

September 2014

# Scottish Hydro Electric Transmission plc

## Annual Performance Report 2013/14

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## Executive Summary



In January 2012, we published our updated Business Plan for RIIO-T1, our price control period that runs from 1 April 2013 to 31 March 2021. My team has recently finished the annual reporting for the first year of this period and I wanted to provide our customers and stakeholders with an update of how we have performed during this year against our commitments in our Business Plan.

In developing our plans for this period, we knew that we would see significant growth in our transmission network but there were a number of uncertainties about exactly what that growth would look like and when it would occur. We agreed mechanisms with Ofgem, our regulator, that allow us to seek funding for some of our major projects throughout the period and during 2013/14, we have worked with Ofgem to agree funding for two projects, Kintyre–Hunterston and Beaully–Mossford. We are also progressing through the cost assessment process for a third project, Caithness–Moray, and expect a decision on this to be reached later this year.

As well as investing in this growth, it is also essential that we continue to look after our existing network. Based on work undertaken in 2013/14, I am pleased to report that we do not expect to need to replace any of the equipment making up the 275kV network for at least another ten years and around 94% of the equipment on the 132kV network is in a similar condition.

A healthy network is essential to ensuring we can continue to provide a safe and reliable supply of electricity to those connected to our transmission system. The reliability of our network in 2013/14 was 99.998% but there have been a small number of incidents at the start of this year that prove that we cannot be complacent. I am working with the team to ensure we learn the lessons from these occurrences so that you, our customers and stakeholders, can continue to rely on our network.

In carrying out our activities, it is important to me that we continue to act in a safe and sustainable manner, seeking to minimise our impact on the environment and acting as efficiently as possible. I recognise that there will always be room for improvement and I continue to challenge my team to look for opportunities to act smarter.

Finally, we do not, and cannot, act in isolation and I appreciate the contributions that our customers and stakeholders have made to help us develop and refine our plans. I hope this update will be of interest to you and I look forward to your continued involvement through this year and beyond.

A handwritten signature in dark ink, appearing to read 'D. Gardner', written in a cursive style.

**David Gardner**  
Director of Transmission

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## Introduction

Scottish Hydro Electric Transmission plc (SHE Transmission) is the owner of the high voltage transmission system in the north of Scotland as shown on the map. As the regional monopoly provider in this activity, our performance and our charges are regulated by the Office of Gas and Electricity markets (Ofgem) through a ‘price control’.

In January 2012, we published our Business Plan for what we proposed delivering during the price control period from 1 April 2013 to 31 March 2021. This can be found here:

[www.ssepd.co.uk/TransmissionPriceControlReview](http://www.ssepd.co.uk/TransmissionPriceControlReview)

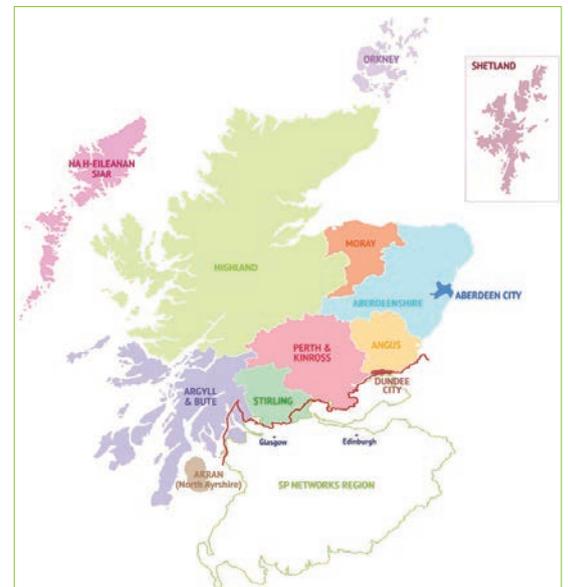
This is the first price control for transmission companies under Ofgem’s RIIO model. Ofgem reviewed our Business Plan against this model and concluded that our Plan was “well justified and in the interests of consumers”. This was confirmed in Ofgem’s Final Proposals publication which can be found at:

[www.ofgem.gov.uk/publications-and-updates/riio-t1-final-proposals-sp-transmission-ltd-and-scottish-hydro-electric-transmission-ltd](http://www.ofgem.gov.uk/publications-and-updates/riio-t1-final-proposals-sp-transmission-ltd-and-scottish-hydro-electric-transmission-ltd)

Our Business Plan, with a few minor adjustments in accordance with Ofgem’s Final Proposals, was then transposed into our licence that we are required, by law, to act in accordance with. These documents create the framework we will operate under during the price control and are referred to in this document as the RIIO-T1 Framework.

In developing our Business Plan, we carried out a wide range of activities to ensure that our proposals were in line with the expectations of our customers and stakeholders, whom we defined as anyone interested in or affected by our activities. We found this engagement to be an essential input to the development and refinement of our Business Plan and undertook to maintain this dialogue during the price control period.

As part of maintaining that discussion, this is our Annual Performance Report, setting out how we performed against our Business Plan during the first year of the RIIO-T1 price control period, namely 1 April 2013 to 31 March 2014. In addition, we are publishing part of the set of data tables that we provide annually to Ofgem. These are available on our website alongside this report. Contact details are provided at the end of the report if you wish to discuss any aspect of our performance during 2013/14 with us.



## Maintaining a safe, reliable supply of electricity

We understand that people depend on us to provide a safe and reliable supply of electricity and we do everything we possibly can to avoid interrupting customers' electricity supplies. When it does happen, we are committed to restoring supplies as quickly as we can.

There are two key measures you can look at to gauge how we are performing in this area. The first is the health of our network. We use Network Output Measures to monitor our network's health and to trigger investment, when required, in our existing network. The second is the reliability of our network and we use the amount of Energy Not Supplied to measure this.

### Network Output Measures

Looking after the health of our existing transmission network is one of our fundamental activities. We measure this health using a framework that is consistent across all of Great Britain's transmission networks and score our equipment on the basis of its replacement priority.

