Scottish and Southern Energy
Power Distribution

Network Innovation Allowance

Scottish Hydro Electric Transmission

Summary Report

for period 1 April 2013 to 31 March 2014

Scottish Hydro Electric Transmission plc

NIA Summary report 2013-2014

Foreword

This report has been prepared by Scottish Hydro Electric Transmission plc ("SHE Transmission") to provide a brief summary of the progress achieved during 2013-2014 on our innovation projects funded through the Network Innovation Allowance (NIA). This allowance was put in place under the RIIO-T1 Transmission Price Control, starting in April 2013, to promote smaller innovation projects that will deliver benefits to customers.

Our core purpose within SHE Transmission is to provide the energy people need in a reliable and sustainable way. To deliver our core purpose in these challenging times we recognise that innovation is a necessity, which is driven by changes in the requirements being placed on our extra high voltage networks, largely as a result of a gradual shift towards lower carbon technologies in the electricity system as a whole and the significant increase in large scale renewable generation sources which are often located on the extremities of our legacy infrastructure.

In this first year of the NIA incentive we have a portfolio of twelve NIA funded projects, all of which continued to focus on innovation initiatives and contribute to achieving our main Innovation Strategy Objectives.

We embrace the challenges faced by the UK electricity sector in its transition to a Low Carbon Economy, and we adopt a dynamic approach to innovation, working with our stakeholders and a range of R&D providers to ensure the best results are achieved. Building on our experience gained during the previous Innovation Funding Incentive mechanism, we are encouraged by the learning so far from this first year of the NIA and will continue working to deliver value to our stakeholders and customers.

Alan Broadbent

Head of Engineering

Table of Contents

1. SHE Transmission Innovation Strategy

Our core purpose within SHE Transmission is to provide the energy that people need in a reliable and sustainable way, with innovation being a central element to deliver this strategy. Our latest innovation vision and priorities were detailed in the Innovation Strategy document, which was submitted to the regulator, OFGEM, as part of the RIIO Business Case. In that document, we outlined the 7 main objectives that drive our innovation activities in the short and medium term. Every innovation project that we undertake ties in with one or several of these main objectives, as part of a concerted effort to achieve our core purpose.

The 7 objectives are as follows:

• Accelerate network development and connections including the integration of increasing amounts of renewable generation. In recent years the challenges faced by the GB transmission networks have changed, driven by the UK's move towards a low carbon economy. Our transmission network is evolving from a relatively simple state, delivering energy from a small number of large generation sources to a large number of customers, to a more complex situation where it must accommodate bidirectional power flows created by an influx of new generators, both large and small.

• Minimise the cost of providing network capacity. Offer solutions to GB electricity customers, and in general to users of our electricity network, that allow them to minimise their connection costs. In this way, we facilitate the increase in low carbon electricity generation, minimising also the costs to the end customers.

• Maximise the use of existing assets to deliver capacity and speed connection. Maximising the efficiency with which we use current assets is widely favoured among our stakeholders as an approach to 'making the most of what we have'. This approach makes use of the extra capacity in transmission networks, which is traditionally reserved to provide security of supply, to provide capacity for generation connections, reduce waiting times, and lower costs.

• Maintain and improve safety and environmental performance. Our primary responsibility to our stakeholders – including employees, contractors and customers – is to ensure their safety. Safety is the primary value of our company and we pride ourselves on 'doing everything safely, or not at all'. These priorities are reflected in the views of our stakeholders and in the application of our Network Innovation Allowance.

• Maintain and improve network performance. Network performance must be maintained in the most cost efficient way. This is unlikely to be achieved relying purely on conventional methods, therefore innovation activities are needed to meet the most cost efficient solutions. We are using our Network Innovation Allowance to meet this objective.

• Provide more accurate information on the short and long term asset condition information to allow more informed decision making. We want to move to a system where our asset replacement programme is condition-dependent, instead of a standard, age-dependent model. This model permits an optimisation of resources, as well as increasing the reliability of some assets which, regardless of their age, are exposed to harsh conditions and therefore represent a critical point to security of supply.

• Remain at the forefront of innovation to maintain our record of providing the highest standards of service at the lowest possible cost. New ideas and improvements to process and design have been central to SHE Transmission's success to date and are fundamental to delivering the changes and improvements prioritised by our stakeholders. We are applying our Network Innovation Allowance to accelerate the rate and effectiveness of innovation on the network, in order to meet this objective.

