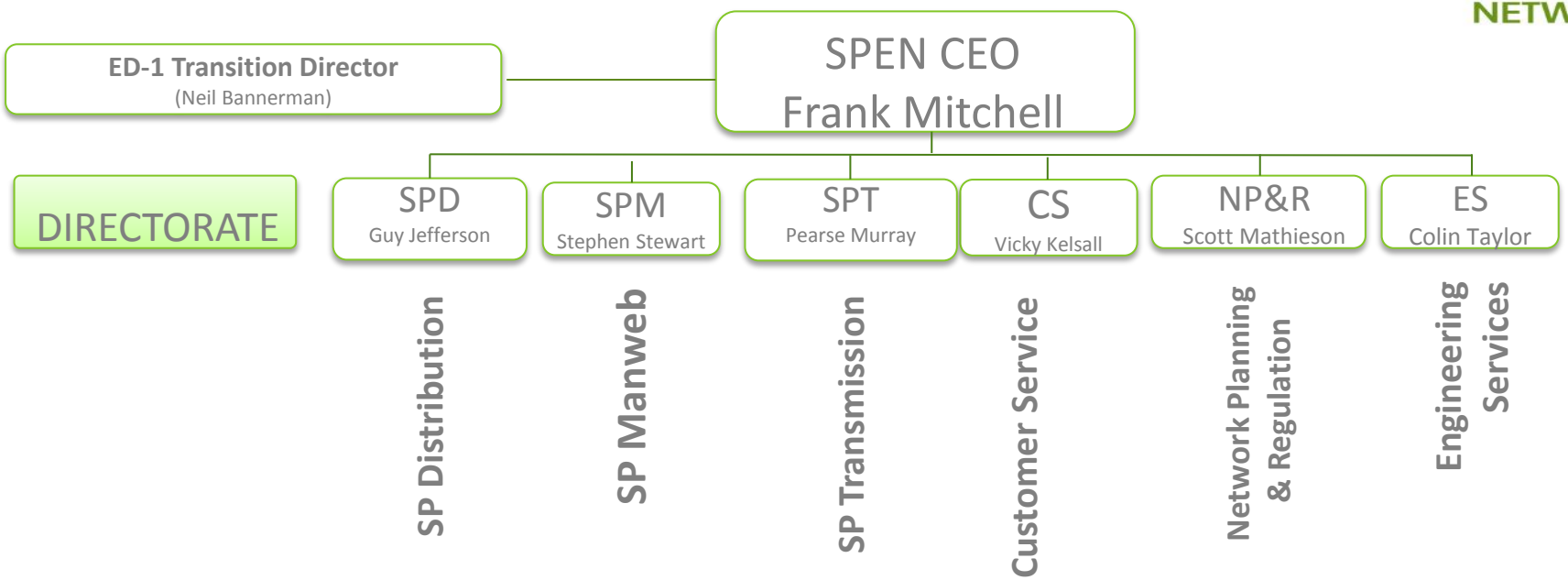

SP TRANSMISSION
2015 Supply Chain Event


SP TRANSMISSION
Pearse Murray
SP Transmission Director

New SPEN Organisation



Our Three Strategic Anchors:

Getting closer to our customers communities and stakeholders

Creating a leading position in engineering and asset management

Equipping our people with the skills they need for the future

SPT: Responsibilities & Resources

Responsible for:

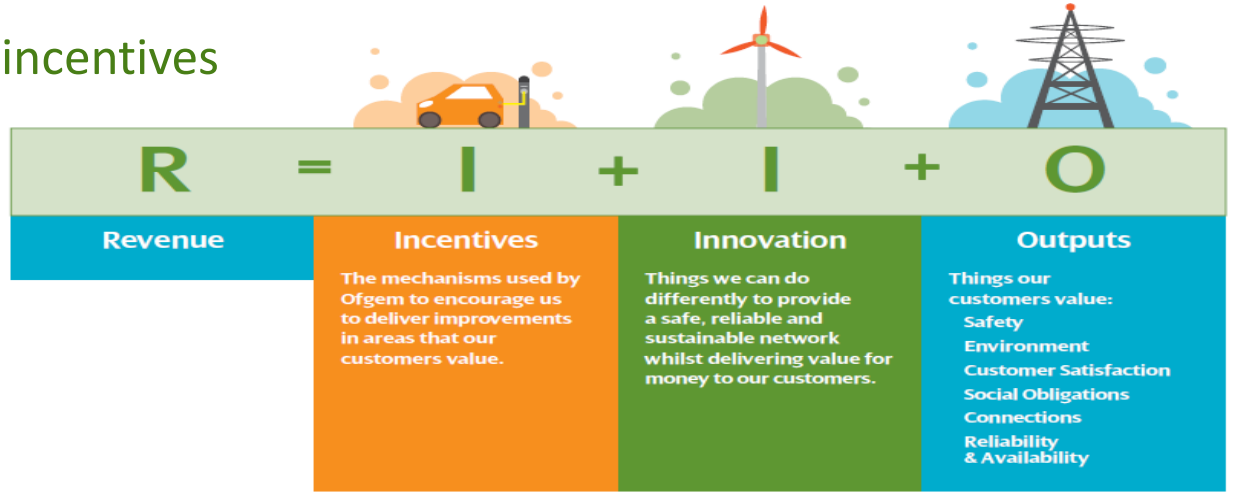
- The operation and development of the SPT Transmission network
- Major projects and HVDC link
- Regulatory & commercial policy compliance
- Regulatory outputs & licence data
- Customer service & stakeholder engagement

Structure:

- Transmission Network Operations
- Major Projects Delivery
- Programme Development and Stakeholder Engagement
- Commercial & Performance

Value in RIIO contract is a combination of:

- Bidding an efficient Business Plan
- Delivering the contracted outputs
- Outperformance of allowed costs
- Outperformance of incentives
- Managing Risk



RIIO-T1 – Transmission

SP ENERGY NETWORKS

Investment Plan of c£2.7bn from 2013 – 2021

£1.8bn (~ 65%) of investment provides connections and capacity for wind generation

- Large Increase in offshore and onshore wind generation
- Base case investment delivers connected MWs and increase in transmission boundary capacity
- Flexibility to adjust investment depending on MWs seeking to connect
- Increased import capacity to Scotland enhance security of supply

