

Summary

Our objective is to achieve world-leading safety performance.

To attain this goal, we have defined two areas of focus for the period 1 April 2015 to 31 March 2023 (the RIIO-ED1 period):

Keeping our customers and the public safe

During the RIIO-ED1 period we will focus on:

- Maintaining a high awareness of our equipment and operations as a hazard to the public – engaging across the community to help keep people safe who are at risk of inadvertently coming into contact with our overhead lines or underground cables.
- Smart Meters – full engagement and planning with suppliers to ensure this extensive programme is rolled out safely.
- Copper theft – proactive measures to reduce the likelihood of copper theft and to protect those involved (both the public and our customers).

To meet our objective of world-leading safety performance, *we are striving to ensure that no one gets injured from our equipment or operations*. Our plans are intended to help achieve this goal.

Ensuring our staff and contractors work safely

With a focus during the RIIO-ED1 period on:

- Deploying our behaviour-based Safety Family concept across our business and contracting work force.
- Realising the benefits of robust new Safety Management System to ensure our procedures and processes keep our operations / people / our staff and contractors safe.

Our target is zero safety incidents among our workforce of both staff and contractors.

One of our 12 Commitments describes our approach to safety during RIIO-ED1:

Commitment 10 – Having the best safety record in the industry won't make us complacent. We will keep looking for ways to keep you safe around our equipment.

Summary of our plans...

Our **objective** is... to achieve world leading safety performance.

During the RIIO-ED1 period our **targets** are:

Public safety	No one gets injured from our equipment or operations
Staff and contractor safety	Reduce safety incidents within our workforce (staff and contractors) to zero

Regulatory policy

In March 2013, Ofgem published its [strategy decision](#) for the RIIO-ED1 period.

The long term safety of electricity distribution networks is set out as a key priority for Ofgem. However, Ofgem recognise the role of the Health and Safety Executive (HSE) as licensee's primary regulatory authority for safety matters. Accordingly Ofgem decided that its regulatory policy is to require compliance with legislative and regulatory framework monitored by the HSE.

Of relevance to the safety of the network are asset health indices, criticality indices and composite risk indices. More information about these measures of the state of the network can be found in [A reliable supply of electricity](#).

The proposals described in this paper are aligned with the regulatory policy, without exception.

An explanation of how our proposals meet regulatory policy requirements is provided in the Appendix - Regulatory policy.

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Introduction

Safety is at the heart of our business, and is the first of [SSEPD's core values](#).

We believe all accidents are preventable, so we do everything safely and responsibly or not at all.

We believe it is vital that safety underpins all of our actions and outputs. The safety of our customers, the public, our contractors and staff is the first thing we consider in everything we do.

We believe good safety is good business, and companies that are good at safety will also be good at business. Leading global companies such as DuPont and the Wood Group have proved this for many years and we aspire to develop and deliver world class safety performance for our wide family of stakeholders.¹

We encompass safety in all of our business practices and ensure our service, innovative processes and efficient outputs are all delivered in a manner that delivers exceptional safety performance.

Our approach to safety

Our approach to safety is built upon the very simple premise that all accidents are preventable. We care deeply about the health and safety of our staff, contractors, customers and the public, and believe we owe them a duty to operate as safely as possible. The vast majority of incidents, if not all, happen as a result of behavioural issues. We believe that in the medium to long term our approach must address these in order to achieve our ultimate objective of being the safest utility in the world.

¹Background information about safety performance in these two examples can be found at <http://www.dupont.co.uk/> and <http://www.woodgroup.com/>

Our safety approach permeates all parts of our organisation (**Figure 1**).

The SSE Group prioritises safety at Board level. Every meeting of the SSE Board and senior management starts with safety, and all incidents are reviewed by the leadership team to identify learning and what improvements can be implemented.

SSE employs a Group Safety, Health and Environment (SHE) Manager who is responsible for establishing, implementing and maintaining the SSE SHE Policy, which is formally adopted by the SSE plc Board. This policy sets out SSE's intentions and principles in relation to its overall SHE performance and provides a framework for action that reflects the culture and values of SSE and is appropriate to the nature, scale and impact of the Group's operations.

The Group SHE Manager uses the Safety Management Standard to implement the Policy, which under four key areas – Plant, Process, People and Performance – provides standards, systems and procedures for every area of SSE's operations for guidance of and use by all staff. The heads of each business, including SSEPD, are in turn responsible for ensuring the rollout of and engagement with the content of the Policy among their staff, contractors and, as appropriate, wider stakeholders.

Local Safety Groups supported by Managers are very active throughout SSEPD and encourage staff at all levels to get involved in improving SHE performance. This promotes genuine two-way communication that is a vital part of a positive SHE culture.

As well as accident and injury prevention, SSEPD's focus on safety encompasses health promotion. SSE's Health and Well-being Action Plan provides the basis for workplace health programmes and initiatives, all designed to help employees be in good shape for work. SSE is committed to advising employees and providing a resource to help develop a healthier lifestyle and regularly runs campaigns and road shows offering advice and help on matters such as diabetes awareness, prostate cancer awareness, asthma awareness and work / life balance.