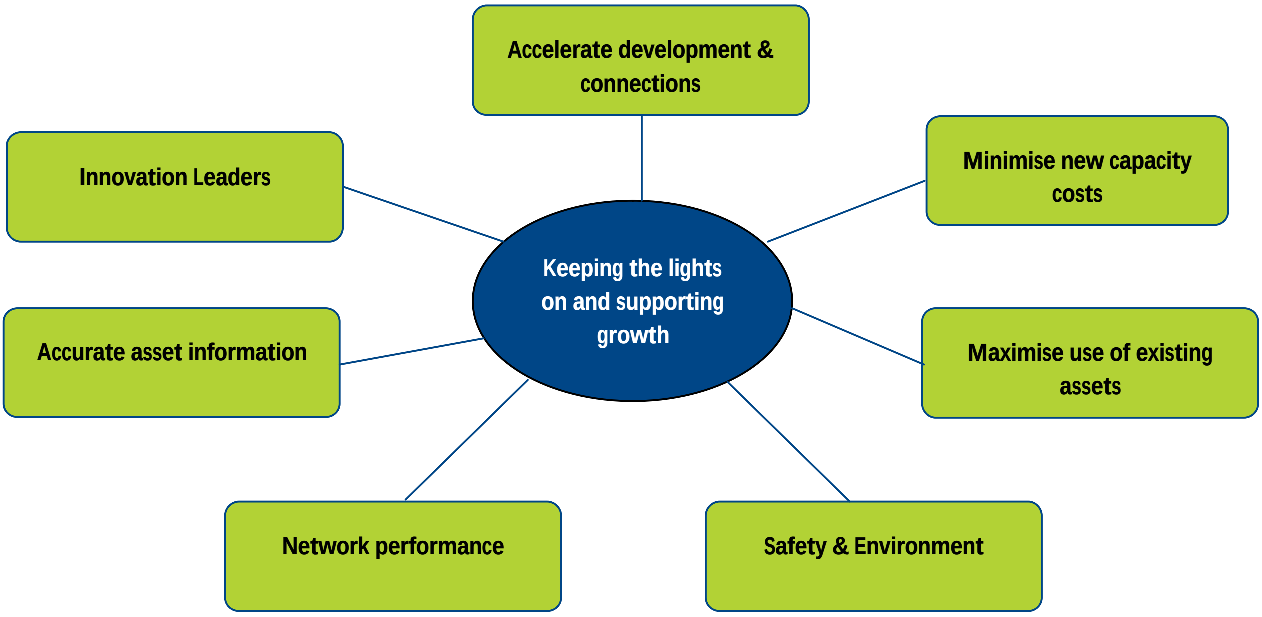

Figure 1. Main objectives of SHE Transmission's Innovation Strategy

2. NIA Project Portfolio

In the year up to 31 March 2014, SHE Transmission had a portfolio of 12 "live" projects that are being funded through the NIA allowance. These projects map to one or more of the seven objectives in the innovation strategy, as shown in Table 1.

Table 1. SHE Transmission's NIA Projects portfolio mapped to our Innovation Strategy

Key: * **Primary Objective**

● **Relevant Objective(s)**

		Objective 1	Objective 2	Objective 3	Objective 4	Objective 5	Objective 6	Objective 7
Project number	Project name	Accelerate development and connections	Minimise new capacity costs	Maximise use of existing assets	Safety & Environment	Network performance	Accurate asset information	Innovation leaders
NIA_SHET_0001	Sustainable Commercial Model For Networks	*			●			●
NIA_SHET_0002	Prognostics and Health Monitoring of Grid Connected Assets			●	●		*	●
NIA_SHET_0003	Alternative Tower Construction	●	●		*			●
NIA_SHET_0004	Dynamic Line Rating CAT1	●	●	*	●	●	●	●
NIA_SHET_0005	Transformer Intrascope			●	●		*	●

		Objective 1	Objective 2	Objective 3	Objective 4	Objective 5	Objective 6	Objective 7
Project number	**Project name**	**Accelerate development and connections**	**Minimise new capacity costs**	**Maximise use of existing assets**	**Safety & Environment**	**Network performance**	**Accurate asset information**	**Innovation leaders**
NIA_SHET_0006	Insulated Cross Arms – Lecht & St Fergus Trials	●	*	●				●
NIA_SHET_0007	Insulated Cross Arms – 132kV Trials	●	*	●				●
NIA_SHET_0008	HVDC Nanocomposite Insulation		●			*		●
NIA_SHET_0009	DC/DC Converter		●			*		●
NIA_SHET_0010	New Suite of Transmission Structures	*	●	●	●	●		●
NIA_SHET_0011	Lightning Protection					*		●
NIA_SHET_0012	Magnetically Controlled Shunt Reactor (MCSR)	●	*	●				●

3. Progress Summary

Strategy Objective 1: Accelerate network development and connections

"The decarbonisation of electricity must be a central policy goal and the supply network must be managed to facilitate this....

Aberdeen City and Shire

"One of the aims of new or upgraded transmission infrastructure should be that it facilitates a move towards low-carbon electricity supply."

Scottish Natural Heritage

"The grid connection issue is felt to be the biggest detriment to growth of [renewable energy]."

