



High Pressure Operational Business Plan

Mutual Energy
in partnership with Scotia Gas Networks



Statement from the CEOs of Mutual Energy and Scotia Gas Networks



A handwritten signature in black ink, appearing to read 'Paddy Larkin'.

Paddy Larkin
CEO Mutual Energy

As CEOs of our companies we are delighted to bid together on this exciting opportunity to develop the gas market to the west of Northern Ireland. We believe the combined strengths of both our companies can best service the needs of the gas consumer and industry in this region.

We are submitting a linked bid for transmission and distribution, because by working together we can create significant synergies which ensure that the regulatory authority can achieve best value for the project.

Mutual Energy's mission is to provide a safe, reliable and efficient gas and electricity transmission service to our direct customers and to consumers throughout Ireland. We also maximise value to our stakeholders by operating efficiently and by reducing the cost of capital and operating costs. We operate both the SNIP subsea pipeline and in-country transmission infrastructure on a fully mutualised basis ensuring all value generated goes back to Northern Ireland energy consumers.



A handwritten signature in black ink, appearing to read 'John Morea'.

John Morea
CEO Scotia Gas Networks

Scotia Gas Networks is the second largest operator of gas distribution infrastructure in the UK. We have been an active participant in the development of the gas market in Northern Ireland since our creation and our teams were responsible for the commissioning of the major transmission pipelines into and through the province. We provide various critical services to all the operators in the market, working with Phoenix Natural Gas, Bord Gais Eireann and Firmus Energy as well as Mutual Energy's gas businesses; providing maintenance, emergency response and gas control services. We also have a strategic linkage with Airtricity, the major gas supplier in Northern Ireland, who is owned by our largest shareholder.

Our joint approach will also allow us to fully utilise the logistics chain of the wider SGN group for both transmission and distribution, allowing the option of securing the transmission construction from a wider range of contractors rather than a single large multi functional contract.

Working in partnership we can deliver the economies of scale, engineering expertise and innovation of SGN together with the market knowledge and experience, focus on local service and financial efficiency of Mutual Energy to achieve the best result for this important project.

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Chapter One

Business Plan Overview

- 1.1 Purpose of business plan
- 1.2 Executive summary

1.1 Purpose of business plan

The operational business plan sets out the ability of the SGN/Mutual JV application to manage all the processes and resources necessary to build and operate the high pressure network in a timely, efficient and safe manner. In cognisance of the Published Criteria and the matters set out in 3.19 (a) to (h), we have demonstrated: the securing and managing the necessary resources, skills and experience, engagement with stakeholders and the timely delivery of the high pressure network. Each section has been completed with a relevant level of detail and explanation of how the SGN/Mutual Energy JV will execute the requirements and how the costs are derived.

1.2 Executive summary

1.2.1 High level key operational objectives

When the idea of a Gas to the West project (West Transmission) was once mooted we put our minds to tackling the key challenges that the project would face. In customer numbers the extension is small in scale, but it does cover a large geographical area with some difficult build terrain. The key question became how can we provide a high quality service to the end consumer in a cost effective manner?

The solution we developed was a joint venture between SGN and Mutual Energy (see CEOs preface).

With the introduction of one of the major UK gas distribution companies with a strong record in customer service to the Northern Ireland (NI) market we hope to transform the way distribution services are provided. SGN existing businesses rank 1 and 2 in the UK for customer service and connect some 5.8m gas customers through over 74,000km of mains. With all the back end processes, staff experience and expertise we feel this will make a big difference to the service to customers. Importantly SGN is used to the model where a number of supply companies compete to supply gas to customers and the distribution company works efficiently with each of these companies to make it happen.

With low customer numbers and a developing gas market the need for efficiency is paramount. Mutual Energy is in a unique position to provide cost efficiency in the transmission part of the network. We have a proven process for providing energy infrastructure at the lowest cost of capital in the UK. We have a clear track record in successfully mutualising infrastructure assets. Being part of a wholly mutual network with three existing assets at different stages in their development we benefit from the important financing efficiency of the portfolio effect.

When gas assets are financed long-term on a rising repayment profile, as has been Northern Ireland Authority for Utility Regulation's (NIAUR) preference in the past, this will give rise to tax losses in the early years. Being part of a larger mutual group allows the loss making entities to sell their tax losses to the profit making entities, minimising the tax paid and enabling borrowings to be reduced.

Whilst this cost effectiveness is vital we also bring significant cost synergies with our two existing gas businesses. In particular we have access to all the required IT systems for both the physical and commercial control of the network, and have people in place to carry out all the system operation functions. These system operation functions include meeting the onerous EU requirements, the contracting arrangements with connecting Transmission System Operators (TSOs) and shippers, and the operational framework for managing and maintaining high pressure gas pipelines.

A key part in the strategy for delivering cost efficiency is the ability to spread the large fixed costs of running a network. At transmission level we do this by outsourcing widely to other companies who already have the large fixed cost base and are able to provide services to us using their existing processes and infrastructure. At distribution level SGN plan to use its existing GB systems where appropriate, avoiding the need for costly investment.

This cost efficiency also spreads to the build cost. Part of the JV arrangement with SGN provides that they will build the Transmission pipeline as well. This allows a full co-ordination of Distribution with Transmission as they are ultimately project managed by the same organisation. In addition SGN already has a large number of existing framework contracts which can be utilised to provide services and materials. From a purchasing perspective the Gas to the West project becomes part of a purchasing portfolio of a network company roughly 20 times larger by customer numbers than the entire NI network.

Finally, cost efficiency is only real if there is a quality to go with the competitive costs. A core operational objective is to bring quality to every aspect of the network. We hope that this business plan demonstrates our experience in safely operating and maintaining a high pressure network, having done so successfully since 2005. We have set processes in place covering the full range of activities and have experience of extending existing systems to cover new acquisitions from as recently as 2008 when we took over the Belfast Gas system.

From a point of view of quality in the build, SGN has over 60 years' experience in construction of gas pipelines, importantly in steel as well as plastic. It has a full range of policies and procedures developed and continuously used to ensure safety and quality in the build. SGN's expertise has been widely used in the past. All the existing HP pipelines in NI were commissioned by and are maintained by SGN.

1.2.2 Summary of proposals to satisfy the delivery of the project in line with the published criteria

Engagement with key stakeholders

Proposals to engage with stakeholders are addressed in a number of areas in the business plan. Specifically in section 3.6, stakeholder engagement in both pre-construction, and construction phase is outlined. In section 7.2 the additional post construction engagement is explained.

In addition to this specific work related engagement is included throughout, for example with:

- the system operator in sections 3.7 and 5.4
- the NIAUR in section 4.2
- ENTSO-G and ACER in section 5.4
- the HSE in section 5.1
- shippers in section 5.4
- the emergency services section 5.8



Close collaboration

Skills and experience of key members of staff

Skills and experience of key staff is covered in section 2.3.

Skills and experience of any JV partners and key secured contractors

JV partner staff are outlined in section 2, with the structural arrangements of the JV in section 2. Section 2.3 contains the CVs of the JV partner staff and contractors secured to provide a range of specialist services. The IT resources are referred to in section 4.5.

Risk identification and management

Risk identification and management is covered extensively in the business plan under three main areas: corporate level, construction specific level and operational level.

- Construction project governance of risk and responsibility for risk management is covered in section 3.2
- Operational risk assessment and management of change in section 3.3
- Construction quality and cost risk in sections 3.7 and 4.4
- The construction risk identification and the associated process section 4.1
- The operational post construction risk identification and process section 4.1
- Company wide risk management section 4.1
- Health and Safety and Emergency risk management section 5.1 and 5.8
- Policies and procedures to manage risk section 5.2, 5.3, 5.6 and 5.7
- Procurement risk management section 6.1

Proposed tendering arrangements

Section 6 outlines the procurement process in detail and the tendering arrangements.

Description of how data input into the workbook was derived

Cost categories and the cost drivers for the ongoing costs of running the business are included in section 8.1 and 8.2.

Section 9 describes how the costs of mobilisation, design and project management, contingency and other costs were determined. This cross references to the various sections which describe the activities.

Section 10 outlines how the WACC was derived and the key assumptions and factors which informed the estimates.

Experience of managing processes and resources to construct HP pipelines

The case studies in section 2.1.3 give illustrations of the experience of our key JV partner SGN in managing the processes and resources to construct the HP pipelines. These are simply examples of the projects which form part of an ongoing and continual construction programme which has built some 120km of high pressure, 415km of medium pressure and 6,700km of Low Pressure pipelines since 2005.

Our existing companies Premier Transmission Ltd and Belfast Gas Transmission Ltd (under its previous name of Phoenix gas) were the entities who respectfully constructed the existing SNIP and Belfast Gas transmission pipelines, though the key staff in these projects were from British Gas and are mostly long since retired. SGN supported both organisations throughout.

Experience of system operation

Mutual Energy has been the primary system operator for gas since the acquisition of Premier Transmission from British Gas in 2005. All gas used in NI has flowed through the Premier Transmission assets and Mutual Energy has used three different providers for the routine gas control room functions, namely National Grid, BGE, and latterly SGN. System operation encompassed the Belfast gas assets even before they were brought into the group, as there is no physical breakpoint between the Premier Transmission and Belfast Gas assets. The two existing TSOs owned by Mutual Energy staff are the only certified fully ownership unbundled transmission system operators in NI and the Mutual Energy staff are the only NI based system operator staff. In the latest ENTSO-G review of compliance with the transparency requirements Premier Transmission was one of only 40% of TSOs in full compliance. Our experience of system operation is demonstrated:

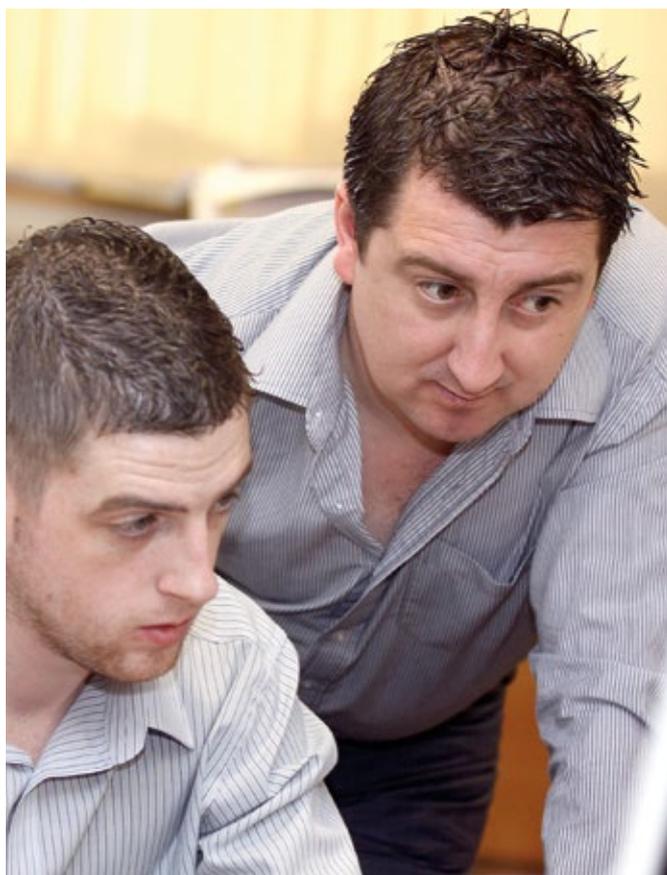
- in section 3 in respect of mobilisation including process and system set up
- in section 5.4 in the operation of the contractual arrangements at both a local and European level
- in section and 4 covering the IT architecture
- in section 5 outlining the existing Pipeline Integrity Management System which will be extended to West Transmission

By way of example our experience of moving a control system from one provider to another is discussed in section 3.2.

Proposals to secure, mobilise and manage resources

Due to our ability to leverage our existing businesses and use our existing staff more efficiently we do not foresee the need for any additional long-term internal staff. We have secured agreement for control room services and maintenance and emergency response services, from our JV partner as outlined in section 2.1 to 2.3. Section 2.4 provides an overview of the key staff we already have available, and our contractual arrangements allow the 'flexing' of resource and access to specialists from throughout the wider SGN network of some 3,676 employees.

Section 3.2 provides detail on the level of resource and the ability to use a wide range of existing framework contracts to mobilise large numbers in a timely manner.



Design, Build and Maintain

As well as the ability to mobilise resources we have a comprehensive competency assessment and training regime, including pioneering use of simulators for training control room staff (section 2.3.1) The management of resources is covered in sections 3.5, 3.7 and through the governance in section 4.

The timely delivery proposals

The delivery proposals and timetable is covered in detail in section 3.

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Chapter Two

Organisation

- 2.1 Structure
- 2.2 Resource levels
- 2.3 Competences and accountabilities
- 2.4 Deployment

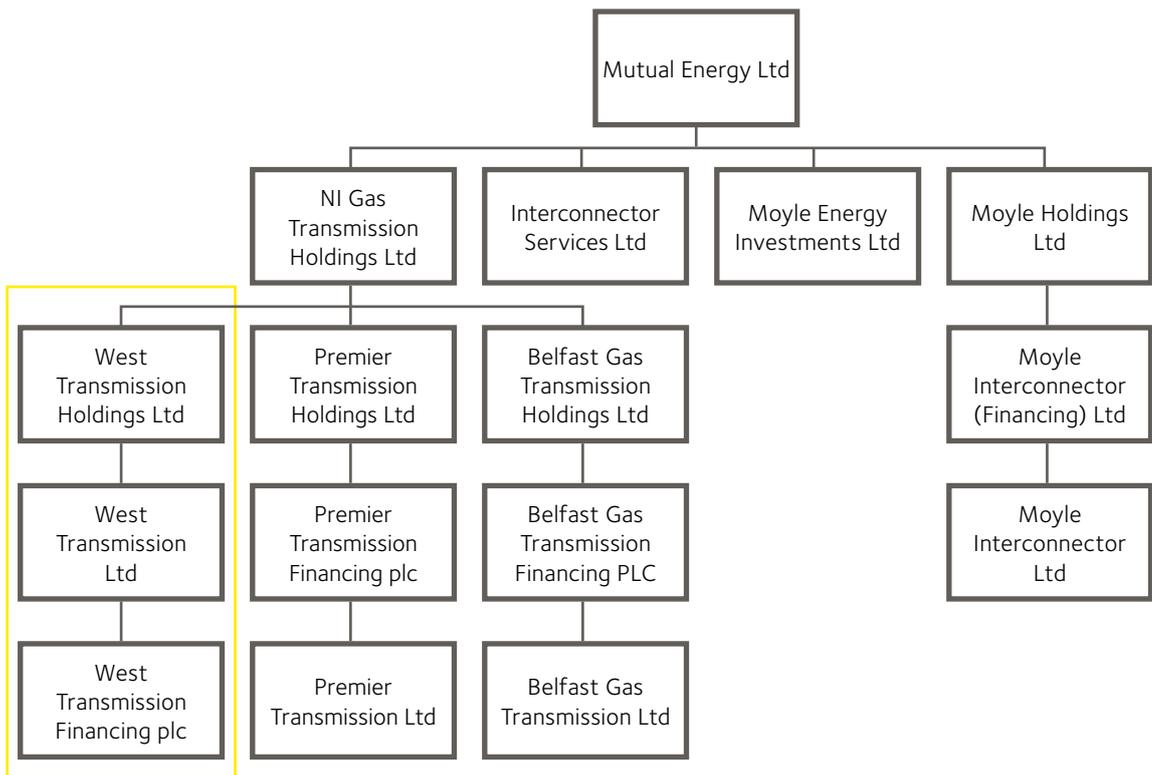
2.1 Structure

2.1.1 Rationale for organisation structure

Group structure

The applicant company is currently a direct subsidiary of Mutual Energy Ltd. We propose to change its name to West Transmission Ltd and ultimately sit in the group structure set out in Figure 2.1.1 below:

Figure 2.1.1 – Mutual Energy group structure



The Mutual Energy group has considerable experience of asset management through the mutual model with Moyle Interconnector Limited (MIL), Premier Transmission Limited (PTL) and Belfast Gas Transmission Limited (BGTL) operating under this model since 2003, 2005 and 2008 respectively. The West Transmission business (West Transmission) will be set up using a similar structure as our other businesses and will join the group as shown in Figure 2.1.1. The operating company will have a subsidiary financing company which holds the debt. The financing structure has been discussed in more detail below.

Governance structure

Being a mutual company the group has no shareholders, and therefore no distributions are made outside the group. Instead members representing the stakeholders, including residential and industrial consumers, have been appointed to fulfil many of the roles of shareholders in other companies. Members do not have any financial interest in the company or receive any remuneration.

Governance of the group is the responsibility of the Board of Directors who are responsible for setting the group strategy and for the management and performance of the businesses. The Board is responsible for the long-term success of the business, having regard to the wider interests of energy consumers in NI, and is accountable to members for the proper conduct of the business.

As neither Mutual Energy nor any of its subsidiaries are listed the group is not required to comply with the UK Corporate Governance Code (whose purpose is to facilitate effective, entrepreneurial and prudent management that can deliver the long-term success of the company). In line with best practice, however, the group has chosen to comply with the Corporate Governance Code, where applicable, in order to provide increased transparency for its stakeholders. All relevant disclosures have been included in the group's Annual Report, including detailed information on the group's governance arrangements and directors' remuneration.

The Board delegates various matters to a number of standing committees. These are listed below, along with the roles of each:

- **Audit Committee:** reviews the financial statements and their significant financial reporting judgements, monitors the effectiveness of the group's financial reporting and internal controls, and oversees the external auditor and risk management.
- **Remuneration Committee:** determines and agrees: remuneration policies for the group including executive structure; the remuneration framework for the chairman, executive directors and senior staff; the nature and scale of performance arrangements and the determination of performance targets; along with benchmarking as appropriate.
- **Nominations Committee:** considers and recommends to the Board persons appropriate for appointment as executive and non-executive directors, together with succession planning and board evaluation.

- **Risk Committee:** oversees health and safety, security and operational risks (other than financial risks) and compliance with non-financial requirements.
- **Membership Selections Committee:** selects suitable potential members of the company and makes recommendations to the Board for their appointment.

The Board retains ultimate responsibility for the strategic direction and control of the Mutual Energy group. The Board delegates the responsibility for delivering the strategic direction and goals of the group to the executive directors and senior managers.

Operational structure

One of the group's key objectives is to operate assets cost effectively on an outsourced basis. In order to do so the group assesses the level of work carried out both internally and outsourced, with the objective of remaining a lean and cost efficient operation. Key contracts are set up via competitive tendering for operational activities such as asset maintenance, security and system operation, with internal resources used for management of these contractors via a comprehensive contracting strategy and partnership approach. All employment contracts are held with Mutual Energy, with costs of employees being recharged to the relevant companies that they work for, in proportion to the time spent on each.

Where cost savings can be obtained by combining contracts for the operational businesses these are procured through Interconnector Services Ltd (ISL), another MEL subsidiary, in order to avail of these economies of scale. Contracts delivered through MEL include subsea surveys, site security, the Maintenance and Emergency Response Contractor (MERC) for the gas businesses and Geographic Information Systems (GIS).

The structure described allows for cost savings in operations and maintenance through regular competitive tendering. This allows market rates for contracts to be achieved. By sharing resources, each company only needs to pay a share of the cost rather than bearing the full cost of each function required.

Structure of Transmission licensee business

As noted the operating company will be owned by a financing company which will be owned by a holding company, with the ultimate parent company being Mutual Energy. This financing structure is important for financing purposes. The operating company is the licensee which operate the assets, however these assets could not be purchased without adequate financing and this is obtained by the financing company who raises the finance and gives security on the shares to the financing parties. The holding company then holds the financing and operating company ensuring it is a fully separate group. The financing company owns the debt and this debt is guaranteed by the operating company, providing assurance to the financiers that the debt service will be met.

The Transmission licensee group will be another separate leg of the whole group, with separate financing and separate financier obligations to have all contracts for that group at an arm's-length basis.

As the Mutual Energy group has a mutual company at the top of the group there is no risk of leakage of profits outside the group either through payments of dividends or through contracts with other subsidiaries which could be set up to include a premium. This is a key difference in the group structure versus one with only that of a mutual company contained within the group. If West Transmission was a standalone mutual company which was part of a non-mutual group then controls would need to be put in place to ensure that there was no dilution of profits or cash. This would incur additional costs to both the company who will need to demonstrate that these are in place and to the NIAUR who would need to perform audits.

Each of the operational sub-groups within the Mutual Energy group are also ring-fenced for financing and regulatory reasons so that no cross-subsidies exist. There are no sales between the operational sub-groups other than the recharge of a share of certain costs from one gas business to another and only in line with the intercompany agreements set up which do not include any uplifts.

As the bonds of each of the businesses have varying repayment structures and were set up at different times they are in varying stages of profitability and as such the group is able to benefit from tax efficiencies which could not be achieved from a standalone company. Tax losses in one company can be transferred at fair value to another profitable company and utilised in order to retain cash for the benefit of the NI consumer, rather than needing to make payment in year to HMRC. Tax losses are sold at arm's-length using the current rate of tax.

Joint venture agreement

SGN and Mutual Energy has formally entered into a joint venture agreement. The aim of the agreement is to bring together the construction experience and operational infrastructure of SGN with the operator experience and cost effectiveness of Mutual Energy group. West Transmission will be wholly owned by the Mutual Energy group and SGN as joint venture partners will be providing the necessary construction, MERC and control room services.

Key points

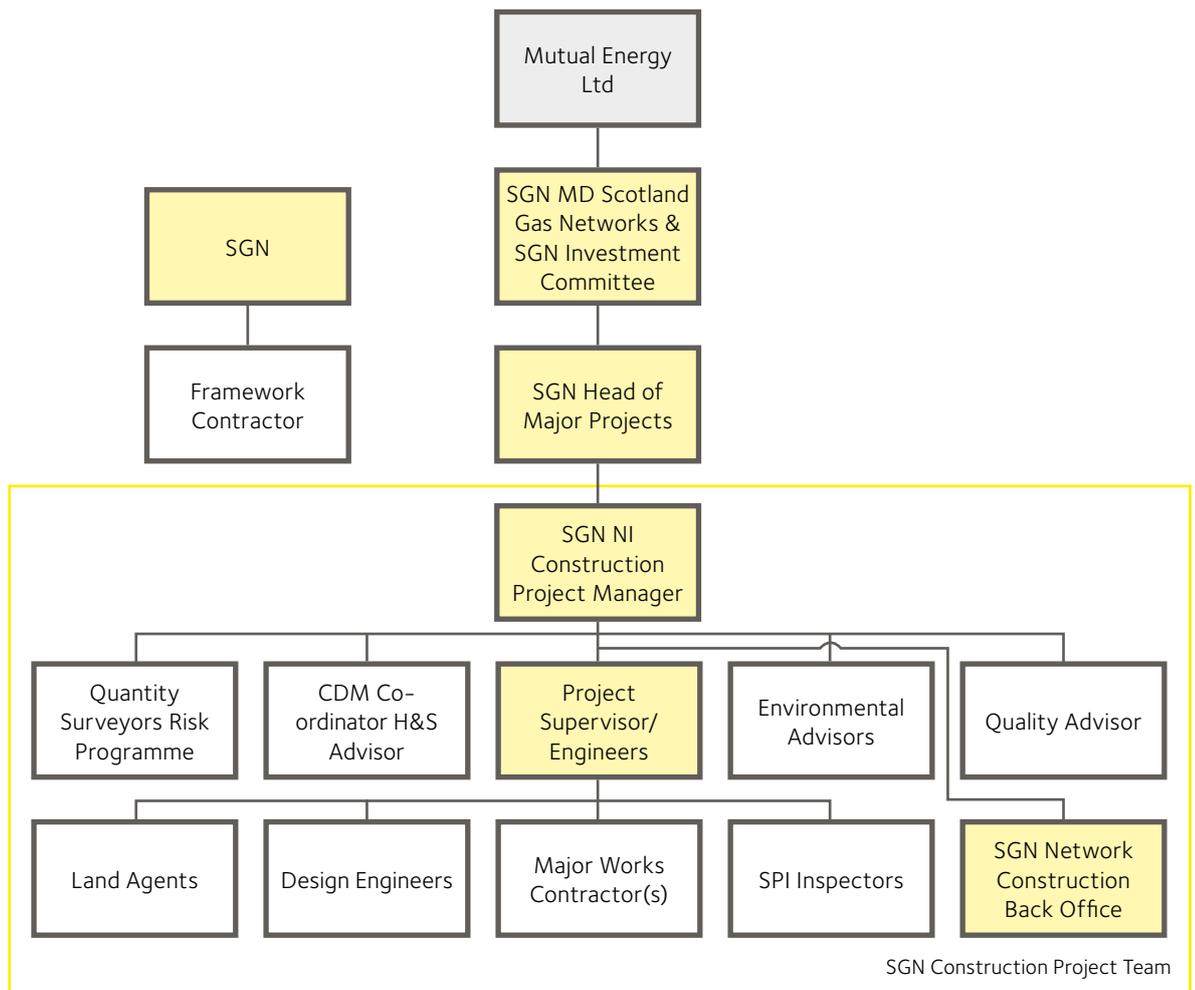
- The group utilises corporate governance arrangements aligned to the UK corporate governance code with members replacing shareholders. The UK Corporate Governance Code is one of the most transparent governance structures in the industry and a proven model to manage risk.
- There is no possibility to distribute funds anywhere to a non mutual company as the entire group is a mutual for customer benefit throughout all stages of the project.
- By being part of a wider group of mutuals both operational co-operation and tax optimisation are possible without risk of losing value to equity companies.
- The group has extensive experience in outsourcing the tasks of a transmission company and this structure benefits from this track record.
- As demonstrated above we have been operating this model since 2003 and to our knowledge are the only company in the gas industry with this experience.
- The SGN and Mutual Energy Groups have entered into a formal JV arrangement.

2.1.2 Business activities and associated resource levels

The key business activities of West Transmission will be the asset construction followed by the ongoing operations, maintenance and administration of the business post commissioning.

Construction

Figure 2.1.2 – SGN construction project team



Overall Project Management

The overall process for managing the Construction process and the JV is detailed in Section 4, which in principle is based upon close co-ordination and involvement of both parties at key milestones before during and after construction of the new HP pipeline. Both parties have agreed to utilise the inherent expertise from both organisations and to explore synergies which will evolve from the JV.

Construction works

The structure to be employed to construct the West Transmission High Pressure system will be led by a highly experienced Major Construction Project Manager employed by SGN, reporting to an SGN First Report: Head of Major Projects. The Construction Project Manager will lead the Construction Project Team (CPT), supported by appropriate Contract Management and Project Managers to enable the efficient and timely delivery of the new system. SGN will appoint up to five Project Supervisor/Officers (one per pipeline section, see section 2.4) to support the Construction Project Manager and to manage the Major Works Contractors (MWCs). See sections 3.6 and 3.7.

The SGN Head of Major Projects will report to the MD Scotland and give monthly progress reports to the SGN Investment Committee. See Governance 3.2.

SGN currently has a portfolio of Specialist Services framework contracts that can supply the various skilled and experienced personnel to populate the required CPT. This will provide options in letting this work either to a single contractor or a controlled number of contractors, with tangible benefits in management, known capability, competence and performance, availability/mobilisation of the appropriate resource, familiarity of the SGN requirements and a consistent approach.

The Construction Project Manager along with the CPT, will be highly focused and will be primarily responsible for monitoring the contractors' performance through audit techniques and monitoring overall project performance. SGN's staff will work with, and be members of, the CPT during all phases of the project.

The key responsibilities of the CPT are to:

- a) Understand and minimise risk;
- b) Deliver technically sound facilities which conform to all aspects of Health, Safety and Environmental legislation and SGN's Health, Safety and Environmental Policies within agreed timescales and budget;
- c) Ensure SGN's and contractors' requirements are clearly defined, understood and delivered;
- d) Target and focus on activities which add value to the project;
- e) Audit contractors for compliance against the deliverables;
- f) Review and document interfaces between the CPT and contractors to ensure effective communication;
- g) Select competent contractors and suppliers;
- h) Procure materials and equipment to the correct specification in a timely manner;
- i) Compile vendor certification into final construction records;
- j) Monitor and control costs;

- k) Identify adverse trends and initiate effective corrective action; and
- l) Manage the overall relationship with key stakeholders and landowners.

It is the responsibility of the Construction Project Manager to appoint sufficient resources to ensure the project is delivered in accordance with project requirements. The resource required will depend upon complexity and timescales specific to the project. The CPT will consist of all, or a selection of the following functions. Some functions will be provided by project services providers and some from SGN.

For projects that have both Electrical/Instrumentation and Civil/Mechanical work activities, the Construction Project Manager shall liaise and undertake all duties identified appropriately supported by the SGN Manager (E&I). The project will be managed as one overall project to promote consistency and take advantage of quantities of scale both financially and flexibility.

Planning and consents

Pipeline projects of this size and nature are normally subject to a planning application accompanied with environmental statements to enable environmental screening in respect to the Environmental Impact Assessment Regulations.

A primary concern in the preliminary route selection is the avoidance of environmentally sensitive areas as designated by the EU such as (AONBs, ASSIs, NNRs). The pipeline route selection process will comprise an analysis of environmental background information, mapping, aerial photography and brought together in the form of maps detailing environmental constraints. Consideration will also be given to planning constraints and future development constraints.

An Environmental Statement (ES) will be developed to comprehensively address the legal and regulatory requirements as required by the Planning (Environment Impact Assessment) Regulations. The ES will provide a base line ecological overview of the proposed pipeline route, predication of significant affect and the proposed mitigation.

Having briefly discussed the planning process with DOE we propose to undertake pre-application discussions with DOE planning in order to further establish an agreed programme of submission, agree the associated fees and the form of submission in terms of drawing requirements, format and quantity of supporting materials.

Wider consents associated with the pipeline and AGI construction eg traffic and drainage consents and a responsible consenting party will be identified as part of the Pre-Construction Phase detailed under section 3.1.1.

Contract Strategy for CPT

In order to move the project forward quickly it is intended that some of the above framework agreements be used to source some of the CPT resource required immediately for design, technical and project services.

The aerial survey and HD photography for route confirmation, will be sourced via an existing contract for expediency and also to ensure the quality and relevance of the images provided.

The pipe and materials will be competitively tendered to drive price and delivery times down. The third-party inspection will be employed via the inspection framework. In order to maximise consistency across the network it is envisaged the AGI skids will be mini-tendered from the regulator supply framework contracts already in place. These framework contracts are based upon the scale and bulk purchases of the SGN group.

Landowner Liaison

It is recognised that it will be favourable to employ local Land Agents, therefore, it is felt that this service would be better tendered locally with a Land Agent appointed per section of pipeline. The Land Agents will produce a schedule of interests listing all land owners and tenants who will potentially be affected by the works. They will then contact each party individually, explain the works and negotiate the areas of land required for pipe storage and site accommodation and all wayleaves, accesses and entry agreements.

In conjunction with the Land Agents, once the site works start it is intended to employ local Agricultural Liaison Officers via the Inspection framework to monitor the ground works on site and assist the Land Agents.

Due to the nature and scale of the works, the environmental works will be let as a specific tendered contract. These works would encompass all survey works for ecology, archaeology and geology. Consultations with statutory authorities, public bodies and any interested parties will form part of the works in developing the Environmental Impact Assessment.

Post-commissioning

The business activities of West Transmission will be in line with those of MEL's other gas businesses PTL and BGTL. MEL therefore already has resources in place to deal with these business activities and they will simply be an extension of the current activities rather than new activities requiring the creation of resources. There are two key operational activities: control room services and maintenance and emergency response.

Control room

Control room services will be contracted out in line with MEL's other gas businesses. This contract is known as the Control Room Services contract and PTL currently contracts this to SGN. As part of the joint venture agreement the Control Room Services will be provided by SGN to the new company in a co-ordinated manner at commercial terms consistent with the existing contract. More detail on the mobilisation is included in section 3.1.2. No additional internal resources will be required.

Maintenance and emergency response

The key activities are the maintenance and emergency response for the asset which will also be contracted out in line with MEL's other gas businesses. The current contractor for the MERC is SGN and the contract is also set up to allow the addition of West Transmission to the contract. Again the management of the contract will be performed using existing resource (one employee). The current contract consists of a schedule of required activities (eg surveillance, maintenance and inspections), along with an associated cost for each. As part of the Joint Venture Agreement the existing on the ground resources will be reorganised to provide the most efficient structure for the transmission assets and utilise any potential joint efficiencies with the West Distribution business. Any additional cost, however, will only be marginal and based on the activities required and the resources necessary, with no additional fixed costs being incurred. The contract includes the availability of maintenance and engineering expertise which is only paid for when it is used, instead of on a fixed basis. These include the following work areas:

- Pipeline maintenance and emergency support, including the management of the specialist Pipeline Maintenance Centre team (also on a 24/7 standby availability)
- Network analysis
- Network planning
- 24/7 call centre and dispatch
- SGN Operations – mechanical, electrical and instrumentation, First Call Operatives, Distribution Operations and contractors
- Corporate communications (24/7 standby provided with West Transmissions nominated PR Consultant)
- Design, construction and commissioning
- Pipeline, pressure management and C, E and I personnel
- Project management
- Procurement (including the benefits from SGN buying power for services such as aerial surveillance and specialist contractors)
- IT (including feedback on SGN systems and best practice developed from years of gas asset management)
- Health and Safety

- Environment
- Planning – including demand and flow analysis
- HR
- Customer services
- Innovations, and Ofgem/Regulator Innovation Funded Initiatives (IFI)
- Aviation consultancy and technical advice
- Gas industry training
- Specialist gas operations training

Resource levels are indicated in section 2.4.

Other business activities

Other business activities include landowner liaison, engineering projects, engineering compliance including health and safety, systems planning, network code, and system control and communications. These activities, with the exception of network code, are all managed by internal engineering resources using external competent persons and other consultants when required. Relationships with competent persons and consultants are already in place for all these business activities and are only charged based on the work performed. No new external resources will be required but simply current resources will be used as necessary. The group also has internal network code resources in place who will manage the network code for West Transmission without the requirement for any additional resources.

The group has a finance department in place which will perform all accounting and financial activities for West Transmission as part of its current processes, without the need for any additional staff.

2.1.3 Proposals to manage contract operations

SGN has utilised many aspects of the NEC suite of contracts for a number of years. The documents are regarded as best practice in the construction industry and through our own experiences we have adapted our contracting strategies to suit the advantages the NEC offers. NEC option A has been utilised on numerous pipeline and AGI construction projects along with Option C where there is potential for better value to be achieved from a target cost contract. For regular and smaller works SGN has utilised the NEC framework contract to engage contractors and develop a working relationship whilst utilising the core strengths of Option A along with Option E where the balance of cost, time and risks require a more direct engagement with the contractor. For low risk and low value works we have also used the NEC short contract reducing the project management obligations for both parties. NEC forms of contract are consistent and the range of contracts on offer provide for a flexible approach to project delivery allowing for value to be achieved throughout projects to achieve results on time and to budget.

NEC3 Option C was most recently used on the Provan LNG project. The benefits of the target price methodology is that it encourages a collaborative and proactive approach to project development incentivising the parties to work together so both can benefit from any savings. It offers the client the transparency required to ensure the best possible value is being achieved while also offering flexibility to manage changes efficiently for the benefit of the projects cost and delivery. The contract sets out clear roles and responsibilities for both parties along with proactive and intensive management of the programme and costs for the project, to deliver the required outcomes on time and within budget.

The MEL group relies on contractors to provide the majority of its services. Group policy is to identify those contractors who are critical to the safe, reliable and efficient operation of its assets and establish long-term contractual relationships with these key contract partners. Selection of these contractors is subject to our procurement procedures (see section 6) and rigorous risk assessment to ensure they have the capability to provide services equivalent to best industry practice. This provides assurance that the management systems and practices of these companies are applied to the group's assets.

Following careful selection of our key contractors, it is essential that we manage them effectively. We have adopted a rigorous performance based approach, reinforced with financial incentive where appropriate which is built into the contract at placement.

We consider our key contractors as the 'experts' and require them to set out the policies and procedures, structure, people and training they will use to manage our assets. Following rigorous risk assessment, we will normally adopt the contractors approach to management of our asset and set out performance targets for safety, reliability and efficiency, reporting requirements, audit and review activities.

Mutual Energy is in the process of working towards the ISO55001 standard for asset management. SGN, already accredited to PAS 55, has recently been audited and awarded ISO55001. (Note the first GDN in the UK to achieve this.)

As a minimum our policy is to:

- Ensure that the contracts include measurable performance targets appropriate to the contract
- Ensure the contractors have in place a robust Health and Safety Management System
- Receive timely and relevant information on contract performance; and
- Hold periodic review meetings with the contractor

This SGN ethos of HP Construction Project Management has been successfully used on many projects since the formation of the company in 2005, where in excess of 120km of HP pipelines and PRSs have been constructed and commissioned to upgrade and extend the existing network. Examples include:

Solent HP crossings to the Isle of Wight (IoW) (2x300mm)

The 51,000 customers on the Isle of Wight (IoW) were originally supplied by three 200mm high pressure pipelines laid on the seabed of the Solent, the stretch of sea separating the IoW from the mainland. SGN identified that these supplies were at risk due to a number of factors: unsupported sections of the pipelines on the seabed due to tidal scouring; the possibility of a catastrophic land slip at the PRS located at the pipeline landfall on the IoW; and the potential for third-party damage eg dragging anchors. The project to remove these risks involved the construction of a new PRS at Gurnard, IoW, outside the slip plane and laying 2 x 300mm steel pipelines using Horizontal Directional Drilling (HDD) techniques from the mainland at Lepe to Gurnard, and connecting the outlet into the existing Intermediate Pressure (IP) system. The length of each HDD was approximately 4km and both were achieved successfully. At the time these were the longest HDDs ever attempted in the world. The project ensured that SGN continued to meet its security of supply obligations and to provide 100% redundancy in the second 300mm pipeline. The HDDs were completed in 2010 and 2011 and the PRS was constructed in 2011.

Bathgate to Newarthill (1200mm)

The project comprised the construction of a 19.5km of 1,200mm diameter high pressure 85barg pipeline and associated control equipment within the central belt of Scotland connecting a new Above Ground Installation (AGI) within the existing Bathgate Compressor Station and a new Pressure Reduction Station (PRS) at Newarthill, North Lanarkshire. The project also included a further connection from the new PRS to the Scottish network pipeline at Carfin via a 2km of 450mm diameter high pressure pipeline. Construction took place in 2005. The primary drivers for the project were to address forecast capacity and storage shortfalls in Central Scotland and to comply with Transco licence conditions ensuring minimum pressure requirements could be maintained in 1 in 20 year supply conditions. The connection to the Scottish network pipeline at Carfin also helped to mitigate the risk created by having the West of Scotland supplied from a single outlet point off the National Transmission system. The new 1200mm pipeline was In-Line Inspected (ILI) during commissioning, a unique occurrence, as the flow during normal operations would not be sufficient to support ILI for decades. This enabled a fingerprint of the pipeline to be established from the outset and a less onerous maintenance and validation regime to be applied, providing the maximum operational efficiency from day one.

Farningham Reinforcement (1200mm)

The primary drivers for the project were to address forecast capacity and storage shortfalls in the South East of England. The project also formed part of the Network Strategy to improve resilience within the network by providing more NTS Offtake capacity and reinforcing the Local Transmission Systems (LTS) in the South East. The project will provide resilience if any one of the existing NTS Offtake facilities fail. The reinforcement project comprised the construction of a 22.6km of 1,200mm diameter high pressure steel pipeline, operating at 38bar, fed from the existing National Transmission pipeline by a new NTS Offtake at Farningham (Farningham B). This pipeline connects into the existing 38bar system at Hadlow, Kent. The project was delivered over a phased two-year programme in 2009 and 2010 and was partially commissioned to enable SGN to meet its 1 in 20 supply obligations for the winter of 2009/10.

Key points

- Construction of the asset will be managed and run by an SGN team with extensive recent experience of planning, building and commissioning high pressure steel gas pipelines.
- MEL senior operations staff are integrated into the project delivery team.
- Risk management of the construction will follow processes and procedures developed and extensively used by SGN which are at a level of detail beyond the requirements in TD1 and TD13 (see section 4).
- For a number of the contributory services to the construction SGN already has framework contracts in place, these contracts having been negotiated by a group with the buying power commensurate with owning one third of the distribution licences in GB (see section 3).
- Post commissioning the Mutual Energy team, who since 2003 have been responsible for system operation of the main gas corridor into NI, will run the assets.
- Tried and tested contracts for the full range of Transmission services are already in place with a wide range of contractors (see section 3).
- An extensive procurement regime is already in place to secure any resources (see section 6).

2.2 Resource levels

2.2.1 Internal and external resource levels, how these are built up and manpower numbers

The resource levels required will vary significantly for the construction and post-commissioning phases and are discussed below.

Construction:

SGN currently has a number of framework agreements in place across a range of activities to enable the business to procure the materials and services necessary to keep the business running effectively without the delays of going out for a full tender every time a need is identified.

The framework agreements generally run for three or four years with the option to extend for a further one or two years.

As the need for an ongoing requirement is established the intention to tender for a framework is advertised on the Achilles database and potential suppliers are invited to declare any interest. A pre-qualification questionnaire is then issued to all interested companies to determine whether they are suitable and have the capability to undertake the work stream identified. The companies successful through the PQQ process are then invited to tender for the framework. The framework will establish the terms of contract and allow for insurances, health, safety and environmental policies and procedures, QA etc to be checked. Following evaluation a number of companies will be appointed to the framework agreement and can then be called off to supply goods or services either as a single source or through a mini-tendered process.

The frameworks SGN currently has in place relevant to the project are as below:

- Design
- Technical services
- Land Agents services
- Inspection services
- CDM and safety services
- Environmental services
- Civil and mechanical works
- E&I design and installation
- Supply of PE pipe and materials
- Supply of steel pipe and fittings
- Design and supply of high and low pressure regulators
- Boiler supply and maintenance

In order to move the project forward quickly it is intended that some of the above framework agreements be used to source some of the people required immediately for the pre-construction phase A: design, technical and project services.

Construction numbers and their sourcing are discussed in section 3.2.1.

Post-commissioning:

As noted in section 2.1 the MEL group operates on an outsourced basis and therefore internal and external resources are used to the extent required for cost effective operation. The table below shows the manpower numbers for all categories of gas personnel for the group (excluding electricity employees in line with Figure 2.2.1) and the external resources. The majority of the external resources are used for short periods of time for specific tasks and are provided by way of contract from a variety of providers:

Table 2.2.1 – Group manpower levels pre commission of West Transmission

Category	Manpower numbers		Description
	Internal resources	External resources – Full Time Equivalents	
Direct engineering staff	2		Engineers employed directly to manage the gas transmission assets and relevant subcontractors.
Group engineering staff	4		Engineering and contractual staff employed to manage major projects and contractual arrangements, including group CEO. These staff can be deployed on either gas or electricity assets as required, providing cross cover and ability to ramp up resources.
Regulatory staff	3		Staff employed to run the gas commercial and regulatory changes including network code and shipper relations.
Finance staff	4		Financial controller and accountants: financial functions including accounting, financial statements, treasury management, regulatory reporting, financier reporting and assistance with network code and IME3 compliance.
Administrative and IT staff	3		Records officer responsible for the management of drawings, map and landowner liaison queries for both gas and electricity. IT systems management including responsibility for upgrades, updates and IT requirements of IME3 compliance and Office manager.
Maintenance engineers		1	See below for more detail.
Maintenance technicians		2	See below for more detail.
Pipeline officer		1	
MERC resources allocated to assets for particular tasks		1.88	These resources are available for infrequent and specialist maintenance such as meter validation, in total up to 33 different personnel are available for work allocation.
MERC subcontractors			This number represents usage of a wider team of up to nine in NI and eight in Scotland.
– NI		3.08	
– Scotland		0.12	

Control room		3.73	SGN will provide the staff and infrastructure for the control room services working to set procedures determined by Mutual Energy and applied consistently across all three gas Transmission assets. It is anticipated that an additional gas control support engineer will be required along with the existing control room personnel. Again this contract is output driven and West Transmission will not bear the risk on resources.
Competent person		0.23	An independent competent person is employed as necessary to fulfil the requirements of the Pressure System Safety Regulations (PSSR).
Security consultant		0.09	To determine security requirements, liaise with security services, and ensure appropriate standards of security are met.
Landowner liaison and legal advice		1	A landowner liaison officer is used to deal with landowner enquiries, response to aerial surveys regarding third party interference with the pipeline and supervision of any works carried out in close proximity to the pipeline.
Independent metering witness		0.15	An independent metering witness is used for meter validations.
Communications maintenance and support		0.20	A consultant is used for maintenance and support of the PLCs and RTUs which enable communication between the control room and the sites.
SCADA application support (included within Control Room Services)		-	
GTMBBS application support (included within Control Room Services)		-	
LeakFinder application support		0.02	Communications, SCADA and GTMBBS, LeakFinder, GIS, Operational IT and Office IT systems maintenance and support are provided by external consultants with specialist knowledge of these systems. Contracts are in place, which provide a fixed level of support with any additional support required available on request.
GIS		0.01	
Operational IT system consultant		0.23	
Health and Safety		0.60	A senior health and safety consultant is used for health and safety management in order to draw on industry expertise and ensure adequate resource is available to give health and safety due consideration. One external resource is in place for three days per week at present and this will still be sufficient when West Transmission joins the group.
Emergency exercise consultants		0.02	Framework contracts are in place with Emergency exercise and network analysis consultants and drawn on as required.
Network analysis		0.08	
Network code consultants		-	Network code and other energy consultants are used when specialist knowledge is required or for projects which require additional resource but where further recruitment of staff is not cost effective. The group currently has two network code and two energy consultants under framework contracts to be used as required.
Energy consultants		-	
Public Relations consultant		0.25	Public relations consultants are used to provide ongoing assistance with PR and marketing, including communication support during operational emergencies.
Rates consultant		0.01	Rates consultants are in place and used to assist with rates reviews when their use is expected to be cost effective.
Office IT support		0.05	Non specialist IT support for general office systems.
Procurement consultant		0.04	Procurement consultants are used when required in order to assist with the tendering of major contracts. No fixed resources are in place.
Total	16	15.79	

The table is not exhaustive and some more detail is provided in the following section. The contractual frameworks employed:

- (1) allows fully specialised resource to be applied to the various tasks;
- (2) provides resource only when it is needed and with costs charged on this basis;
- (3) provides transparency on costs which are arm's-length under contract rather than an opaque allocation from another group company;
- (4) allows scaling up in the case of an emergency utilising both the scale and competencies of one of the largest gas utilities in the UK.

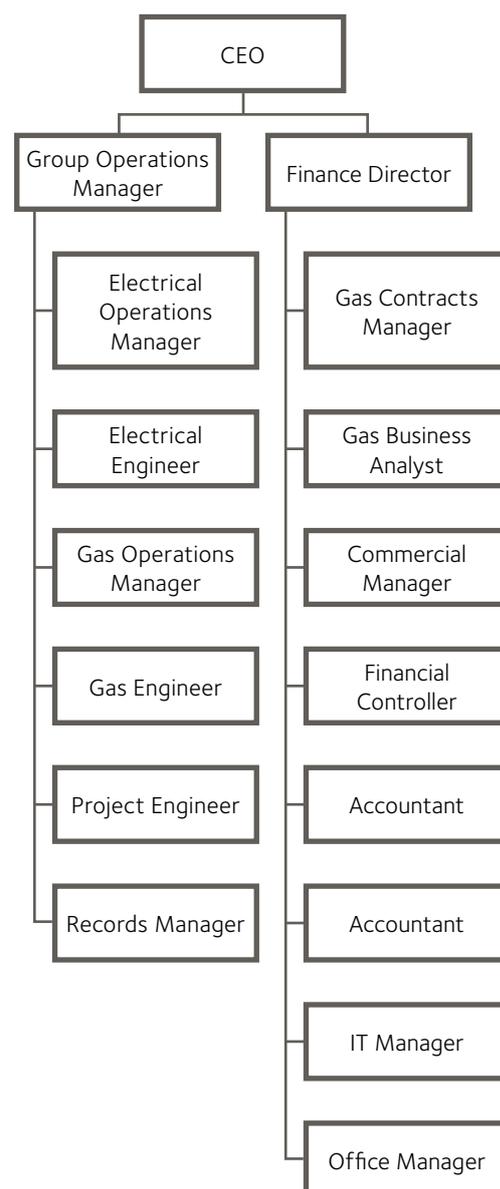
Figure 2.2.1 – Organisational Structure

Figure 2.2.1 shows the current resource structure for the MEL group, with all employees being directly employed by the parent company MEL. There is no requirement for any additional internal resources as a result of the addition of West Transmission.

2.2.2 Relationship between manpower numbers and business activity in West

Manpower numbers

Manpower numbers for each category of personnel in the group have been shown in Table 2.2.1 above. The manpower numbers shown include 16 ongoing internal staff and an estimated 16 full time equivalent external resources. Most external resources with the exception of key contracts (Control Room Services and MERC) and system support resources are available on an ad hoc basis so that costs are only incurred when work is required, and not on an ongoing basis in order to ensure cost effectiveness. External resource levels included in the table are an estimate only based on expected activities.



West Transmission is a natural extension of MEL's gas businesses as the business activities align perfectly to those of the existing gas businesses and as such West Transmission can be taken on without affecting the internal resources required for the group.