£0.9bn (~ 35%) of investment needed to modernise the network

- Majority of 275kV network over 40 years old
- Significant sections of 132kV network over 60 years old

Strong Incentives for Delivery of Outputs :

- Increase transmission capacity between Scotland and England to 6.6GW (from 3.1GW)
- Connect an additional 2.5 GW of wind generation to our transmission system (to total over 4.4GW)
- Flexible funding mechanisms to accommodate more MWs if required
- Over 15% of our substation assets renewed (99 circuit breakers, 20 transformers)
- 20% of our overhead line infrastructure refurbished (over 800 circuit km)

Delivery is Key to Government Energy Policy Objectives

RIIO-T1: Progress to date - First 2 Years

Totex	• £570M spent, versus allowance of £784M. • Catch up over next 2-3 years
Non-Load Outputs	• Significantly ahead of plan, - 30.5% versus 20.7% • OHL refurbishment programme main contributor
Reinforcement	• Consenting delays on key reinforcement projects, majority overcome, momentum building rapidly • West Coast HVDC now summer 2017
Customer projects	• Connections expenditure behind plan • Pressure from developers on consented projects • Uncertainty increased following recent government announcements
Incentives	• Performing strongly on network reliability , customer satisfaction and SF6 • Room for improvement on stakeholder and broader environmental performance

Innovation in Transmission

Innovation is embedded throughout our T1 Plan

West Coast HVDC

- Largest of its type in the world at 2.2 GW, 420 km, 600kV

New Generation Conductor Systems

- Composite core conductor allows significant increase in power transfer capacity

Digital Substations (IEC61850) , FITNESS

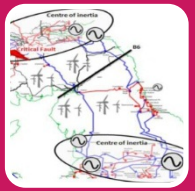
- IEC61850 deployment
- FITNESS - Future Intelligent Network Transmission Substation

Onshore Interconnnector Upgrade

- 60% increase in transfer capacity through combination of traditional and new technology projects

VISOR

- SPT led project, funded through the NIC to establish a wide area monitoring system (WAMS)for UK transmission grid



Transmission Local Inertia

- Following initial NIA funded study, SPEN is now leading a european level project

Responding to your feedback

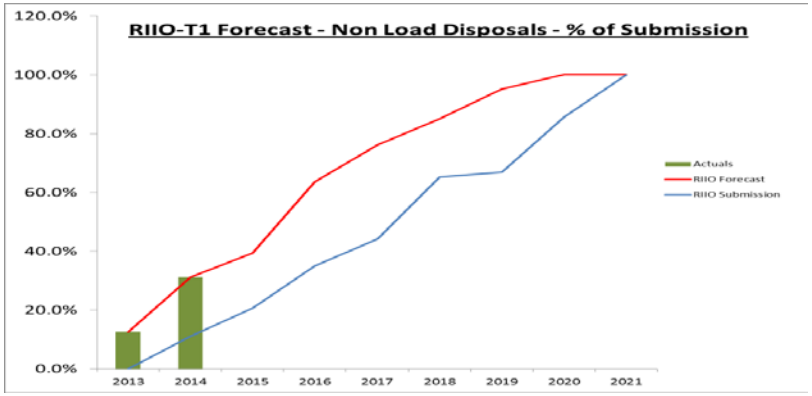
- *Can you give us more detail on the year ahead tenders*
  - Craig/Wilson will talk through upcoming tenders
  - We have added value range to future tender list
  - We have included a project description to accompany the tender lists
- *A longer term view would be useful*
  - Cathie will present an outline of the main projects we will be tendering for over the next five years
  - We will put this information on our website
- *Can you group projects geographically*
  - We have tried to tender projects in one area at the same time, subject to project needs
  - We have included geographic information in the project descriptions
- *The tender packs are too complex and there are too many PQQ*
  - We have tried to standardise use of one PQQ to cover multiple projects where appropriate
  - We have reviewed the process for producing tender packs and made improvements but we have more to do on this
  - Colin will talk through the elements of tender packs today and there is an additional session for new suppliers / contractors at the end