Scottish Rural Property and Business Association

Sustainable Commercial Model for Networks

Project reference/name	**NIA_SHET_0001 Sustainable Commercial Model For Networks**
Start date	June 2013
Duration	22 months
Description	Development of a Sustainable Commercial Model (SCM) to quantify the contribution of electricity transmission projects to the Scottish and UK economy through direct, indirect and induced expenditure, as well as a method for quantifying the social and environmental impact of electricity transmission projects. The SCM will also be trialled in a specific transmission project.
Expected benefits	This project is focused on enabling more informed and consistent decisions in transmission project development. This has the potential to provide cost savings for transmission customers in areas such as the planning process as well as early and informed engagement with stakeholders to identify the most cost effective options.
Progress	A software model and associated method for quantifying the economic impact of transmission projects (the Sustainable Commercial Model) has been delivered and is now being refined. The next step is to develop the additional capability to quantify the associated social and environmental impacts. The application of this tool and the associated method to a Beauly-Denny transmission project case study is well underway.
Further details	http://www.smarternetworks.org/Project.aspx?ProjectID=1180

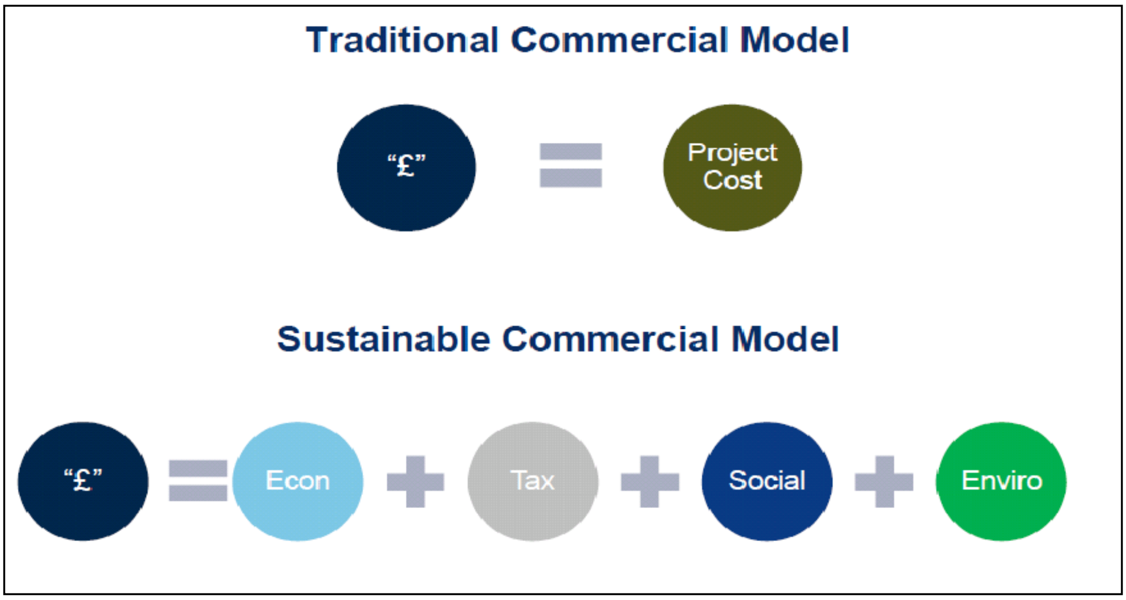

Figure 2. Traditional project evaluation model vs approach adopted by the SCM.

New Suite of Transmission Structures

Project reference/name	**NIA_SHET_0010 New Suite of Transmission Structures**
Start date	December 2013
Duration	16 months
Description	This project is leveraging existing innovations to design a new suite of 275kV transmission structures to exploit the full potential of those innovations, e.g. insulated cross arms and low-sag conductors.
Expected benefits	The objective of this project is to design a suite of transmission structures that are smaller, cheaper and quicker to build, and easier to maintain than the existing transmission structure designs which are widely used in the GB transmission network. This is intended to provide financial savings for customers. Safety and environmental impacts are also being actively considered in order to maximise the benefit of the new suite of designs for a range of stakeholders.
Progress	A review of the literature on the standards and requirements relating to transmission structures has been completed and a review of current developments in overhead line support technologies is ongoing. The development of new design options will follow the completion of this review work.
Further details	http://www.smarternetworks.org/Project.aspx?ProjectID=1302

Strategy Objective 2: Minimise the cost of providing network capacity

"We are committed to ensuring these challenges are met in a way that provides value for money for consumers."

Ofgem

"Domestic energy bills already carry a growing number of 'surcharges' to fund a variety of energy policies. Those in fuel poverty cannot afford to pay such regressive surcharges."

Age UK

Insulated Cross Arms – Lecht & St Fergus Trials

Project reference/name	NIA_SHET_0006 Insulated Cross Arms – Lecht & St Fergus Trials
Start date	January 2010
Duration	5 years
Description	This project included the development and construction of insulated cross arm prototypes followed by installation and testing of the prototypes in harsh environmental conditions on the SHE Transmission network. The selected locations were the Lecht in the eastern Cairngorms followed by St Fergus substation. An insulated cross arm installation on a transmission tower replaces the current arrangement of steel cross arm and insulator string, and provides a potential alternative to the rebuilding of a given circuit to uprate the voltage of the circuit.
Expected benefits	The ability to retrofit the insulated cross arms to existing towers means the cost of a voltage upgrade to provide network capacity is less than the cost of a line rebuild, resulting in savings for our customers. The upgrade could also be completed in a shorter timeframe than a line rebuild could be.
Progress	The project has been successfully completed. The insulated cross arms were developed by Arago Technology, following collaboration between EPL Composite Solutions and the University of Manchester. Four prototypes were available for installing at the Lecht, at a de-energised transmission line over a period including two winters with severe weather conditions. This location was chosen because of its location exposed to some of the most extreme weather conditions on the GB transmission system. The analysis of the data gathered from the trial allowed for the development of an improved cross arm design, incorporating design changes that were based on the data recorded during the extreme weather events. The latter trial at St Fergus has been operational for over a year and will continue for the foreseeable future to provide further knowledge about the prototype performance. The data recorded by monitoring devices is relayed back to the University of Manchester in real time, where it has been