Table 2.2.2 – Group manpower level (internal and external) and increment from West Transmission

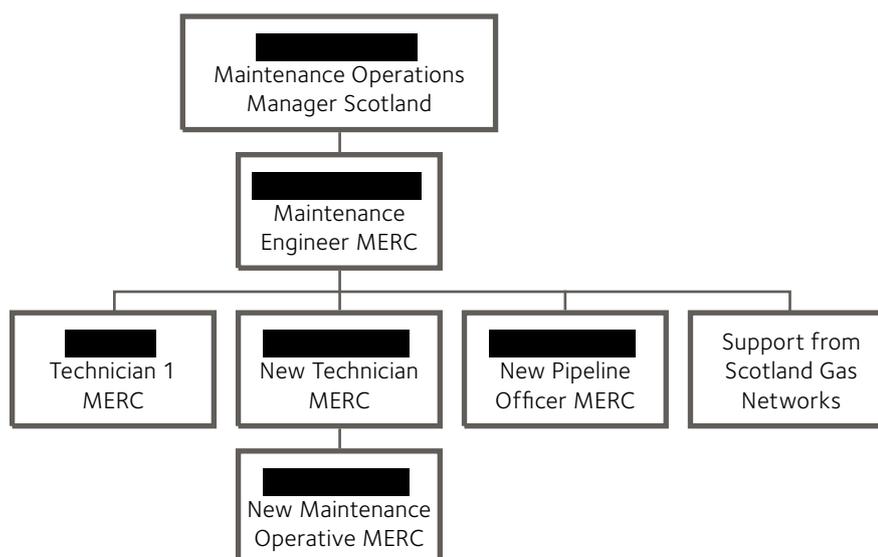
Category	Manpower numbers		Rationale for increase.
	Existing resource	Incremental increase from West	
Direct engineering staff	2		No increase required as existing contractual structures will be either extended or replicated, with little increase in management requirement.
Group engineering staff	4		Most engineering major projects are stand alone and this resource is already in place. As many of the projects are planned scheduling can be used to optimise existing resource and avoid increasing numbers.
Regulatory staff	3		By adopting existing codes and co-ordinating changes no additional staff are required. All EU requirements can be analysed and introduced by the existing team.
Finance staff	4		Existing systems and processes will be adopted and financing will be in line with our existing financing minimising any additional requirements.
Administrative and IT staff	3		No increase required as administrative and IT resources can absorb the needs of West Transmission.
Maintenance engineers	1		It is anticipated that another maintenance technician and pipeline officer will be required to facilitate the additional activities required for West Transmission. Response times for calls are required to be within one hour in the current contract and this will be still be required for any extension of the contract to include West Transmission. This contract is output defined and MEL does not bear the risk on resources. The level of resources for this contract going forward has been discussed further in section 2.4. It should also be noted that the configuration of numbers of personnel and their roles could be dependent on the locality of where the individuals are based, ie their home address, which would be a focus for cross-flexing and multi-skilling staff to suit the resource requirement. A more detailed analysis is contained in section 2.2.3 below.
Maintenance technicians	2	1	
Pipeline officer		1	
MERC resources allocated to assets for particular tasks	1.88	0.5	
MERC subcontractors			
- NI	3.08	1.05	
- Scotland	0.12	-	
Control room	3.73	1.0	An additional control support engineer will be required to facilitate the addition of West Transmission.
Competent person	0.23	0.01	Additional resources required for West Transmission will be marginal.
Security consultant	0.09	0.01	Additional resources required for West Transmission will be marginal as it will be considered within the security reviews carried out.
Landowner liaison and legal advice	1	-	Landowner liaison increases are included within pipeline officer above.
Independent metering witness	0.15	0.04	Additional metering validations will be required for the new sites and has been estimated based on the resources required for existing meters.
Communications maintenance and support	0.20	0.08	The communications at the new sites will require additional maintenance and support which has been estimated in line with our experience of our current communications in place.
SCADA application support (included within Control Room Services)	-	-	No increase is required as these applications are already in place.
GTMBBS application support (included within Control Room Services)	-	-	
LeakFinder application support	0.02	-	
GIS	0.01	-	
Operational IT system consultant	0.23	-	

Health and Safety	0.60	-	West Transmission will be incorporated within the group's health and safety system. Any additional safety audits are included within MERC and maintenance resources above.
Emergency exercise consultants	0.01	0.01	Emergency exercises need to be performed for each council area. As the pipe runs through several council areas the workload here is expected to double.
Network analysis	0.08	-	Following the addition of West Transmission to our model any future modelling will incorporate West Transmission without the need for any additional resource.
Network code consultants	-	-	It is anticipated that following the completion of IME3 compliance work no external network code or energy consultants will be required.
Energy consultants	-	-	
Public Relations consultant	0.25	-	Additional public relations will be required during mobilisation but post commissioning it is expected that ongoing will be met by the current resource levels.
Rates consultant	0.01	-	West Transmissions rates will be reviewed as part of the rates reviews already carried out.
Office IT support	0.05	-	No increase is as systems are already in place which will facilitate the addition of West Transmission.
Procurement consultant	0.04	-	Procurement is done on a group basis for contracts so no additional resource will be necessary.
Total	30.78	4.70	

2.2.3 Key assumptions and drivers

Post construction maintenance operations from 2016

Figure 2.2.3a – Proposed structure in 2016, to be developed as detailed in 2.4



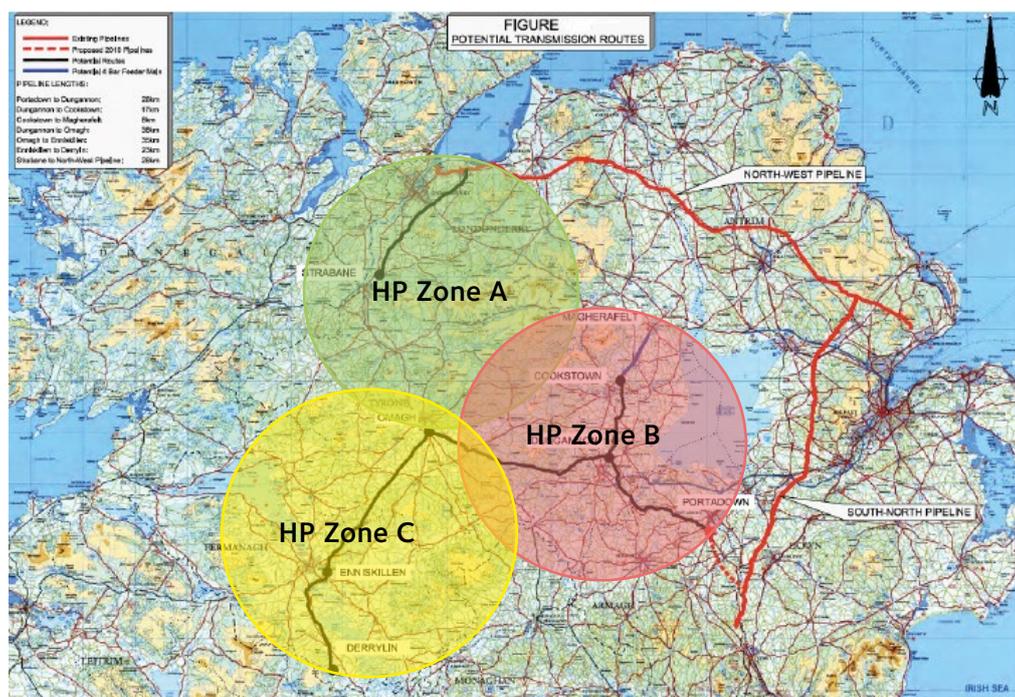
The resource requirement in order to operate the current MERC plus the addition of a West Transmission contract will continue to be supported by specialist resources from SGN as and when required, ie Metering Validations, Line Walks/ CIPS (or pigging operations where relevant), etc. Efforts will be made to recruit new resources as required from the local community in NI.

Resource levels will be driven by a number of key assumptions:

- (1) It is assumed the contract will be managed under a single framework for three assets, so driving efficiencies in management.
- (2) Both the E&I Technician, and the Electrician should be able to cross flex into each other's roles (to a degree), with the Technician required to have sufficient competence to attain some aspect of EL6 Authorisation. There may be a requirement for more personnel dependent on the extent of electrical installations on each site. Both roles will be capable of performing additional mechanical/pipeline/landowner liaison or other tasks as and when required.
- (3) Mechanical Technicians will be fully qualified in pressure management, but also capable of undertaking pipeline maintenance activities (including landowner liaison), and be prepared to attain EL6 Restricted Authorisation where applicable. This figure includes utilising the Maintenance Technician on the existing MERC Contract, with a view of all resources being utilised on all new and existing assets. Technicians may be required to work independently when carrying out downstream governor maintenance (I&C). It is assumed that domestic governor issues will mainly be dealt with by distribution teams or downstream First Call Operatives (FCO) trained and competent to requirements detailed in 2.3.1. It is also suggested that Mechanical Technicians may also be utilised on downstream private client governor/plant maintenance activities, if appropriately skilled. These works will likely require a Mechanical Team Manager or Maintenance Officer for management support (at least while any transmission MERC contract is retained). Technicians will be flexible to provide assistance to E&I/pipeline/landowner liaison or other maintenance activities as required.
- (4) Mechanical Operative will become a qualified Technician (if required), and may also be required to assist with E&I/pipeline/landowner liaison or other maintenance activities and may be utilised on <7bar standby or operations under certain circumstances.
- (5) It is assumed that pipeline maintenance activities such as line walks/CIPS may require additional resource from SGN Pipelines department during initial years however this may need to continue if other disciplines cannot be cross-flexed into a pipeline role for assistance with these activities. The likelihood is that the Pipeline Technicians would be required to carry out Symology, and would be heavily involved in landowner liaison in the initial five years and on an ongoing basis thereafter.
- (6) Initial requirement is unknown however at least one full time Pipeline Officer personnel will be required as significant landowner liaison will be necessary, along with administration to promote uptake of natural gas in these new areas. This requirement is likely to reduce when the network develops.

Out of hours standby arrangements, see also section 5.8

Figure 2.2.3b – Standby, first call attendance



It is known that the distribution network operated by SGN will have FCOs on standby at all times in the zones shown in Figure 2.2.3b above. It is proposed that these personnel be trained to respond to transmission callouts in order to meet the initial response times which is expected to be a one hour response, followed up by the MERC Technician normally within two hours.

In terms of the current MERC contract it is anticipated that in the short term the existing standby arrangements with the current SGN subcontractor would remain, with the possibility of amalgamating standby rotas once the West Transmission contract is operating with sufficient resources to allow this, essentially post 2017.

Support arrangements at a minimum will include the following each week:

- Sufficient FCOs (provided by core staff or contractors) to manage all areas of the transmission network (this will be dependent on staff locations, but could utilise Pipeline Technicians if required)
- x1 Maintenance Technician (as part of a cross-flexing team with E&I); and
- x1 E&I Technician (or Electrician) (as part of a cross-flexing team with Mechanical)

Control room manpower

Following a workload mapping exercise, it was confirmed that in order to accommodate the West Transmission remit a slightly revised SGN organisation is proposed. This resource will undertake the production of appropriate management information and monitor compliance with policies and procedures and associated performance criteria, and will operate during normal working hours on a Monday to Friday basis. Outside of normal working hours, the SGN Network Control Manager on duty will be the point of contact for West Transmission operations.

The similarity between the West Transmission remit and the Control Room Services remit allows for such a marginal increase in resource numbers to meet all future requirements.

2.2.4 Efficiency improvement plans

The organisational structure and resource levels will be extremely efficient from the outset as no increases in internal resources and few increases in external resources will be required. The company also plans to introduce further efficiencies throughout the licence period. The growth of the group's gas network will justify further training of internal staff to allow them to specialise in areas which we currently outsource due to lack of in-house specialist expertise. This move to reduce the need for various external contracts will introduce ongoing cost savings. The group has experience of bringing processes in house and was evidenced this year with Moyle successfully bringing its maintenance management in-house with savings of up to £300k per year. Staff training in EU energy legislation is currently ongoing with the involvement of staff in EU network code development which will lead to the ability to manage all future network code changes in-house.

SGN and Mutual Energy has agreed to consider the provision of maintenance and emergency response in a holistic fashion with potential for cross training and cross cover between the LP and HP systems to minimise overall costs. As the network grows other opportunities will be explored on a controlled management, competence assessment and risk basis.

Key points

- There is an immediate efficiency in manpower numbers achieved by adding West Transmission to the existing framework.
- The existing framework has a long track history for managing Transmission assets.

- By using a small core staff and contracts to provide the expertise workload variability can be managed cost effectively in a small asset; and
- As the service contracts are provided by contractual parties through an arm's-length process the customer benefits from transparency and the ability to change contractor if service is unsatisfactory

2.3 Competence and accountabilities

2.3.1 Competence management arrangements

At the time of employment, individuals are required to have attained and be able to demonstrate specific skills and qualifications that are set out in any job specification minimum requirements. Typically for the roles of Group Operations Manager and the Gas Operations Manager, the personnel must have a recognised Engineering Chartered Status and have been working within the gas industry for a minimum of five years. The process for employment of individuals is set out in the Recruitment of Staff Policy document.

Initially upon joining MEL, individuals undergo a training programme specific to the role. The content and extent of the training is dependent upon previous experience, qualifications and the work role.

Personal performance is reviewed annually in respect of training, performing the role and achieving both company and personal targets. This annual review is completed by the Line Manager and sets targets and roles for the forthcoming year. Importantly the annual review highlights any gaps in respect of competence and the appropriate training requirements are identified and set as a specific target for the forthcoming year. Training requirements are set out in the Staff Education and Training Policy document.

In relation to all outsourced contracts, the contractor is obliged to use personnel who are fully experienced, qualified, and competent and trained in the particular duties assigned to them. The contractor will not make any replacement of the key personnel detailed in their organisation structure without the prior approval of the owner's representative.

Control Room Staff

The Control Room Services contract ensures that the competency standard is detailed within the Safety Management Framework document and the competency policy is contained in the Gas Requirements Manual (GRM) and The Gas Transporters Safety Case, section 5 and section 7 respectively.

Initially, the competence of the service provider as an organisation is assessed in terms of experience and ability to deliver the service during procurement. Individual personnel are then provided with training specific to the Control Room Services role. This training process includes specific completion of set questionnaires which test the knowledge of the operative in respect of the Emergency Procedures, Commercial and Local Operating Procedures.

Emergency training is also undertaken in terms of emergency response software and emergency exercises. On amendment of any procedure employed by the Control Room Services, the changes are briefed out to Control Room Services personnel and if the changes are material further questionnaires are completed as per above. A record of on the job experience is also maintained.

SGN has adopted a **Safety and Technical Competence (STC)** system to ensure all staff are competent to undertake their specific role which is evident in both the Control Room Services Contract and the (MERC) Contract which is discussed below. Since the introduction of STCs, SGN has developed a **Competency Assurance System (CAS)** which is a process through which the competencies of individuals to carry out specified, safety related activities are determined, achieved, documented and recorded in a manner that is proportionate to the risk and size of the organisation.

Competencies are maintained via the normal Gas Control competency process which is assessed by a trained DS33 assessor and conducted on an **annual basis** for those who are licensed to operate. The competency process has been developed to enable staff to fulfil their responsibilities and to perform activities to recognised standards of competence on a regular basis, in order to reduce risks, satisfy legal and regulatory requirements, meet the organisation's business objectives and enable the organisation to meet contractual commitments. The Routine Quality Monitoring & Independent Assurance of Operational Activities procedure (SGN/PM/SHE/28) strengthens the CAS with a range of job performance monitors and assurance mechanisms that will identify any sub-standard performance between formal technical inspections and/or review.

The role of the control room in high pressure systems is fundamentally different from a low pressure control room and training and competency management must reflect this. SGN Gas Control use an STC model which was adopted from National Grid (NG) for the System Operator Management Service Agreement (SOMSA) exit. This method of assessment was reviewed by the HSE UK as part of the SGN Safety Case changes to allow SGN to exit. The method SGN Gas Control adopts is that any new starter will undergo a foundation assessment which consists of 19 units and the trainee will submit written answers to set questions; then an experienced trainer will then question the candidate to test the level of understanding. If the trainee passes the assessments they will then progress to the intermediate level. This looks at 10 further areas in more detail covering the Network the trainee has been assigned to.

On completion of this level of training the trainee will then move on to the advanced level which contains 17 Network specific units.

While completing the 17 units the trainee is linked to a relevant Engineer who will guide them through the operation of the Network until a point where the trainee will operate the network with the trainer observing. On completion of STCs, the trainee then undertakes three months solo operation over a winter period between the 1 October and 31 March on the Network being assessed. After this period, a review will take place between the trainee, Network Manager, their Trainer and Assessor to confirm that the candidate can be awarded the status of Licence to Operate (LTO). If successful, this information is updated onto the People Development Framework (PDF) database.

For a Network Control Engineer (NCE) who has previously attained LTO competence, they undergo an assessment with a Network specific accredited Assessor to renew their LTO on an annual basis.

The assessment has three mandatory elements which cover the period since the previous assessment.

- (1) The candidate will be expected to demonstrate knowledge and understanding of
 - a. any changes to the gas supply system in the Network since the previous assessment
 - b. any new Learning experiences and events, and the implications for the operation of their own Network
 - c. any new or modified procedures or processes
 - d. any changes to operational tools or systems.
- (2) The candidate will be expected to collate and provide evidence of competent operation of their Network. The evidence will then form the basis of a discussion between the Assessor and candidate.
- (3) The candidate will provide evidence of having operated the Network for a minimum of 19 shifts since the previous assessment which shall include a mix of morning, afternoon and night shifts and a mix of summer and winter shifts.

SGN Gas Control also records all employees STC and LTO records on the PDF database which issues reminders to both the Engineer and the Manager six months prior to the due date and as again as the date approaches. This database is administered by the Assessors only (SGN Gas Control have seven Assessors).

One Assessor is qualified to A1 level and is responsible for internal audit of the process. The SGN internal auditors have also completed a review of the process.

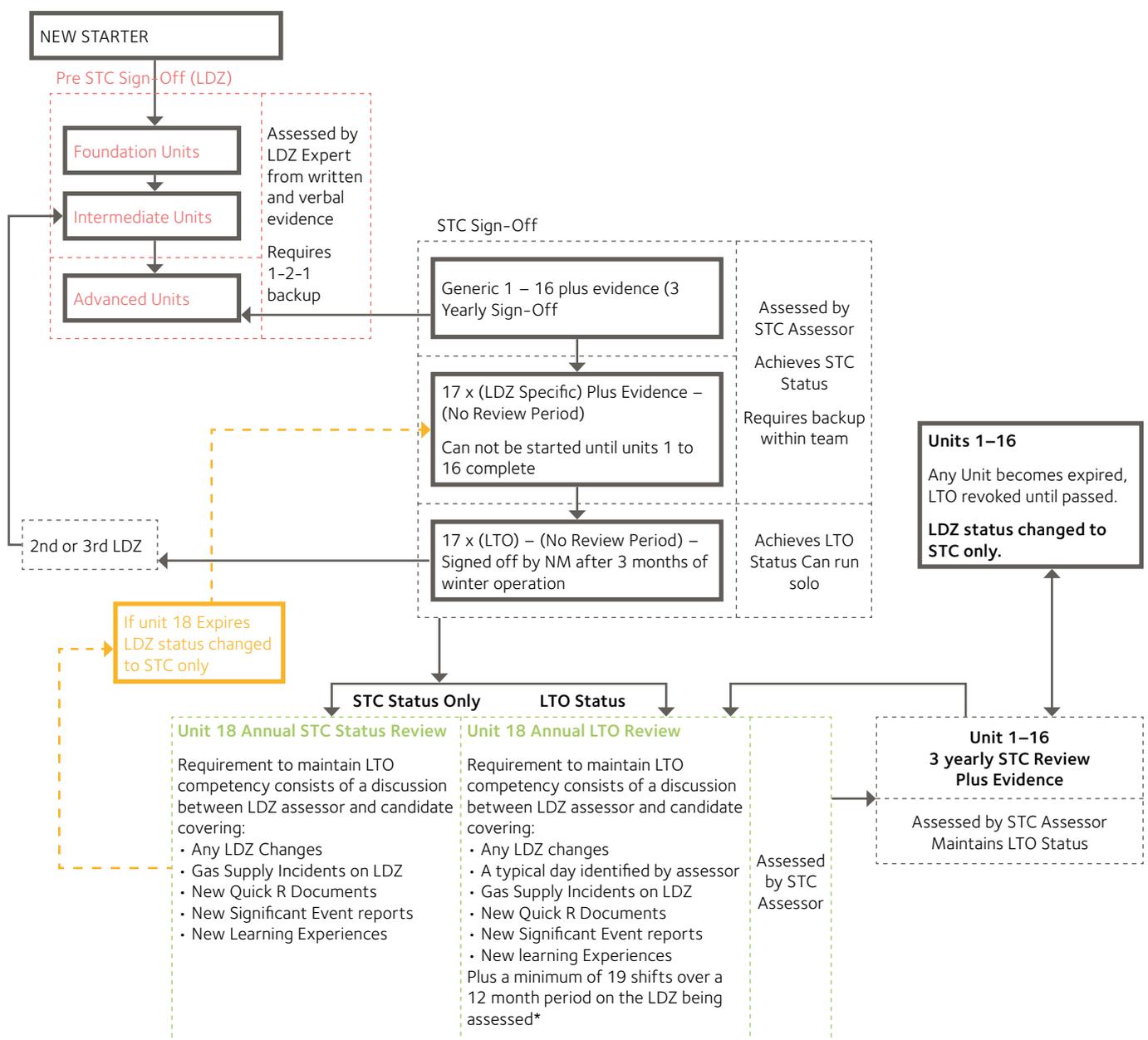
The Support Engineers follow the same level of training until they gain their STCs. The Engineer will be given the STCs appropriate to the role they fulfil but the Support Engineers are normally competent in more than one role. The matrix for the support role is shown below. The Support Engineers have a specific STC which assesses their ability to run the emergency software and appreciation of procedures used during emergency conditions.

Figure 2.3.1a – Support Engineer Competency Matrix

Expert Support Level		Specialist	
Who?	Process	Who?	Process
All in Operating Strategy	Technical Documentation and Legislation	Specialist in Operating Strategy	DNCS Picture Build
	Local Operating Procedures		
	Liaison with other departments and external agencies		DNCS Change Requests
	Monitoring and NRO Maintenance		DNCS End to End
	Emergency Conditions		
	Commercial Indicators		
	Gas Laws & Gas Quality		
	Holder/Bullet Operations		
	Telecoms & DNCS (Level 4)		
	Gas Escapes Telecoms & DNCS		
	LDZ Specific Gas Escapes		
SCADA	DNCS Operations		
	DNCS Change Requests	SCADA	Gas Holder Validation
	DNCS End to End		
	Gas Quality		
	Local Operating Procedures		
	Technical Documentation and Legislation		
	Liaison with other departments and external agencies		
Demand Management	Emergency Support		
	Interruption Support		
	Technical Documentation and Legislation		
	Liaison with other departments and external agencies		
	Local Operating Procedures		
Demand Forecasting	Forecasting Support		
	Local Operating Procedures		
	Technical Documentation and Legislation		
	Liaison with other departments and external agencies		

A report of all SGN Gas Control current STCs and LTOs is sent by the Lead Assessor to the Gas Control Room Manager and the Gas Control Support and Emergency Planning Manager. This report is then discussed each month at the relevant team meetings with the employees present. The report is also sent to the SGN SHE team who produce a monthly report for the SGN Directors on all SGN employees' current STC status.

Figure 2.3.1b – Grid Control STC sign off process



Maintenance and emergency response staff

The Competency Assurance System CAS applies to maintenance and emergency response staff. The management procedure covers the job roles that contain a significant safety, health, environmental and/or engineering responsibility and is reviewed on an **annual basis**. The process covers management, staff, operatives and contractors who work on network activities. Those within scope, are individuals whose role has a direct safety implication beyond a general duty of care; ie an individual that has the authority to make a decision or take actions that if incorrect could have an adverse effect on the health and safety of employees, contractors and/or the public. This includes employees that have responsibility for the safe flow of gas and the provision of an emergency response service.

Similarly to the Mutual internal staff recruitment process, a role description is generated to identify responsibilities assigned to an individual. The role description details the individual's principal safety accountabilities and activities and is unique to the individual concerned and reflects their specific duties. Due to the diversity of skills required across a vast number of job roles, the competency process allows for the use of standardised and bespoke formats of evidence presentation. Where there are common roles and work types, the format is uniform throughout the Premier Transmission pipeline system, the Scotland Network and the Southern Network and will also be used in the West Transmission networks. Supporting guidance documents provide a number of permissible styles for each process with any changes to these styles receiving approval from the Competency Management Group. Each format used, clearly identifies the key tasks and activities of the individual's job role.

Competency is demonstrated by a combination of training, assessment as well as other learning techniques (eg distance learning). Mentoring is used for newly promoted individuals and newly recruited employees with the Reviewing Manager deciding on the appropriate mentor and mentoring period.

The competency review period typically ranges from one to three years depending on the job role but where an employee's next review is greater than 12 months, the reviewing manager must satisfy themselves, between reviews, that the current range of competency evidence is still valid. The Reviewing Managers will ensure that no individual competency element expires by greater than three months beyond the due refresher date. New starters, promotions and secondments to roles with significant safety and technical accountability will have their capability/competence assessed within four weeks of commencing their new roles.

This CAS procedure is the SGN standard for competency assurance as demonstrated in both the Control Room Services and MERC contracts. It is the responsibility of contractors or consultants to demonstrate that all their direct employees and those individuals of their sub-contractors have the necessary safety related technical competencies to meet legal requirements to complete the work satisfactorily.

This should normally be by presentation of a valid registration card with an approved body, such as Gas Safe, Energy Utility Skills (EUS) or Construction Skills Certification Scheme (CSCS).

Any new competency standards or changes to existing competency standards will be governed through the Competency Management Group. The senior manager responsible for the local process will maintain a record of all competencies and ensure that any deficiencies in meeting the company standards are effectively managed with management information on conformance being collated and supplied by the SHE team.

The processes in the (MERC), provided for the Premier Transmission Pipeline System (PTPS) by SGN will be adopted for West Transmission. The Contract Management Plan sets out the procedures for the training, competency, assessment and authorisation of personnel who are required to work on or near electrical systems or equipment. The West Transmission Responsible Engineer (RE) must be satisfied that individuals are competent to undertake Routine Maintenance on the system and that individuals are competent to act as Authorising Engineer and/or Competent Person prior to registration on the SCO (Safe Control of Operations) Register.

MERC staff competency is maintained by SGN/PM/SHE/77, the Management Procedure for Competency Assurance (CAS) as outlined above. This scheme maintains an accurate record of employee competences, underpinned by evidence and MERC shall make this available to the West Transmission RE for audit at any time. This is reviewed annually by MERC and where insufficient evidence is available to support competence a gap action is recorded. This gap action is closed by training and, where appropriate, assessment. Staff competency is still tracked via the Safety, Training and Competency Scheme and staff are also subjected to annual reviews to identify competency gaps. Each MERC Maintenance Manager holds a copy of the STC or CAS records for their team. Completion of annual reviews is controlled through a monthly traffic light report circulated to Executive Board level within MERC.

The SCO Register referred to above involves MERC providing to the West Transmission Gas Operations Manager a register of competent persons capable of undertaking all maintenance and emergency response tasks as required. This shall include a list of Senior Authorised Persons, Authorised Persons, Authorising Engineers and Competent Persons associated with work on or near electrical systems on the transmission system. This register will include qualifications and experience, and will be matched to the core competencies as required by the Management Procedure T/PM/SCO/PM/7 for assessing Authorising and Competent Engineers.

Electrical isolation certificates are issued by persons trained to T/PM/EL/6. Regular inspections are undertaken by MERC of Authorising Engineers and Competent Persons to ensure the permitry process is being adhered to and that all relevant risks and hazards have been identified.

SGN contractors will be evaluated in accordance with Network Procedure T/PM/SHE/76 – The Management Procedure for SHE Selection and Management of Contractors and it is the responsibility of the Project Manager to ensure that the SGN Health and Safety Objectives and Targets are incorporated within project goals of all service providers and contractors.

The individual resources put forward by the specialist framework contractors for the various roles will be subject to the following assessment and checks prior to acceptance by SGN:

- review up to date CV for each resource
- ensure that resource has current appropriate qualifications for the job and suitably meet the cross match of any relevant and existing STC profile
- ensure that resource has valid licence and accreditations for the job
- note that expiry dates of qualifications, licences and accreditations exceed the project duration or that appropriate renewal arrangements are in place
- interviewed by the SGN Project Manager, primarily to validate suitability, capability, experience, performance and availability

2.3.2 Professional and academic qualifications and experience associated with key personnel

Internally, the MEL group has a number of staff that are designated to work solely on gas related activities and the qualifications and experience of these key staff are set out below.

Group Operations Manager – [REDACTED] –

A Chartered Engineer with over 20 years' experience in gas and electricity transmission, distribution and supply. A member of the Institute of Mechanical Engineers and Institution of Gas Engineers and Managers (IGEM). Qualifications include a First class Honours in Mechanical Engineering and ACCA Diploma in Financial Management.

Experience includes :

- Planning Manager with BG Global involvement in the setup of Phoenix Natural Gas
- Construction Manager with Phoenix responsible for procuring contracts and managing construction of the Greater Belfast gas distribution network including the 8km extension of the Belfast Gas Transmission pipeline across Belfast Lough, 3km construction of a 19bar spur across Larne Lough
- Project Manager with Bord Gais Eireann, he was a member of the construction team building the North West Transmission gas transmission pipeline, 116km of 18" steel cross country pipeline
- 10 years managing all the gas and latterly the electricity assets of the Mutual Group

Gas Operations Manager – [REDACTED]

A Chartered Mechanical Engineer, with 15 years' experience in the Gas industry. He started in Phoenix Natural Gas as a graduate trainee and gained experience in all aspects of Gas Distribution Engineering before joining PTL in 2005. He was initially responsible for Network Code development, shipper relations and associated systems.

After being appointed Gas Operations manager for PTL in 2010 he became responsible for the Integrity and Operation of the Premier Transmission Pipeline System (PTPS) in accordance with the PTL Pipeline Integrity Management System (PIMS). The PIMS is central to ensuring compliance with statutory obligations such as the Gas Safety Management Regulations, Pipeline Safety Regulations and the Pressure Systems Safety Regulations. He is also responsible for procuring and managing the contracts required to deliver the PIMS including the core Maintenance and Emergency Response Contract (MERC) and the operational control room contract (Control Room Services).

Commercial Operations Engineer – [REDACTED]

Gas Operations Engineer with 13 years' experience in the gas industry. Joined Phoenix Natural Gas in 2002 as an Engineering Graduate, before moving to Firmus energy to take position of Industrial and Commercial Engineer. Previous experience includes working in distribution, primarily as a connections design engineer. Responsibilities have included designing and planning in new connections, supervision and auditing of construction teams, 24 hour standby rota as supervisor. Joined PTL in 2008 and responsibilities included day to day customer operations, including billing shippers, code management, EU compliance, code operational requirements including IT contract management.

He is currently responsible for the control room contract and procedures, the onsite systems integration provider contract and ensuring staff training and competency. He has been awarded Safe Control of Operations 1, 2 & 4 and is currently working towards an IGEM chartered engineer.

Project Engineer – [REDACTED]

Twenty-two years' experience in the gas industry. Formerly Network Development Manager for Phoenix Natural Gas Ltd, responsible for the management of all Commercial aspects associated with delivering the design, construction and maintenance of a modern Gas Distribution Network. He was responsible for gas distribution network development activity, managing the engineering department responsible for delivery of network extensions. Other responsibilities include client liaison and supply chain management to achieve set KPIs with key top tier suppliers supporting the Distribution Contract. He was also responsible for training, competence and continuous development of the Network Development and Commercial team.

He joined PTL in 2013 as Project Engineer. Current responsibilities include planning, executing and finalising all engineering projects and business change, including acquiring resources and co-ordinating team members and third-party contractors or consultants to deliver projects. He is also responsible for technical long-term planning of both the gas and electricity systems.

IT Manager – [REDACTED]

Prior to joining Mutual Energy, MEL's IT Manager worked for a global IT consultancy firm for 11 years, focusing on large-scale project delivery, from requirements gathering and analysis, through design and implementation, to testing and project closure. He is responsible for managing the assessment, implementation, testing and maintenance of MEL's IT infrastructure and applications. Currently this includes the implementation of an enhanced Disaster Recovery solution for key business applications; the requirements definition, Proof of Concept and delivery of a new commercial Gas Transportation platform; and the integration of current operational systems with the ENTSOG and PRISMA platforms.

Gas Contracts Manager – [REDACTED]

Prior to joining Mutual Energy, the Gas Contracts Manager worked for seven years in the Phoenix Energy Holding Group primarily in the Gas Supply division where he was responsible for a wide range of commercial activities including energy trading, regulation, and business planning. Joining Mutual Energy as Gas Contracts Manager in January 2013 he became responsible for the development of the key contractual arrangements governing the movement of gas in NI, including the PTL and BGTL Network Codes and the Transportation Agreement.

Acting as the initial point of contact for shippers, pipeline operators and the NIAUR on all matters relating to the Network Code and Licence operation, application and/or modification. As part of the project team, he is responsible for delivering changes to the regulatory regime in NI; particularly in relation to EU compliance and represents PTL in its dealings as a member of ENTSOG.

Business Analyst – [REDACTED]

After joining PTL in 2013, a graduate in LLB Law with Honours she has become responsible for commercial aspects associated with transmission and network code development. Key duties include development of the key contractual arrangements governing the movement of gas in NI with a focus on achieving European Compliance, dealing with enquiries from external stakeholders, Interpretation of European Legislative changes and their impact on Mutual Energy and the wider industry, liaising with the Gas Operations team to ensure that the IT systems used and the transportation commercial operation procedures are consistent with the underlying Network Code.

Gas Analyst – [REDACTED]

After graduating with a BA from the University of Cambridge, MEL's gas analyst worked for a global accountancy practice for five years, gaining both tax and Chartered Accountant qualifications. Since joining MEL in 2012, key duties have included the preparation of the gas businesses management and statutory accounts, supervision of all tax affairs and liaison with the NIAUR in relation to financial and regulatory licence requirements. She now focuses primarily on the financial aspects associated with changes to the NI regulatory regime with a focus on achieving European compliance, in particular the Network Code on Tariffs.

Accountant – [REDACTED]

After graduating with a First class Honours in Mechanical Engineering, she spent four years working for Ernst & Young as an audit executive on a variety of audits including several energy companies before qualifying as a Chartered Accountant in 2009. She joined Mutual Energy in 2010 where responsibilities include: management accounting; financial accounting; budgeting; financial interactions with the NIAUR, including required revenue reporting and shadow price control determination; and compliance with financial covenants. During her time at Mutual she has also been involved in the development of commercial arrangements for the gas businesses including CAG development and IME2 compliance.

SGN Management and Construction Staff

MD Scotland Gas Networks – [REDACTED]

A chartered engineer (UK), a member of the Institution of Gas Engineers and Managers, and a member of the Institute of Directors. Qualifications include; BSc and HNC in Gas Engineering. Over 30 years' experience in the gas industry. Member of the SGN Executive Board and has been responsible for all Distribution and Transmission Operations in Scotland since 2005 and successfully leading the Scotland GDN to the top Ofgem ranking, out of the eight UK GDNs. Additionally responsible for Transmission Construction throughout SGN, Scotland and South of England since 2013.

Head of Major Projects – [REDACTED]

A chartered engineer (UK), European Engineer (Eur Ing), a Fellow of the Institution of Gas Engineers and Managers (IGEM), member of the Institution of Civil Engineers. Qualifications include: MBA, BSc (Hons) Civil Engineering, ONC Engineering, ROSPA Managing Safely, Association of Project Manager (APM), DEA and GDA. Over 33 years' experience in the gas industry, the majority as a Senior Manager and is responsible for the delivery of Major Projects throughout SGN. Has previously held head of department in operational and commercial roles in Transmission, Distribution and Metering, including two overseas Transmission projects working to International Industry standards. Has been involved and supported the development of the gas industry in NI since 1996.

Construction Project Manager – [REDACTED]

A chartered engineer (UK), a member of The Institution of Gas Engineers and Managers, a member of The Institution of Mechanical Engineers and a member of The Institute of Leadership and Management. Qualifications include BSc in Mechanical Engineering. Over 25 years' experience in the gas industry predominantly in Transmission construction and maintenance. Involvement in a wide range of projects across all pressure regimes and types of gas site.

Previous experience of successfully managing complex and large scale transmission projects. SGN/PM/G17 approver/appraiser for above and below 7bar steel pipelines, PE100 pipelines, above and below 7bar PRSs and cathodic protection. Conversant with NEC forms of contract.

Project Officer/Supervisor – to be appointed

Will have 10 years' experience of working on transmission projects. Five years' experience of project management involvement with large or complex transmission construction projects. Conversant with NEC forms of contracts.

Safety Officer – to be appointed

Will have a recognised NEBOSH or equivalent qualification with experience of working in the gas industry. Further qualified as an addendum to the NEBOSH certificate in construction.

Control Room Services Staff

Gas Control Manager (GCM) – [REDACTED]

The GCM is a chartered engineer with Institution of Gas Engineers and Managers (IGEM) membership. Qualifications include ONC and HNC in Mechanical and Production Engineering, BEng (Hons) in Natural Gas Engineering (Distribution and Transmission).

Thirty-one years in the gas industry, with broad experience of technical, operational and non-operational activities. This includes running the shift operation responsible for daily gas supply to SGN's 5.8 million customers via the GCC at Horley. He supported the integration of a new gas control system (DNCS) into the GCC, which was followed by the implementation of a new telemetry system. He is also the Emergency Controller on the annual Gas Supply Emergency exercises led by National Grid (Reform, Revive and Saffron).

Gas Control Support and Emergency Planning Manager – to be advised

A chartered engineer with IGEM membership. Qualifications include Certificate in Management Studies, ONC and HNC in Mechanical and Production Engineering and City and Guilds Gas Distribution 663.

Thirty-two years' gas industry experience, 17 years in the Gas Control Centre. As well as participating in the annual emergency exercises, he is also responsible for planning the exercises with the NEC. Lead manager in setting up SGN's new GCC including the design of control room layouts, training of staff, and migration of staff from the central control room in Hinckley. Implemented the new Distribution Network Control System by working with the IT project Manager from a business perspective. Managed the Energy Performance Agreement role from National Grid Transmission into SGN.

Head of Network Management (Transmission) – [REDACTED]

A chartered engineer with IGEM membership and Institute of Administrative Management (IAM) membership.

Thirty-two years gas industry experience, asset management activities of transmission and storage assets including 3,000km of local transmission pipelines, 27 off takes from the national transmission system, 315 pressure reduction stations, 94 low pressure holders, 25 high pressure vessels, one high pressure buried pipe array, four LNG storage/distribution sites, one LPG storage/distribution site, numerous valves, electrical and instrumentation assets.

Head of Network Construction – [REDACTED]

A chartered engineer with IGEM certification and B.Sc (Hons) in Mechanical Engineering. Thirty-two years' experience in the gas industry. Construction experience in Transmission (>7bar) and Distribution (<7bar) activities including design, commissioning and project management. Experience in managing and leading diverse teams. Experience in developing, evaluating and managing major contracts, strong record of delivering projects on time and within budget, strong technical and commercial analytical skills.

Head of Network Strategy – [REDACTED]

A chartered engineer with IGEM membership. Qualifications include BSc (Hons) Degree in Metallurgy and Materials and ONC and HNC in Mechanical Engineering.

Thirty-three years' gas industry experience with wide ranging knowledge of Technical, Operational and Non-Operational activities, including responsibility for the design, planning and asset management of all distribution assets operating up to 7bar. Lead responsibility for developing key asset investment strategy for SGN and agreeing these with the HSE and the economic regulator.

Head of Engineering Policy – [REDACTED]

A chartered engineer with IGEM and Chartered Institute of Purchasing and Supplies membership. Qualifications include Postgraduate Diploma in Management Studies and Honours Degree in Mechanical Engineering. Twenty-seven years' experience across a broad range of disciplines within the gas industry, including Operations, Connections, Asset Management, Network Planning, Contracts and Project Management. He successfully managed the first stage of the SOMSA exit programme and the delivery of the Gas Control Centre.

Policy Manager – [REDACTED]

A chartered engineer and Fellow member of IGEM, Member of Institution of Mechanical Engineers (MIMechE) and Member of the Chartered Management Institute (MCMI). Twenty-two years in the gas industry, experienced in plant installation, commissioning, maintenance, operations management, technical policy making, and investment planning and project management. Proven engineering and management skills with the ability to manage change and achieve financial and other key performance targets.

Project Manager, Power Generation – [REDACTED]

An Incorporated Engineer (IEng) and member of IGEM. Qualifications include NVQ Level Four in Procurement and HNC and ONC Mechanical Engineering. Thirty years' gas industry experience, currently working on delivering special projects which include the procurement, delivery and installation of a 4.5MW turbo expander, also experienced as a Network Operations Manager and New Connections Business Manager managing service provider contracts.

Network Support Manager – [REDACTED]

A chartered engineer with IGEM and Chartered Institute of Purchasing and Supply membership. Qualifications include BSc in Mechanical, Aeronautical and Production Engineering and HNC Mechanical Engineering. Thirty-three years' Gas Industry experience, professionally qualified and experienced member of the Gas Control Team, currently managing the Network Control process and ensuring compliance with the companies Safe Control of Operation's procedures.

Gas Control Support Engineers – nine of

SGN has nine Gas Control Support Engineers with varied experience in the gas industry. Responsible for supporting the efficient control of South, South East, Scotland and Mutual Energy owned transmission assets in both Scotland and NI. They maintain business applications and demand management system. Gas control engineers have numerous qualifications between them and include Safe Control of Operation 1, 2, 4 and 5, SCADA support module S4, SCADA support simulation, Monitoring support module S6, Demand management system module, SCADA database maintenance and mimic editing, SCADA monitoring configuration, Qualified distribution craftsman, Supply and demand analyst, Network maintenance, Maintenance Hub and System design and planning.

MERC Contract Staff

Maintenance Operations Manager – [REDACTED]

A chartered engineer, a fellow of the institution of Mechanical Engineers, member of the Institution of Gas Engineers and Managers and of the Institution of Occupational Safety and Health (IOSH). Qualifications include BSc (Hons) in Mechanical Engineering. The Maintenance Operations Manager has over 20 years' experience and is responsible for the management of E&I and mechanical maintenance activities. Based in Glasgow and has a two hour response to Scottish sites, six hours to NI.

SGN ISL Maintenance Engineer – [REDACTED]

Engineering technician with IGEM and Institution of Occupational Safety and Health (IOSH) membership. Current qualifications include NVQ3 in Mechanical Services Engineering and he is currently working towards a BEng (Hons) in Energy and Building Services Engineering degree and Incorporated Engineer status.

Over seven years' experience in the gas industry with the last two years in HSENI, dealing with all aspects of gas safety, across all pressure regimes. He has a one-hour response to NI sites. The ISL Engineer has overall responsibility to manage and co-ordinate the delivery of all maintenance activities on the ISL system.

SGN Maintenance Managers led by [REDACTED]

The Pipelines Engineering Manager has over 25 years' experience and manages all pipeline maintenance activities. Qualifications include CP Tech and he is a Level 2 member of the institute of Corrosion. The Electrical and Instrumentation Manager holds Scotvec Certificate in Electrical and Electronic Engineering and has over 20 years' experience. Based in Glasgow with a two hour response to Scottish sites, six hour to NI. The Maintenance Manager has over 24 years' experience and manages pressure control equipment. He holds SCOTVEC Assessor, ISM and is a member of IGEM. A second Maintenance Manager has over 34 years experience is employed as a maintenance support manager for all maintenance aspects of the contract and Maximo. Qualifications include HNC Mechanical Engineering, IOSH and he is on International Register of Certificated Auditors (IRCA).

Emergency Response

SGN provides a team of experienced personnel and specialist sub-contractors to provide standby cover. This comprises a shared Duty Manager to support work in Scotland and NI. Two ISL dedicated SGN employee and one SGN Contractor support employee on standby 24/7 based in NI. In Scotland, SGN provide one ISL dedicated Senior Network Technician with an Electrical and/or Instrumentation background and one ISL dedicated Pressure management Technician. All staff based in Scotland are fully equipped and ready to travel immediately to NI if required to support the NI based team.

In addition, SGN's specialist sub-contractor, National Grid Gas Pipeline Maintenance Centre is also on a shared standby rota to provide specialist above 7bar operations support, including access to the Centralised Emergency Materials and Equipment (CEME) Scheme. Furthermore, arrangements have been put into place with local contractors in NI and Scotland to provide civil engineering support and equipment on a best endeavours basis if required.

External Consultants

External Code Consultant – [REDACTED]

MEL's External Code Consultant has 22 years' experience in the gas industry. Qualifications include Master of Business Administration and BEng Hons Mechanical Engineering. Joining British Gas as a graduate mechanical engineer undergoing engineering and management training before becoming Project Co-ordinator for the major technical re-organisation project to rationalise Transco's gas transmission system control operations and IT systems from 12 locations to four new centres. She then moved to the new Commercial Operations department which had been set up to operate the new gas transmission regime, the Network Code. She then spent five years as Commercial Analyst, first leading a team developing and delivering the internal and external performance reporting systems for the newly introduced regime, and subsequently developing proposals for improvements to the Network Code. Latterly appointed as Business Strategist, developing propositions for business unbundling and leveraging the core capability of System Operations, and managing intellectual property issues. She became an Independent Consultant key projects including support Ofgem's five-year regulatory reviews of gas transmission and distribution network companies. Recent work for PTL has included involvement in 'Common Arrangements for Gas' (CAG) negotiations and IME3 compliance.

External IT Consultant – [REDACTED]

MEL's external IT Consultant has worked in gas industry for more than 30 years for North West Transmission Gas, British Gas HQ and BG Group HQ in roles from programmer through systems analyst, project manager, planning manager, user support manager, group office systems manager and group IT strategy. He has been operating successfully as an independent IT consultant since 1998 and has been a key player in Mutual Energy and PTL IT solutions for more than a decade.

He can work at all levels from technical through to board level. Extensive experience in system design, project management, software and hardware evaluation, contract negotiation, outsource management, business process engineering, strategic planning and project justification at board level. Unparalleled experience of commercial IT and real time SCADA systems as they relate to all aspects of the gas industry. In depth knowledge of gas transportation systems. He has recently been instrumental in ensuring a successful move of the PTL control room and associated support systems (commercial, SCADA and telemetry) from BGE to SGN.

External Engineering Consultant – [REDACTED]

A chartered mechanical engineer and a Senior Consultant/MD with Alpha E Ltd. Also a Registered European Engineer with 35 years' experience covering a broad range of disciplines in the gas industry. During his 20-year career with British Gas as a Principal Engineer, he was involved in the engineering development of distribution and transmission gas networks and offshore gas pipelines.

Joining AESL in 1995 as a Technical Director he became responsible for projects associated with gas pipeline engineering. In 2003 he formed his own consultancy and has provided services to PTL since then. He has specialist expertise in gas distribution and transmission pipelines, inspection of subsea lines, inspection of pressure vessels and safety legislation including Written Schemes of Examination, Pressurised Systems Regulations, DSEAR and Hazard Assessment. He has presented numerous international papers on pipeline technology and is Immediate Past Chairman of the North of England Section of Institution of Gas Engineers and Managers.

External Engineering Consultant – [REDACTED]

Over 30 years' experience in the Power and Gas industries and has provided services to PTL since 2011. Qualifications include Master of Business Administration and BSc Honours in Mechanical Engineering. Diploma of Fuel Technology and Certificate of Power Engineering. Consultant to Mutual Energy Ltd providing advice on PTL Network development, PTL gas connections, EU Network Code compliance, Transportation Agreement, and Islandmagee Gas Storage project.

Senior level business, commercial and technical experience in the power and gas industries with BG Group and Premier Power Ltd. Experience in the development, construction and delivery of the Ballylumford CCGT and large plant projects with international experience.

2.3.3 Training and development arrangements for all employees are set out

Mutual Energy employees

MEL ensures training is provided in compliance with legislation and health and safety policies and procedures. MEL conduct regular reviews of the effectiveness and implementation of training and levels of competency within the group following incident investigations and/or health and safety inspections and audits. MEL ensures that health and safety advice is provided by professionals with appropriate health and safety qualifications, training and experience and ensures all persons responsible for carrying out health and safety reviews receive sufficient training to make sure they are competent to perform their assigned duties.

Personal performance of internal MEL staff is reviewed annually in respect of training, performing the role and achieving company and personal targets. This annual review is completed by the Line Manager and sets targets and roles for any forthcoming year. Importantly the annual review highlights any gaps in respect of competence and the appropriate training requirements are identified and set as a specific target for the forthcoming year. Training requirements are set out in the Staff Education and Training Policy document.

SGN employees

Training and Development need is informed by changes in legislation, regulation or procedures, identified gap actions in the competency frameworks, nominations by line managers, or individual requests and is therefore carried out on a competency, update or gap action basis, rather than allocating a set number of days to individuals.

The overall process is managed by a dedicated team within our Human Resources Training team, who will assess the requirement for training and ensure that regular management information is provided to pinpoint need and inform the selection and development of courses. Where appropriate, recognised qualifications are achieved by our employees to demonstrate fundamental competence, but this is supplemented by training against agreed internal standards. External registrations and accreditations are maintained as appropriate (eg Gas Safe registration, Streetworks registration etc) and all records of training are retained in accordance with recommended best practice as acknowledged under our ISO 55001 accreditation.

As appropriate our engineering policies and standards are updated to reflect changes to industry practice. These changes are then communicated to our workforce through either briefings or training. Individual training is provided in the classroom (or workshop), Toolbox talks, or delivered via team briefs held on a monthly basis at depots which highlights safety matters, near misses, or new procedures (with minor changes) and to ensure competence, individuals are assessed through the competency assessment process SGN competency requirements are documented in their Competence Assurance System (CAS) (see section 2.3.1 above). This system covers all employees and describes what is expected to ensure that employees attain and maintain competency in a variety of job roles. Line management is responsible for any formal assessments required. Contract meter workers are assessed against existing industry standards appropriate to their level and scope.

SGN Operations and Maintenance

All training required by the business is co-ordinated via the SGN Training Department. All Gas Safe and Streetworks registrations are managed by the team and training records are maintained for each employee. Staff competency is tracked via the Safety, Training and Competency Scheme, staff are also subject to annual reviews to identify competency gaps. The Competence Assurance System (CAS) is owned by the Training Team and is detailed above.

Control Room Services

The Control Room Services training plan covers the requirements for both new starts and for existing engineers to 'maintain competency'. Individual personnel are provided with training specific to the Control Room Services role. This training is provided either by Mutual Energy directly or indirectly via competent Control Room Services personnel.

SGN already has a robust system of managing its employee STCs and will utilise this system to manage the competencies of all personnel working on West Transmission assets. Based upon a thorough review of the West Transmission Network Design, the relevant Network Code(s) and relevant existing Gas Control policies and procedures, Mutual Energy will develop specific competencies for the West Transmission Transmission roles.

SGN's Competency Management Group will lead on developing a tailored process specifically for the new roles of West Transmission Network Control Engineer and West Transmission Support Engineer. Further to this, existing and new SGN Gas Control staff will require training and assessment. This is to ensure that the new West Transmission roles are fully shored up by management and the support team.

It is essential that the specific characteristics of the West Transmission Network are fully understood by the West Transmission Network Control Engineers and therefore, a specific set of competencies will be developed for West Transmission Physical and Commercial Operation. Ultimately, the West Transmission Network Control Engineer will require a West Transmission Licence to Operate (LTO) before being allowed to operate the West Transmission Network.

SGN has made an assessment that the duration of training for Gas Control Staff will be six months. Although the scale of the West Transmission Network is smaller than the smallest SGN LDZ, the workload associated with the network cannot be fully assessed at this stage. Therefore, SGN expects that a new starter will be signed off as fully competent and issued an LTO for the West Transmission Network in six months.

In order to meet this timescale and be ready for year 1 operations, dependencies on the construction side of the project will need to be removed. As such, SGN Gas Control plans to use a simulator as the key vehicle for training delivery and competency assessments. In April 2014, SGN Gas Control initiated a project to establish a Gas Network Simulator that interfaces the DNCS SCADA system to an on-line network model, providing real time data and analysis of the complete gas network. This simulator should be in place by the end of year, and amongst many other benefits, will provide of a realistic operator training environment to reduce training times, improve quality and manage the assessment process end-to-end. This simulator can be readily configured to cover the West Transmission Network and with simulated data, can cover all potential scenarios – emergencies, winter operations, summer operations, etc. The training design, development and delivery approach is further described in Section 3.1.2.