Figure 1 Safety in our organisation

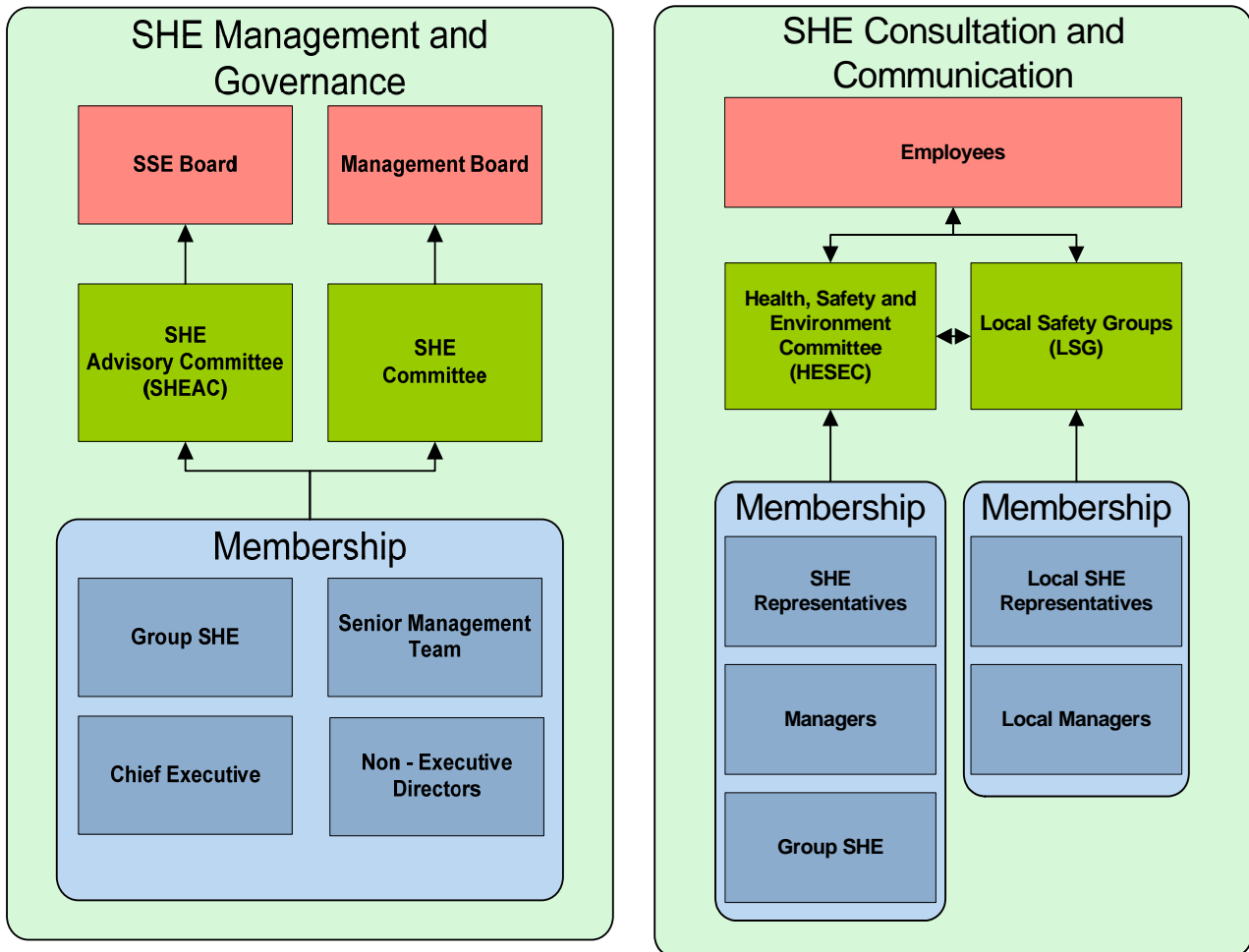


Diagram illustrating the entities responsible for safety at SSE board and senior management levels. SSEPD has representation in the SHEAC.

To reflect the nature and scale of SSE’s operations, a number of Health, Safety and Environmental Committees (HeSECs) exist across the company, and each business, including SSEPD, has Local Safety Groups (LSGs).

Acting safely

In SSEPD we believe we should operate safely or not at all.

Our approach to safety is centred on behaviour, and is underpinned by our company values – safety, sustainability, excellence, teamwork, service, and efficiency. All of our colleagues, up to and including the Chief Executive, are measured against these values and safe behaviour is first-and-foremost.

This approach is wide-ranging and covers all those who are affected by our operations – the public, our customers, our suppliers, our contractors and our people.

To achieve our objective of world-leading safety performance, we recognise that we must use both systems and processes and act and behave safely:

- The stewardship of our assets is a key component of delivering safety. Our accreditation to PAS55 - the British Standards Institution's (BSI) Publicly Available Specification for the optimised management of physical assets - is an important indicator of our commitment to the safe operation of our networks. In support of our superior asset stewardship we have introduced a detailed **Safety Management System (SMS)** (**Figure 12**) that encompasses 14 key business areas. Our SMS is the foundation upon which the safety of our operations is forged.
- Recently we introduced the **Safety Family** concept to our business (**Figure 11**). This is a behaviour-based system that is designed to improve the safety of our staff and contractors by identifying and promoting specific actions that we all can take to keep ourselves safe whilst at work. This approach goes beyond rules to try to change the way people think and behave.

The RIIO-ED1 period will be challenging in a world full of uncertainty. We believe it is important we ensure our plans are supported by a safety performance that is exceptional in order to fulfil our stakeholders' expectations and deliver our stretching business goals. Our journey to world class safety performance will be driven and underpinned by our exceptional asset stewardship, our strong safety systems and our leading edge, behaviour based Safety Family programme.

Many people believe that improving safety costs money. For certain specific cases this may be true, but in the long run improved safety will always lead to improved business performance. Our

Business Plan does not have a specific cost included for safety because we believe that safe behaviour is an inseparable element of all our activities, rather than a stand-alone optional activity.

It is our belief that safe working is an intrinsic part of what we do, and it isn't possible to separate this from the rest of our business. Many of the principles discussed with our people during Safety Family training are just as relevant to good business practice.

Customers' views

Over the last few years we have discussed our approach to safety with our key stakeholders. This discussion has shown us the different ways that our customers, suppliers, contractors, staff and other stakeholders view our approach to safety.

Within the general public we found an expectation that we would be acting safely at all times and considering the welfare of our colleagues, contractors and the public.

"SSEPD knows what it's doing regarding safety";

We also found that safety is a priority for our customers, with 83% of those surveyed confirming that a safe supply of electricity was very important to them.

When asked specifically about our approach to safety, 94% of respondents agreed with our approach to keeping people safe around our network.

"Very supportive, you need to do more to educate customers about this. There should be a collective approach to safety by all the DNO's to identify and control safety concerns for the good of all the UK, not just specific DNO's areas or groups. Share best practice."

People who have experience of our approach to safety gave us positive feedback about our activities:

"SSEPD is seen as a leader in our industry and is well regarded – you should be proud".

With others recognising our work to improve safety in the agricultural sector:

"the National Farmers' Union is a good example [of SSEPD working in partnership with others on safety] and working with schools to educate",

and,

"[I] thought the yellow labels [height warnings supplied free to agricultural vehicle retailers] was a great idea"

Others were keen to share ideas for improvements:

"It would be good if there were up-to-date maps available for customers (farmers etc.) which show where the lines/cables are around their area."

"think of the needs of non-English speakers given the rise in the number of migrant workers."

Participants indicated that they would like us to extend the Safety Family concept to everyone with some participants saying:

"Introduce more Toolbox Talks focused on safety issues at large scale industry events and give talks to larger building contractors who are persistent offenders when it comes to hitting lines or digging up cabling."

