

# Network Innovation Allowance (NIA) Annual Summary

1 April 2014 to 31 March 2015  
for Wales & West Utilities



working with you

## A message from Graham Edwards

Every day our skilled and dedicated colleagues do their very best to keep our 7.5 million gas consumers safe and warm, with a supply they can rely on and a level of service they can trust. We don't sell gas – we use our 35,000 kilometres of pipelines to transport gas to homes and businesses across Wales and the south west of England. It's a vital service and one that we are very proud to deliver.

At Wales & West Utilities, innovation is key for designing our business for the future, supporting the provision of a reliable gas supply while protecting and helping the environment and, importantly, delivering best value for money for gas consumers.

The Network Innovation Allowance (NIA) scheme, which is operated by our regulator Ofgem, is now in its second year. We committed £1.6 million to innovation in 2014/15. We are carefully investing this money in projects which provide real benefits to our customers, both now and for the future. We are reporting here on our progress against those projects, which are supported by NIA funding.

Traditionally, innovation and utilities may not always have been talked about in the same breath, but I believe that the sector can now be described as dynamic and innovative. We use the innovation incentives to fast-track this change, which, as the Chief Executive of one of the top performing gas distribution networks, I find exciting.

The industry's collaborative activities continue to grow from strength to strength and our challenge is to keep up the momentum that we have generated continuing to work with collaborative forums such as the Energy Innovation Centre. Over the last 12 months, we continue to grow our collaborative innovation community both in the UK and internationally, and increased the number of project opportunities we have reviewed.

We are now entering the time where, with the support of our regulator, innovation and improved skills are having a positive influence. The deployment of innovative new products and services throughout the industry will ultimately benefit gas consumers through lower costs.



**Graham Edwards** Chief Executive



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# 1 Executive summary and key achievements

We are delighted to present this second annual summary of our innovation activities for 2014/15, achieved using funding through both the NIA incentive allowance in addition to other funding areas like the open innovation award from the Welsh Assembly Government.

Our innovation strategy mirrors our key business drivers which are providing excellent customer service – we are once again the top performing GDN for customer service across our industry, reducing our impact on customers' bills and operating a safe and reliable network while minimising our environmental impact.

Collaborating and sharing innovation with others is a key focus for Wales & West Utilities. Eighty per cent of our projects have been delivered in conjunction with others; not only does it avoid duplication of effort and consequently duplication of cost passed on to customers, it allows us to share expertise, skills and resources.

We take pride in our ability to deliver innovation all the way through to implementation stage. Within this document, we feature 10 projects that demonstrate our ability to deliver. Our highlights are:

- The Futurewave innovation project, providing a digital 'one-stop shop' to help people source and fund energy solutions more effectively and efficiently, to deliver great customer service, and save customer costs as a collaboration project.
- The Ductile Iron Window Cutter innovation project swiftly and efficiently cuts through ductile iron pipes. This not only delivers cost reductions by achieving best value from our essential works, but also delivers further cost reductions for customers through knowledge sharing about the project.

All in all, our innovation strategy is aimed at delivering our business objectives on behalf of all our stakeholders, taking a lead role in collaborating with others and demonstrating an excellent track record in delivering innovation.

## Our year at a glance



## Key achievements

- We have taken the lead on five of the 17 collaborative projects in which we're participating with the GDNs.
- These projects will deliver a benefit of reducing future year's spending of £250,000 per annum and will deliver benefits in our key focus areas of safety, asset and network management, environment and customer service.
- Achieving industry-leading customer service scores – a 4% improvement from 8.69 to 9.04 over the year – thanks to launching services from other industries like online connection quotation and scheduling, and through the success of our Customer Service app, which empowers customers to share their views and enables us to respond to their feedback even faster.
- Winning Best Gas Network Improvement at the 2015 Energy Innovation Awards for our joint creation and development of a ductile iron pipe window cutting tool with specialist provider Steve Vick International Ltd. The device makes replacing pipes faster, which shortens the time our customers are off gas and reduces disruption from roadworks.
- Implementing new and innovative technology, such as extended pipe coil trailers and large diameter PE branch saddle equipment which allows smaller excavation sizes and only one interruption per service replacement, reducing disruption to consumers, has helped us achieve industry number one status for the lowest duration of planned supply interruptions in 2013/14.
- Winning a Wales Quality Innovation Award and a Business in the Community Stronger Communities Award for our innovative and fresh approach to tackling the dangers of carbon monoxide with arts organisations such as Theatr na nÓg and the Royal Welsh College of Music & Drama.