Maintenance and emergency response

In relation to the MERC contract, training and, where appropriate, assessment is provided. Similar to the Control Room Services Contract, staff competency is tracked via the Safety, Training and Competency (STC) Scheme, staff are also subject to annual reviews to identify competency gaps.

The MERC Training Policy document sets out the company's commitment to provide employees with the appropriate training to enable them to carry out their duties effectively, and to allow them to develop within the company. A rolling five year programme of assessments has been developed for Governor Craftsmen, ensuring their competence is maintained over all pressure regimes and equipment types.

MERC policy is that wherever possible, it will develop in-house training courses to meet its business needs and meet the personal development needs of the individual and enable re-training in new skills. Where external training courses are more appropriate (eg to assist individuals to attain professional and statutory qualifications or for specialist training), both MEL and SGN support their staff where it is agreed that the qualification is required to enable them to perform their duties and enables them to acquire new skills relevant to their area of work, or enables them to transfer to another part of the business.

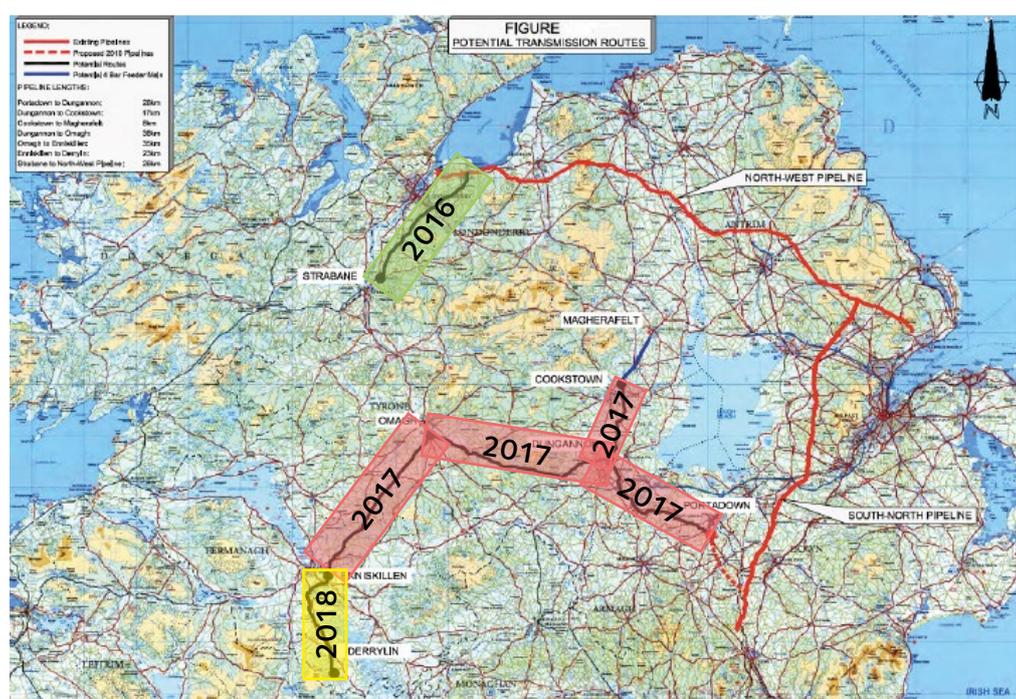
Key points

- West Transmission will benefit from a highly structured audited and documented training and competency management regime.
- The regime is already operational covering all aspects of high pressure pipeline work from on site to the control room.
- West Transmission will have access to Belfast based expertise of the team who have been running the main transmission pipeline for the last decade.
- The personnel involved are all transmission trained with experience in transmission.
- In addition a range of support contractors is already in place with the key skills needed to support a transmission asset operator.
- The existing processes and systems are tried and tested on Mutual Energy's existing assets.
- The training process for control room staff recognises the vital importance of high pressure control, including the use of simulators to train in advance of the system coming on line.

2.4 Deployment

HP Construction: The SGN Construction Project Manager and Project Team will initially be based at the SGN office, proposed to be located at Omagh during the pre-construction phase A, thereafter as the HP construction MWC mobilisation gets underway, move to a suitable MWC construction site establishment.

Figure 2.4a – Construction Plan



The West Transmission Network is divided into six sections, which will be let in whole or part as part of a competitive tendering process during 2015/16. As part of the procurement tendering process, the successful MWC(s) will be required to identify and establish suitably located construction site office(s), strategically adjacent to the pipeline sections/AGIs. It is anticipated that more than one location will be required.

Table 2.4b – Estimate of the HP Construction resources

Estimated HP Construction Resources, subject to agreement with MWCs	2014	2015	2016	2017	2018	Source
SGN Project Manager	1	1	1	1	1	Internal SGN
Pipeline Routing Engineers	14	12	10			Framework contracts
CAD Operators	4	4	3			Framework contracts
Project Supervisors/Engineers	6	6	7	7	6	Framework contracts
Land Agents Contracts		1	1	1	1	Tendered
Environmental Impact Contract		1	1	1		Tendered
Q&A inspectors		4	6	65	6	Tendered
Quantity Surveyors	6	5	4	25	11	Tendered
Safety Officers		1	1	4	1	SGN/Framework contract
Major Works Contractors			1	3	1	Tendered
Archaeologist			5	20	5	Council to nominate
Environmental Clerk of Works			1	4	1	Framework contracts

Maintenance of the Mutual Energy assets in NI by the MERC contractor SGN is currently co-ordinated from the SGN office in Antrim. The location of this office will be maintained and reviewed as the new HP West Transmission assets are commissioned. Resources will be recruited to accommodate the increase in maintenance and third party monitoring activities on the new HP West Transmission assets as they come on-line.

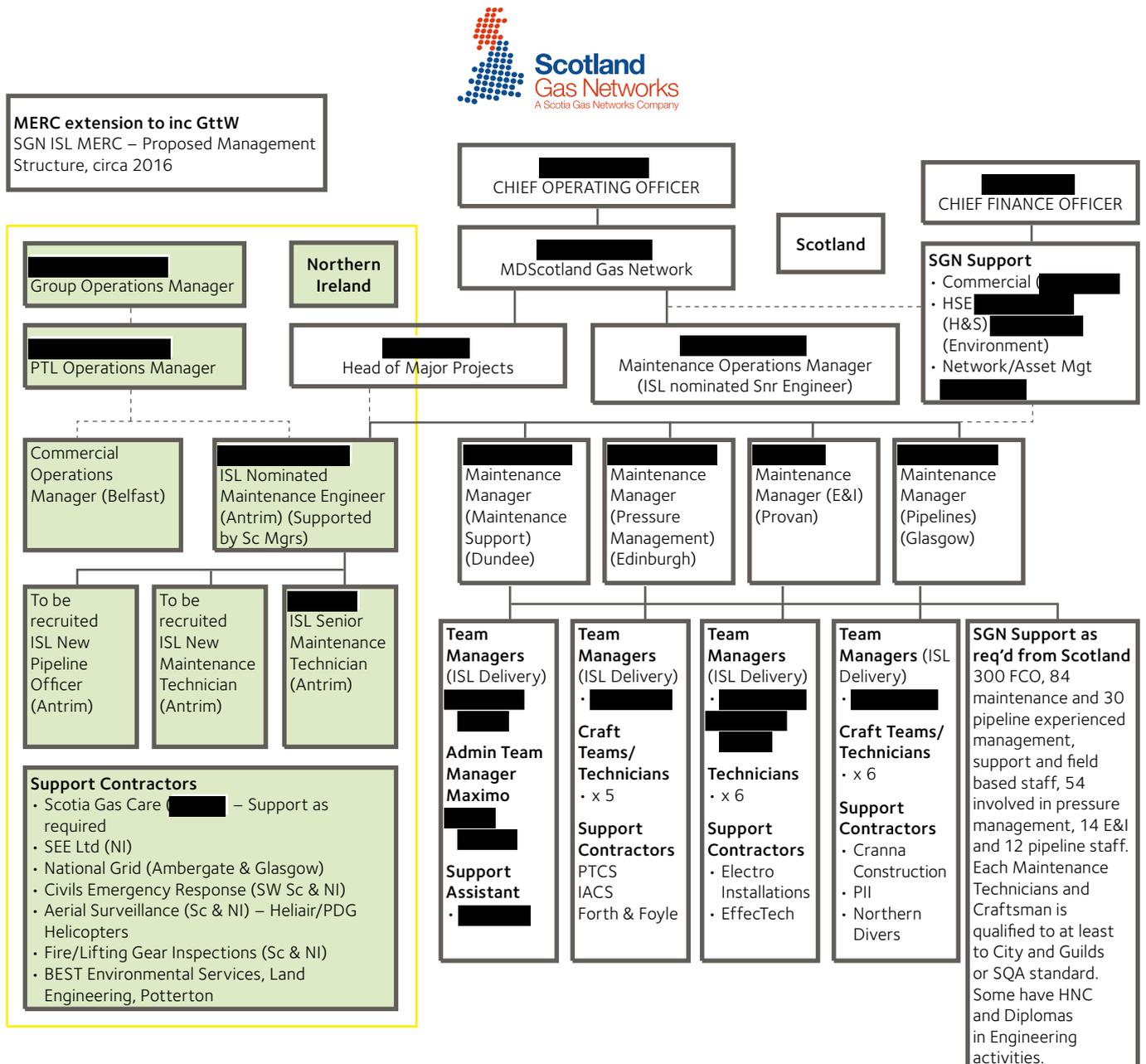
Table 2.4c – Estimate of MERC resources

Operations	Existing	2016	2017	2018	2019	→ 2026
Maintenance	Manager	1	1	1	1	1
Team	Manager	-	-	1	1	1
E&I	Technician	Sc	1	1	1	1
	Electrician (EL6)	Sc	Sc	1	1	1
Mechanical	Technician	1	1	2	2	2
	Operative	-	1	1	1	1
Pipelines	Officer	Contractor	1	2	2	1
Administration	Dundee	Dundee	1	1	1	Part time
FTE in NI		2	5	10	10	9
Sc support		3	2	-	-	-
Total		5	7	10	10	9

Sc = support from Scotland, Dundee = maintenance back office support

Out of hours Standby arrangements from 2016

Figure 2.4d – MEL/SGN MERC Structure



System Control: The existing scope of works to be extended to accommodate the West Transmission requirements as they come on line from 2016.

THIR

Chapter Three

Mobilisation

- 3.1 Plans and Proposals
- 3.2 Resources
- 3.3 Activities
- 3.4 Costs
- 3.5 Systems
- 3.6 High pressure system construction
- 3.7 Construction project management



3.1 Plans and Proposals

There is both a construction and an operational mobilisation requirement for the West Transmission project. The construction element of the transmission section includes the build of the pipeline and Above Ground Installations (AGIs), with the operational element covering what needs to be in place to enable operation of the assets from go-live.

3.1.1 Construction Mobilisation

Construction Project Initiation

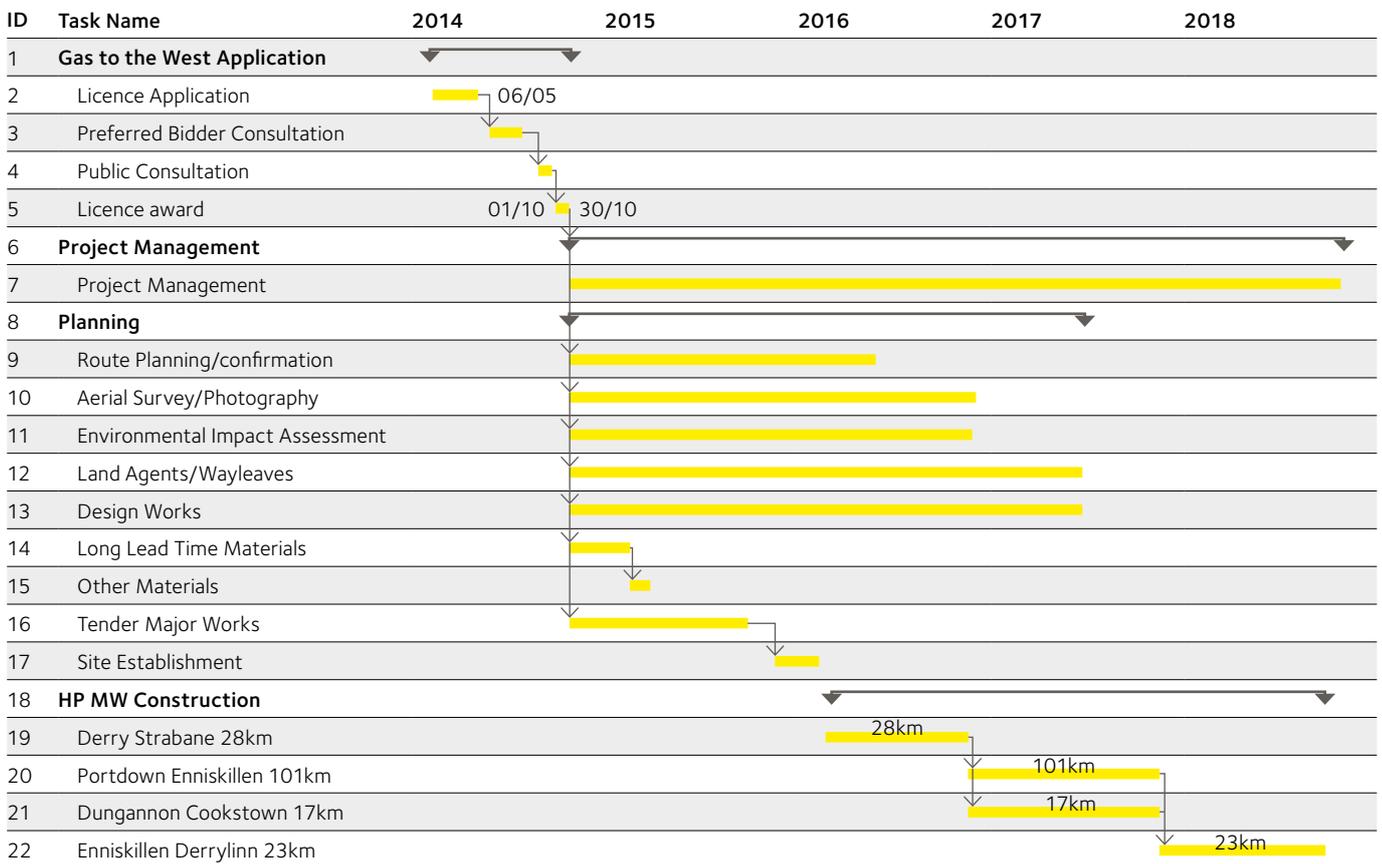
The Construction Project Initiation phase must culminate in a fit for purpose West Transmission HP pipeline system. The project will be carried out in phases as described below, including the following project principles:

- Preparation for preferred bidder consultation and licence award Phase A
- Pre-construction Phase B: route planning confirmation and environmental impact assessment and design Construction site location establishment to meet plan
- Phase C: three-year construction programme
- Risk will be mitigated by adopting a project management, governance and assurance approach
- The technical solution will comply with the agreed industry standards and legislation



Construction Mobilisation

Figure 3.1.1a – High Level Project Plan



Preferred Bidder and Licence Award Phase A

On completion of the licence application submission, we intend to maintain the availability of the bid team to answer all enquiries efficiently as possible.

Pre-construction phase B

Following the bid process and on award of the licence, the first objective for the construction of the Transmission system process will be to verify the tender route corridors or establish new corridors as appropriate. At the same time a request for the Hot-Tap connection to the North West pipeline at Coolkeeragh and the connection at Derryhill PRS will be made to BGE(NI) Ltd. Routing Engineers will be required for each section of the pipelines as soon as possible. In order to achieve a fast response to the requirement, we would seek to employ routing Engineers and CAD operators from SGN’s existing Design Framework contract which currently engages eight design houses, of varying sizes. Each section of the pipeline will have a Project Supervisor dedicated to running that section of pipeline with the exception of Derrylinn where it is anticipated that the supervisor responsible for Strabane will move to this section on completion of Strabane.

These supervisors will be sourced through existing Project Management Framework Contracts or via the Design Framework as appropriate. In addition, Project Engineers will be employed throughout the life of the construction project to assist in the design. They will then be available on site during the build process to assist the Project Manager and make engineering decisions where necessary.

Following initial routing being established the route will be flown and high definition photographs taken of all possible routes and AGI sites. These will be used to aid the routing process. Initial routing will require a mix of desktop and vantage point surveys.

During this initial routing process, site-specific scopes and tenders will be produced for the environmental works and the Land Agents. These tenders will be tendered and let in accordance with European Requirements as one tender for all the environmental works and a Land Agent per section of pipeline. As information is gathered from environmental surveys and feedback from landowners and tenants via the Land Agents, the routes will be refined and locations for the PRSs established allowing the detail design for the pipelines and the PRSs to be undertaken. As the designs are developed, material schedules for each pipeline and PRS will be produced and the long lead time items such as pipe, bends and valves will be tendered and sourced. On placing orders for these materials, a Quality Inspector will be employed via the current SGN Inspection Framework to oversee the procurement and production of the materials and equipment.

SGN currently has a number of framework agreements in place across a range of activities. This enables the business to procure the materials and services necessary to keep it running effectively without the delays of going out for a full tender every time a need is identified.

The framework agreements generally run for three or four years with the option to extend for a further one or two years, therefore encompassing the requirements for the West Transmission Project. Any necessary adjustments or contract variations required will be carried out by the SGN procurement department in time for the West Transmission Project preferential bidder being announced. Procurement under the framework contracts is described in more detail in **section 6**.

Construction Phase C

Prior to projects entering the construction phase, the network construction Project Manager must arrange an on-site co-ordination meeting with all affected and interested parties and their representatives.

These may include but not be limited to:

- Site Nominated Manager/Pipeline Maintenance Manager
- Construction Project Manager
- E&I Project Manager
- Principal Contractor
- Designer(s)
- CDM Co-ordinator
- Project Supervisor

The purpose of the pre-construction meeting is to ensure that there is a clearly documented record of all responsibilities and communication prior to the start of construction works on site. The Project Manager will be responsible for acquiring any necessary permits or Form of Authority prior to commencement and for maintaining a register of issued FOAs.

It is envisaged that the section to Strabane will be suitable to lay as a below 7bar pipeline, possibly in PE100 for the majority of the route; and it is intended that this section be laid in 2016. Routing and design for this section and associated PRSs will be prioritised so that the Invitation to Tender (ITT) document for the Main Works Contract can be produced by August 2015 to be let by November 2015 for a site start in January 2016. Materials for below 7bar operation should be able to be sourced during this tendering process. Providing there are no major environmental or landowner issues this will allow operational commencement at Strabane in October 2016.

The sections from Portadown to Enniskillen and Dungannon to Cookstown, will be tendered during 2016 for a site start in January 2017 and gas will be brought across from Portadown from October 2017 over a three-week commissioning period to Cookstown and to Enniskillen. Owing to the length of pipeline to be constructed in this period, it is envisaged that the final reinstatement of this area will be undertaken during the following year in 2018.

Due to the challenging nature of the ground conditions between Enniskillen and Derrylin, which has a high water table and is considerably wet, it is proposed to construct this section in 2018. This will allow more detailed geological surveys to be carried out and more in depth consultations with drilling contractors to establish the best route and material for the pipeline.

In order to achieve these dates, it is assumed that the environmental, ecological, archaeological and geological surveys do not present issues or risks which would unduly delay the project proceeding either during the planning and design stage or more particularly during the build phase. In addition, the other area of risk is obtaining landowner and tenant consent throughout the route in a timely manner to allow for survey works to progress and subsequently access for the build.

High level construction risk management

A comprehensive list of risks to the project delivery, proposed mitigation measures and possible consequence is given in Figure 3.1.1b. A full risk workshop will be convened immediately after the award of preferred bidder status to fully establish P50 and P80 risks and mitigations. This process is detailed in **section 4.1.1**.

Figure 3.1.1b – Initial HL Construction Risk Assessment

Risk Description	Programme Impact	Impact	Potential Mitigation
Preferred bidder not agreed before August 2014	Strabane deferred to 2017 or 2018	Possible Inflation costs	Maintain availability of Bid team and efficiently respond to all enquiries
Land owner issues	Reroute or delays	Increased land owner payments	Engage with Landowners at the earliest possible stage
Unforeseen ecology	Reroute or delays	Increased construction costs	Site investigation as early as possible as part of the route confirmation work
Unforeseen archaeology	Reroute or delays	Increased construction costs	Site investigation as early as possible as part of the route confirmation work
Routing issues due to topography or obstacles	Reroute or delays	Increased construction costs	Site investigation as early as possible as part of the route confirmation work
Unavailability of steel	Pipe not produced/received in time	Cost of delays	Multiple supply source options from other SGN Group operations. Test market ASAP
Late delivery of materials	Delay to construction	MWC standing time claims	Multiple supply source options from other SGN Group operations and suppliers
Lack of access for environmental surveys	Greater likelihood of unforeseen enviro/geology	Increased construction costs	Engage with Landowners at the earliest possible stage
Lack of resources to manage & inspect the pipeline const' plan	Pipe laid to Omagh in 2017 and Enniskillen 2018	Possible Inflation costs	Multiple supply resource options from other SGN Group operations and suppliers
Contractors ability to resource for the pipeline lengths proposed	Pipe laid to Omagh in 2017 and Enniskillen 2018	Possible Inflation costs	Multiple MWC supply resource and options from other SGN Group operations
Late supply of design parameters	Late procurement of materials	Increased design costs	Confirm design requirement and parameters as soon as possible after award
Delays to construction due to route topography	Delay to construction	Increased construction costs	Site investigation as early as possible as part of the route confirmation work
Delays to construction plan due to route geology	Delay to construction	Increased construction costs	Site investigation as early as possible as part of the route confirmation work
Failure to remove hedgerows and trees prior to bird nesting	Delay to start of site works	Increased construction costs	Ensure MWC scope of works is clear, agreed and let in sufficient time
Weather delays	Delay to construction	Increased construction costs	MWC Contract terms and conditions, Robust Project Management and Construction Procedures
Environmental Determination delays Construction	Transmission pipe delayed to 2018	Possible Inflation costs	Commence planning process immediately on award
Public Relations	Delay to construction	Increased construction costs	Robust Engagement and Communications plan
EIA Determination conditions	Delay to construction	Increased construction costs	Commence planning process immediately on award. Outcomes to be built into MWC scope
Third Party crossing consents	Delay to construction	Increased construction costs	Engage with Landowners , council or NI Rail, at the earliest possible stage
Completeness and quality of the Main Works Contract	Financial	Increased construction costs	Contract terms and conditions. Have options to draw on other resources from Group operations

Free issue materials not to specification	Delay to construction	Increased construction costs	Robust material contracts with known and trusted suppliers, full quality insp' through manufacturing
Land damage due to bad weather	Delay to construction	Increased construction costs	MWC Contract terms and conditions, Robust Project Management and Construction Procedures
Spread of plant and animal diseases	Delay to construction	Increased construction costs	MWC Contract terms and conditions, Robust Project Management and Construction Procedures
Damage to permanent works materials	Delay to construction	Increased construction costs	MWC Contract terms and conditions, with options to draw materials from other SGN Group activities
Unidentified land owners	Delay to construction	Increased construction costs	Commence planning immediately on award. Engage landowners at the earliest possible stage

When the main works start on site, the MWC will set up a site establishment and satellite site offices local to the works on the pipeline sections or AGIs. During the planning phase, suitable areas of land adjacent or close to the working strip will be identified and the Land Agents asked to investigate and negotiate these areas and access to them for site accommodation and pipe stores during the works.

Within the works information for the MWC will be the requirement to establish a site compound with sufficient accommodation for the contractors' personnel and our project staff working on each section of pipeline. The accommodation will be self-contained with offices, meeting rooms, welfare facilities, utilities and storage. The areas will be fenced, top soil stripped, Terram laid and stoned and paved for walkways. It will be large enough to accommodate sufficient portacabins for the site staff, parking for all vehicles and storage for materials. In addition to the main office areas will be areas along the route where pipe will be delivered and stored prior to stringing. These areas will be fenced and topsoil stripped.



Pipeline Stringing

The pipelines will be constructed using a spread process where several groups of people and equipment progress through the works, each conducting a different activity following on from the previous group. Where the pipeline is of significant length and timescales are short, it will be necessary to have multiple spreads along the pipeline operating at the same time. In addition, there will be specialist teams working at complex crossing points such as rivers, railways and areas where special working methods will need to be employed.

The pipeline will be pegged out along the route and fencing erected either side to create a working width. The type of fencing will depend on the surrounding land use and a stock proof fencing will be used on agricultural land. The fencing will remain throughout the works and as agreed with the landowner until the ground is fully reinstated. All construction activities will then take place within the fenced area. The width of the strip will be determined by the diameter of pipe to be laid, the terrain and any environmental constraints.

Where special crossings are to be undertaken larger box areas will be required. Where necessary, gated crossing points will be installed to allow the landowner access across the spread.

Once fenced, the working width will be cleared of all crops and hedges and the topsoil will be stripped. All ditches and streams will be bridged or flumed to ensure they are protected. The topsoil will be stacked on one side of the working width and kept separate from any other excavated material. The topsoil within each field boundary will be kept within that field. During the topsoil strip an archaeological watching brief will be present to identify any unrecorded archaeological finds.

Any utilities crossing or adjacent to the working width will be identified and marked to prevent damage during construction.

Depending on ground conditions, it may be necessary to install additional header drains along the edge of the working width.

The pipe will be delivered and stored at the pipe dumps. Each pipe will be checked on receipt, any coating or bevel damage will be noted and marked. All pipe numbers will be recorded. Following top soil strip, the pipe will be strung along the pipeline route end to end on wooden skids. Any coating or bevel damage will be rectified at this stage.



Pipeline Construction

The pipes are then welded together. This is a critical part of the pipeline construction and is subject to a high level of inspection. The weld procedures will be checked and approved for the grade and wall thickness of pipe. The welding consumables will be checked that they are compliant with the procedure and correct storage methods have been employed prior to use. All the welders will be tested to ensure they meet the required standards and automatic welding machines will be checked for compliance. All test welds are tested to destruction under laboratory conditions to determine the capabilities of the weld. The pipe ends are checked ultrasonically prior to welding to ensure there are no defects that could affect the integrity of the weld and all welds are visually inspected during welding and then radiographed. The inspectors also ensure that the correct amount of pre-heat is maintained in the pipe during the welding operation. On a long pipeline, several teams of welders or machines will complete the different passes of the weld until the weld is complete to ensure the process is maintained at pace. The welding operation is susceptible to the weather and so a welding shelter may be needed. These are also advisable where members of the public may be present to prevent the arc from the weld causing eye damage.

When the weld is passed from the radiography, the area is grit-blasted and coated with a multi-component liquid or epoxy to a standard at least as good as the factory applied coating on the rest of the pipe. The whole pipeline is then checked for coating defects prior to ditching.

The trench is excavated by trenching machines or excavators following the ground contours to give the pipe nominally 1.1m of cover. The trench is excavated sufficiently to allow for a sand bed and surround to be compacted around the pipe to protect the coating. The excavated material is placed adjacent to the trench on the opposite side to the topsoil. Different strata in the excavated spoil will be stored separately. Any land drains severed will be logged and repaired on backfill. Services will be hand dug and protected crossing the trench. Farm crossing will be maintained by fenced bridging while the trench is open.

Prior to lowering the pipe, the trench bed will be checked for cleanliness and any objects likely to cause damage will be removed. Immediately prior to ditching, the whole pipe will be checked with a holiday detector to check for damage to the pipe coating. Any holidays will be repaired before lowering. The pipe is lowered using side booms which lift and snake the pipe into the trench onto a sand bed or sand bags. A sand/fine surround is then filled and compacted around the pipe. The pipeline is then backfilled in line with the original soil sequence and compaction will be suitable for the type of excavated material and the use of the land. Any surplus material will be disposed of in agreement with the landowner.

Depending on the land post construction, drainage may be required. A specialist land drainage consultant will be employed when necessary to design and install any land drainage system.

The working width will then be reinstated as far as possible to its original state. The sub soil will be ripped to a depth of at least 300mm to break up compaction caused by the running track. The topsoil will be spread and the width will again be ripped to include the top layer of the subsoil.

3.1.2 Operational mobilisation

The operational aspect of the mobilisation phase will involve ensuring certain infrastructure and arrangements are in place to enable operation of the assets from go-live. This includes anything outside the physical boundaries of the pipeline and AGIs that are required to be in place such as the extension of existing operational agreements and the network code, new IT infrastructure, control room procedures which need to be in place to operate the assets, and any other contractual agreements to cover the inclusion of operating the West Transmission assets.

Currently we have the management structure and systems in place to operate the PTL and BGTL assets through two main contracts as outlined in section 2.1 and 2.2 above. To incorporate the new West Transmission assets new telemetry will need to be installed at the various sites. However, the remainder of the IT infrastructure will stay largely 'as is' with the guiding principle of extending/modifying the existing IT systems in use. This will minimise the need for additional IT hardware.

During mobilisation the detail of the Control Room Services contract and the MERC will be defined based upon the final design to ensure that at go-live any new infrastructure, resources and arrangements are in place. This means that existing processes which are being successfully delivered to the highest technical and legislative standards on existing assets will be extended. The resources required and the management of these to deliver the operational mobilisation plan is covered in section 3.2.

We will draw up a transition plan of key activities to mobilise for West Transmission operations. The transition plan activities lag behind the commencement of construction activities by approximately one year and commence in late 2015. This is to provide certainty on timescales and to ensure that staff are trained just in time.

Mobilisation plan overview

The activities required during mobilisation will be broken down into two areas:

- Business activities
- IT activities

Process mapping and requirements consolidation based upon the proposed Transmission Network Design and existing Gas Control Processes and Procedures will set the framework for defining the tasks under these categories as follows:

Business activities:

- Validation of the proposed organisation design
- Staff recruitment where indicated
- Staff and HR consultation on the redesign of existing jobs
- Redesign of the Control Room layout
- Training needs analysis for the physical and commercial operation of the new assets and the maintenance and emergency response for these new assets
- Training design, development and delivery, which will be accompanied by the following activities in parallel: updating the Safety Case, updating PIMS, Control Room Services and MERC scope extensions, drafting the Network Code (either new or dovetailing into the existing Code depending on CJV), NINOA and the update of existing Policies and Procedures (eg LOP, COP, etc)
- Competency assessment

IT activities:

We will follow a standard systems development lifecycle. The guiding principle will be to extend/modify the existing Gas Control Systems to accommodate West Transmission operations wherever possible. The IT systems proposed are described in detail in section 5.5.

All Business activities (with the exception of staff recruitment) will be targeted for completion in line with first live gas to Strabane in October 2016. Some of the IT activities, namely DNCS, SCADA, GTMBS and Leakfinder extensions/modifications and telemetry deployments will be phased in line with the following AGI construction timescales:

AGI	Target Date
Strabane IP	October 2016 – Year 1
Dungannon, Cookstown, Omagh, Enniskillen	October 2017 – Year 2
Derrylin	October 2018 – Year 3

Underpinning the overall approach are the following critical success factors:

- All requirements (business, functional and non-functional) must be fully defined and agreed. The test strategies must be based on these base-lined requirements. Further, the documented requirements must serve as a key basis for project assurance
- Planning controls must be agreed, base-lined and strictly administered. Agreed milestones should not be ignored
- The resulting business and technical architecture must be fit for purpose and should not be over/under engineered
- All resources involved should have a good understanding of delivering resilient systems
- The processes used in the project must enable all stakeholders to work seamlessly and aid the decision making process
- A strong focus on assurance and testing must be ensured when delivering operational systems of such criticality
- Ensure senior level sponsorship in all organisations involved
- Ensure maximum exposure of people to the new/extended systems before go-live

In order to meet these critical success factors and adequately address all of the components of West Transmission High Pressure operations, an overall transition timescale of 12 months elapsed time for first go-live gas is envisaged. This includes a period of two weeks to prove system stability post go-live. New staff recruitment and on-boarding (covered later in this section) extends beyond this period and will take place in the second year of West Transmission operations. Also, as stated previously, key IT activities will extend into years 2 and 3 of West Transmission operations. These timescales take account of critical transmission and distribution construction timescales.

Key points

- Planning and consents are a key factor in the timing of the project.
- Based upon the outline design we expect Strabane to be supplied using PE which makes consenting easier and an earlier gas on date in 2016.
- The project plan envisages main construction in 2017, with reinstatement and the final leg to Derrylin in 2018.
- The mobilisation plan covers both construction and ongoing operations.

3.2 Resources

The Project Governance structure to manage resources throughout the mobilisation is represented in the diagram below. This covers frequency, meeting objectives and the representation required.

Figure 3.2a – Governance of HP Construction and MERC Interface

Meetings	Objectives	Stakeholders
Quarterly Mutual/SGN JV Project Steering Board Meeting	<ul style="list-style-type: none"> • Share Project Delivery Progress • Review costs and expenditure • Review escalated Issues/variations 	<ul style="list-style-type: none"> • Mutual Project Manager(s) • SGN Executive or rep • SGN Head of Major Projects
Monthly Meeting SGN Investment Committee and Executive	<ul style="list-style-type: none"> • Share Project Delivery Progress • Review costs and expenditure • Review escalated Issues/variations 	<ul style="list-style-type: none"> • SGN Investment Committee • SGN MD Scotland • SGN Head of Major Projects
Monthly Major Projects Meeting	<ul style="list-style-type: none"> • NIAUR interactions • Share Workstream Updates • Review Progress against Plan • Review Cost and Quality • Review/Agree Change Requests • Review/Agree escalated CEs • Agree changes to Delivery Plan • Review Project Risks 	<ul style="list-style-type: none"> • SGN Construction Project Manager • SGN Head of Major Projects • Regulation Manager • MEL/SGN Maintenance Engineer • MWC reps • Specialist Contractor Reps • SGN Project Officer(s)
Ad-hoc meetings with MWC and Specialist Contractors	<ul style="list-style-type: none"> • Review Progress and daily Issues • Review CEs escalated by Project Officer/QS's • Review Risks, issues and dependencies • Agree Issues to be escalated 	<ul style="list-style-type: none"> • SGN Project Officer(s) • Workstream Leads • SPI • QS(s) • LA • EI • Admin, minute taker

In parallel to the main construction project the operational go live team operate in a similar fashion:

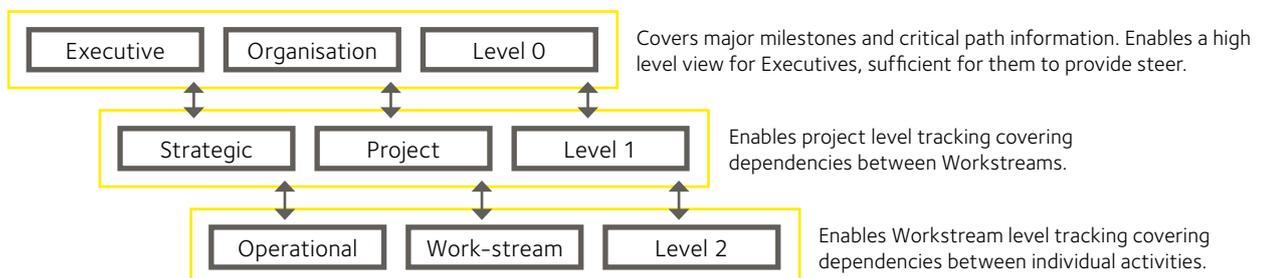
Figure 3.2b – MEL/Control Room meetings structure

Committees	Meeting Objectives	Stakeholders
<p>MONTHLY MEETING</p>  <p>Executive Steering Committee</p>	<ul style="list-style-type: none"> Review overall Project Status Review highest scoring risks and issues Agree Stakeholder engagement actions – Executive level Agree Sponsorship actions as required – support project communications, validate key decisions, supply resources as required. 	<ul style="list-style-type: none"> NIAUR Executive Representative(s) PTL Group Operations Manager PTL Operations Manager SGN IT Director SGN Network Director SGN Finance Director Head of Network Management SGN Project Manager SGN Commercial Lead SGN Assurance Manager <p style="text-align: right;">Executive</p>
<p>MONTHLY MEETING</p>  <p>Project Governance Board</p>	<ul style="list-style-type: none"> Review overall Project status (including exceptions and escalated items) Review high scoring risks and issues Agree/review Stakeholder engagement actions – Strategic level Agree/review delivery actions – Strategic level Make Go/No Go decisions Agree course corrections Undertake major Project approvals, eg Stage closures. 	<ul style="list-style-type: none"> NIAUR Management Representative(s) PTL Operations Manager PTL Commercial Operations Engineer SGN Gas Control Manager SGN Gas Control Support & Emergency Planning Manager SGN Project Manager SGN Delivery Manager <p style="text-align: right;">Strategic</p>
<p>WEEKLY PROGRESS MEETING – Monday @ 15.00</p>  <p>Project Management Council</p>	<ul style="list-style-type: none"> Share Work-stream updates Review progress against time, cost and quality Agree/review Stakeholder engagement actions – Operational level Agree/review delivery actions – Operational level Review risks, issues, assumptions and dependencies Agree items for escalation. 	<ul style="list-style-type: none"> SGN Work-Stream Leads PTL Operations Manager PTL Commercial Operations Engineer SGN Project Manager SGN Delivery Manager <p style="text-align: right;">Operational</p>

MEL has recently just completed the relocation of its control room from BGE, Cork to Southern Gas Networks (SGN) in Horley, England. This was completed successfully and led by SGN as the appointed contractor. Based on this successful transition, the execution of the operational mobilisation plan will follow a similar approach, in that SGN will carry out the delivery of the mobilisation project, with management from West Transmission who will ultimately be responsible as the licence holder.

There will be a product based three layered plan (Level 0, Level 1 and Level 2), the generation of which will adhere to the following principles:

Figure 3.2.a – Product Based Planning



The project plan containing all project phases, individual activities within each work-stream, work-stream deliverables, etc will form the primary basis for monitoring progress, escalating issues and taking preventive and corrective actions on an ongoing basis.

As a standard operating procedure, there will be a weekly and monthly project reporting cycle but are flexible in terms of the reporting formats and frequency. The table below illustrates the reports that we intend to deploy.

Figure 3.2c Reports

No	Report Name	Report Details	Frequency
1.	Weekly Progress Report (Level 2 Plan Tracking)	Key components: <ul style="list-style-type: none"> • Overall RAG (Red, Amber and Green) status • Highlights of the week including activities completed • Lowlights • Plan for next week • Metrics which are applicable for the current phase of the project • Status of project deliverables • Status of issues, risks, dependencies and assumptions. 	Close of play Friday each week
2.	Project Governance Board Report (Level 1 Plan Tracking)	Key components: <ul style="list-style-type: none"> • Project progress • Time, cost and quality update • Stakeholder communications • Dependency management actions • Go/No-Go decisions and major approvals as necessary • Status of top risks and issues. 	As per an agreed calendar day each month
3.	Executive Committee Report (Level 0 Plan Tracking)	Key components: <ul style="list-style-type: none"> • Major project updates • Significant milestones achieved • Status of top risks and issues. 	As per an agreed calendar day each month
4.	Other Progress Dashboards (Test Completion, etc)	Testing progress reports and any other dashboards that would indicate the following: <ul style="list-style-type: none"> • Progress to plan/deviations • Forecast as per original plan • Defect report, pass rates • Issues, etc 	As necessary

Resourcing strategy

The resourcing strategy is to utilise the existing Mutual and SGN resources already employed in the operation and maintenance of the Scotland to Northern Ireland Pipeline (SNIP), Belfast Gas Transmission system and the associated AGIs, particularly in the initial phase of construction and the phased commissioning of the new HP pipelines and AGIs.

This resource comes to the project fully qualified and experienced in the requirements of operating and maintaining HP gas systems in NI and will be supported as required by additional resources from SGN.

3.2.1 Construction resources

SGN has a documented Selection and Management of Contractors procedure which describes in detail how we will assess the competence of a contracting company and/or individuals who will carry out work within the contract. This document follows the principles on competence in the HSE ACoP (L144), Managing Health and Safety in Construction.

Potential sub-contractors that would be involved in site operations are required to have successfully completed an Achilles Verify assessment for Safety, Health, Environment and Quality (SHEQ) with a minimum average score of 75% (a score of <70% in any element would not be acceptable) before being included in the pre-qualification stage of the procurement event. Any weakness identified in specific elements of the Verify assessment, or elements which are particularly relevant to the work activity, would be further explored and assessed, normally at the PQQ stage. The applicant would be eliminated if the response to SHEQ questions and any subsequent clarifications or requests for supporting information were not satisfactory.

Figure 3.2.1a – Estimated resources for construction works

Estimated HP Construction Resources	2014	2015	2016	2017	2018	Source
SGN Project Manager	1	1	1	1	1	Internal SGN
Pipeline Routing Engineers	14	12	10			Framework contracts
CAD Operators	4	4	3			Framework contracts
Project Supervisors/Engineers	6	6	7	7	6	Framework contracts
Land Agents Contracts		1	1	1	1	Tendered
Environmental Impact Contract		1	1	1		Tendered
Q&A inspectors		4	6	65	6	Tendered
Quantity Surveyors	6	5	4	25	11	Tendered
Safety Officers		1	1	4	1	SGN/Framework contract
Major Works Contractors			1	3	1	Tendered
Archaeologist			5	20	5	Council to nominate
Environmental Clerk of Works			1	4	1	Framework contracts

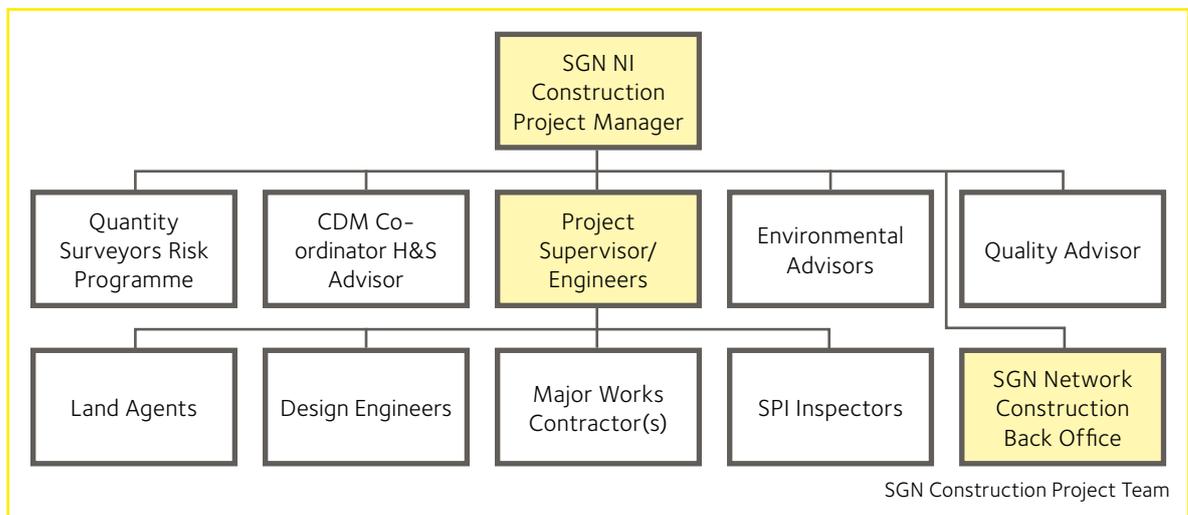
Recruitment process for construction resources

The recruitment process has two broad stages – (1) the definition of roles and requirements and (2) securing the resources.

Definition of roles

As HP construction is a regular and ongoing part of SGN's business a number of policies and procedures cover the running of the project, the project structures and the roles involved. The following diagram illustrates the structure from the project manager down which is to be resourced:

Figure 3.2.1b – Construction Project Team



A key part of finding the resources is having a detailed role specification. Annexe 1 contains the job specifications of the various roles.

Securing the resources

A detailed face to face assessment is held with contractors who progress beyond the first tender stage. A more comprehensive examination of the evidence provided at tender stage is then examined and evaluated before selecting the contractor who is to be awarded the contract.

The only exception to this is for low risk works by companies with less than five employees or the total spend is less than £10,000. In these cases a separate in-house evaluation is carried out jointly by the employing department and SHEQ.

SGN has a number of Framework Agreements in place for a variety of activities across the spectrum of disciplines required to manage, design, plan and build Transmission projects. In order to expedite a timely start to the routing of the pipelines, it is proposed to utilise routing engineers off the existing design framework agreement. In addition the Project Manager would invite CVs from suppliers on the Project Management and Design frameworks to appoint five Project Supervisors to supervise and drive forward each section of pipeline (excluding Derrylin as above) and also Project Engineers. This is to ensure constructability within the designs and assist the Project Manager during the build phase of the works.

The project will fall under the requirements of the Construction (Design and Management) Regulations (NI) 2007 (CDM) so a CDM Co-ordinator will be appointed from existing frameworks at this stage in accordance with the regulations. In order to monitor the works through the planning and construction phases, CVs will be invited via these frameworks to appoint at least one Health and Safety Advisor per pipeline section.



Route Planning

For the more site-specific works, ie The Environmental, Land Agent and MWC, the works would be tendered with the scopes and ITTs being produced by the Project Supervisors and Qs sourced from existing framework agreements. SGN has internal policies and procedures to ensure contracts of such value are tendered and let in accordance with European Law so these contracts would be dealt with by SGN Procurement as per SGN procedures. Similarly the tenders for the materials will be produced and tendered in the same manner.

As part of the Environmental Tender, the consultant will be required to provide an Environmental Clerk of Works for each section of pipeline during the construction period. They would monitor the works and ensure all environmental constraints and agreed mitigation measures are adhered to.

In order to ensure all documentation and records are captured and the most up-to-date information is being used, a Document Controller will be appointed via existing framework agreements for each section of pipeline.

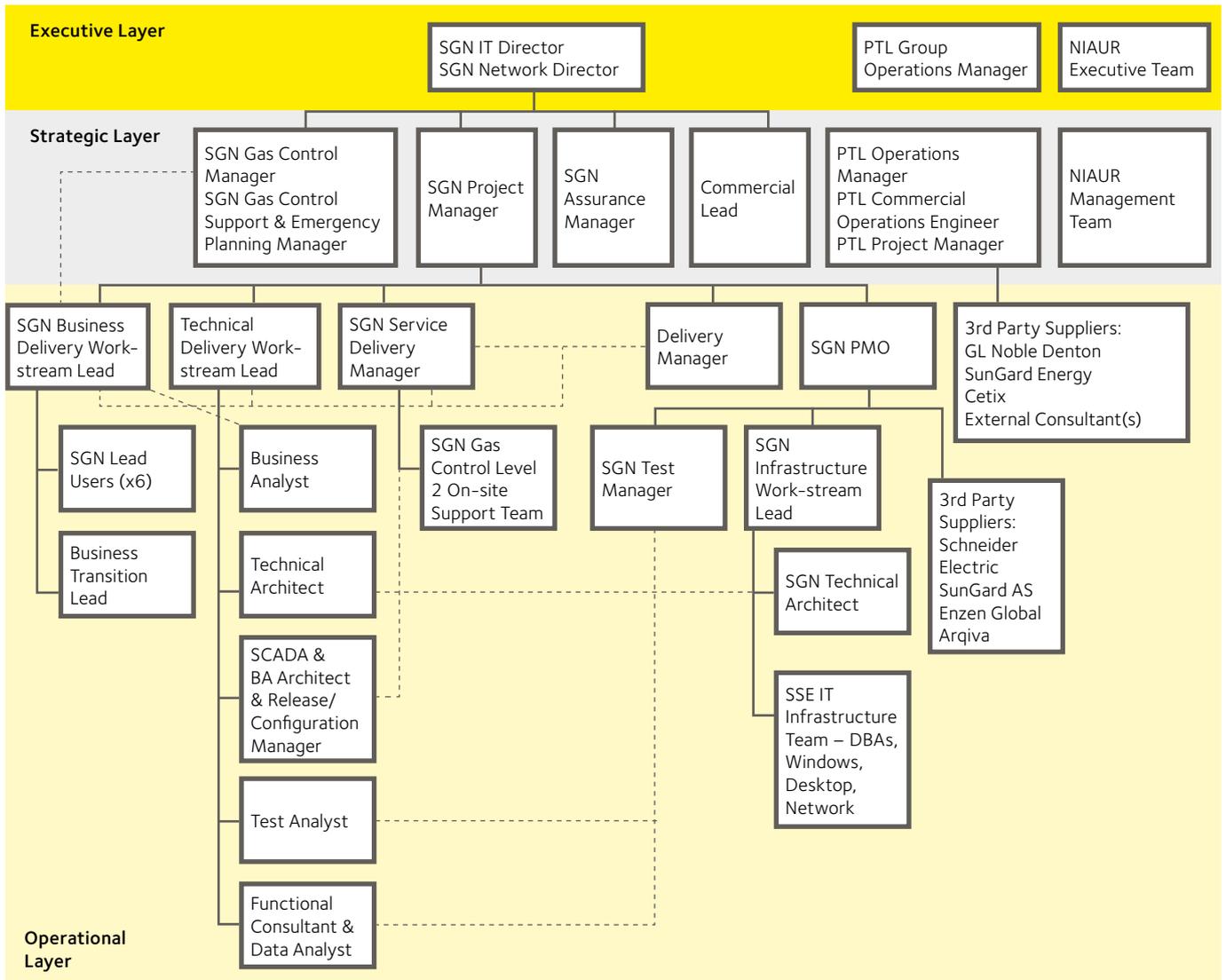
Once construction activities commence on site, a high level of inspection will be required to ensure the standards of construction and integrity of the pipelines and AGIs are met. SGN will appoint a suitably qualified and experienced Senior Pipeline Inspector (SPI) for each section of pipeline and they will oversee and collate records from the weld, coat and wrap and agricultural inspectors employed on that pipeline. In addition Agricultural Liaison Officers (ALOs) will be appointed to work alongside the Land Agents and liaise directly between the landowners and the construction project team, to ensure the landowners are kept informed of the activities on their land and any issues are addressed appropriately. The number of inspectors and ALOs will depend on the construction programme submitted by the successful MWC and the number of pipeline construction front ends proposed. SGN currently has a number of Inspection Framework Agreements in place which could be utilised as a vehicle for employing inspection personnel and CVs for these roles can be invited through this route.

3.2.2 Operational Mobilisation Resources

Resources to deliver the operational mobilisation plan will involve using existing MEL staff along with their sub-contractors and external consultants. **No additional recruitment will be necessary to carry out the operational mobilisation plan.** During mobilisation SGN will train the staff in the control room and the additional staff members for MERC (see section 2.4) using the SGN HR recruitment procedures. Where possible, this will include advertising locally in relation to the work location and if necessary advertising to a broader geography and ultimately nationally, if required. SGN already locate a number of locally recruited staff in NI secured following these processes.

The project organisation required to deliver the technical operational mobilisation is as follows:

Figure 3.2.2 – Proposed PTL/SGN Control Room Project Organisation



Similar to the construction resourcing a key part in the process for operational mobilisation is the identification of the roles. These are also outlined in Annexe 1.