Those pieces of equipment, 'assets', that are relatively new (or have had improvements made to them to make them equivalent to new) are scored Replacement Priority 4 (RP4) and we expect these assets to not need replacing for at least ten years. Those assets that need either replacing or alternative measures to improve their performance within the next two years are scored Replacement Priority 1 (RP1).

In the past year, improvements to the health of our assets were achieved through completion of the following work:

- Wood pole replacements along the 132kV Craigiebuckler to Tealing route;
- Reinsulation on the Lairg to Cassley and Dunoon to Whistlefield 132kV routes;
- Partial replacement of the conductor on the 132kV Kintore to Craigiebuckler line; and
- Replacement of circuit breakers at Sloy, Brechin and Keith substations.

As a result of this work, almost all of our assets on the 275kV network fell into the RP4 category by the end of 2013/14 and we do not expect to make improvements to these assets during the remainder of the RIIO-T1 period. Even on the older 132kV network, around 94% of the assets are in a similar condition. Over the remaining seven years of the RIIO-T1 price control review, we intend to invest in 850km of overhead line, 11km of underground cable, 16 transformers and 16 circuit breakers.

The funding for this is provided through our Non-Load Related allowance that makes up part of the money that Ofgem agreed we should spend during the RIIO-T1 period. More information on this is provided under 'Our costs and revenue for 2013/14' on page 16.

**ENS Fast Facts**

In 2013/14, 99.998% of energy generated was supplied to customers.

Energy Not Supplied dropped from 667MWhrs in 2013 to 80MWhrs in 2013/14.

The significant decrease in ENS was a return to normal levels of service since supply in March 2013 was severely affected by snowstorms on Arran and the Kintyre peninsula.

Total Unsupplied Energy, at 80MWhrs, was lower than our Ofgem target of 120MWhrs.

In 2013/14, a single fault left customers in Skye off-supply for over six hours. SHE Transmission agreed to pay over £250,000 in compensation to those affected.

**Energy Not Supplied**

In our Business Plan, we committed to measuring the reliability of our network on the basis of Energy Not Supplied. Energy Not Supplied is a measure of the amount of electricity not supplied to customers as a result of an incident on the transmission system. Keeping the amount of Energy Not Supplied as low as possible is one of our outputs that you can measure our performance against, as well as an area where we are incentivised under the RII0-T1 Framework.

Overall, during 2013/14, 99.998% of energy generated was supplied to customers.

During 2013/14, just under 80 megawatt hours (MWh) of electricity were not supplied. Of this, 35.6MWh were classified as Incentivised Loss of Supply Events, excluding very short interruptions under three minutes and reflecting that some customers, for example, choose a lower standard of connection. The data table below shows our performance for 2013/14.

This is a significant improvement on our performance in 2012/13 when our network was severely affected by snowstorms, particularly on Arran and the Kintyre peninsula, and below the target agreed with Ofgem of 120MWh per year. However, we recognise that any interruption can cause significant inconvenience to our customers.

In our Business Plan, we set out our plans to compensate customers who are off-supply as a consequence of an incident on our transmission network for six hours or longer. We made over £250,000 of compensation payments to affected customers as a consequence of transmission incidents in 2013/14.

We have had two significant incidents on our network during the first half of 2014/15. We continue to review our performance and to learn lessons in light of such incidents. The extent of the work we are currently undertaking on the transmission system does increase the risk of incidents occurring but we are committed to taking all reasonable steps to minimise the likelihood of disruptions and to mitigate the impacts if they do happen. We greatly appreciate the contributions of all those who worked with us to manage and mitigate such events during the last year and look forward to continuing to work together in the future.

ENS in 2014	MWh
Volume of supplied energy	5,900,000.0
Volume of unsupplied energy	79.8
Volume of unsupplied energy from excluded incidents other than exceptional events	44.2
Volume of unsupplied energy categorised as exceptional events*	0.0
Volume of unsupplied energy in incidents due to Incentivised Loss of Supply Events**	35.6
Target	120.0
Difference	(84.4)

**\* Volume of unsupplied energy due to exception events**

Exceptional events here are identified as events outside the reasonable control of the transmission owner. These would include acts of terrorism, war, civil unrest, sabotage, fire, severe weather and events caused by instructions from Government

**\*\* Incentivised Loss of Supply Events**

This is energy that has not been supplied with the exception of outages caused by shortages from generators, generators choosing to disconnect their equipment, or any outages lasting less than three minutes.

## Someone to talk to

Developing and maintaining a network which serves an area the size of the north of Scotland can only be achieved with the support and engagement of a wide range of parties, including local communities, land owners, elected representatives and statutory consultees (those required by law to be consulted as part of planning and/or consenting processes). In developing our Business Plan for the RII0-T1 period, we found our engagement with customers and stakeholders to be an essential input and something that we committed to continuing during the price control period.

As part of this, Ofgem has established two incentive mechanisms within the RII0-T1 Framework to ensure we maintain this commitment and the voices of our customers and stakeholders are heard and used to inform our activities.

### Survey Fast Facts

The survey asked 51 respondents, from a possible 327, a range of questions assessing their experience of working with SHE Transmission.

Overall satisfaction with SHE Transmission scored

**6.5 out of 10**

compared to a baseline in 2013 of

**5 out of 10**

This score has fallen by 0.7 since the previous 2012 survey, when SHE Transmission scored

**7.2 out of 10**

SHE Transmission's strongest scores related to our people: politeness, professionalism, knowledge, technical expertise and commitment to safety were all the highest scoring questions.

The lowest scoring category relates to the guidance and transparency of our connection process.

### Stakeholder Satisfaction Output

In recognition of the important role that wider society plays in shaping our network, we developed, with Ofgem and the other transmission owners, a Stakeholder Satisfaction Output mechanism to promote improved service for our customers and stakeholders this helps provide external assurance that we are listening, and where possible, acting on what those parties affected by our activities tell us. If we perform well, we earn a financial reward but there is also a potential penalty if we fail to deliver.

For SHE Transmission, the Stakeholder Satisfaction Output mechanism is made up of three parts comprising:

- results of an annual **satisfaction survey** carried out by an independent market research company,
- performance measured by agreed **key performance indicators** (KPIs) and
- independent **assurance of our stakeholder engagement work**.