Craig McDougall & Wilson Smith

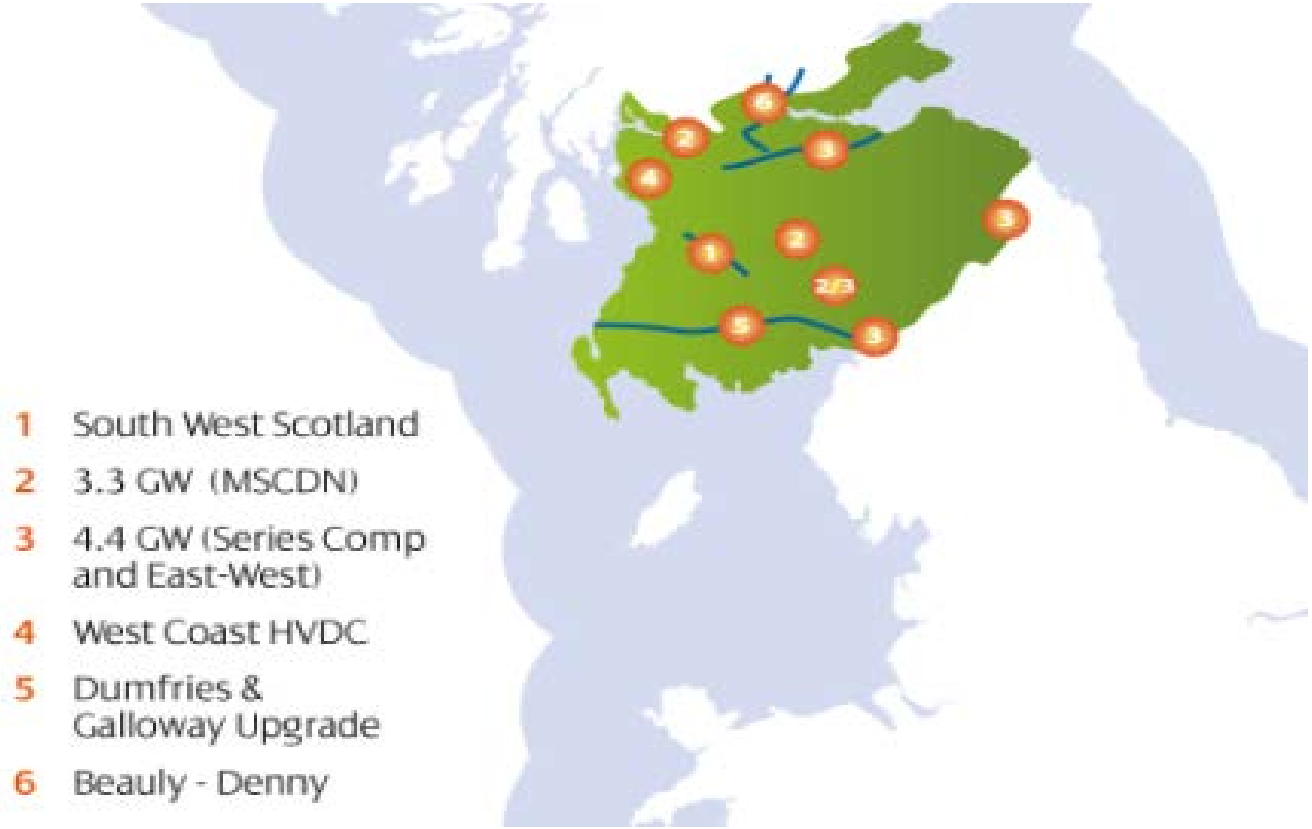
Progress to date & immediate future

Non-load / Modernisation plan

- Overhead line Programme
  - Over 50% through agreed plan by end of this year
  - Delivery model to date, mixture of traditional EPC and disaggregated model (access roads separated)
- Transformer replacement
  - Quarter of way through outputs
  - Project review process ongoing to inform future, to maximise value / efficiency
- 132kV switchgear
  - 30% through plan after first two years
  - Bonybridge complete, Windyhill and Chapelcross in progress, Currie to tender within year
- Over next year….
  - Commencement of main 275kV switchgear plan
  - Lambhill project in tender…



Reinforcement Projects – Strategic Upgrades



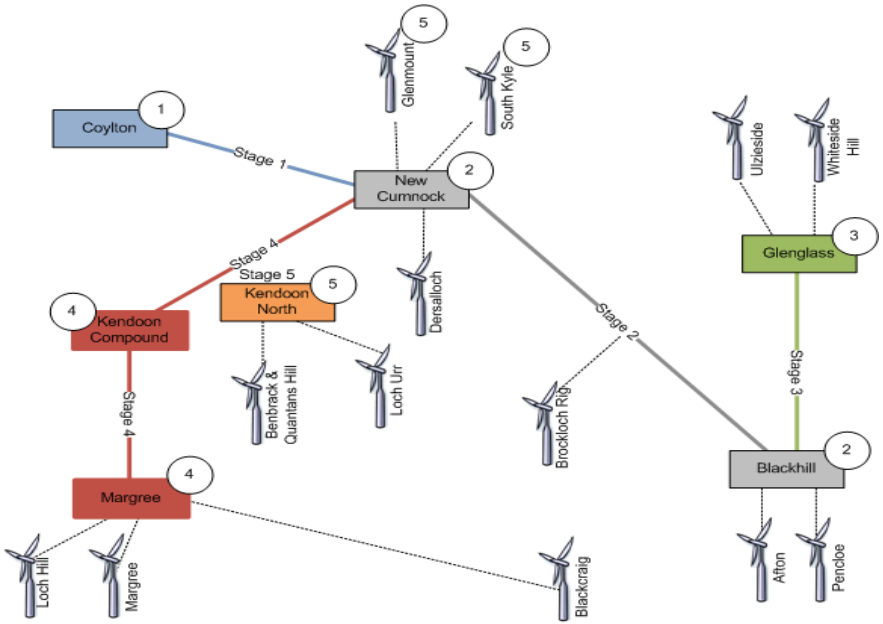
1 South West Scotland
2 3.3 GW (MSCDN)
3 4.4 GW (Series Comp and East-West)
4 West Coast HVDC
5 Dumfries & Galloway Upgrade
6 Beauly - Denny

Strategic upgrades, progress to date

- Beauly Denny
  - New 400kV line to be energised 2015
  - Remaining works over next two years
- MSCDN programme nearing completion
- Series Compensation
  - 2 units energised
  - Overall completion in 2016
- Hunterston East and Hunterston to Kintyre
  - Kintyre circuits to be energised in 2015
  - Overall completion in 2016
- ENSG East West
  - Strathaven to Wishaw nearing completion
  - Overall completion in 2016
- Western HVDC
  - Construction well underway
  - Overall completion in 2017

South West Scotland Programme

- Phase 1 Coytlon to New Cumnock
  - New line to be energised in 2015
- Ovehead line, 132kV tower works
  - Contract awarded in 2015
- Substation works
  - Significant volume of new substations
  - Fully disaggregated model
  - Tenders progressing in market
  - Opportunities
- 132kV wood pole line works
  - Number of circuits required for wind farm connections
- Challenges over next year
  - Volume of work and tenders
  - Significant proportion of delivery plan
  - Further wind farm and customer connections in addition to SWS




SP TRANSMISSION
Colin McNeil
IEC

Agenda

- Introductions
- HSQE
- Tender Process
  - Tender pack components
  - Tendering meetings
  - Tender Questions
  - Tender evaluation
  - Next steps
- Working together on site
- General strategy
- Questions

IEC Contacts

- IEC Peter Jones (UK Director)
- Head of Networks , Rafael Adobes Golfe
- Key Account Manager, Sharon Nulty
- Engineering Manager, John Stokoe
- Colin McNeil, Delivery Manager
  - Irene McGowan, Tendering Manager
  - David Drummond, Lead Quantity Surveyor
  - Michele Brunton, Lead, Health and Safety
  - Chris McGowan , Lead Construction Manager

