such as Utility Week Live and the Energy Networks Innovation Conference, and we will continue to share best practice with our partners and across the industry.

"It was fantastic to see Cadent collaborate on such an important initiative to help people who are isolated and struggling with connecting to their communities."

Sarah Greenwood, **Corporate Account Executive, Alzheimer's Society**

Embracing open innovation to tackle isolation: Connect the Community Challenge

As we responded to the COVID-19 pandemic, we recognised a growing need to play our part in tackling social isolation across the communities that we work and live in. Building on the success of our 2019/20 Dementia – Call 4 Action project, we teamed up with technology experts RS Components and Nordic Semiconductor to launch our Connect the Community Challenge.

The Challenge invited innovators, engineers and creative thinkers from across the globe to consider how isolation and loneliness had impacted their community and conceptualise new, innovative solutions using 'Internet of Things (IoT)' technologies. Our collaborative approach allowed us to access a previously untapped audience of innovative young creators and future customers.

We shared over 50 high quality entries from across 15 countries with technology and customer safeguarding experts from across the industry to shortlist the ten most transformative ideas. The winners included entrants from Bangladesh and Canada, providing solutions such as smart medication dispensing and community support tools.

We have since worked with the entrepreneurial winners to connect them with expert designers and unlock funding opportunities to make their concepts a reality, opening up career opportunities for them while developing products to support our communities.

We have showcased this project at key industry events and webinars, to demonstrate the community benefits of open innovation.

Improving access to crucial services: Welfare Decision Tool

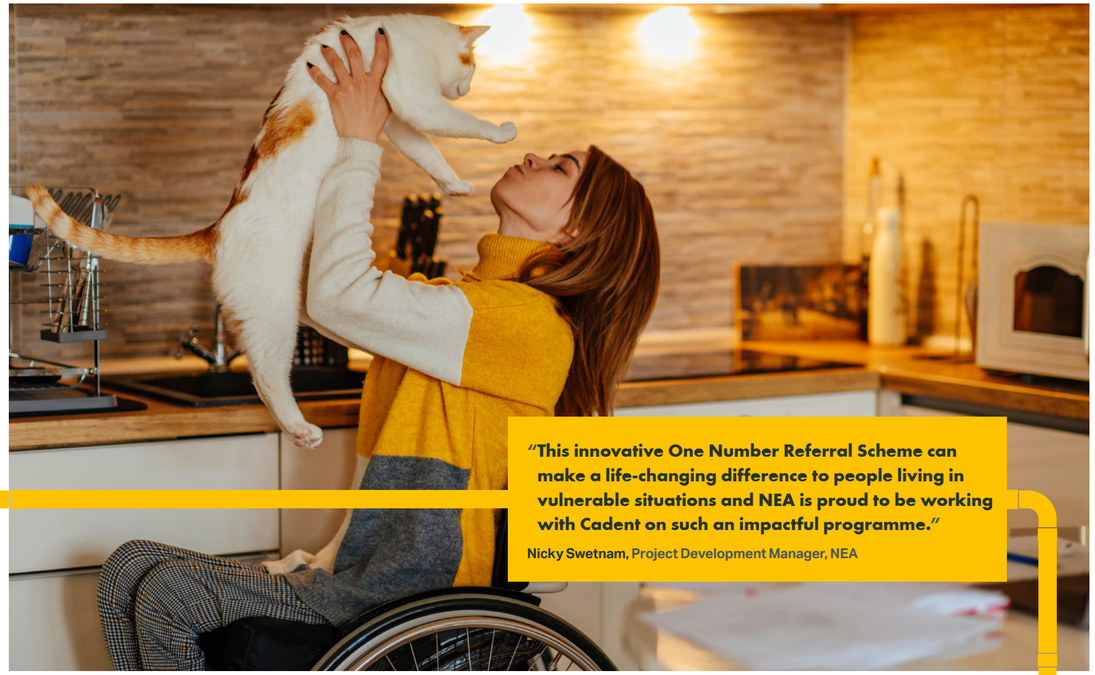
Our engineers often encounter customers who could benefit from additional welfare support – especially those on the Priority Services Register (PSR). Working with Frazer-Nash, with support from the Energy Innovation Centre (EIC), we have developed an innovative new tool for engineers to tailor welfare products and services for customers who might find themselves in a vulnerable situation.