"Work more with schools, sports clubs and councils to educate regarding safety. Also work with contractors who are the 3rd parties who get hurt."

This section illustrates how we have engaged with stakeholders at dedicated engagement events as part of the RIIO-ED1 process and through discussions that have taken place over recent years. The impact of the feedback we have received is shown in this document. For example on [page 19](#) we discuss our plans for RIIO-ED1 to maintain a high awareness of our equipment and operations as a hazard to the public, in accordance with the participant feedback above.

Focus 1

Keeping our customers and the public safe

To meet our objective of world-leading safety performance, we are striving to ensure that no one gets injured from our equipment or operations. Our plans are intended to help achieve this goal.

This section is about the challenges of ensuring customer and public safety, and how we will deliver an improved service in this area. It contains our plans for:

- Reducing risk of injury to the public through our operations and use of our equipment, including:
 - Improving the safety of the public from contact with our overhead lines; and
 - Addressing safety issues created by third parties hitting our underground cables.
- Helping electricity suppliers deliver smart meters safely.
- Reducing the impact of copper theft on our customers.

By acting on these plans we will contribute to keeping injuries to the public as low as possible during the RIIO-ED1 period.

Our obligations

How we conduct our activities safely is regulated by primary legislation.

The most important pieces of legislation we work under are:

- The Health and Safety at Work Act 1974;
- The Management of Health and Safety at Work Regulations 1999; and
- The Electricity, Safety, Quality and Continuity (ESQC) Regulations 2002.

Together, these regulations set out the minimum standards we are required to follow.

We believe we should aim exceed these standards wherever possible, and explore innovative ways to address new and emerging safety challenges in today's world. This aim is reflected in our [Innovation Strategy](#) – one of the key objectives which we assess potential research and development (R&D) projects against is to 'Maintain and improve safety, health and environmental performance'.

Historical approach to public safety and our performance

Our enduring responsibility in this area is to safeguard those carrying out recreational or working activities where there are substations, overhead lines and underground cables. Children in particular are at risk near our overhead lines and substations and special measures are required to mitigate this risk.

We tackle these issues using a two-fold approach:

- We ensure our equipment carries prominent warning signs, is guarded properly and complies with and, where possible, exceeds legislative requirements. We have identified and invested in security measures at our highest-risk substations, including in systems which alert us to the presence of intruders using alarms and cameras linked to our 24-hour manned Security Bureau; and
- We believe we must educate those who are most at risk. We issue a number of annual mail campaigns to schools, landowners and fishing organisations (**Figure 2**). These include offers of visits from our experienced field staff who regularly spend time visiting concerned stakeholders including farmers and head teachers.

Figure 2 Examples of SSEPD safety information leaflets



Confidential statistics reported to the HSE by from electricity distribution operators for injuries involving the public have shown a rising trend for the last seven years. In contrast, our performance has generally been better than average and with an improving trend (Figure 3). We attribute this improvement to activities carried out by our colleagues to improve public awareness of safety around our equipment and operations.

Figure 3 Injury statistics involving members of the public, collected by the Health and Safety Executive

All Injuries	2006	2007	2008	2009	2010	2011	2012	Average
Industry Average	24	22	27	31	41	41	29	31
SSEPD	24	13	36	21	22	29	9	22

Drivers for change

While our underlying approach to safety will not change, there are some changes in the wider environment in which we operate that will impact on our approach to safety on behalf of our customers and the public. In particular, we are aware of:

- Changes to the risks around our equipment
- The planned roll-out of smart meters.
- The ongoing theft of copper.

The latter two of these will require careful management during the RIIO-ED1 period, and the first will be managed with a longer-term perspective.

All of these developments represent hazards for our stakeholders and costs to our business (which in turn impact on customers' bills). We intend to address these specifically during the RIIO-ED1 period by using innovative approaches that are both efficient, and improve customer service.

Changes to the risks around our equipment

Our overhead lines and underground cables have unfortunately featured in energy industry injuries statistics for many years. Ongoing changes in third party behaviour, including the use of larger farm vehicles and increasing numbers of parties digging in our roads, have the potential to exacerbate this risk. We have plans to address these issues and improve our performance in this area going forwards.

The planned roll-out of smart meters

The Government's programme of decarbonising the energy sector is being led by the introduction of smart meters. This will be a huge exercise, with around 29 million existing electricity meters scheduled to be swapped for new, [smart meters](#) across the UK, and 3.7 million alone on our networks before the end of the decade.

The logistics of this operation are very complicated and a large workforce will be required to install the smart meters and rectify defects; these people will require considerable training. The large number of meter exchanges and newly trained meter operatives provides a considerably heightened potential for incidents if not managed correctly. Our plans for our role in this programme will ensure the safety of customers, other operatives and our people.

The ongoing theft of copper

The global price of copper has risen steeply over recent years (**Figure 4**). This, coupled with the economic downturn, has led to a steep increase in thefts of copper cables across the industry (**Figure 5**).

This practice is both extremely dangerous to the thieves and impacts negatively on our customers when they lose their electricity supply, and there is also an element of risk to the public when copper earth conductors from substations are stolen, removing the protective earthing mechanism. This is an area we have already begun to successfully address and have reduced our incidents in comparison to other DNOs. We will continue this work with other parties over the RIIO-ED1 period.