Health Safety Quality and Environmental

- UK Safety Management System (SMS) structured around compliance with CDM Regulations 2015 via SMS procedures
- CDM Roles for IEC can include Designer, Principal Designer, Principal Contractor and Contractor roles under CDM
- Project Quality Plan developed for Networks defines process, SPEN and IEC business process requirements, Framework agreement requirements, checklists, guidance
- PQP evolving with revisions approx every 6 months
- IEC specific requirements included in appendices within the tender pack

SPEN IEC Process

- SP develop schemes, including technical and initial financial approvals, progress consents, stakeholder management, programme management, approvals , governance, external reporting etc
- SP send Project information pack to IEC
- IEC develop Engineering solution for SP approval
- IEC develop Engineering detail (disaggregated projects) or functional spec
- SP manage Customer and regulatory interfaces
- SP control process for additional funds for projects and contracts (IEC propose)
- SP manage IEC performance

Contracting Models

- Framework Agreement between SPPS and IEC
  - IEC Principal Designer (CDM role)
  - Design
  - Project and Contract Management
- Networks Substation projects (disaggregated)
  - Free issue supplies
  - IEC Design (scheme and majority of the detail)
  - IEC CDM PC , SP appointed contractors CDM Contractor
- Networks Cable Projects (disaggregated)
  - Duct installation
  - Cable supply, install, joint / terminate, commission
  - IEC PC SP appointed contractors CDM Contractor
- OHL Projects (some disaggregation)
  - Free issue materials
  - Access roads on some projects IEC CDM PC role
  - Main OHL works contractor CDM PC role

Tender Process

- Project Delivery strategy, proposal by IEC for SP approval
- All contracts identified are programmed
- IEC place any survey or specialist design contracts
-
- Call off free issue materials from framework or competitive tender
- SP identify potential tenderers and carry out Prequalification with IEC support

Tender Process

- IEC prepare all Tendering information, scope, specifications, drawings, Bills
- Tender packs sent to SP for approval and issue
- Post tender meetings/ technical compliance managed by IEC
- SP obtain Best and Final Offers and place contracts
- IEC manage the contract post contract award
  - HSQE, , Programme
  - Monthly valuations / payment milestones
  - Variation management

Tender Pack

Part 1 Scope and Project Description

- Site Information
- Technical Specification
- Test and Commissioning Plan
- Construction Phase plan, CPP (only where IEC are CDM PC)
- Environmental Management Plan, EMP
- Photographs
- Site investigations and surveys (often contractor under FIDIC)
- Existing records and drawings
- Utility Information
- Specifications (identifying those applicable to the contract)
- Drawings

Tender Pack (cont)

Part 2 - SPEN standards (controlled document only changes via formal review process)

Part 3 - Commercial section SPEN Terms and Conditions , IEC PM advises on key dates, sectional completion, use of certain clauses)

Part 4 - Project Management

Project Management
Contractors Safety Performance Requirements
Drawing manual (guidance on submission of any drawings reqd)
Quality and Environmental Requirements
Project Management Schedules B1 – B11 (Management structure, Subcontractors , plant , accreditations, safety stats , site facilities, training, manpower curve)

Tender Pack (cont)

Part 5

Contractor Schedules

Specific information on any plant / material supplied under the contract, equipment specifications, supplier details , accreditations, test and inspection regime, warranties and guarantees

Information on working team structures

Part 6 Pricing schedules

Bill of Quantities / Pricing Schedule

Definition of Prices / Civil preamble

Tender Meetings

Site visit
Initial tender meeting / IEC project team presentation
Target 4-8 weeks post tender return depending on scope
Tender review meeting (meetings)

Often request for an extension from tenderers
Need to maintain timescales to avoid delaying project in most cases

Tender Questions

Are key to clarifying full understanding of the contract
They can be raised by either party
They should be controlled via a TQ register
All TQ's need to be closed off signed off and agreed before proceeding to the next stage
Volume / impact of TQ's may drive revision of the Bill (target only 1 rev)

Ultimately they form part of the contract along with the tender pack (appended)

They should be issued only when the some information is missing or unclear, we do receive TQ's on information that is in the pack and clear

We need to avoid rushing through this stage and not clarifying fully
Project deadlines and availability of resources can be an issue

Tender evaluation

Following the tender receipt and clarification process IEC complete a tender evaluation on all bidders and advise who has complied with the tender issued

IEC project team assess

- Health Safety Quality and Environmental compliance (ISO, CSPR etc)
  - Example PSP, MSRA, ITP, QP EP
- Compliance with specification , approved equipment, standards, etc
- Project and Site Management proposals
  - Project organogram, CV's etc
- Programme, compliance with key dates, programme confidence
- Proposed subcontracting level / competence / quality
- Appropriate level of Resources,
- Approved authorised staff
- Other

The output tends to be compliant / non compliant , tenderers need to fully cooperate and provide all information requested to the required quality and in the timescales requested

Next steps

Tender assessment issued to SPEN programme manager for approval

SP Purchasing commence commercial discussion leading to Best and Final Offer

IEC available to assist / advise on Bill Quantities and rates and other commercial queries

Post Contract award
pre site start

Return signed contract (IEC will liaise with SPEN)
Provision of relevant bonds (IEC will liaise with SPEN)
Complete any Residual design work
Ordering materials
Engage subcontractors
Secure resources
Confirm contract appointments and Organogram
Issue Contract programme for approval
Issue final HSQE docs
eg Project Safety Plan
Method statement, Risk assessments
Lifting plans
Arrange Site accommodation and welfare *
Arrange Power, water, telecomms
Assist with Landowner or Planning consents/ conditions

Post site setup

Build Final File from the start

Daily coordination /Daily briefing /Daily HSQE checks

Weekly safety review
Weekly progress and coordination meeting
Weekly commercial meeting (discuss and agree works to date , delays, claims etc) Collate substantiation to support all project variations and agree any associated programme implications IEC PM to advise SPEN of any cost and time impact
2 week / 4 week lookahead programmes

Monthly commercial meeting (NEC risk reduction)
Monthly Project Meeting
Monthly Q and E inspections
Monthly H&S stat returns
Commissioning / Commissioning Panel meetings
Attend any third party interface meetings

Working Together

Encourage consultation between workforce IEC and other contractors

Using SOR or alternative process to identify and control potential hazards

Drive Quality improvements by identify and utilisation of inspection test plans

Commercial - Ensure full substantiation of any claims as soon as practicable (IEC require to provide full detailed substantiation to SPEN for any purchase order increase) . The key is to secure the information at the earliest opportunity to ensure the variation process is implemented as quickly as practicable.