Ofgem is still to formally confirm its acceptance of our proposed KPIs and also to notify the scores at which performance for the survey and the KPIs move between being worthy of reward to being subject to penalty. In the absence of this formal notification, our comments are based on the KPIs we proposed and our understanding of what scores will be implemented.

#### 1. Satisfaction Survey

Each year, we use an independent market research company to carry out a survey to understand how satisfied our customers and stakeholders are with our performance.

Respondents from across the full range of stakeholder categories are interviewed over the telephone to assess their experiences of working with SHE Transmission.

The survey company interviews respondents on a range of issues and asks them to rate their overall experience of working with SHE Transmission, on a score of one to 10. This score is used for the incentive. However, all of the feedback provided by participants during the process is reviewed and, wherever possible, used to drive improvements in our performance.

For the year 2013/14, **overall satisfaction with SHE Transmission scored 6.5 out of 10**. This was a small reduction on the survey carried out in 2012 when SHE Transmission scored 7.2 out of 10, although it is above the proposed baseline of 5 out of 10.

Our strongest scores related to our people: politeness, professionalism, knowledge, technical expertise and commitment to safety were all the highest scoring questions. The lowest scoring category relates to the guidance and transparency of our connection process. We are working to address this and have introduced a number of measures which we hope will improve future experience. These include customer and stakeholder service training for staff; working with National Grid to improve communication with applicants during the connections process; and increased visibility at key industry events to explain the process, provide support, and allow interested parties to meet members of our team.

**KPI Fast Facts**

Overall KPI scored

**91%**against a baseline  
target of 50%

All safety targets met. Key contractors reduced their injury by half in one year – an excellent achievement.

Complaints all acknowledged and normally resolved quickly, but we received 32 more complaints than expected last year.

23 new trainee positions created and recruited from the north of Scotland. The proportion of approved suppliers based in our area is now up to 30%.

More than 85% of our research and development projects are joint collaborations with leading research centres. We implemented 21 new innovative ideas into our day to day operations.

**2. Key Performance Indicators**

In April 2013, we submitted our proposed KPIs to Ofgem for approval based on the areas of our performance that our customers and stakeholders told us mattered to them. As soon as these have been approved, we will make them available on our website so you can see how we are measuring our performance.

**Our KPIs for 2013/14 scored a weighted average of 91%** against the target of 50%. As this is the first year that we have used this approach, this performance is encouraging.

Our injury rate, one of our most important measures, saw an encouraging improvement on 2012/13 figures, especially among our key contractors. Their total recordable injury rate fell from 1.09 to 0.6 for every 100,000 hours worked – an outstanding achievement by our contractors.

There were areas where we need to get better and we are looking to improve these during this year. One area in particular we are keen to improve is the number of days used by staff to volunteer in the community.

Our scheme, 'Community at Heart', encourages staff to take a day out of the office to help with community or charity projects. As only half of the total permissible number of staff took part, we are introducing more effective internal promotional campaigns in 2014 to improve participation. If you are involved with a project that would benefit from our assistance then let us know and we may be able to help you. More information on the scheme can be found at: [www.sse.co.uk/AboutUs/CommunityAtHeart](http://www.sse.co.uk/AboutUs/CommunityAtHeart)

**3. Assurance of our stakeholder engagement work**

External assurance of our stakeholder engagement programme was carried out by independent assurance providers, ERM CVS. We submitted our Terms of Reference for this to Ofgem in April 2013, detailing what level of performance constituted compliance, exceeding compliance or failure to comply.

In accordance with these Terms of Reference, ERM CVS conducted 'Limited Assurance', which it considered to be appropriate in this case, and concluded that **SHE Transmission complied with its Stakeholder Engagement Strategy for 2013/14.**

*"Based on our activities, nothing has come to our attention to indicate that SHE Transmission statement of compliance with its Stakeholder Engagement Strategy and Implementation Plan is not fairly stated, in all material respects, with the reporting criteria."*

ERM CVS Limited Assurance Statement

**Stakeholder Engagement Incentive**

The Stakeholder Engagement Incentive builds on the Stakeholder Satisfaction Output and is intended to encourage network companies to engage effectively with a wide range of stakeholders and use the outputs from this process to inform how we plan and run our businesses. It uses a two-part submission – part one is reviewed by Ofgem, and part two is scrutinised by an independent expert panel, who then meet with us to question us on the detail of our submission.

Our submissions for 2013/14 can be found, under Transmission, here:

[www.ssepd.co.uk/Library/StakeholderEngagementPublications](http://www.ssepd.co.uk/Library/StakeholderEngagementPublications)

Overall, we received a score of 5.4 for 2013/14, based on our submissions and meeting with the expert panel. This is an improvement from our score of 3.0 in the trial held in 2012/13 and recognises the steps we are taking to deliver on the commitments in our Business Plan.

**Listening to you**

As we go about our activities, we are interested to hear your thoughts on our activities and how we are performing. If you identify an area where you think we can do better, then let us know. You can email us at: [customer.relations.scotland@sse.com](mailto:customer.relations.scotland@sse.com).

Details for alternative methods of contacting us are available on our website at:

[www.ssepd.co.uk/contactus](http://www.ssepd.co.uk/contactus)

## Supporting the growth of the low carbon economy

In our Business Plan, we set out our expectation that we will significantly expand our network over this decade to facilitate the growth of renewable generation in the north of Scotland in order to meet national renewable energy targets. The exact timing and scale of that growth was, and to some extent still is, uncertain as it depends on new generation proceeding.

To ensure appropriate funding was available to allow us to deliver projects as the need and timing becomes more certain, we developed two key uncertainty mechanisms with Ofgem to fund our large transmission projects and connections infrastructure.

### Strategic Wider Works

Strategic Wider Works is the mechanism we use to seek Ofgem's agreement on both the need for our new large transmission projects and also the additional funding.