	analysed periodically. Analysed data from the first year of the trial indicates the cross arms are working as expected. Unexpected leakage currents haven't been recorded, however they have shown to be affected by the weather.
Outcomes and lessons learned	The main output from this project is the proving of the insulated cross arms mechanical and electrical properties. The prototypes produced for trialling at the Lecht had been tested in a laboratory environment, but they hadn't been tested in the harsh environments that can be experienced on the GB network., Improvements were made to the design of the cross arms following analysis of the data gathered from the Lecht trial and prior to installation for the St Fergus trial. This included introducing an incline to horizontal members to improve water run off, and an improved manufacture process to seal the core and prevent the possibility of air voids. Further testing will be required prior to BAU adoption of this innovative solution, including demonstration of the cross arm on one or more real operational 132kV circuits. This project corresponds to a change in technology readiness level from 3 to 5.
Planned implementation	Demonstration of the cross arm on one or more real operational 132kV circuits will be required prior to BAU adoption of this solution. There are also some issues still to be resolved if retrofitting insulated cross arms to existing towers to upgrade a particular circuit. At present there is not a design for insulated cross arms to be installed on tension towers, and thus new tension towers would be required to be built in any retrofit upgrade using insulated cross arms. There is also the issue of earthwire shield angles being reduced after the installation of Insulated cross arms, which requires further research in order to resolve the issue.
Further details	http://www.smarternetworks.org/Project.aspx?ProjectID=1401

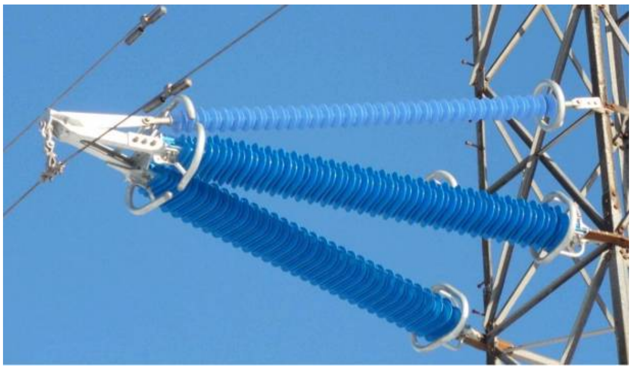

Figure 3. Installation of insulated cross arm at The Lecht (left) and St Fergus test rig (right)

Insulated Cross Arms – 132kV Crossarm Trial

Project reference/name	**NIA_SHET_0007 132kV Crossarm Trial**
Start date	April 2013
Duration	2 years
Description	This project is building on the preceding Lecht & St Fergus Trials (see project NIA_SHET_0006 above) through trial installation of insulated cross arms on the towers of an operational 132kV circuit. The performance of the insulated cross arms is being monitored for up to two years.
Expected benefits	The expected benefits of this project are common with those of the preceding Lecht & St Fergus Trials (see project NIA_SHET_0006 above).
Progress	Six cross arms were successfully installed in 2013 on SHE Transmission's 132kV line between Craigiebuckler and Kintore. Performance and condition monitoring of the cross arms is ongoing.
Further details	http://www.smarternetworks.org/Project.aspx?ProjectID=1569

Figure 4. Installation of the six insulated cross arms on the 132kV transmission line

Magnetically Controlled Shunt Reactor (MCSR)

Project reference/name	**NIA_SHET_0012 MCSR**
Start date	December 2013
Duration	9 months
Description	The objective of this project is to assess the feasibility of installing a magnetically controlled shunt reactor as a trial on the SHE Transmission network.
Expected benefits	The use of an MCSR on the transmission network could reduce the cost of controlling reactive power flow to maintain constant voltage on the network. This would provide a saving for our customers.
Progress	The Peterhead and Kintore transmission substations have been identified as potential locations for installation of a trial MSCR; the associated power system studies and practical assessments are ongoing. The potential benefit of an MCSR based SVC is to eliminate the need for step-down transformers and numerous discrete reactors, since the MCSR and associated capacitors and filters are connected directly to EHV busbars, thus decreasing the associated costs.
Further details	http://www.smarternetworks.org/Project.aspx?ProjectID=1334

Figure 5.Magnetically Controlled Shunt Reactors (MCSR).

Source: ZAPOROZHTRANSFORMATOR PJSC

Strategy Objective 3: Maximise the use of existing assets

"Reduction of system redundancy – through innovation and design standard."

