



Capital Development & Delivery Strategy

December 2019

SHE Transmission

Capital Development & Delivery Strategy

About us

We are Scottish Hydro Electric Transmission (SHE Transmission), part of the SSE Group, responsible for the electricity transmission network in the north of Scotland. We operate under the name of Scottish and Southern Electricity Networks, together with our sister companies, Scottish Hydro Electric Power Distribution (SHEPD) and Southern Electric Power Distribution (SEPD), who operate the lower voltage distribution networks in the north of Scotland and central southern England.

As the Transmission Owner (TO) we maintain and invest in the high voltage 132kV, 275kV and 400kV electricity transmission network in the north of Scotland. Our network consists of underground cables, overhead lines on wooden poles and steel towers, and electricity substations, extending over a quarter of the UK's land mass crossing some of its most challenging terrain.

We power our communities by providing a safe and reliable supply of electricity. We do this by taking the electricity from generators and transporting it at high voltages over long distances through our transmission network for distribution to homes and businesses.

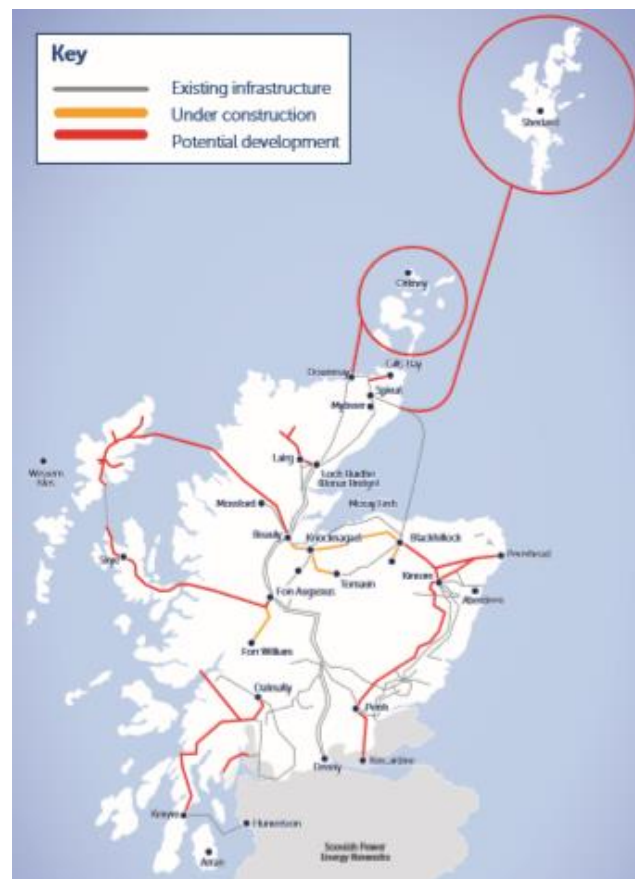


Figure 1 - Our Existing and Future Infrastructure

This Publication

This **Capital Development & Delivery Strategy** publication sets our capital development and delivery ambitions, how these ambitions have been developed, and how we plan to deliver them through the next price control period (known as RIIO-T2¹) to enable the transition to the low carbon economy.

The whole strategy has been developed with a primary focus on delivering **Sector Leading Efficiency** - ensuring we build the right thing, at the right time for the Transmission System, for the GB consumer, the economy and the environment. Achieving this for the best whole life price is crucial to SHE Transmission's ambitions, and this approach is reflected in the ethos of this document.

We recognise that the cost of energy is a significant issue for current and future consumers. This is set against ambitious but necessary, legally-binding global targets to ensure that carbon emissions are dramatically reduced. In order for this to happen, SHE Transmission must ensure that our electricity network facilitates the connection of renewable energy generation, lowering carbon emissions through the displacement of traditional carbon dense generation, and reducing the wholesale price of electricity. While the cost of electricity transmission makes up only a small proportion of a consumer's bill, developing our network in this way requires specialised and often bespoke solutions which can cost millions of pounds. Our role over RIIO-T2 and beyond is to develop the network to facilitate this transition by investing in the optimal solutions, at the appropriate time and at the appropriate cost.