Provide Final File

Contract Review meeting / assessment and lessons learned

Continuous improvement

Work Safely

Produce Quality product or service

Participate in Contractor Forums

Participate in on site safety coordination meetings

Dialogue with key IEC personnel to discuss issues and develop relationships

SPEN Approach to Dis-aggregation

Kevin Wynne

David Comrie

General Philosophy

- Iberdrola group approach
- Internalise risk – manage through in-house engineering
- Expand supply base
- Avoiding layers of sub-contractors
- Maximising benefits from volumes

Implementation

- Initial phased introduction commenced 2011
- Significant factor in Ofgem ‘fast track’ decision
- Key elements
  - Free issue equipment
  - Significant cost elements dis-aggregated
- Fine tuning since then based on experience of completed projects
- Evidence clearly demonstrates that the internalisation of risk is successful

Current Approach

- **Switchgear**
  - Civil
    - Buildings – individual competitive tenders
    - Civil platforms – mini tender, individual tender>£1m
  - Main Plant
    - All main plant from different Framework Agreements
    - GIS – individual tenders
  - Other contracts
    - Individual EPC for tower deviation
    - Individual tenders for P&C
  - Balance of Plant
    - All other project elements
    - Individual competitive tenders

- **Overhead Lines**
  - Access roads (towers)
    - Separate contract for build and maintain during works plus removal at end if required.
  - Free issue materials
    - Conductor
    - Insulators
  - Main OHL works
    - All works on towers plus provision of misc materials
    - OHL contractor PC

- Transformers
  - Transformer bulk purchase – annual tender

- Cables
  - Cable supply & install – individual tender
  - Cable civil – individual tender

Ongoing Evolution of Dis-aggregation

- Project Delivery Strategy agreed between IEC and SPEN
- All required contracts identified:
  - call off from framework
  - free issue material
  - Survey and special Design
  - Competitive tender
- PDS can be adjusted at SPEN's discretion
  - E.g. leave access roads in scope for main contractor, no free issue insulators
  - Combine contracts with works of a similar nature
- Allow tenderers to offer competitive solutions for multiple awards

Efficiency delivered

- Value of approach – actual v ‘what might have been’
- Range of estimates across project types
- Period to 2021 forecast to delivery **£99m** saving against regulatory allowance
- Includes variances paid to date and forecast variances on similar level

- Dis-aggregated model will continue
- Where appropriate we will consider different contracting strategies
- Opportunity for bidders to offer additional discount for multiple awards
- We welcome alternative offers for every tender!

Cathie Hill
Looking Ahead

RIIO T1 Position

- Eight year deal, funding to 2021
- Three investment drivers: modernise the network, reinforce the network and connect new generation
- Connecting new generation (windfarms) still subject to considerable uncertainty
- Major reinforcement works (Beauly-Denny, East-West, Series Comp) nearing completion on site
- Still significant amount of asset replacement works, especially switchgear

Switchgear Programme

- Most significant works are 275kV plant replacement within existing substations
- Limited ‘off line’ opportunity
- Mostly AIS with significant enabling works, framework for main plant, individual tender for BOP, line entry/ tower diversion, individual tender civils
- Currie: full site project, replacing 132kV & 275kV sw gr, installing transformer and reactor
- Wishaw, 275kV sw gr and reactor
- Current programme shown below, but may change

Substation	Size	Tendering start	Mobilisation	Build Period
Currie	5 275kv 12 132kV	Q2 2016	Q2 2017	3yrs
Kaimes	3	Q2 2017	Q1 2018	1.5yrs
Strathaven	7	Q2 2017	Q4 2017	3yrs
Wishaw	11	Q2 2016	Q3 2016	4yrs
Kincardine	Offline GIS	Q1 2018	Q2 2018	3yrs

Transformer/ Reactor Programme

- Transformer change
  - In market Tongland, Erskine, Giffnock, Strathleven, Grangemouth
  - Transformer, PI, LVAC, Aux trans, NER from frameworks
  - BOP, civil typically <£1m
- Additional reactors required due to network changes
- Current programme shown below, but may change

Substation	Size	Tendering start	Mobilisation	Build Period
St Andrews Cross	2* online	2016 Q4	2017 Q4	2 yr
Shrubhill	1*online	Q1 2017	Q4 2018	1yr
Crystal Rig, Markhill, Elvanfoot, Moffat, Eccles, Coalburn, Kilmarnock South	7*60MVA, 5*air cooled, 2* oil	2016 Q1	2016 Q4	1 yr