Figure 4 Price of copper

Historical Copper Prices \$/lb

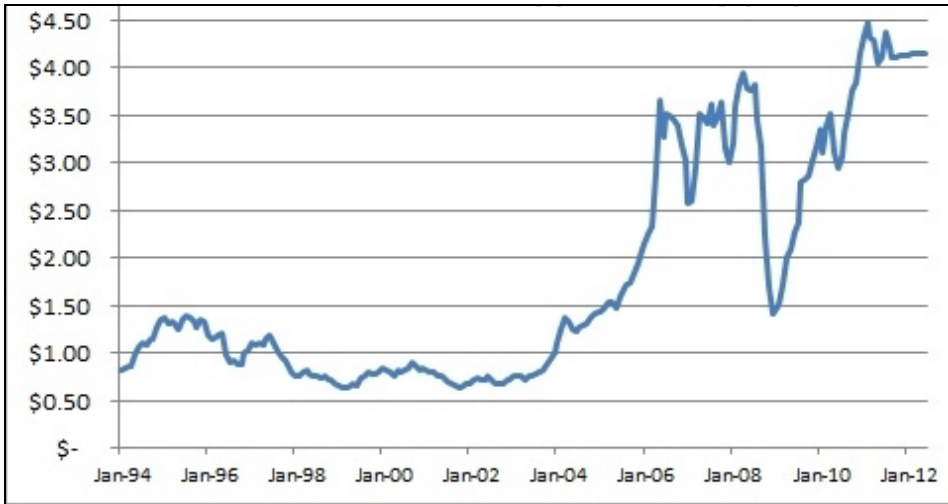
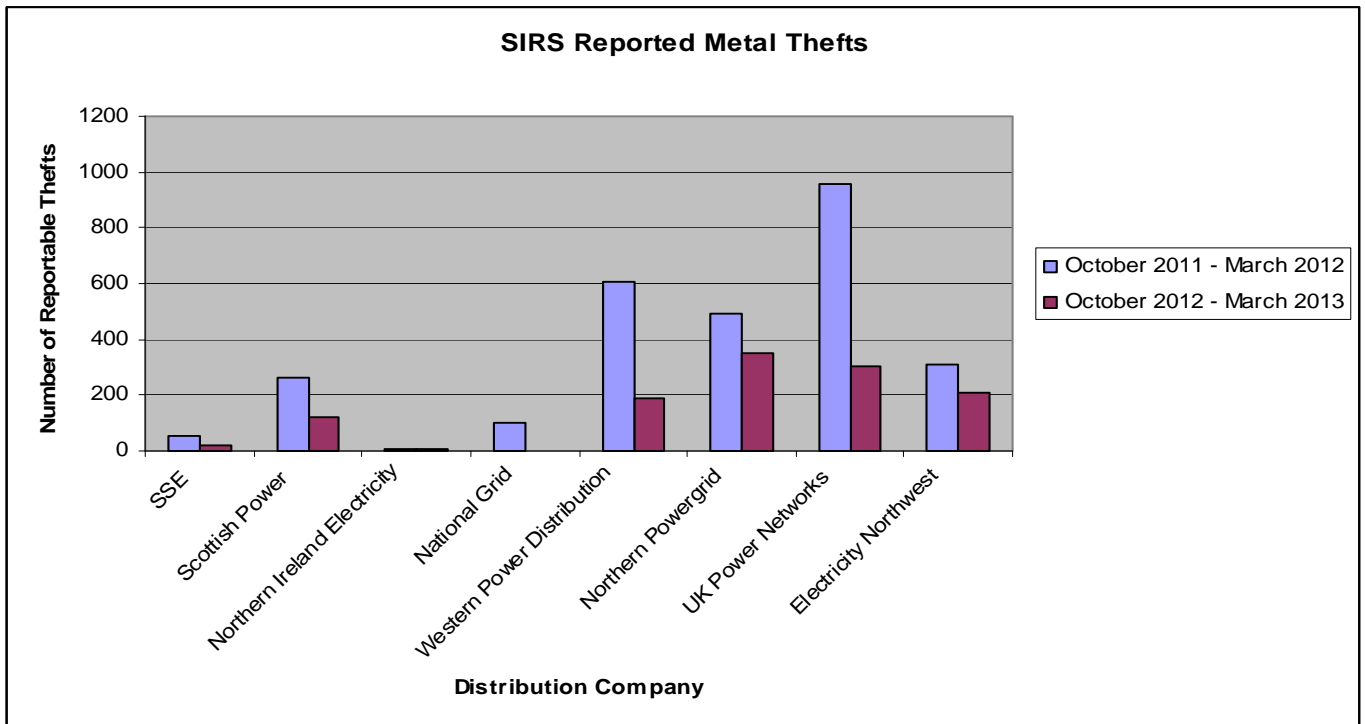


Figure 5 Copper theft incidents²



² SIRS refers to the Security Incident Reporting System, which was commissioned by the Electricity Security Managers Forum (ESMF) in 2008 to provide a national scheme to collate security incident data and provide a resource for the various agencies charged with ensuring security on the electricity network.

Our plans for the RIIO-ED1 period

Improving the safety of the public around our equipment and operations is not a quick or easy job. We cannot be out there protecting people day and night from rash actions, so must instead work hard to make people aware of the risks and how they can protect themselves.

This is an important part of our activities and, based on many years of sharing our safety commitment with people who might be at risk, we feel like we are making progress.

Looking forward, we want to build on that progress both by continuing the education message that is working well and widening it out to encompass new risks. Thus we have identified three main areas of activity during the RIIO-ED1 period:

- Maintaining a high awareness of our equipment and operations as a hazard to the public.
- Helping electricity suppliers install smart meters safely.
- Reducing the impact on our customers of copper theft.

Our safety ethos tells us we want to have zero injuries to the public around our operations – this is what we will work for. Unfortunately we recognise that this is extremely hard to achieve as we cannot control the actions of all members of the public. But will do as much as we can to make sure that incidents do not happen and our plans will make sure we stay focused on that during the RIIO-ED1 period.

Maintaining a high awareness of our equipment and operations as a hazard to the public

Education and awareness is the bedrock of safety around electrical equipment and operations.

There are a number of basic things that we must get right to underpin this process. These include:

- Maintaining and improving our mail shots to schools, angling clubs and landowners (**Figure 2**);
- Continuing to visit schools and engage with both teachers and pupils;
- Ensuring the signing and guarding of our road works is to the highest standards; and
- Inspecting and maintaining our overhead lines to ensure their warning signs are in good condition, the anti-climbing measures are intact and line heights have not been compromised.

Improving the safety of land users from contact with our overhead lines

For reasons of efficiency, electricity is mainly distributed in rural areas through overhead lines. This is generally a very safe way to operate, but unfortunately has led to a small number of injuries and fatalities over the years. As agricultural machinery gets bigger, in order to gain efficiencies of scale, we have seen a growing number of incidents of this type.

Our approach in this area centres on three main activities:

- Increase the height of our overhead lines;
- Use innovative ideas to inform the agricultural community better about the dangers; and
- Put some lines underground on a risk-based approach.

In 2002 the primary safety legislation that governs our industry was replaced by the Electricity, Safety, Quality and Continuity (ESQC) Regulations. These new regulations removed previous derogations for overhead lines that were lower than the required statutory height. In our operational area in the north of Scotland a significant number of our lines were affected, as they were built to the lower heights permitted by the derogations in order to keep down costs at that time.

Accordingly, in 2008 we agreed a risk-based plan with the Health and Safety Executive (HSE) to increase the height of around 26,000 overhead line sites over a 12 year period. We have accelerated this programme and now intend to complete it by 2018. The total cost of these works will be £41 million, including £2.6 million in the RIIO-ED1 period.