The document is split into three parts:

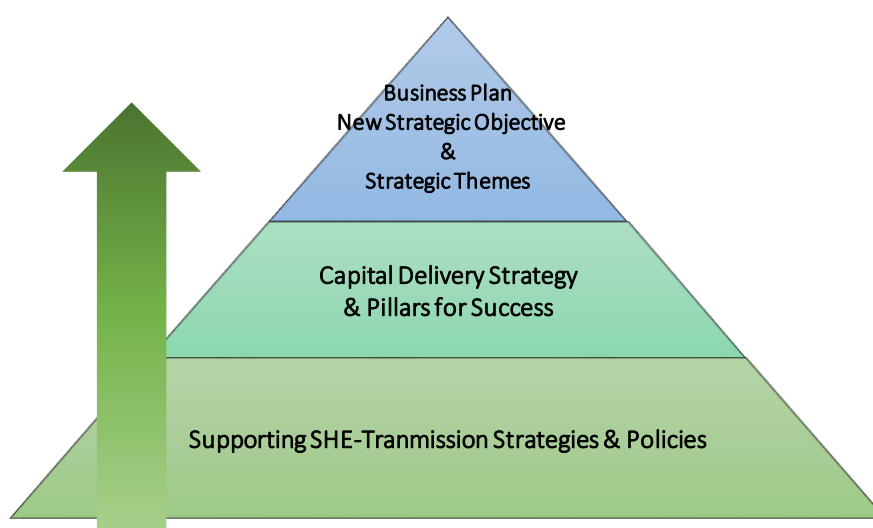


Figure 2 – How the Business Plan is supported by SHE Transmission Strategies & Policies

Section 1: Outlines SHE Transmission Strategic objectives, the 4 key strategic themes that explain how this strategic objective will be met by the business.

It then sets out the aim and rationale behind this **Capital Development & Delivery Strategy** and focuses on the drive for Sector Leading Efficiency, identifying the key areas for our Capital Development & Delivery programme through RIIO-T2.

Section 2: Describes the processes that SHE Transmission typically follows through the lifecycle of a Capital Investment Project:

- i) setting out key activities and actions that we undertake and how these have helped us to be successful through RIIO-T1;
- ii) Looking briefly at the key aims from the individual strategies and policy documents that feed into this overarching **Capital Development & Delivery Strategy**. These aims are crucial as they set the tone on how collectively the strategies and policies will be utilised to help deliver capital investment through RIIO T2 and to enable the transition to a low carbon economy.]

Section 3: Details how SHE Transmission intend to build upon our experience of successfully developing and delivering capital projects and our next steps in preparing for this in RIIO-T2.

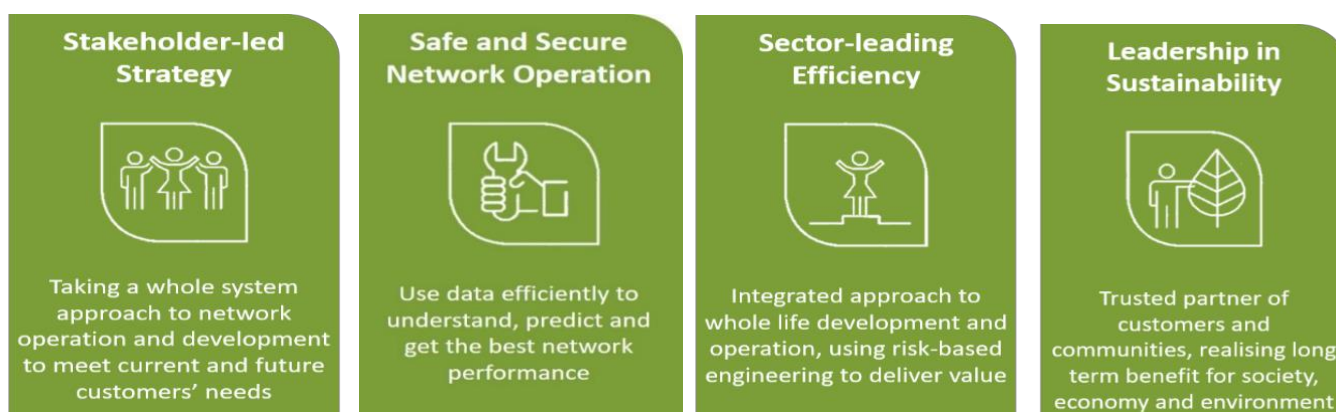
¹ **RIIO Revenue = Incentives + Innovation + Outputs**

SECTION 1

The SHE Transmission Strategic Objective for RIIO-T2²

Our strategic objective is to enable the transition to the low carbon economy.