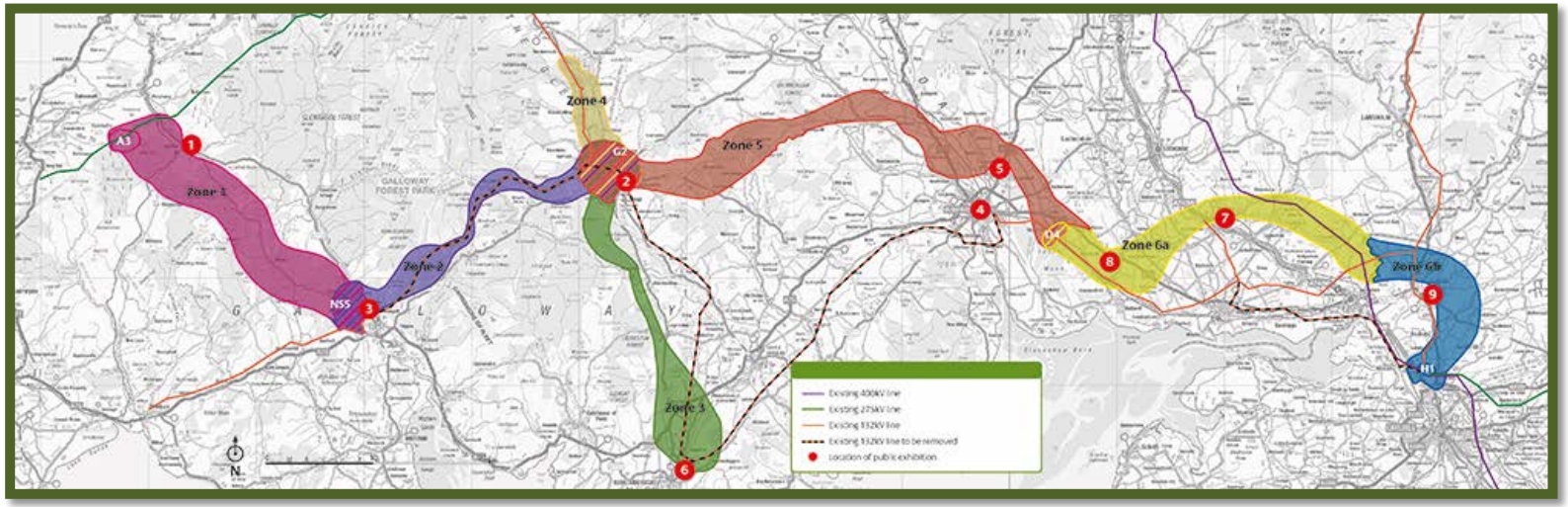
Overhead Lines

- Main 275kV refurbishment circuits between Currie and Kincardine, split in to two projects (56km 2018/19, 56km 2021)
- 132kV projects in scoping
  - V Route 137km: tender 2016, deliver 2018-2020
  - U&AT 61km: rebuild/ refurb assessment ongoing, delivery prior to 2021
- Connections driven work
  - Re-conductor Torness/Dunbar/Innerwick tender 2019 deliver 2020/21
  - Wood pole, model may evolve
- Current programme shown below, but may change

Route	Cct km	Tendering start	Outage seasons
XD/XM/XK/XN	112 refurb	Q3 2016	2018, 2019, 2021
U&AT	61 rebuild/ refurb	2017	2020
V Route	137 refurb	Q3 2016	2018-2020
New Cumnock -Margree	20 Wood OHL & Cable	2015 Q4	2016/17
XP	19	2016 Q4	2017
YG Diversion	5	2016 Q1	2017

Dumfries & Galloway Strategic Reinforcement

- Main driver replacing 80 year old lines
- Connect Harker to Auchencrosh
- Needs to be future proofed
- Will be in consenting till 2019
- Scale 175km double circuit tower line & 4 substations



Long Term Summary

- Second half of RIIO T1
- 275kV switchgear will dominate
- Updates available as required

Michele Brunton IEC
Bob McGuire SP Energy Networks
Working Together - Safely

Health and Safety – Current Focus Areas

- CDM Regulations 2015 – Principal Designer Appointment
- CSPR – Ongoing review and assessment of current Rev 6.
- CSPR New Section - Helicopter Operations Requirements
- Quality of Pre Construction Information
- Temporary Works Requirements
- Key Performance Indicator Returns
- Next Contractor Safety Forum – December

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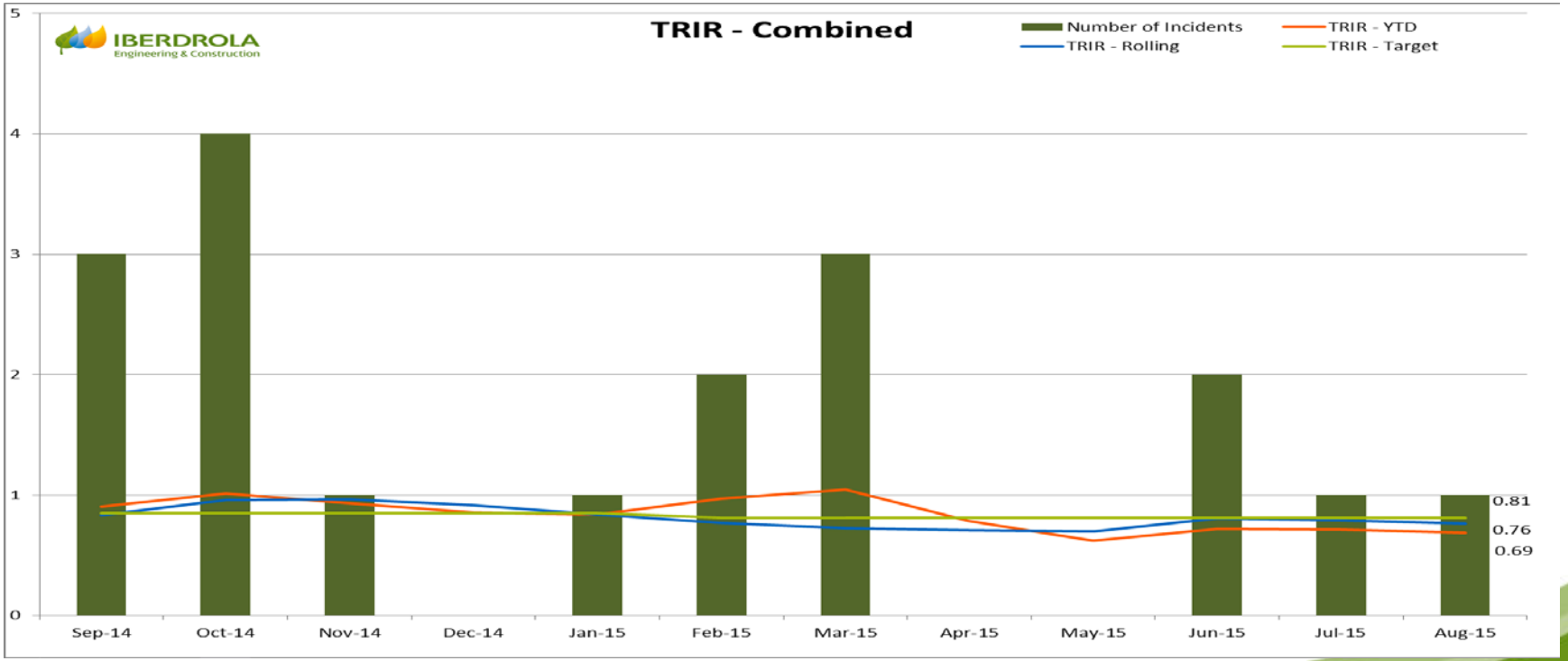
Health and Safety – Safety Performance