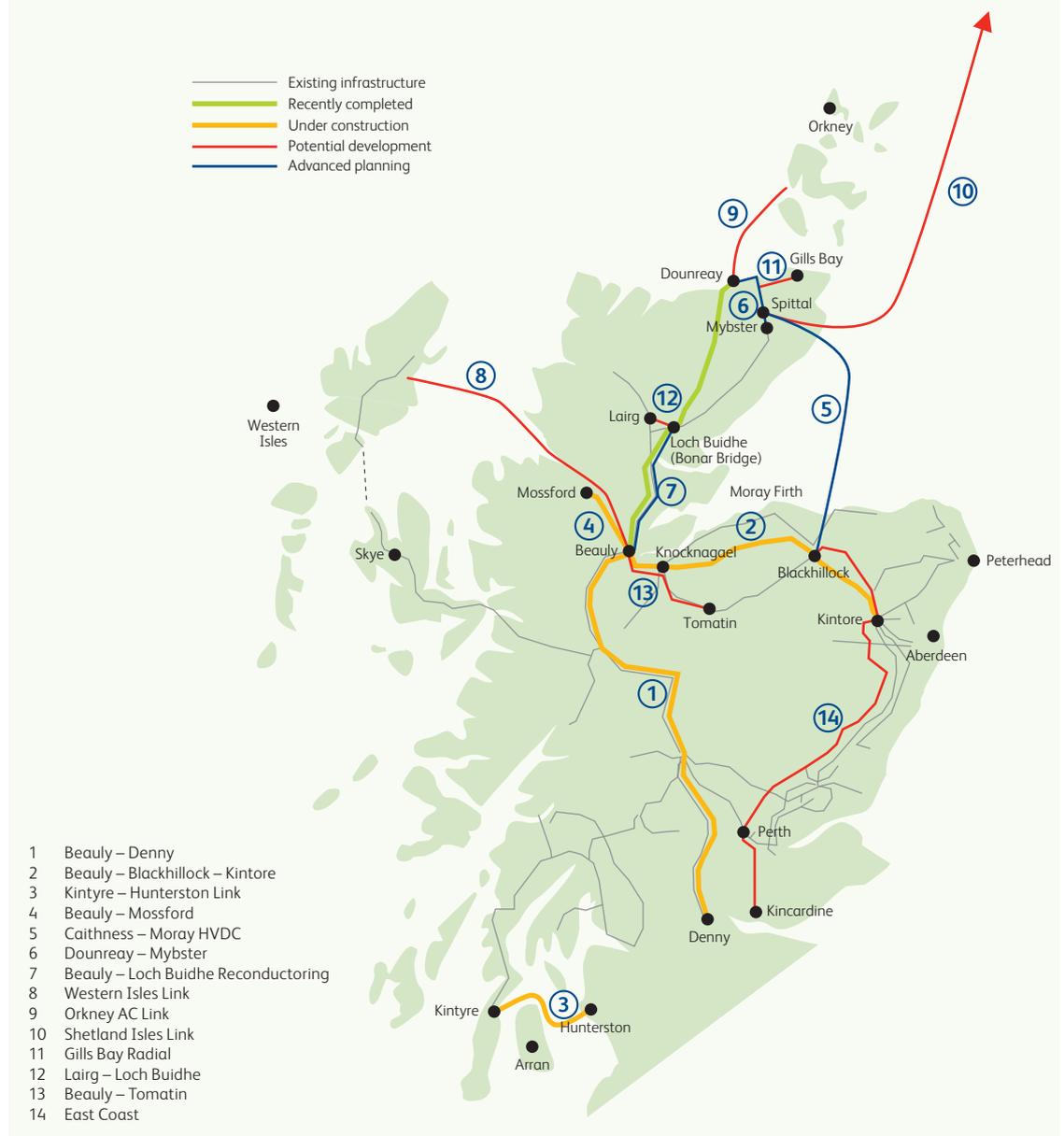
The assessment of Strategic Wider Works projects is a two-stage process; with Ofgem first assessing the Needs Case. In this, they are looking to satisfy themselves, on behalf of end consumers, that we have justified that a given project is needed and the time at which it is needed. The timing of these projects is often finely balanced to ensure that the balance between costs and benefits is appropriately struck.

The second stage is the Project Assessment and this is a more detailed look at our proposed solution to meet the identified need and an in-depth scrutiny of the costs to ensure efficient delivery of the solution.

More details on how Ofgem carry out the assessment can be found in their Guidance Document, available here: [www.ofgem.gov.uk/electricity/transmission-networks/critical-investments/strategic-wider-works](http://www.ofgem.gov.uk/electricity/transmission-networks/critical-investments/strategic-wider-works)

During 2013/14, we have been working with Ofgem on the assessment of three projects under the Strategic Wider Works mechanism.

## Overview of Transmission projects

**1. Beaulieu Mossford**

This project is the replacement of the existing 132kV overhead line and tower infrastructure with a double circuit 132kV overhead line, and an element of underground cable. It is the second stage of a reinforcement project that was commenced under the last price control. Ofgem consulted on its final assessment of this project in December 2013 and approved £45.6 million (2009/10 prices) of additional Allowed Expenditure in April 2014. The first phase of the project, construction of a new substation at Corriemoillie was successfully delivered slightly ahead of time in 2013/14, with the second phase due for delivery in December 2015. More information is available at:

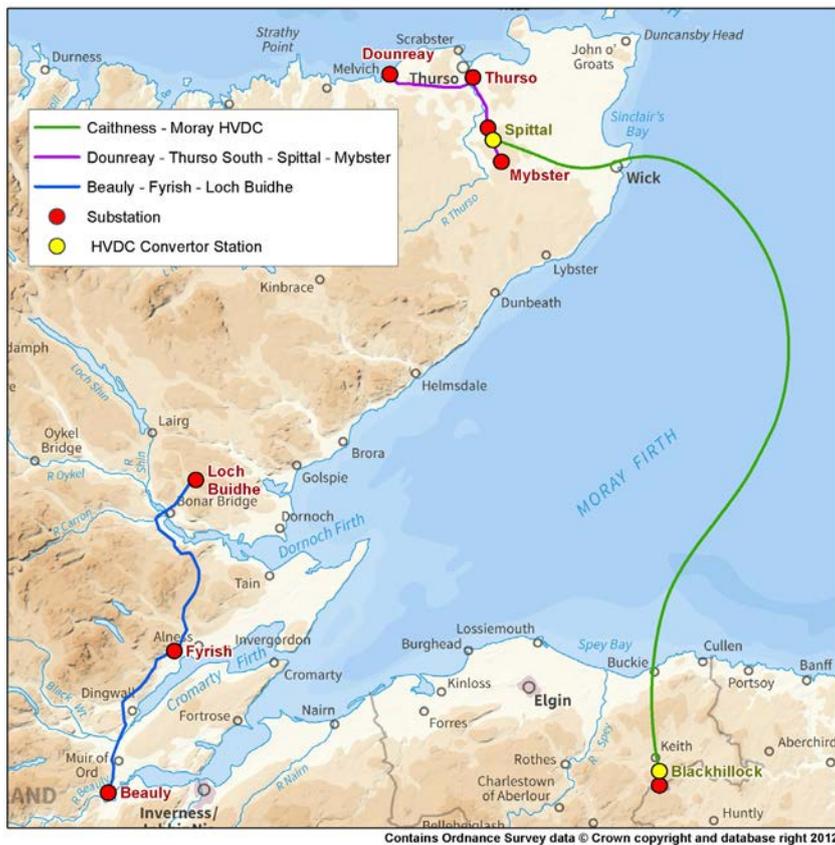
[www.ssepd.co.uk/BeaulieuMossford](http://www.ssepd.co.uk/BeaulieuMossford)

**2. Kintyre Hunterston**

This project is the reinforcement of the transmission system around the Kintyre peninsula, including the installation of two subsea cable circuits from a new substation in Crossaig Forest, around the north coast of Arran, to Hunterston. We are delivering this project in conjunction with Scottish Power Transmission (SP Transmission).

Ofgem consulted on its final assessment of this project in July 2013 and approved £174.1 million (2009/10 prices) of additional Allowed Expenditure for SHE Transmission in November 2013, with delivery due in March 2016. More information is available at:

[www.ssepd.co.uk/KintyreHunterston](http://www.ssepd.co.uk/KintyreHunterston)



### 3. Caithness Moray

In March 2013, we submitted our proposals to Ofgem for Caithness Moray. This project involves a subsea HVDC cable link between Caithness and Moray and a number of associated onshore works. The map shows the proposed reinforcement as a whole and also illustrates the project elements that we anticipate using to deliver it to ensure a successful outcome.

In July 2014, Ofgem issued its decision to “accept the Needs Case for SHE Transmission’s proposed subsea cable and associated onshore works”. This is the outcome of the first stage of the assessment process and is available at:

[www.ofgem.gov.uk/electricity/transmission-networks/critical-investments/strategic-wider-works/caithness-moray](http://www.ofgem.gov.uk/electricity/transmission-networks/critical-investments/strategic-wider-works/caithness-moray)

We are continuing to work with Ofgem on the Project Assessment stage and expect Ofgem to make its decision on the level of additional Allowed Expenditure later this year. Our forecast investment for this project is just under £1.1 billion (2009/10 prices) and we are working with Ofgem to facilitate revenue recovery commencing in 2015/16.

More information on the project and the project elements is available at:

[www.ssepd.co.uk/CaithnessMoray](http://www.ssepd.co.uk/CaithnessMoray)

These are the projects submitted to Ofgem for assessment during 2013/14. We anticipate making further submissions on other projects during the coming years and will continue to provide regular updates on all of our large transmission projects on our website. These can be found here:

[www.ssepd.co.uk/Projectshomepage](http://www.ssepd.co.uk/Projectshomepage)

### Transmission Investment for Renewable Generation

Transmission Investment for Renewable Generation (TIRG) is a funding mechanism that preceded Strategic Wider Works to provide additional funding for large transmission projects. We currently have one project in construction under this mechanism.

#### Beaulieu Denny

This project is the construction of a new 400kV overhead line from Beaulieu to Denny to replace the old 132kV overhead line. We are delivering this project in conjunction with SP Transmission.

Works completed during 2013/14 including reaching the half-way point in the tower construction programme. The north section, from Beaulieu to Fort Augustus, was also successfully constructed and energised allowing removal and reinstatement of the original 132kV overhead line.

Based on expenditure to date and known issues include the interface with SP Transmission’s section of the line, we still expect the final cost will be over £675 million. Further discussions continue to take place with SP Transmission and Ofgem on the co-ordination with the network in the south of Scotland and the timescales and full cost of completion.

More information on this project is available here:

[www.ssepd.co.uk/BeaulieuDenny](http://www.ssepd.co.uk/BeaulieuDenny)

### Generations Connections Volume Driver

The Generation Connections Volume Driver is the mechanism we are using to trigger additional allowances to fund connections infrastructure. In addition to contributing to the Needs Case for large transmission projects, funded under the Strategic Wider Works mechanism, new generation connections may require two types of network investment:

- Connection sole-use assets, which are paid for by the user; and
- Infrastructure sole-use and/or shared use assets, which are underwritten by the user during construction but paid for through use of system charges after construction.

It is the investment required for these sole-use and/or shared use infrastructure assets that is considered under this mechanism.

In our Business Plan, we specified the level of generation that we were reasonably confident would materialise in the initial part of the RIIO-T1 period and the baseline funding we need to deliver the infrastructure assets to meet this level of generation. We then proposed a mechanism to trigger additional allowances once the threshold of this baseline is reached, which Ofgem agreed with subject to renaming as a Volume Driver rather than a Revenue Driver to align with its RIIO policy. Our document setting out how this mechanism works is available here: [www.ssepd.co.uk/WorkArea/DownloadAsset.aspx?id=1474](http://www.ssepd.co.uk/WorkArea/DownloadAsset.aspx?id=1474)

During 2013/14, we have continued to develop projects to be funded under this mechanism and, as at the end of March 2014, we forecast we will deliver an additional 1,593MW and 7,659MVA of capacity over our baseline threshold during the RIIO-T1 period and our allowance will be increased to fund this work.