In order to achieve this objective, we have developed four strategic themes that explain how our Business Plan will drive and facilitate our contribution to cleaner economic growth to meet the future challenges for our industry - decarbonisation, decentralisation, digitisation and democratisation (the 'Four Ds'). You can read more about the Four Ds in the section of our Business Plan: <https://www.ssen-transmission.co.uk/riio-t2-plan/>



Energy networks are built and operated to meet the needs of current and future customers, and so customers' and stakeholders' needs must be the drivers of all activities.

Energy networks, and especially the high voltage transmission motorways, must be operated safely. They must be reliable, available and resilient to changing circumstances, be these opportunities or threats.

Energy networks must be affordable to generators and customers, recognising the difficulties of the fuel poor and vulnerable, and be open about the trade-offs between cost and investment for local and national benefits to achieve the clean energy transition

Energy networks must be trusted by the customers and communities they serve demonstrating long term benefit for society, the economy and the environment.

Further detail on the development of these strategic themes can be found here. <https://www.ssen-transmission.co.uk/riio-t2-plan/>

This Capital Delivery Strategy has been developed taking account all four themes with the intention that it will promote the delivery of our principal Strategic Objective.

Our Capital Development & Delivery Strategy

To build the right thing, at the right time for the Transmission System, and for the GB consumer, economy and environment.

It is one thing to deliver capital investment, but it is significantly more challenging to deliver it efficiently. As a regulated transmission owner, we recognise that it is our responsibility to ensure that the projects necessary to maintain, reinforce, or develop our network are delivered in a manner which ensures value for money to customers, developers and end consumers.

The responses to our Emerging Thinking consultation strongly expressed that the transmission element of consumer bills must be kept as low as possible whilst still achieving wider stakeholder priorities, such as ensuring

security of supply and meeting decarbonisation targets.

This is a challenging balance to strike. The process by which this value for money analysis is undertaken considers technology (ensuring optimal solutions are chosen), as well as cost (both in terms of monetary value to the consumer and resources), and time.

We aim to deliver the optimal solutions at the right time, by the best method, for the best whole life price, and we consider we are best placed to do this in the North of Scotland.

Setting up for Success

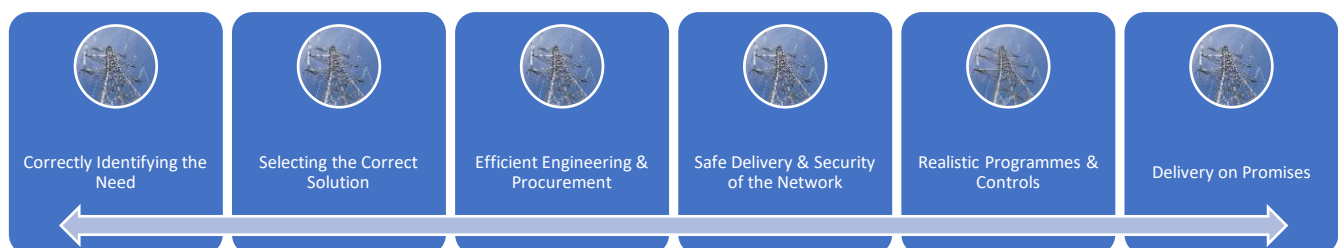
The development and delivery of projects by SHE Transmission is a key performance driver which has been one of the major successes over RIIO – T1. What has been key to this success has been the structures and resources, from involved and strong project sponsorship to empowered site based delivery professionals, having the right skills and capabilities in place has been fundamental in setting projects up for success. It is also essential that our supply and contracting partners have the right resources and are sustainable, the platform of the certain view provides this foundation and the ability to recruit and develop much required engineers into the energy sector.

Capital Delivery Drivers for RIIO T2

As we have detailed previously, our Capital Development & Delivery Strategy for RIIO-T2 has been developed with a primary emphasis on our strategic theme to deliver **Sector Leading Efficiency**.

Our experience, the lessons we learn and the continual improvements facilitated by our processes allow us to deliver the optimal solutions and achieve the greatest consumer value. We do this through a process of rigorous assessment and justification of need, the identification of the optimal solutions, consideration and application of innovative technologies and processes, and optimal approaches to procurement and contractual management considering projects individually to meet bespoke requirements or, where appropriate, bundling to drive cost efficiencies.

From these processes we have identified six areas which underpin and enhance our ability to focus on the strategic themes and our Strategic Objective.