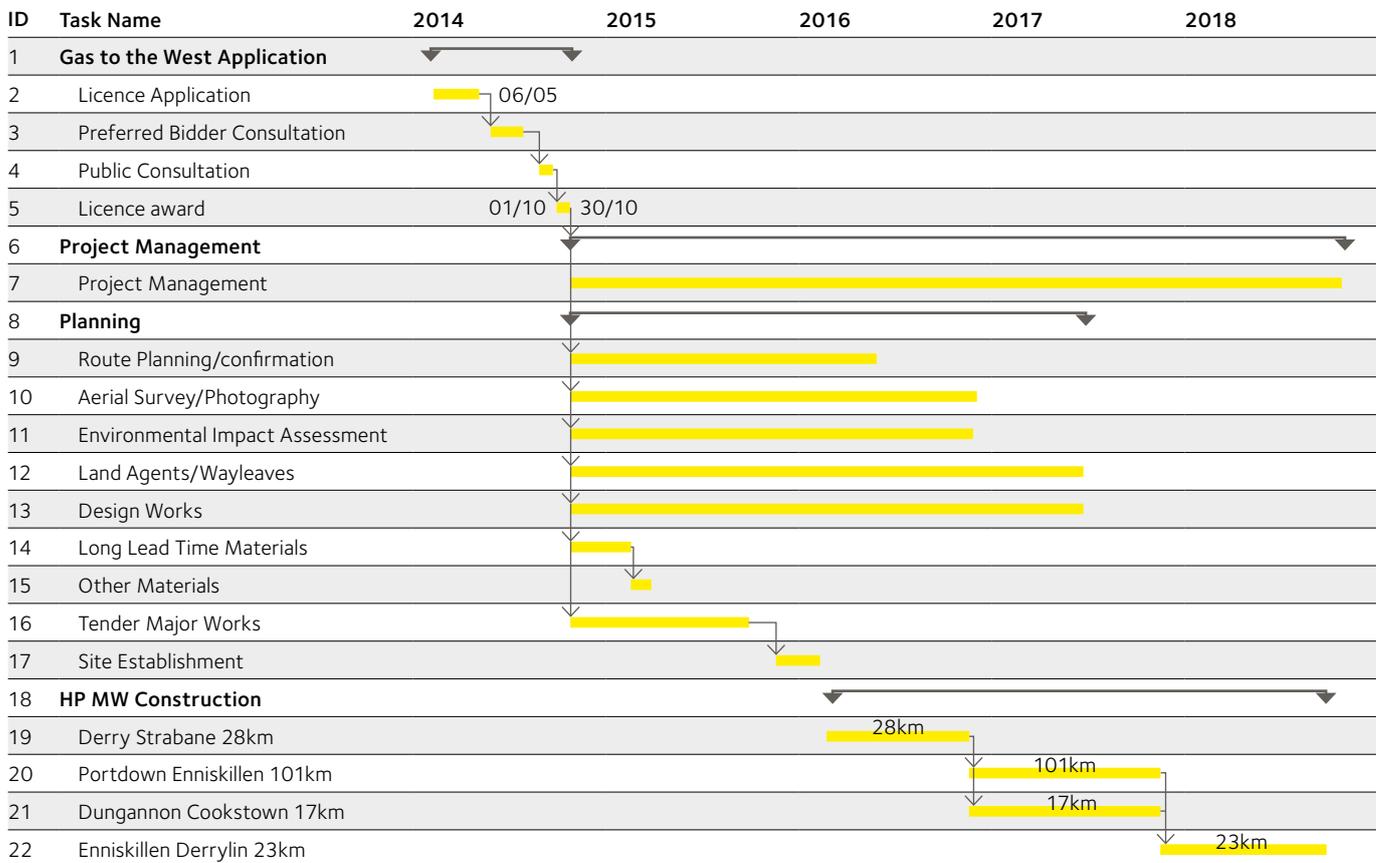
Key points

- A governance structure and methodology is in place for the project.
- Job roles have been developed for all key project roles.
- A resourcing strategy is completed.
- Resourcing has been considered both for the construction project and ongoing operations.

3.3 Activities

3.3.1 Construction

Figure 3.3.1 High Level Project Plan



Route Planning

The pipeline route corridor is established by desktop studies of maps and information available in the public domain taking into account major geographical, technical, archaeological and environmental factors between the start and finish point of the pipeline. The route should seek to avoid built up areas and areas of sensitivity or significant environmental or engineering features and highlight significant crossings that will need to be undertaken. Routing is an iterative process and as the project progresses and further information becomes available through surveys and investigations, discussions with landowners, locations for sites, crossing points for major crossings, route surveys and design requirements are established the route is continually refined to a centre line of the proposed route on mapping at a scale of 1:2,500.

Design

The design will confirm the design parameters, pressures, flows etc in order to establish pipe diameters and wall thickness, material grades, proximity requirements, valve locations and produce design documents for the pipelines and PRSs in accordance with the requirements under The Gas Safety (Management) Regulations (NI) 1997 and The Pipelines Safety Regulations (NI) 1997. The designs will take account of all mechanical, civil, Cathodic Protection (CP), electrical, control and instrumentation, telemetry, stress analysis, hazardous area, safety and security aspects. The designs will be managed to ensure constructability and ease of on-going maintenance. Each design will produce a document containing all calculations, a material schedule and data sheets and a suite of drawings suitable to allow construction of the pipelines and PRSs.

Tenders for the various aspects of work and materials will be produced using the NEC contract conditions. The output of the contract and the certainty of the data supplied with the ITTs will determine which option the contract is let under. The contracts will be produced by the Project Supervisors in conjunction with Quantity Surveyors (QSs) familiar with the NEC contract clauses. A suitably robust scope of works will be developed together with all site information that is available and detailed tender return information. Each tender will be sent out to the companies identified as suitable through the pre-tender selection process (see section 6.1). All tender return information will be evaluated against pre-set criteria for technical compliance and commercially. Based on these evaluations each tender will be let to the most favourable contractor and the tender then managed by the Project Manager and QSs for the life of contract.

Environmental Impact

The Environmental Consultant will be responsible for all ecology, archaeology and geology survey work and investigation and production of the Environmental Impact Assessment (EIA). The Consultant will appoint a lead Environmentalist to oversee the various disciplines and co-ordinate communications and meetings with all consultees. Following initial desktop surveys to establish likely requirements, site surveys will be undertaken. Ecological surveys will look at all flora and fauna including human factors and identify all designated areas along the route. Site surveys will need to take place over a 12-month period in order to capture all aspects of the environmental features along the route corridor. Archaeological surveys will identify all Scheduled Ancient Monuments, investigate previous information for historical activity and use aerial photographs to identify areas of specific interest. Magnetic surveys of these areas can then be carried out together with line walks looking for artefacts and where necessary pre-construction excavations of areas identified as likely to have significant archaeological importance.

The geological surveys will incorporate all aspects of ground conditions. Maps and old logs of previous land usage will be investigated together with any information available in the public domain to establish ground conditions along the route. All water resource features along the route must be identified. Desk top surveys will identify the requirements for trial pits and boreholes along the route and at all crossing points. In most cases, access to private land will be required to undertake these surveys.

Land Agents

Land Agents will be appointed to identify all landowners and tenants along the route corridor including sub-surface rights. The Land Agents will produce a schedule of all interested parties and make contact to inform them of the project and processes that will entail. They will negotiate access for survey work in the first instance and subsequently access for construction both along the pipeline working width as well as access routes for lock-out sections and sites for PRSs and AGIs. Prior to construction works taking place, the final easements must be agreed which will allow access to the pipeline for routine maintenance and repair during the life of the asset. Drawings showing working areas and accesses and easement drawings will be produced and agreed with the landowner under the Heads of Terms of Agreement which will then be formed into legal documents agreed between the solicitors for the formal easement.

3.3.2 Operational (Control Room)

The next sections describe the fundamentals of the overall approach covering details on the activities outlined above; present a high-level transition plan to deliver the West Transmission physical operations and commercial capability. These fundamentals can be broken down into the following categories:

- Project Initiation
- Business Solution
- Technical Solution
- Testing
- Implementation and Roll-out

a. Project Initiation

The Project Initiation phase must culminate in a fit for purpose West Transmission solution framework and detailed transition plan for building a West Transmission physical operations and commercial capability. In order to achieve this successfully and rapidly, the following guiding principles will be used:

- Existing Gas Control Systems will be extended/modified to accommodate West Transmission operations wherever possible;
- New hardware will be deployed to support West Transmission operations. This will avoid having to conduct a hardware refresh in the first few years of operation, thereby minimising the risk of disruption to this important new service.
- Risk will be reduced by adopting a solution architecture based on industry standards; and
- The technical solution will adhere to a standard IT project lifecycle.

The key features of this phase are as follows:

Process Mapping – Following a thorough review of all available documentation, principally the West Transmission Network Design and existing related processes and procedures, targeted workshops will be set up as required to map the key ‘Strategic’, ‘Before the Day’, ‘During the Day’ and ‘After the Day’ physical operational and commercial processes.

Requirements Consolidation – Following the generation of process maps, targeted workshops will be set up to capture the business, functional and non-functional requirements related to each process map. These will then be consolidated into a Requirements Traceability Matrix covering the following areas:

Figure 3.3.2a – Requirements Traceability Matrix

S.No	Business Processes	Business Process Steps	Requirements	Change Requests	Functional Design		Technical Design		Test Cases				Remarks
					FDS	FDS Compliant to requirement (F-Full/P-Partial/N-Not)	TDS	TDS Compliant to requirement (F-Full/P-Partial/N-Not)	System Testing	System Integration Testing	User Acceptance Testing	Operational Acceptance Testing	

The resultant Requirements Traceability Matrix will serve as a key assurance tool, ensuring that the requirements are adequately covered in the functional and/or technical design specifications have sufficient test cases in place for validation and verification and reference any emerging change requests.

MEL and SGN will follow a pragmatic but thorough approach to process mapping and requirements consolidation, re-using as much of the current documentation (eg the current Network Code) as is possible and to keep the solution simple.

Risk, Assumption, Issue and Dependency (RAID) Meetings – Facilitated meetings will be conducted to capture all initial risks assumptions, issues and dependencies. These will be recorded in a RAID Log adhering to the following format:

Figure 3.3.2b – RAID Log Format

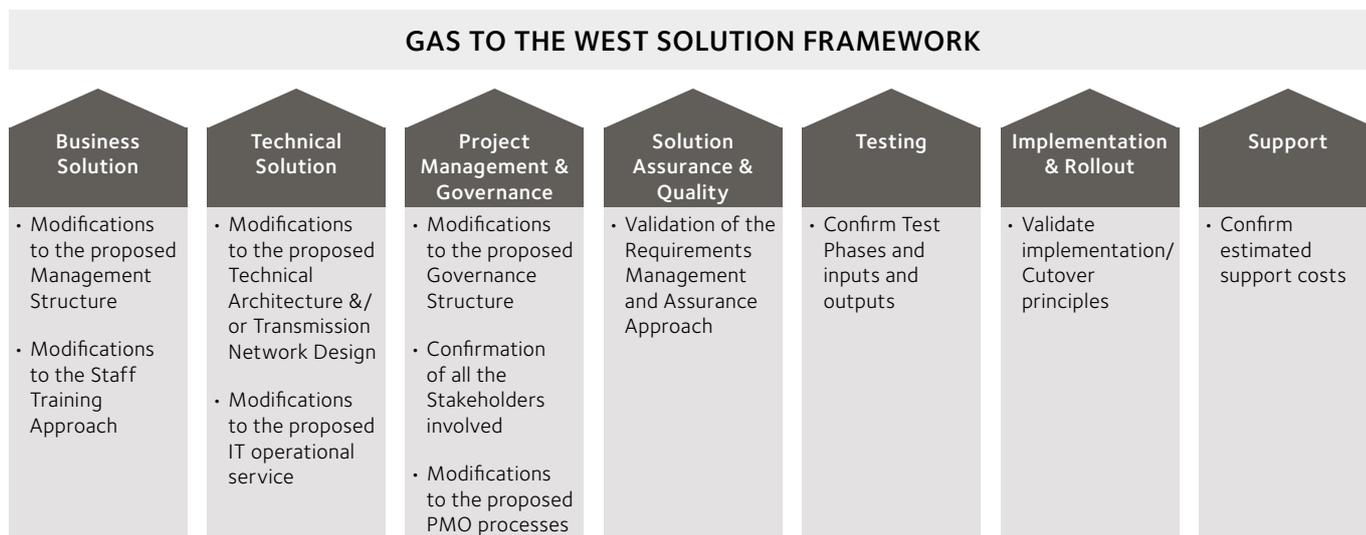
Ref No	Area	Status	Type	There is a risk that...	...because of...	...leading to...	Owner	Actionee	Raised by	Likelihood	Budget	Benefits	Schedule	Quality	Current Rating	Initial Rating	Deliverables Impacted	Trigger/Impact Date	Target Resolution Date
		Open Closed		There is an issue that...															
				There is an assumption that...															
				There is a dependency on...															
Comments/Progress/Actions				Management Actions	Date Raised	Date of Last Review	Date for Next Review	Date Closed		Suggested Mitigation									
Record any additional comments here, including such things as triggers, reasons for closure, etc				Prevention/Reduction/Transference/Acceptance/Contingency															

The meeting(s) will be facilitated by PMO resources. All Work-stream Leads from the West Transmission Transition Team will be in attendance (Construction, Operations, Gas Control, etc). Invites will also be extended to the Regulator and the chosen Supplier for West Transmission Low Pressure operations.

Risks will be subject to scoring based on likelihood and impact on budget benefits, schedule and quality. Both risks and issues will be tracked and reported against on a weekly basis. Further details on the proposed risk and issue management approach are provided in Section 4.1.

Modify/Enhance the West Transmission Solution Framework – Further to the preceding stages of project initiation, elements of the proposed West Transmission Solution Framework may require modification and/or enhancement. Areas that may warrant re-work and/or further work are illustrated in the figure below:

Figure 3.3.2c – West Transmission Solution Framework



Transition Planning – On the basis of a confirmed West Transmission Solution Framework, a detailed Microsoft project plan for the transition will be prepared.

Figure 3.3.2d – West Transmission Transition Planning

DD02B-Level 2 Plan

ID	Task	% Complete	SGN BRAG	Duration	Start	Finish	Predecessors	Task Owner
1	Level 0 - Top Level Work Package	0%	●	40 days	Mon 04/06/12	Fri 27/07/12		Work Stream Lead
2	Level 1 - Sub Level Work Package	0%	●	40 days	Mon 04/06/12	Fri 27/07/12		Resource 1
3	Level 2 - Task 1	0%	●	10 days	Mon 04/06/12	Fri 15/06/12		Resource 2
4	Level 2 - Task 2	0%	●	10 days	Mon 18/06/12	Fri 29/06/12	3	Resource 3
5	Level 2 - Task 3	0%	●	10 days	Mon 02/07/12	Fri 13/07/12	4	Resource 4
6	Level 2 - Task 4	0%	●	10 days	Mon 16/07/12	Fri 27/07/12	5	Resource 5

b. Business Solution

The key features of the Business Solution are as follows:

Staff Engagement and Planning – Within the project initiation phase, the process mapping exercise will serve to validate the proposed management structure and initiate the engagement with staff.

Logistical Arrangements – Further to a review of logistical requirements with staff, plans will be formalised to update the main and back-up SGN Control Rooms.

Training Needs Analysis (TNA) – A detailed TNA will be conducted. The TNA will not just focus on operating procedures and system training interventions but will also cover key elements of applicable regulation such as the Network Code.

Training Design, Development and Delivery – Further to the TNA, the training module specifications can be further elaborated upon to finalise the training design. SGN Gas Control plans to use a simulator as the key vehicle for training delivery. This simulator can be readily configured to cover the West Transmission Network and with simulated data, can cover all potential scenarios – emergencies, winter operations, summer operations, etc. This will constitute a minimum of six weeks of training delivery (elapsed time) in order to cover all of the shift teams. Post training delivery, competency assessments will be conducted in line with the approach specified in **Section 2.3**. Once the construction and system build dependencies are delivered, a training environment based on the actual West Transmission Network can be built.

Contract extensions and documentation

A series of contracts and process documents must be developed and agreed. These include:

- Control Room Services Agreement
- Cetix (System Integrators) contract to allow for the maintenance of West Transmission Site Telemetry equipment
- Security contract to allow for adequate physical security at the West Transmission Sites
- Land Liaison contract
- West Transmission Network Code
- Northern Ireland Network Operators Agreement Amendment (NINOA)
- TSO/DSO Agreement
- West Transmission PTL Inter Operator Agreement
- Contractual Joint Venture/System Operators Agreement Amendment. This will need done if a Contractual Joint Venture (CJV) is in place prior to West Transmission go-live. If so, the CJV and the System Operators Agreement will need extension to reflect the operation of the West Transmission assets
- Commercial Operating Procedures (COP) update
- Local Operating Procedures (LOP) update
- Emergency Procedures update
- Safety Case update.
- Pipeline Integrity Management System (PIMS) update

NOTE: regulatory and procedural documentation will feed into the training delivery. The above arrangements which need to be put in place for go-live of gas are described in more detail in **Section 3.5**.

c. Technical Solution

The technical solution will be developed. This is discussed in Section 5.5.

d. Testing

Early in the build phase of the technical solution, MEL and SGN will formalise its test strategy which has at its core, the following principles:

- Testing and usage of representative simulated data, including MIMICs
- Maximum exposure of the system to full size and production like conditions, throughout all test phases
- Continuous evaluation of performance to ensure it meets the requirements
- A dedicated testing team, including users and testing experts

The key test phases envisaged are as follows:

- System testing
- System integration testing
- User acceptance testing
- Operational acceptance testing
- End-to-End testing

NOTE: Performance testing will be carried out as part of system integration testing, user acceptance testing and operational acceptance testing with the objective of verifying that the extended applications run in line with performance criteria and experience no degradation.

These test phases will be repeated to accommodate the system extensions/modifications and telemetry deployments for the subsequent AGIs in years 2 and 3.

e. Implementation and Roll-out

For implementation and roll-out the following key steps are envisaged:

- (1) Production data migration.
- (2) Extended applications and interfaces are deployed and enabled within the production environment.
- (3) If operational conditions permit (eg no adverse weather conditions, no emergencies, etc) then cutover will be initiated. Telemetry feeds from sites will be enabled to the preproduction environment and the extended systems will be in full operational control of the West Transmission Network.

(4) Fall-back period – three consecutive days of fault free running must be realised to provide confidence that the extended systems are fully capable of the controlling the West Transmission Network. If any major problems are encountered, they must be rectified and the clock on fault free running reset.

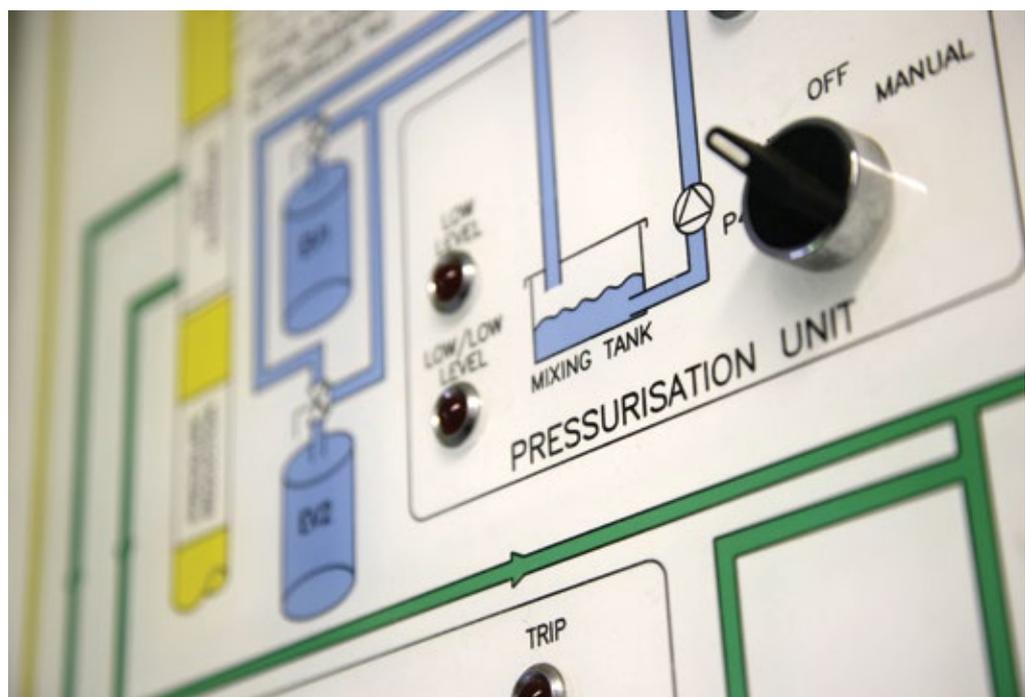
Indicative timescales for this process are illustrated in the figure below:

Figure 3.3.2e – Implementation and Roll-out Timescales

Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8
Step 1: Production Data Migration							
			Step 2: Systems Deployed				
				Step 3: Cutover			
					Step 4: Fall-back Period		

Risk will be further mitigated by conducting a cutover rehearsal within the pre-production environment to validate the approach and timings.

This approach is only applicable to first live gas in October 2016. Subsequent system extensions/modifications and telemetry deployments in line with the AGI construction timescales will follow a standard change and release management process.



Grid Control

Framing these activities within the context of the project phases of project initiation/requirements, design, build, test, and implementation and stabilise and improve, elicits the following high level transition plan:

Figure 3.3.2f – HL Control Room Transition Plan

ID	Task Name	2014			2015				2016				2017				2018			
		Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	GTTW Transmission High Level Transition Plan			▼																▼
2	Contract Award			◆ 17/10																
3	Year 1 Strabane																			
4	Project Initiation/Requirements							▼	▼											
15	Design							▼	▼											
33	Build							▼	▼											
53	Test							▼	▼											
72	Implementation													▼	▼					
79	Stabilise & Improve													▼	▼					
83	Year 2 Dungannon, Cookstown, Omagh, Ennis																			
84	Build													▼	▼					
97	Test													▼	▼					
107	Training and Implementation													▼	▼					
117	Year 2 Derrylin																			
118	Build																			▼
131	Test																			▼
141	Implementation																			▼

- The timescales indicated are representative of elapsed time and not effort.
- The Technical Design, Data Provisioning Strategy, Test Strategy and Plan and Test Scenarios and Test Scripts will be developed with the final enduring solution in mind and will not require any significant re-work in years 2 and 3 of West Transmission operations.
- All business activities (with the exception of staff recruitment) will be targeted for completion in line with first live gas to Strabane in October 2016. Training for years 2 and 3 of West Transmission operations will take the form of staff briefings on the details and characteristics of the new added sites.
- The elapsed testing timescales for years 1 and 2 will be the same. Although year 2 introduces four new sites, year 1 will be the first opportunity to test the viability of the newly extended IT systems. A greater level of defect fixing is therefore anticipated in year 1.

- The vast majority of new Control Room infrastructure (eg new storage) will be procured and installed in year 2.
- It is assumed that a full physical and commercial operating service will need to be in place by October 2016 in line with first gas live to Strabane.
- Contract negotiations relates to the following:
 - Control Room Services Agreement with SGN
 - MERC Agreement with Scotia Gas Networks
 - Cetix (System Integrators) Contract
 - Security Contract
 - Land Liaison Contract
- Documentation relates to the following:
 - West Transmission Network Code
 - Northern Ireland Network Operators Agreement Amendment (NINOA)
 - TSO/DSO Agreement
 - West Transmission PTL Inter Operator Agreement
 - Contractual Joint Venture/System Operators Agreement Amendment
 - Commercial Operating Procedures (COP)
 - Local Operating Procedures (LOP)
 - Emergency Procedures
 - Safety Case
 - Pipeline Integrity Management System (PIMS)

Key points

- A detailed plan of activities has been developed.
- The plan is based upon a set methodology.
- The methodology has been used by Mutual Energy and SGN on a number of projects.

3.4 Costs

As set out in section 3.3.2, there are a significant number of contracts and documents that need to be in place to have a full Physical and Commercial operating service before first gas flows. In keeping with the rest of this business plan, Mutual Energy will be able to draw on existing contracts, resources and expertise to efficiently ensure that the relevant structure is in place. In addition, the necessary IT systems will need to be in place to facilitate the operation of the network. Efficiencies can be made here as it is proposed to implement West Transmission operations on the existing architecture used for the provision of current Control Room Services to PTL. There will be some hardware and software costs and it is unclear whether these should be assumed as part of the VCE and excluded from mobilisation costs. In the interests of completeness these have been included.

The mobilisation costs of preparing for operational go-live will comprise legal advice, consultancy, IT infrastructure costs and 'backfill' resource which will be used to free up current Mutual Energy staff members' time in the busy mobilisation period. The former two costs are based on existing framework rates and estimates of input, while the IT costs have been developed by SGN based on their recent PTL mobilisation. 'Backfill' assumes one member of staff sourced via an existing framework agreement.

The expected mobilisation activities and rationale are set out below with the costs in **figure 3.4**.

Contract negotiations

Conveyance licence agreement – it is expected that the licence will be broadly in line with the existing PTL and BGTL licences. While this should mean that the licence drafting and negotiation is relatively straightforward, we have allowed for 15 days of legal input given the comfort that may be required by financiers under a mutual licence.

Control Room Services Agreement – this will be modelled on the existing agreement with our partner SGN. We have assumed that five days for legal review would be required.

MERC – this will also be modelled on the existing agreement with SGN. We have assumed that 5 days for legal review would be required.

Cetix (System Integrators) – this contract provides support for the telemetry equipment and interface between SCADA and communications and Sunguard specifically for SCADA. This is of sufficiently small quantum that procurement can be managed internally whether we extend our existing contract or move to a new provider so mobilisation cost is zero.

Security Contract – this contract is to ensure that there is adequate physical security at the West Transmission Sites which will be in line with that required at Mutual Energy’s existing sites. Procurement can be managed internally and covered by the backfill staff, so mobilisation cost is zero.

Land Liaison Contract – this will be a new contract given the different geography compared to Mutual Energy’s other gas assets. Legal input will be required and we have prudently assumed this will required five days.

BGE (NI) connection agreement – since West Transmission will connect to assets owned by BGE a connection agreement will be required. Our expectation is that this will be one of the more complex tasks to complete and 20 days legal input will be required.

Control room project costs

These are the IT infrastructure costs to be incurred in ensuring the SGN control room is prepared for operational go-live (see Table 3.4).

Software costs – include costs of SCADA Licences inc Template and link configuration work, AES Licences, User Remote Access for DNO.

Hardware costs – storage upgrade for SCADA, Leakfinder and supporting applications.

Documentation

West Transmission Network Code – it is expected that the existing PTL network code will be adopted by West Transmission. The initial work will be carried out by existing staff with external resource input. To update the code and ensure the wording is appropriate for West Transmission is estimated to be five days consultancy input and five days for legal review.

Northern Ireland Network Operators Agreement Amendment (NINOA) – the NINOA will need to be updated to include West Transmission. Based on recent experience of updating the NINOA in respect of Congestion Management Principles the external resource required to update the NINOA and ensure the wording is appropriate for West Transmission is estimated to be five days consultancy input and five days for legal review.

TSO/DSO Agreement – this will be between West Transmission and our partner SGN. It is expected to replicate existing agreements in place with Mutual Energy and only require two days legal review.

West Transmission PTL Inter Operator Agreement – this will mimic existing BGTL – PTL agreement and can be dealt with internally with two days legal review.

Commercial Operating Procedures (COP) update – existing resource only required so covered by backfill cost.

Local Operating Procedures (LOP) update – existing resource only required so covered by backfill cost.

Joint balancing procedures – existing resource only required so covered by backfill cost.

Emergency Procedures update – existing resource only required so covered by backfill cost.

Safety Case update– existing resource only required so covered by backfill cost.

Major Accident Prevention Document (MAPD) – existing resource only required so covered by backfill cost.

Operational and Business Risk Registers – existing resource only required so covered by backfill cost.

Pipeline Integrity Management System (PIMS) update – existing resource only required so covered by backfill cost.

Staff recruitment – as per above we anticipate that one additional person will be sourced during mobilisation via an existing framework agreement. Based on recent experience we estimate this will be required for one year at £60k per annum.

Training – Roll out new training for COP, LOP, Balancing Procedures to Control Room Services– existing resource only required so covered by backfill cost.

Communications/stakeholder engagement

It is anticipated that the vast majority of the stakeholder engagement set out in Section 3.6 will be undertaken by senior management of Mutual Energy and SGN with no additional cost being incurred ie communications with statutory bodies, operating stakeholders, public representatives, NGOs, business community and media stakeholders. While there is significant engagement with landowners expected it is assumed that the cost of this will be capitalised under wayleaves. Engagement with the general public will be via the media and their attendance at public exhibition staged principally for the benefit of landowners and wayleaves but which will be open to all.

Figure 3.4 – Forecast operational mobilisation costs

Mobilisation activity	Legal days	Consultant days	Mobilisation cost £
Contract Negotiations			
Conveyance Licence Agreement	15	0	33,187
Control Room Services Agreement	5	0	11,063
Control Room Project Costs	0	0	330,017
MERC	5	0	11,063
Cetix (System Integrators) Contract	0	0	0
Security Contract	0	0	0
Land Liaison Contract	5	0	11,063
BGE (NI) Connection Agreement	20	0	44,250
Documentation			
West Transmission Network Code	5	5	16,038
NINOA	5	5	16,038
TSO/DSO Agreement	2	0	4,425
West Transmission PTL Inter Operator Agreement	2	0	4,425
Commercial Operating Procedures (COP) Update	0	0	0
Local Operating Procedures (LOP) Update	0	0	0
Joint Balancing Procedures	0	0	0
Emergency Procedures Update	0	0	0
Safety Case Update	0	0	0
Major Accident Prevention Document (MAPD)	0	0	0
Operational & Business Risk Registers	0	0	0
Pipeline Integrity Management System (PIMS) Update	0	0	0
Staff			
Staff Recruitment	0	0	60,000
Training	0	0	0
Total			541,567

3.5 Systems

Arrangements to be put in place during mobilisation

West Transmission requires a series of component parts to be in place before go-live. These are covered in more detail in Section 5.

There is no need to procure any additional IT systems as all required systems exist and are operational. Had any been required the procurement processes outlined in Section 6 would apply.

There will be a need to extend operational IT systems and the business processes around them to cover the new assets. This is covered in detail in section 3.3.2 above. As stated previously, to keep implementation costs to a minimum, it is proposed to implement West Transmission Operations on the existing architecture used for the provision of current Control Room Services to PTL. This will be accompanied with the implementation of Telemetry to the new sites following the same principles of the existing Telemetry network. This design allows for complete integration of the core control systems and applications, cost savings by using shared infrastructure and services for infrastructure such as management, security and backups and ensures full adherence to the architecture principles used for the current control system design. The key changes/extensions proposed are referred to in the Technical Solution in Section 3.1.2. and are detailed in Section 5.5

SGN, under the MERC also utilise Maximo for management of the MEL gas assets as described in section 5.6.6. This existing tool will be utilised for the new assets and so will negate the need for any new IT requirements specifically for asset management purposes.

3.6 High pressure system construction

3.6.1 Engagement with external stakeholders

General Communications

Despite general recognition of the benefits of the provision of new and enhanced energy infrastructure to communities and to the economy, proposed energy developments have never been subject to such critical scrutiny in the public domain.

The history of lignite in NI, bringing Corrib gas ashore in Mayo, current concerns around grid development, wind-farms, the North/South interconnector and shale gas 'fracking' are all indicative of this increasingly challenging environment for development of energy infrastructure.

Public concern about any project can delay its progress through the permitting process (at considerable cost) and delay the benefits flowing to energy consumers.

For this reason, and the fact that it is our strongly held wish to involve and engage properly with all relevant stakeholders around major energy projects, the Mutual Energy/SGN consortium will implement a comprehensive communications and engagement strategy. It is our aim to achieve nothing short of best practice in this area of project development. (For the purposes of this section of the bid submission we deal only with the high pressure pipeline related elements of our combined communications strategy.)

Our Communications Strategy will be based around three key principles: These are

- Openness, transparency and responsiveness
- Continuous engagement and meaningful consultation
- Clear, relevant, timely communication with stakeholders

Openness and Transparency

From the very moment we serve official notice of our application (as required by the competitive process) we will welcome questions and queries not only from the Regulator and/or DETI but from any other interested stakeholders including public representatives and local communities. We will provide clarifications and where appropriate publish queries and responses if that is likely to be of benefit.

If awarded the licence, we will carry this approach through the entire pre-construction and subsequent development phases through to commissioning. If there are requests for information of any kind at any stage we will attempt to provide it in good faith. We will assign a dedicated staff resource to be a single point of contact to facilitate easy flow of information and to process queries promptly. We will be highly responsive to all requests.

This approach will also be adopted in relation to dealing with all complaints that may arise in relation to development activity.

Continuous Engagement and Meaningful Consultation

High-quality engagement and consultation with stakeholders is an essential prerequisite to project success. Mutual Energy/SGN will commit its senior management to an ongoing process of stakeholder engagement throughout the development of the project but most importantly at the early stages. Stakeholders include not only the relevant regulatory authorities, but all those organisations and individuals who have an interest in our activities.

Key organisations include the Consumer Council with whom we plan early and detailed discussions so that we can provide them with the best possible information relating to the impact of our activities. This applies to citizens within the defined territory and also in relation to future timescales, availability and indicative final price of delivered gas.

Our engagement will be ‘continuous’ in the sense that we will offer availability for all the engagement that stakeholders wish for – it will not be just a series of tick-box meetings. There will be an ‘open-door’ approach to all stakeholders.



Consultation

Similarly, the proposed consultation will be meaningful. We will not simply present stakeholders with a ‘fait accompli’ and invite them to endorse it. We will listen carefully to concerns and counterpoints and be receptive to changing our plans as a result of real consultation with others. Again, the team will offer a single point of contact to co-ordinate all consultation activity efficiently.

Clear, Relevant, Timely Communication with Stakeholders

It is our intention to offer all of our stakeholders a flow of timely information and communications which is specifically relevant to them. For some stakeholders this may simply be a matter of providing ample advance notice of a project related activity which may cause them minor disturbance or inconvenience. This is important for all sorts of activities from general survey work through to direct construction activity impacting roads or rights of way. For others it may be the provision of relevant briefing material on the project's progress as it approaches various milestones. At its most background level, it is letting local communities know what is going on even if the high pressure pipeline project has no direct or immediate impact upon their lives.

A Strong Track Record in Energy Infrastructure Communications

Both partners have considerable experience of successful communications around major energy project developments and a strong track record of stakeholder engagement around all related activities. The companies also have extensive experience of working with each other and working co-operatively on the communications aspects of operating major natural gas infrastructural assets.

In the case of Mutual Energy, our recent success in securing planning permission and other key permits for a major gas storage facility in Islandmagee Co Antrim is good evidence of our approach to stakeholder communications. In this instance we liaised with all the relevant statutory authorities at an early stage so that we could understand fully their requirements and expectations. However, at the same time we started a deep and meaningful engagement with the relevant local communities and their elected representatives at both Council and Assembly level. This proved to be a winning formula, securing community confidence at an early stage and allaying any fears about the various short-term and long-term impacts of the project.

Although Mutual Energy can point to examples of communications success in relation to a number of project-related activities, the real reason for that success is that the company has, from the outset, followed a clear overarching communications strategy and applied itself professionally to its implementation.

The company has adopted a model of continuous stakeholder engagement where the emphasis ranges from frequent and intense engagement with those stakeholders who most impact the success of the business through to less frequent, but nonetheless consistent briefing of those stakeholders who have perhaps less impact but have a legitimate interest in what the company is doing.

In its implementation of this communications strategy, including engagement with policymakers and authorities in Brussels, London, Dublin and Stormont, Mutual Energy is supported by energy sector communications specialists, Lagan Consulting. Although that support is in place the core communications work has by no means been sub-contracted and it continues to be carried out with a very hands-on approach by company senior management. We believe that the strong commitment to this task on the part of senior management has built and consolidated the company's reputation for solid communications in the public policy and political arena.

Although the West Transmission high pressure pipeline project is a new project and will undoubtedly bring its own unique challenges, we believe that many of the core stakeholder communications requirements involve activities which Mutual Energy is already successfully engaged in on a regular basis and in which the company has already built up a strong capability.

Set out below is a list of major stakeholders and the approach Mutual Energy proposes to follow in relation to communicating with them. The information is set out in a broadly chronological order starting with the pre-construction phase and moving through to commissioning.

Table 3.6.1a – Pre-Construction Phase

Stakeholder	Message and Rationale	Communications Channels
Statutory Bodies		
Department of Enterprise Trade and Investment (DETI)	<p>Engagement with the Government Department responsible for energy policy.</p> <p>Initial discussion to focus on DETI expectations in relation to the project.</p> <p>(MEL to assist DETI in dealing with any overhanging issues/queries relating to the project competition.)</p>	<p>Initiation meeting.</p> <p>Regular subsequent meetings arranged.</p> <p>Provide a detailed briefing document on MEL plans for each stage of the project.</p> <p>Provide a detailed MEL communications strategy for the first and subsequent stages of the project.</p>
Northern Ireland Utility Regulator (NIAUR)	<p>Engagement with the regulatory authority responsible for running the pipeline competition.</p> <p>Initial discussion to focus on CER expectations in relation to the project.</p> <p>(MEL to assist NIAUR in dealing with any overhanging issues/queries relating to the project competition.)</p>	<p>Initiation meeting.</p> <p>Regular subsequent meetings arranged.</p> <p>Provide a detailed briefing document on MEL plans for each stage of the project.</p> <p>Communications strategy for the first and subsequent stages of the project.</p>
European Commission DG Energy	Brief DG Energy on the West Transmission project so they understand how it contributes to delivery of EU energy policy in UK/Ireland and how it fits with other MEL activities and Projects of common interest.	Provide an overview/outline briefing paper to DG Energy.

Department for Regional Development (DRD)	Engage with DRD in relation to regional development context of West Transmission and implications for other infrastructure including roads.	Initiation meeting. Regular subsequent meetings arranged. Provide a briefing document on MEL plans for early stages of the project.
Department of the Environment (DOE) Planning Service	Engage with planning authorities to ascertain broad planning requirements including need for various studies/surveys and to develop a common understanding on the likely timetable for obtaining planning consents. Through dialogue obtain a comprehensive understanding of the EU Habitats Directive and how it impacts the project. This is vitally important as the requirements of the Directive are increasingly at the centre of legal challenges to major infrastructure projects.	Initiation meeting. Regular subsequent meetings arranged. Provide a briefing document on MEL plans for early stages of the project.
DOE Northern Ireland Environment Agency (NIEA)	Consult with NIEA in relation to all of the environmental impacts arising in the context of West Transmission, including flora and fauna, protected areas, ASSIs, AONBs, water, air pollution, heritage/archaeological etc. Ultimately, MEL will have to satisfy NIEA that it understands all of the environmental impacts of the project and is prepared to take every reasonable step to mitigate them.	Initiation meeting. Regular subsequent meetings arranged. Provide a briefing document on MEL plans for early stages of the project. Produce a communications plan for NIEA, indicating how stakeholders affected by environmental impacts will be engaged and communicated with.
Department of Agriculture and Rural Development (DARD)	Consult with DARD on agricultural and rural development issues (including impacts on farmers) which are likely to arise in relation to West Transmission.	Initiation meeting. Regular subsequent meetings arranged. Provide a briefing document on MEL plans for early stages of the project.
Irish Department of Communications, Energy and Natural Resources (DCENR)	MEL maintains a line of communication with the Irish energy authorities in Dublin. This is because MEL's assets operate in an increasingly all-island market. It is therefore important that the Dublin authorities are adequately briefed on MEL activities, including West Transmission.	Initiation meeting. Regular subsequent meetings arranged. Provide a briefing document on MEL plans for early stages of the project.
Commission for Energy Regulation (CER)	MEL maintains a line of communication with the Irish energy authorities in Dublin including the Commission for Energy Regulation (CER) which has a regulatory role in relation to other parts of MEL's business. MEL's assets operate in an increasingly all-island market. It is therefore important that all of the Irish regulatory authorities are adequately briefed on MEL activities, including West Transmission.	Initiation meeting. Regular subsequent meetings arranged. Provide a briefing document on MEL plans for early stages of the project.
NI Consumer Council (CCNI)	Although it is an early stage of the project and the bulk of the consumer facing work in West Transmission relates to the low pressure distribution network, it is important to familiarise NI's most important consumer body with the project and its benefits.	Have an initial briefing meeting. Prepare a briefing document for the CCNI which provides an economic analysis and which outlines the benefits to different categories of energy consumers. Agree to have further briefing meetings.
Health and Safety Executive Northern Ireland (HSENI)	Health and Safety is of primary importance to a major high pressure gas pipeline project. There should be early engagement with HSENI to obtain its advice in relation to the project and to outline to them the plans and procedures that will be put in place to ensure safety.	Have an initial briefing meeting. Prepare a briefing document for the HSENI which provides an outline of physical project along with the key issues and related risks. Agree to keep HSENI briefed throughout the construction phase of the project.

Other Operating Stakeholders		
Other Utilities, NIE, NI Water, BT etc	It is important that the physical work planned in order to deliver West Transmission is co-ordinated with the plans of other utilities. This may be more of an issue for distribution than transmission, but as a minimum there should be sufficient co-ordination to avoid duplicative excavations and interruptions to road users etc	Hold initial meetings with other utilities and agree to share details of future project plans.
Internal MEL Stakeholders (Members, Bondholders, Suppliers and Contractors)	Mutual Energy brings a low cost model to bear on infrastructure provision. In order to secure this model for West Transmission, including low cost of capital and contractual economies of scale, it is important that existing financiers and suppliers/contractors understand the new project.	Meetings will be held and relevant briefing will be provided to all of MEL's main internal stakeholders.
MEL operating partners System operator, Northern Ireland (SONI), Single Electricity Market Operator(SEMO)/EirGrid, Bord Gais Eireann (BGE)/Gaslink, Single Electricity Market (SEM) Committee	MEL maintains a line of communication with most of the other Irish energy operators in the all-island market structures including SONI, SEMO/EirGrid, BGE/GasLink and the Single Electricity Market Committee. MEL's assets operate in an increasingly all-island market. It is therefore important that all of the relevant operators are adequately briefed on MEL activities, including new projects such as West Transmission.	Initial meetings to be held followed by circulation of relevant briefing material. Further engagement as requested or deemed necessary.
Individuals/Communities		
Landowners along pipeline route	Perhaps the most important project stakeholders for a gas pipeline project are those landowners who are impacted directly by the pipeline route and related infrastructure, AGIs etc. It is vitally important to have high quality engagement with this group of stakeholders so that their concerns can be taken account of, and factored into operational planning. It is important also to allay any fears this group may have about the project generally and to bring them to a good understanding of the significant benefits. Initial communications must show landowners that the preferred pipeline route is not a fait accompli and genuine consultation will take place following which the route will undoubtedly undergo some alteration.	All landowners to be engaged individually face to face by project officers. Briefing material to be prepared and distributed to each landowner. Detailed explanatory brochure also to be given out. Public exhibition to be staged in selected population centres (town halls/community centres) all along the pipeline route to give people good information about the preferred pipeline route and the planned timetable for construction.
Farmers/Ulster Farmers' Union	All that applies to landowners (above) includes farmers. In addition it is important to engage with the Ulster Farmers' Union (UFU) and others who can advocate on behalf of farmers generally, but who can also provide very constructive assistance as an intermediary.	Initial meetings to be held with farmers' groups and UFU. A briefing document will be produced for farmers indicating how the project may impact them and how such impacts may be mitigated.
General Public	There is a general imperative to raise public awareness of the benefits of extending the natural gas network into the West Transmission of NI. A secondary message is to set out how the mutual model benefits all energy consumers.	In the pre-construction phase communications with the wider general public will be primarily through the media. Individual citizens will be welcome to attend exhibitions etc (which will be advertised in the press) and have access to project staff to discuss details of the project.
Public Representatives		

Local politicians/Councillors	In addition to engaging with those citizens immediately impacted by the West Transmission project, and citizens generally, it is vitally important to maintain a high quality dialogue with their public representatives. A key category is local Councillors who will be intensely interested in how the project impacts their local area.	Meetings to be held with individual Councillors and groups of Councillors. Initial presentations to be offered to all Councils along the pipeline route. Tailored briefing to be prepared for Councillors. Meetings to be held with Councillors' representative body NILGA and briefing given.
MEPs, MPs and MLAs	As above, senior politicians will be very interested in the project in their constituencies. They can be very influential in shaping public understanding of the project.	Meetings/briefing to be offered to all politicians whose constituencies overlap the pipeline route.
Assembly Committees	The NI Assembly DETI Committee has done a lot of work on energy and should be briefed not only as a courtesy, but because its views and reports are important in influencing the energy policy environment for the West Transmission Project. The Assembly Environment Committee should also be briefed, for similar reasons.	Meetings should be arranged with the relevant Assembly committees and presentations given on MEL's plans for the project. A separate briefing document should be prepared for committee members focusing on the aspects of most interest to members.
Party energy and Environment spokespersons	Energy and Environment spokespersons of political parties are interested, knowledgeable and appreciative of good information. It is important that they are well briefed so that among other things, they can brief their party colleagues.	Meetings to be arranged with party spokespersons and relevant briefing provided.
NI Business Community		
CBI/IoD/FSB and other business representative groups	The main business representative bodies are influential in determining public opinion and policy-makers' responses to business issues. It is important that they are well briefed in relation to the project.	Initial meetings to be held followed by circulation of relevant briefing material. Further engagement as requested or deemed necessary.
Local Chambers/Business Forums	Much of the communication with local chambers etc will relate to the later phases of the project and primarily the distribution activity.	Initial meetings will be offered and briefing provided.
Other Interested Stakeholders, NGOs, Interest Groups		
Environmental groups, NGOs, NI Environment Link, Friends of the Earth, etc	The high pressure pipeline will undoubtedly attract concerned environmentalists and others who will seek reassurances about impacts and mitigation. It is very important that there is a continuous constructive dialogue with this group of stakeholders and in particular with the more professional, active organisations operating in this sector.	Initial meetings to be held followed by circulation of relevant briefing material. Further engagement as requested or deemed necessary. Also the project team will establish a mechanism for dealing expertly with queries and answering all technical questions which may arise from this group.
Consumer Groups	In addition to dialogue with the Consumer Council, MEL should engage as necessary with other consumer interests eg fuel poverty lobby.	Meetings to be offered and relevant briefing supplied.
Media Stakeholders		
Local Newspapers	Local newspapers will be a vital tool in communicating with local communities along the pipeline route.	Project team will have initial meetings with editors and provide briefing.
Regional Newspapers	Regional press will be useful in transporting information to the wider public and to highlight project milestones.	Meetings to be arranged with editors and relevant business and environmental correspondents.

Electronic Media, TV and Radio	TV and radio provide high quality reach in transporting information to the wider public and highlighting project milestones. Electronic media can also give the project a 'face' or a 'voice'.	Meetings to be held with relevant producers and correspondents with relevant briefing supplied.
Local Business Media	Local business media will be useful in transporting information to the 'business' public and to highlight project milestones.	Meetings should be held with editors of Ulster Business and Business Eye and briefing supplied. The magazines are good vehicles for publicising project developments.
Commentators, Opinion-Formers, Economists	There is a small but influential community of economic commentators in NI who can impact on how any project is perceived and understood. It is important to engage with them.	Project team to draw up a list of 'influencers' and arrange briefing meetings at suitable junctures.

Table 3.6.1b – Construction Phase

Many of the communications activities set out in relation to the pre-construction phase of the project will carry on into the construction phase. The tables below outline communications activities which are additional to those set out above in the pre-construction phase.

Stakeholder	Message and Rationale	Communications Channels
Statutory Bodies		
Department of Enterprise Trade and Investment (DETI)	Ongoing engagement with the Government Department responsible for energy policy.	Continue to provide a detailed briefing document on MEL plans for each stage of the project. Provide a detailed MEL communications strategy for the construction stages of the project.
Northern Ireland Utility Regulator (NIAUR)	Maintain engagement with the regulatory authority responsible for running the pipeline competition.	Continue to provide detailed briefing on MEL plans for the construction phase.
European Commission DG Energy	Brief DG Energy on the West Transmission project so how they understand how it contributes to delivery of EU energy policy in UK/Ireland and how it fits with other MEL activities and projects of common interest	Keep briefed.
Department for Regional Development (DRD)	Engage with DRD in relation to regional development context of West Transmission and implications for infrastructure including roads.	Maintain close contact with DRD Roads Service and establish procedures for any planned interruptions to traffic during the construction phase.
Department of the Environment (DOE) Planning Service	Engage with planning authorities to ascertain broad planning requirements are being met.	Maintain dialogue with Planning Service ensuring understanding of detailed aspects and conditions of permission.
DOE Northern Ireland Environment Agency (NIEA)	Consult with NIEA in relation to all of the environmental impacts arising in the context of West Transmission, including flora and fauna, protected areas, ASSIs, AONBs, water, air pollution, heritage/archaeological etc.	Maintain continuous dialogue with NIEA on all aspects of impacts and mitigation during construction phase. Establish trouble-shooting administrative procedure to avert unnecessary, avoidable project downtime.
Department of Agriculture and Rural Development (DARD)	Consult with DARD on agricultural and rural development issues (including impacts on farmers) which are likely to arise in relation to West Transmission.	Maintain ongoing dialogue and provide briefing as required.
Irish Department of Communications, Energy and Natural Resources (DCENR)	MEL maintains a line of communication with the Irish energy authorities in Dublin.	Continue briefing as required during construction.

Commission for Energy Regulation (CER)	Commission for Energy Regulation (CER) has a regulatory role in relation to other parts of MEL's business. It is therefore important that Irish regulatory authorities are briefed on MEL activities, including West Transmission.	Meet and provide briefing as required re construction phase of the project.
NI Consumer Council (CCNI)	It is important to familiarise NI's most important consumer body with the project and its benefits.	Provides an economic analysis which outlines the jobs in the construction phase and benefits to different categories of energy consumers.
Health and Safety Executive Northern Ireland (HSENI)	There should be continuous engagement with HSENI to obtain its advice and to outline to them the plans and procedures that will be put in place to ensure safety.	Agree to keep HSENI briefed throughout the construction phase of the project.
Other Operating Stakeholders		
Other utilities, NIE, NI Water, BT etc	It is important that the physical work planned in order to deliver West Transmission is co-ordinated with the plans of other utilities. This may be more of an issue for distribution than transmission, but as a minimum there should be sufficient co-ordination to avoid duplicative excavations and interruptions to road users etc.	Hold initial meetings with other utilities and agree to share details of future project plans.
Internal MEL Stakeholders (Members, Bondholders, Suppliers and Contractors)	Mutual Energy brings a low cost model to bear on infrastructure provision. In order to secure this model for West Transmission, including low cost of capital and contractual economies of scale, it is important that existing financiers and suppliers/contractors understand the new project.	Meetings will be held and relevant briefing will be provided to all of MEL's main internal stakeholders.
MEL operating partners System Operator, Northern Ireland (SONI), Single Electricity Market Operator (SEMO)/EirGrid, Bord Gais Eireann (BGE)/Gaslink, Single Electricity Market (SEM) Committee etc.	MEL's assets operate in an increasingly all-island market. It is therefore important that all of the relevant operators are adequately briefed on MEL activities, including new projects such as West Transmission.	Continue normal engagement and relevant briefing. These stakeholders can also be kept up to speed on the project via presentations/participation in energy sector conferences and seminars. MEL is already a frequent contributor to such events.
Individuals/Communities		
Landowners along pipeline route	Perhaps the most important project stakeholders for a gas pipeline project are those landowners who are impacted directly by the pipeline route and related infrastructure, AGIs etc. It is vitally important to have high quality engagement with this group of stakeholders so that their concerns and preferences can be taken into account. It is important also to allay any fears this group may have about the project generally and to bring them to a good understanding of the significant benefits. It is important to satisfy landowners that disturbance and intrusion will be kept to a minimum and that procedures are in place to provide compensation where loss occurs.	Continue engagement following the pre-construction phase. All landowners to be engaged individually face to face by project officers following confirmation of the agreed pipeline route. Detailed briefing material to be prepared and distributed to each landowner. Detailed finalised explanatory brochure also to be given out. Public exhibition to be staged in selected population centres (town halls/community centres) all along the pipeline route to give people good information about the preferred pipeline route and the planned timetable for construction. Public meetings will be arranged where and when necessary.