**UK ENERGY**  
Innovation Awards  
**2015**  
Winner



The team with the Wales Quality Innovation Award

## 2 Innovation project progress update

- We invested £1.6 million across 22 innovation projects in 2014/15 with support funding from the Network Innovation Allowance (NIA) scheme operated by our regulator, Ofgem.
- This significant investment is focused on providing a reliable gas supply, promoting sustainability, delivering value for money and driving outstanding service for our customers.
- Ten have been completed so far, including work on mains' stress corrosion cracking, leakage reduction and the handling of sludge from redundant gasworks and gasholders.
- The 12 ongoing projects include a corrosion coating investigation, an assessment of a small bore pipe lining system, work on using sound to detect pipeline features and research into transferable best practice from the water sector. Four of our most ambitious projects are:

1

### Iron main condition assessment tools phase three

#### NEED

Providing our customers with a safe and reliable supply involves replacing older cast iron mains according to their remaining lifespan

#### CHALLENGE

Develop a tool to accurately assess the condition of metallic mains

#### IMPACT

Improved safety and minimised disruption and costs for customers from the speedier identification and treatment of any strain or possible defect

Demanding  
**SAFETY**  
 ALWAYS 



SAFETY

#### KEYFACTS

Finishes  
 January 2016

Collaboration  
 WWU and  
 National Grid

# ENVIRONMENT



2

## Treatment and re-use of gasholder sludge

### NEED

As we are storing more gas in our pipes, the need for gasholder storage has reduced. Since 2005, we have been following a challenging gasholder demolition programme and need a better solution for the removal of sludge from the base of each tank

### CHALLENGE

Developing a sustainable and cost-effective method for the disposal of the hazardous sludge waste

### KEYFACTS

Finished June 2015  
Collaboration WWU only

### IMPACT

Delivers a carbon saving of around 55% along with a 28% cost reduction compared to the traditional approaches of incineration or landfill

Doing all we can to **PROVIDE A RELIABLE GAS SUPPLY** & PROMOTE SUSTAINABILITY

3

## Futurewave phase one and two

### NEED

Energy consumers have no tools to help them make more informed energy choices between energy sources e.g. gas, electricity, oil etc

### CHALLENGE

Create an online energy option comparison platform that also acts as a funding and development hub that helps match innovative ideas with investment backing

# CUSTOMER

## customer quotes

I know about finances, mortgages... but don't know about energy **Brian, Leeds** (off gas)

Really starting to feel the pinch with the cost of oil **Geraint, N Wales** (off gas)

### KEYFACTS

Finishes November 2015  
Collaboration WWU, NGN, NGGD, SGN

### IMPACT

Will simplify customers' lives and support the development and efficient delivery of energy solutions

Driving  **OUTSTANDING SERVICE**

4

## Ductile iron window cutter

### NEED

We want to use the most efficient methods of replacing our old metal gas pipes

### CHALLENGE

To develop a hand-held tool that will safely, swiftly and successfully cut through ductile iron pipes without damaging the newly inserted pipe to give improved value from our essential works

### IMPACT

Reduce the size and duration of our street works activities that affect our customers – minimising disruption and reducing cost

Delivering  
**VALUE**  
FOR MONEY



COST



### KEYFACTS

Finished  
January 2015  
Collaboration  
WWU only

For more details on all our 22 innovation projects, see the table on page 18 of this report or visit the learning portal at [www.smarternetworks.org](http://www.smarternetworks.org).