SECTION 2

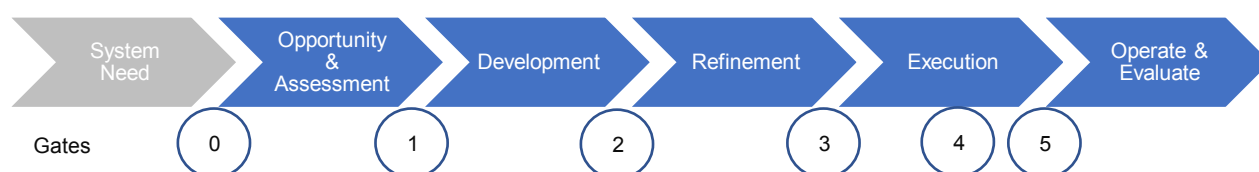
The SHE-Transmission Capital Investment Project Lifecycle

The way in which we do things

All major projects undertaken by SHE Transmission must comply with the SSE Group Project Governance process, commonly referred to as the Large Capital Projects Governance Manual. This manual aims to ensure that all large capital (investment) projects for the SSE Group are governed, developed, approved and executed in a safe, consistent and effective manner.

The Governance process was developed to align with the natural progression of a project and has five Phases with formal 'gates' between Phases. The purpose of the gates is

to ensure transparency, scrutiny and appropriate approval of project development, definition and the required deliverables. The gates are also appropriate junctures to obtain clarity on project risks and issues, as well as benefits, and assists with business decision making. For consistency, we have aligned our Capital Delivery Strategy with this process but have also introduced a precursor to the Opportunity & Assessment phase that is referred to as "System Need". The following diagram illustrates each stage of the process.



System Need

This is the stage in the process where the question about whether there is a need or not and if so, what is it that is required? Typical drivers include:

- National Grid's Network Options Assessment,
- Future Energy Scenarios,
- Operational Costs,
- Asset Condition,
- Additional Load Growth,
- Legislation.

The system need is considered by the SHE Transmission System Planning team in conjunction with National Grid and the other Stakeholders who have an influence on the drivers for capital investment (e.g. developers, demand customers, and Scottish Hydro Electricity Power Distribution – the distribution network operator in our area).

The optioneering phase of a project is the combination of the Governance processes of Opportunity & Assessment, Development and Refinement. These three phases seek to discover where the synergies between scheme types and their drivers may exist across a geographical region such that overall system delivered provides a holistic benefit.

Opportunity & Assessment

It is during this phase a project is formally initiated. Within SHE Transmission it is the role of the Transmission Planning team to develop, assess and select business opportunities or requirements. This phase screens opportunities for best strategic and regulatory fit; assesses the investment timing business case and viability of technical execution; and defines the appropriate level of governance to be applied. If necessary, a development budget is requested during, or

at the end of this phase and a project team is assigned. From conceptual design the project team will consider how an individual project interfaces, interacts and impacts other pieces of work in development or construction within their region. In addition to this the parameters set out in engineering standards are applied to define the envelope within which a project is to deliver its needs and requirements. The Cost Benefit Analysis (CBA) process is also initiated, and preliminary engagement and consultation with stakeholders will commence. The key outputs of this stage are the development of the Business Case and Business Opportunities Report.

The engagement of stakeholders is continuous throughout a project lifecycle and forms a critical part of the optioneering phases. Whether a project is driven by existing asset health or the growth of the demand on the network these requirements are combined with the stakeholder need to define the background against which schemes are developed.

Development

This is the phase where selected project opportunities are further assessed and defined, and a preferred option is selected. If not already in place, a budget is requested ahead of refinement. Strategies for assembling the necessary land and consents should be progressed as should the development of a procurement strategy specific to the project. This phase will involve continued engagement with stakeholders in relation to consents, circuit routes, site availability, and may also include public meetings. SHE Transmission will typically assign a Development Project Manager for each project during this phase, with responsibility for the budget, development and delivery of the project to the required/approved deadlines.

This Project Manager will be supported by experienced personnel including, but not restricted to, engineering, planning, consenting, legal, environmental, and commercial. The development of any piece of work is an iterative assessment of scheme need and options taking into account the changing background of the drivers and stakeholder need and feedback.

A key output from this phase is the clear identification of a preferred technical solution that is to be progressed. This solution should be a scope of work that supports our policies, the regional considerations and stakeholder engagement with a fully justified need and cost estimate supported by CBA. It is during this phase that construction works would commonly be tendered.