Our Welfare Decision Tool provides appropriate and tailored welfare provision options by utilising existing PSR data and individual needs established on the doorstep, combined with key external considerations such as weather and how long the customer is likely to be without gas. This recognises that vulnerability is transient, and anyone can become vulnerable in different circumstances, and identifies the most appropriate support solutions for that customer.

This removes the guesswork for engineers, giving our operations teams confidence that they have supported someone in a vulnerable situation efficiently and based on robust evidence. We are now planning to build on the technology, meaning that in the future the app will help engineers identify the best safeguarding provisions, and arrange for delivery of products such as heaters and locking cooker valves direct to a customer's property.

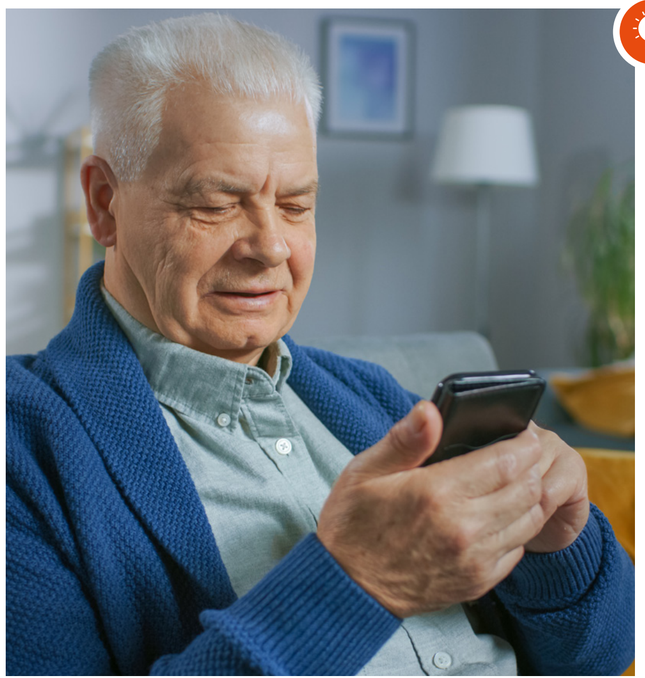
"It is really encouraging to see the networks actively seeking innovative solutions to safeguard people in the most vulnerable situations in society. It was fantastic to see the final product come together, as a result of the hard work and creative approaches demonstrated by the project teams."

Anthony Reid, Innovation Engineer, Energy Innovation Centre



"This innovative One Number Referral Scheme can make a life-changing difference to people living in vulnerable situations and NEA is proud to be working with Cadent on such an impactful programme."

Nicky Swetnam, Project Development Manager, NEA



Joining up support services: NEA One Number

Our stakeholders have challenged us to play a broader role in joining up different support services that are available across our industry, but are often unknown or inaccessible for many customers. Following a successful trial in two of our networks, we have partnered with National Energy Action (NEA) to use their independence and expertise to provide a truly joined up customer service.

Colleagues or delivery partners can now refer customers by calling a dedicated number, managed by NEA's experienced team, to access a range of support services including energy advice, wellbeing support, income maximisation services, financial support with appliance repairs and various additional safeguarding services.

Since its launch, we have continued to engage closely with customers and colleagues to identify opportunities for continual improvement. We have acted on suggested enhancements, including developing a dedicated contact form for when phone lines are busy. The form received very positive feedback and is now used for around 75% of all referrals.

The 'One Number Referral Scheme' has been shared as an example of best practice with other GDNs, and we continue to work with stakeholders to increase the number of services that customers can be referred to.

Leading the way to net zero

We are leading the way in ensuring that the UK's gas network plays its role in securing zero carbon energy which is reliable, flexible and convenient for customers to use.

"This hydrogen trial shows how the North West and Greater Manchester are at the forefront of the low carbon economy and that, working with Cadent and the HyNet NW project, we can deliver deep decarbonisation of society."

Andy Burnham, Mayor of Greater Manchester

This year, we have moved forward at pace with our flagship hydrogen projects, HyNet North West and HyDeploy, providing policy makers with much-needed evidence of hydrogen's potential to realise the UK's net zero ambitions in homes and industry – all while minimising our impact on customers and ensuring no one is left behind in the energy transition.