Following the introduction of the regulations in 2002 we anticipated increasing use of larger machinery, and it is our current policy to build new overhead lines at a height greater than that required by statute. All of the investment proposals in our Business Plan have safety of the public as one of the main design criteria.

Security the safety of land users, and our ongoing relationship with them, is very important to us. We have developed and put in place a [Grantor's Charter](#) that clearly sets out our responsibilities in this area.

However, we believe it is important we develop an industry-wide approach to this issue to ensure that all land users are protected, not just those associated with our networks. Following discussions with the Scottish Government and the National Farmer's Union, we have approached the Energy Networks Association and proposed discussions with the other GB energy network

operators to establish a common policy in this area. We intend to continue to lead in the development of this new policy and will implement it as soon as possible.

More generally, we are active members of the Energy Networks Association Safety Groups and have contributed to a number of working parties that produce safety guidance published in the public domain. Recently we chaired a group that produced 'ENA Safety Instruction Number 6 – Post Trip Manual Reclosing of Electricity Distribution Circuits'. This document was written following the death of a farm worker, and gives national guidance to DNOs with regard to best practice when re-energising circuits after a fault. We believe this will contribute to a substantial decrease in the rate of deaths and injuries to the public from contact with overhead lines.

SSEPD is one of the most [innovative energy network operators](#) and we see new and innovative approaches as essential to keeping our approach to safety engaging and meaningful to the public. We have already produced overhead line height warning stickers and distributed these amongst farm machinery manufacturers and distributors, which has proved a popular and successful initiative (**Figure 6**).

Figure 6 SSE Estates Project Manager Norman MacIver holding one of our overhead line warning stickers



Overhead lines are an efficient and cost effective way of distributing electricity to rural communities. However one of our recent innovative ideas for cable laying, the cable plough, now allows us in certain situations to lay underground cable much more cheaply and safely (**Figure 7**).

Using a risk-based approach we have identified this as an area for investment. It is our intention to underground up to 60 miles of overhead lines during the RIIO-ED1 period which will primarily address [local visual amenity concerns](#), but will also improve safety. These measures will improve the safety of rural areas and improve the reliability of supply to customers.

Figure 7 Cable plough in operation in Islay



Addressing safety issues created by third parties hitting our underground cables

Underground cables safely distribute electricity in most urban areas of the country. However, when third parties excavate in the vicinity of our underground cables we are often faced with damaging situations that unfortunately can also lead to injuries. Currently we have around 3,500 incidents of damage to our underground apparatus each year.

By far the best solution to this issue is better education of those involved. We already provide plans of our equipment locations free of charge online³, but believe we need to do more in the area of prevention and education.

Going forward, we propose a two-fold plan to address this:

³ Follow www.ssepd.co.uk/Safety/WorkingSafely/ to find details of our Mapping Services team.

- From an analysis of our fault response activities we can ascertain who the most 'at risk' parties are. We plan to target these parties in an education campaign in which our most experienced staff will visit them and meet with operatives carrying out works.
- We plan to set up a routine procedure for visiting active sites and educating those involved in safe digging techniques.

Helping electricity suppliers install smart meters safely

Smart meters will be installed in every domestic and small commercial property in GB by the end of 2021. The responsibility for installing this new metering equipment has been mandated to electricity supply companies who will use their meter operative agents to undertake this work on their behalf. We expect that the majority of meter installations will be undertaken by suppliers' agents without any need for involvement by ourselves. However at a small percentage of locations an operator responsible for exchanging the metering equipment will encounter pre-existing network related issues associated with our supply equipment. In these instances we will need to attend site to resolve the issue reported.

Over the past three years SSEPD has worked with other DNO's through the ENA Smart Meter Operations Group (SMOG) to clearly define and categorise the types of issue that will be encountered by meter operatives. This work has resulted in changes being made to industry governance to ensure that issues with DNO equipment located at the customers supply position are reported and managed in a consistent way and with appropriate prioritisation being allocated for each issue type identified.

The categories identified are:

- Category A – Emergency. Work in this category will generally have safety implications and our prompt presence on site will be required. Examples of jobs falling into this category include cut-outs operating hot or physical damage to our equipment which requires immediate action. When we receive notification of jobs falling into this category we will respond to and manage them as we do now; we aim to attend site within three hours (four hours outwith normal working hours). Our first priority will always be to make safe.
- Category B – Remedial work required before a smart meter can be installed. There are a number of examples which fall into this category including specific issues associated with cut-outs which prevent the operation of our equipment but pose no immediate risk to the meter operative or our customers. Examples include: operative unable to remove cut-out fuse and issues relating to equipment design. When a job in this category is reported we will take action to remedy the situation and allow the smart meter can be installed. Work will be scheduled in line with the standards that are currently being developed with suppliers, e.g. through DCUSA Change Proposal DCP153 (see below).

- Category C – Asset condition report. These jobs have no immediate impact on smart meter rollout and no immediate safety concern but we will want to be made aware of issues relating to the condition of our assets. Examples include issues which may impact on the ability to adequately seal cut-outs or equipment with a rating of less than 60A. Where it is determined that remedial action is required work will be scheduled according to our current standards and priorities, i.e. as business as usual.

In order to understand the likely scale of network related issues that will be encountered for each category during the installation of smart meters we have surveyed approximately 6,000 properties across our SEPD and SHEPD licence areas. The result of our survey has indicated that meter operatives will encounter category A and category B issues at 4% (SEPD) and 3.5% (SHEPD) of our supply terminations. The overall rate for all categories was found to be around 7%.

We have worked with the National Skills Academy for Power (NSAP) to ensure that the training standards for new meter operatives are appropriate and that the safety elements of training modules fully meet our requirements. We will continue to engage with NSAP and the broader meter operator community through the industry 'Smart Metering Benchmarking Group'. This is a forum managed by NSAP which brings together metering industry lead trainers and operational experts from DNOs.

We have also been working with DECC, who are overseeing the programme, and suppliers to understand where and when they will be installing smart meters. At this time suppliers plans are relatively vague however we understand that the majority of smart meters will be installed after 2015 and hence fall within the RIIO-ED1 period. We will continue to work with these organisations to ensure that we are kept informed of their plans as they develop.

Throughout the programme our priority will be to attend to category A and category B issues within defined timescales. We are currently working with suppliers and meter operator organisations to develop a service level agreement – DCUSA change proposal DCP153⁴ which will define the required response times.