Refinement

During the refinement phase of a project the selected option is further developed to a level that allows full assessment of the viability of technology and execution. Key requirements from this phase include gaining higher degrees of certainty on cost, programme and risks. Execution and commercial strategies are selected, and the Business Case is finalised. With the greater certainty on the costs and other outputs, the CBA can again be updated. During this phase a gradual transition and transfer of responsibilities takes place between the Development and Execution Project Teams (if appropriate). At the end of this phase, a request for full capital investment is made to the appropriate Governance Review Teams and Executive Boards.

The SHE Transmission supply chain will be engaged during this phase to progress some preliminary design work for the selected solution and to support the consent process. The project will not typically be permitted to progress beyond this phase without all the necessary options for land assembly having been secured, all consents in place, and execution phase project prices (including construction and plant) being firmed up. Significant efforts are made during the refinement phase to understand the risk profile for the project and put in place the necessary mitigation measures as appropriate.

Execution

Having received the necessary internal governance and executive board approvals, the project will move into execution. Options will be exercised to secure land rights, supply and construction contracts will be placed, the detailed design will be completed, and construction works will be commenced followed by the commissioning of the new assets onto the Transmission network. SHE Transmission have excelled in this phase of projects during RIIO-T1 through the consistent application of our processes in the earlier stages.

During the execution stage the SHE Transmission project team is significantly bolstered with experienced site personal and any necessary experts to assist with the

complexities of delivery. These can include safety management, engineering specialisms, the environment, archaeology, community officers, and additional commercial resource to manage the main contracts.

Strict governance controls are applied throughout the lifecycle of the project but never are they more important than during the Execution phase which sees the greatest expenditure.

Operate & Evaluate

With the construction works complete, project energised, and all the necessary handover and as built information in place, the SHE Transmission Project Team hand the asset over to the Operations Team for its continuing operation and maintenance. The performance and financial returns are evaluated against the Business Case and the final CBA can be undertaken.



Stronelairg Substation under construction – 2017



Public road improvements at Farigaig – 2016



Loch Buidhe Substation



Blackhilllock Substation – the largest in the UK



Knocknagael – Tomatin 275kV Overhead Line

SHE-Transmission Supporting Strategies & Policies



The new SHE Transmission Capital Development & Delivery Strategy has been compiled taking cognisance of Strategies, Policies, and Methodologies that support SHE Transmission RIIO-T2 Business Plan.

Each area or discipline has been carefully considered and where appropriate standalone strategies, policies or methodologies have been produced. Details of these documents are provided at the end of the **Capital Development & Delivery Strategy**. Figure [3] provides further detail of the typical activities or considerations that occur at each stage of the project lifecycle with examples of key decisions and inputs that are made at key junctures along the project journey.

Figure [3]

The Key Aims from each supporting strategy and policy

These drive the Capital Development & Delivery Strategy and are crucial in setting the tone for how collectively the strategies and policies will be utilised to help deliver capital investment through RIIO T2 and to enable the transition to a low carbon economy.