We have also stepped up our engagement on the future of transport, building advocacy for hydrogen transport and a national refuelling infrastructure by demonstrating credible pathways to overcoming the technical barriers we will face.

Hydrogen at scale: HyNet North West

HyNet North West is a full chain hydrogen / carbon capture and storage (CCUS) project, which aims to deliver full industrial decarbonisation across the cluster and provide the backbone for wider cross-sectoral decarbonisation.

Through HyNet North West, we plan to produce around 3.8GW of low carbon hydrogen by 2030, which is nearly 80% of the UK's target set out in the Prime Minister's Ten Point Plan. In development since 2016 by Cadent and partners Progressive Energy, HyNet North West has been through origination, feasibility and pre-FEED phases.

In 2020 we have seen the emergence of the HyNet consortium, which consists of Progressive Energy (project integrators), ENI (CO2 transport and storage), Essar (hydrogen production), Cadent (hydrogen network), Inovyn (hydrogen storage), CF Fertilisers (capture plant) and Hanson Cement (capture plant). Our role in the consortium is the delivery of a FEED and consenting package for the hydrogen network.

Following the announcement of £72 million of Government funding, HyNet NW will transform the North West into the world's first low-carbon industrial cluster, playing a critical role in the UK's transition to net zero greenhouse gas emissions by 2050 and the global fight against climate change. We are engaging and collaborating with government agencies, councils, combined authorities, regional planners, delivery bodies and local communities to enhance their understanding of HyNet NW.

Through HyNet NW, we will reduce regional carbon dioxide emissions by up to 1 million tonnes every year, which is the equivalent of taking 600,000 cars off the road. This is one of the most impactful projects across the whole of the UK.

Hydrogen in our homes: HyDeploy

In 2019, HyDeploy became the first project in the UK to inject a blend of up to 20% by volume of hydrogen into the existing gas supply.

Over the 17-month trial period at Keele University, the project focused on the safe management of the blending process. The project followed a strict management regime, which included checks on how the blend smelt, how it burned and how safe it was. There were also regular gas quality checks, to ensure the incremental increases in blending over the trial period could be safely managed, allowing up to 20% concentration of hydrogen to be blended into the gas network and on to the end user.

The project has proved successful, with the hydrogen blends having been safely and efficiently distributed to a broad range of users within the Keele gas network. This includes 100 domestic properties and up to 30 university campus buildings, such as; office blocks, lecture theatres and laboratories.

During the trial, COVID-19 led to restricted site access and reduced demand on the network, with students returning home during the first lockdown. We adapted by extending the trial until March 2021, to provide the opportunity to undertake further blending over what would be a vital winter period, with high probability of increased gas demand.

We have succeeded in realising what we set out to deliver through our trials. Consumers noted no difference between the hydrogen blend and that of their former gas supply and are proud to be advocates for this innovative project. The outputs of this project will be crucial in closing the evidence gaps needed to facilitate the future rollout of hydrogen blends.

"Hydrogen is an important component of how we reach net zero for transport. There are emissions savings we are making today from bio CNG that not only help to decarbonise HGV transport here and now, but enable a hydrogen future."

Dr Angela Needle, Director of Strategy, Cadent

Shaping the future of low-carbon transport: Transport pathways

Electricity, hydrogen and biomethane all have a key role to play in decarbonising transport. Over the past year, we have led a study, in conjunction with the other gas networks, to understand the transition to a decarbonised economy in 2050, focusing on how the transition is achieved and the competing and complementary nature of different low emission fuels and technologies over time. Whilst the project has considered the whole economy, it focuses predominantly on transport, especially heavy goods vehicles (HGVs), as an early adopter of green gases and as a key enabler of the transition to net zero emissions.

The project has highlighted that biomethane has an important role to play in the pathway to net zero but will need to ramp up quickly to maximise its potential. Biomethane and hydrogen-powered trucks represent a substantial opportunity for green gases to accelerate transport decarbonisation by 2030. A large-scale deployment of these trucks would lead to a 38% reduction in emissions from trucks by 2030, compared to just 6% if decarbonisation efforts in this segment focus solely on zero-emission options. Beyond 2030, hydrogen trucks are expected to begin deployment at scale, but they will not initially compete for the same use cases as gas trucks, as early hydrogen vehicles are likely to be better suited to medium range applications. The project also explores the associated infrastructure needs, suggesting that around 170 refuelling sites for gas trucks will need to be deployed over the next decade to meet the growing demand for these vehicles .