Smart meters will be installed at 3.7 million properties within our two licence areas; we estimate that in total our staff will be required to assist suppliers at up to 185,000 different locations with the

³ <http://www.dcusa.co.uk/Public/CP.aspx?id=174>

majority of visits occurring during the RIIO-ED1 period. We will ensure that we have sufficient, appropriately trained operatives available to meet the requirement of this additional workload.

Our principle aim associated with the installation of smart meters is to ensure that we can provide sufficient support to suppliers and their agents to enable them to undertake their [smart metering](#) obligations in a safe way.

Safety concerns surrounding the smart meter rollout are centred on two main issues:

- The removal of the old meter and the installation of the new, smart meter (which is the responsibility of the energy supplier); and
- Pre-existing, network-related defects within the existing meter installation that represents a risk to the operative (which is the responsibility of the network licensee).

Suppliers are already engaged in an extensive training programme to ensure they have sufficient people to install the new meters. As described above, we are playing our own part in this effort and are training additional people to deal with defects found during the rollout.

Reducing the impact on our customers of copper theft

Copper theft is a major cause of concern across all of the main infrastructure industries, including electricity and rail. With the scrap value of the stolen metal being far lower than the replacement cost of the assets stolen, it costs the network business millions of pounds every year. It is also evident that the possible knock-on societal impact has not yet been fully experienced, for example the severity of consequential power cuts, but may be felt in the future if it continues at current levels.

Our infrastructure has come under attack across a range of areas, including:

- Wood poles being cut down and copper wires stolen;
- Substations being broken into, switches opened and copper internals stolen;
- Underground cables being cut into and pieces removed; and
- Earthing stolen from substations.

In virtually all of these cases the equipment is live at the point of third party interference and the thieves rely on the response of our protection equipment isolating and de-energising (or 'shutting

down') that part of the system to make it safe. Unfortunately this does not always happen, and there have been numerous incidents involving thieves being killed or badly burned whilst trying to extract copper within the industry (**Figure 8**). To date there have been no fatalities from this activity at SSEPD sites.

These incidences frequently cause large numbers of customers to lose supply for extended periods. Loss of power supply from the grid can cause extensive issues at city and household levels from traffic light failure, large areas being left in total darkness, and heating and medical equipment failure, with the negative consequences that these could bring (such as road traffic accidents, fires from use of candles, and risk to health).

Figure 8 Injuries during copper theft in the industry

2011/12	3 killed and 24 injuries
2012/13	2 killed and 7 injuries

Government policy and police actions are certainly having a positive impact on reducing copper theft, but there is still a worrying level of activity that requires positive action by us. Our two networks are possibly the least affected of the GB electricity networks (**Figure 5**) and we believe this is the result of actions we have already taken.

We are investing heavily in substation security measures and we intend to extend this programme in the RIIO-ED1 period.

SSEPD aims to provide enhanced security at six 132kV substations and 600 33kV substations. CCTV, intruder alarms and access controls will be provided at these sites whilst providing further security through the installation of high secure doors. These works will provide the security required to protect the public and avoid unwanted access and potential theft of vital electrical equipment such as electrical earthing and switchgear protection batteries.

Innovation and efficiency of programmes is key to ensuring our customer service is maintained at the current high levels. We are looking at innovative ways to deter theft going forwards, with special paints, new materials, electronic access to key buildings through high-security doors and material tracking all being investigated as part of these efforts.

During 2010-2015, we will spend approximately £6 million improving security in 300 substations and we intend to secure a further 500 sites during the RIIO-ED1 period at a cost of approximately £10 million.

Risks and uncertainties

We believe our plans described above recognise the major risks and uncertainties associated with public safety that we can envisage looking forward to the RIIO-ED1 period. We are not aware of any European or UK legislation changes on the horizon that would affect or change our plans.

We see the biggest risk in this area as copper theft, where certain strategic locations could be targeted by thieves (including large-scale theft of earthing copper from our key grid points, which could lead to wide-scale power outages). These locations are at the forefront of our investment plans and we intend to ensure their vulnerability is reduced to a minimum.

Conclusion: our outputs and expenditure on public safety

What we are going to do

To meet our objective of world-leading safety performance, we are striving to ensure that no one gets injured from our equipment or operations. Our plans are intended to help achieve this goal.

This will be measured annually, and figures will be collated and published by the Health and Safety Executive.

How much this is going to cost

Safety is an integral part of what we do as a responsible operator of our electricity networks. Therefore, the costs associated with the activities described above are included in the 'business as usual' costs in our Business Plan.

However, the [main investments that will improve public safety](#) during the RIIO-ED1 period are set out in **Figure 9**.

Figure 9 Significant investments that will improve public safety during the RIIO-ED1 period

Investment Focus	Cost (£ million, 2012-13 prices)	Output	Benefit
Increase height of low overhead lines (driven by Electricity Safety, Quality and Continuity Regulations)	2.55	Further 2,200 sites to be cleared by 2018	Fewer third party incidents
Substation security investment	10.4	Improve security at 500 substations	Fewer third party incidents and less customer inconvenience due to loss of supply
Undergrounding of overhead lines	25.5	Underground 60 miles of power line	Fewer third party incidents

Focus 2

Ensuring our staff and contractors work safely

Our objective is to achieve world-leading safety performance. This will mean having zero safety incidents involving our staff and contractors.

This section is about how our business ensures our staff and contractors are kept safe. We believe every accident is preventable and have put in place a framework that we believe will deliver this goal during the RIIO-ED1 period.

Our approach has two main strands that run through all we do:

- Our Safety Family ethos that ensures all our people are their 'brother's keeper' and everyone knows, understands and enacts what is expected of them in terms of observance and promotion of safety; and
- A Safety Management System that is robust, flexible and underpins our business strategy.

By implementing these approaches we believe that we can achieve our target of zero safety incidents involving our staff or contractors.

Our obligations

How we conduct our activities safely is regulated by primary and secondary legislation.

The most important pieces of legislation we work under are:

- The Health and Safety at Work Act 1974;
- The Management of Health and Safety at Work Regulations 1999; and
- The Electricity, Safety, Quality and Continuity (ESQC) Regulations 2002.

Together, this legislation sets out the minimum standards we are required to meet.

We believe we should aim to exceed these standards wherever possible, and explore innovative ways to address new and emerging safety challenges in today's world.

