SGN

Your gas. Our network.

2015/16

Network Innovation Allowance

Annual Summary

Welcome

to our annual summary of Network Innovation Allowance (NIA) activity for 2015/16. Innovation is at the core of our business strategy – it's part of how we're continually adding value to our customers and the business.

Contents

In 2015/16 our portfolio included 58 projects funded through the NIA funding mechanism. This year we've maximised our budget for the year, spending £5.6m on these exciting innovations.

The portfolio is wide-ranging and links across a number of our key business areas. Around a third of these are collaborative partnerships with other network licensees, both gas and electricity. We continually seek to collaborate, and share knowledge and learning with the wider utilities industry to help us achieve our common goals.

We recognise that the most powerful form of collaboration is knowledge dissemination and sharing learning. This is demonstrated by our 'fast followers' project, which is an example of how we've delivered on our commitment to implementation. 'Fast followers' ensures we maximise the benefits of all NIA investment by seeking out successful learning from the whole NIA portfolio and implementing the outcomes from the other Network Licensees projects into our own business.

This year, we maximised our allowance, spending £5.6m on NIA projects.

About us

We're the second largest gas distribution company in GB, delivering a safe and reliable supply of natural and green gas to 5.9 million homes and businesses through 74,000km of gas mains and services.

Our vision is to keep our customers safe and warm by leading the way in energy delivery. We're committed to exceeding our stakeholders' expectations by delivering value for money and exceptional customer service, while innovating for a safer, more secure and sustainable future.

"We strive to design projects to deliver outcomes, not merely outputs. It is essential that we progress our projects through to business as usual"

Angus McIntosh
Innovation and New Technology Manager

Innovation strategy

Collaboration

We're working alongside the other network licensees to ensure the maximum amount of valuable information is shared. Over the next year, we will continue to collaborate with the networks to help maximise value from our projects.

29% of our current project portfolio are collaboration projects

Advanced Mini Bag Kit
This project is developing a solution to allow the exchange of emergency control valves, without the need to excavate and disrupt the customer's gas supply. We're working on this project with National Grid Gas Distribution and will be carrying out field trials on NGGD's network.

Cured In-Place Pipe (CIPP)
Stage 3 of this project is to develop and commercialise a range of solutions for installation, maintenance and intervention operations for fully structural CIP liner systems. We're working on this with National Grid Gas Distribution.

Acoustek
This project is to determine if acoustic technology can be optimised to survey below ground gas distribution assets. We're working on this project with National Grid Gas Distribution, Northern Gas Networks and Wales and West Utilities.

“With SGN you get enthusiasm and drive to make things happen. That’s great news if like us, you enjoy innovation – it helps you believe things are possible.”

Derek Muckle
Director of Innovation, Radius Systems

Our Wireless instrumentation field trial project at Chelsfield

Fast follower

Throughout this RIIO price control period implementation has been one of our key priorities. In our daily operations, we can already see the benefit of several projects which concluded and were implemented last year.

A key component of a successful implementation strategy, is implementing NIA projects from across GB, including those developed and proven by other network licensees. We've introduced our 'fast followers' initiative where we're leading the way, regularly reviewing and learning from other network licensees' projects to benefit our customers. We also ensure we disseminate learning from our own projects to help other networks adopt a similar approach.

Project snapshot

Fence feet improvements

Project reference: NIA_NGGD0045

Following National Grid Gas Distribution's project which developed an improved, safer base for Heras fencing, we identified the potential to implement the products on our sites. We identified that to maximise the benefit of the units a small adaption would need to be made to allow them to be used with Avalon barriers. We engaged Fence Feet Ltd who supply the equipment in GB and we're now working to implement the use of fence feet on our sites in Scotland.

Project snapshot

Pipeline damage measurement using hand-held laser scanners

Project reference: NIA_NGGT0054

Following National Grid Gas Transmission's (NGGT) project which investigated the suitability of using hand-held laser scanners to measure pipeline damage and corrosion features, the recommendation was made that hand-held scanners could be used and the Creaform HandySCAN 700 was identified as the preferred option. SGN recognised the potential benefit for our network and engaged with both NGGT and the manufacturer, Creaform, who delivered a demonstration at our site at Provan. Currently, we are working to implement the use of the HandySCAN 700 into our business.

