Notes on Completion: Please refer to the appropriate NIA Governance Document to assist in the completion of this form. The full completed submission should not exceed 6 pages in total.

NIA Project Registration and PEA Document

Date of Submission

Oct 2023

Project Reference Number

NIA_CAD0095

Project Registration

Project Title

Homeshield

Project Reference Number

NIA_CAD0095

Project Licensee(s)

Cadent

Project Start

October 2023

Project Duration

1 year and 11 months

Nominated Project Contact(s)

innovation@cadentgas.com

Project Budget

£186,666.00

Summary

There are a range of alarm systems within the home. Currently households may or may not have a number of differing alarms that detect a number of hazards. Current alarms operate in an isolated manner, these alarms may be misinterpreted or completely ignored leading to a lack of action on the occupier's side. Home Shield will have the capacity to detect a number of alarms and onwardly communicate those hazards to the occupier and a 'key contact' of the occupier leading to proactive action to make the situation safe. Home Shield is a 'fit for all', inclusive, battery or mains powered alarm.

Nominated Contact Email Address(es)

Innovation@cadentgas.com

Problem Being Solved

There are a range of alarms for the home; For example, Carbon Monoxide alarms (Carbon Monoxide is a tasteless and odourless gas), Smoke alarms, Methane (CH4) Gas alarms[ST1] [NS2] . (Although Methane alarms aren't currently widely deployed within GB)

Currently there are no alarm detectors on the market that are suitable for multiple types of alarms found within a household. The retrofit alarm should pick up these multiple alarms but also be able to differentiate between the different types of sound i.e., the battery needs changing verses you need to call the emergency services. By having information provided directly to the individual or the carer (or both) – knowing that it is a battery change will reduce the quantity of calls that are received into different emergency control rooms for non-emergencies.

Gas Distribution Networks (GDNs) have emergency response teams to respond to calls from customers who experience CO or methane leaks. When a consumer or consumer's representative, contacts the contact centre, the call operative is required to categorise an emergency, and this is can be difficult for the following reasons:

· Consumers in vulnerable situations can be unsure, or are unable to process and understand what an alarm sound means

· A faulty alarm system or low battery sound can be misunderstood as a leak detection

· Consumer's do not have the ability to hear, or disregard alarm sounds

· Alarm sounds can cause anxiety and un-due stress to certain consumers in vulnerable situations which may lead to absenteeism and avoidance of the emergency engineer.

As a result of this, some alarms will be ignored, turned off or misinterpreted and do not support independent living.

Method(s)

Home Shield would be positioned into the consumers property and acts as an acoustic monitoring device for other alarming systems. If an alarm sounds within the property, Home Shield will detect that receptor and output an action to protect the property occupier. Home Shield will send a non-audible alert/text to the occupier and the occupiers 'Key Contact or Contacts' so that they can complete some checks and ensure the safety of the occupier.

Data Quality Statement

The project will ensure that necessary data is of sufficient quality and readily available to meet the objectives of the project. This will be achieved by capturing output that has derived from research undertaken with charity organisations.

Measurement Quality Statement

The project will develop a working prototype and the data/performance will be communicated and reviewed with the wider project team regularly to ensure transparency and consistency.

Scope

This is a research and development project. This project will create an active acoustic monitoring device that can identify programmable sounds including alarms. It is all inclusive and caters to all consumers in vulnerable situations, establishing an effective way of communicating if an alarm goes off in the home of a consumer in a vulnerable situation, alerting and their named contact, benefits of this will include:

Consumer - Reassurance of correct alarm identification, allowing a device to be within the home. Promoting Independent living for consumers in vulnerable situations.
Safety - Alert the consumer in vulnerable situations and key contact in the event of emergency
Community - Awareness of multiple alarm types Improving the knowledge and understanding of staff in the needs of all members of the community

In Scope

· In-home device

· Retrofittable

· Battery powered / Mains Powered

· POC Development to Minimum Viable Product for review

· Final Prototype can listen to and communicating to pre-existing devices in the home and sends appropriate notifications to their key contact

· Final Prototype Development

Objective(s)

This project will create a Battery/Mains powered device that can identify multiple types of sounds, including programmable sounds and alarms, that can be retrofitted and will seamlessly integrate with the customer and their key nominated contacts.

