Date of Submission

May 2021

Network Innovation Allowance Progress Report

Notes on Completion: Please refer to the appropriate NIA Governance Document to assist in the completion of this form.

Network Licensees must publish the required Project Progress information on the Smarter Networks Portal by 31st July 2014 and each year thereafter. The Network Licensee(s) must publish Project Progress information for each NIA Project that has developed new learning in the preceding relevant year.

Project Progress

Project Title

Submarine Cable Sensing (SUBsense)

Project Reference

NIA_SSEN_0034

Funding Licensee(s)

Scottish Hydro Electric Power Distribution

Project Start Date

August 2018

Project Duration

3 years and 0 months

Nominated Project Contact(s)

Colin Mathieson

Scope

The scope of the project is to install a live system on several cables which are due to be laid in a variety of different locations to monitor for third party intervention, cable movement and fault detection. These cables will be monitored during the project and the data gathered will be assessed by the relevant teams. An evaluation will be completed at the end of the trial with recommendations of the system's suitability for transfer to BAU.

Objectives(s)

The objectives of the project are:
·To have installed multiple fully functional DAS systems providing real time monitoring of submarine cables.
·Establish an effective communications method to enable real time alerts from remote islands to be received, investigated and actioned from asset management.
·Documented a baseline condition of the monitored submarine cables.
·To monitor for an extended period to assess for alerts from third party intervention, cable movement or cable faults.
·To have gained an understanding of the system's suitability as a condition monitoring tool for business as usual adoption and its impact on asset
·Created a specification for condition monitoring best practices to be used on submarine cables.

Success Criteria

The project will be deemed as successful if all of the items in the scope are met and the TRL level is increased to TRL 9; or if the project clearly shows that this methodology is not suitable for full scale deployment.

Performance Compared to the Original Project Aims, Objectives and Success Criteria

Since the project start, the DAS systems have been procured and received. As the DAS systems are on a long lead-time it has taken substantial time to receive delivery of the systems. Fibre cabling has been installed at one of the selected test sites, to extend the submarine cable fibre from the shore end to the substation, where the DAS equipment will be deployed. Works are continuing to develop the systems integration and communications network before the DAS systems are deployed at the remote sites.

Below is a summary of the progress thus far:

· To have installed multiple fully functional DAS systems providing real time monitoring of submarine cables.

Works are progressing to complete two installations of DAS systems in 2020. Fibre cables have been laid where required. Testing of the fibres, systems integration and communications are ongoing. Once this is completed the DAS systems will be deployed on the first two sites.

· Establish an effective communications method to enable real time alerts from remote islands to be received, investigated and actioned from asset management.

The satellite communications system has been bench tested and performed as expected when integrated with DAS. The DAS system could

be remotely accessed as planned. Post installation, the robustness of the communications infrastructure will be monitored and adjustments, such as changes to the supplied satellite communications bandwidth package, will be made to maximise value. The satellite communications costs represent a large percentage of the ongoing monitoring costs therefore, significant cost savings can be made by selecting the most appropriate bandwidth package.

· Document a baseline condition of the monitored submarine cables.

This will be completed upon installation of the DAS system on the submarine cable. It cannot be completed until the DAS systems have been installed on the cables. This will be completed at a future date.

· To monitor for an extended period to assess for alerts from third party intervention, cable movement or cable faults.

This will be completed upon installation of the DAS system on the submarine cable. It cannot be completed until the DAS systems have been installed on the cables. This will be completed at a future date.

· To have gained an understanding of the system's suitability as a condition monitoring tool for business as usual adoption and its impact on asset management.

This will be completed upon installation of the DAS system on the submarine cable. It cannot be completed until the DAS systems have been installed on the cables. This will be completed at a future date.

· Create a specification for condition monitoring best practices to be used on submarine cables.

This will be completed after the effectiveness of DAS for condition monitoring has been established. It cannot be completed until the DAS systems have been installed on the cables. This will be completed at a future date.

Required Modifications to the Planned Approach During the Course of the Project

No modifications to the planned approach have been made.

Lessons Learnt for Future Projects

The project is in the early stages and as such there has not yet been any significant learning on the project so far.

The Outcomes of the Project

N/A

Data Access

See Network Innovation Competition (NIC) and Network Innovation Allowance (NIA) Data Sharing Procedure at https://www.ssen.co.uk/InnovationLibrary/Distribution/

Foreground IPR

No foreground IPR has been created during the project.