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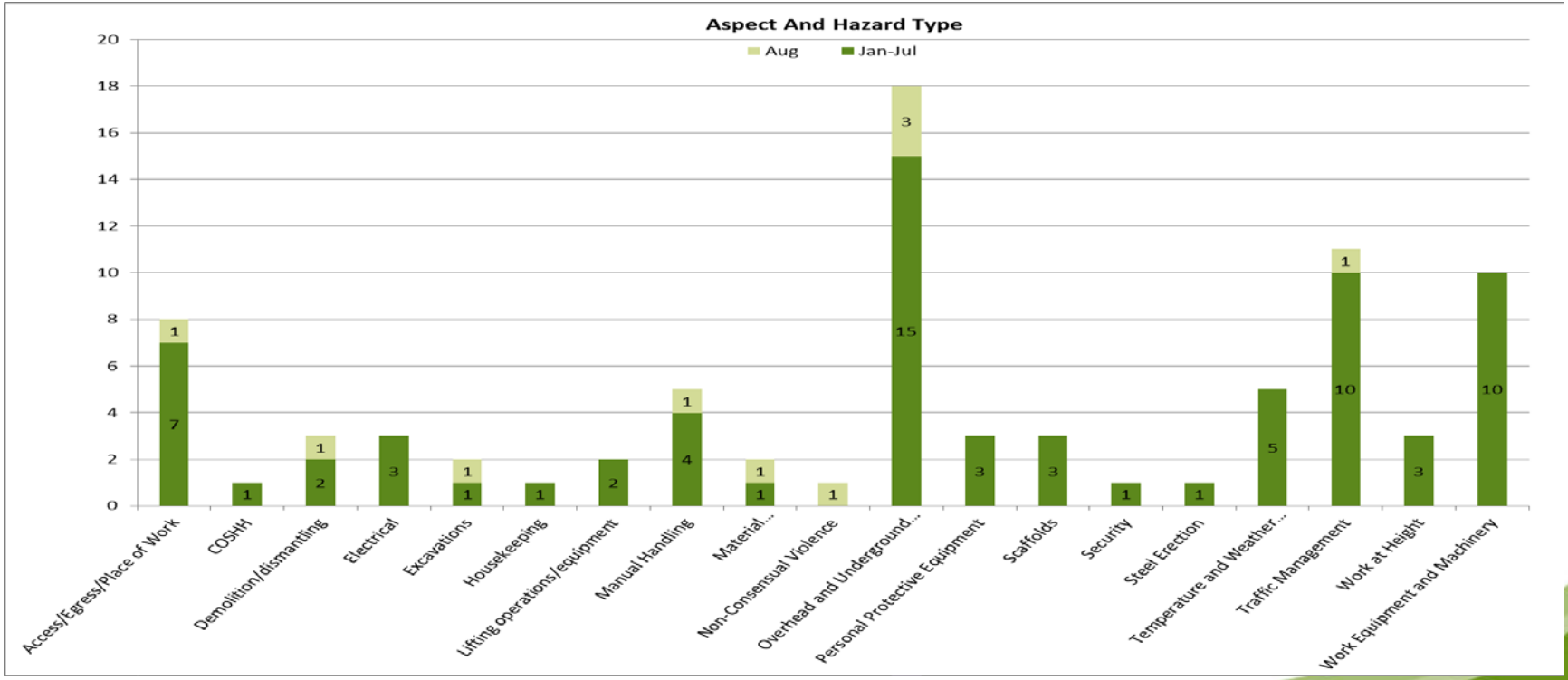
Health and Safety – Safety Performance



Transmission Overhead Line Working at Heights Safety Forum

Transmission OHL W@H Safety Forum

- Forum agreed that falling objects posed the most significant danger to staff and site operatives.
- Control and implementation of hazard zones is inconsistent.
- Limited data available only high potential or actual accidents highlighted / recorded.
- Agreement to conduct anonymous survey of OHL line teams to gain data.

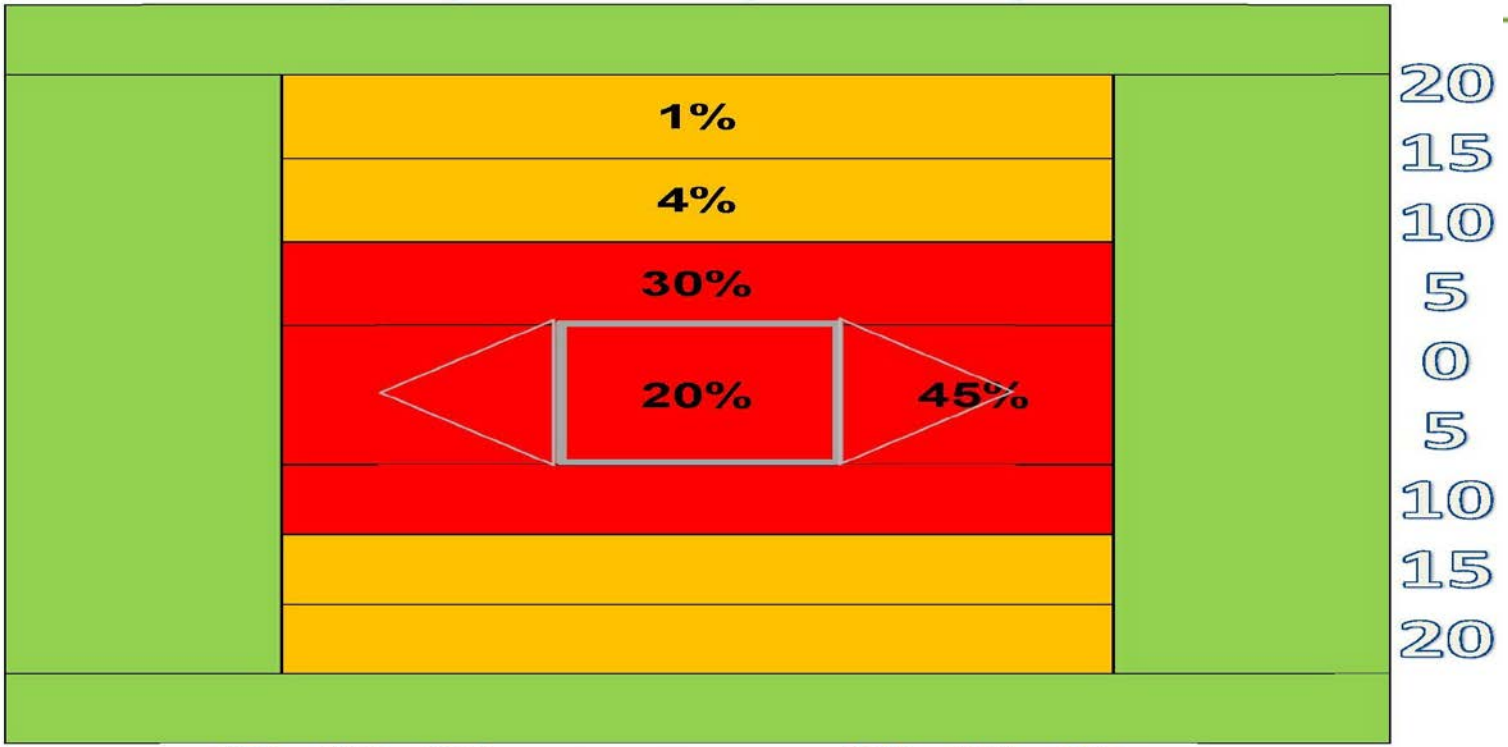
Dropped Objects Survey Report (Summary)