Project Objectives:

1. Will keep customers in vulnerable situations safe if an alarm goes off in their home

2. Key contacts communicated with to ensure customer in vulnerable situation is safe

3. An inclusive product that keeps people safe without the need for a mobile phone or ability to use one

4. Listens to and talks to pre-existing devices in the home and sends appropriate notifications to their key contact

5. Retrofittable, standalone, plug & play, seamless, off-grid/on-grid

Consumer Vulnerability Impact Assessment (RIIO-2 Projects Only)

This project has been input into the Consumer Vulnerability Impact Assessment Tool and there are no negative impacts on consumers in vulnerable situations therefore there is no need to take mitigation measures.

Success Criteria

Creation of a prototype device that:

Ensures onward communication of an alert. Measured by the ability of Home Shield to communicate via text message to Occupier and Key Contact

The device solution is easy to set up and use, confirmed by user feedback.

A Battery powered/Mains Powered device that is usable by off-grid customers (provided there is a mobile signal) and mains power customers.

A Device that alerts key contact, by means of a SMS

The Device will have the capability to undertake Identification of multiple types sounds and alarms, measured by testing and training of acoustic monitoring device

User Acceptance (Both Individual & Key Contact) Measured by the user acceptance group are satisfied that the functionality of the product works in an appropriate way for the audience. This will include relevant feedback from charity partners

Project Partners and External Funding

The project partner for this project is Utility Innovation Solutions Ltd, in collaboration with Northern Gas Networks Ltd and Wales and West Utilities Ltd. This project will be wholly funded by NIA.

Potential for New Learning

By the end of this research and development project a prototype device will be created, that will give the utility companies a better understanding of the range of challenges and specific issues faced by consumers in vulnerable situations, mainly by:

- Understanding the capabilities and limitations for in-home acoustic monitoring devices
- Further understanding of needs and expectations of charities representing customers in vulnerable situations and their members

All reports will be published on the ENA Smarter Networks Portal.

Scale of Project

The project will be delivered as detailed, creating a successful prototype that, if successful could be further developed intro production phase that could be manufactured and rolled out delivering benefit to consumers in these circumstances. If the scale was paired back, it would reduce the ability to produce a working unit that would significantly reduce the benefit received from the project.

Technology Readiness at Start

TRL2 Invention and Research

Technology Readiness at End

TRL5 Pilot Scale

Geographical Area

This project is development based and will be created and tested in the NW network but is applicable in all 5 of Cadents 5 Networks as well as in NGN and WWU.

Revenue Allowed for the RIIO Settlement

Not Applicable. This research and development project is designed to promote safe independent living for consumers in vulnerable situations. The high-level risk associated with the low TRL project, and the high level of uncertainty associated with the project, is beyond current risk appetites of networks and not be provided for under the funding provided under the current RIIO settlement. NIA will allow us to complete this project.

Indicative Total NIA Project Expenditure

Total External Cost:	**£140,000**
Cadent Gas Ltd	£93,333.34
Wales and West Utilities Ltd	£23,333.33
Northern Gas Networks Ltd	£23,333.33
Total internal Cost:	**£46,666.66**
Cadent Gas Ltd	£31111.11
Wales and West Utilities Ltd	£7,777.78
Northern Gas Networks Ltd	£7,777.78
Total Indicative Expenditure:	**£186,666**

Project Eligibility Assessment Part 1

There are slightly differing requirements for RIIO-1 and RIIO-2 NIA projects. This is noted in each case, with the requirement numbers listed for both where they differ (shown as RIIO-2 / RIIO-1).

Requirement 1

Facilitate the energy system transition and/or benefit consumers in vulnerable situations (Please complete sections 3.1.1 and 3.1.2 for RIIO-2 projects only)

Please answer **at least one** of the following:

How the Project has the potential to facilitate the energy system transition:

N/A

How the Project has potential to benefit consumer in vulnerable situations:

Home Shield will support independent living. The product will have the ability to be bespoke to a wide range of vulnerabilities. It can work with all existing devices within the home and therefore will be provided with minimum follow costs to the purchaser. Home Shield will give family members comfort knowing that the vulnerable situation is being monitored 24/7/365 and be safe in the knowledge that there is a product supporting occupiers to live independent lives.

Requirement 2 / 2b

Has the potential to deliver net benefits to consumers

Project must have the potential to deliver a Solution that delivers a net benefit to consumers of the Gas Transporter and/or Electricity Transmission or Electricity Distribution licensee, as the context requires. This could include delivering a Solution at a lower cost than the most efficient Method currently in use on the GB Gas Transportation System, the Gas Transporter's and/or Electricity Transmission or Electricity Distribution licensee's network, or wider benefits, such as social or environmental.