### Timely Connections

The growth we are seeing on the network is the result of connecting new renewable generation projects. We appreciate that applying for a connection is a significant step for those developing a new generation project and we are keen to make the process as smooth as possible. We also understand the importance of projects being delivered on a timely basis to enable developers to meet their own objectives.

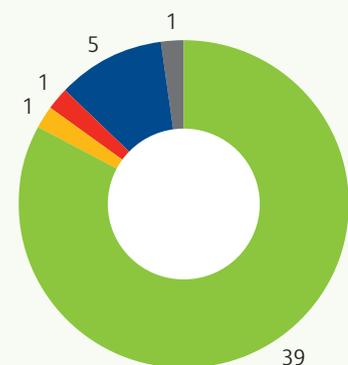
To try to assist those unfamiliar with the process for obtaining a connection to our transmission system, we developed our Generations Connections Guide during 2013/14, ahead of its publication in July 2014. It is available here:

[www.ssepd.co.uk/WorkArea/DownloadAsset.aspx?id=2855](http://www.ssepd.co.uk/WorkArea/DownloadAsset.aspx?id=2855)

SHE Transmission received 47 applications, via National Grid, from developers looking to connect to our network during 2013/14. Of these, 83% originated from onshore wind farms and the following diagram shows the breakdown by generation type. All of the applications we received were returned to National Grid to issue to developers in accordance with our commitments under industry codes.

We also completed three connection schemes during 2013/14, adding a combined capacity of 217MW to the network. The three schemes, all wind farms, were completed and successfully energised on schedule.

#### Applications for New Connections



## Doing our best to look after the environment

In developing our RIIO-T1 Business Plan, we set out the importance of operating responsibly, taking the long-term view to achieve growth while safeguarding the environment. As our plans turn into delivery, our activities continue to be underpinned by our objective to apply best practice in environmental stewardship and where this does not currently exist, developing these best practices with our stakeholders. To understand our performance against this objective, there are a number of incentives and outputs within the RIIO-T1 Framework that can be considered.

### SF<sub>6</sub> Fast Facts

Overall SF<sub>6</sub> leakage in 2013/14 was 259.4kg. This is higher than the previous year's leakage of 158kg and higher than our baseline target of 150.7kg. This leakage constituted 3.6% of total volume of SF<sub>6</sub> installed.

The 2013/14 SF<sub>6</sub> figure is distorted by the loss of 113kg of SF<sub>6</sub> in a single event due to rupture disc failure on a newly commissioned 275kV circuit breaker at Fort Augustus substation on 29 July 2013. If this exceptional event is removed from the loss figures then this results in an overall loss of 145.5kg – an 8% reduction on 2012/13 and well within the Ofgem agreed baseline target figure.

Measured loss due to actual leakage decreased from 95.8kg during 2012/13 to 71.8kg lost during 2013/14 – a 25% reduction.

### Minimising SF<sub>6</sub> Leakage

Sulphur hexafluoride (SF<sub>6</sub>) is used as an electrical insulator on extra high voltage networks as it allows electrical assets to be built in smaller sizes and closer together; reducing the amount of concrete, land and materials required to build a substation. However, SF<sub>6</sub> is also a potent greenhouse gas, so it is important for us to monitor any leakage of SF<sub>6</sub> from electrical equipment and to seek to minimise such leakage.

As part of the RIIO-T1 Framework, we are incentivised or penalised each year based on how we perform in terms of our leakage against a target that has been agreed with Ofgem. For 2013/14, our SF<sub>6</sub> leakage was 259.5kg, compared to our target of 150.7kg for the year.

As we continue to grow our network, the number of assets we have installed that use SF<sub>6</sub> will increase so we are working to reduce our losses wherever possible. During 2013/14, we completed schemes to remove the worst performing assets from the system and we also invested in SF<sub>6</sub> leakage detection cameras. The cameras have been proven to rapidly detect SF<sub>6</sub> leakage and allow faulty components to be identified and replaced without requiring an outage. In 2014/15, we plan to complete the trial of an innovative leakage reduction compound which can be applied directly to circuit breaker flanges to reduce leakage.



### Measuring our Business Carbon Footprint

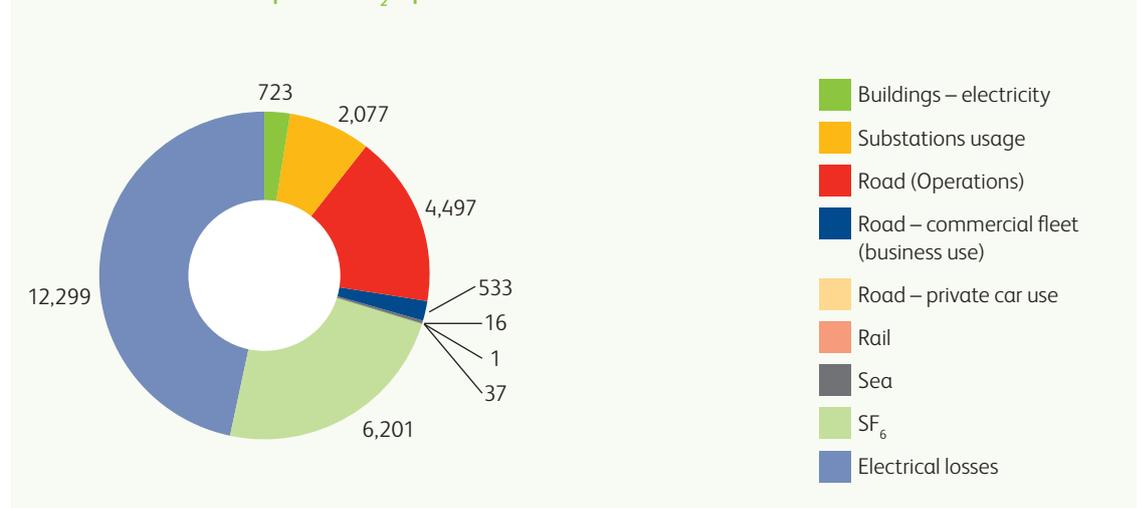
Our Business Carbon Footprint is a combined total of all greenhouse gas emissions, converted into their carbon dioxide (CO<sub>2</sub>) equivalent, produced as a by-product of our activities in the past year. 2013/14 is the first year in which we have applied the RIIO-T1 methodology for measuring our carbon footprint.