The project has therefore enabled development of a green gas decarbonisation narrative, supported by a wide range of stakeholders which clarifies the path ahead and demonstrates how the use of biomethane and hydrogen are scaled up over time, and how they compete with and complement one another. We are now conducting further research to outline how a hydrogen refuelling station network can be practicably connected to the existing gas grid, with hydrogen supplied at the purity levels required. The findings will be published in our Hydrogen Grid to Vehicles (HG2V) and Hy4Transport reports later this year.

Greener gas at a fairer price: Future Billing Methodology

As we move to a network that conveys low carbon gases, such as hydrogen and biomethane, we need to develop a way of recognising the wider energy range of the gas we supply. The Future Billing Methodology project, which we lead, is exploring ways to attribute energy values that are reflective of the gas being supplied at a local level. This will remove the cost of enriching biomethane to standardise energy content and enable hydrogen to be blended into the network, while ensuring consumers are billed in a fair and equitable way.

The project has involved the installation of sensors within the network to validate modelling software used across the industry today. The software has the ability to model zones of influence and mixing of gases from different sources to allocate energy content at a local level for consumer billing.

The ultimate objective of the project is to 'prove the concept' and provide a recommendation of a future billing methodology that unlocks the full potential of the gas network to deliver low carbon energy.

Collaborating for a cleaner supply chain

Our embedded supply chain is key to the work we deliver, and our suppliers are crucial in helping us to deliver our carbon reduction targets. This year we have increased our engagement activities and included key suppliers in strategic conversations around reducing our collective environmental impact and supporting customers in vulnerable situations.

We made the decision to support our supply chain by joining the Supply Chain Sustainability School. Through our membership, we provide all supply chain partners with their own access to the Sustainability School's website, where they can access a library of tools and resources that can support reducing their carbon footprint.

Our supply chain partners are able to upload their data, performance metrics and ideas on how to limit their carbon footprint in a shared portal. Through this visibility of data, we are able to monitor how they are delivering against their environmental commitments and can recognise excellence and identify exceptions. We have also been able to innovate more effectively through this collaboration, which has led to us dramatically reducing our waste to landfill to 4% from 16% in 2019/20. We have also launched an innovative tool that enables us to repurpose offcuts of plastic pipe waste, a common cross-industry problem, through sharing data of available plastic pipe via a central database accessed by our networks and supply chain.

The leadership and collaborative approach we have taken in engaging and galvanising our supply chain to reduce their environmental impact has resulted in us being promoted to Gold status within six months of joining. We have shared this best practice approach with other GDNs and partners who are considering joining the school.

"Cadent is taking the lead by adopting a collaborative, innovative approach when engaging with their peers, suppliers and stakeholders. Cadent's level of engagement with its Supply Chain has grown significantly, elevating them to a Gold Level membership as well as being an active Partner at the Sustainability School. This is testament to the step changes they are making through direct impact on their environmental and sustainability practices."

Shaun McCarthy, OBE – Chair of the Supply Chain Sustainability School

Making life easier for customers

While keeping our customers safe, warm and independent in their homes, we are also committed to drawing on best practice within and outside our sector to enhance the experience they have with us. By embracing new tools, techniques and processes, we are leaving a more positive impact on the communities we serve.

As RIIO-1 draws to a close, we have brought key solutions to market to make life easier for our customers. We are also looking to the future and exploring new territory, with new ways to engage with customers and bring the disruption of our works to a minimum.

NEW

Connecting with our customers: Smart video surveying

We are here to help customers who request a new gas connection or a change to an existing gas connection. We typically carry out pre-works surveys face to face via a trained surveyor – limiting the number of surveys possible per day due to travel time. We also recognised that, during the COVID-19 lockdowns, for many customers a face to face visit was not practicable or desirable, with many shielding or looking after loved ones who were shielding.