## Zero cost projects

MINIMUSS  
BRANCH  
SADDLE

RISE  
RAPID  
CABLE DUCT  
SEAL

SAFETY  
SHOVEL

BLACK  
CORE  
PIPE

INTERIM  
REINSTATEMENT  
REDUCTION

INSULATED  
EMERGENCY  
CONTROL  
VALVE

Zero cost projects are project ideas we have tested for transfer to business as usual. They have delivered great safety benefits and saved us money too





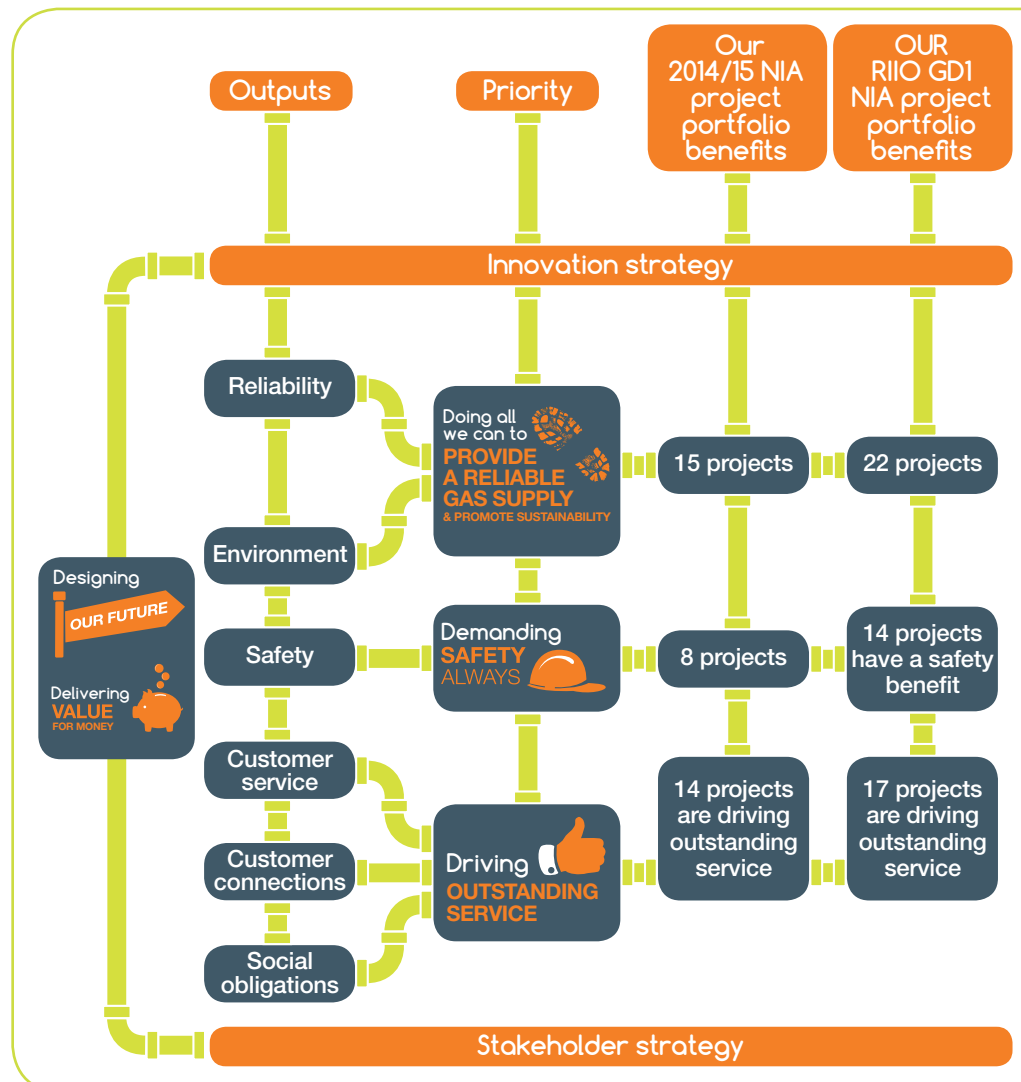
### 3 Linking our Network Innovation Allowance (NIA) work to our innovation strategy and business priorities