Farmers/Ulster Farmers' Union	All of the communications imperatives that apply to landowners (above) include farmers. In addition it is important to engage well with the Ulster Farmers' Union (UFU) and others who can advocate on behalf of farmers generally, but who can also provide very constructive assistance as an intermediary.	Dialogue to be maintained with farmers' groups and UFU. A further construction phase briefing document will be produced for farmers indicating how the project may impact them and how such impacts may be mitigated. Special meeting for farmers will be arranged during the construction phase where necessary.
General Public	There is a general imperative to raise public awareness of the benefits of extending the natural gas network into the West Transmission of NI. A secondary message is to set out how the mutual model benefits all energy consumers.	Individual citizens can attend exhibitions etc (which will be advertised in the press) and have access to project staff to discuss details of the project. Communications with the wider public during the construction phase will continue to be primarily via the media (see below). As an INNOVATION in communications, MEL will run a professional social media presence for the project.
Public Representatives		
Local politicians/Councillors	In addition to engaging with those citizens immediately impacted by the West Transmission project, and citizens generally, it is vitally important to maintain a high quality dialogue with their public representatives. A key category is local Councillors who will be intensely interested in how the project impacts their local area.	Meetings to continue as necessary with individual Councillors and groups of Councillors during construction. Further presentations to Councils as required. Briefing to be continued for Councillors and dialogue to continue with NILGA.
MEPs, MPs and MLAs	As above senior politicians can be very influential in shaping public understanding of the project.	Meetings/briefing to continue with all politicians who are interested in the project.
Assembly Committees	The NI Assembly DETI Committee should be briefed because its views and reports are important in influencing the energy policy environment for the project. The Assembly Environment Committee should also be briefed, for similar reasons.	Meetings should continue and further briefing of the relevant Assembly committees should be offered throughout the construction phase of the project. An updated briefing document should be prepared for committee members.
Political Party Energy and Environment spokespersons	Energy and Environment spokespersons of political parties are interested, knowledgeable and appreciative of good information. It is important that they are well briefed.	Meetings to be continued with party spokespersons and relevant briefing provided.
NI Business Community		
CBI/IOD/FSB and other business representative groups	The main business representative bodies are influential in determining public opinion and policy-makers' responses to business issues. It is important that they are well briefed in relation to the project.	Updated relevant briefing material should be provided. Further direct engagement with business representative organisations as requested or deemed necessary. MEL executives should participate (as speakers etc) at business sector events. Carefully tailored exhibition and sponsorship platforms will be evaluated (but only activated where there is clear strategic value).
Local Chambers/Business Forums	Much of the communication with local chambers etc will relate to the later phases of the project and primarily the distribution activity.	Continue engagement and briefing during construction phase.

Other Interested Stakeholders, NGOs, Interest Groups		
Environmental groups, NGOs (NI Environment Link, Friends of the Earth, etc)	<p>The high pressure pipeline will continue to attract concerned environmentalists and others who will seek reassurances about impacts and mitigation during the construction phase of the project.</p> <p>It is very important that there is a continuous constructive dialogue with this group of stakeholders and in particular with the more professional, active organisations operating in this sector.</p>	<p>Ongoing engagement communication and briefing will be continued throughout the construction phase.</p> <p>The project team will continue to operate a mechanism for dealing expertly with queries and answering all technical questions which may arise from this group.</p> <p>MEL will participate in influential environment sector conferences and other events.</p>
Consumer Groups	<p>In addition to dialogue with the Consumer Council, MEL should engage as necessary with other consumer interests eg fuel poverty lobby.</p>	<p>Meetings to be continued as required during construction.</p> <p>MEL will continue to brief the benefits of the project to end users of energy and participate in relevant events.</p>
Media Stakeholders		
Local Newspapers	<p>Local newspapers will be a vital tool in communicating with local communities along the pipeline route, particularly during the construction phase of the project.</p>	<p>Project team will continue dialogue with local papers and ensure understanding around the need to publicise construction phase developments/announcements in local areas.</p>
Regional Newspapers	<p>Regional press will be useful in transporting information to the wider public and to highlight project milestones.</p>	<p>Dialogue to continue with editors and relevant business and environmental correspondents.</p> <p>At suitable junctures during the construction phase MEL will organise 'open-days' for media and other stakeholders.</p>
Electronic Media, TV and Radio	<p>TV and radio provide high quality reach in transporting information to the wider public and for highlighting project milestones. Electronic media can also give the project a 'face' or a 'voice'.</p>	<p>Meetings will continue with relevant producers and correspondents with updated briefing supplied during the construction phase.</p> <p>At particular project milestones where there are strong 'visuals' visits will be arranged for the electronic media.</p> <p>MEL intends to capture all of the visually strong phases/events relating to the project so that high quality video footage can be supplied to television</p>
Local Business Media	<p>Local business media will be useful in transporting information to the 'business' public and to highlight project milestones.</p>	<p>Briefings will continue with editors/journalists of Ulster Business and Business Eye and other similar outlets.</p> <p>The magazines are good vehicles for publicising project developments and human interest aspects.</p>
Commentators, Opinion-Formers, Economists	<p>There is a small but influential community of economic commentators in NI who can impact on how any project is perceived and understood. It is important to engage with them.</p>	<p>Project team to continue to work the list of 'influencers' and arrange briefing meetings at suitable junctures during the construction phase.</p>
Social Media	<p>Social media is a very powerful modern communications tool for providing concise, immediate information to those who are interested in receiving it.</p> <p>It can greatly enhance all round communications for MEL to have a professional social media presence throughout the construction phase and beyond.</p>	<p>MEL to establish a professional social media interface including Facebook and Twitter and others as appropriate.</p> <p>Project team to assign specific responsibility for keeping this feed fresh and up to date.</p>

3.6.2 Finalisation of the pipeline and AGI designs

SGN construction works will be carried out in accordance with the suite of Management Procedures for Network Construction Projects in conjunction with the governance and Project Assurance Team, see section 4.4:

- CMS 01 Project Management Framework Document
- CMS 02 Project Health and Safety Management System
- CMS 03 Project Environmental Management System
- CMS 04 Project Risk Management System
- CMS 05 Project Acceptance and Documentation Handover System

The design works will be developed in up to three phases, Feasibility, Preliminary and Detail Design.

For design activities the design organisation shall submit with their tender an organogram showing the organisation of their team. The tender shall also include CVs for key personnel. The proposed personnel shall demonstrate qualifications and experience commensurate with the work to be undertaken. These persons must be identified on the Cost, Time and Resource (CTR) schedule.

All phases of works will be supported by the following requirements:

Cost, Time and Resource Schedule (CTRs)

Any appointed design consultant is required to fully develop CTRs identifying the activities, the deliverables against the activities and the resources required to complete the activity. For longer duration studies, the consultant will be required to report against these CTRs on a monthly basis showing percentage progress and the amount of resource consumed.

Programme of Design Activities

A project plan for the works (eg Gantt chart) shall be provided, and developed in sufficient detail to identify the major elements, typical lead times etc, so the critical path of the project can be highlighted and addressed. The designer shall submit with their tender a fully resourced and cost loaded programme detailing the disciplines and resources required to provide the contract deliverables. Presentation of this data should be made using MS Project or Primavera P3e to enable a detailed appraisal of the resources and costs to be made at tender evaluation stage and then subsequently throughout the execution of the contract, where planned resources can be measured against actual.

The designer will be required to maintain their project programme and in conjunction with the Project Manager or their authorised representative, report on progress to date, including man hours expended, per discipline, per week and report on actual progress against planned forecasted progress to date from the agreed programme with the Project Manager. Preparation of a complete Project Programme (week number and date duration), using (as a minimum) Microsoft Project 2003 or Primavera P3e. These must show all design activities eg production of drawings, material schedules, specifications, design calculations, reports etc. This shall be provided and agreed with Project Manager within one week of contract award. The Design Services Contractor's programme milestones (deliverables) shall be consistent with SGN's consolidated programme.

Change Control

To ensure an auditable trail is maintained throughout the development of the works, all changes to the scope, design and material specification must be formally agreed and signed off by the Project Manager prior to the change of works scope. This shall be accompanied with a cost and time impact of the change supported by the appropriate CTR and updated programme. The change request can be initiated by the Project Manager or designer and shall be recorded on the appropriate SGN form (SGN Q09, Q10 or Q11).

The design process will explicitly consider the options for different routes, different material types and suitabilities, being informed by flow modelling, pressure drops and velocities. At an early stage we would intend to discuss the options with NIAUR on any possible variation from the assumed concept design which replaced steel with PE. SGN construct in large volumes in both materials and are familiar with both. Any recommendation for a major change would be based upon the cost benefit analysis of the change rather than a predisposition towards either material. Importantly the Mutual Energy and SGN groups are committed to delivering value to the customer. In the event that PE is used in preference to steel we will look at constructive ways to ensure this does not involve value moving from the lower cost Transmission RAB to the higher cost Distribution RAB.

Design Freeze

On completion of the preliminary or conceptual design phase, the design must be reviewed by the Asset Manager who will sign off the design and approve the use of specified materials.

To ensure that the project is not adversely affected by late design changes which could have cost or programme implications, the design will be held for client approval and comment at the end of preliminary or conceptual design. Once all the comments have been resolved and addressed the design will progress to the detail design phase.

A design freeze will occur at the end of the detailed design phase, and on completion of SGN procedure TP/MP/G17– Management Procedure For The Management Of New Works, Modifications and Repairs. Towards the end of the detailed design phase all the interested parties, will be invited to confirm their agreement to the design, to ensure that the design can be fixed before construction begins.

T/PM/G17 Design Approval and Appraisal

Should the project involve new construction and modifications to plant associated with the gas supply system in accordance with the Pressure Safety Systems Regulations (PSSR) there is a requirement to undertake design approval and design appraisal of the submitted design in accordance with the requirements of T/PM/G17.

The Project Manager, who shall initiate the T/PM/G17 documentation, must ensure that all persons nominated to undertake design approval and design appraisal works are recorded on the design authority database and are subsequently suitable to undertake the category of works for which they have been nominated, satisfying themselves that there are no restrictions in place for the approver/appraiser.

The design appraisal work element shall be undertaken by an organisation that is totally independent to that of the design organisation.

No drawings will be submitted for G17 approval until the Project Manager or nominated representative has commented and accepted the drawings prior to submission.

3.6.3 Initiate materials procurement processes and award contracts

On receipt of the Design Approval G17 from West Transmission, SGN will procure the materials on a competitive tender basis in accordance with Section 6. The pipe and materials will be competitively tendered to drive price and delivery times down. The third-party inspection will be employed via SGNs inspection framework which is already in place. In order to maximise consistency across the network it is envisaged the AGI that skids will be mini-tendered off the SGN current regulator supply framework.

3.6.4 Finalise the pipeline route planning

The pipeline route corridor is established by desktop studies of maps and information available in the public domain taking into account major geographical, technical, archaeological and environmental factors between the start and finish point of the pipeline. The route should seek to avoid built up areas and areas of sensitivity or significant environmental or engineering features and highlight significant crossings that will need to be undertaken.

Routing is an iterative process and as the project progresses and further information becomes available through surveys and investigations, discussions with landowners, locations for sites, crossing points for major crossings, route surveys and design requirements are established the route is continually refined to a centre line of the proposed route on mapping at a scale of 1:2,500. As information is made available from the environmental surveys and landowner/tenant meetings the route will be refined and locations for the PRS and valve sites identified.

3.6.5 Obtain consents, easements and complete AGI land acquisition

Due to the nature and scale of the works, the environmental works will be let as a site-specific tendered contract. These works would encompass all survey works for ecology, archaeology and geology. Consultations with statutory authorities, public bodies and any interested parties will form part of the works in developing the Environmental Impact Assessment. Initial design, survey and planning works will be undertaken from an office rented locally by SGN suitable for accommodating the routing engineers, environmental consultants and project staff required to plan the pipelines and associated AGIs.

It is recognised that it would be favourable to employ local Land Agents so it is felt that this service would be better tendered locally with a Land Agent appointed per section of pipeline. The Land Agents will produce a schedule of interests listing all landowners and tenants who will potentially be affected by the works. They will then contact each party individually, explain the works and negotiate the areas of land required for pipe storage and site accommodation and all acquisitions, wayleaves, accesses and entry agreements. In conjunction with the Land Agents, once the site works start it is intended to employ local Agricultural Liaison Officers via the inspection framework to monitor the ground works on site and assist the Land Agents.

3.6.6 Preparation of construction, maintenance and specialist services contract tender documents in accordance with the principles stipulated

The procurement process will be carried out by the existing SGN procurement team, who are already in place and procuring large quantities of materials for the two existing SGN group networks. The main works will be tendered as a bespoke tender under the NEC terms and conditions. The scope of the works will be developed by the designers and site supervisors with input from the environmental consultants as appropriate. The return information requested will allow evaluation of the contract in relation to competencies of the project staff and previous experience of undertaking the types of work under consideration. The process will ensure that the reference to the NI Executive Sustainability requirements are passed on to appointed contractors on a back to back basis (as a minimum). ITTs for construction and specialist services will be scoped and clauses developed under the NEC form of contract. Tenderers will be pre-qualified, invited to tender, evaluated and appointed as per Section 3.3 and Section 6.

3.6.7 Initiate the competitive tender process and award the construction, maintenance and specialist services contracts

The procurement tender process will be carried out by the existing SGN procurement team, in full compliance with EEC procurement legislation. The main works will be tendered as a bespoke tender under the NEC terms and conditions. The return information requested will allow evaluation of the contract in relation to competencies of the project staff and previous experience of undertaking the types of work under consideration. The assessment process will use a combination of both price and quality.

Key points

- A detailed programme of stakeholder engagement is planned.
- SGN will construct the asset using a detailed set of policies and procedures used extensively and continuously in its GB business.
- These policies and procedures give an increased level of detail over the industry standard requirements.

3.7 Construction Project Management

3.7.1 Timely commissioning and establishment of the project team and systems

It is proposed that the pipeline to Strabane be constructed as below 7bar which would allow construction to start in January 2016 with a gas-on date of October 2016. If laid as below 7bar, then the consents requirements and notifications are greatly reduced allowing the time periods for the works to be compressed. The transmission pipelines from Portadown to Enniskillen would be constructed in 2017 with a gas-on date of October 2017. Lastly the pipeline to Derrylin would be completed, the route being the most technically challenging due to the existing ground conditions, high water table and constraints.

In order to meet these gas-on dates, it is imperative that the planning works begin as soon as possible after the bid is awarded. It is therefore proposed that in order to recruit the main core of people required to manage and move the project forward, existing framework agreements are used to invite CVs and employ suitable people via this route. This would include Project Supervisors and Engineers, CDMC, QSs, Document Controllers and Routing Engineers/Designers.

A web-based system for document sharing will be set up and co-ordinated by the Document Controller. All personnel employed on the project will have access to the system. The Document Controller will be responsible for ensuring that only the most current document is available for viewing.

It is proposed that each section of pipeline be managed as an individual section with a Project Supervisor, Document Controller and Routing Engineers dedicated to each section. All sections will be overseen by the Project Manager, CDMC and Project Engineers to ensure consistency across the project and provide additional support where required.

The overall network will be checked by a Design Engineer to optimise the sizing, pressure tiers, material etc of each section of pipeline. They will work closely with the Routing Engineers to identify any pinch points, ground conditions, special crossings etc which could affect the design of the pipeline. Once the route corridor has been established, an aerial survey taking high resolution photographs all along the route will be undertaken. As the material requirements become apparent the designer will make a rough estimate of cost of pipe and equipment to enable SGN Procurement to advertise to the European Journal for suppliers.

On award of bid and engagement of Qs and initial project personnel, the scopes and ITTs will start to be prepared for the environmental and Land Agent contracts. By the time the works have been posted in the European Journal and pre-qualification procedures have been completed, the route corridor will be sufficiently developed to allow the tendering processes to proceed.

The environmental surveys are required over a 12-month period particularly over spring and early summer. In order to complete the surveys and finalise routing for the Strabane section, emphasis will be placed on this section to start with to get surveys underway. It is critical that the Land Agents are able to agree early access for these surveys. The remainder of the route will undergo a more rigorous desk top survey to refine the requirements for the site surveys to make them cost effective over the area to be covered.

As information is made available from the environmental surveys and landowner/tenant meetings the route will be refined and locations for the PRS and valve sites identified. For Strabane this will be required by January 2015 in order to allow the design and stress analysis for the PRS to be completed and the modules scoped for tendering. It is envisaged that all PRSs will operate on pressure control so that the scope for each module can be similar just accounting for flows and pressures.

Once the route is developed sufficiently the pipeline designs will be completed and the requirements for pipe and other materials will be formed into ITTs to be issued to the suppliers successful through the pre-qualification process.

Similarly, as the routes and designs are finalised the ITTs for the MWC will be developed. The section to Strabane will be let as a separate contract. It is envisaged the pipelines from Portadown to Enniskillen will be let as one contract to allow greater flexibility of the workforce and equipment should one of the sections encountered delays during construction.

During the construction phase, each section will have a dedicated SPI supported by weld and coating inspectors. The number of inspectors will depend on the MWC programme and proposed number of front ends and tie-in sections. All pipe, as it is received at site, will be inspected prior to acceptance. For Strabane line, (and assuming use of polyethylene pipe PE100) all but fusion welds will be visually inspected and the external and internal beads checked. The pipe will be checked for loss of wall thickness prior to ditching and the surround will be checked for sharps. For the transmission pipe all welds will be visually inspected, radiographed or ultra-sonically tested. All coating will be checked and the pipe fully holiday checked prior to ditching. All equipment and consumables will be checked prior to use. The location of every pipe, fitting and weld will be recorded on the bar charts and the material and consumables certification will be recorded against each bar chart. All pressure tests will be witnessed and the records kept for each section.

3.7.2 Construction QA processes and asset records

The Project Manager will be responsible for the complete quality assurance programme of the contract, including all quality assurance requirements to be imposed on their sub-contractors and suppliers of materials. Depending on the contract strategy selected, Inspection personnel may be employed by Network Construction to support the PMT. The QA processes cover a wide range of areas including:



Pipe Welding

Site Inspection Personnel

The final responsibility for quality of the site work will rest with the Contractor. As defined in sections 3.7.1 and 4.1 an Inspection team will be engaged to carry out the ongoing monitoring of the quality of workmanship. All work will be reported on appropriate Inspection forms.

Quality and Inspection Test Plan

Where appropriate, the Quality Advisor will ensure that the contractor submits a Contract Specific Quality and Inspection and Test Plan for review and comment prior to commencement of work. Once approved, controlled copies will be held by the following personnel: Project Manager, Project Quality Advisor, Senior Pipeline Inspector and the Project Supervisor. If a deviation to the plan is found, it should be notified to the Project Supervisor, who will liaise with the Quality Advisor to ensure that suitable corrective action is taken.

Review of Construction Procedures/Method Statements

Approval of Welding and NDT Procedures

Weld procedures, weld procedure qualifications, welder qualifications and NDT procedures shall be submitted to the Project Manager for review and comment 10 working days prior to any related work commencing.



Transmission AGI

Construction Procedures/Method Statements

All Construction Procedures/Method Statements and accompanying risk assessments, including hydrostatic testing procedures, shall be submitted to the Project Engineer for review 10 working days prior to any related work commencing. These will be reviewed by the Project Engineer or their nominee.

Change Process

Any proposed changes to construction procedures/method statements, including hydrostatic testing procedures, shall be submitted to the Project Supervisor for review. Work will not start, or if started, will cease, until the changes have been agreed. Any changes agreed will be documented using the change request form and entered on to the change request register.

Inspection/Monitoring

ISO 9001:2000 Audit

At the request of the Project Manager, the Quality Advisor will arrange an ISO 9001:2000 audit on either the main contractor or sub contractor to the scope of the contract. The Quality Advisor will attend any such audit as an observer and make available to the Project Manager the results of any such audit within 10 days working days.

Construction Inspection/Monitoring

The Senior Pipeline Inspector will ensure that the Pipeline Welding Safety Checklist, SGN H&S 27, is completed. Where deemed necessary by the PMT, the Quality Advisor may carry out further site inspections and audits to determine compliance with the Contract Quality and Inspection Test Plan. A formal report will be issued to the Contractor and Project Manager upon completion and it will be retained for inclusion in the Project handover documentation. HSE monitoring shall be carried out in accordance with the requirements of CMS 02 and CMS 03.

Monitoring Visits

The Project Quality Advisor will visit site to discuss and monitor with inspection personnel the implementation of the Project specific Quality and Inspection Test Plan and general compliance with technical specifications.

Free Issue Material

Inspection of Materials at Suppliers

SGN via the PMT where appropriate, are responsible for ensuring that delivered materials and associated certification is in accordance with the original order and technical specification.

Delivery of Materials to Site (Free Issue)

The procedure and controls to be applied to incoming permanent materials procured by the Network for free-issue to the construction, Main Works Contractor will be as follows:

Storage areas, including pipe dumps will be identified during routing and negotiated by the Land Agents pending allocation of materials to the Main Works Contractor. Inspection of pipe upon delivery is to be undertaken in accordance with SGN Local Procedure Pipe Receipt (LP 02). Prior to the Network allocating a material storage site, a risk assessment will be conducted in order to confirm that the location is fit for purpose including:

- traffic movements and access
- permitry
- handling
- COSHH
- proximity of operational personnel and plant
- proximity of persons other than those at work

The scope includes for:

- Receipt
- Inspection
- Storage
- Issue
- Records

SGN via the Materials Controller is responsible for all activities defined within this procedure.

Handling and Storage of Materials

Received materials are verified against purchase orders, the MTO and the procurement plan prior to offloading. Inspection at this stage includes quantity, identification marking, damage and the provision of certification. Non-conforming orders are quarantined prior to problem resolution. Records of receipt and inspection are generated and maintained and the responsible Project Team Member is advised of delivery status with the updating of the procurement programme. Pipe receipt inspection is carried out at the pipe dump location by BGas qualified inspection personnel in accordance with defined procedures. The Project Supervisor will ensure that the offloading of materials is carried out by the contractors and in the presence of Inspection Team personnel to ensure that material is not damaged or unnecessarily handled.

Storage requirements are defined, for example, IGE TD1 Ed.5 for the storage of pipes and fittings. Inspection of pipe upon delivery is to be undertaken in accordance with SGN Local Procedure LP02 – Pipe receipt. Non-conforming materials are physically marked as to their status or segregated in order to prevent inadvertent usage. Periodic checks are made on stored items in order to ensure that traceability is maintained and deterioration is detected. Covered areas are available for the storage of susceptible materials and equipment. The Project Supervisor, will ensure that the contractor submits a method statement for the handling/storage of materials and/or pipe and that the procedure is in place, prior to receipt of material. It is the responsibility of all PMT to report incorrect handling/storage methods to the Project Supervisor immediately.

Traceability of Construction Material (Free issue)

A defined process is used to ensure the traceability of all material after goods receipt and the compilation of a databook. The contractor is responsible for the generation of accurate and true 'red line' drawings, which are to be signed and verified by both the contractor site manager and an appointed representative of SGN.

Material Certification

The Senior Pipeline Inspector or a nominated person will act as a central body for collation/dissemination of vendor material certification and ensure certification files are included into the final Design and Construction files in conjunction with the Contractor's Representative.

Quality Review Meetings

When deemed necessary by the Project Manager or Quality Advisor, the Quality Advisor will set up Quality Review Meetings with the Contractor's Quality team. An agenda, will be issued prior to the meeting by the Quality Advisor and minutes will be provided and circulated to the PMT within five days of the meeting date. Any queries/anomalies/deviations, which cannot be agreed at the meeting will be passed to the Project Supervisor for clarification.

Defects and Non conformance

Should a defect or non conformance be identified A formal Defect Notice and Non conformance process is used to control the construction, Health, Safety or Environmental defects or malpractice.

3.7.3 Project cost monitoring and control, including contingency costs

At the outset of the project the record system employed by SGN for record capture will be started and the records will be built up over the life of the project. This consists of a section for project management including contracts, consents, finance, approvals, EIA etc and a section for the build records. These records form part of the pipeline and PRS asset on completion.

A QS will be employed per section from the start of the works to maintain the finance spreadsheet. All orders will be recorded when raised and paid. In addition, the QS will maintain the contract and record all payments. The forecast sum will be updated continually as actual figures become available and monitored against the approved sum. Any contingency costs will be removed from the forecast as the risk of that event occurring is removed.

3.7.4 Risk assessment and proposals to mitigate/resolve identified issues

Risk registers will be produced as an overall risk to the project and also for each individual pipeline. The main risk register will be produced at the outset of the project and will encompass the main risks likely to impact on either the delivery or cost of the project. Every risk will identify the likelihood of occurrence and impact. Mitigation measures will be described for each risk and will be pursued until the risk is appropriately mitigated. The risk register will be maintained by the QS and project supervisor for each section.

3.7.5 Arrangements for liaison with and handover to Systems Operations

Final Design and Construction Records

The Project Manager is responsible for compiling the client's documentation in accordance with existing standard procedures. The PMT and the Contractor will agree the detailed index for the project records, specifying handover deliverables within two weeks of site construction activities commencing. The PMT will review the proposed index. Any comments should be directed to the Project Supervisor. The Quality Advisor will monitor the compilation of the records to ensure they comply with the agreed requirements. Any deviations will be directed to the Project Supervisor. The Project Engineer/Supervisor will ensure that Commissioning, Operational and Asset Acceptance is in accordance with the requirements of CMS 05 – Project Acceptance and Document Handover System and that this procedure has been adhered to and signed by the Project Manager and/or appropriate persons.

Control and Instrumentation (C&I) systems

The Control and Instrumentation (C&I) systems will be designed as part of the PRS design process in accordance with the specifications required by the end user. Materials will be ordered via SGN P&L systems and the PRS modules scoped to be compatible with this equipment. The C&I equipment and cabling will be installed as part of the installation contract including the mimic boards and screens on site and in System Operations. The systems will be end-to-end tested and all modes of operation and failure will be simulated and verified on site and in the control room. When all checks have been completed satisfactorily the system will be handed over to System Operations.

Further details are included in **section 4.1.2** on the operational transmission plan.

Key points

- Full project management policies and procedures are already in place.
- The key staff involved all have an intimate understanding of the processes.



Maintaining the asset

FOUR

Chapter Four

Governance

- 4.1 Risk management
- 4.2 Interaction with NIAUR
- 4.3 Policies and Procedures
- 4.4 Inspection review QA Audit
- 4.5 Information systems



4.1 Risk management

4.1.1 Identification and quantification of risk issues

Risk management is a key part of the governance of the business and of major projects in particular. The following section outlines some of the processes involved, covering those at construction stage and in operation stage and covering both business level and asset level risks.

Construction

At the outset there will be a risk workshop to identify the risk management strategy. In advance of the full risk assessment carried out as described in 4.1.2, the following high level risk register is indicative of the risks in the construction phase of the project:

Figure 4.1.1 – Example of Construction Risk Management Register

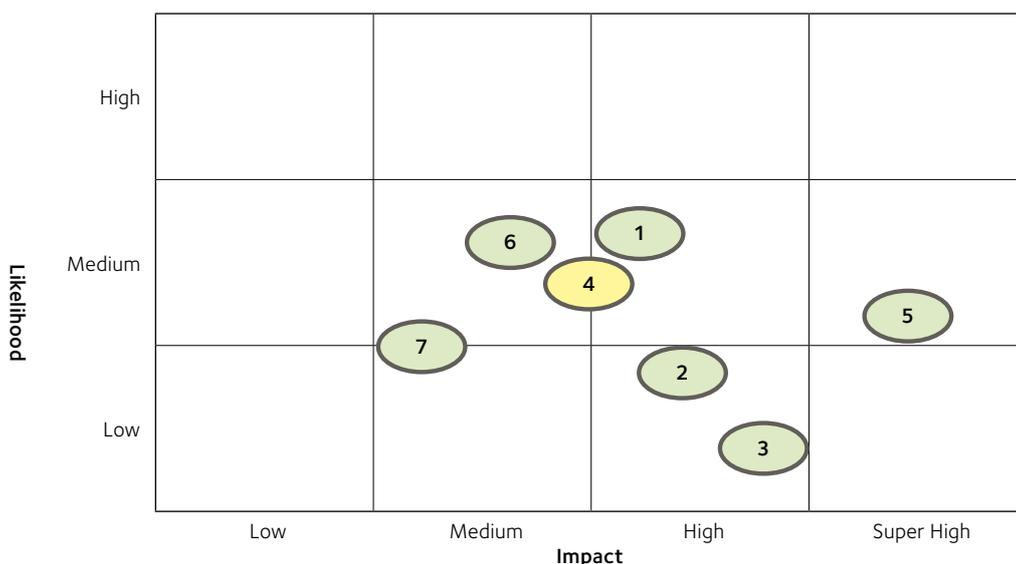
Risk Ref	Risk Title	Status	Current Probability	Risk Owner	Form A/D	Origination Date	Close Out Date
Far R1	Contract strategy	Closed	0%		A	9th Oct 06	8th Jan 08
Far R2	SGN resources	Closed	0%	Project services	A	9th Oct 06	10th Nov 06
Far R3	Availability of Resources (Design & Implementation)	Closed	0%	Design	A	9th Oct 06	8th Jan 08
Far R4a	Delay to preliminary design	Closed	0%	Land and environment	A	9th Oct 06	8th Jan 08
Far R4b	Delay to preliminary design	Closed	0%	Project Services	A	9th Oct 06	8th Jan 08
Far R5b	Design changes – AGI	Live	95%	Design	A	8th Jan 08	
Far R6	Changes to conceptual design	Closed	0%				8th Jan 08
Far R7b	Re-works on site following late G17s – PRSs	Closed	0%	MWC – PRSs	D	10th Nov 06	8th Jan 08
Far R8	Inadequate information for detailed design	Live	5%	Design	A	8th Jan 08	
Far R9	General anomalies in the scope	Closed	0%	Design	D	10th Nov 06	8th Jan 08
Far R10	Quality of information supplied by SGN to the contractor	Closed	0%	Design	D	10th Nov 06	8th Jan 08
Far R11	Design problems and errors	Closed	0%	Design	D	9th Oct 06	8th Jan 08
Far R13	Detailed design interface	Closed	0%	Project Services	A	10th Nov 06	8th Jan 08
Far R16	Late approval Form A	Live	0%	MWC – pipeline	A	8th Jan 08	
Far R16b	Form D Approval (Main Works Contractor- PRSs)	Live	5%	MWC – PRSs	D	10th Nov 06	
Far R17b	Late award of Works contract – PRSs	Live	5%	MWC – PRSs	D	9th Oct 06	
Far R18	ITT preparation issue/delay	Live	5%	Project Services	A	9th Oct 06	
Far R19b	ITT contract quality PRSs	Live	5%	MWC – PRSs	A	9th Oct 06	
Far R20	Procurement support	Live	50%	SGN	A	9th Oct 06	
Far R22a	Bankruptcy of contractors (2011)	Live	5%	Project services	A	10th Nov 06	
Far R23	Bankruptcy of Suppliers (2011)	Closed	0%	Materials	A	10th Nov 06	8th Jan 08
Far R25b	Free issue station materials not to specification	Live	5%	MWC – PRSs	D	9th Oct 06	
Far R26	Late delivery of materials from contractor	Closed	0%			10th Nov 06	8th Jan 08
Far R27	Damage to contractor procured materials	Closed	0%			10th Nov 06	8th Jan 08
Far R28b	Damage to SGN procured materials	Live	10%	MWC – PRSs	D	10th Nov 06	
Far R29b	Material progress/ late delivery/ free issue pipe for PRSs	Live	25%	MWC – PRSs	D	10th Nov 06	

The project will use the early warning system inherent within the NEC methodology, with parties raising in advance concerns that may cause cost or programme implications. These are added to the risk register illustrated in Figure 4.1.1. The risk register quantifies the risk issue in respect of cost/programme implication/likelihood and consequence as described in 4.1.2 below.

Post construction

Post construction the risks to the project will be formally assessed using the methodology explained. The following is an illustration of the risks identified:

Figure 4.1.1a – Risk Register



1. Inadequate Corporate Strategy and Communication
2. Poor Financial Management
3. Failure of Financial Structure
4. Regulatory risk
5. Poor Operational Performance
6. Business Environment and Market risk
7. Liquidity risk

4.1.2 Description of the policy and processes to identify and manage risk issues

The policy and processes applied to identify and manage risk are consistent between both the construction and operational phases.

Risk control at board level

As discussed in section 2.1.1 Mutual Energy's risk processes are based on the UK Corporate Governance Code.

The Board of Directors approves the overall risk management process, known as the group risk governance framework, and approves all the policies covered by the framework. Responsibility for ensuring compliance with the policies is divided between the Risk Committee and the Audit Committee. The Risk Committee deals with all risks that are inherently operational in nature (including health and safety), while the Audit Committee monitors all financial and other risks.

Identification of risks and assessing how they are managed is carried out by a risk register process, with the register reviewed regularly by the board and the relevant board committees. This ongoing process for identifying, evaluating and managing the group's significant risks ensures that risks are identified early, highlighted to the appropriate people and dealt with efficiently.

The Risk Committee looks specifically at the following areas:

- Health and safety
- Operational safety, including asset engineering fitness for purpose
- Environment
- Security; and
- Emergency response

The Audit Committee covers all other risks and its role includes the review of the procedures for the identification, assessment and reporting of risks. The committee oversees the group's internal controls and risk management systems.

Identification and management of risk at business and project level

As noted above, the management and monitoring of risks is carried out by a risk register process, with the register reviewed regularly by the project board.

The risk register details:

- The identified significant risks compared with expected outcomes
- Impact and likelihood or occurrence before and after control
- Mitigating actions and controls
- Responsibility
- Timescales

The asset senior manager or project manager will ensure that identified mitigating actions are carried out and control measures are put in place and verify that the actions are carried out via audit. They also report periodically to the project board on the current risk status.

All staff have been given appropriate training on risk management and contractors are required to demonstrate competence in risk management. Staff and contractors will be required to carry out an informal risk assessment of their activities as part of their everyday work in addition to the formal assessments carried out in advance. This ensures that risks are mitigated at all levels across the business.

The Business Risk Management Process includes the following elements:

- Identification, assessment and documentation of business risks
- Identification, prioritisation and documentation of required internal controls
- Identification and documentation of responsible managers for risks and controls
- Governance, monitoring and reporting mechanisms; and
- Escalation and issue resolution

All significant risks are systematically and regularly identified, assessed, monitored and adequately controlled. Assessments consider the significance of the risks to the company, the likelihood of the risks materialising, the ability to reduce the impact if the risk was to materialise and the costs of operating controls relative to the benefit obtained in managing the risks.

As part of the process all senior managers have responsibility to :

- consider and identify risks in all aspects of their work
- evaluate the risks
- consider what is in place to mitigate the risk and whether it is appropriate and effective
- consider existing policies and procedures that may affect the response to a risk
- report any process or control improvements that could be made
- report any control weaknesses or breakdowns as soon as they are evident; and
- document the risk and its control assessment and any actions undertaken or planned for risks which may threaten the achievement of company strategy and objectives

Specific risk identification for West Transmission

The risk management policies and procedures described in section 4.1.3 will be extended to govern any operational risk associated with the West pipeline system via an Operational Transition Plan (OTP). Such OTP shall include HAZOP and HAZID workshops to identify the major accident, operational and environmental risks associated with the new pipeline system. Any new risks shall be risk assessed as described and incorporated within the Operational Risk Register (ORR) as applicable. Any remedial actions or business improvements will then be allocated and added to our Remedial Action Register (RAR).

Our Major Accident Prevention Document (MAPD) will be also be amended and updated for the new assets, describing in detail the hazard, its probability of happening and associated mitigations in place.

One particular area of risk is health and safety. The risk assessment process is a systematic general examination of the effect of the employer's undertaking, work activities and the condition of any premises. It enables us to identify the foreseeable risks and to determine what measures and controls should be taken to comply with the employer's duties under the relevant statutory provisions.

In our approved risk assessment policy (MEL HSP-018), we commit to:

1. make a suitable and sufficient assessment of the significant risks to the health and safety of:
 - employees to which they are exposed while they are at work
 - persons not in MEL employment arising out of or in connection with MEL work activities
2. record the significant findings of the assessment
3. ensure appropriate control measures are implemented to remove, reduce or control identified risks and hazards
4. provide employees with comprehensible and relevant information on:
 - the risks to their health and safety identified by the risk assessments
 - the requisite preventive, control and/or protective measures
5. review any such assessment if:
 - there is reason to suspect it is no longer valid, or
 - there has been a significant change in the matters to which it relates, for example work method, equipment, materials, etc, and as a result of any such review shall make changes as required
6. where necessary ensure appropriate on-site risk assessment procedures are implemented for work activities undertaken within changing and/or hostile environments

7. make suitable and sufficient risk assessments specific to the hazards and risks, covered by health and safety legislation, that are significant to MEL, eg Gas Safety (Management) Regulations (NI) 1997
8. make any other specific risk assessments that may be required by other health and safety legislation, approved codes of practice and/or guidance

As noted previously, West Transmission will be adopting the processes and policies of PTL. Our use of a suitable and sufficient risk assessment in practice means that the level of detail and degree of sophistication of the risk assessment is proportional to the risk and the timeframe to be employed.

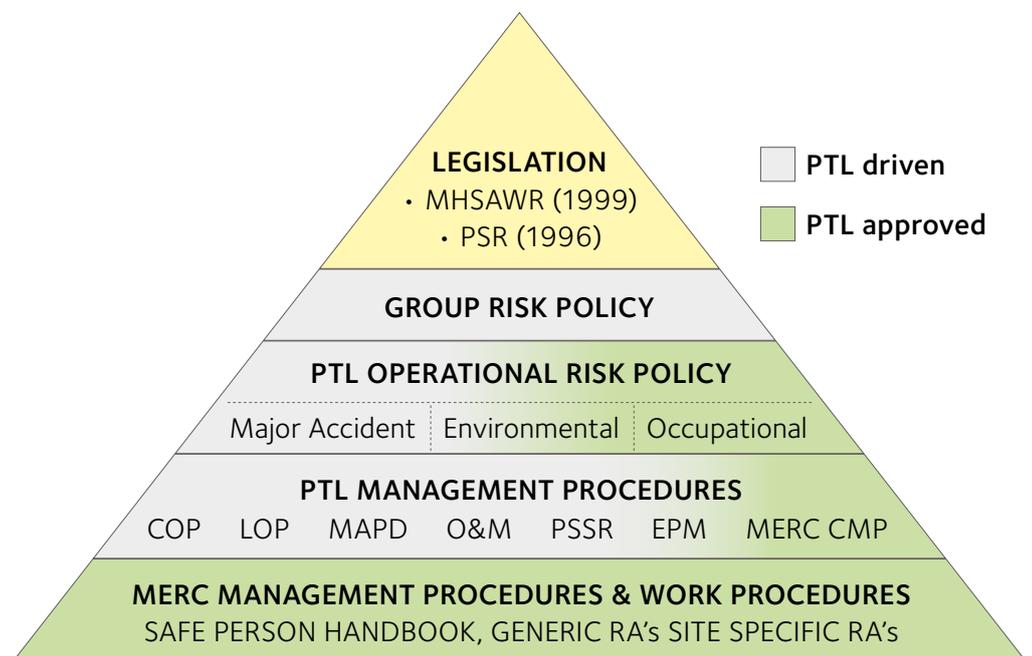
When applying the risk assessment policy in practice we manage using both a top down and bottom up approach, described in our Pipeline Integrity Management System (PIMS) management procedure.

A top down approach is taken through the compilation, assessment and continual review of operational risks which the pipeline exposes to the public, employees and the business, the controls in place to manage those risks and, where necessary any further improvements to be employed to lessen the exposure to a particular risk.

A bottom up approach is taken whereby all work undertaken by contractors working on the system, primarily the MERC, must be fully risk assessed, documented and approved by MEL management.

Our risk management structure is illustrated below:

Figure 4.1.2 – Risk Management Structure



The asset senior manager is formally responsible for ensuring that a robust risk management process is in place. Control is maintained through a management structure with clearly defined responsibilities, authority levels and lines of reporting; the appointment of suitably qualified staff in specialised business areas; a comprehensive financial planning and accounting framework and a formal reporting structure. These methods of control are subject to periodic review as to their continued suitability.

4.1.3 Description of the procedures to mitigate risk and monitor actions to completion

Significant risks are documented in an Operational Risk Register (ORR) which is to be reviewed by West Transmission management and key contractors at least twice a year.

We structure the ORR using a preliminary hazard analysis technique to identify risks and assess their consequence and likelihood to their occurrence. The ORR review is a facilitated, team-based review using hazard guide words and prompts for identification. The operational risks posed fall into three categories:

- Major accident risks
- Occupational risks
- Environmental risks

The potential of the risk emanating is assessed on a life, commercial and supply basis and categorised according to a predefined risk rating. The likelihood of the event is assessed in respect of frequency, eg once or more every five years.

Each risk that has been identified for the particular subsystem or operation is studied in turn and recorded in one line of the table arriving at a risk rating either for the particular hazardous event or the subsystem of the operation.

We document within the ORR the controls in place or measures undertaken to manage the risk and an assessment is made on the adequacy of the controls in place to manage the particular risk.

The results of the ORR are summarised in a Risk Assessment Matrix (RAM). This standard qualitative risk assessment approach helps to identify which areas of risk the business is most exposed and can help prioritise where we should focus on trying to improve controls and mitigations.

Major accident hazard risks considered in our ORR include:

- Environmental hazards, eg ground movement, subsidence
- Design considerations, eg design suitability
- Process deviations, eg over-pressure of the PTPS and downstream networks
- Internal and external corrosion, including AC interference
- External interference, eg third-party impact

Occupational Hazard Risks

Occupational risks are the risks mainly posed to PTL's employees or contractors, associated with the performance of the various activities required to operate, inspect and maintain the pipeline system. These may emanate from a loss of containment event but are more commonly associated with the dangers experienced when working within an engineering environment.

All contractors including the Control Room Services and the MERC (and its sub-contractors) are required to carry out risk assessments for all activities undertaken as a part of the inspection, maintenance and emergency response arrangements for the PTPS.

MERC uses a Safe Person Handbook to ensure that the correct control methods can be adopted for any hazard present on any worksite. The Safe Person Handbook includes Safe Person Task Cards for higher risk activities such as working at heights, street works, manual handling and lifting operations.

MERC has Generic Risk Assessments for all routine maintenance activities. Prior to work commencing on the PTPS assets, PTL review the Generic RAs and ensure their suitability and relevance for work being executed on the PTPS assets. Generic Risk Assessments are clearly numbered and are recorded on any permit to work that may be issued.

MERC employees undertake a site-specific risk assessment, prior to commencing any work activity, to ensure all hazards have been identified and are controlled. In doing so, reference is made to the company Safe Person Handbook. The handbook contains comprehensive safety advice on hazards and control measures and, also, safe person hazard sheets by work activity.

While undertaking safety inspections onsite, PTL ensures its and its contractors' safety rules, safe systems of work and specific risk assessments are reviewed, understood, hazardous conditions identified and appropriate corrective actions taken to improve safety standards.

Environmental Hazard Risks

We employ the best available technology not entailing excessive cost (BATNEEC) in order to prevent or reduce the impact of a polluting event.

West Transmission system would only pose a high risk to the environment in the event of a loss of containment – an event which itself would create the potential for a major hazard incident. Most of the environmental risk posed by the PTPS, therefore, is mitigated by the controls in place to avoid loss of containment.

Lesser environmental risks, such as spillage of hazardous chemicals or low volume releases of methane to the environment as a result of maintenance operations, are addressed in the MERC suite of management and work procedures. Specifically, the MERC Safe Person Handbook contains ICE sheets (Information on Chemicals for Employees), including guidance on precautions, storage, transport and disposal, as well as what to do in the event of an emergency.

Site-based risk is subject to two levels of control: the risk control and monitoring regime of the Mutual Energy group which overlays on and audits the risk processes of the MERC contractor. The management procedures associated to this framework set out the SGN wide risk and control methodology and how it should be applied.

Key procedures to mitigate and monitor risk

The following is a brief synopsis of the key procedures to mitigate and monitor risk:

(1) Procedures to support our management of risk will include requirements for:

- Business risk processes to manage business and operational risks that reflect a 'whole life cycle assessment' approach
- Business continuity management processes to a recognised standard (eg BS25999) to control risks/threats to the continuity of critical business processes
- a process to identify and assess changes to legislation and regulatory conditions
- allocation of roles and responsibilities and approval/authorisation, including the role of safety forums and other governance groups
- compliance with legislation intended to control risks (eg COSHH, manual handling, employment of young persons)

- the use of proactive and reactive approaches to risk management and the use of appropriate risk management tools and techniques (eg ERIC – Eliminate, Reduce, Isolate, Control; BATNEEC – Best Available Technology Not Entailing Excessive Cost)
- a methodology/process for hazard identification and documentation for all workplaces and work activities (eg operational sites, offices, warehouses) and how action will be decided and taken to control the risks
- consideration of human factors as part of our risk assessment processes
- a hierarchy of controls to reflect the level of risk (eg generic risk assessment, site specific risk assessment, permit etc)
- the need to review risk assessments in light of changes to work processes, new equipment, significant changes to existing safe systems of work and findings from audits, inspection or incident/accident investigations (or any other source of feedback)
- where appropriate, a consistent qualitative or quantitative risk assessment methodology that reflects likelihood and consequence and allows prioritisation of risks and risk reduction action plans
- the documenting, monitoring and reporting of risks to the business
- providing assurance to the business and other inspecting bodies and stakeholders
- managing the need for specialist quantified risk assessments (eg HP pipelines, storage sites)
- the monitoring and testing of risk control systems
- development and monitoring of action plans to address issues and improve performance
- employee involvement, including reporting any risk control weaknesses or breakdown
- effective communication on hazards, precautions and risk assessment across the business
- supervision to ensure that employees are following appropriate risk assessment systems for the activities being undertaken

- the competence requirements of personnel who will be undertaking risk assessments; and
- processes and controls to ensure the security of our people, information and our assets

(2) Processes and procedures that will be put in place such that temporary and permanent business changes are adequately assessed and managed will prescribe the requirements for:

- allocation of roles and responsibilities and an approval/authorisation process commensurate with the risk associated with the change
- evaluation that is timely and proportionate to the risk
- an impact assessment of the change – to include any human factors risks and an assessment of the effect on any of our systems and the gas transporters safety cases
- the need to assess and control any interdependencies with other changes
- the need to review and, if required, revise statutory safety documents or reports, policies and procedures, environmental permit submissions, and if necessary to inform the regulatory authorities of the change
- ensuring that technical changes to plant, equipment and systems are managed to ensure compliance with appropriate standards and guidance
- controlling the introduction of new products, equipment and techniques
- effective employee engagement and communication (including employee representatives)
- ensuring that the required levels of competence are maintained
- ensuring that organisational changes comply with all applicable human resources policies and procedures
- the monitoring required during changes
- the records and documentation to be retained for all changes and the period of retention; and
- periodic reviews of the management of change system to monitor its effectiveness

Project risks will be managed on a regular basis and updated regularly throughout the construction period, using the Qualitative Risk Analysis procedure. The risks are identified, substantiated and quantified at workshops run by an independent Risk Management Consultant. Workshops are held at least once during the main three phases of the project:

- Phase 1 – Feasibility and Project approval
- Phase 2 – Detailed Design, Preparation of Tender Documentation, Tender Evaluation and Contingency assessment
- Phase 3 – Construction

Risks will be rated, prioritised and recorded on a P50, P80 or P100 probability basis, presented on a typhoon chart, Risk Analysis Summary, Risk Register and an S-curve produced detailing overall project risk as a cumulative frequency graph. See examples below.