146	(Washers / Split Pins/ Lashings / Pens / Scotch Tape and Nuts)
60	(Bolts / Dowel Pins / Earth Braids)
26	(Conductor Shoes / Vibration Dampers / Spacer Dampers / Bonding Spacers / Lugs)
42	(Socket / Adjustable Spanner / Podger / Ratchet)
3	(Arcing horn / platform / running block)

277 Total Items Dropped

128 Survey Sheets Returned

Falling Objects Survey Summary Sheet



Transmission Overhead Lines

Safety Critical Rules

Transmission OHL Safety Critical Rules

- Permanent Attachment shall be applied when working at height
- 100% Compliance with Safety Rules / Safe System of Works / Emergency Procedures
- Danger Zone shall be Physically Demarcated (minimum of continuous rope or chain) and access shall be controlled by a nominated person
- No entry into a danger zone without permission and positive verbal confirmation from the nominated person that all works and movement above have stopped
- Hand tools shall be tethered when in use or captive when not in use
- All equipment and materials shall be secured, raised / lowered and used in a controlled manner.
- Working above / below another activity which is in progress is prohibited unless unavoidable for specified OHL activities
- Supervisors shall be positioned to allow control and communication with all team members.
- All Incidents / Near Misses / Hazards shall be reported as per client / employer requirements.


SP TRANSMISSION

SP ENERGY NETWORKS

Energy Networks Purchasing

David Comrie
Head of Purchasing – Energy Networks

Supplier Registration

SP TRANSMISSION

Achilles

- Achilles is a provider of supplier management services to several industrial sectors, and is used by major UK Utility Organisations to source and pre-qualify suppliers
- Primary route for suppliers to access contracts with major UK Utility Organisations
- Supplier registration: http://www.scottishpower.com/becomespsupplier.asp
- Key Contact at Achilles: Gavin Pickup: gavin.pickup@achilles.com
- During registration, suppliers must indicate which product/services they provide, and ensure they register using the correct product/service codes
- Suppliers must provide a key contact who will receive all correspondence relating to potential contract opportunities – very important to ensure this mailbox is managed

International Standards Organisation (ISO) Accreditations required:

- ISO 9001 (Quality)
- ISO 18001 (Health and Safety)
- ISO 14001 (Environmental)

Achilles registration

UVDB Verify Audit

- To work with Scottish Power, Suppliers must have Verify and achieve an average score of 75%+
- Independent audit assessment carried out by Achilles
- UVDB Verify allows your company to demonstrate compliance to health, safety, environment and quality requirements.

Pre-qualification Questionnaire (PQQ)

A pre qualification questionnaire (PQQ) is used to request information from potential suppliers to enable us to identify which suppliers are capable of delivering the contract.

Step 1: Screening Process

- Buyer will search under relevant product/service codes in Achilles
- Supplier has Verify (and achieved score of 75%+)
- Supplier has ISO 9001, 14001 and 18001

Step 2: Issue of PQQ

- Issued to suppliers via Achilles “eQual” system
- **Content**
  - **Financial details of organisation**
  - **Experience**
  - **Use of subcontractors**
- Responses requested usually 1 – 2 weeks.
- **Responses received after the deadline will not be considered.**
- Responses are then scored – must achieve the minimum threshold score (outlined in the PQQ) to be taken forward to tender stage

Contract Award Criteria

- Contract award criteria is outlined in the Invitation to Tender (ITT) letter
- Ensures that it is clear and transparent to all tenderers of how their bid will be assessed
- Contract award criteria for Scottish Power:
  - Stage 1: Technical compliance (pass/fail)
    - Tenderers must be technically compliant to enable them to be taken to the next stage
  - Stage 2: Commercial – lowest cost

Tender Process

Supplier Relationship Management (SRM)

- E-tender tool, used throughout Iberdrola Group
- All tender documents uploaded and published to tenderers
- Tenderers return all bids through SRM

Invitation to Tender (ITT) Pack

- ScottishPower Policies:
  - Health and Safety
  - Environmental
  - Alcohol and Drugs

- Part 1: Scope of Work/Specification
- Part 2: Technical Standards
- Part 3: Commercial terms and conditions
- Part 4: Project Management
- Part 5: Technical Schedules
- Part 6: Pricing Schedules

Tender Process

Tender Submission Essentials:

- **Technical**
  - Full compliance with all tender documentation
  - Completion of the Part 4 (Project Management) schedules
  - Completion of the Part 5 (Technical Schedules)
  - Provision of a project programme, method statement
  - Provision of CV's for key personnel

- **Commercial**
  - Completion of Part 6 (Pricing schedules)
  - Full compliance with Part 3 (terms and conditions)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