Community Energy Scotland

Dynamic Line Rating CAT 1

Project reference/name	**NIA_SHET_0004 Dynamic Line Rating CAT 1**
Start date	April 2009 (Transmission IFI mechanism) April 2013 (NIA)
Duration	6 years
Description	The objective of this project is to install a CAT-1 transmission line monitoring system on a SHE Transmission line and demonstrate whether it can provide a safe and cost-effective dynamic line rating system.
Expected benefits	The use of dynamic line rating (compared to static rating) can release significant extra additional network capacity which can reduce capital expenditure requirements in upgrading existing transmission lines or in constructing new lines. Dynamic line rating may also offer increased flexibility to deal with outages if it is deployed on an adequate number of transmission lines.
Progress	An initial review of the compatibility of the CAT 1 with the SHE Transmission SCADA system has been carried out. Evaluation of the CAT-1 protocol has provided confidence that the real time information is in a format compatible with the SHE Transmission SCADA System. There has been preliminary work done in installing a "sag monitor" on the Carradale 132 kV line. This preliminary work increased understanding about the practicalities of deploying sag monitoring technology and has proven the concept. A revised choice of circuit has been established; the preferred route is now Tealing-Abroath tee Brechin 132kV overhead line. The next steps for the project are the installation and trial of the six CAT-1 monitoring units that were procured. This will follow during the next available outage of the identified circuit.
Further details	http://www.smarternetworks.org/Project.aspx?ProjectID=451

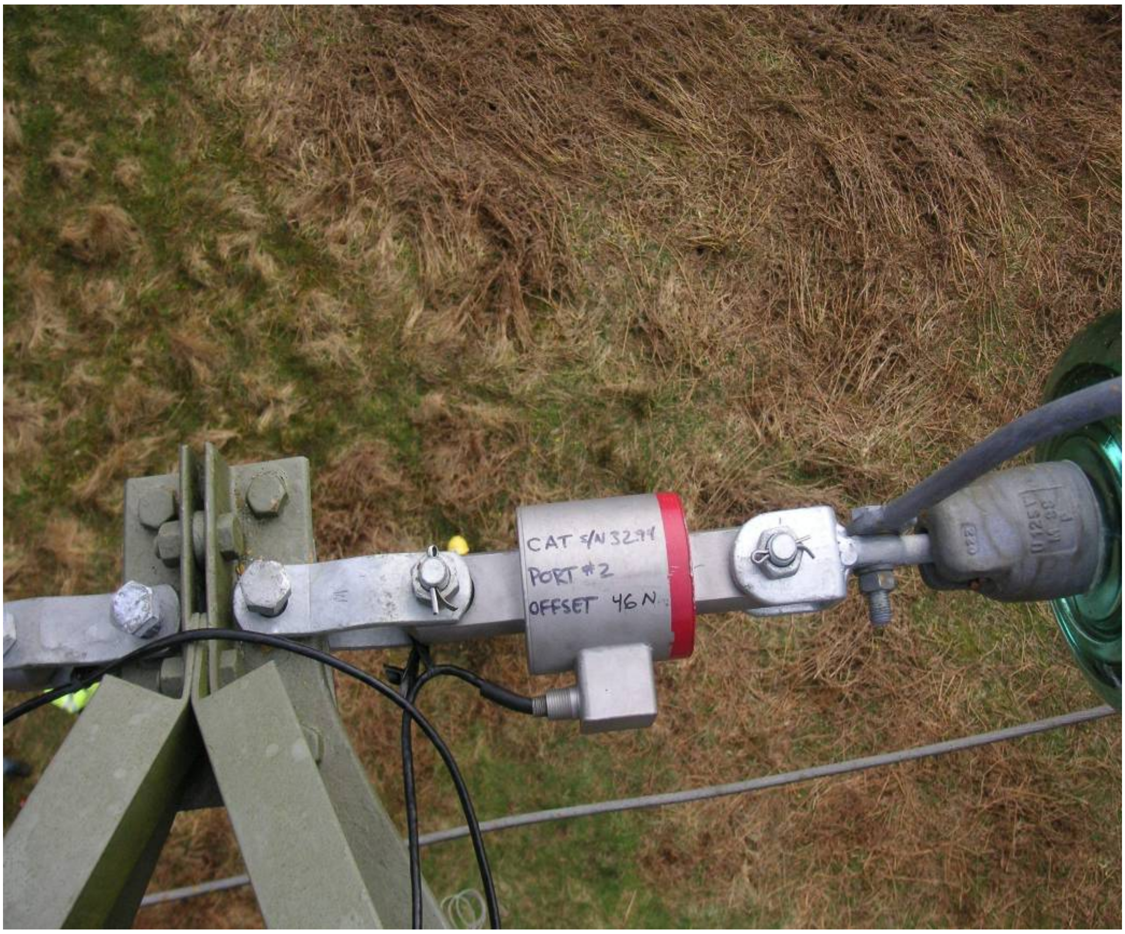

Figure 6. Dynamic line rating sag monitor.