Figure 4.1.3b – Example typhoon chart

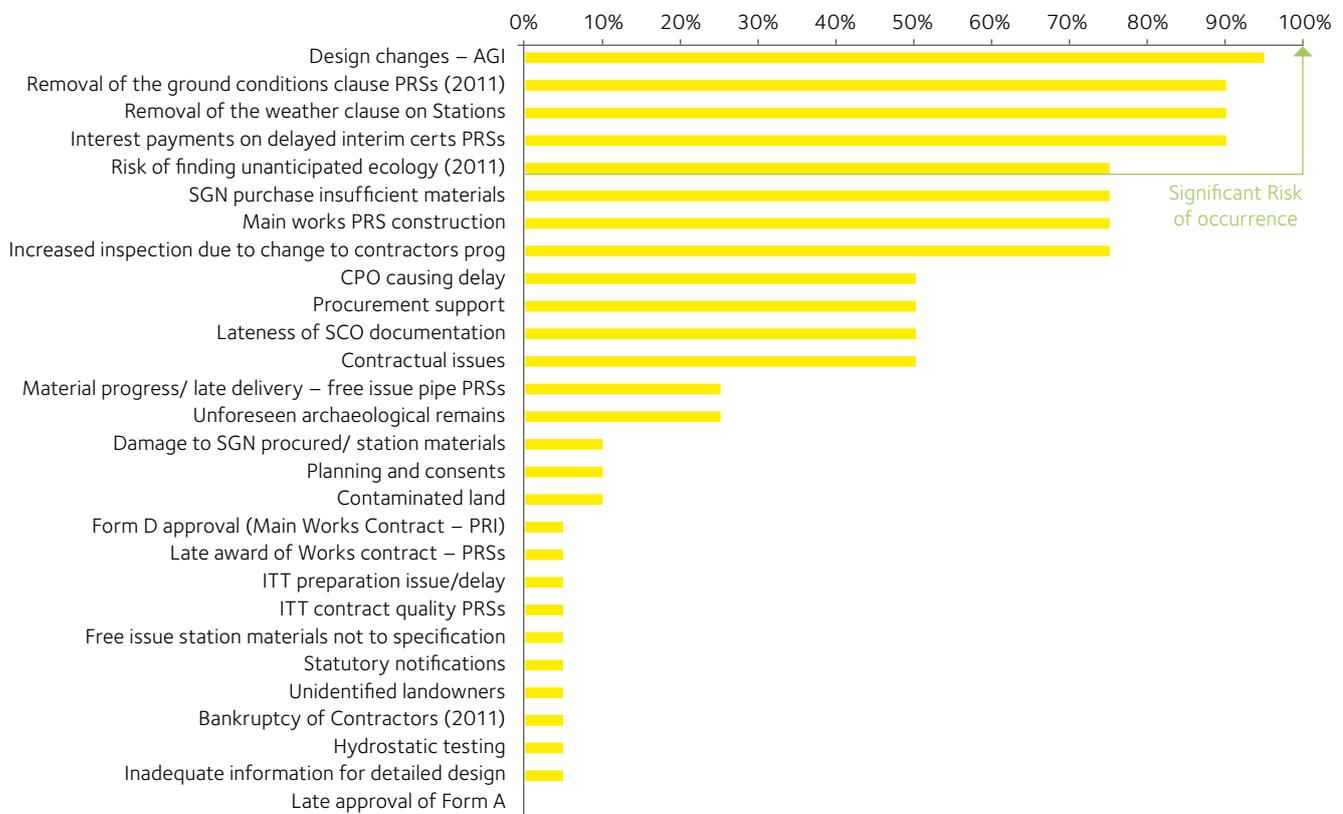
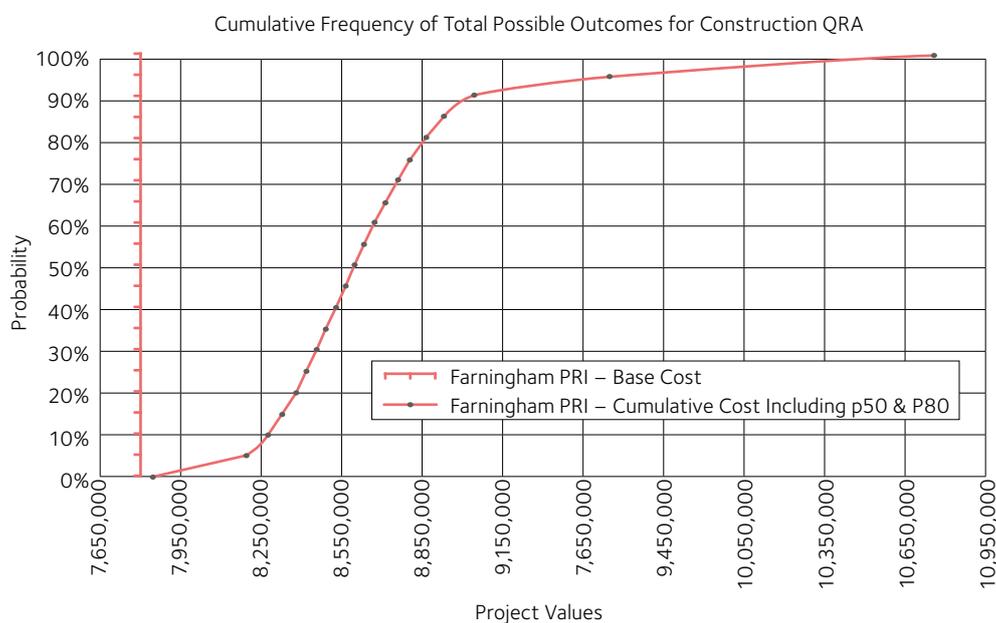


Figure 4.1.3c – Example risk analysis summary

Risk Ref	Description	Current Probability	Cost impact Minimum	Most Likely	Maximum	Status	Form A or D
Far R5b	Design changes – AGI	95%	£10,000	£25,000	£50,000	Live	A
Far R99c	Removal of the ground conditions clause PRSs (2011)	90%	£10,000	£25,000	£50,000	Live	D
Far R98a	Removal of the weather clause on Stations	90%	£0	£79,000	£158,000	Live	D
Far R80b	Interest payments on delayed interim certs PRSs	90%	£987	£2472	£4955	Live	D
Far R59a	Risk of finding unanticipated ecology (2011)	75%	£10,000	£25,000	£500,000	Live	D
Far R92b	SGN purchase insufficient materials	75%	£50,000	£150,000	£300,000	Live	D
Far R37b	Main works PRS construction	75%	£100,000	£150,000	£200,000	Live	D
Far R72b	Increased inspection due to change to contractors prog	75%	£1,253	£2,507	£5,014	Live	A
Far R89	CPO causing delay	50%	£100,000	£175,000	£250,000	Live	A
Far R20	Procurement support	50%	£10,000	£20,000	£50,000	Live	A
Far R43	Lateness of SCO documentation	50%	£10,000	£20,000	£50,000	Live	D
Far R77	Contractual issues	50%	£80,000	£250,000	£500,000	Live	D
Far R29b	Material progress/ late delivery – free issue pipe PRSs	25%	£20,618	£43,704	£87,212	Live	D
Far R62	Unforeseen archaeological remains	25%	£25,000	£100,000	£500,000	Live	D
Far R28b	Damage to SGN procured/ station materials	10%	£20,618	£43,704	£87,212	Live	D
Far R47a	Planning and consents	10%	£25,000	£50,000	£100,000	Live	A
Far R64	Contaminated land	10%	£20,000	£100,000	£250,000	Live	D
Far R16b	Form D approval (Main Works Contract – PRI)	5%	£0	£0	£0	Live	D
Far R17b	Late award of Works contract – PRSs	5%	£125,000	£250,000	£500,000	Live	D
Far R18	ITT preparation issue/delay	5%	£25,000	£50,000	£75,000	Live	A
Far R19b	ITT contract quality PRSs	5%	£175,000	£175,000	£250,000	Live	A
Far R25b	Free issue station materials not to specification	5%	£22,964	£43,354	£86,708	Live	D
Far R51	Statutory notifications	5%	£12,500	£25,000	£50,000	Live	A
Far R57	Unidentified landowners	5%	£10,000	£50,000	£75,000	Live	A
Far R22a	Bankruptcy of Contractors (2011)	5%	£1,350,000	£1,350,000	£1,650,000	Live	A
Far R101	Hydrostatic testing	5%	£400,000	£400,000	£400,000	Live	A
Far R8	Inadequate information for detailed design	5%	£50,000	£100,000	£150,000	Live	A
Far R16	Late approval of Form A	0%	£0	£0	£0	Live	A

Figure 4.1.3d – Example P50 and P80 risk report



Key points:

- West Transmission will benefit from a highly structured audited and documented risk management regime.
- The regime is already operational covering all aspects of high pressure pipeline work from on site to the control room.
- The framework includes processes and procedures which are BSS accredited.
- The risk management regime will cover assets from the main point of entry into NI through to the furthest extremity allowing a better view of interrelated risks.
- The risk model is already fully operational for Transmission assets and has a proven track record.

4.2 Interaction with NIAUR

4.2.1 Principles/arrangements to be completed during mobilisation

West Transmission will operate the same philosophy using the same Mutual Energy staff to interact with NIAUR. The philosophy is one of openness. Rather than filter NIAUR queries through a central regulatory team, the business empowers every member of the gas team to interact directly with NIAUR as and when required. One of the executive directors is charged with responsibility for regulation and will co-ordinate any onerous or time consuming requests and is always available as a point of contact.

In addition there will be a range of formal requirements:

- Annually on 1 April, West Transmission will pay the licence fee to the Authority;
- West Transmission will give the Authority a statement of connection charges, and, terms for connection;
- West Transmission will submit to the Authority a statement of its proposed arrangements for the conveyance of gas by submitting a “Network Code”;
- Prior to full mobilisation, the licensee will seek to agree the final form of the Transmission licence;
- West Transmission will submit System Operator Agreements to the Authority for approval;
- As the licensee intends to adopt a mutual model, the licensee will discuss and agree the financing approach taken and any necessary direction under the licence; and
- The Forecast Required Revenue of West Transmission and Shadow Price Control will be agreed with the Authority.

4.2.2 Accountability for regulatory affairs identified in the organisation structure

MEL offers a high standard of access throughout the organisation ensuring transparent procedures. The current organisation structure facilitates the required interactions with the NIAUR (the Authority). The accounting team and financial controller are responsible for achieving gas financial compliance and carrying out financial interactions including the provision of the Forecast Required Revenue (FRR), Actual Required Revenue (ARR), Shadow Price Control (ACO and BCO) and annual audited accounts. The regulatory team consisting of the gas code manager and gas analyst are responsible for interactions in relation to the Gas Network Code including the requirements of the EU third package of legislation.

The executive directors meet with the Authority as required on any matters of strategic importance or matters critical to NI consumers. MEL has a communications strategy which sets out the level of engagement required with stakeholders including the Authority. This includes formal quarterly meetings, response to key consultations and frequent briefings.

The person accountable for regulatory affairs is the Finance Director.

4.2.3 Proposals for periodic reporting of performance, including cost reporting, to the Regulator

It is proposed that the majority of West Transmission's interactions with the Regulator will be similar to BGTL/PTL's current activities which are set out in current licence obligations and procedures.

West Transmission will periodically provide/report to the Authority:

- The basis of apportionment that it proposes to use for the financial statements in respect of the Business of the Economic Network for approval and then provide the Authority with a copy of each set of financial statements and auditor's reports required.
- Additional information including a report detailing the number of separate arrangements with gas suppliers for gas conveyance services provided; and the volumes of gas off taken from the Network by gas year.
- Copy of Network Code 'modification rules' and any successful code modifications.
- A charging methodology statement for approval by the Authority showing the STC/VRF Services.

- Forecast revenues and volumes and information relating to the calculation of the Postalised Charges in respect of the next Gas Year and each of the following four Gas Years inclusive and such further information or explanation as required.
- Revenues and Volume 'Actual Figures' for the immediately preceding Gas Year in October.
- A breakdown of the Quarterly Exit Quantities by Exit Point for the relevant Quarter.
- West Transmission's calculation of Actual Required Revenue, in November after the end of each Gas Year.
- Every third subsequent year, in an approved format, an estimate of its Controllable Operational Expenditure (BCO) for each of the next three Gas Years, together with explanation and supporting information.
- A statement detailing the amounts of controllable operational expenditure actually incurred by West Transmission in each gas year (ACO).
- Forecast STC and VRF revenue receivable by the last business day in June, and by the tenth business day in November in the case of actual usage of Daily Capacity and of the Virtual Reverse Flow Service.
- Details when a new Director (of it or a holding company) is appointed or a previous director resigns.
- A copy of the annual accounting statements within a period of 10 months from the end of the related financial year.
- A procurement plan, when requested by the Authority. It will state the list of contracts entered into by the licensee for activities associated with the licensee's business; the duration and costs of such contracts. The plan will also report on the details of the procurement process.
- A management incentive plan, when requested by the Authority, under which the level of remuneration of the executive directors and such other persons as the Authority shall from time to time specify is expressly related to specified standards concerning their personal performance and the performance of West Transmission in such a way as to enhance their incentives to improve those standards.
- A copy of the NI Capacity Report created in co-operation with other Designated Pipeline Operators.

Key points:

- An existing framework of reporting exists which will be built on and developed.
- The framework is built on a culture of openness with the Authority at all levels of the organisation.
- Responsibility for regulatory affairs is clearly allocated to one of the executive directors of the group and is reported regularly at board level.

4.3 Policies and procedures

4.3.1 Process for development of policies and procedures

We constantly assess our activities, responsibilities and the external environment in order to identify the need for new or revised policies and procedures.

The review is both bottom up, ie driven by employees on the ground identifying policy changes, and top down. Top down policies are driven by the Board, risk and audit committees in response to the compliance reviews and annual review of the governance structure.

When it is considered necessary to implement a new policy or procedure, responsibility is delegated to an individual with the appropriate knowledge and experience according to the nature and level of expertise required. The individual then ensures they have a full and up-to-date understanding of MEL's legal and environmental responsibilities, both internal and external, before the drafting of the policy.

The policy is then drafted ensuring it is of appropriate length and complexity for those expected to implement it. It is then discussed with the relevant staff to allow for feedback. Following this, the relevant committee (risk or audit) will review and approve the policy.

Engineering policies are adopted from the MERC provider, to ensure that staff operating on site are working to a single set of known policies rather than different policies depending on the site.

4.3.2 Process for maintenance/review of policies and procedures

The Compliance Officers monitor the compliance of the group's directors and employees with the governance framework and the associated policies.

Internal monitoring is an integral part of our overall compliance procedures and ensures our compliance with the governance framework and associated policies and that our policies are kept up to date and fit for purpose. The frequency of review is determined by the risk profile of the policy. High risk policy reviews take place every year, moderate risk policies every two years and low risk policies every three years.

The review is carried out by a staff member who is independent from the policy and covers, as a minimum, a review of the following:

- (a) the adequacy of the policies;
- (b) any training material relevant to compliance matters;
- (c) the adequacy and accuracy of documentation;
- (d) adherence to counter party agreements;
- (e) the adequacy and accuracy of records maintained;
- (f) the fulfilment of contract notification obligations; and
- (g) action taken to correct deficiencies in compliance.

The audit of each policy is documented and presented to the Audit Committee. The Audit Committee consider any recommended improvements or issues arising from the review and request recommendations to be included in a revised policy or procedure.

In order to ensure that all revisions are made to the policies or procedures on a timely basis, a centralised log of these is maintained and reviewed by the committee so they can monitor the recommendations to ensure they are in place by the next committee meeting.

4.3.3 Organisational arrangements for personnel access to current documents

MEL's current group governance framework and associated policies are held on the internal server and are freely accessible to all staff. All staff are required to familiarise themselves with the policies and sign a declaration to confirm they have done so.

MEL is in the process of transferring data to Microsoft SharePoint which will act as a comprehensive document management platform. This will provide one central location for operational policies, governance framework etc and the ability to tailor document rights for security or confidentiality purposes.

4.3.4 Proposals for communication of changes

Any changes made to the governance framework or associated policies are documented in change control tables on the individual documents. These are circulated around the staff members via email to ensure all staff are aware of the most current policies.

Policy and procedure and document control with sub-contractors

Sub-contractors including construction contractors are issued with appropriate documentation at the commencement of a contract. This documentation is recorded and receipted at initial issue and any subsequent updates. Roll-out or cascade briefings are also recorded and fed back to construction managers during contract works and are subject to auditing by the SGN construction management periodically during all activities and works.

Key points:

- An existing policy and procedure framework already exists.
- A range of communication channels are utilised.
- A centralised updated document store is utilised.
- As the asset will remain within the existing group all the in place arrangements can be adopted with no cost implications.

4.4 Inspection review QA Audit

Construction Quality Assurance

We will mobilise and direct an integrated Project Assurance Team (PAT) comprising appointed specialist Technical Advisor(s) and key individuals of the SGN design and CPT to review Key Phases of the Project.

Construction quality assurance will be managed in three key phases;

1. Pre-Construction Design
2. Pre-Construction Materials Procurement
3. Construction

1. Pre-Construction (Design Phase)

During, or after, detailed design has been undertaken, the PAT will review the main design elements covering the following areas;

- Check with respect to pipeline hydraulic design including diameter check, velocity calculations, pressure drop calculations etc;
- A check to ensure appropriate design pressure and pipeline wall thickness calculations are in compliance with the relevant design codes;
- Review of the main material specifications to ensure appropriate codes and standards have been used, in particular linepipe material and main line valve specs;
- Review of design of any pressure reduction stations to ensure appropriate design codes have been used and overpressure protection has been considered with appropriate design incorporated;
- Review of main construction and field welding specification;
- Check of the pipeline route to ensure the design complies with the relevant design codes with respect to building proximity, risk assessment, main crossings design;
- Review of population density along the pipeline route and confirm area classification and associated design factors;

- Review of Environmental Impact Assessment (EIA) to ensure all areas are covered and mitigation measures are still relevant and appropriate and no additional Environmental issues have arisen since development of the EIA eg badgers have not relocated to locations close to the pipeline working width or bats have colonised trees located near to the working width;
- Check to ensure all pre construction environmental measures have been completed eg clearance of crested newts, exclusion of badgers (where appropriate), and all other environmental mitigation measures;
- Check all planning and environmental consents are in place including consents for water course crossings (where appropriate), road crossings, rail crossings etc;
- A review of international codes and standards for the design, construction and operation of natural gas pipelines shows that the spacing and positioning of block valves is based on recognised criteria.

2. Pre-Construction (Material Procurement)

In order to verify all of the main materials are in compliance with the specifications and standards specified in the procurement documentation, particularly with respect to the main linepipe, mainline valves etc, a detailed audit will be undertaken with respect to all inspection and test certificates for the main materials. This will include:

- Design Review to ensure appropriate design pressure and pipeline wall thickness calculations are in compliance with the relevant design codes
- Review of the main material specifications to ensure appropriate codes and standards have been used, in particular linepipe material and main line valve specs
- Review of the material procurement process including vendor inspection and accreditation
- Q&A inspection of the supplier's facilities and quality management systems.

3. Construction

In addition to the Quality Assurance outlined in Section 3.7.2 MEL's Quality Assurance of the construction phase will be managed by undertaking several site based inspections and system audits to review the reports and inspection documents produced by the main construction contractors inspectors or independent inspectors, where employed. MEL's existing Health and Safety Management System and specifically MEL HSP-011 Contractor Management and MEL HSG-007 Requirements for Contractors will be applicable to all aspects of the transmission build.

Also dependent upon the requirements of the EIA, a specialist field based environmental inspector may be deployed to ensure all mitigation measures required by the EIA are completed by the construction contractor.

Embedded inspection/review/QA/audit

In addition to the above QA audit process the requirement for QA will be throughout the ITT for material procurement and main works contracts.

Proposed range of construction operational activities covered

On placing of the material orders, Q&A inspector will visit the supplier's factory, to check the QA plan, including the procurement of the raw material, production process and carry out further checks during production testing and coating. This will be recorded as witnessed by the QA inspectors.

Furthermore the suppliers' specification and process for the transporting and delivery of the material to site, storage arrangements, reviewing on site, coating holiday detections, end bevel checks, will also be checked and carried out and documented by the QA inspectors.

QA inspections will also be undertaken during all welding, site coating, testing, additional holiday testing and repairs prior to ditching or laying in an appropriate sand surround. Pearson and Close Interval Potential Surveys (CIPS) will be carried out and the records vetted by the QA inspectors on 100% of the buried system on completion.

HP pipelines will be subject to 100% radiography, IP systems 100% ultrasonic inspection of butt welds.

In respect of the civil works a series of checks on traffic management and reinstatement of road surfaces is part of the overall programme of work.

Operational Phase

The QA process is an integral part of risk management as outlined in section 4.1.3. This risk management process outlines a series of QA and compliance audits that are required. These include:

- Health and Safety audits and risk assessment reviews
- External audits involving third parties including the competent person
- Defined regime of site inspections
- Work inspections on activities and
- Audits of compliance with policies and procedures

Each member of the engineering staff is allocated a set target for audits and external audits from organisations such as ROSPA are carried out periodically.

Proposals to identify actions and manage to completion

The process for managing the recommended change to policies and procedures following audit/review is as detailed in Section 4.3.

Arrangements for feedback into review of policies and procedures

The process for revision and review of policies and procedures is as detailed in Section 4.3.

Key points:

- QA and audit will be embedded through all the subcontracts.
- In addition a client led independent QA process will be adopted.
- SGN has a number of QA policies which have been used in past construction projects which will be applicable.

4.5 Information systems

4.5.1 IT systems proposed to provide management information

We propose that West Transmission would use our current management information systems as follows:

Sage accounts system which provides up-to-date accounts and reports to enable us to understand and analyse our business performance. It also provides us with report designer, allowing reports to be customised to our needs saving time and resources. Sage accounts enables us to keep on top of our cash flow by easily identifying debtors and creditors. Preparation of monthly management reports from Sage allow senior management to review and address variances on a monthly basis.

Sage forecasting allows us to prepare detailed, accurate financial forecasts providing support for any business planning and future financial decisions.

Maximo Asset Management delivers a comprehensive view of all assets and allows ease of management of ageing assets, assists in the ability to identify spend and highlights when replacement is necessary.

Scada and Communications systems provide live physical operation information to the control room from each site. This enables immediate reaction to any adjustments in temperature, pressures etc to ensure the efficient running of the equipment.

Our **GTMBS (Gas Transportation Management and Billing System)** provides all the commercial operation information required for billing such as metering, flow volumes etc. The information provided by GTMBS is in the format required to provide information to the NIAUR and Ofgem and will be instrumental in providing the information required to be published under the EU Transparency requirements.

Our **Leakfinder system** is a commercial off-the-shelf application written by GL Noble Denton and is used for detecting leaks within pipelines so that they are repaired without delay.



Gas control

Our mapping system, **Geographic Information System (GIS)**, provides immediate access for staff to asset data on both a desktop system and web browser. This is an invaluable tool when completing third-party enquiries, landowner queries and responding to any potential physical hazards near our assets.

We have first-hand experience of expanding our systems. This was carried out within our gas business in 2008 when BGT's assets were purchased and PTL's systems were extended to facilitate this. We have an intricate understanding of each of these systems and are confident that they would be seamlessly extended/tailed to any additional requirements under West Transmission. Further detail is provided in Section 5.5.

Other Key IT Services:

- File and Print Services
- Active Directory Services
- Citrix Presentation Server (including Citrix Access Gateway for remote access)
- SQL Services (to support Citrix)
- Patch management provided by Windows Software Update Services (WSUS)
- Dedicated SAN Hardware for Horley, Horsham and Pre-Production
- HP Hardware monitoring via Systems Insight Manager
- Backup Services – provided by the Gas Control Tivoli Storage Manager 'TSM' platform
- Anti-Virus Management – currently provided by Sophos
- Systems Management provided by the SGN System Centre Operations Manager (SCOM) infrastructure.

In addition a number of services are hosted by SunGard (for GTMBS):

- Oracle Database Services
- Virtual Desktops for GTMBS application access
- Active Directory Services for management and authentication
- Systems Management
- Anti-Virus Management.

4.5.2 Proposed approach to provide and disseminate operational activity based cost information

As detailed in Section 5.7, any work carried out under our main operational contract (MERC) is reported using a standard template detailing the nature of the work and the associated costs allowing for careful monitoring and analysis.

We envisage that the approach to providing and disseminating operational activity based cost information for West Transmission would follow our current MERC model with information being monitored and analysed in the following way:

- Planned expenditure per item is fully detailed, discussed and agreed with internal engineers before the work commences;
- Monthly meetings are held between the contractor and internal staff to discuss the spend to date and explain any additional services;
- The MERC, as part of the contractual services, agrees a formal contract inspection plan each year with MEL. Such formal inspection and audit of work activities, the applicable reporting and subsequent charge per contract forms part of the inspection plan for each month of each year; and
- Internal monthly accounts meetings are held with senior management (CEO and Finance Director) to assess spend and analyse any variances.

This process ensures that cost information is scrutinised at every stage and the relevant information is regularly provided to senior management so that any required action can be taken on a timely basis.

4.5.3 Support services requirements identified and resourced

We plan that West Transmission would engage with our current support services providers and further build on our existing relationship with these providers, ensuring a smooth transition.

Internally, we have the resource of an IT manager who has experience managing all of our IT systems and also managing the IT requirements of EU compliance.

Externally, we engage the services of Rainbow Communications to provide IT service support for our corporate network and business applications when required. We also have Sage support for accounts and forecasting.

Maximo support is provided by IBM on site and is available on a 24/7 basis.

Isense provides extensive consultancy support including support for our GTMBS system. Cetix (System Integrators) contract provides support for the telemetry equipment and interface between Scada and communications and Sunguard specifically for Scada.

As well as the support services directly with West Transmission, it is planned that current third-party support contracts between SGN and its service providers such as Schneider Electric, SSE IT SunGard Availability Services, Enzen Global and Arqiva will be available to enable a back-to-back support service to West Transmission via the Control Room Services contract.

Key points:

- No new IT systems are required as they all already exist and are operational.
- A full suite of support contracts to the existing IT infrastructure are already in place.
- Activity based cost reporting is already utilised with every action taken on the pipelines fully individually costed.

FIVE

Chapter Five

Technical

- 5.1 Safety Case
- 5.2 Technical policies, procedures and reference standards
- 5.3 Compliance with relevant legislation, industry standards and best practice
- 5.4 Network Code
- 5.5 System performance monitoring, system control arrangements
- 5.6 Asset records
- 5.7 Asset management system
- 5.8 Emergency Response

5.1 Safety Case

Background

For the purposes of regulation 3 (2) 2 of the Gas Safety (Management) Regulations (NI) 1997, the Duty Holder for the Premier Transmission Pipeline System (PTPS) is Premier Transmission Ltd (PTL). The PTPS currently comprises the pipeline systems and above ground installations of the Scotland to Northern Ireland Pipeline (SNIP) and the Belfast Gas Transmission Pipeline (BGTP). It is proposed that the current PTPS safety case arrangements will be extended to cover the new West Transmission pipeline system and that PTL will remain as dutyholder for the entire system including SNIP, BGTP and West Transmission. A streamlined and efficient process is proposed for the West Transmission pipeline system adopting an existing mature and relevant safety case already in existence and accepted by the Health and Safety Executive (HSE) in both NI and GB.

The existing safety case comprises a number of core sections including:

1. System Description
2. Operations and Maintenance
3. Safety Management
4. Competence
5. Management of Contractors
6. Audit
7. Co-operation
8. Gas Escapes, Incidents, Emergencies and Investigations
9. Contents and Characteristics of Gas
10. Continuity of Supply and Supply Emergencies

The safety case is complimented and supported by a Pipeline Integrity Management System Manual (PIMSM). The PIMSM describes in greater detail the arrangements established by PTL to ensure the safe, effective and reliable transportation of gas from Twynholm in Scotland to the various offtake sites in NI and describes how these discrete arrangements are integrated together to form a cohesive management system. PIMSM is, therefore, a key reference document which provides further detail on the arrangements described within the safety case.

5.1.1 Proposed process and timetable for development

The Mutual Energy Group has had relevant recent experience in amending its safety case to incorporate material change, such as will be required with the inclusion of West Transmission.

Process for development of safety case

Section 3.0 Mobilisation describes our integration plan for the West Transmission pipeline system and specifically lists both the gas safety case and PIMSM amendments as business readiness activities. In this section we describe the specific safety case and PIMSM development process in more detail.

Change organisation – resource, process and governance

The PIMSM and gas safety case will primarily be reviewed and amended by the Gas Operations Manager with assistance from the Commercial Operations Engineer. The Group Operations Manager will check any such amendments to ensure that a satisfactory integrity management system is in place for the complete pipeline system including West Transmission and is compliant with our PIMS Policy. Once checked by the Group Operations Manager and any recommendations included, both documents will be presented to the Chief Executive Officer for review, understanding and approval.

Risk assessment

While reviewing each element of the PIMSM and safety case, each required amendment to incorporate the West Transmission pipeline system shall be risk assessed in respect of the three elements of risk already included within the Gas Business Operational Risk Register (ORR – see Section 4.1):

- Major accident risks
- Occupational risks
- Environmental risks

Following such risk analysis, the ORR will be updated and the register re-risk assessed and scored where applicable.

Implementing and monitoring

The risk analysis and assessment process described above, as with the normal ORR review, will yield a number of actions. These will feed into potential further amendments to the gas safety case and PIMSM and also the mobilisation plan as a subset of the mobilisation task associated with the gas safety case and PIMSM review. This will be implemented and monitored as described at section 3.3.2.

Timetable for development of safety case

The current PTL safety case will be re-submitted in 2014 and 2017 as part of the routine three-year cycle for submission to the HSE. Our proposed West Transmission system operational commissioning is 2016. To provide the requisite six months HSE safety case review period, the PTL safety case will be re-submitted prior to the 2017 routine submission as a material safety case amendment.

5.1.2 Arrangements for liaison with and submission to HSE

As described above the incorporation of the West Transmission pipeline system into the safety case and PIMSM amendments shall be submitted as a material change to the safety case in the intervening period between the planned routine submission dates.

We will notify both HSE (NI) and HSE (GB) of the material change and as with previous routine submissions, we will liaise closely with the HSE to explain any amendments and what it means to our PIMS and how we will manage the change. Such close liaison includes a full face to face review of our PIMS to provide the necessary explanations and assurances.

Previous experience of such process includes:

- 2004 MEL's acquisition of the PTL business (SNIP) from the original developer, BG plc
- 2005 transition of the Control Room Services gas control room from National Grid Hinckley to BGN, Cork
- 2008 purchase and integration of the BGTP system into the then SNIP system,
- 2013 transition of the Control Room Services gas control room from BGN, Cork to Southern Gas Networks, Horley.

5.1.3 Proposed process for management of change in operational practices

The process for the management of operational change is explained in detail in section 3.3.2.

In addition to the functional and business process part of change management explained in section 3.3.2, we also employ Health and Safety assessments as part of the process. These are covered in MEL policy HSG-010 Managing Health and Safety During Organisational Change, which is based on HSE guidance on

'Organisational Change and Major Accident Hazards. The main focus of HSG-010 is on change at operational and site level. It is also relevant to changes at corporate level which can have a significant impact on safety at operational level. HSG-010 sets out a three-step HSE framework:

Step 1 – Getting organised for change

Step 2 – Assessing risks

Step 3 – Implementing and monitoring the change

Key points:

- Safety case submission will incorporate a full integrated system covering all Mutual Energy Assets.
- The safety case for high pressure assets is already in place and the submission will be an amendment.
- Mutual Energy has experience of four major safety case amendments to the existing transmission safety case.

5.2 Technical policies, procedures and reference standards

5.2.1 Policies covering all operational business activities

HP construction

The pipelines and PRSs will be designed and constructed in accordance with IGE industry standards backed up by SGN policies and procedures. These procedures have been developed over 60 years of designing and building transmission pipelines and PRSs.

The pipelines will be designed and constructed in accordance with IGE/TD/1 (Steel pipelines and associated installations for high pressure gas transmission) and supporting SGN procedures and specifications, eg SGN/SP/P/10 (Specification for general pipelining designed to operate at pressures greater than 7barg). The PRSs will be designed and constructed in accordance with IGE/TD/13 (Pressure regulating installations for transmission and distribution) and supporting SGN specifications eg SGN/SP/E/28 (Specification for the Design of Pressure Regulating Installations with Inlet Pressure Not Exceeding 100bar).

The designs will be done generally in accordance with IGE/GL/5 (Plant Modification Procedure) and the SGN specification SGN/PM/G/17 (Management Procedure for the Management of New Works, Modifications and Repairs) to check for compliance of material specifications, siting, routing and layout design.

Compliance with requirements during construction will be monitored by site inspection. (see Section 3.7.2).

Post commissioning

Our overarching gas operations policy document is the Pipeline Integrity Management System policy document PIMSP-001. The framework of the PIMS is based on ASME B31.8S 'Managing System Integrity of Gas Pipelines' and Recommended Practice DNV-RP-F116 'Integrity Management of Submarine Pipelines'. The initial skeleton draft was structured with support from a third-party pipeline integrity specialist but incorporated MEL's actual operating systems. It is continually reviewed and updated to reflect operational experience and change.

The PIMS policy document sets out our Pipeline Integrity Management policy statement and describes the extent of its application, ie the entire Premier Transmission Pipeline System (PTPS). Importantly the PIMS policy document sets out the MEL responsibilities for pipeline integrity management including the MEL CEO, the Group Operations Manager, Gas Operations Manager, employees and contractors.

The principles of the PIMS policy are that in conducting its business MEL will:

- identify, assess, remove, reduce and manage the health and safety risks to its employees and others who may be affected by its activities
- identify, assess, remove, reduce and manage the pipeline integrity risks
- comply as a minimum, with legislation, relevant codes of practice and other requirements and, where reasonably practicable, improve on the performance standards they specify
- co-operate fully with relevant enforcement agencies, and work with industry and external bodies, to further the understanding and development of health and safety management and practice
- set measurable pipeline system integrity objectives and establish arrangements to monitor such objectives

- implement arrangements for ensuring that the PTPS is properly operated within defined limits, is correctly and safely inspected and maintained at suitable intervals commensurate with the risks to which it is subject and any repairs or modifications are correctly designed and installed using suitable materials
- implement arrangements for dealing with emergency situations, including the arrangements for investigating and reporting such events so as to understand their cause and prevent recurrence. This includes effective contingency plans, where appropriate, in conjunction with the relevant authorities and emergency services
- maintain a comprehensive description of the Management System which is employed, implemented and maintained by MEL in the form of the Pipeline Integrity Management System Manual (PIMSM). This document will be periodically reviewed and maintained to ensure that MEL's policies and objectives are achieved. The core requirement of the PIMS policy is to establish and operate a PIMS which is described in a PIMSM.

The purpose of the PIMS Manual (PIMSM) is to:

- Describe the arrangements established to ensure the safe, effective and reliable transportation of gas from Twynholm in Scotland to the various offtake sites in NI, including those in West Transmission
- Describe how these discrete arrangements are integrated together to form a cohesive management system

It should be highlighted that the PIMSM is a description of the PIM System. The system is the combination of the policies, risk assessments, organisational structure, people (including their knowledge, skills and experience), chains of command and communication, procedures, manuals, drawings, specifications etc.

The individual PIMSM sections are:

1. Purpose
2. Introduction
3. Health, Safety and Environmental Policy
4. Pipeline Integrity Management Policy and Objectives
5. Pipeline System Description
6. Organisation
7. Risk Management
8. Design and Construction
9. Integrity Management
10. Normal Operations

11. Safe Control of Operations
12. Emergency Response
13. Accident, Investigation and Reporting
14. Control of Change
15. Procurement
16. Repairs
17. Document Control
18. Review
19. Audit
20. Deviations

Each individual PIMSM section, where applicable, either contains the management procedure or, where this is not practicable, summarises and then references the applicable separate management and/or work procedure(s).

5.2.2 Proposals for training of personnel to ensure understanding

Section 2.3 describes the training and competency arrangements for West Transmission, the MERC and the Control Room Services, ie the core team managing and delivering integrity management.

The West Transmission pipeline system components shall be designed and constructed with similar plant and equipment already employed within the PTPS.

The core requirement, therefore, in respect of training in the various groups of people is the understanding of the location and what additional physical components are used, and how the existing system will extend to cover these new locations and assets.

In the response to question 5.8, we set out by way of an example the specific training plan in respect of our emergency procedures and required amendments. A similar training plan would be developed to encapsulate any changes or amendments to the PIMS. In summary, a training plan will:

- Identify the key changes following PIMSM amendment
- Identify the individual groups requiring training and whether they require specific training tailored to their role
- Develop the tailored training packs (this will typically take the format of presentations, questionnaires, site visit training and IT application practicals)
- Plan delivery of training by competent personnel
- Outline the assessments and any particular audit requirements
- Update relevant competency matrices and Competency Assurance Schemes

The following table illustrates the existing training regime which will be extended to West Transmission. These are the initial performance standards plus ongoing frequency of inspection and/or refresher training expected to be achieved by pressure control field personnel for core job roles Governor Technician/Craftsman/Senior Operative/Operative:

Table 5.2.2 – Governor Technician/Operative training plan

No.	Core Qualifications & Training	Years	Technician/Craftsman	Senior Op	Operative
	Capita registration (Annual registration)	1	Opt	Opt	Opt
Cert – 1	EMTA/GNE/C&G/ONC/HNC	40	X	X	X
Cert – 2	Assessor (A1/D32)	40	Opt	n/a	n/a
Cert – 3	VS02		X	n/a	n/a
Cert – 4	Rhinoanalyst		Opt	Opt	Opt
Auth – 1	Electrical Certification of Authorisation (Restricted)	5	Opt	Opt	Opt
No.	SGN Assessments	Years	Technician/Craftsman	Senior Op	Operative
PC-01	Functional Check > 7 bar + PreHeater	5	X	n/a	n/a
PC-02	Functional Check < 7 bar	5	X	n/a	n/a
PC-03	Below Ground Unit	5	X	n/a	n/a
PC-04	Industrial & Commercial (All sizes)	5	X	n/a	n/a
PC-05	Functional Check Service Governor <=2" & 2bar	5	n/a	Opt	n/a
PC-09	Routine Inspection <> 7bar	5	n/a	Opt	Opt
PC-10	By Pass >7 bar (Scotland Only)	5	n/a	Opt	Opt
PC-11	Breathing Apparatus	5	X	X	X
PC-12	High Pressure Valve Maintenance (38 bar)	5	Opt	Opt	Opt
PC-13	Gascoseeker	5	X	X	X
No.	SGN Training	Years	Technician/Craftsman	Senior Op	Operative
Train – 01	Health, Safety & Environmental	5	X	X	X
Train – 02	Fire Control	5	X	X	X
Train – 03	Emergency First Aid	5	X	X	X
Train – 04	SCO 1-5	5	X	Opt	Opt
Train – 05	NRSWA (Units 001 & 002)	40	X	X	X
Train – 06	Lifting Operations – Site Control	40	Opt	Opt	Opt
Train – 07	Confined Spaces	40	X	X	X
Train – 08	Manual Handling	40	X	X	X
Train – 09	Personal Security	40	X	X	X
Train – 10	Work @ Heights (Holders)	40	Opt	Opt	Opt
Train – 11	Loggers & Correctors – BSEN2391- (ex TIM 8)	40	X	X	X
Train – 13	Cathodic Protection	40	Opt	Opt	Opt
Train – 14	Plant Operator (ex TEM 8)	40	Opt	Opt	Opt

X = mandatory Opt = optional

We have previous experience of adding a pipeline to an existing system and extending the training regime garnered from the addition of the Belfast Gas Transmission assets to the SNIP.

Key points:

- The new assets will be designed and constructed to industry standards and as such will be compatible with the existing PTPS assets.
- Policies and procedures are already in place to support the new Transmission entity, with a proven framework of policies at Mutual Energy integrated into an extensive and detailed set of 300+ procedures used throughout the SGN networks in GB.
- Rather than develop new procedures there is commercial, operational and health and safety benefits to adopt and extend what already exists
- An extensive training regime for high pressure assets is already in place, tried and tested.
- The business has recent experience of incorporating a new high pressure asset into an existing regime and training staff accordingly.
- Operational readiness training includes control room simulation tools to allow a fully trained control room service tailored to the system characteristics from day one.

5.3 Compliance with relevant legislation, industry standards and best practice

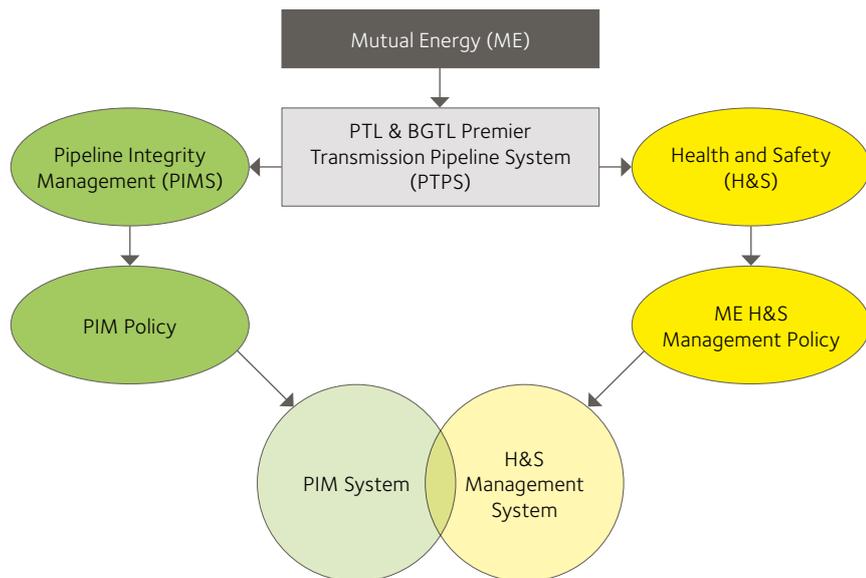
5.3.1 Proposals to incorporate into all policies, procedures and practices

Operations

In the response at 5.2, we describe our PIMS which encapsulates technical policies, procedures and reference standards. The PIMS also encapsulates relevant legislation, industry standards and best practice, for example the Pressure Systems Safety Regulations NI (2004).

MEL operates a Health and Safety Policy and Health and Safety Management System (HSMS). The PIMS and HSMS overlap in achieving the same goal in certain areas, for example risk assessment.

The overlap is shown below.



MEL has structured its HSMS on the principles of the Health and Safety Executive guidance HSG65 – Managing for health and safety (revised December 2013) and the joint Institute of Directors/Health and Safety Executive guidance Leading Health and Safety at Work. The 2013 HSG65 guidance refers to four specific elements which are addressed by MEL as follows:

PLAN

- Policy
- Planning

DO

- Risk profiling
- Organising
- Implementing the plan

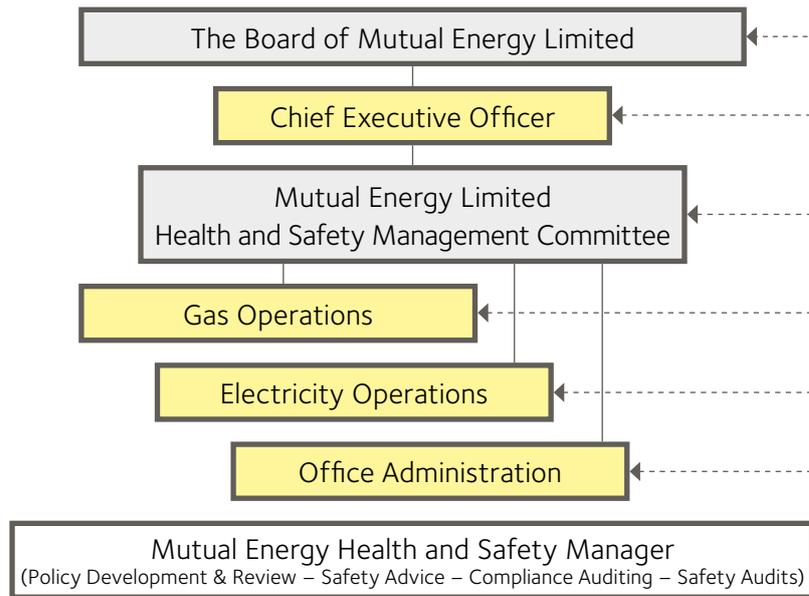
CHECK

- Measuring performance
- Investigating incidents, near-misses and good catches

ACT

- Reviewing performance
- Learning lessons

To ensure successful implementation, the policy is strongly supported within the entire group with specific responsibilities defined from the Chief Executive Officer through management levels to employees and contractors. The management structure is set out below.



MEL has established a Health and Safety Management Committee (“HSMC”) to implement the management system.

The HSMC ensure specific health and safety policies and procedures are developed and/or revised and agreed and where applicable are presented to the MEL board for approval.

The HSMC is chaired by the Group Operations Manager and comprises representatives who between them have functionality and experience to be able to effect the HSMS and encourage co-operation and communication with employees and contractors. The vast majority of occupational risk is posed to contractors such as MERC while delivering their services to MEL and therefore a representative from each of the Group’s key contracts is appointed to the Committee. This structure ensures that there is a single point of contact for safety and that information is shared and disseminated safely. It is highly beneficial in promoting cross fertilisation of ideas and best practice across the Group’s multiple disciplines.

The HSMC make sure Risk Control Systems are in place to ensure that adequate precautions and safe systems of work are developed, implemented and are effective across all stages of the work process. The HSMC plans health and safety targets in order to meet the assigned objectives set out in the health and safety business plan.

The performance of the plan is reviewed quarterly while active and reactive monitoring systems are implemented to assess the degree of compliance with the health and safety policy and system. The health and safety loop is closed by ensuring any learning points or remedial actions captured are either added to a gas business remedial action register (see Section 4.1.2) and/or subsequent health and safety business plans. Remedial actions are assigned to an owner and are also individually risk rated where applicable so that the appropriate reaction and level of response can be managed and implemented.

The HSMC agree and document the key health and safety legislation applicable to MEL in policy document HSG-001. A sample of the legislation contained within HSG-001 is set out below:

- The Health and Safety at Work Order (NI) 1978/Act 1974
- The Control of Asbestos at Work Regulations (NI) 2007
- The Construction (Design and Management) Regulations (NI) 2007
- The Management of Health and Safety at Work Regulations (NI) 2006
- The Work at Height Regulations (Northern Ireland) 2005 (amended 2007)
- The Noise at Work Regulations (NI) 2006
- The Control of Substances Hazardous to Health Regulations (NI) 2005
- The Gas Safety (Installation and Use) Regulations (NI) 2004
- Pressure Systems Safety Regulations (NI) 2004
- The Provision and Use of Work Equipment Regulations (NI) 1999
- The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (NI) 1997
- The Personal Protective Equipment at Work Regulations (NI) 1993
- The Electricity at Work Regulations (NI) 1991
- The Pipeline Safety Regulations (Northern Ireland) 1997
- Dangerous substances and explosive atmospheres (Northern Ireland) 2003
- Control of Major Accident Hazards Regulations (Northern Ireland) 2000.
- Gas Safety (Management) Regulations (Northern Ireland) 1997

We describe how the system works by way of a simple example.

The objective of the Personal Protective Equipment at Work Regulations (NI) 1993 formalise the provision of PPE following the assessment of risks required.

A sub peer group of the HSMC reviewed the requirement of the regulation and developed a specific PPE policy, for example:

- only PPE assessed and approved by the HSMC or the Group Operations Manager will be issued to employees
- the policy sets out the minimum PPE requirements

In addition to the policy requirements, the responsibilities were developed and agreed, for example:

- the Group Operations Managers will ensure the requirements of the policy are resourced and implemented
- employees and contractors must only use approved PPE in accordance with information, instruction and training

The PPE policy document was presented at the HSMC quarterly meeting, and its contents explained, discussed and approved.

The PPE policy performance is checked through regular work place inspections and any gaps or remedial actions are fed back into the HSMC and remedial action register. The HSMC can review the performance and assess whether the PPE policy document requires amendment.

The MEL Health and Safety Policy and HSMS are not pipeline or AGI specific and, therefore, the policies, systems, committees and procedure shall readily incorporate the West Transmission pipeline system. As part of the mobilisation/plan each approved policy document shall be reviewed in the context of the new assets and any amendments/gaps identified. The mobilisation plan shall set out the programme for review and amendment of the applicable policy document and its approval by the HSMC.

Construction

SGN policies and procedures comply with all relevant industry standards. SGN has developed best practice policies for over 60 years in the construction of HP pipelines and AGIs in the UK.

Design will be carried out in accordance with the IGEM/TD/1, TD/13 and GL5/G17 procedure to ensure compliance of all material specifications, siting and site layout design. Construction will be monitored by an independently appointed QA inspection contractor to ensure requirements are adhered to during the whole process. The individual QA Inspectors will be monitored by appropriate numbers of Senior Pipeline Inspectors (SPI) and each pipeline spread by a qualified and accredited Site Supervisor.

5.3.2 Process to maintain awareness of industry practice

MEL maintains awareness of industry best practice through a number of channels including:

- MERC and other contracting partners
- Membership of the British Safety Council
- Membership of Energy Networks Association
- Membership of the Northern Ireland Utility Health and Safety Practitioner's Group
- Membership of the Centre for Protection of National Infrastructure Closed Groups
- MEL is formally consulted by HSENI (Health and Safety Executive for Northern Ireland) on any proposed changes to health and safety legislation and has the opportunity to respond, and prepare for new legislation or changes to existing legislation
- Frequent pro-active meetings with HSENI in our offices, at their offices, or on site
- Frequent meetings of Northern Ireland Safety Group, Institution of Safety and Health (NI branch)
- Frequent attendances at Health and Safety Conferences in NI, GB and ROI
- Meetings and exercises with the Emergency Services

Operational Managers and the Health and Safety Manager are involved in the above meetings and fora. These opportunities for networking and participating in working groups ensures that MEL is kept up to date with current thinking, best practice and learning from incidents from within the industry.

In addition, the Health and Safety Manager maintains and enhances their skills as a Chartered Member of the Institution of Safety and Health by participating in Continuous Professional Development.

Key points

- Safety case submission will incorporate a full integrated system covering all Mutual Energy Assets.
- The safety case for high pressure assets is already in place and the submission will be an amendment.
- Mutual Energy has experience of three major safety case amendments to high pressure safety case.
- An industry leading update programme is in place including both meeting lead structures and the inclusion of the Mutual Energy assets within the best practice bulletin regime used throughout GB by SGN.

5.4 Network Code

5.4.1 Network code management

Whilst structurally there are similarities in transmission and distribution network codes, they do differ in a number of important aspects. For example a transportation network code will fundamentally differ from a distribution network code as:

- It must meet the requirements of EU driven target codes, which are constantly changing and often inherently inappropriate;
- It must deal with additional concepts such as virtual reverse flow;
- It must include activities for capacity trading and settlement of a secondary market;
- It will have requirements to facilitate information exchange to fulfil European transparency requirements.

As codes are considered living documents, it is essential to have a dedicated team, responsible for the efficient and effective ongoing management of the codes. MEL's Code team consists of the Gas Contracts Manager and Business Analyst (see organisational chart Figure 2.2.1). The team is also supported when required by a consultant with a vast range of knowledge and experience of code development within the NI, GB and ROI regimes as well as wider European developments. This team shall be responsible for the development of the new West Transmission code. The existence of an NI located and focused team shall drive efficiencies in terms of resources and costs. It is not anticipated that the Code team, who currently successfully manage two codes, shall require expansion.



Network maintenance

The following issues must be considered in developing the timetable and compliance processes for the West Network Code:

- European developments;
- Entry and exit point allocation; and
- The timetable for interaction with a single code for NI;

European developments

Key considerations in the development of the West Transmission code are the European driven changes, ones that are currently occurring and those planned for the future. The obligations required under the Directive 2009/73/EC need to be understood and factored into the development of the West Transmission code. The list below details some of the key areas that the MEL Code team plan to take into consideration when developing the West Transmission code:

- Implementation of the network codes:
 - Capacity Allocation Mechanisms (CAM)
 - Balancing
 - Interoperability and data exchange
 - Tariffs code
 - Potential rules for trading code
- Incremental capacity changes to the CAM code
- Congestion management procedures
- Transparency requirements specially data provision to the transparency platform
- REMIT requirements
- Ten-year network development plan
- Gas regional investment plans
- Incorporation of business rules specification requirements
- Summer and winter outlooks
- Common network operation tools

These requirements have been and continue to be developed by the European Network of TSOs for Gas (ENTSOG). PTL has been a member of ENTSOG since 2010 and from that date has been involved with the creation and development of the codes and other activities through our participation as a working group member or by utilising our voting rights on key decisions.

We can seamlessly incorporate changes and requirements from the ever changing European codes into the programme for developing a code for West Transmission.

While it is envisaged that a Contractual Joint Venture (CJV), which MEL will be party to, shall be in place in late 2016, it is important to note that CJV will be acting as an agent for the TSOs rather than being the party obliged to implement the European requirements. As the CJV will be neither a TSO nor a legal entity, the legal and licence obligations shall remain with the West Transmission TSO. MEL recognises the importance of managing the CJV delivery of some of these requirements on its behalf. Given that the CJV will focus on market facing activities, in its role as an agent, it shall not be delivering all of the requirements; for example, representation of the West Transmission TSO at ENTSOG, and applying to become certified as a Fully Ownership Unbundled TSO.