"Through our involvement in the Gas Innovation Governance Group and our fast followers initiative, we are maximising the entire NIA investment for our customers."

Max Paladini
Innovation Graduate

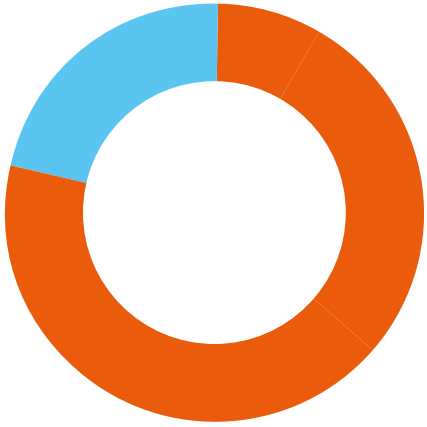
Our project partners

“We engage directly with companies and organisations of all shapes and sizes.”

Angus McIntosh
Innovation and
New Technology Manager.

The NIA funding mechanism is stimulating enterprise and widening the supply chain. We’re demonstrating this with our diverse portfolio which draws on the expertise of companies from SMEs based around the UK to large multinational organisations based in Europe and North America.

NIA Project Partners



SME	78.2%
Non SME	21.8%

Our 2015/16 portfolio

The following section outlines each project which continued into or was commissioned by us during the period 1 April 2015 and 21 March 2016. We have also included project snapshots to provide further insight into some of our existing projects.

"Our increasingly diverse innovation portfolio is helping to drive performance across the business."

David McLeod
Innovation Delivery Manager

Mains replacement

Mains replacement work can be disruptive and cause inconvenience to our customers. Our projects focus introducing new methods, equipment or techniques that will reduce customer disruption and inconvenience to road users.

Project snapshot

Core drilling and flow stop, WASK

Project reference: NIA_SGN0052

Partnership: SGN and WASK

Core drilling and flow stop is a key component of the overall keyhole solution we're developing.

The project seeks to firstly develop a means of connection for a standardised fitting, and secondly carry out flowstopping operations through a single core hole.

Over the year, this project has developed significantly, including comprehensive offsite testing. The final prototype units have now been manufactured and we've begun training SGN teams ahead of a series of field trials to refine the equipment for use on our network.

"Keyhole technology is an exciting step forward for our industry – literally changing the face of streetworks."

Alex Stewart
Project Manager

Following the successful implementation of core and vac techniques, several of our projects in this area focus on increasing the volume of work we can carry out through keyhole technology. These projects aim to improve the quality, safety and reliability of our mains replacement work through a reduction in the size of our excavations:

- Fracture monitoring using acoustics
- Cured In-Place Pipe (CIPP) (stage 2)
- Microstop
- Investment prioritisation in distribution systems
- Bond and bolt saddle system
- Gas Eco (GECO) gas pump
- Mains and service replacement through keyhole
- Core drilling and flow stop, WASK
- Long handled PE top tee cutter
- Olympic rings for RIIO
- PE bodied valves
- GasLight Q field portable non-destructive PE material analyser
- SynthoScope
- Utilisation of the modular NIC robotics platform for service line rehabilitation
- Automated pressure tester
- Interruption solutions – live ECV, meter and service replacement (stage 1)

Emergency

Emergency operations are a high cost area and have significant impact on customers. Our emergency projects aim to protect the safety of the public, and improve the safety of our teams and contractors.

The introduction of innovative projects such as Optomole allows us to quickly and accurately pinpoint the source of a gas escape, thus improving the efficiency and reliability of supply to our customers.