Please provide an estimate of the saving if the Problem is solved (RIIO-1 projects only)

N/A

Please provide a calculation of the expected benefits the Solution

As this is a research and development project, then there will be no financial benefits to capture at this stage. However, this project will aim to produce a prototype of an active acoustic monitoring device that could be a potential solution to be adopted and put into production, establishing an effective way of communicating if an alarm goes off in the home of a consumer in a vulnerable situation, alerting and their named contact, benefits of this will include:

· Consumer - Reassurance of correct alarm identification, allowing a device to be within the home. Promoting Independent living for consumers in vulnerable situations.

· Safety- Alert the consumer in vulnerable situations and key contact in the event of emergency

Please provide an estimate of how replicable the Method is across GB

There will be no roll out opportunity at the completion of this project. Further phases would need to be delivered for this to be achieved.

Please provide an outline of the costs of rolling out the Method across GB.

Roll out cost are not within scope as the end TRL level is 5

Requirement 3 / 1

Involve Research, Development or Demonstration

A RIIO-1 NIA Project must have the potential to have a Direct Impact on a Network Licensee's network or the operations of the System Operator and involve the Research, Development, or Demonstration of at least one of the following (please tick which applies):

☐ A specific piece of new (i.e. unproven in GB, or where a method has been trialled outside GB the Network Licensee must justify repeating it as part of a project) equipment (including control and communications system software).

☐ A specific novel arrangement or application of existing licensee equipment (including control and/or communications systems and/or software)

☐ A specific novel operational practice directly related to the operation of the Network Licensees system

☐ A specific novel commercial arrangement

RIIO-2 Projects

☑ A specific piece of new equipment (including monitoring, control and communications systems and software)

☐ A specific piece of new technology (including analysis and modelling systems or software), in relation to which the Method is unproven

☐ A new methodology (including the identification of specific new procedures or techniques used to identify, select, process, and analyse information)

☐ A specific novel arrangement or application of existing gas transportation, electricity transmission or electricity distribution equipment, technology or methodology

☐ A specific novel operational practice directly related to the operation of the GB Gas Transportation System, electricity transmission or electricity distribution

☐ A specific novel commercial arrangement

Specific Requirements 4 / 2a

Please explain how the learning that will be generated could be used by the relevant Network Licensees

The learnings from this project could be adopted by other Network licensees. However, the cost and methodology to roll this is out have not yet been developed.

Or, please describe what specific challenge identified in the Network Licensee's innovation strategy that is being addressed by the project (RIIO-1 only)

N/A

Is the default IPR position being applied?

☑ Yes

Project Eligibility Assessment Part 2

Not lead to unnecessary duplication

A Project must not lead to unnecessary duplication of any other Project, including but not limited to IFI, LCNF, NIA, NIC or SIF projects already registered, being carried out or completed.

Please demonstrate below that no unnecessary duplication will occur as a result of the Project.

An active acoustic monitoring device that can identify programmable sounds including alarms has not been identified previously across all GDNs, and is identified as a need in consultation with charity partners.

If applicable, justify why you are undertaking a Project similar to those being carried out by any other Network Licensees.

N/A

Additional Governance And Document Upload

Please identify why the project is innovative and has not been tried before

There are a range of alarm systems within the home. Current alarms operate in an isolated manner, these alarms may be misinterpreted or completely ignored leading to a lack of action on the occupier’s side. Currently there are no alarm detectors that are suitable for multiple types of alarms found within a household, Home Shield will have the capacity to detect a number of alarms and onwardly communicate those hazards to the occupier and a ‘key contact’ of the occupier leading to proactive action to make the situation safe, promoting independent living. This issue has been developing and has not been identified previously across all GDNs

and thus makes this project innovative.

Relevant Foreground IPR

The project and the resultant outcomes/deliverables will conform to the default treatment of IPR as set out under the agreed NIA Governance (where the default requirements address two types of IPR: Background IPR and Foreground IPR)

Data Access Details

Any consumer data gathered throughout this project will be anonymised and will be compliant with General Data Protection Regulations (GDPR) and the UK Data Protection Act. Any compliant data can be made available for review upon request.

Please identify why the Network Licensees will not fund the project as apart of it's business and usual activities

The scale of the issues at hand is unknown until a prototype is produced and therefore there is a high level of uncertainty associated with the project which would be beyond the network licensees' risk appetites and is not provided for, under the funding provided under the current RIIO settlement.

Please identify why the project can only be undertaken with the support of the NIA, including reference to the specific risks(e.g. commercial, technical, operational or regulatory) associated with the project

The high-level risk associated with the low TRL project is beyond the current risk appetites of networks. NIA will allow us to complete this project to better inform future decisions and opportunities.

This project has been approved by a senior member of staff

☑ Yes