Our innovation strategy is to create and deliver benefits for all our customers by reducing costs while providing excellent customer service and a reliable and sustainable gas supply. This is achieved by collaborating with others, promoting swift evaluation, trialling and implementation of projects and keeping abreast of learning from others. During this year we have reviewed our innovation strategy and are committed to:

- include projects that enhance our knowledge on low carbon energy and understanding the role of the gas network for the future
- help us to reduce costs for the benefit of all our stakeholders
- find new ways to foster ideas e.g. crowd sourcing
- make it easier for people to bring ideas to us.

The graphic, right, illustrates how our innovation and stakeholder strategies link our five key business priorities while ensuring our commitment to deliver to Ofgem's required outputs.

All innovation ideas – we had 139 during 2014/15 – are rigorously evaluated and approved through a governance process including a minimum of three executive team members and align to our innovation strategy and business priorities and we ensure that all projects selected for development have the potential to provide customer benefits.



## How do we continue to grow and discover?

To leverage the best outcome, we use collaboration through open innovation. Under this approach, we go outside our own organisation to develop solutions with more than 1,000 companies that help enhance performance and growth.

While 80% of our 2014/15 projects involve partnering with other gas distribution networks, we are looking to increase our collaborative partnerships outside the gas industry.

In a similar way, we also work extensively with other companies and organisations – in the UK and internationally – to ensure we are always drawing on skills and expertise, and have a wide range of ideas to consider for tomorrow's innovative processes, not limiting ourselves to the traditional products and solutions available within the gas industry. One example of this is the suite of projects assessing the technical capability and benefits of UK and internationally developed pipe lining and rehabilitation systems for gas risers in high rise buildings.

As our portfolio demonstrates, many of our projects were developed from a variety of sources, including our owners and global infrastructure business the CKI Group, our supply chain and contractor partners, water and electricity businesses, collaboration forums and industry problem statements that challenge all of the gas industry to find solutions. Our collaborative project to assess the impact of intelligent carbon monoxide monitors is an example of one such project developed through a collaboration forum.

Open innovation also brings us valuable wider exposure to a diverse range of sectors including defence, pharmaceutical and electronics industries.

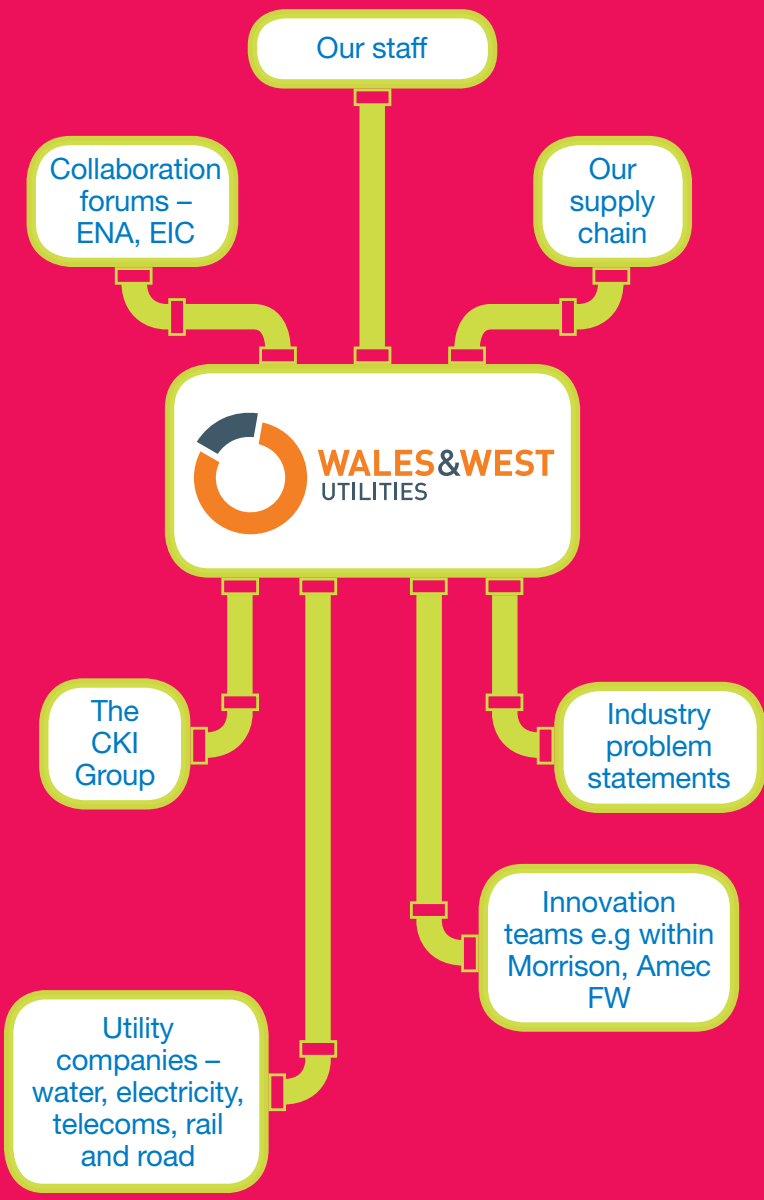
Alongside our external focus, we are proud that our biggest source of innovation – 45% of all current ideas – is our own workforce. We continue to look for new ways of fostering their support and tapping into their experience. This is achieved through our monthly innovation committee, which is attended by a varied group of colleagues from across the business and is an effective method of connecting people with different perspectives and experiences. The increased ambition of our employees' suggestions has led to our new ideas total rising 65% on 2013/14.