The proposed solution is a product called Vyntelligence, which will enable customers to control the survey process by capturing video footage themselves. Vyntelligence also offers further computing intelligence to pick out words and prompt actions, driving right-first-time data capture.

After a period of development and testing, we are now entering a three-month trial period in the West Midlands. Following our trial, we will determine whether the proposed solution can be implemented across the West Midlands and then more widely across Cadent. Through this technology we hope to significantly reduce lead times for our customers, and provide a greater end-to-end customer experience by putting the power in their hands.

The proposed solution is a product called Vyntelligence, which will enable customers to control the survey process by capturing video footage themselves.

Rethinking single-use pipe fittings: Mechanical Purge End

Last year we shared the details of Mechanical Purge End, a solution which is quickly and easily fitted to the end of the gas pipe during gas pressure testing – preventing the waste we would generate by disposing of single-use fittings.

We now plan to roll out the technology in late summer 2021. The benefits of this technology were recognised at the Utility Week Awards 2021, where Mechanical Purge End won Product of the Year.

Winner: Product of the Year at Utility Week Awards 2021

A new method for mains insertion: Pipeline Spacers

Through our Pipeline Spacers project, we aim to address the challenge of inserting large diameter plastic pipes into ageing cast iron pipes, as part of our gas mains replacement process.

The existing process requires one of our engineers to enter the cast iron pipe and remove any Weko seal brackets from joints before the pipe can be inserted. The spacers enable the plastic pipe to be 'rolled' over the seals during insertion instead. This maximises the safety of our teams while speeding up the process so we can reduce disruption to our customers.

In March 2021, we successfully completed our first trial in North London. We are now planning a further trial in autumn 2021.

Replacing service pipes at pace: Kobus Pipe Puller

As part our gas mains replacement process, we have to replace customers' service pipes to their properties. The Kobus Pipe Puller is a trenchless technique for replacing gas service pipes of small diameter, designed to speed up the process and minimise avoidable disruption for customers.

This year, we carried out 15 successful field trials, on ¾" and 1" service pipes. This allowed us to take a sample of each inserted pipe for further lab testing by the experts at ROSEN.

Following the lab tests, it was established that all samples passed core requirements, allowing us to close the trial phase and move into implementation. We are now working closely with our Procurement team and Kobus to establish effective routes for distribution, so customers across our networks can benefit from this technology.

Transforming gas mains replacement: Foambag Operation on Stubs (FBOS)

Often when carrying out gas mains replacement, we face challenging situations where we have to work in busy locations such as junctions or sensitive public areas. This makes it much harder to dig and access our gas assets.

Working with Steve Vick International (SVI), we have developed the Foambag Operation on Stubs (FBOS) technique. The FBOS technique fully decommissions mains right up to the last transition joint on mains of 4"-6" in diameter.

FBOS is a highly innovative technique compared to more traditional methods because it uses remote live mains insertion which can be used on both single or two-way fed mains. Additionally, FBOS allows for greater insertion lengths, up to 25 metres and has an improved ability to navigate obstructions with a specially developed nosecone designed to negotiate bends, existing services and plugs. Due to FBOS's use of SVI's signature sealant technology, which seeks out and seals loose particles, issues relating to rust or contaminants are also reduced.

The project took just 15 months and was completed well within the project timescales, in spite of the practical challenges presented by COVID-19. There is the potential for FBOS to be scaled up to 8" – 12", further increasing the significant benefits this technique delivers to gas distribution networks and the public.

This technique allows for old gas mains to be kept live throughout, therefore maintaining the gas supplies to customers, and reducing the need for complex and costly traffic management. SVI's products also help to improve health and safety by allowing the works to take place in a safer location and reduce the environmental impact associated with excavating and disposing of soil.

Duraseal

With Duraseal, we are exploring the use of self-amalgamating tape to minimise disruption during the repair of low and medium pressure metallic gas mains. This technology can be applied with just three core components, allowing engineers to make essential repairs with minimal disruption to customers' gas supplies and road users.