Under this methodology, our Business Carbon Footprint for 2013/14 was equivalent to 26.4 tonnes of CO<sub>2</sub> for SHE Transmission and its major contractors.

The breakdown is shown in the following chart.

Transmission losses contributed significantly to our Business Carbon Footprint and we are aware of this impact. In December 2013, we published our Transmission Losses Strategy and this can be found here: [www.ssepd.co.uk/workarea/DownloadAsset.aspx?id=1444](http://www.ssepd.co.uk/workarea/DownloadAsset.aspx?id=1444)

#### Our Business Carbon Footprint in CO<sub>2</sub> Equivalent Emissions in 2013/14



### Considering our impact on visual amenity

We continue to be conscious of the impacts of our assets on visual amenity and the differing views our customers and stakeholders have about how this impact should be managed and mitigated.

Throughout 2013/14, we have continued to engage with our statutory consultees on developing our plans to grow our network and appreciate the feedback provided both direct to us and also to Ofgem through its consultative exercises on our Strategic Wider Works projects.

### Environmental Discretionary Reward

The Environmental Discretionary Reward (EDR) is a voluntary scheme operated by Ofgem to encourage transmission owners to attain higher standards of environmental management and facilitate a low carbon economy. As part of this SHE Transmission submitted a Sustainability Statement to Ofgem for assessment, outlining the environmental best practices and initiatives undertaken during 2013/14.

This Statement had been developed as part of a consultative exercise with interested parties and details can be found here:

[www.ssepd.co.uk/Library/TransmissionPriceControlReview/TransmissionConsultations](http://www.ssepd.co.uk/Library/TransmissionPriceControlReview/TransmissionConsultations)

We are currently awaiting the outcome of Ofgem's assessment of our performance under this scheme.

## Developing a smarter network

Alongside our Business Plan, we published our Innovation Strategy, setting out our belief that “innovation with a purpose” is central to our activities, and this purpose is the implementation of innovation to deliver real benefits to our stakeholders. During 2013/14, we have utilised the mechanisms available to pursue activities in accordance with our Innovation Strategy that we believe will deliver against this purpose.

### Network Innovation Allowance

In 2013/14, SHE Transmission spent £1.1 million on 12 innovative projects through the Network Innovation Allowance (NIA). This is the first year that the NIA has been in place and we have used it to fund a diverse range of projects. Further information on the portfolio of projects that we have developed during the year are available at: [www.smarternetworks.org/Files/NIA\\_&\\_NIC\\_140731120253.pdf](http://www.smarternetworks.org/Files/NIA_&_NIC_140731120253.pdf)

NIA_SHET_0001 Sustainable Commercial Model For Networks	NIA_SHET_0005 Transformer Intrascope	NIA_SHET_0010 New Suite of Transmission Structures
<p><b>Start date</b> June 2013 <b>Duration</b> 22 months</p> <p><b>Description</b> 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.</p> <p><b>Expected benefits</b> 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.</p> <p><b>Progress</b> 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 Beaulieu–Denny transmission project case study is well underway.</p> <p><b>Further details</b> <a href="http://www.smarternetworks.org/Project.aspx?ProjectID=1180">www.smarternetworks.org/Project.aspx?ProjectID=1180</a></p>	<p><b>Start date</b> April 2013 <b>Duration</b> 2 years</p> <p><b>Description</b> 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.</p> <p><b>Expected benefits</b> 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.</p> <p><b>Progress</b> Research into an intrascope probe system that could be used for the in-situ analysis of the condition of internal insulation within transformers was carried out. This was followed within testing at the prototype level in a laboratory. Based on the outcome of this laboratory testing, we have also undertaken successful testing on de-commissioned transformers. Evaluation of the test results are ongoing and we are also looking to test the method on operational transformers. The outcome of the evaluation and operational testing will indicate the suitability of this approach as a transformer condition monitoring tool that can be used as part of our business as usual activities.</p> <p><b>Further details</b> <a href="http://www.smarternetworks.org/Project.aspx?ProjectID=1183">www.smarternetworks.org/Project.aspx?ProjectID=1183</a></p>	<p><b>Start date</b> December 2013 <b>Duration</b> 16 months</p> <p><b>Description</b> 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.</p> <p><b>Expected benefits</b> 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.</p> <p><b>Progress</b> 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.</p> <p><b>Further details</b> <a href="http://www.smarternetworks.org/Project.aspx?ProjectID=1302">www.smarternetworks.org/Project.aspx?ProjectID=1302</a></p>

### Network Innovation Competition

During 2013/14, we developed our Multi-Terminal Test Environment (MTTE) project and submitted it to Ofgem's Network Innovation Competition (NIC). This project aims to maximise the benefits of investment into high voltage direct current (HVDC) technology by all the transmission owners by:

- Supporting transmission planning and improving specification of HVDC schemes;
- Facilitating multi-terminal solutions and interconnected DC hubs;
- De-risking control interactions between converters connected in electrical proximity, and also with other fast acting power electronic controllers embedded within the AC network;
- Training and developing Transmission Planning and Operations Engineers;
- Undertaking post-commissioning scenario planning and network analysis;
- Modelling multiple HVDC technologies; and
- Enabling feasibility studies for facilitating future innovative converter topologies.

Ofgem agreed with our view that this project has the potential to deliver significant benefits and has allowed us £11.3 million of additional funding to develop this. The project is at an early stage and we are working closely with National Grid and SP Transmission to ensure that benefits and learning are realised.