Strategy Objective 4: Safety and environmental performance

> "Safety, reliability and environmental concerns should be of a primary concern for all transmission businesses."
>
> EDF Energy

> "It is through research that, for example, alternatives to the use of SF6 as an insulator may be found allowing for possible phasing out of this potent greenhouse gas."
>
> SEPA

Alternative Tower Construction

Project reference/name	NIA_SHET_0003 Alternative Tower Construction
Start date	February 2010 (Transmission IFI mechanism) April 2013 (NIA)
Duration	5 years
Description	This project is trialling and assessing the use of a modified Emergency Restoration System (from supplier SBB) as a lightweight tower crane for construction and dismantlement of transmission towers.
Expected benefits	The innovative solution being trialled in this project offers several potential benefits compared to the existing methods of constructing and dismantling transmission towers. These include reduced construction time, reduced environmental impact, mitigation of safety risks, and financial savings for customers due to a reduced requirement for temporary access roads.
Progress	The third-party mechanical assessment of the use of the modified SBB Emergency Restoration System as a lightweight tower crane is ongoing. The subsequent trials will consist of erection and dismantlement of transmission towers in an operational environment.
Further details	http://www.smarternetworks.org/Project.aspx?ProjectID=575

Figure 7. Training staff in the use of the modified Emergency Restoration System

Strategy Objective 5: Improve network performance

"The Council would wish to see the current high levels of reliability maintained."

Orkney Islands Council

"SHETL should concentrate in some areas on the quality of the transmission they provide."

Scottish Rural Property and Business Association

HVDC Nanocomposite Insulation

Project reference/name	**NIA_SHET_0008 HVDC Nanocomposite Insulation**
Start date	June 2012
Duration	3 years 6 months
Description	This project is addressing the industry challenge to establish higher performance and more reliable insulation material solutions to facilitate the next generation of HVDC transmission systems in GB. Specifically, the project includes development and demonstration of a new method to distribute nano-scale fillers into polymeric insulation material. Previous earlier-stage R&D has shown nanocomposite electrical insulation materials to significantly out-perform conventional micro composite insulating materials.
Expected benefits	The resulting availability of proven advanced insulating products is expected to reduce the size and improve the reliability of the insulation associated with HVDC converter stations in GB. This would yield significant financial savings for GB customers.
Progress	A method to disperse nanoscale fillers in polymeric insulation material has been developed and is now being optimised. Demonstration products have been fabricated by project partner Mekufa using the polymeric insulation material. The fabrication process is being developed and improved. In general terms, this project is targeted at reducing the size and improving the reliability of the insulation associated with such converter stations. This should result in a reduction in cost which has been conservatively assumed as 1%.
Further details	http://www.smarternetworks.org/Project.aspx?ProjectID=1570

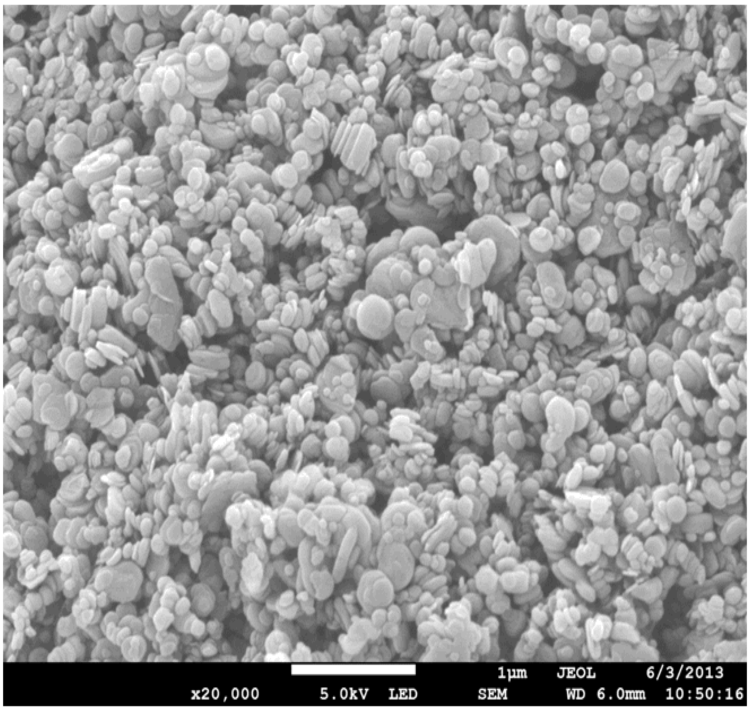

Figure 8. Nanocomposite image and insulator

DC/DC Converter

Project reference/name	**NIA_SHET_0009 DC/DC Converter**
Start date	September 2013
Duration	3 years 6 months
Description	Development of a design for a DC/DC converter. This is to address the current absence of technology to interconnect HVDC systems at different voltages, given the growing number of HVDC systems in the GB transmission network.
Expected benefits	This project is expected to provide GB Transmission Owners with new learning about the design of a DC/DC converter. This could facilitate the development of this technology in areas such as potential capital expenditure reductions on HVDC systems, and potential reductions in system losses.
Progress	SHE Transmission is collaborating with the University of Aberdeen in this project. Delays to the appointment of a PhD candidate to undertake this project have been resolved, with work now expected to begin in August 2014.
Further details	http://www.smarternetworks.org/Project.aspx?ProjectID=1246