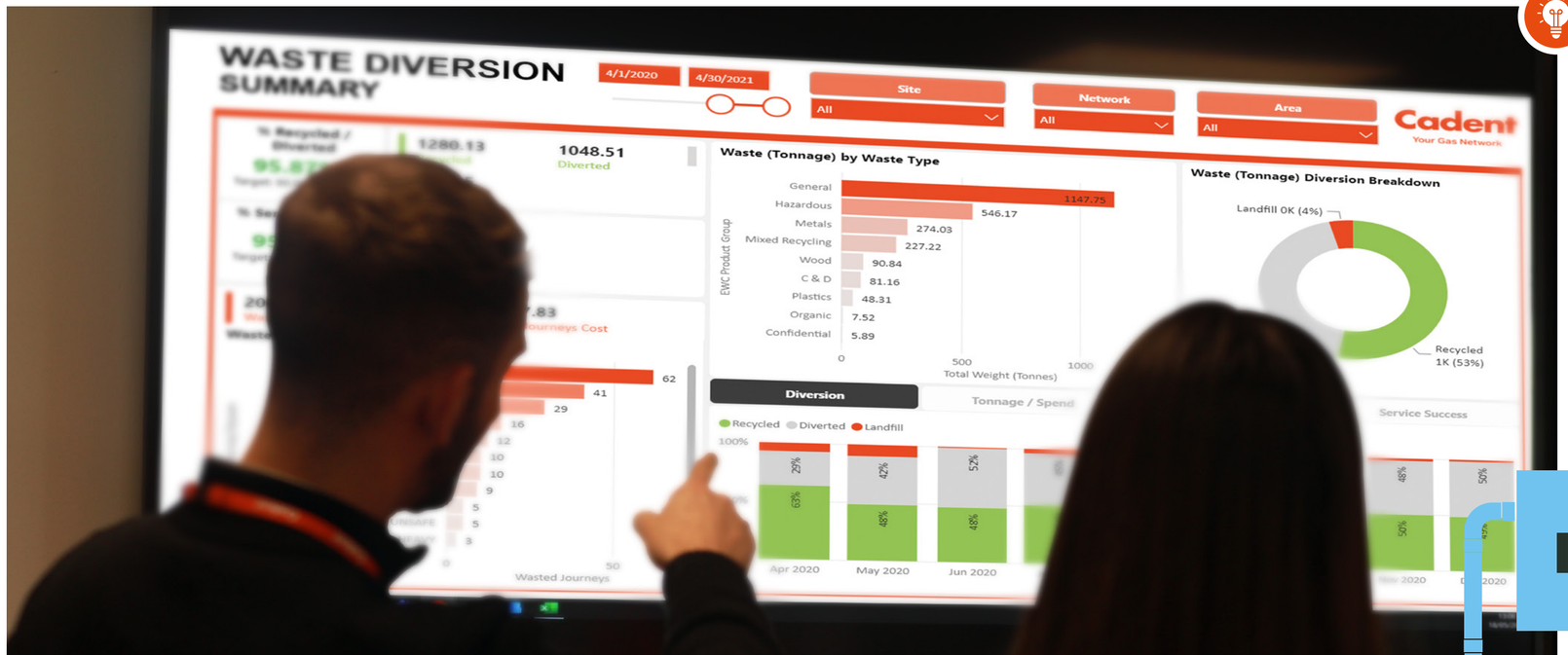
We launched the project in September 2019, and following initial analysis we have carried out extensive laboratory testing (including long-term performance testing).

After unexpected delays due to COVID-19, we are now underway with field trials, with the aim of completing the project by the end of September 2021.

This technology can be applied with just three core components, allowing engineers to make essential repairs with minimal disruption to customers' gas supplies and road users.

"FBOS has created a great opportunity for us to replace stranded mains or stubs that would otherwise have been difficult or costly due to their location and excavation requirements. Following our completed and successful field trials we are looking forward to adopting the technique across our network and making it available, through SVI to other gas distribution networks (GDNs)."

Vishal Dhanji, Innovation Project Manager – West Midlands, Cadent



Harnessing data to improve our ways of working

Last year we shared the success of our ongoing data transformation journey. We have made sharing data a priority so that we embed best practice across all our partners. This was evidenced in our London Infrastructure Mapping project where we made the locations of our network assets visible to other utilities, opening up opportunities to work on collaborative roadworks projects and reduce the impact on customers by coordinating the timing of roadworks.