We review the quality and effectiveness of our ongoing innovation portfolio monthly through a steering group that includes three of our executive team plus other key decision makers and process owners. This allows us to respond quickly to feedback and incorporate it into our planning at the highest level.

We have completed 10 projects in 2014/15. Projects have been funded through both the NIA incentive allowance as well as through other funding routes such as our open innovation award from Welsh Assembly Government.

**45%**  
 of all current  
 innovation ideas  
 come from  
 our own  
 workforce

# Our sources of innovation



## 4 Sharing significant learning

# SHARE

### Learning from others

All five gas distribution and transmission ownership groups work closely through the Gas Innovation Governance Group (GIGG), a collaboration forum hosted by the Energy Networks Association, to explore which technological, operational and commercial projects are most suitable for our future needs.



GIGG members at Wales & West Utilities host day

Representatives from each network meet each month to discuss and evaluate opportunities. We, alongside the ENA, develop the agenda for a successful annual innovation conference, organise events to share innovation strategies and approaches, effectively share completed project learning and communicate the latest innovation news with other member groups of the ENA.

We will attend the second 2015 Low Carbon Network Innovation (LCNI) Conference at Liverpool. This is an excellent opportunity to showcase innovation investment and demonstrate the excellent progress we have made.

We are excited that the sharing of project outcomes has enabled us to successfully replicate two of the projects included in the following six project summaries.



Our staff at LCNI 2014

1

## Long-term demand forecasting

### WHAT WE SHARED

An innovative method of forecasting peak domestic gas demands for future years using previously unused data such as boiler efficiencies and installation rates, new build rates and changes in insulation for houses

### WHY

Improved modelling techniques were required to provide more accurate forecasts that take account of recent significant changes in the way that people are managing their energy consumption in their homes

### IMPACTS AND BENEFITS

A clear understanding of future gas requirements which enables us to provide a reliable service and ensures efficient investment in the network

Doing all we can to  
**PROVIDE  
 A RELIABLE  
 GAS SUPPLY**  
 & PROMOTE SUSTAINABILITY

### KEYFACTS

Shared  
 February 2015

Who has learned  
 WWU, NGGD,  
 NGGT, NGN, SGN

2

## Asset health & criticality modelling (pipelines, special crossings, block valves)

### WHAT WE SHARED

The outputs of the project which created a common framework to assess the health and criticality of pipeline assets