Entry and exit allocation

The MEL code team has in depth knowledge of the existing transmission code processes and how they will practically apply in West. PTL also benefit from being a shareholder in PRISMA. PRISMA operates the gas capacity booking platform which most of the European TSOs shall be utilising to the sell capacity once the CAM code is implemented. As a shareholder and member of working groups, PTL has an opportunity to input into decisions that affect NI and have access to a wealth of information. Given that PRISMA functionality extends to the exit points on a network as well as entry points, as a shareholder of the company, access to this information and PRISMA resources is invaluable when considering developments to the NI regime, which ultimately have to be represented in the code.

5.4.2 The timetable for completion of the network code and interaction with the single code development

In conjunction with delivering compliance with Third Package obligations, a single European compliant code for NI will be developed. It is envisaged that the single code will be managed by the CJV. The TSOs are using a lead TSO approach to the development of the CJV and single code. The MEL Code team will be leading the development of the single NI code. While MEL has the primary responsibility to deliver this code, it will be doing so on behalf of all NI TSOs and will be based on the current NI codes, primarily the PTL code and the BGE (NI) code, which are almost identical. One of the reasons for the use of the PTL code as a basis is that currently 100% of NI's gas is transported through the PTL transportation system. As a result, the PTL code is the only code in NI to which all shippers are acceded. The two main objectives for the new single code shall be Third Package compliance as well as developing a code with a specific focus on the NI regime.

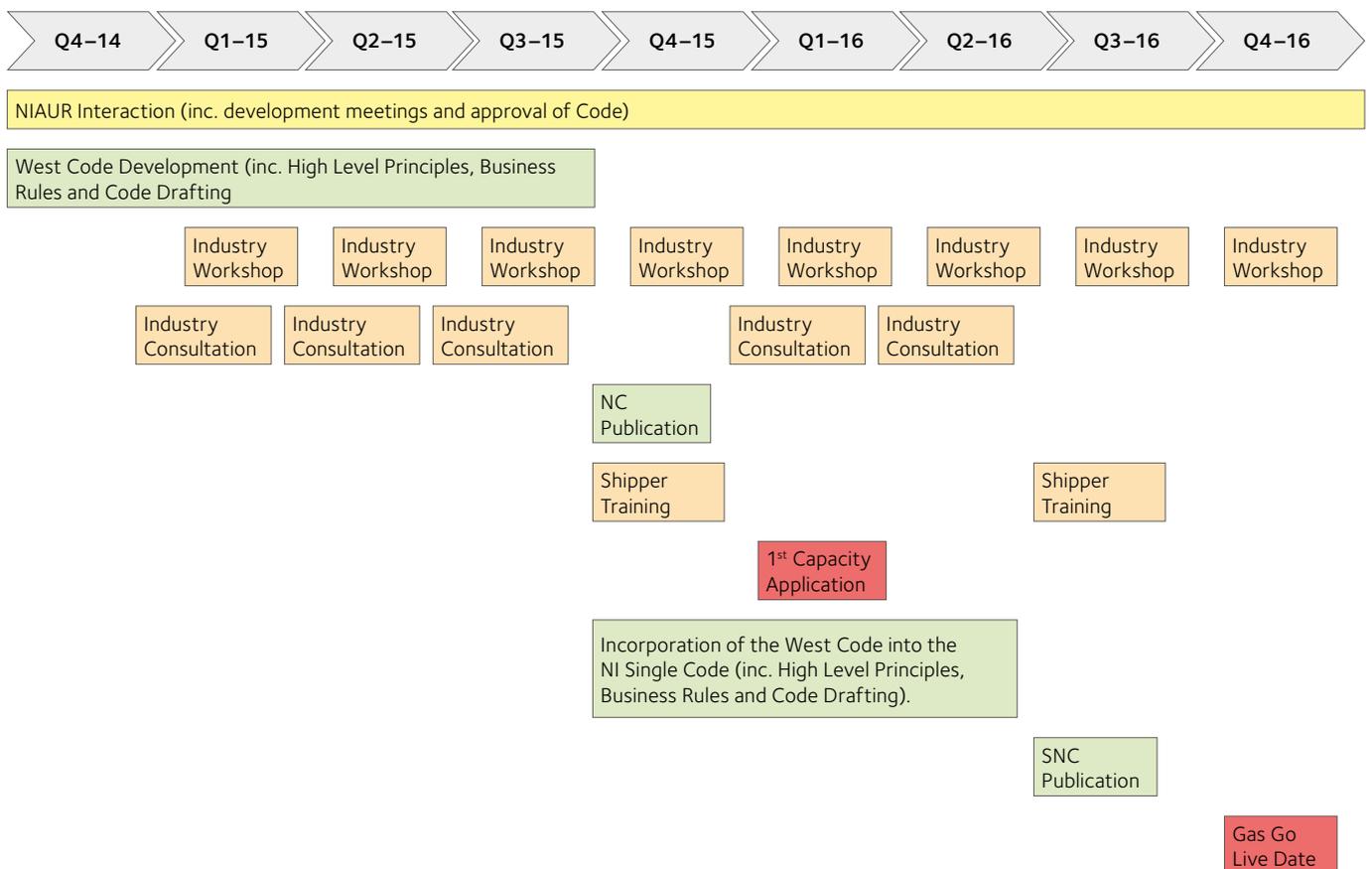
The interaction of the timing of the single code with the network being commissioned is fundamental in the timetabling and processes needed to develop the West Transmission network code.

It is expected that there will need to be a West Transmission code in place to facilitate activities required in advance of market opening in October 2016 and certainly six months ahead of first gas to Strabane. These activities include (but are not limited to) exit point registration and the ability to make annual capacity bookings. The capacity booking window is expected to open in Q1-16. It is not a case of simply copying the existing codes for the West Transmission. With its detailed insight into both the existing transmission codes and in its role developing the new single NI code, the MEL Code team is uniquely placed to make the required development of the West code in advance of NI moving to a single code.

It should be noted that as a code is needed in advance of the single NI code, so too is an IT system to manage it. The existing GTMBS system is already in place and available for the West code.

MEL would be in a position to deliver significant savings in the development of the West Transmission code if granted the licence and development of the West Code would be rolled into the existing workplan without the need for additional resources. MEL has dedicated significant resources and incurred costs working towards European compliance over the years. MEL believes further efficiencies can be driven as there would be no need for West Transmission, as the TSO, to spend time and money familiarising themselves with the European requirements and the detailed specifics. MEL’s plan to adopt a modified PTL code means that the West Transmission code shall be ready and prepared in advance of market opening hence removing a significant risk of delay.

The following diagram illustrates the proposed high-level timeline to develop and deliver the West Transmission code and its incorporation into the proposed single NI code.



5.4.3 Code modification – internal and external accountability

Internal Review

At present, MEL modifies its codes in line with a transparent and publically available set of modification rules. These modification rules can only be changed following a public consultation. Prior to the external modification process, the Code team follow an internal process to ensure that there is quality control and accountability. When drafting a code modification, the Code team seek input from the relevant parts of the organisation. The information derived from these discussions is incorporated in the drafting of the modification report. Once drafted, the modification is circulated to the management team for further comments. In developing the modification report, the Code team will liaise closely with the Regulator and adjacent TSOs. Once finalised, the modification is approved by an Executive Director prior to publication to industry. Once published, the Code team follow the code modification rules. In developing the West Transmission code, MEL shall adopt the same process internally and externally. As part of the single NI code development, the modification process shall be reviewed and MEL will envisage using the updated process.

Industry communication

As the code is a contract between a shipper and TSO, MEL believes that it is vital to involve industry throughout the development process. As mentioned above, all of NI's gas is transported through the PTL network and as such, MEL has a working relationship with all shippers in NI. To date, whenever there have been significant changes to the PTL and BGTL codes, MEL has presented the proposed changes at industry workshops specifically designed to encourage engagement and receive feedback. MEL plan to hold workshops to keep industry participants up to date with developments in the code and the West Transmission project. MEL plan to use these workshops, not only as a tool to convey information, but also to receive feedback, which can be incorporated into the development plans.

Regulatory communication

MEL plans to work closely with the Regulator throughout the development of the code to be used in the West Transmission. MEL shall continue its practice of holding frequent discussions and providing updates to the Regulator. Through this practice, costs are minimised, ensuring that the Regulator, as the body approving the code, is supportive of the steps of work, thus preventing both redrafting and the risk that the changes will not be approved.

5.4.4 Other contractual arrangements

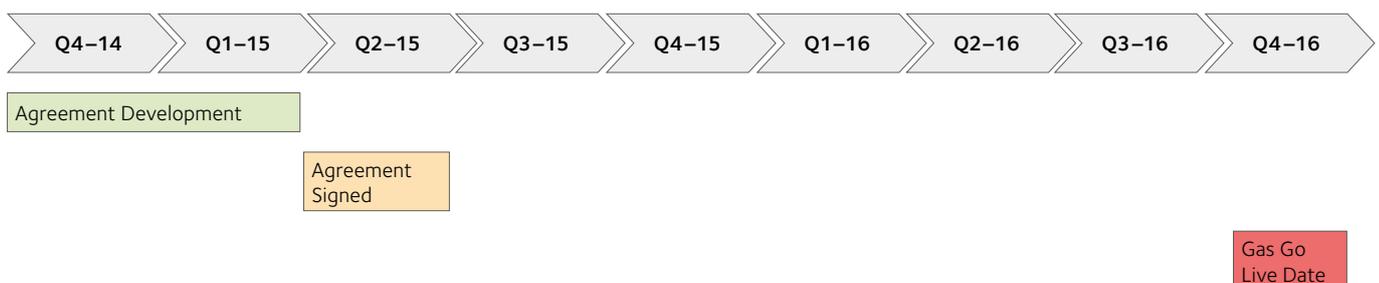
In addition to the code, MEL has identified other contractual arrangements, which it believes West Transmission TSO will be required to put in place. This is based on the arrangements MEL has in place and its knowledge of future developments to the NI regime.

TSO/DSO agreements

There will be a requirement to put in line an agreement with the Distribution System Operator (DSO) operating in the West Transmission. This agreement will cover areas such as access rights to site and data exchange. MEL shall utilise existing agreements as a basis but understands that the agreements must be representative of the particular arrangements in place. MEL intends to replicate the working relationships it has with the existing DSOs with that of the new DSO in the West Transmission.

TSO/DSO agreements timeline

The following diagram illustrates the proposed high-level timeline to deliver the TSO/DSO agreement. The actual timeline shall be developed in conjunction with the relevant DSO.

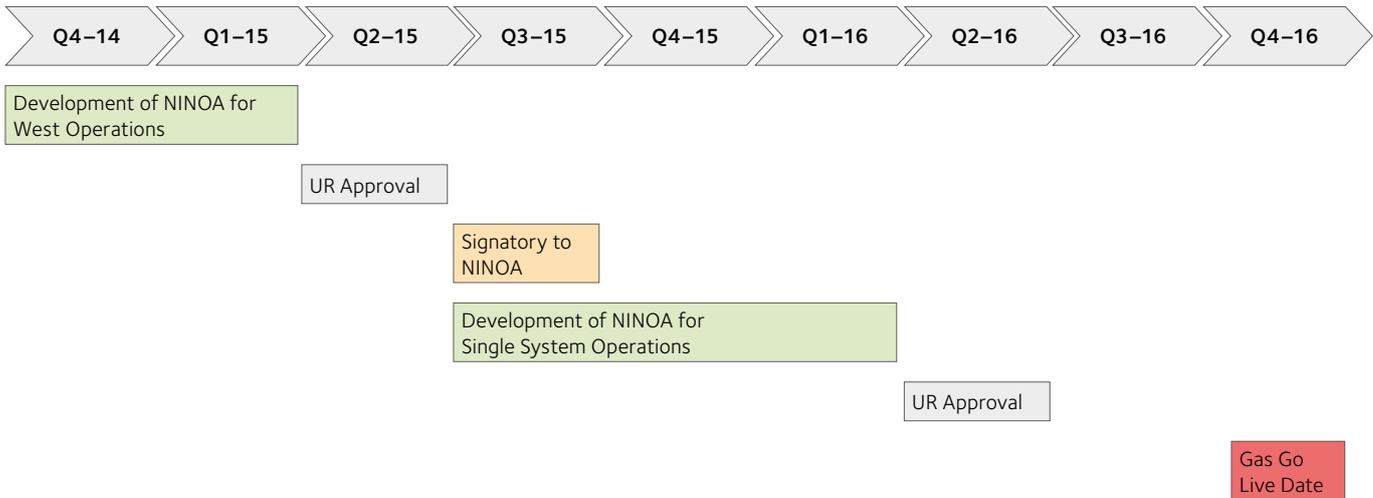


NI Network Operators Agreement

MEL has worked closely with the BGE(NI) to operate the NI system on a streamlined basis for the benefit of NI shippers. To facilitate streamlining there is a requirement for significant co-operation between the TSOs co-ordinating the wide range of activities carried out on a daily basis. These arrangements are captured in the Northern Ireland Network Operators Agreement (NINOA). As one of the originators of the NINOA and a developer and operator of the procedures within it, MEL is comfortable with the procedures that it would need to adopt as the TSO in the West Transmission. As a party to this agreement MEL does not anticipate any significant costs or resources will be required to sign up and incorporate the processes in the West Transmission business.

Northern Ireland Network Operators Agreement timeline

The following diagram illustrates the proposed high-level timeline to deliver changes to the NINOA to reflect the development of the network in the West Transmission and single system operation. The actual timeline shall be developed in conjunction with the other NI TSOs.



System Operator Agreement

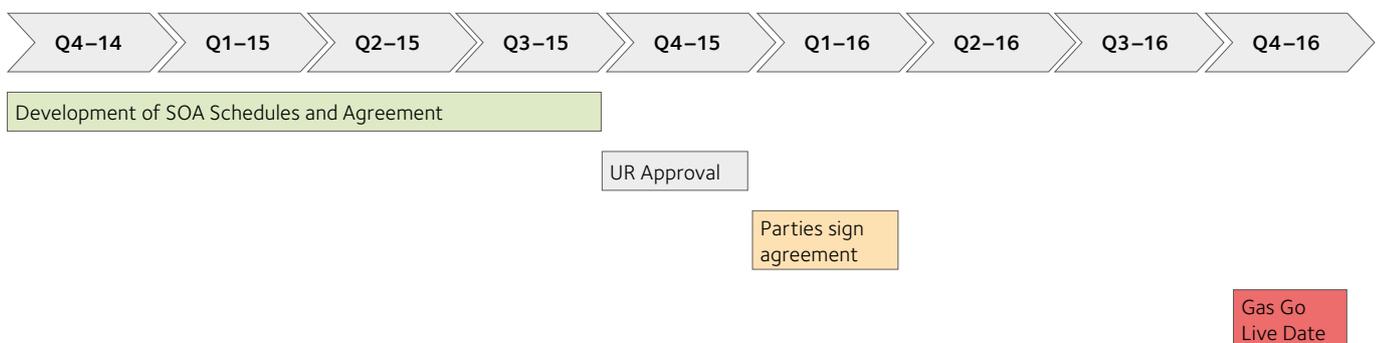
In addition to the development of a single NI code and CJV there are plans for a System Operator Agreement (SOA) to be put in place. MEL is involved in the development of this SOA and will be party to it in advance of gas flowing the West Transmission. The SOA will compose a number of schedules that the West Transmission TSO must sign up to. These include areas such as:

- Co-ordination of Control Rooms
- Planning and co-ordination of Maintenance Activities
- Co-ordination of Emergencies
- Network Planning
- Network Connections
- Metering Standards
- Monitoring Gas Quality
- Stock, UAG and Shrinkage Calculations
- Joint Balancing Procedures and NINOA
- Congestion Management
- Technical Capacity Register
- NI Network Diagram

MEL, as a party involved in the development of the SOA, sees further costs savings by having already agreed and set up operations to comply with the SOA prior to operations commencing in the West Transmission.

System Operator Agreement timeline

The following diagram illustrates the proposed high-level timeline to develop and deliver the SOA to facilitate single system operation. The actual timeline shall be developed in conjunction with the other NI TSOs.



Key points

- MEL has the only dedicated NI based transmission code team.
- There are real differences in managing a distribution code and transmission code, and all the processes and structures for managing a transmission code are already in place in MEL.
- In order to avoid delays in the Gas to West project, the West network code and IT systems will be required in advance of NI moving to a single code.
- MEL is uniquely placed to produce a code and IT system for West Transmission and to co-ordinate the changeover to a single NI network code.
- There is a significant body of work in developing the arrangements for an NI CJV and there is no incremental cost for MEL adding a third Transmission network under the same ownership.
- As an original developer and operator of the many contractual arrangements supporting the existing code, MEL are comfortable with and will lead the necessary amendments required to the supporting contractual framework.

5.5 System performance monitoring, system control arrangements

The systems that will be deployed to support West Transmission Operations form the technical solution as mentioned in Section 3.1.2.2 Project Plan and Proposals as implemented by a joint MEL/SGN project team. This section provides further details on the proposal.

5.5.1 Existing Systems

The existing IT system consists of the following key components:

- DNCS SCADA application
- Leakfinder application
- GTMBS application
- Lotus Notes applications
- PLC telemetry network covering the all sites:
- Other supporting back office applications: Citrix gateway, file share, printing, fax, etc.

These IT systems are jointly hosted at SGN and SunGard Data centres.

To support on-going patch management, training and code releases, a number of environments are available, these are:

- Production (physical) – Effectively the live monitoring system
- Pre-production (physical and virtual)
 - Code deployment (physical and virtual)
 - Training (virtual)
 - Testing (virtual)
 - Development (virtual).

The pre-production environment is made up of both physical and virtual infrastructure to allow for increased flexibility, easier migration, performance testing of hardware for core components and fast availability of additional testing platforms. Pre-production resides on a separate physical network firewalled from the production and corporate environment.

As with production, the system is fully network redundant and this resilience is utilised to support on-going testing and development. Pre-production is physically located in the primary data centre to keep costs lower on cross site networks. A simulated cross site WAN allows for failover testing and system functionality.

5.5.2 Architecture principles

All of the above applications and services are deployed in accordance with the following architecture principles:

- 99.95% availability of DNCS SCADA, Leakfinder and GTMBS
- No single points of failure
- Operational autonomy (the ability for the control room to operate without a connection to the corporate network)
- High levels of both physical and network security of the control system
- Dedicated, always live Backup Control Centre (BCC) operation – within 30 minutes' travel of the primary control room
- Online and offline archiving of all core and supporting systems
- Read only access to Control System for authorised users outside the physical boundary of the control network
- Secure remote vendor access to the Control System for third-party support
- Adherence to CPNI security guidelines – please refer to the CPNI website: www.cpni.gov.uk/advice/infosec/business-systems/

5.5.3 The proposed technical solution for West Transmission operations

To keep implementation costs to a minimum, it is proposed to implement West Transmission Operations on the existing architecture as described above. This will be accompanied with the implementation of telemetry to the new sites following the same principles of the existing telemetry network. This design allows for complete integration of the core control systems and applications, cost savings by using shared infrastructure and services for infrastructure such as management, security and backups, and ensures full adherence to the architecture principles used for the current control system design. The key changes/extensions proposed are outlined below.

Extension of DNCS SCADA (SCX)

The DNCS SCADA system is based on the Schneider Electric SCX product which provides all the basic functionality expected of such a system, including data acquisition; supervisory control; limit checking; alarm management; derived point calculations and trend plotting. Key architecture points:

- The DNCS SCADA Application is implemented at the SGN Gas Control Data Centre.
- There are three operational control read/write servers in a triple-redundant configuration and two read-only 'performance firewalls'.
- Two servers are at the SGN Horley Data Centre and one server at the SGN Horsham Data Centre. Horsham is the location of SGN's Emergency Control Centre.
- At any point in time, one of the read/write servers will be main and others will be in standby mode.

The existing DNCS SCADA system will be extended to cover West Transmission operations. In overview, this will involve the following:

- The creation of six sites using standard site templates to cover the additional AGIs.
- In the site mimics, design of the site diagrams by referring to the site schematic diagrams.
- The creation of points in database explorer under the relevant sites.
- Upon creation of all points in database explorer, embedding those points on site/point/limits/GQ mimics.

As stated in Section 3, this work will be phased in line with the AGI construction timescales.

Extension of Leakfinder

Leakfinder is a commercial off-the-shelf application and is used for detecting leaks within pipelines. Leakfinder resides on the same security network as the DNCS SCADA control servers and communicates with DNCS SCADA over an OPC interface. It uses SCADA telemetry readings for data modelling. There are two instances of the Leakfinder Application – one at Horley and one at Horsham.

The existing Leakfinder system will be extended to detect leaks on the West Transmission Network. This will involve the establishment of a new Leakfinder model based upon the West Transmission network design.

As stated in Section 3, this work will be phased in line with the AGI construction timescales.

Extension of Lotus Notes applications

This suite of applications provides the control room with a number of key tools and databases that support the key systems. These applications are critical to Gas Control operations, and are therefore hosted on Lotus servers located within the control room network rather than the corporate network. There are two instances of this application suite – one at Horley and one in Horsham. Lotus Domino replication is used to keep the two servers in Horley and Horsham in sync for failover purposes.

The following existing Lotus Notes applications will be extended to cover West Transmission operations:

- Logbook – this database enables users to record significant events during daily operations. All operational issues, faults, planned work and work orders are logged in this application by the Control Room Operators.
- Shift Working Log – this database generates a whereabouts facility for all shift staff. Also incorporates a holiday booking and cover system.
- Standby Rota – this database contains call out information. It gives information regarding who in the area Maintenance teams to call out in the event of out of hours faults.
- People Development Framework – this database holds records of staff competencies. It also includes information about performance and career development.
- Single Source Point Lookup – this database holds site names and associated points and acts as a common reference point for faults, issues and updated DNCS site configuration data.
- Shift Handover – this database contains details of occurrences on a shift logged by an Operator. This facilitates communication between shifts and is used as an aid to shift handover.

This work will be completed in line with first live gas to Strabane in October 2016.

Extension of GTMBS

GTMBS (Gas Transportation Management & Billing System) is a commercial application used by MEL group gas companies to manage commercial activity from before the day nominations right through to after the day allocations and to carry out the vital monthly settlement process. The GTMBS application is provided as a hosted service in the SunGard Availability Service (SunGard AS) Data Centre facility at Hounslow as the primary site and Woking as the secondary site. DNCS SCADA sends Metered Volume and Line Pack data directly to the GTMBS database.

The existing GTMBS application will be extended to cover the Commercial operation of the West Transmission Network. This will involve configuration changes to GTMBS to incorporate new exit points and to align with network code arrangements and so does not require any additional software or hardware to be procured.

As stated in Section 3, this work will be phased in line with the AGI construction timescales.

Telemetry Network Extension to incorporate the new sites

The Telemetry Network is provided by Arqiva through their satellite and GPRS networks. The primary route is through satellite and the secondary via GPRS. Switching between the primary and secondary routes is controlled using the AES protocol converter application installed in the DNCS SCADA application server. AES is used to convert the Modbus protocol to the DF1 protocol which is used by the PLC for telemetry data communication.

The telemetry solution will use two communication technologies for acquiring telemetry information from the six AGIs. The primary route to the AGIs will be via a satellite link over the existing SGN Arqiva Network. The solution will share the Arqiva satellite ground stations in Bedford and Crawley for down link and data will be sent to the data centres via the existing secure WAN link from Arqiva to SGN. For increased availability, both Arqiva ground stations are inter-connected and there is a connection from both Arqiva ground stations to primary and secondary SGN data centres. The secondary route to the AGIs will be via a GPRS solution implemented and managed within the Arqiva network. Hosting the GPRS solution within the Arqiva network moves all routing decisions from SGN to Arqiva for satellite link failures, rather than directly into the PTL network – this adheres to security best practice.

The on-site integration of telemetry to the Remote Telemetry Units (RTUs) will be conducted by current service provider Cetix.

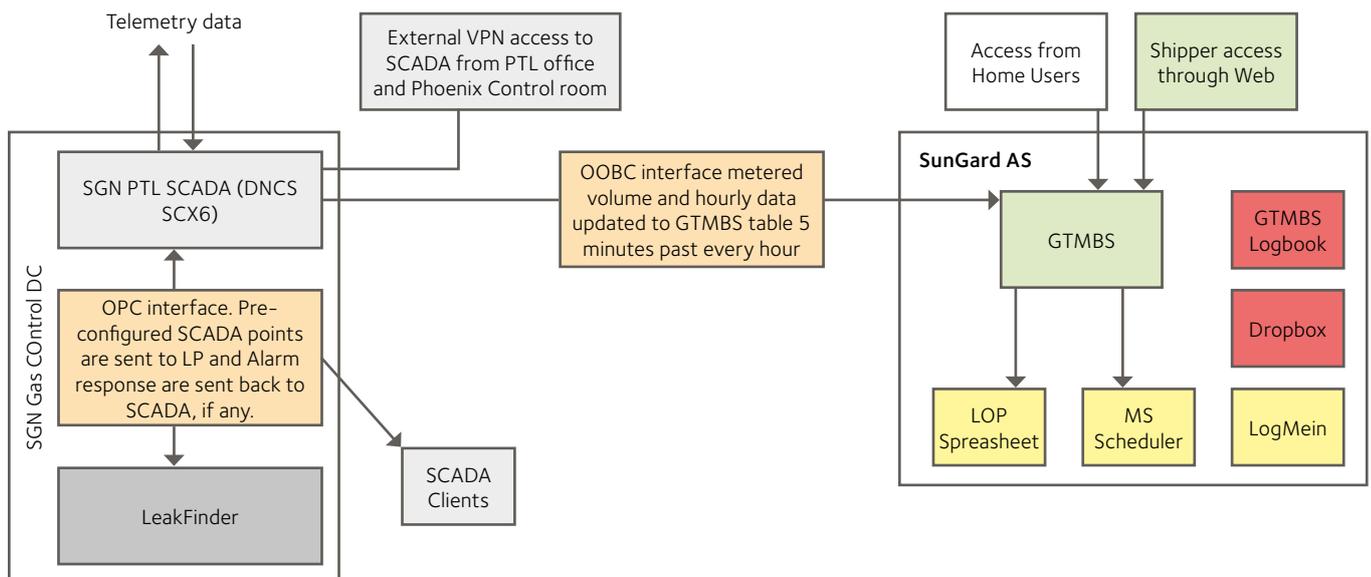
As stated previously, this work will be phased in line with the AGI construction timescales. It will also involve the following activities:

- First year of mobilisation activities in readiness for live gas to Strabane – the installation and commissioning of primary (satellite) and secondary (GPRS) communications at the Derry Connection Point.
- Second year of mobilisation activities in readiness for live gas to Dungannon, Cookstown, Omagh and Enniskillen – the installation and commissioning of primary (satellite) and secondary (GPRS) communications at the Portadown Connection Point.

Interface modifications/extensions

The figure below illustrates the interfaces that will be subject to minor modification/extension in order to accommodate the physical and commercial operation of the West Transmission Network:

Figure 5.5a – Interface Landscape



Aspects of this work will be phased in line with the AGI construction timescales.

Environments

All of the changes specified above will need to be reflected in the following environments:

- Production (physical)
- Pre-production (physical and virtual)
 - Code deployment (physical and virtual)
 - Training (virtual)
 - Testing (virtual)
 - Development (virtual).

These changes will require the support of the following suppliers:

Change	Supplier
Extension of DNCS SCADA (SCX)	Schneider Electric
Extension of Leakfinder	GL Noble Denton
Extension of Lotus Notes Applications	SSE IT (Lotus Notes Administration Team)
Extension of GTMBS	SunGard Energy, SunGard Availability Services & Enzen Global
Telemetry to the New Sites	Arqiva and Cetix
Interface Modifications/Extensions	All of the above and SSE IT (Filemover Support Team)
Environments	SSE IT (Hardware Planning Team)

All the changes specified above elicit the following key activities in order to progress the technical solution:

Figure 5.5b – Technical Solution Activities

Requirements	Design	Build	Test	Implementation	Stabilise & Improve
<p>Refer to the Requirements Consolidation section of Project Initiation – Section 3.1.2</p>	<ul style="list-style-type: none"> • Within the Project Initiation phase, Requirements will be used to validate the Proposed Technical Architecture. • Further to validation of the Technical Architecture: • Logical and Physical Technical Models will be refined and finalised; • Functional Designs for extended applications will be updated; • Support arrangements will be confirmed; • All Environment requirements will be specified – Training, Test Development, Pre-production and Production; • A Bill of Materials for all new hardware across all environments will be finalised and best and final offers obtained; • A decision to proceed with procurement will be sought; • Procurement will be initiated. 	<ul style="list-style-type: none"> • Development of the Data Provision Strategy. • Test Strategy development. • Application Configuration. • Hardware and Software installations as per the Environment Specifications. • Network changes – IP ranges. • Develop an Equipment Register. • Initial Data provision (simulated data) and associated testing. • The development of Test Scenarios and Test Scripts. • Formalise Support arrangements with Suppliers – Support levels, SLAs, etc. <p>Refer to the following sections below:</p> <ul style="list-style-type: none"> • Data • Testing • Support 	<ul style="list-style-type: none"> • System Testing • System Integration Testing. • Non-Functional Testing. • User Acceptance Testing. • Performance Testing. • Operational Acceptance Testing. • E-2-E Testing. • Implementation/ Cutover Planning. • Cutover Rehearsal. • Develop Support Processes. <p>Refer to the following sections below:</p> <ul style="list-style-type: none"> • Testing • Implementation and Rollout. 	<ul style="list-style-type: none"> • Activate Support Contracts. • Production data migration. • Data conditioning. • Cutover • Go-live <p>Refer to the following sections below:</p> <ul style="list-style-type: none"> • Data • Implementation and Rollout • Support 	<ul style="list-style-type: none"> • Post Implementation Support provision. • Root Cause Analysis. • Optimise Infrastructure. • Continuous improvement. <p>Refer to the following sections below:</p> <ul style="list-style-type: none"> • Support

5.5.4 System performance monitoring

In terms of system performance/capacity monitoring and system control arrangements for West Transmission operations, the following existing services will be applied:

- System Centre Operations Manager (SCOM) is the standard system-monitoring tool used to monitor the SGN Windows environments. Application alerting is configured as required with details provided by the application vendor. The Operations department monitor alerts 24/7 and will contact the relevant support teams when a problem arises (dependent on the required actions).
- Monthly capacity monitoring of all hardware.
- Weekly availability reporting on telemetry communications.
- Network communications performance monitoring – network traffic, utilisation of devices, etc.
- Data centre environmental monitoring at all Gas Control locations.
- Backups – all systems on a daily basis to allow for faster recoveries. Two Tivoli storage manager servers located within Gas Control allow for onsite backups. Disk storage of the latest backup allows for fast restoration of the most recent data, while daily, weekly, monthly and annual backup archives are stored on tape. For GTMBS, West Transmission will use SunGard's Vaulting products that are service-based solutions designed to protect customer data by electronically transmitting data to two geographically separate SunGard data centres. As data is sent offsite immediately, data protection is enhanced dramatically over a traditional tape-based backup solution.
- Anti-virus – Sophos Anti-virus is used within SGN Gas Control. Sophos is centrally managed and clients receive their updates from distribution points on the Gas Control network. For GTMBS, West Transmission will utilise the managed AV solution from SunGard. SunGard's managed AV utilises world leading AV software, Symantec Endpoint Protection, with a pure business focus. The solution is managed and deployed by a highly resilient centralised management server. A single endpoint agent is deployed on each instance of customer servers that detects the latest threats from viruses and malware and sends an instant SNMP notification to the SunGard's Network Operations Centre (NOC) via the management server. The servers are monitored 24/7 and customers are immediately notified by telephone of any alerts thereby preventing a service impacting event. The service includes installation and provisioning of the end point AV client on the customer server, on-going signature updates and routine maintenance.

- Patch management – patch management within SGN Gas Control is maintained by Microsoft Systems Center Configuration Manager (SCCM). SGN Gas Control’s dedicated instance of SCCM is managed centrally and independent of the SGN estate. Patch deployment schedules ensure that hotfixes and service packs are first deployed within test environments before being deployed onto production platforms. The only exceptions to this process are hotfixes from vendors that are deemed as ‘critical vulnerabilities’. Critical patches are deployed to all systems within 48 hours of release. Due to the criticality of SGN Gas Control operations and the risk that these patches pose on operating systems and applications (due to their lack of regression testing), critical patches are rolled out in a staggered manner across the Gas Control network. The patching of GTMBS will be controlled via SunGard Managed Services and will be applied using a risk based method and be executed using SunGard’s patch management tool, HP Server Automation.

Key points

- The robust SGN IT infrastructure regime is already in place with resilience commensurate with a system supplying nearly 6 million customers.
- The systems utilise satellite technology in addition to the phone based system.
- A tailored NI system has been developed to replicate SGN’s wider systems. It is compatible with and can be supported by the wider SGN support network, yet meets necessary security and regulatory compliance as it exists as separate architecture.
- Such an extensive support structure would be cost prohibitive if the NI tailored solution existed as a complete standalone.
- As the solution is already in place it avoids the significant IT set up costs from implementing a new system.



In line inspection

5.6 Asset records

HP operations and maintenance

5.6.1 Key records maintained

Pipeline system data

The following pipeline system data is maintained throughout the life of the asset:

1. Design Data
 - a. Design basis
 - b. Detail design reports
 - c. Design calculations
 - d. Design drawings
 - e. Design queries and concessions
 - f. HAZIDs/HAZOPs/HAZANs
 - g. Risk assessments
2. Purchasing data
 - a. Purchasing specifications
 - b. Materials certificates
3. Construction data
 - a. Welding records including radiographs, weld procedures and welder qualifications and heat treatment records
 - b. Ultrasonic inspection records
 - c. MPI and dye penetrant inspection reports
 - d. Construction queries and concessions
 - e. As laid drawings
 - f. Road crossing drawings
 - g. Land drainage drawings
 - h. Land re-instatement records
4. Testing and commissioning data
 - a. Filling procedure and records
 - b. Flow meter, pressure gauge and temperature recorder calibration certificates
 - c. Hydrostatic testing records including calculation of air content, pressure and temperature chart recorder, pressure log and pressure/temperature reconciliation calculations
 - d. Leak testing records including pressure chart, pressure log and, if applicable, helium trace certificates

5. Operational data
 - a. Normal and safe operating limits
 - b. Register of excursion of safe operating limits
 - c. Pig runs – date, type, speed, debris recovered.
 - d. Inspection and maintenance records
 - i. Pigtraps
 - ii. Pipework
 - iii. Valves including block valves
 - iv. Landline surveillance records
 - v. Land owner liaison records
 - vi. Aerial survey
 - vii. CP test post and transformer/rectifier records
 - viii. Pearson, close interval potential and direct current voltage gain survey records
 - ix. Subsea inspection reports including video tapes, DVDs, charts etc
 - x. Telemetry functional check records
 - xi. ESD system functional check records
 - xii. Leak detection system functional checks
 - e. Written scheme(s) of examination reports
 - f. Register of ESD valve opening and closing
 - g. Register of risk analysis review
 - h. Register of risk based inspection scheme review
 - i. Pipeline fitness for purpose reports
 - j. Owner/occupier register (within GIS)
 - k. Authorities register
 - l. Register of all pipeline incidents
 - m. Internal audit reports
 - n. External audit reports
6. Authorisations and consent
 - a. Environmental statement
 - b. Pipeline construction authorisation
 - c. Planning consents for AGIs
 - d. Consent to discharge test waters
 - e. Deed of grant records
 - f. Notifications to HSE (of changes, restarts etc)
7. Incident data
 - a. Operating limits excursion register
 - b. Incident reports
 - c. RIDDOR reports

5.6.2 Arrangements for retention/collection of key records

Original design data

Consistent with MEL existing practice, the original design files for all assets will be converted to PDF format for use on current IT applications and to facilitate backup contingency. Typically, for a transmission pipeline, these original records can be over 100 large A4 files. Experience has proven that an electronic indexing system is a pre-requisite to ensure ease of reference. The new documentation will be incorporated into MEL's existing referencing system.

Drawing records

MEL has adopted and will maintain engineering drawing records in accordance with Management Procedure T/PM/RE/3/. The objectives of the Management Procedure are:

- To ensure that appropriate drawings are held for all pipelines, plant and equipment to satisfy legislative and business requirements
- To define the standard and content of drawings to support safe and efficient operations planned and carried out
- To ensure that responsibilities are defined for the creation, updating, approval and audit of drawing records
- To define the application of computer aided drawing systems to the compilation and storage of drawing records

The following drawings will be maintained in AutoCAD and/or original PDF format:

1. Engineering line diagrams
2. Process and instrument drawing
3. General arrangement site drawings
4. Stress analysis
5. Hazardous area drawings
6. Electrical drawings
7. Instrumentation drawings
8. Pipeline alignment drawings (strip maps)
9. Pipeline construction profiles

The drawings are governed by detailed procedures included in the PIMS document.

5.6.3 Collection of Design and Drawing Data

Records/Document Controller and Senior Pipeline Inspector (SPI) on the construction works are responsible for the collation of all material certification, weld records, coating records, daily reports, test records, including certification and relevant equipment. Bar charts will be produced identifying the location, pipe section number/fittings etc. These will be referenced back to the as-built drawings with GPS co-ordinates. A similar process will be employed for all AGIs. All records will be scanned and stored onto data CDs with a linking and index system to enable the user to search records. Hard copy records will be provided to the Pipeline Operator and the appropriate records uploaded into Maximo asset management system, prior to commissioning to establish a maintenance programme for the new assets and each piece of equipment. This will include the commissioning dates for each item of plan and equipment, so that the appropriate maintenance frequencies are put in place.

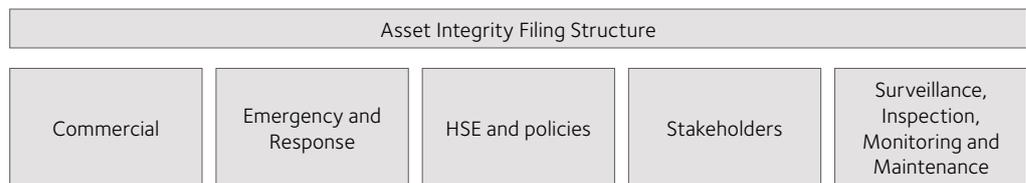
The above will form part of the CDM H&S file that will be compiled by the Construction team and handed over on completion of the works. MEL operates a change control management procedure which provides a framework for management and control of new works, modifications and repairs on gas systems. The change control procedure incorporates the UK gas industry SGM/PM/G/17 – The management of new works, modifications and repairs. It inherently incorporates the philosophy outlined in the Institution of Gas Engineers and Managers (IGEM) guidance document IGE/GL/5 'Plant Modification Procedures' which recommend the processes for appraising and approving modifications to a gas transportation system and its associated support systems. The procedure is based on six keys steps including:

1. Proposal – a clear definition of the problem with factual supporting information and recommended solution
2. Design Brief – design study and scope of design described
3. Detail Design – detail designs and specifications produced to meet the design brief
4. Implementation – Plant, equipment and services are procured, installed, tested, commissioned and accepted.
5. Documentation – All drawings, records, procedures and statutory documents are brought up to As-built status and accepted. This includes but is not limited to:
 - a. Contractors drawings, construction records and documents,
 - b. Operating and Maintenance Procedures updated in line with the Change
 - c. Emergency Procedures Manuals updated in line with the Change
 - d. Written Scheme of Examination Procedures updated in line with the change
6. Handover and Close Out – including formal approval and incorporation of records into the appropriate area of the asset integrity filing system.

5.6.4 Asset Integrity Filing System

The Asset Integrity Filing system is illustrated in Figure 5.6a. Any records associated with the integrity are maintained and filed in the logical place in accordance with the filing structure. For example, maintenance reports are stored under the Surveillance, Inspection, Monitoring and Maintenance folder.

Figure 5.6a



5.6.5 Geographical Information System

In addition to the Asset Integrity filing system, MEL operates a Graphical Information System, ArcGIS that lets the user easily author data, maps, globes, and models on the desktop and serve them out for use on a desktop, in a browser, or in the field via mobile devices.

The GIS retains:

- Pipeline and AGI locational positioning including,
 - Construction profiles
 - Road crossings
 - Aerial, Marker and Cathodic protection Posts
 - Marine marker buoy and posts
 - Pipeline characteristics, wall thickness and pressure
 - Groundbed locations
- Easement buffers and associated landowner information
- Inspection results from subsea surveys, including;
 - Subsea debris
 - Depth of burial
 - Exposures
 - Sea bed scars
- Online inspection data
 - Denting
 - Gouging
 - Metal objects
 - Construction calliper surveys

When new information in respect of any of the above data is received it is added to the GIS and retained.

5.6.6 Computerised Maintenance Management System (Maximo)

Maximo (a proprietary computer software application) is used by MEL as both a single asset repository and work management system for all operational work streams. This integrated package consists of three distinct software applications, Maximo being the asset repository, Maximo Mobile (Syclo) as the field workforce solution, and Click for work dispatch.

For the maintenance process, the core Maximo system:

- holds details of all maintained assets
- contains maintenance programmes for operational sites
- auto generates work orders for routine maintenance activities
- has the functionality to create ad hoc work orders for non routine work such as faults, remedial work and projects
- can hold details of labour along with associated skills – functionality not currently used

Asset information is held on a hierarchical basis

- location eg pipeline, pressure reduction site
- process group defining function eg pressure reduction station, pipeline, block valve
- system type eg pressure reduction, gas heating, filters, valve
- stream identifier ie stream 1, stream 2
- equipment or individual assets – valves, filters, regulators including manufacturer and model details
- auxiliary equipment – control systems and components associated with the main equipment above eg control pilots, pressure profiling units

Additional information held includes the site owner, and also the manager where this differs. Importantly, the status of each site is also recorded, ensuring history is retained for mothballed and decommissioned plant and, at the same time, allowing the maintenance plans to be de-activated.

Key points

- A fully integrated documents regime is already in place.
- The regime includes the use of an asset management system allowing access to staff on the ground.
- The solution allows for the integration of the records to the maintenance regime.

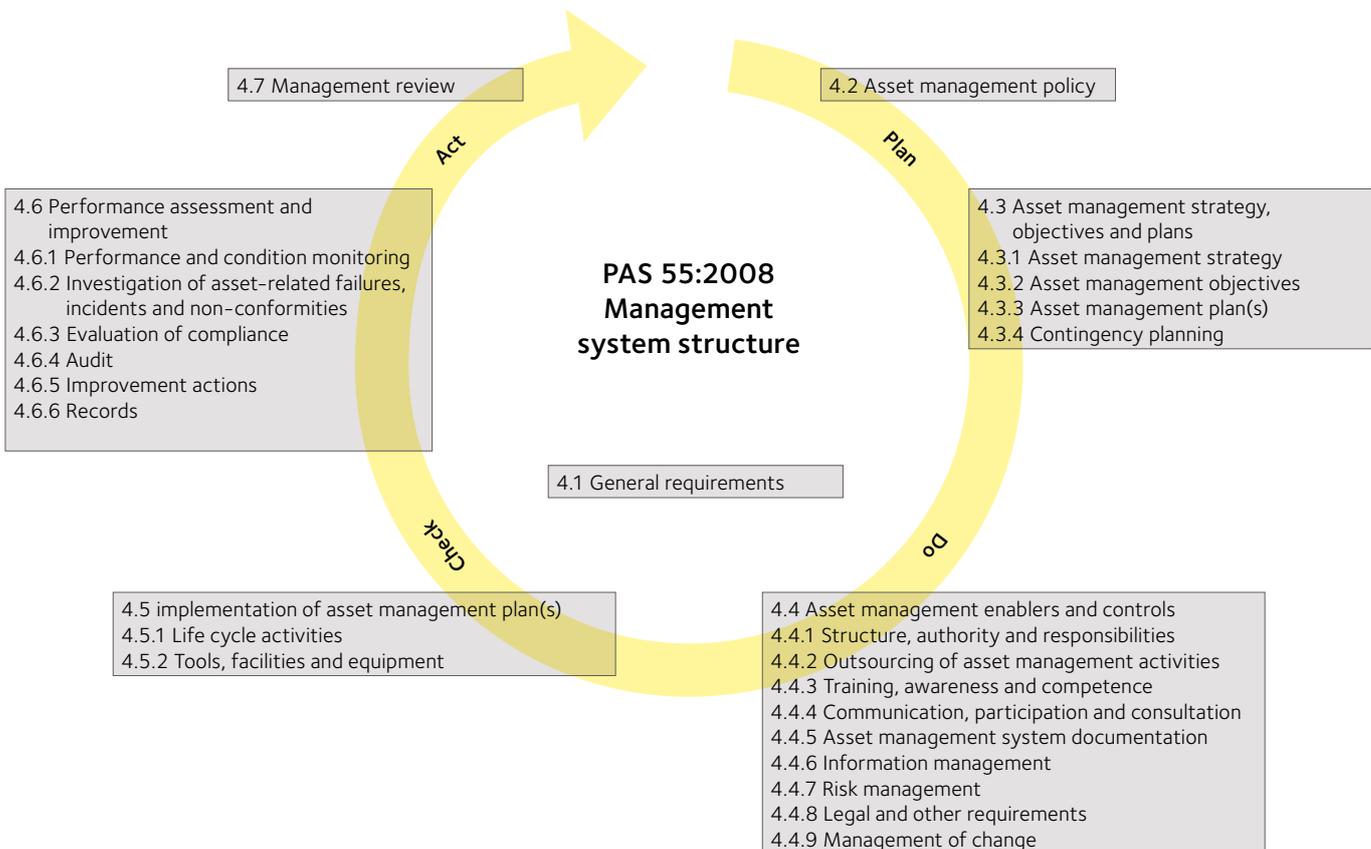
5.7 Asset management system

5.7.1 Proposed approach to implement an asset management system

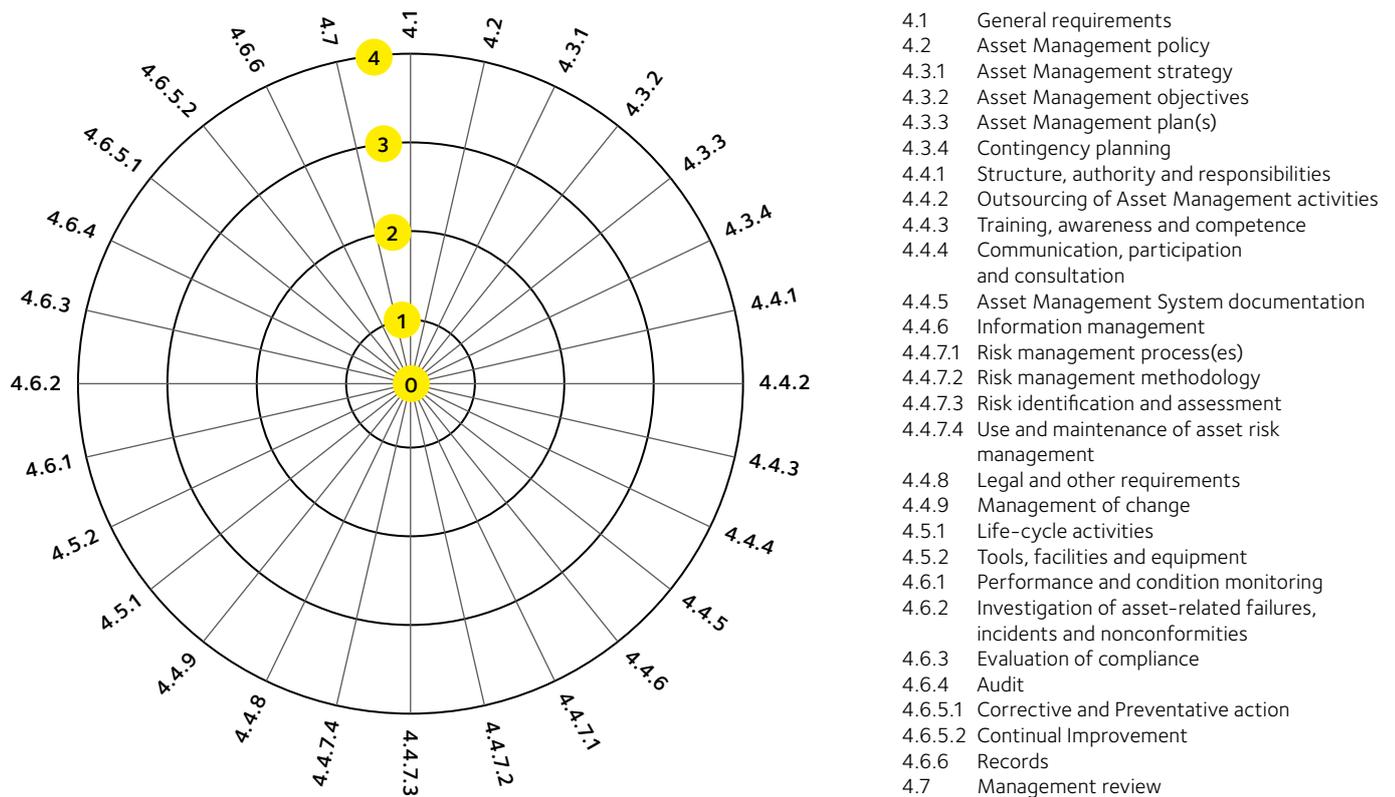
MEL gas companies already use an asset management system as noted in Section 5.2, the Pipeline Integrity Management System. The development of the PIMS was a key foundation on which to pursue PAS 55:2008 Asset Management accreditation.

PAS 55: 2008 was transposed into international standard ISO 55000:2014 Asset Management in January 2014. Therefore, the work done to date, systemising the MEL approach to asset management with a view to PAS 55 accreditation, will now ultimately lead to ISO 55001 accreditation.

The PAS 55 structure is shown below and is based on the same Plan, Do, Check, Act system that the MEL Health and Safety Management System is derived (the latter based on HSG65 guidance as described in Section 5.3).



Phase 1 of our road map to achieve PAS 55 accreditation includes undertaking a gap analysis against the requirements of PAS 55 to understand where the PIMS and business procedures might require further development. Each of the 21 sub-clauses set out above will be scored on a scale of 0 to 5 and plotted on the PAS 55 Radar Plot as per below.



Phase 2 of the road map includes a number of stages. Initially we will progress planning workshops whereby we will use the phase gap analysis to decide what areas of the PIMS need further development and what level of excellence we realistically can and want to achieve within the timeframe. Such planning workshops will deliver an action plan and “business champions” to drive and manage their applicable action.

The key to successful implementation of the action plan is communication to, and support from, all aspects of our business and that there is a clear line of sight through each level of management, employees and contractors. A steering committee inclusive of our CEO, Finance Director and Group Operations Manager shall govern the action plan. The appropriate business champion will be nominated from management to deliver their applicable action plan requirement. Subsequently, each business champion shall manage their relevant team including employees and contract representatives from MERC and Control Room Services.