- Incident management (stage 1)
- Stent bag
- Portable 'gas in ducts' sample system
- Water extraction reel and Y branch
- Advanced gas detection
- Tornado max
- Optomole (stage 1)
- Bar hole zone rating (stage 1)
- Gas risk in no access properties

Project snapshot

Advanced gas detection

Project reference: NIA_SGN0064

Partnership: SGN, GMI and DNV GL

This project seeks to revolutionise the way we capture and record gas escape readings and eliminate paperwork and electronic forms. In partnership with GMI, we are developing a smart device that will have the capability to detect natural gas and carbon monoxide via infrared, and will be able to differentiate between different gases and other sources of false readings; recording all site data electronically. The plan is for the device to automatically plot the location and volume of any barhole reading, reference to geographical information, and risk score. The project also seeks to improve calibration requirements, removing the need for operatives to return to a central calibration hub.

"This innovative 'pipeline gas test' rapidly indicates if the gas sample is natural gas or methane and will make a difference to the efficiency of field operations with significant cost savings expected."

Ian Hepburn
Principal Consultant, DNV GL

Repair

Our repair projects aim to reduce disruption, operating costs and our overall impact by improving technology, current operational processes or techniques.

- Advanced mini bag kit
- Solutions to pipeline graphitisation and corrosion – stage 1 – concept development
- Aerosol sealant – stage 1A – initial development
- Development of specification for PE repair systems
- Self-amalgamating tape (stage 3)
- Seeker particles (stage 2)
- Gas polymerisation – proof of concept
- Robotic roadworks (stage 1)
- Gas polymerisation – stage 2 – engineering development
- Acoustek
- 40mm serviflex

Advanced Mini Bag Kit

Project snapshot

40mm serviflex

Project reference: NIA_SGN0061

Partnership: SGN and Radius

40mm serviflex is an alternative solution for renewing 2" steel services on our gas network.

Significant progress was made on this project over the year with the successful completion in February 2016. A number of field trials were carried out in both our Scotland and southern networks, all of which were successful and resulted in efficiencies.

We're currently working to implement these products in 2016/17 across our network to ensure we maximise the benefits and continue to improve the value we provide to our customers.

"The 40mm Serviflex system is aimed specifically at large supplies, where it allows replacement of the existing services with less disruption to our customers."

Ged Paver
General Manager – Commercial and Performance, SGN

LTS and storage

LTS and storage is a specialist area of our business that is costly to manage and maintain.

We're investing in projects that will either improve technology, current operational processes or techniques to minimise costs and ensure the secure supply to our customers.

- Smart paints and coating systems
- Beyond visual line of sight aerial inspection vehicle

Pressure management, maintenance, electrical and instrumentation

Pressure management, maintenance, electrical and instrumentation are all high cost areas of our business.

Over the past year, we have increased our focus on this area as part of our strategy to further diversify our portfolio. This has included registering new and exciting projects with the potential to radically change the way we maintain and replace our assets in the future.

- Immersion tube preheating
- Automated regulator maintenance (ARM) (phase 1)
- Corrosion mapping system for buried orpheus regulator modules – phase 2
- Magnetic filtration in medium to low pressure network
- Novel pressure reduction station (stage 1)
- Oscillating energy harvester (phase 2)
- Acoustic communications in gas mains
- Starline/Marwin valve bolt replacement

Project snapshot

Automated regulator maintenance (ARM) (phase 1)