<p>1. Safety <i>"Safety is the key priority for SHE Transmission in all aspects of our work and is therefore the first topic to be considered for everything we do including capital investment projects."</i></p>	<p>2. Stakeholder Engagement <i>"To effectively understand and include the needs of our stakeholders in our current network planning, development and operations, and in planning for a decarbonised future."</i></p>
<p>3. Project/Governance <i>"A process set out to ensure that all large capital investment projects for the SSE Group are governed, developed, approved, and executed in a safe, consistent and effective manner."</i></p>	<p>4. Strategic Optioneering Methodology <i>"To provide a structure to the optioneering phase of a project or projects such that the synergies between scheme types and drivers can be identified across a geographical region and the overall system delivered provides a holistic benefit.</i> <i>The objectives are:</i></p> <ul style="list-style-type: none"> • <i>Produce a robust regional solution</i> • <i>Provide input to CBA for investment justification</i> • <i>Deliver a fully developed project solution ready for delivery"</i>
<p>5. CBA/Willingness to Pay <i>"To outline the framework all SHE Transmission investment decisions are assessed in terms of their societal, environmental and economic impact as well as their consideration of whole-life costing and whole-system solutions."</i></p>	<p>6. Innovation <i>"The aim to support transition towards a clean energy economy, whilst maintaining high levels of reliability in electricity supply and ensuring energy remains affordable to all</i> <i>We define innovation as a way of identifying and proving new ways of working for long term benefit of our customers, our stakeholders and ourselves. This covers all aspects of our business operations including technical and nontechnical concepts.</i> <i>We have delivered real benefits from innovation in T1 and looking to expand on this with the development of our strategy with stakeholders."</i></p>
<p>7. Procurement and Commercial <i>"The aim of SHE Transmission Procurement and Commercial department is to be a world class provider of Procurement and Commercial Services to ensure delivery of SHE Transmission business plan and associated themes, whilst ensuring alignment with other policy requirements.</i></p> <p><i>SHE Transmission Procurement and Commercial policy promotes the creation of governance for all procurement and commercial services that combined, support <u>effective decision making</u> as a means to <u>drive efficiency</u> and demonstrate <u>best value</u>."</i></p>	<p>8. Cost book <i>"A collation of historic and current cost data that is utilised to support estimated projects. SHE-T experience during RIIO T1 is that our projects have been varied and encompass a variety of unknown relating to scope geography, access requirements, ground conditions, and location etc.</i></p> <p><i>In developing the estimates for these projects, SHE-T have a variety of cost information to support the production of estimates. Most notably, SHE-T have a variety of frameworks for key work activities including Overhead Line, Substations, Underground Cable and key Equipment (e.g. transformers). These frameworks mostly include a detailed schedule of rates.</i></p> <p><i>For projects where the key work activities apply, the framework schedule of rates will be utilised, whilst also benchmarking to previous projects delivered of a similar nature.</i></p>

	<p>For more bespoke projects that may include HVDC convertors, subsea cable or SVC equipment SHE-T would typically refer to previously delivered projects where similar work has either been constructed or tendered. If no historic cost advice exists, we may engage with the supply chain to obtain outline cost information.”</p>
<p>9. Environment</p> <p>“To set a clear vision for how we will consider the environment in our core business activities, setting the highest standards as we become a leader in sustainability and promoting best practice in environmental stewardship. Our Environmental policy has three core objectives: Creating future environmental value; Addressing historical and current impacts; Transparently communicating environmental decisions.”</p>	<p>10. Sustainability</p> <p>“The goal of our sustainability strategy is a to have a positive impact on the environment and society. We define leadership in sustainability as being a trusted partner of customers and communities, realising long-term benefit for society, economy and environment. Our Capital Delivery strategy will support the achievement of our science-based carbon reduction target, realising a biodiversity net gain on new projects and meeting our waste and resource use targets. During the delivery of our projects we want to ensure communities benefit from our investments and we will seek to support local supply chains where practical under procurement regulations.</p>
<p>11. Land</p> <p>“To set out the strategy for securing all necessary rights for the delivery of Transmission projects, utilising statutory process where appropriate and demonstrating best value for our customers whilst assisting with our sustainability and environmental commitments. In addition, it also sets out how we will deal with Injurious affection claims, terminations and challenges to our rights and network efficiently and proactively. It is our obligation to demonstrate best value for customers whilst supporting security of supply.”</p>	<p>12. Vista</p> <p>To use Ofgem funding to deliver the maximum benefit for nationally designated landscapes in the north of Scotland transmission network. Achieved by delivering projects that offer significant reductions in visual impact, while avoiding unwanted economic and environmental impacts.”</p>
<p>13. Regional Factors (inc. opex)</p> <p>“SHE Transmission operates across a challenging geography. Our Regional factors approach seeks to illustrate the unique factors of the North of Scotland that impact our costs of operating and developing the network, including the impact of the geographic and sparsity challenges that we encounter. This is important to consider as part of any cost benchmarking exercise with other TOs, as we face different challenges and should not be assessed on a like for like basis.”</p>	<p>14. Engineering</p> <p>“The purpose of the SHE Transmission Engineering Policy is to ensure that the SHE Transmission network can be operated safely and reliably in compliance with relevant legislation and standards whilst meeting the needs of stakeholders who connect to or interact with the network.”</p>
<p>15. Pre-construction Allowances</p> <p>“The Pre-Construction allowance is required to enable development of projects to provide certainty of scope, cost, programme, risk and opportunities prior to contract award for execution</p> <p>The development path is undertaken in line with our internal Large Capital Projects Governance Framework Manual. As the projects develop through the Governance process certain key activities are undertaken to give certainty on the ability to deliver the works in the delivery phase.”</p>	<p>16. Project Execution</p> <p>“All of the good work in correctly identifying the need for capital investment and selecting the correct solution would be lost if we cannot execute the project safely, effectively and efficiently.</p> <p>Selecting the correct and experienced team with the appropriate leadership and skillset are crucial and is a key focus for us for RIIO T2. Ensuring clear plans are developed for the execution of projects on site are crucial. A clear plan for securing all the necessary consents and land agreements are also pivotal prior to works commencing on site.</p>