### WHY

To enable better, effective and efficient decisions for managing our assets and to support a consistent reporting framework for asset health and risk across the gas industry

### IMPACTS AND BENEFITS

To optimise investment in our assets and maintain the low cost of gas transportation for our customers

Doing all we can to  
**PROVIDE  
 A RELIABLE  
 GAS SUPPLY**  
 & PROMOTE SUSTAINABILITY

### KEYFACTS

Shared  
 February 2015

Who has learned  
 WWU, NGGD,  
 NGGT, NGN, SGN

3

Smart phone QR codes

**WHAT WE SHARED**

The developed processes and trial results of National Grid Distribution's NIA project to investigate the optimal use of QR codes

**WHY**

To keep the local community and surrounding businesses better informed about the progress of projects

**IMPACTS AND BENEFITS**

A new and innovative way of communicating with customers affected by streetworks. A QR code is included at the site that can be scanned by smart devices to access the latest details on project progress

Driving  **OUTSTANDING SERVICE**



**KEYFACTS**

Shared August 2014

Who has learned **WWU & NGGD**

4

Cured in place pipe (CIPP) (stage 2)

**WHAT WE SHARED**

As part of a collaboration with all networks we organised a demonstration trial of a fully structural liner and documented the limitations and benefits of the liner (installation methods, fittings and product shrinkage)

**WHY**

To investigate innovative solutions that may reduce the cost of replacing and maintaining our metallic pipes

**IMPACTS AND BENEFITS**

A potential rehabilitation technique for metallic gas mains that will be developed further through the next project phase

Doing all we can to  **PROVIDE A RELIABLE GAS SUPPLY** & PROMOTE SUSTAINABILITY



**KEYFACTS**

Shared Ongoing project

Who has learned **WWU, NGGD, NGN, SGN**

5

## Abriox Osprey pressure validator

### WHAT WE SHARED

The trial results of a remote pressure recording unit that fits onto any gas service pipe developed within a SGN NIA project.

### WHY

To exploit new technology that can offer lower cost maintenance and enhanced battery life and the opportunity to introduce competition to this field to benefit us both economically and in efficiency.

### IMPACTS AND BENEFITS

A new and innovative way of transmitting pressure data to a server, seen via a controlled website without the need for manual downloads on a site visit. The benefit of this is that it allows us to respond to customer pressure issues with greater speed and accuracy.

Driving   
**OUTSTANDING SERVICE**



### KEYFACTS

Shared  
August 2014

Who has learned  
WWU & SGN

6

## Unconventional gases within the onshore gas network

### WHAT WE SHARED

Clear and consistent guidance for generations to come to support the changing energy needs of our customers and achieve the government's low carbon targets.

### WHY

To facilitate and enable the development of UK standards to apply when connecting new, unconventional energy sources to the gas network. This included biomethane, gas collection pipelines for biogas and the impact of onshore shale gas on networks.

### IMPACTS AND BENEFITS

This project has provided standards and guidance that have been rolled out within our business. During the first year following completion of this project we have made nine biomethane connections to our gas network.

Doing all we can to  
**PROVIDE A RELIABLE GAS SUPPLY**  
& PROMOTE SUSTAINABILITY 

### KEYFACTS

Shared  
January 2014

Who has learned  
WWU, NGGD, NGN, SGN



## Illustrating innovation in practice on our essential gas mains replacement programme

The latest and most efficient technology is being used to deliver our essential gas mains replacement project at Whiteladies Road, Bristol with minimised disruption and noise levels. The new high capacity polyethylene pipes are being inserted into the old metal ones using the latest equipment that has dramatically reduced the need for digging and lessened the disruption to road users and residents.