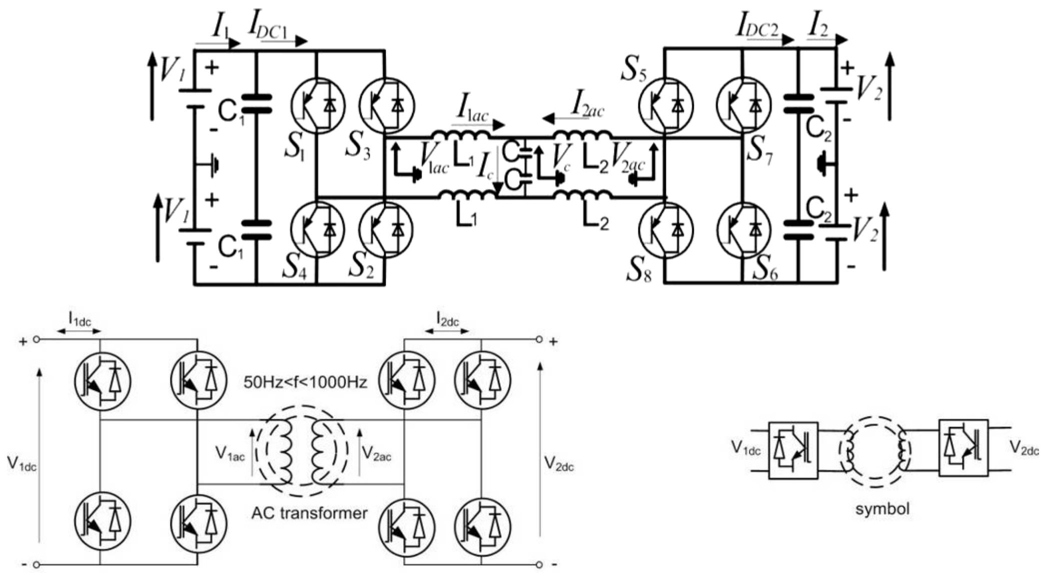

Figure 9.: DC/DC converter – non-isolated (top) and isolated (bottom).

Source: University of Aberdeen, PhD research project.

Lightning Protection

Project reference/name	NIA_SHET_0011 Lightning Protection
Start date	December 2013
Duration	3 years
Description	The scope of this project is to build and verify simulation models of lightning strikes on transmission lines where the towers have high footing resistances and to evaluate different options for lightning protection in these transmission lines.
Expected benefits	The optimisation of lightning protection on transmission lines where the towers have high footing resistances is expected to result in financial savings for customers through improved efficiency.
Progress	Research work by a PhD candidate has begun at Heriot-Watt University.
Further details	http://www.smarternetworks.org/Project.aspx?ProjectID=1301

Figure 10. Transmission tower

Strategy Objective 6: Accurate asset information

"Find ways of providing more electric vehicle charging points whilst minimising network reinforcement."

Renewables UK

Prognostics and Health Monitoring of Grid Connected Assets

Project reference/name	**NIA_SHET_0002 Prognostics and Health Monitoring of Grid Connected Assets**
Start date	December 2012 (Transmission IFI mechanism) July 2013 (NIA)
Duration	3 years 6 months
Description	The objectives of this project at inception were to: • Review the literature on prognostics and health management; • Build a small-scale prototype prognostics system for testing on electromechanical relays; • Apply the prototype results to develop a cost-effective online transformer oil condition monitoring and prognostics system prototype for subsequent testing on a decommissioned SHE Transmission grid transformer
Expected benefits	Prognostics and health management (PHM) can potentially provide an improved assessment of the condition of an operational network asset. This can inform the network operator's asset management decisions. For example, the life of a transformer may be extended through an estimation of the transformer's remaining useful life using PHM tools. This would provide a financial benefit to our customers by minimising the cost of replacing ageing assets on our network.
Progress	As part of the initial phases of the project, a detailed review of the tools available for prognostics and health management (PHM) has been completed. The conclusions from this review were then successfully applied in a lab-based prognostics prototype test bed to test the contacts of small electromechanical relays.
Further details	http://www.smarternetworks.org/Project.aspx?ProjectID=1182