SECTION 3

A Platform for Project Development & Delivery in RIIO – T2

The experiences and learnings gained through successful capital delivery in RIIO-T1 supported with the governance and processes applied demonstrate a strong platform to build for RIIO T2.

Key highlights and strengths -

- A strong and focussed Safety Culture that is the priority in everything we do.
- Extensive knowledge and understanding of the geographically unique environments and terrain in that we work.
- Strong and experienced environmental and consenting team working closely with key stakeholders such as SEPA, local authorities and the Electricity Consent Unit.
- Development of projects that understand, complement and are sympathetic to the environment in which they are located.
- The successful delivery of over £2bn of capital projects during RIIO-T1.
- Delivery of several significant strategic projects where we have been recognised for our ability to deliver capital investment project successfully.
- Our ability to deliver innovations through our projects – the introduction of composite poles, innovative conductors, and HVDC technology onto the network have all helped bring best value during RIIO T1 whilst still meeting connection dates.
- Processes to capture Lessons Learned from each project, delivering continual improvements, have been incorporated into the way that we develop and deliver capital investment projects. This has directly influenced and is reflected in our development and delivery strategy for RIIO T2.
- Our ability to recognise that often delivery strategies need to be bespoke or tailored to the unique needs or conditions of a project.
- Developing and Delivering Projects in a collaborative way with Stakeholders & the Supply Chain while still delivering efficacies and value for customers.
- Providing dynamic project solutions for customers.

How we plan to delivery in RIIO T2

Safe Development & Delivery ensuring that everyone who works on our projects goes home safely every day is our number one priority and is at the core of everything we do within SHE Transmission. Constructing safely starts with the planning and development of designs and we ensure that there is sufficient time to do this and that everyone is empowered with 'If its not safe we don't do it'.

Second only to safety is the security of our network. This aligns with our key strategic theme of a Safe and Secure Network Operation. Not putting our network, and therefore the supplies or connections of our customers, at risk is critical and this is factored in the design, planning, and construction techniques applied to delivering our projects.

The Certain View sets up a platform towards Net Zero and this portfolio provides an opportunity to move from a transactional approach to project delivery with our contractors & supply chain to a move collaborative model. We recognise the benefits in a longevity of relationships with our supply chain and plan to build on our successful delivery frameworks used during the RIIO T1 period. The engagement with the supply chain will be progressed well in advance of the RIIO T2 period to ensure there are close working relationships and a full alignment with respect to our key drivers (i.e. safety and innovation). In continuing to build strong relationships with the supply chain & contractors, SHET will work to establish opportunities to provide further efficient delivery and also encourage the use of local suppliers and subcontractors which will see benefits to the local suppliers in communities that we work in.

We place great importance on and are committed to engaging all stakeholders likely to have an interest in the development of our new assets. Effective stakeholder consultation and engagement is an essential part of effective project development and this is reinforced in our Stakeholder Engagement Strategy. Our engagement should be inclusive, relevant and meaningful, commencing at the appropriate stage of project and continuing throughout the delivery and operational phases.

Due to the scale and nature of our projects, we often receive wide ranging views on the acceptability of proposals and where opportunities exist to contribute to wider social value. Early engagement allows us to understand the breadth of views in our

upfront design, ensuring we achieve a balanced approach that accommodates any competing requirements as effectively and transparently as possible. This allows us to consider local community views alongside statutory authority comments and legislative requirements.

To support project engagement, we are actively seeking to make our consultation materials even more accessible through enhancing our website, understanding when and how our stakeholders wish to input, and developing the use of innovative visualisation technology.

Innovation form a key part of our RIIOT2 business plan. Several innovations were successfully delivered during the RIIOT1 period and we plan to work closely with our contractors to continue this into RIIOT2. These innovations will be a major contributor as we strive for the most efficient solution and delivery real value.



Scottish & Southern
Electricity Networks

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