We used the following innovative solutions:

1

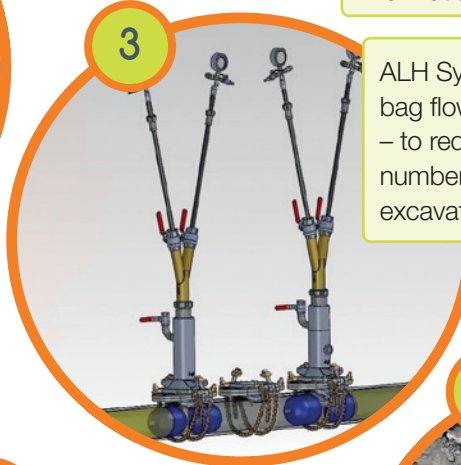


ALH Systems' Large Diameter PE Bagging-off equipment – to reduce the size of the drilling

2

Radiodetection's Camera System with Crawler for pipe inspection – to receive instant information from within the pipe

3

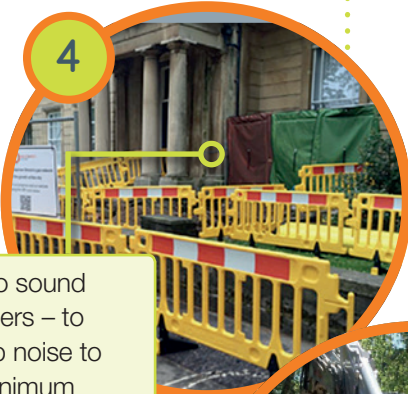


ALH Systems' Twin bag flowstopping – to reduce the number of excavations

5

Steve Vick's MACAW Pipe Cracker – to break into a cast iron main safely

4



Echo sound barriers – to keep noise to a minimum

6

QR Codes – to keep our customer updated on progress

7



Steve Vick's Pipe Pusher/Handler to speed up our gas pipe insertion process

8



Minimuss & electrofusion saddles – to reduce the number of excavations



## Looking ahead

Looking ahead, providing great customer service and value for money remain key priorities for both our business and innovation strategies. We also have a focus on the future role of gas and sustainable gas alternatives to help deliver the UK energy requirements.

This will include demonstrating the future for gas as an affordable and reliable energy source as part of a sustainable energy solution. We will also concentrate on improving the ability to assess the condition of our assets, particularly iron mains. If we then have to upgrade those assets, we will find ways to continually challenge the way we work to make sure we achieve maximum efficiency.

Our 2015/16 innovation projects include research into how the gas network can support and reduce the load on the electricity sector by exploring some key future potential options for reducing emissions for heat and power. An example of this is our collaborative project to explore how micro CHP from gas can be used to generate electricity in the home, when the heating is already on. This replaces the need to use imported coal or expensive imported additional gas to generate electricity.

As part of a bottom-up case study based at Bridgend in south Wales, an innovation project is also underway to assess other forms of renewable energy to understand the opportunity it offers. This study will actively engage and gather evidence that will enable consumers to have clear information on the choices of potential heating options and their affordability.

We are committed to continuing to drive innovation through our business with the aim of delivering the greatest customer value, reducing our environmental impact and being part of a low carbon economy that benefits all our stakeholders.

## 5 Annual project summary 2014/15

For further information on our projects, including project progress and closure reports please go to the learning portal at: [www.smarternetworks.org.uk](http://www.smarternetworks.org.uk)