We have increased the scale of our ambitions, with each of our customer operations areas forensically analysing their performance levels. We examined, in detail, each point that we engaged with customers during each customer journey. We found that in almost all cases, speed (the faster an operational project is delivered), is of critical importance to customers. To understand the intricacies of this trend, teams carried out further analysis into our job completions and durations, building a baseline report to understand our engineers' activities and identify periods of non-value adding work (i.e. work not directly related to customer outcomes, such as depot visits). From this, they were able to conduct a deep dive into potential reasons for productivity gaps, at a level of granularity not previously available.

We have used this information to develop a sophisticated desktop tool, providing operational management teams with a holistic overview of work delivery to support planning improvements. By providing KPIs in a simple, accessible format in one place, the utilisation tool has empowered colleagues to challenge traditional ways of working and embed innovative new working patterns that have enabled them to increase productivity by up to 50% in many areas.

We have increased the scale of our ambitions, with every regional business unit forensically analysing their performance levels. We examined, in detail, each point that we engaged with customers during each customer journey.

Looking ahead

As we move from RIIO-1 into RIIO-2, we have taken a number of actions to lay the groundworks for our future success. We are taking the proactive steps today to anticipate the needs of our customers and communities, so we can provide a service that delights our customers long into the future.

Our ongoing data transformation journey is allowing us to make the best strategic decisions so we can keep gas flowing safely and reliably in our networks.

Scaling up support services for customers in vulnerable situations

Throughout the COVID-19 pandemic we have innovated to find ways of accessing hard-to-reach groups who have been significantly impacted, making sure we hear their voices during these challenging times. We continue to work with specialist partners to ensure our innovation activities are carefully considered, accessible and independently assured.

Our focus throughout RIIO-2 will be expanding our innovation pool as far and wide as possible, so we can bring a range of expert voices into co-creating solutions that benefit customers across all utilities and wider customer service sectors.

An embedded approach to net zero

As policymakers and influencers respond positively to our plans for a future hydrogen gas network, we have been proactively advising key local stakeholders to bring them on the journey with us and co-creating regionalised plans.

We have developed our regional modelling tool, MyHeat, to serve two purposes:

- To model future net zero pathways for the impact on our network, so that we can ensure we invest in the right infrastructure going forward
- To assist in visualising to Local Authorities how the impact of net zero pathways might impact on their planning needs

Our model enables a view both on choices that might be made on the lowest whole life cost of a technology, but also on the lowest upfront cost.

In a first-of-its-kind collaboration, we worked with Electricity North West to develop the Decarbonisation Pathway for Greater Manchester report, plotting a route to net zero for the region by 2038. This work has provided an exemplar template for other local authorities across our networks, and we are now working on similar reports for Liverpool City Region, Cumbria, Lancashire and are actively in discussions with the West Midlands Combined Authority and the Greater London Assembly as well as many other local authorities.

Best in class customer experience

To further drive our embedded innovation approach, we have focused on equipping colleagues and partners with the tools they need to respond to local needs.

Our ongoing data transformation journey is allowing us to make the best strategic decisions so we can keep gas flowing safely and reliably in our networks.

To ensure all colleagues have access to real-time insights enabling them to make better decisions, we have launched a suite of PowerBI dashboards which are available to everyone and tailored to their needs. Managers and supervisors are equipped with the tools to make evidence-based decisions to improve performance and frontline engineers can see their own performance against targets. This creates clear accountability and ownership across the organisation.

Through these measures, we have laid the foundations for an innovation ecosystem that is centrally governed, but locally defined. We look forward to driving our innovation capability to the next level throughout RIIO-2, deploying transformative solutions at pace and meeting and exceeding the needs of our customers for the foreseeable future.

Measuring for success

In RIIO-1, we collaborated with our gas industry partners to develop a new Innovation Measurement Framework. We welcome Ofgem's deployment of this tool as the framework of choice for all gas distribution networks in RIIO-2. This will allow us to closely track the benefits of each individual project, ensuring we deliver value for our customers each step of the way.

We look forward to continuing our journey to develop industry-leading innovation capabilities throughout RIIO-2.

Keeping the conversation flowing

If you would like to talk to us about any of our existing projects or a new idea, contact: **innovation@cadentgas.com**