Project reference: NIA_SGN0082

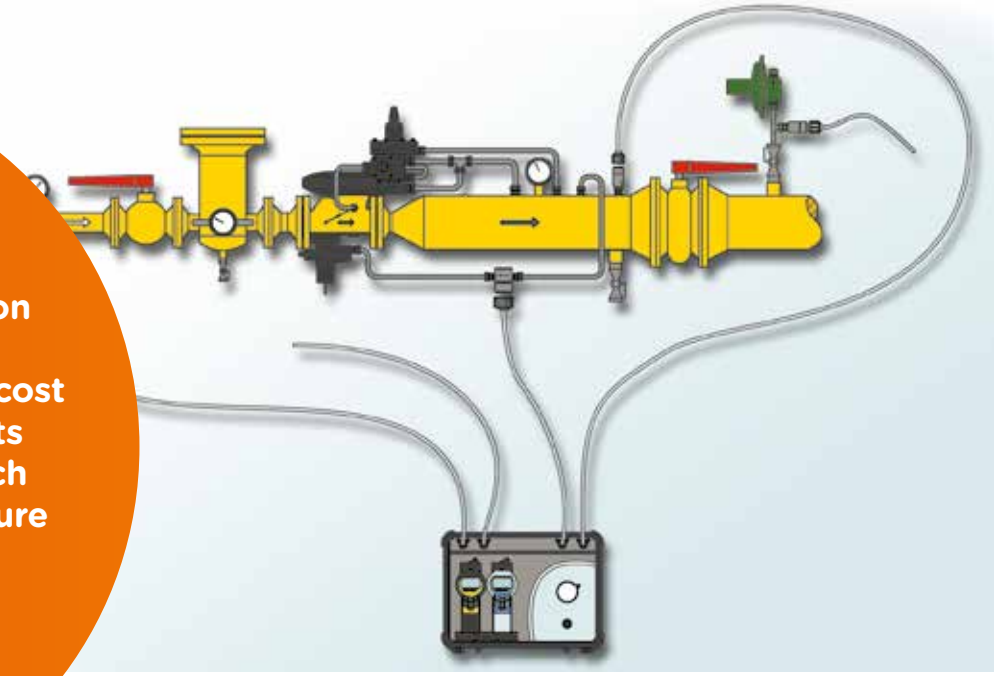
Partnership: SGN, Wigersma & Sikkema and MACAW Engineering

Research area: Pressure management, maintenance, electrical and instrumentation

This project seeks to trial an electronic regulator diagnostics system on a number of SGN pressure regulator sites. The project will install an inspection system developed by Wigersma & Sikkema. This system can be operated both remotely and manually by SGN engineers. If successful it could improve operational safety and efficiency, as well as asset performance data.

"The PLEXOR inspection system will provide a more efficient maintenance solution compared to the traditional techniques. This will enable cost reductions and improvements transforming the way in which the industry maintains pressure reduction assets."

Piotr Skotnicki
Managing Director, Wigersma & Sikkema B.V.



New and renewable gas sources

We believe that gas will be a sustainable and green energy source up to and beyond 2050.

Through the introduction of new and renewable gas sources we are able to open up the gas market, driving down the cost of gas and promoting the low carbon economy. The projects in this category seek to demonstrate the flexibility of our network and ensure that gas continues to be a core part of the energy mix for years to come.

- Real-Time Networks feasibility study
- Impact of distributed gas sources on the GB gas network
- Energy map and plan
- Siloxane impact study
- Project Futurewave – phase 2 (digital prototype)
- Combined fuel cell – heat pump research study

"I see this report as the beginning of an increased awareness of the flexibility and diverse roles that gas can play."