NIA ref	Title	Outline	Status	Collaboration between	Comp date	Cost in 2014/15
<b>Wales &amp; West Utilities-led projects</b>						
NIA_WWU_001	Diurnal Storage (phase 2)	A demonstration project to determine the factors that affect the gas storage requirements	Complete	WWU, NGGD, NGN, SGN	06/2014	-£52,140
NIA_WWU_006	Asset health & criticality modelling	Collaborative platform to define consistent Ofgem reporting	Complete	WWU, NGGD, NGN, SGN	10/2014	£32,965
NIA_WWU_009	Investment prioritisation in distribution systems	Identifying and recommending transferable practices from the water sector	Ongoing	WWU, NGGD, NGN, SGN	07/2015	£38,576
NIA_WWU_010	Soil and groundwater remediation technologies for gasworks and gasholder sites	Understanding the key issues and contaminants that all networks face managing these sites	Complete	WWU	11/2014	£34,569
NIA_WWU_011	Long-term demand forecasting for peak days	Developing a new, improved way of forecasting peak domestic demand and a better understanding of how domestic usage is changing	Complete	WWU	09/2014	£80,513
NIA_WWU_013	Ductile iron main window cutter tool	Designing and developing a prototype cutter to allow the removal of a window from an iron main	Complete	WWU	01/2015	£77,234
NIA_WWU_0016	Treatment and re-use of gasholder sludge	Developing a full-scale cost efficient, sustainable solution	Ongoing	WWU	11/2015	£234,704
NIA_WWU_017	Iron mains condition assessment system (phase 3)	Looking at developing a tool, systems and processes to travel through, and determine the condition of live 12" diameter iron mains	Ongoing	WWU, NGGD	01/2016	£751,712
NIA_WWU_018	Asset health modelling (pipelines, special crossings, block valves)	Developing a consistent Ofgem reporting framework that is able to score pipelines on asset health, probability of failure and deterioration	Complete	WWU, NGGD, NGN, SGN	01/2015	£22,971
NIA_WWU_020	Smarter network control	Investigating an alternative Pressure Control System to the current manually intensive systems	Ongoing	WWU	11/2015	£0
<b>National Grid Distribution-led projects</b>						
NIA_NGGD_0007	Development of DANINT FWAVC software for new gas chromatograph	Reviewing and trialling engineering software for data management of gas composition	Ongoing	WWU, NGGD, NGN, SGN	04/2016	£9,025
NIA_NGGD_0008	Internal stress corrosion cracking (ISCC) assessment work	Understanding the implications of manufactured gas	Complete	WWU, NGGD, NGN, SGN	06/2014	£189
NIA_NGGD_0014	Cast Iron Fitness For Purpose (CIFFP)	Developing a methodology to assess cast iron mains	Complete	WWU, NGGD, NGN, SGN	11/2014	£14,956

NIA ref	Title	Outline	Status	Collaboration between	Comp date	Cost in 2014/15
<b>National Grid Distribution-led projects (continued)</b>						
NIA_NGGD_0032	Intelligent (CO) monitors	A trial deployment of Smart Compliance Ltd sensors, which will allow the remote monitoring of CO alarms	Ongoing	WWU, NGGD, NGN	03/2016	£38,212
NIA_NGGD_0033	Multi-occupancy building Cured In Place Lining (HTC Serline)	Assessing the performance of HTC's small bore riser pipe lining system	Ongoing	WWU, NGGD, NGN	05/2015	£13,624
NIA_NGGD_0035	Multi-occupancy building Cured In Place Lining (Nu Flow)	Assessing the performance of Nu Flow Technologies' small bore riser pipe lining system	Ongoing	WWU, NGGD, NGN	10/2015	£12,618
NIA_NGGD_0055	Development of gas industry specification for polymeric pipe lining systems for multi-occupancy buildings	Developing a specification test procedure protocol to enable the validation 'fitness-for-purpose' of any technology for riser pipe lining systems	Ongoing	WWU, NGGD, NGN, SGN	12/2015	£0
<b>Northern Gas Networks-led projects</b>						
NIA_NGN_049	Technologies and strategies to reduce gas leakage expenditure profile	Understanding any transferable practices for leakage management	Complete	WWU, NGN	07/2015	£57,523
NIA_NGN_090	Project Futurewave	Research to enable networks to understand their role and contribution in localised energy generation and consumption	Complete	WWU, NGGD, NGN, SGN	05/2015	£131,228
<b>SGN-led projects</b>						
NIA_SGN_0023	Cured In Place Pipe (CIPP) stage two	Testing the available methods of liner for use as a rehabilitation technique	Ongoing	WWU, NGGD, NGN, SGN	03/2016	£55,353
NIA_SGN_0044	Acoustek	Investigating the use of sound to detect pipeline features	Ongoing	WWU, NGGD, NGN, SGN	05/2016	£24,120
NIA_SGN_0045	Orbis Oxifree (TM198) corrosion coating	To validate Orbis Oxifree Corrosion Prevention Coating's suitability for use on gas networks	Ongoing	WWU, NGGD, NGN, SGN	06/2015	£11,448



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