We will provide more detailed updates as the project progresses but, in the meantime, more information can be found in our submission document at: [www.ofgem.gov.uk/publications-and-updates/electricity-network-innovation-competition-submission-she-transmission-ltd-%E2%80%93-multi-terminal-test-environment-mtte-hvdc-systems](http://www.ofgem.gov.uk/publications-and-updates/electricity-network-innovation-competition-submission-she-transmission-ltd-%E2%80%93-multi-terminal-test-environment-mtte-hvdc-systems)

### Turning innovation into business-as-usual

During 2013/14, a number of examples of learning have made the transition, into business as usual, allowing us to be more efficient, effective, co-ordinated and/or safer in our activities. The following are a few examples:

- Development of procedures for the deployment of **SF<sub>6</sub> cameras and Oxy-free paint** to detect, locate and repair leakage on assets using SF<sub>6</sub> in a rapid and efficient manner;
- Design of a **new 132kV cable** which could be installed into existing steel pipework thus reducing excavation and reinstatement costs and traffic disruption; and
- Use of **high resolution aerial surveys and photographs** to capture information on our overhead lines. These surveys provide an accurate record of the asset condition of our overhead lines and enable us to optimise our asset replacement strategy without compromising the performance of our network.

We also made progress on the deployment of simple Active Network Management (ANM) systems to enable the connection of renewable generation during 2013/14, with the first deployment complete in the North West of Scotland. Whilst further work is required to be able to declare this solution as business-as-usual, this work has been funded directly by SHE Transmission, outside of our activities funded under the NIA and NIC, in response to feedback from our customers and stakeholders. We are continuing to look at how ANM practices may be more widely used on our transmission network to make further progress with this approach.

## Our costs and revenue for 2013/14

In Appendix A to our Business Plan, we set out our best view of our forecast expenditure and associated revenue for the eight years of the RII0-T1 price control. As described in the previous sections of this document and our Business Plan, there was a significant level of uncertainty around the timing of our investment on large capital projects at the time of developing our Business Plan.

This section and the Totex table provided in Appendix 1 provides an update on our performance in 2013/14 and an indicative forecast of our anticipated costs for the remainder of the RII0-T1 period. All costs referred to in this section and the Appendix are in 2009/10 prices to aid comparison with our Business Plan.

### Our costs for 2013/14

We are aware that network costs are ultimately borne by consumers so it is essential that we are efficient in our activities to minimising this burden as far as possible. Excluding Beaulieu Denny, our total expenditure was £149.6 million in 2013/14, equivalent to just under 82% of our Allowed Expenditure.

We explain the main difference below, noting that much of this apparent underspend is due to delay in investment and connections that will catch up in time.

#### Baseline Capex and Opex expenditure

We have underspent £36.9 million for load-related baseline works. This relates either to customer connection assets, and is due to customer delays, consenting delays, scheme cancellations along with some schemes completed earlier in the previous price control period, or to baseline wider works projects such as Beaulieu Blackhillock Kintore and Beaulieu Mossford (substation) where phasing on the project has moved expenditure between adjacent years.

We were £1.5 million underspent on our Opex expenditure, predominantly due to an underspend on Closely Associated Indirect costs within the year.

#### Generation Connections Volume Driver expenditure

Expenditure against projects funded under the Generation Connections Volume Driver was also underspent by £6.1 million. This reflects minor phasing changes to the timing of the projects we are delivering under this mechanism during the initial part of the RII0-T1 period.

#### Strategic Wider Works expenditure

We overspent on our allowance for Kintyre Hunterston by £4.3 million. This was due to us progressing works early on this project. Within Appendix 1, we have assumed an allowance for Caithness-Moray in line with our submission to Ofgem. However, this is still subject to the Project Assessment and we expect Ofgem's decision in due course.

### Our forecast costs

Appendix 1 provides our forecasts for the remainder of the RIIO-T1 period. We currently anticipate our total expenditure across the eight years to be slightly under £2.8 billion, excluding Beaully Denny and any future Strategic Wider Works projects that have not been submitted to Ofgem as at the end of September 2014.

The variances between our forecasts and allowances reflect the timing of connection projects and is largely driven by the activities of developers. The underspend on load-related baseline capex relates to costs for connection sole-use assets, which are paid for by the user. The allowance is therefore indicative only.

There are also some minor variances in relation to Generation Connections Volume Driver. This reflects that the mechanism generates additional allowances divided evenly over an assumed average four-year construction period for these projects, rather than in direct relation to the expenditure profile. This is adjusted following completion of these projects to reflect the outputs delivered.

### Beaully Denny (TIRG)

Beaully Denny is excluded from total expenditure under the RIIO-T1 Framework as the mechanism used to fund this project, TIRG (described above), is not part of Ofgem's definition of 'Totex' (or Total Expenditure). This is because TIRG pre-dates the RIIO-T1 Framework and is subject to different financing parameters. For the same reason, Beaully Denny, as a TIRG project, is not included in the tables provided in Appendix 1 as it is subject to different reporting arrangements. However, this project is a significant investment for SHE Transmission and we therefore believe it is appropriate to provide an update on the costs associated with it.

In 2013/14, we invested £140.4 million in Beaully Denny. This is greater than our allowance for the year due to re-phasing of elements of the project from previous years and also issues including the interface with SP Transmission's section of the line. Further discussions continue to take place with SP Transmission and Ofgem on the co-ordination with the network in the south of Scotland and the timescales and full cost of completion.

### Our Revenue

In our Business Plan, we forecast that our revenue for 2013/14 would be £225 million. Our actual revenue for the year was £184.1m, £41m less than originally envisaged. This was lower primarily due to the phasing of our Strategic Wider Works projects. In developing our Business Plan, we anticipated some of these projects commencing earlier than seen.

During 2013/14, we received no revenue associated with projects funded under the Strategic Wider Works mechanism, although we have incurred costs. The allowances agreed with Ofgem for Beaully Mossford and Kintyre Hunterston include provision for the recovery of costs incurred during 2013/14 and 2014/15 on a time value of money neutral basis and we will recover these in our revenue for 2015/16. We also expect to recover revenue from this year for Caithness Moray on the same basis, (subject to Ofgem approval).

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