Historical approach to staff and contractor safety and our performance

In SSEPD we believe all accidents are preventable. This standpoint has driven our strategy on safety for the last decade and we have adopted a number of initiatives over that period that have put us at the vanguard of GB network employee safety performance. All of our previous and enduring plans have concentrated on addressing the behaviour of the individual, underpinned by detailed safety management systems.

Over the last decade we have taken advice from DuPont (an acknowledged world leader in safety management), engaged with our people both individually and through the Trade Unions, established strong Local Safety Groups to promote local ownership of safety issues, and established an extensive and maturing safety risk management and audit process.

In light of the actions we have taken already our performance in relation to staff and contractor safety has achieved a low level to our sector performance (**Figure 10**).

We have come to a point where further, additional improvement will require a step-change. We have reviewed our plans to gain a deeper understanding of what is required to reach our ultimate goal of zero injuries. We concluded that we required a complete review of our underlying safety management systems and more concentrated efforts to address behavioural safety in particular. These efforts are described in the following sections.

Figure 10 Fatal, major and over three day absence employee incidents for electricity distribution networks – Incident Rate per 100 Employees

	2007	2008	2009	2010	2011
DNO Average	0.34	0.32	0.23	0.22	0.16
SSEPD	0.08	0.05	0.27	0.07	0.09

Drivers for change

As we move into the RIIO-ED1 period, we will undoubtedly change the way we do some things and our exposure to external safety challenges will continue. However our overall approach to safety remains the same as we have successfully employed in the recent past.

We believe all accidents are preventable and that we have a moral requirement to ensure all of our staff and contractors go home at night in the same condition as they started work in the morning.

Our plans for the RIIO-ED1 period

In SSEPD we employ over 3,500 of our own staff and many hundreds of contractors every year to deliver the services our customers need.

To fulfil our goals we have to ensure that everyone understands our requirements and works safely. In the future, improvements in our performance will be achieved by addressing safe behaviours through our Safety Family approach and safe practices through our Safety Management System.

In matters of safety performance we make no differentiation between our own people and the contractors we employ: we see our contractors as part of our Safety Family, and want them to be as safe as our own people.

Our Safety Family ethos

Most, if not all safety incidents, happen as a result of behavioural mistakes. Analysis of our SEAR safety incident database⁵ clearly shows that accidents happen due to individuals ignoring procedures, breaking rules or going beyond the scope of work that was originally intended, planned and prepared for. For example, there have been instances of overhead linesmen falling from poles when they chose not to follow the correct procedure for attaching themselves to it. We recognised the fundamental importance of behaviour some time ago and set out to find a way to tackle this, adopting both a top-down and bottom-up approach.

⁵ SEAR stands for Safety Environmental Awareness Report, and is an internal tool for reporting incidents or 'near-incidents'.

Our Safety Family ethos is built on the premise that safety is everyone's responsibility and requires everyone - supervisors, managers and all staff - to understand and fulfil their responsibilities in relation to safety management (**Figure 11**).

The Safety Family framework encourages all staff to look at their own personal safety behaviours and their influence on others around them. It outlines expected SHE behaviours that staff can assess and this encourages them to identify personal strengths and areas where they can improve that will have a positive impact on safety performance.

Figure 11 Our Safety Family



All of our people have been inducted into the Safety Family through workshops where safety topics are discussed, maps of key issues are produced, and action plans are developed to address these.

Good communication is a key part of the Safety Family way of doing things and maintaining an effective communications plan will ensure we do this correctly going forwards.

We see our contractors as our ‘extended family’ – they are invited to take part in the Safety Family rollout, and in situations where they follow their own company’s behavioural safety programme they are encouraged to take elements of best practice from each scheme and work within the Safety Family framework.

As a minimum all of our contractors’ staff sign the SHE charter, and we look to both share relevant lessons in safety learned from industry, contractors and the wider SSE Group with our contractors, and to learn from their own practices and experience. We will be rolling out a new contractor safety engagement programme in 2013.

Monthly meetings are held between senior managers within SSE and Contractors. A review of good practices, on site safety management improvements and safety alerts are carried out.

SSEPD runs a safety workshop each year for all contractors covering on site work activities such as civil, electrical and cable installation. A full participation by contractors is an indication of the positive value it creates.

We are confident our Safety Family approach will produce dividends going forwards, and will help us achieve our target of zero incidents involving our staff or contractors during the RIIO-ED1 period.

A robust and flexible Safety Management System

Almost without exception, our safety performance is related to direct activities in which we engage in relation to the assets that supply our customers. It is therefore crucial that our stewardship of assets is best practice and that we ensure we underpin this approach with a robust safety management system.

There are a number of measures that indicate our performance in this area, including:

- Accreditation to the UK PAS55 Asset Management Standard.
- Delivery of our annual inspection and maintenance requirements.
- Fulfilment of our internal safety audit targets.

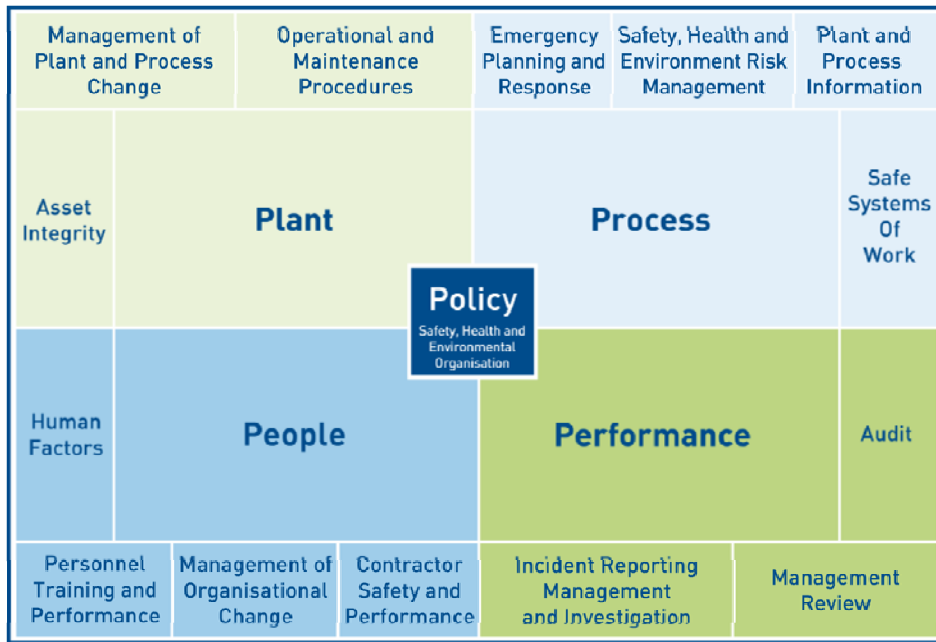
Underpinning these measures is a comprehensive risk assessment process that ensures our people and contractors manage design, site and construction risks effectively and comprehensively on every job they undertake.