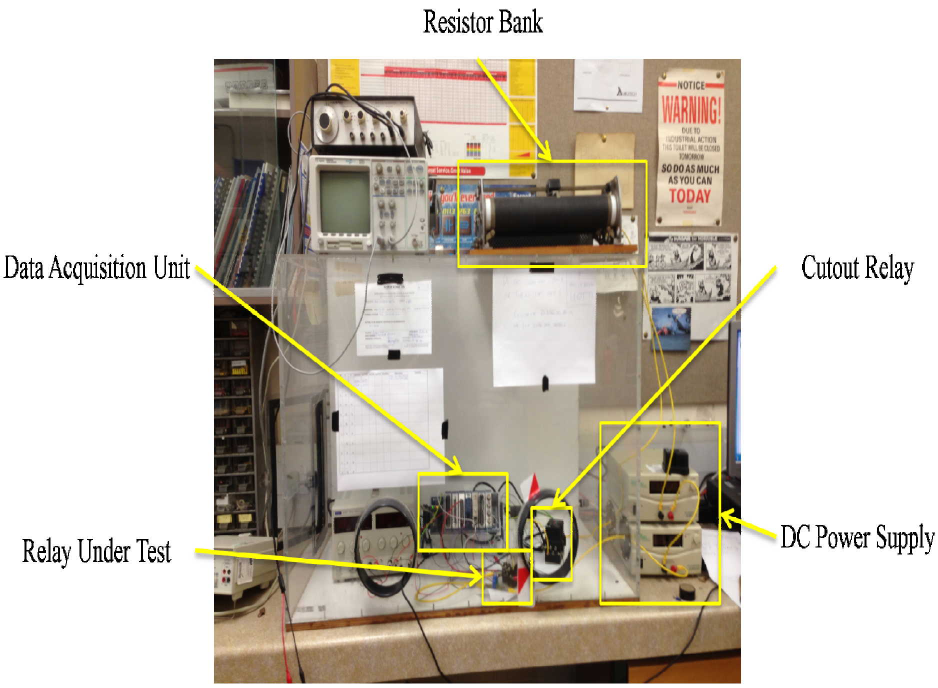

Figure 11. PHM experiment set-up

Transformer Intrascope

Project reference/name	**NIA_SHET_0005 Transformer Intrascope**
Start date	April 2013
Duration	2 years
Description	The objectives of this project are to develop, trial and assess an intrascope probe system based on the concepts of endoscopy and spectroscopy which can be used for in-situ analysis of the condition of power transformers' internal insulation.
Expected benefits	This project is trialling an innovative method of assessing the condition of a transformer's internal insulation. The main existing assessment method is more lengthy and more costly, and includes draining the transformer insulating oil, transporting the transformer to an off-site location, and de-tanking the transformer core and windings for assessment. The expected benefits of the innovative method include reduced expenditure and reduced network outage time in each condition assessment event. In addition, the innovative method may result in deferral of the condition-based replacement of transformers because it provides a more accurate assessment of the remaining life of the transformers. This will enable network operators to make the best possible use of transformers, minimising the cost of transformer replacement to customers.

Progress	The initial stage of the project, which was to conduct research into an intrascope probe system that could be used for the in-situ analysis of the condition of internal insulation within power transformers, was completed successfully. This is the first experience of use of an endoscope for in-situ testing of transformers. Testing was then done at the prototype level in the laboratory. This testing provided confidence and experience in using the system for the subsequent field-based testing phase of the project. This concluded this laboratory testing phase of the project, which was followed by field-based trialling of the system on a number of decommissioned primary transformers. Testing has then been done successfully on decommissioned transformers, and the next steps are to test on operational transformers. Evaluation of the test results is currently ongoing and will indicate the method's suitability as a transformer condition monitoring tool in business-as-usual.
Further details	http://www.smarternetworks.org/Project.aspx?ProjectID=1183

Figure 12. Trial of the intrascope probe system on a decommissioned National Grid transformer in 2014

Strategy Objective 7: Remain at the forefront of innovation

"I think it is great that innovation is embraced. I get a chance to develop ideas to make routine processes easier."

SSEPD Colleague

"The RIIO model seeks to promote this behaviour by rewarding innovation and setting a long-term framework to encourage a more flexible and forward looking approach from network companies."

Ofgem

All the innovation projects that we undertake at SHE Transmission, and SSEPD in general, have this ultimate objective of keeping us as leaders in innovation, with the goal of providing the best value to our end customers.

4. Highlights of the year: areas of significant new learning

Demonstrating a pioneering tool for stakeholder engagement

Our NIA project 'Sustainable Commercial Model for Networks' has delivered a software model and associated method for quantifying the economic impact of transmission projects, with the additional capability to quantify the associated social and environmental impacts currently being developed and integrated into the model. Results from the initial application of this model to the Beauly-Denny transmission project have been produced.

Successful trial of a new condition monitoring tool

We have developed and trialled a probe for in-situ condition assessment of insulation in transformers as part of our NIA project 'NIA_SHET_0005 Transformer Intrascope'. Testing and demonstration of the prototype in the field on an operational transformer on the SHE Transmission network was successfully completed in June 2014, confirming the ability of the intrascope system to assess the condition of internal insulation in transformers.

Valuable learning about new material solutions

Our NIA project 'HVDC Nanocomposite Insulation' is providing learning about the use of nanoscale fillers in polymeric insulation material.

Deploying new solutions in a real network environment

Our successful NIA trials of innovative insulated transmission tower cross arms in two environmentally challenging locations in our network are being consolidated by ongoing performance and condition monitoring of the cross arms on an operational 132kV transmission line, as part of our NIA project 'Insulated Cross Arms – 132kV Trials'.

5. Contact details

Scottish Hydro Electric Transmission Limited

200 Dunkeld Road

Perth PH1 3AQ

future.networks@sse.com

Media enquiries should be directed to SSE's Press Office on +44 (0)845 0760 530