Jacob Kane
Assistant Manager, KPMG

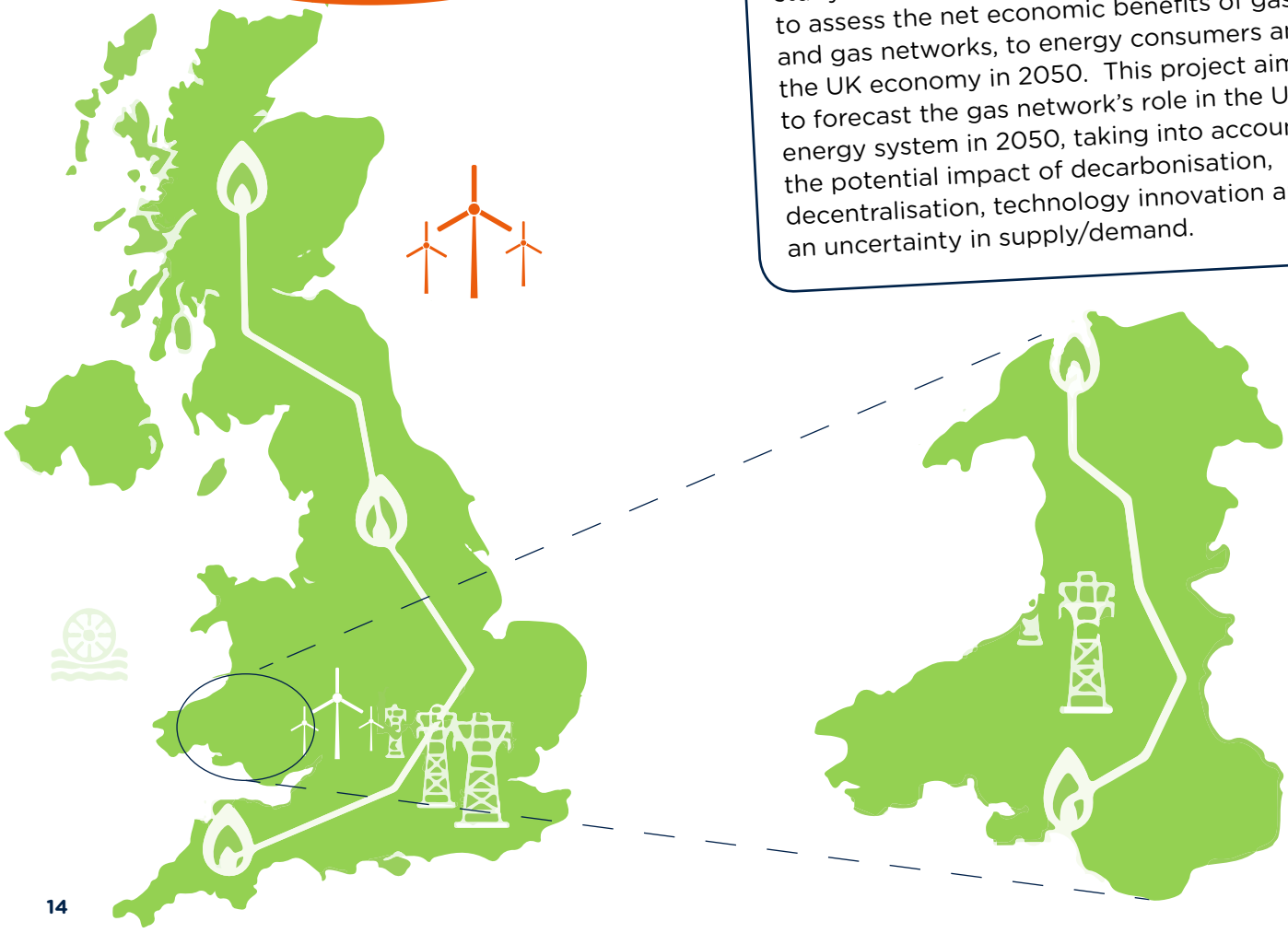
Project snapshot

Energy map and plan

Project reference: NIA_SGN0094

Partnership: SGN, National Grid Gas Distribution, National Grid Gas Transmission, Northern Gas Networks, Wales and West Utilities, Energy Networks Association and KPMG

This project aims to support the design and development of a research and development study for Energy Map 2050 – an approach to assess the net economic benefits of gas, and gas networks, to energy consumers and the UK economy in 2050. This project aims to forecast the gas network's role in the UK energy system in 2050, taking into account the potential impact of decarbonisation, decentralisation, technology innovation and an uncertainty in supply/demand.



Other

This section gives the gas distribution networks the flexibility to register projects that do not fall into any of the defined categories but are still compliant with Ofgem regulations and may deliver value to the GB gas consumer.

- Development of gas industry specification for polymeric pipe lining systems for multi-occ buildings
- Lead crystal battery assessment
- Development of DANINT FWAVC software for new gas chromatograph
- Project Futurewave

Next steps

Over the first three NIA years, we have successfully implemented a number of projects to help optimise performance in the GB gas distribution networks.

Our focus over the next year is to continue building on this success by meeting and exceeding the following goals:

- Future of gas: We aim to examine the role of gas, and the gas networks in the future energy system, alongside an analysis of alternative scenarios
- Implementation: Continue to successfully implement valuable projects
- Form new partnerships: Build new working partnerships to drive innovation across the industry

Message of thanks from the SGN Innovation team

"We would like to take this opportunity to thank all our project partners, participants, our colleagues and the other network licensees for their commitment and hard work throughout the year. We're delighted that across the industry innovation is gaining momentum and the benefits are already being realised through our implemented projects. We look forward to building on the success so far through NIA and in particular, continue to work collaboratively and share learning with other network licensees."