Our asset management processes and procedures include the inspection and monitoring of our network components. This includes the assessment and measurement of Health Indices and Load Indices of many of the poles, transformers and cables to confirm that they are in a satisfactory condition (Health Index) and adequate to meet the loadings and security requirements that are required of them (Load Index). In simple terms these indices measure the likelihood of failure.

These indices have been created and are maintained to ensure that our investment plans are in place to address the highest risk areas on our network in our [investment plans](#). The indices help us to confirm that the overall level of risk on our entire network is able to be measured and managed over the RIIO-ED1 period and in line with our customers' views and guidance. In general we have sought to ensure that this overall level of risk does not increase, as this would result in an unacceptable deterioration in network performance as well as an unacceptable increase in the risk of injury to staff and the public.

At the heart of our business we have introduced a robust and flexible Safety Management System (SMS). It is based on a core policy covering four main sections – People, Process, Plant and Performance - and describes fourteen key areas that are most important for our business operations ([Figure 12](#)).

Figure 12 Safety Management System



We have implemented policies, procedures and work instructions to facilitate the effective delivery of these fourteen areas and these have been rolled out to all of our staff through focused training. We recognise that it is essential that we build on our policy by forming procedures that explain what is required of our people, and that we ensure they are fully trained. By way of example, to ensure our operations during emergency situations are properly managed and controlled, we have developed a detailed procedure that explains what is expected of staff in specific organisational roles, and how we will manage the process of restoring customers' supplies during periods of bad weather. This ensures that we work to maximum efficiency and are less likely to make mistakes in an event which is time-critical.


In order to improve our people's understanding of the SMS system and to remind them of what can go wrong in our business we use the PEAR acronym, covering People, Environment, Asset and Reputation (**Figure 13**).

Our SMS system is risk-based and provides a robust and flexible system for us to manage this across all of the PEAR areas. The associated Risk Management Standard is the foundation of the risk assessment practices for our people who carry out field works in the business (**Figure 14**).

Figure 13 PEAR: People, Environment, Asset, Reputation

Scottish and Southern Energy

PEAR - an acronym to help us to remember the factors that we should consider when we think about what can go wrong in our business.



- People** – keeping people safe
- Environment** – operating in a sustainable way
- Asset** – protecting the business
- Reputation** – impact SSE image

AB

Figure 14 Risk Management Standard

Scottish and Southern Energy

Risk management Standard

Promptly identify, assess and document SHE hazards so that they can be managed effectively.



Understand how hazards can impact People the Environment, Assets and SSE's Reputation and understand how likely these events are.

Assess performance of the risk management plans and to initiate corrective action if required.

Record the output of hazard ID and risk assessment process to enable action to be taken to reduce risk.

Evaluate the controls that are currently in place, the requirement to strengthen these controls or the need to put new ones in place.

MP

Risks and uncertainties

We believe that our approach addresses the major risks and uncertainties we envisage looking forward to the RIIO-ED1 period. We are not aware of any European or UK legislation changes on the horizon that would affect or change our plans.

Conclusion: our outputs and expenditure on staff and contractor safety

What we are going to do

Our target is to have zero safety incidents within our workforce and contractors by the end of the RIIO-ED1 period.

How much this is going to cost

Safety is an integral part of what we do as a responsible operator of our electricity networks. These costs are included in the 'business as usual' costs in our Business Plan.

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Appendix

Regulatory policy

Process: Has the DNO followed a robust process?

This technical appendix is designed to be clear and easily navigable: in the summary (p.2) we define two areas of focus to deliver safety outputs during RIIO-ED1 (keeping our customers and the public safe, and ensuring our staff and contractors work safely); the structure of this document reflects these two focus areas. A table of contents is provided on p.5.

On p.10 we describe how we have engaged with stakeholders, both at dedicated engagement events as part of the RIIO-ED1 process and through discussions that have taken place over recent years. The impact of the feedback we have received is evident throughout this document. For example, our customers told us that we need to do more to educate customers about safety around our network; on p.19 we discuss our plans for RIIO-ED1 to maintain a high awareness of our equipment and operations as a hazard to the public.

Our strategy for long-term delivery of world-leading safety performance is based on our Safety Family ethos (p.32), our robust and flexible Safety Management System (p.35) and our commitment to education and awareness as the bedrock of safety around electrical equipment and operations (p.19).

Outputs: Does the plan deliver the required outputs?

Our proposals to achieve world-leading safety performance are fully aligned with the regulatory requirement for compliance with the legislative and regulatory framework monitored by the Health and Safety Executive (HSE). We believe that long-term improvements to safety performance will always lead to improved business performance. Our Business Plan does not include a specific cost for delivering the required safety output because we believe that safe behaviour is an inseparable element of all our activities, rather than a stand-alone optional activity.

We will deliver the required safety output through our Safety Family ethos (p.28), our robust and flexible Safety Management System (p.30), our commitment to education and awareness around electrical equipment and operations (p.17), by helping electricity suppliers to install smart meters safely (p.24), and by reducing the impact on our customers of copper theft (p.26).

Our historical approach and performance in delivering outputs in our two areas of focus for safety during RIIO-ED1 (keeping our customers and the public safe, and ensuring our staff and contractors work safely) is

discussed on pages 14 and 31 of this document.

Resources (efficient expenditure): Are the costs of delivering the outputs efficient?

As explained on p.9 of this document, our Business Plan does not include a specific cost for delivering safety outputs because we believe that safe behaviour is an inseparable element of all our activities, rather than a stand-alone optional activity.

Resources (efficient financing): Are the proposed financing arrangements efficient?

As explained on p.9 of this document, our Business Plan does not include a specific cost for delivering safety outputs because we believe that safe behaviour is an inseparable element of all our activities, rather than a stand-alone optional activity.

Uncertainty & risk: How well does the plan deal with uncertainty & risk?

The approach described in this document to achieve world-leading safety performance takes account of the major risks and uncertainties that we envisage for the RIIO-ED1 period. For example, on pages 28 and 38 of this document we discuss the main risks and uncertainties associated with public safety and with ensuring our staff and contractors work safely.