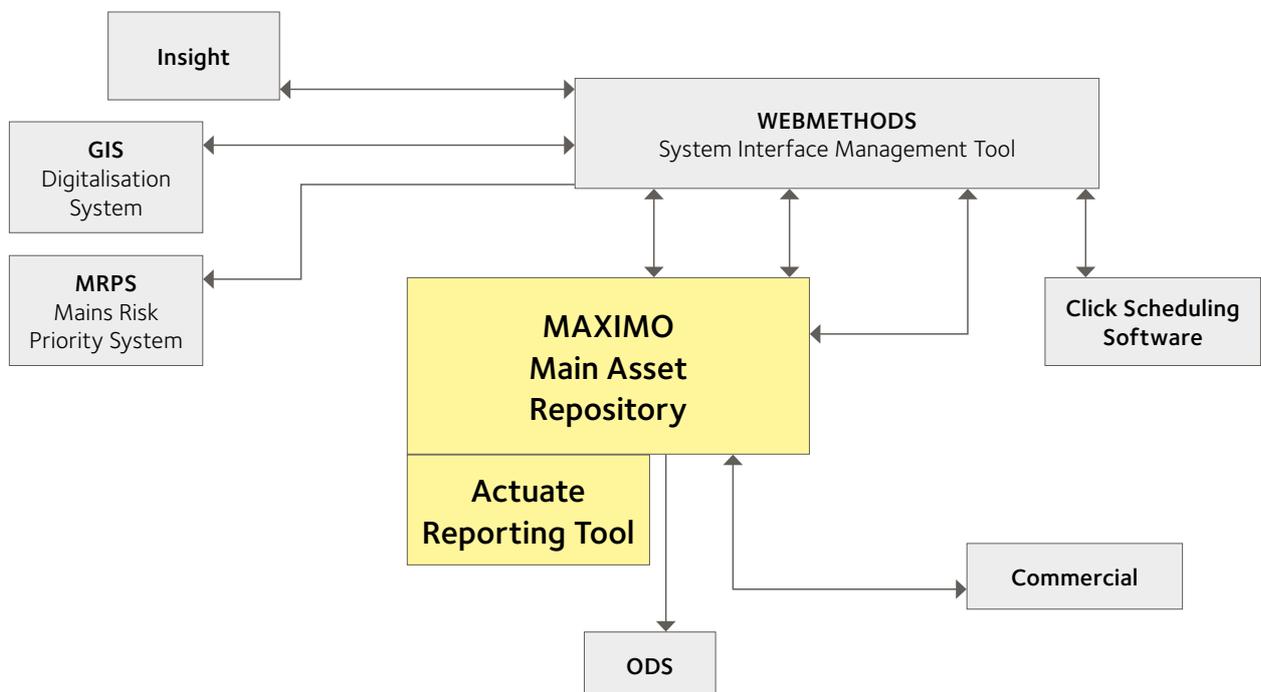
Following delivery of the PAS 55 action plan, we will undertake a readiness audit. This will allow us to fine-tune any PIMS sections further as applicable in advance of any inspection and subsequent accreditation.

The timescale for the MEL roadmap to accreditation will largely depend upon the output of our phase 1 gap analysis but we believe a two to three-year programme is realistic.

As well as the PIMS development, a key foundation in PAS 55 accreditation will be adoption of a computerised maintenance management system (Maximo).

Maximo is a fully automated, integrated suite of front office applications that have been operational through the SGN MERC arrangements for three years. Maximo is used by SGN as the main asset repository and has been designed and built to enable clear partitioning of assets using set criteria as defined by the requirements of the business.

This is illustrated as follows:



Preventative maintenance is automatically managed by Maximo using set criteria. The system automatically generates work orders and tasks that are then allocated to relevant suitably qualified engineer laptops using Click scheduling software. The engineering qualifications/competency for each individual and the minimum requirements for each job are loaded into the system to ensure that work is appropriately allocated by competency levels.

Maintenance plans are set up through the Preventative Maintenance functionality, with individual Job Plans set up for each maintenance task. The task can be aimed at any level from site to individual asset with frequencies set in days, months or years. The skill requirements can also be set against each maintenance task.

Routine maintenance work orders are generated on a calendar month basis and are available 21 days in advance, giving the MERC adequate time to plan resources, equipment and spare parts. Longer term planning (eg F Schedules, ILI) is arranged through the Annual Maintenance Plan.

Maximo Mobile is used by all MERC Field Operatives to receive and record work details in real time. Each work order specifies the maintenance task to be undertaken, the equipment, system or stream to be maintained and the site location. Special instructions are included on individual work orders such as any site specific safety requirements or site access details. Additional information recorded on work orders includes site specific risk assessments and request for further work.

The Maximo Click is used by the Dispatch teams to issue work to field workers. A precise audit trail is available for all assets at any time and enables data to be passed via webMethods to both internal and external parties.

5.7.2 Demonstration that asset records are integrated/aligned with work and financial management processes

Asset maintenance is contracted out to SGN (the MERC contract) with management of the contract performed by MEL staff. The contract sets out all routine and planned maintenance to be carried out in each period, along with a description of each activity, the site/location of the work and the cost of each activity.

The contract is also set up so that additional activities required can be agreed and carried out at the approval of the company. When any work has been carried out, it is reported using a standard template including the details of the work and the costs associated. This information is aggregated allowing interrogation of the data to assess the level of work for any site or activity in any period, as required. The reporting template links all the activities and their costs for the period to the amount invoiced each month and each invoice is entered on the financial system (Sage). Each invoice can easily be traced back to the works included within it and reconciliations are performed to ensure all costs reported have been captured in the financial systems.

Monthly reports are prepared for senior management which include the total costs of the MERC activity, a breakdown by category and details of any engineering projects, thereby ensuring appropriate financial management.

As discussed in section 5.6 Maximo is used as a work management system for all operational work streams. This ensures the alignment of work processes with the asset management system by recording all scheduled and performed maintenance activities.

5.7.3 Proposals to identify and manage developing risk issues

Risk management is already core to both our Health and Safety Management System and our Pipeline Integrity Management System. Risk management is also a core requirement of PAS 55 and we are already strong in that discipline.

In Section 4.1 we describe our risk management system. In summary, our risk assessment policy sets out our corporate commitments in respect of risk.

We describe our top down approach including the management of major accident risk, occupational risk and environmental risk through our Operational Risk Register and Risk Assessment Matrix. The top down approach is presented to our board of directors at least annually.

We also describe our bottom up approach whereby all work undertaken by contractors working on the system, primarily the MERC, must be fully risk assessed, documented and approved by management.

It is recognised that different risk issues will develop on a day to day basis, and also over time, as the West Transmission pipeline system and NI gas transmission system develops.

The MEL risk assessment system is applied across the high pressure PTPS assets that we currently own and operate and has proven successful during day to day operation and through the ongoing lifecycle maintenance of the current assets. It will also incorporate and be able to incorporate the risk management of any developing West Transmission pipeline system risk.

5.7.4 Application of Reliability Centred Maintenance (RCM) principles to optimise activity

We employ RCM where it is applicable to the assets that we operate. As is current industry standard with the majority of GB transmission operators, our schemes of Surveillance, Inspection, Maintenance and Monitoring are time-based with frequencies based on:

- the recommendations within IGEM/TD/1
- the original equipment manufacturer guidelines
- standard industry practice
- specific local experience based upon supporting evidence and robust reasoning.

We maintain knowledge through:

- results, observations and trends from our on schemes
- the MERC
- external expert review
- Oil and Gas UK
- UKOPA

We continually review maintenance frequencies. The following demonstrates, by way of example, our approach to RCM:

Case Study: Applying RCM to Subsea Asset Inspection regime

Regular surveys of the subsea pipelines are carried out to gather information to enable an assessment of the integrity of the pipelines and reaffirm their fitness for continued operation at their declared Maximum Permissible Operating Pressure (MPOP).

The inspection regime of the Scotland to NI Pipeline (SNIP), Larne Lough Crossing (LLC) and Belfast Lough Crossing (BLC) were a duty-based schedule originating from recommendations from the installation contractor at the time of commissioning.

A combination of techniques is employed to inspect the pipelines to give a snapshot of the condition of:

- Seabed bathymetry and scouring:
- Pipeline exposure
- Identification of seabed scars:
- Spanning
- Damage (concrete coating and pipe)
- Cathodic protection
- Debris

A fundamental survey review was undertaken by MEL and our PSSR Competent Person looking at the past survey techniques and the data gathered with the objectives of:

- Identifying what integrity risk is being addressed by each dataset*
- Trending the results through past surveys and commenting on the effectiveness of the data to meet the objective*
- Logging the key data in a more accessible and discernible format (GIS) to enable rapid access in the event of an emergency and to facilitate future trending as more data is added over the asset life*

The fundamental survey review concluded that there was sufficient basis for reducing the frequency of monitoring and detailed recording of exposure and other debris. However, the frequency of span and seabed scar monitoring should remain and be supplemented by internal intelligent inspection to locate potential pipeline damage which can't be assessed by external (subsea survey) inspection methods due to poor visibility and poor access to the complete circumference of the pipeline. This recommendation was reviewed by the Risk Committee and presented and approved by the Board.

The outcome meant that the full scope survey could be moved out to four-yearly cycles on the condition that the intervening period is supplemented by a survey which will gather information on spanning as well as an internal survey which will assess possible damage, ie a full survey and lighter survey planned reciprocating every two years.

The full survey when compared to a lighter survey requires:

- A greater spread of inspection equipment*
- A large vessel with additional specialist contractors*
- A significantly longer inspection timeframe*

The combination of the above, and in particular the vastly reduced inspection timeframe and subsequent vessel cost associated with a lighter survey, drives significant material savings, while achieving the assessment of the integrity of the pipelines to reaffirm their fitness for continued operation.

Involving a submarine asset, it is appreciated that the above is not applicable to the West Transmission pipeline system, however we include by way of example to demonstrate the approach and methodology employed.

Key points:

- West Transmission asset management system will be that already in use through the MEL gas group.
- The key foundations of the asset management system are the PIMS and the computerised maintenance management system Maximo.
- The system is already in place and being used to drive cost efficiencies and productivity.

5.8 Emergency Response

Emergency procedure background

No new emergency response plan is required, but the existing emergency procedure for the high pressure transmission assets will need to be modified to take into account the new geographical area and pipeline characteristics.

The existing framework is made up of four emergency procedure documents:

- PTL/OP/004 Emergency Procedures Manual for the PTPS
- The NI Offsite Emergency Plan
- The Dumfries and Galloway Major Emergency Scheme
- The NI Emergency Communications Action Plan

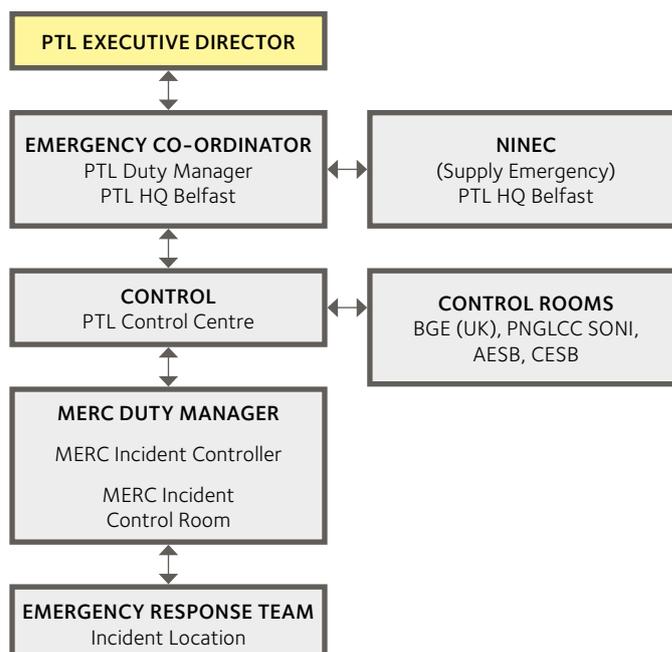
We describe the emergency plans that are applicable to the West Transmission pipeline system, which will be managed fully within the processes developed for PTL.

PTL/OP/004 Emergency Procedures Manual for the PTPS

This procedure sets out the internal arrangements for managing an incident and/or a gas supply emergency. It clearly defines roles and responsibilities for our emergency response. Our Chief Executive Officer has the overall responsibility for controlling and co-ordinating an emergency response. They may delegate this duty to the team of experienced Duty Managers on rota. This role is termed the Emergency Co-ordinator (EC). The MERC Duty Manager acts as the Incident Controller and manages the incident at site through an MERC emergency response team.

In the event of an actual or potential gas supply emergency, where supplies of gas are restricted to an extent that safe system operating pressures cannot be maintained and there is the possibility of supplies to the distribution markets being affected, the Northern Ireland Network Emergency Co-ordinator (NI-NEC) will be mobilised.

For an onshore incident, we explain the sources of an emergency report and specifically set out the dos and don'ts for any person reporting the incident. On receipt of any incident report the immediate reaction is to attend the incident. This one-hour response is made by the MERC emergency team who will safely approach the incident and act as the eyes and ears on the ground and report back to the MERC IC. A triangle of communication is established between the EC, the MERC IC and the Control Room Services and all communications and actions are logged by all. The communications structure is shown below.



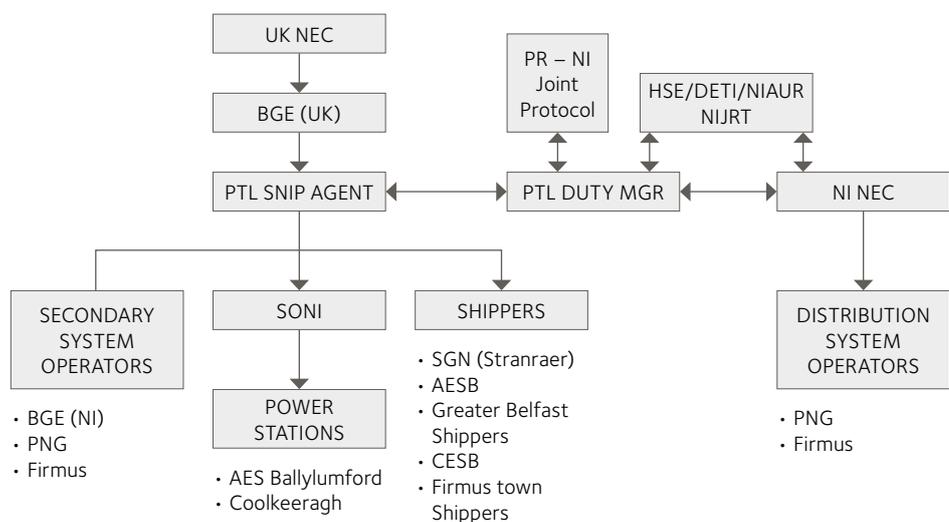
The priority for everyone involved in emergency response is to:

- Safeguard life – establish a predefined cordon and ensure people are evacuated safely
- Safeguard property – for example if the pipeline is ruptured and is on fire we would liaise with and request the NIFRS to dampen adjacent properties
- Assess the pipeline damage and effect a repair – note this is likely to require system reconfiguration in terms of pressures and flows

An incident depending on its severity is one of the catalysts that could trigger a gas supply emergency. The procedure sets out other potential scenarios that could trigger such emergency; for example a diplomatic incident between Russia and Ukraine could lead to gas shortage and insufficient supplies to the system.

The communication structure for a gas supply emergency is set out below.

Figure 6.6 – Communications for a Network Gas Supply Emergency



The process for managing a gas supply emergency is as follows:

1. Declaration of potential/actual gas supply emergency

Following notification or determination of a gas supply emergency the Control Room Services, following direction from the PTL EC, will issue a notification to all stakeholders declaring the potential or actual emergency. Such notification will contain as much information about the emergency trigger as is possible.

2. Reduction of power generation demand

If there is a supply v demand deficit, PTL as the primary transporter in NI, engages with SONI and presents a strategy to restore supply demand balance. SONI who are best placed to manage the electrical system may accept the proposed strategy or develop an alternative and re-dispatch accordingly. If SONI do not respond or re-dispatch in sufficient time we will issue an emergency step instruction direct to the generators to reduce demand and protect the primary system.

3. Reduction of distribution demand

In the event that the gas supply emergency is likely to affect distribution demand, the NINEC will have already been requested to mobilise to our office where all SCADA and commercial nomination information resides. Once NINEC is mobilised, we support NINEC in preparing and implementing a response strategy to manage any supply demand imbalance. This will involve working through the stages of the emergency including assessment, re-balancing, firm load shedding, network isolation and restoration.

The NI offsite emergency plan

The second leg of the framework that is applicable to West Transmission is the maintenance of an adequate Pipeline Emergency Plan (PEP) for dealing with the consequences of major emergencies and for providing protection to members of the public whose health and safety could be affected. The Offsite Emergency Plan is a statutory requirement under the Pipeline Safety Regulations.

The existing emergency plan would be extended to incorporate the West Transmission pipeline system.

Once an incident is triggered and declared, the PSNI will immediately put in motion a communications tree to alert all agencies as necessary. The MERC Emergency Response team at the incident location will assist the PSNI and NIFRS.

The NI Emergency Communications Action Plan

The NI gas industry stakeholders have developed and agreed an Emergency Communication Action Plan. The plan sets out the process for providing a press response to an incident and/or gas supply emergency. It provides guidance on the initial common press statement to be delivered by gas industry stakeholders and who will provide such delivery. It then sets out the arrangements for subsequent press statements. The principle behind the plan is that all NI gas industry stakeholders are delivering a common message throughout any incident or gas supply emergency.

5.8.1 Standards of performance and rationale

MEL gas companies operate a positive affirmative emergency response protocol for an incident, ie we ensure that an MERC Emergency Response team is deployed to site to provide eyes and ears back to the MERC IC and EC and technically to assist the offsite emergency services. The rationale of the positive affirmation protocol is that accurate incident information is obtained by a trained and competent operative and allows the EC to develop the emergency strategy based on reliable information.

In order to effect a positive response protocol, MEL has contractually agreed a one-hour response time with the MERC. The MERC shall at all times respond to requests made by MEL or others, for personnel to attend emergency, alarm, and security situations on the PTPS, in such a way that the time between receipt of the request and attendance at the specified location shall not exceed one hour. This response is termed first level response.

First level response is monitored through the MERC and Control Room Services contracts. We have very infrequent emergency response alarms, however the one-hour MERC response applies not just to emergency alarms but any applicable alarms generated by the SCADA system. For example, if the SCADA alarms as a result of boiler fault that requires site attendance, PTL monitor the time from receipt of SCADA alarm to when the MERC arrive on site.

5.8.2 Explain emergency procedures prioritised for development during mobilisation stage (PREs, emergency incidents, supply constraint etc)

Above we describe the emergency procedures that shall apply to the West Transmission pipeline system. Each procedure will be reviewed during the mobilisation period and amended where necessary to incorporate the West Transmission pipeline system. The changes required are set out briefly on next page;

PTL/OP/004 Emergency Procedures Manual for the PTPS

Generally the Emergency Procedures Manual is a generic document whose principles in the main are applicable to all pipeline systems owned and operated by MEL group. For example, the initial action by the recipient of any emergency alert shall remain the same irrespective of the number of pipeline systems or their location.

The core requirement is to ensure that MEL, the MERC and the Control Room Services staff are fully trained and competent in the physical attributes of the new West Transmission pipeline system.

We do note a few minor changes required to the procedure such as an update to the interface with emergency stakeholders. The NINEC safety case and emergency co-ordination arrangements may also require minor adjustments and as the existing emergency procedures dovetail with the NINEC procedure, the existing document may need changed as a result. The addition of new AGI meters will also need to be added to the IT systems employed by MEL to manage emergencies alongside extracting any new shipper information from GTMBS where applicable. However, such IT system amendment is not expected to be material.

The NI offsite emergency plan

As with the MEL internal procedures, the offsite plan is generic in terms of incident response and the core amendment will apply to pipeline system details and key agency responsibilities. For the latter, the change relates to the wider range of agencies involved opposed to what that agency will do during an emergency incident. For example it is noted that the West Transmission pipeline system will extend through PSNI districts F and G and although the PSNI response will be common, such additional districts need to be aware of and agree the offsite plan requirements.

The NI emergency communications action plan

The key requirement is to develop and agree a press statement specific to the West Transmission pipeline system. The statement shall be based on those already developed for the existing NI pipeline systems. The plan will need to be amended to include any new communication contact details.

5.8.3 Explain how resource arrangements align with progressive development of business

As no new resources are required at the MEL level all parts of the emergency plan will be operative and in effect from a very early stage. The construction programme will include requirements for emergency response and the mobilisation changes in the MERC contract described in section 3 will include a ramp up and training regime to align to gas flow and customer growth.

5.8.4 Compliance with single gas emergency number and interaction with other parties within the utility industry

The current NI gas emergency number arrangements have been agreed by all NI gas operators for transmission and distribution. The contract for the operation and response protocols resides with the distribution system. We foresee this arrangement continuing and have agreed this position with our JV partner. If an emergency alert is received by the service provider, they will note the postcode of the reported incident alongside the incident details.

Such information is passed to the Distribution out of hours Duty Manager and first line response teams and they will determine whether the emergency alert relates to the distribution system or transmission system or both. If the postcode relates to part of the district with both transmission and distribution assets, the distribution first line response will be mobilised. In addition the transmission control will be notified and the MERC response teams placed on alert for a pending mobilisation to site if required.

SGN plans to use the 0800 002 001 emergency phone number currently utilised in NI. However, we will explore alternative arrangements for providing this service in collaboration with other interested parties. SGN recently initiated and led a similar piece of work in the UK to assess the practicality and economics of utilising its own emergency call number, as an alternative to procuring the service from National Grid. Further detail is given in section 8.4.

5.8.5 Arrangements for personnel training and simulation exercises

Section 2.3 describes the training and competency arrangements for MEL group, the MERC and the Control Room Services, ie the core emergency response team. Emergency response forms part of the core competency for all emergency response team personnel including the MEL staff competency system and the MERC and Control Room Services Competency Assurance Schemes.

We have recent experience of incorporating a material change into the emergency procedure and the training and competency process changes required by the change.

Case Study: example of a major change to emergency procedures

The Emergency Procedure document was recently reviewed and amended to develop the subsea emergency response protocol and to reference the change in control room from Bord Gais Networks (BGN), Cork to SGN, Horley. Following review, amendment and management sign off of the emergency procedure a training plan was developed. The plan identified the various groups of personnel required to be trained, ie the PTL Duty Managers, the MERC Duty Managers and Emergency Response teams and the Control Room Services Control room staff.

A core training pack was developed including training slides and questionnaire to primarily cover the changes to the emergency procedures and also to serve as a refresher of the general emergency procedure requirements. It was identified that each type of personnel has a varied role when delivering their part of the emergency response and therefore the core training pack was subsequently individualised for the audience intended.

The training was delivered over a number of pre-planned meetings for all the emergency response personnel involved, including interactive question and answer sessions. Each individual participant completed their specifically tailored questionnaire which was assessed and then audited by PTL to ensure a comprehensive level of competence.

After any of our emergency procedures have been materially amended, we plan and execute an emergency exercise.

The above training plan process would be employed after any changes to the suite of MEL emergency procedures to incorporate the West Transmission pipeline system, ie in summary a training plan would be developed to:

- Identify the key changes following procedure amendment
- Identify the individual groups requiring training and whether they require specific training tailored to their role
- Develop the tailored training packs (note the above describes the use of slides and questionnaires, however this could take another format eg IT application practicals)
- Plan delivery of training by competent personnel
- Outline the assessments and any particular audit
- Participate in simulation exercise

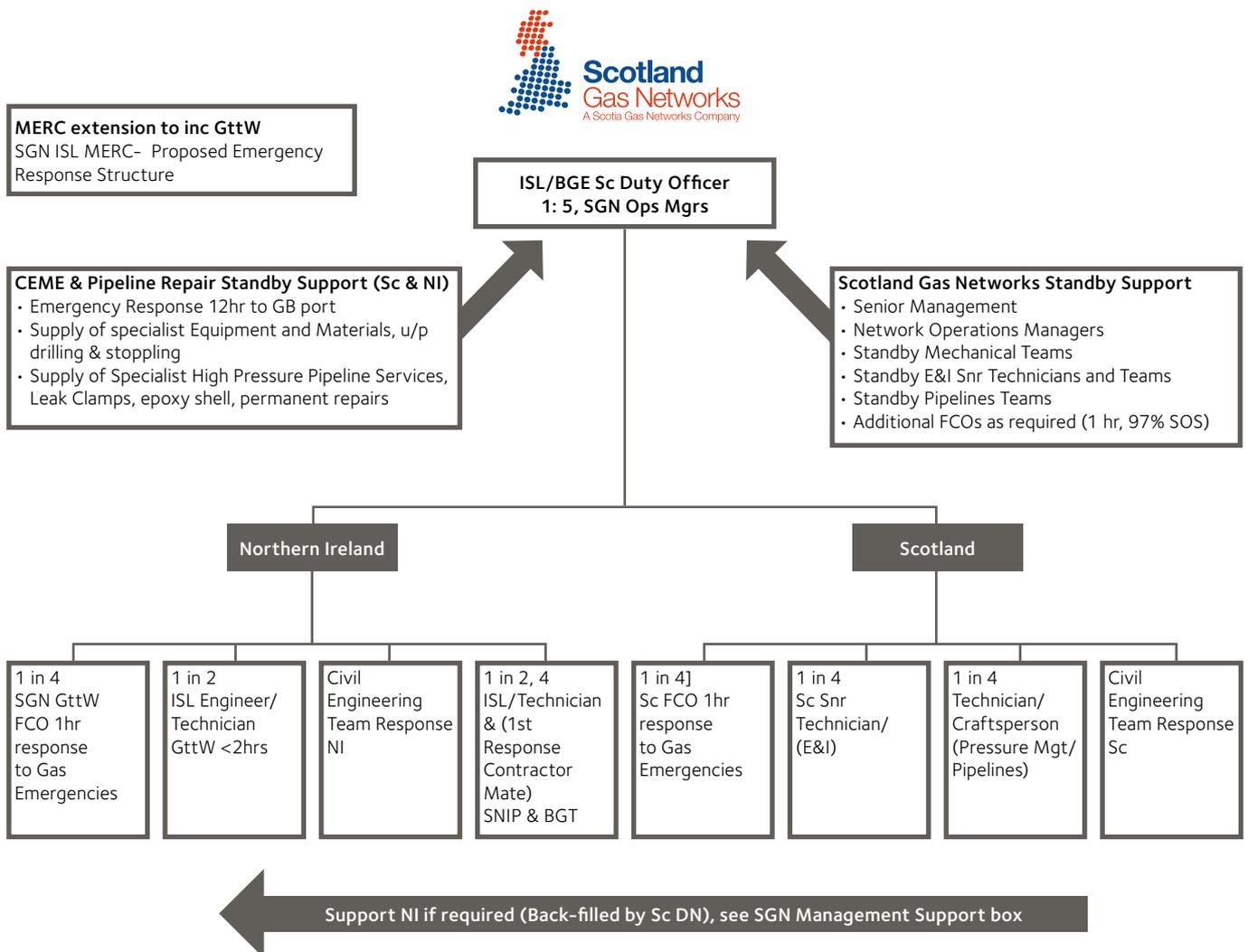
As part of our gas safety case arrangements, PTL and its emergency response team undertake a schedule of simulation exercises as set out below.

Test	Frequency
Review of the procedures to ensure that they are up to date and reflect the current condition of the pipeline and the Pipeline Management System and all contacts are correct.	Every 12 months
Desk top exercise.	Every 2 years
Full test comprising an on site response to a simulated pipeline event.	Every 3 years

For gas supply emergency exercises the frequency reduces to at least one exercise per year. Going forward such exercises would be inclusive of the West Transmission pipeline system.

We already have a schedule for the PTL NI assets in respect of NI offsite plan. It is recognised that such schedule may have to be enhanced to incorporate testing of the existing assets and the West Transmission pipeline system separately. This is due to the different council planning groups, PSNI districts etc that may request specific testing in their respective areas. MEL will work with the HSE (NI) and emergency stakeholders to develop the appropriate schedule of simulation exercises.

The following diagram illustrates the support network in place in SGN to respond to emergency situations in the NI network and its supplying Scotland infrastructure.



Key points:

- The entire framework of emergency arrangements already exists and the West Transmission will be a change to the existing arrangements rather than a completely new set.
- We have recent practical experience of making such a change and a track record of testing.
- We have existing relationships with all the relevant parties and have run multiple exercises for the emergency services explaining the difference between a transmission incident and response to a distribution incident and response.
- The training regime already covers all the asset owner aspects of emergencies, as opposed to the NINEC processes which are more downstream focused.

SNX

Chapter Six

Procurement Process

- 6.1 Principles
- 6.2 Materials
- 6.3 Construction, Maintenance and
Specialist services

6.1 Principles

6.1.1 Accountability for development and management of procurement processes in the organisation structure

The process for the development of our procurement policy is as detailed in section 4.3 with ultimate responsibility lying with the board. As part of the contractual arrangements with SGN a number of key procurement activities are carried out by SGN. Its accountability structure is as outlined below:

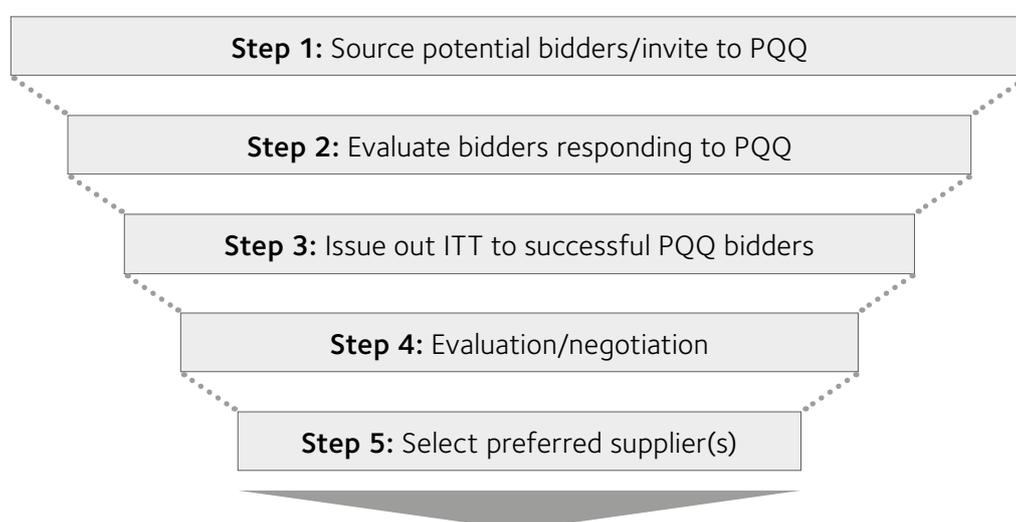
Figure 6.1.1 – Accountability within SGN for procurement on behalf of the licensee

Accountability	<ul style="list-style-type: none"> • Process and Compliance is a major building block of our Operating Model. • The Procurement Director has ultimate accountability to the Board for Procurement process governance and compliance.
Development	<ul style="list-style-type: none"> • Our Procurement Director commissions the Head of Performance & Compliance with developing Procurement policies and procedures which govern all procurement activities and binds every individual within our business • All policies and procedures are captured within our Procurement manual • These policy and procedures set out our responsibilities under the EU procurement regulations, as well as procurement best practices where EU procurement thresholds have not been triggered or are not applicable. • These procurement governance principles are based on industry best practice.
Management	<ul style="list-style-type: none"> • The Heads of Procurement and their procurement teams are charged with managing the implementation of the policy and procedures • The procurement teams carry out all procurement activities in full compliance with the Procurement Manual and ensure that the business remains compliant in all procurement activities where procurement is delegated to the business. • Key Performance Indicators are measured and regular audits are carried out to ensure compliance and uniformity of implementation.

6.1.2 Proposed policies and procedures to ensure compliance with EU

Our internal Procurement policy has been developed in line with statutory requirements to ensure that all procurement activities are compliant with the Utilities Contracts Regulations 2006 and the Utilities Contract Regulations Amendments 2009. We keep abreast of any new EU requirements with regular updates from our solicitors and specialist procurement consultants.

The procurement process we intend to follow to ensure the implementation of robust procedures in line with EU regulations and best practices is illustrated below:



Supplier short listing

- The Pre qualification questionnaire is sent to all bidders who meet the selection criteria
- The PQQ is used to assess the technical capability of each bidder as well as other key considerations such as Health and Safety matters, financial considerations and Environmental awareness.
- Invitation To Tender (ITT) documentations are only issued to bidders who have been successful at PQQ stage.
- The ITT contains the award criteria which is used to assess capabilities of bidders to deliver products/services in line with the actual specifications under the prospective contract.
- Commercial submissions are only considered if the bidder is adjudged to be technically competent.
- Final decision is made on the basis of Most Economically Advantageous Tender (MEAT)

The strategy is to select the most competent contractors on the basis of a MEAT criteria.

Whether the purchase relates to the regulated or deregulated business and the estimated value of the purchase will dictate whether the event will be governed by EU legislation.

Activity Area	Activity Area	Method	Responsibilities
Do EU Rules Apply?	<ul style="list-style-type: none"> In order to have a competitive environment, a sufficient number of tenderers need to be involved. Whether the purchase relates to the regulated or deregulated business and the estimated value of the purchase will dictate whether the event will be governed by EU legislation. There may be occasions where a limited number of tenderers have been identified, or where single source tender action may be adopted. This is usually because the number of tenderers will be limited by the class or nature of the contract (eg special skills, previous work on project, etc). The regulations will apply to all spend over £348k (services/goods), or £4.3m (works). 	<ul style="list-style-type: none"> The preferred method of selecting tenderers is from the Achilles Utilities Vendor Database (UVDB), which is the recognised Approved Vendor List (AVL) for the Company. Achilles carries out an ongoing process of updating the subscribing suppliers information held in the UVDB. Care is taken to select suppliers that are able to deliver the required goods/services while at the same time, encouraging competition. Using the tender assessment criteria established, each tender is evaluated, scored and ranked accordingly. Technical and commercial compliance and the set evaluation criteria are paramount in this process. It should be clear who the front runner(s) is/are and further negotiations/clarifications may continue, if appropriate, with a short-list of tenderers. 	<ul style="list-style-type: none"> The Procurement Representative will assess the application of EU legislation. Agreement will be reached regarding the method of filtering and/or pre-qualification to be used if the number of identified suppliers is to be reduced. The nominated Procurement Representative and the Project Manager will decide on the list of potential suitable tenderers.
Pre-Qual.	<ul style="list-style-type: none"> A supplier pre-qualification exercise will need to be carried out where it is important to ascertain critical quality, commercial, legal or financial requirements before entering into the tendering process or in cases where the number of potential suppliers needs to be reduced to a manageable number. It is important that suppliers are not invited to tender if they do not satisfy the minimum criteria determined by the company. 	<ul style="list-style-type: none"> Procurement develops an assessment scoring model in advance of carrying out the pre-qualification. The pre-qualification exercise is used to assess the capability of the tenderers and identify the most capable/ invite the best candidates to tender. The following is a list of typical criteria that could be used in order to determine the tender list:- Successful track record of carrying out similar work, technical capability, resources capability, financial robustness (eg company accounts and evidence of financial status) etc 	<ul style="list-style-type: none"> The Procurement Representative and the Project Manager will decide on what criteria and scoring mechanism is to be used to evaluate the suitability of the tenderers in order to determine the final list to be invited to tender for the contract.
ITT Process	<ul style="list-style-type: none"> The tender enquiry document will include all the relevant documents including: Terms and Conditions of Contract, Schedules (eg "Specification", technical requirements, programme of work, drawings, pricing schedule, etc), instructions to tenderers, our health & safety policies, including any on-site H&S requirements, social responsibility, environmental impact etc The criteria to be used, the weightings to be applied and the method of scoring will be agreed and set out in a tender assessment worksheet prior to the ITTs being issued. The tender assessment criteria will be project specific. In general, some or all of the following criteria may be used, not necessarily listed in order of importance: tender price, technical expertise and capability, programme of work, available resources, quality management system etc. 	<ul style="list-style-type: none"> The tender enquiry document will include all the relevant documents including: Terms and Conditions of Contract, Schedules (eg "Specification", technical requirements, programme of work, drawings, pricing schedule, etc), instructions to tenderers, our health & safety policies, including any on-site H&S requirements, social responsibility, environmental impact etc The criteria to be used, the weightings to be applied and the method of scoring will be agreed and set out in a tender assessment worksheet prior to the ITTs being issued. The tender assessment criteria will be project specific. In general, some or all of the following criteria may be used, not necessarily listed in order of importance: tender price, technical expertise and capability, programme of work, available resources, quality management system etc. 	<ul style="list-style-type: none"> The Procurement Representative will gather together all of the required information to be included in the tender enquiry document. The Project Manager should provide the required technical schedules and other relevant contract/ project information for inclusion in the tender enquiry document. The Procurement Representative will prepare and issue the formal ITT, which shall include all of the appropriate documents and schedules. The Procurement Representative and the Project Manager, together with the tender evaluation team members (where applicable), should decide on what assessment criteria is to be used and prepare the assessment model for the particular contract prior to issuing the ITT. Once evaluation has been completed, Alcatel letters are sent out in compliance with the Alcatel rules

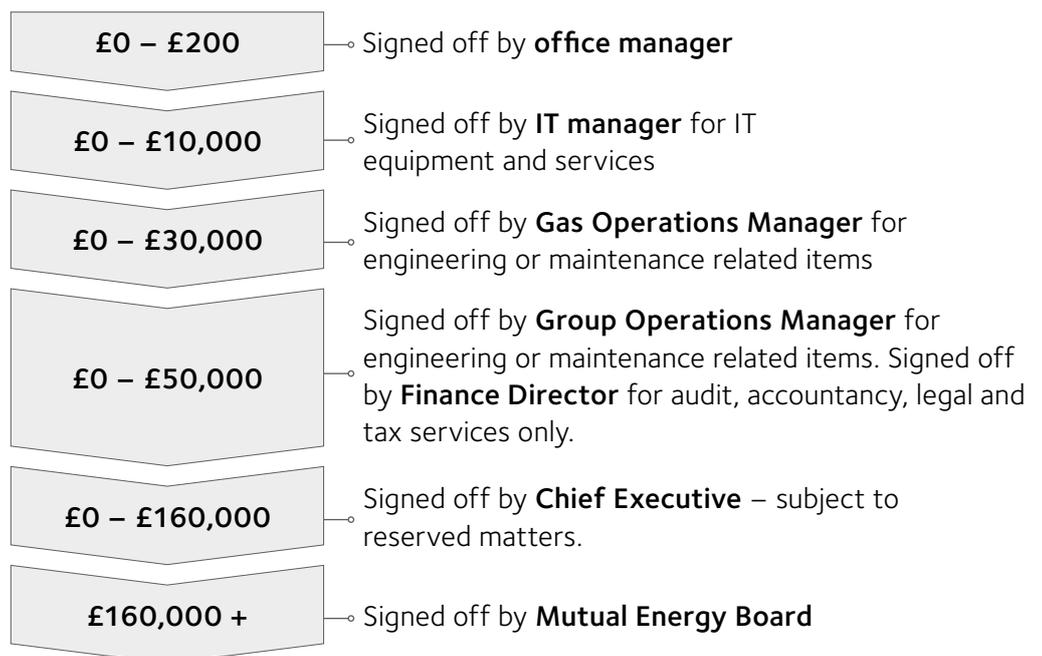
6.1.3 Processes, authority levels and financial controls

Our procurement policy provides required practice that governs the process of acquiring goods and services. It ensures that all contracts exceeding £5,000 are tendered to at least three suppliers. Contract holders establish objective criteria for the pre-selection of contractors and suppliers and evaluation of offers of contract. Suppliers and contractors are expected to secure work on the basis of quality, timeliness, cost and HSE performance of their products and services. Pre-qualification is formally documented for all contracts over £0.25m.

Bid evaluation criteria and methodology is agreed before tenders are opened and, wherever possible, prior to ITTs being issued. ITTs specify the format in which bids are to be submitted. Where a procurement consultant is employed the consultant and the contract holder must both be in agreement before any contract is awarded. There is no deviation from the agreed criteria without the agreement from the Chief Executive.

A sealed bid process is used for contracts that have been advertised in the European Journal. The opening of the bids must be witnessed by at least two people and witnesses must sign the bids with a date and time.

Contractual commitments are only signed by MEL staff with the appropriate authority, as follows:



All key steps in our procurement process are formalised and signed off by management to ensure that all actions meet business requirements, are in compliance with legislation and partner requirements and that an appropriate audit trail of decisions is maintained.

For large complex contracts over £0.25m a Contract Management Plan is drafted which will provide a clear statement of contract management responsibilities. Key Performance Indicators (KPIs) are incorporated in all large contracts and used as a basis for ensuring key performance issues are identified and monitored. Periodic meetings are held with all key suppliers/contractors to review performance against key contracts/KPIs to assess wider opportunities for maximising their contribution to MEL.

Contract variations and amendments are strictly controlled to ensure that scope extension does not occur in an unmanaged fashion. MEL ensures that high document standards are adhered to at all times with bid lists, ITT's, quotations/ tenders and bid evaluations being treated as confidential and kept securely at all times. Signed originals of all major contracts and agreements are kept in a safe and secure location. A complete audit trail of all documentation is maintained.

HSSE issues are always considered as part of all procurement exercises and any issues are addressed in accordance with MEL's HSSE Policy. Where appropriate, HSSE criteria are used in selecting MEL suppliers and contractors either as a requirement for pre-qualification or as part of the formal bid evaluation process.

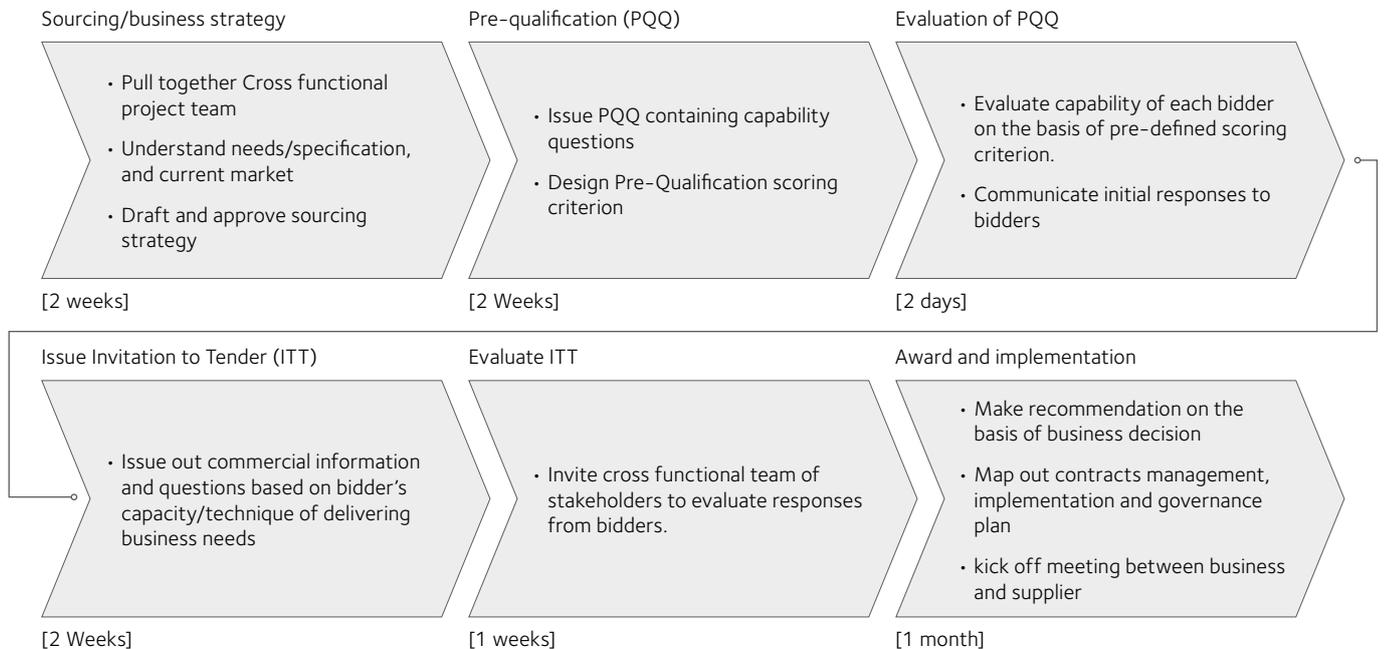
All contracts and procurement activity is conducted with integrity and ethical behaviour consistent with the MEL code of ethics and business principals. We also encourage our suppliers to adopt a similar position to ourselves on Health, Safety and the environment, human resources, personal conduct and communication.

As part of the JV agreement SGN will be managing the procurement of the main construction contracts. SGN's procurement process is of key importance and is explained below. Structured financial authority levels and controls are in place and engrained within the SGN business.



6.1.4 Competitive tendering arrangements and timetable for these

Our tender timetable allows for early engagement with our stakeholders in order to ensure efficient planning, execution and delivery of all tender activity in readiness to place Contracts on time.



The timetable for tendering is outlined in section 3.1.

As the need for an ongoing requirement is established the intention to tender for a framework is advertised on the Achilles database and potential suppliers are invited to declare any interest. A pre-qualification questionnaire is then issued to all interested companies to determine whether they are suitable and have the capability to undertake the work stream identified. The companies successful through the PQQ process are then invited to tender for the framework. The framework will establish the terms of contract and allow for insurances, health, safety and environmental policies and procedures, QA etc to be checked. Following evaluation a number of companies will be appointed to the framework agreement and can then be called off to supply goods or services either as a single source or through a mini-tendered process.

The frameworks SGN currently has in place relevant to the project are as below:

- Design
- Technical services
- Project services
- Land Agents services
- Inspection services
- CDM and safety services
- Environmental services
- Civil and mechanical works
- E&I design and installation
- Supply of PE pipe and materials
- Supply of steel pipe and fittings
- Design and supply of high and low pressure regulators
- Boiler supply and maintenance

In order to move the project forward quickly, it is intended that some of the above framework agreements be used to source some of the people required immediately for design, technical and project services.

The aerial survey will be sourced via an existing contract for expediency and also to ensure the quality and relevance of the images provided.

The pipe and materials will be competitively tendered to drive price and delivery times down. The third-party inspection will be employed via the inspection framework. In order to maximise consistency across the network, it is envisaged the AGI skids will be mini-tendered off the regulator supply framework.

It is recognised that it would be favourable to employ local Land Agents so it is felt that this service would be better tendered locally with a Land Agent appointed per section of pipeline. The Land Agents will produce a schedule of interests listing all land owners and tenants who will potentially be affected by the works. They will then contact each party individually, explain the works and negotiate the areas of land required for pipe storage and site accommodation and all wayleaves, accesses and entry agreements.

In conjunction with the Land Agents, once the site works start it is intended to employ local Agricultural Liaison Officers (ALO) via the Inspection framework to monitor the ground works on site and assist the Land Agents.

Due to the nature and scale of the works, the environmental works will be let as a site-specific tendered contract. These works would encompass all survey works for ecology, archaeology and geology. Consultations with statutory authorities, public bodies and any interested parties will form part of the works in developing the Environmental Impact Assessment.

The new sites and monitoring for the pipelines are intended to be integrated into the existing systems currently maintained by SGN under contract to MEL. In order to ensure consistency and compatibility with the existing systems, the design, installation and commissioning for the new SCADA and C&I controls will be undertaken via the existing E&I framework agreement.

Live gas operations for commissioning and undertaking the fingerprint pigging run will be done by suitably competent gas engineers registered for these activities on the SGN competent person database and overseen by an Authorising Engineer registered on the SGN database.

Initial design, survey and planning works will be undertaken from an office rented locally by SGN suitable for accommodating the Routing Engineers, Environmental Consultants and project staff required to plan the pipelines and associated AGIs.

Looking specifically at the construction contracts to be awarded we would expect the following mix of contracts:

Activity	Cost	Tender or Source
Materials	Linepipe Material/weld testing Pipe storage and site lease AGI materials MTO design Third party inspection	Competitive tender or existing framework options Inspection framework Negotiated by Land Agent Tender off AGI supply framework Design framework Inspection framework
Construction	Fixed price scope Re-measurable work Schedule of day works Defined provisional sums: Additional works Commission pipeline with external parties Accommodation, amenity and restoration works Planting, environmental and landscape works Undefined provisional sums: Pre-construction archaeology Legal and Insurances	Project services framework (QS) Competitive tender (MWC) Under MWC Under MWC Under MWC Under MWC Competitive tender or existing framework options Local Council nominated Internal existing resource
Wayleaves and land acquisition	Standard wayleaves Development wayleaves Necessary wayleaves Public bodies AGI sites CP wayleaves Crop loss and disturbance payments Route investigation DETI oral hearings Licence holder internal costs ALOs Public Relations	Negotiated by Land Agent Negotiated by Land Agent Negotiated by Land Agent Tendered Environment contract Negotiated by Land Agent Negotiated by Land Agent Negotiated by Land Agent Negotiated by Land Agent Negotiated by Land Agent Tendered Environment contract Internal existing resource Inspection framework Tendered Environment contract
Site Investigations	Aerial photography Topographical surveys Ground investigations Noise and Emissions studies Safety Evaluation Landowner identification Aerial video	Existing contract Design framework Tendered Environment contract Tendered Environment contract CDM and Safety framework Tendered Land Agent contract or existing framework options Existing contract
SCADA and C&I	AGIs Pipeline SCADA C&I design C&I commissioning Others	E&I framework E&I framework E&I framework E&I framework E&I framework E&I framework
Commissioning	Gas and initial live gas operations Intelligent pigging	Existing Qualified SGN personnel Existing contract

One key advantage in respect of timetable is the ability to avail of a range of already tendered framework contracts.

SGN has existing framework contracts for the following scopes of work:

- Environmental Impact Assessment
- Land Agent Services
- Materials suppliers, including linepipe
- Major works contractor

SGN propose to let contracts to companies on an individual or where possible a combined pipeline section basis.

6.2 Materials

The majority of materials will be secured within existing framework agreements. Where there is a need for new contracts to be put in place, best practice procurement principles will be adopted in line with the EU regulatory procedures.

List of Key Materials – Distribution

- PE Pipe 25mm to 355mm (4bar rated)
- PE Top Tees
- PE Reducers
- PE Bends
- PETees
- PE Flow Retractors
- 555 Valves
- PE to Metal transitional fittings
- Black Bends
- Grey Sleeves
- Meter Boxes
- MP/LP Meter Controls
- Service MP Governor rigs
- U6 Credit Meters
- U6 Pay as you go meters
- U6 Token meters
- U6 Electronic Meters
- Meter Governors
- PRS

List of Key Materials – Transmission

- Steel Pipes
- Steel Fittings
- Steel Valves
- Steel Tees
- Bends
- HP to IP regulator skid units and kiosks
- Environmental Consultancy services
- Mains works contracts

Current Contract situation

- SGN has strategic long-term frameworks for the supply of all these material products which can be extremely advantageous as we have already taken steps to shorten lead times needed to secure these products on site.
- These products are being sourced to a fit for purpose quality standard, through financially robust suppliers operating within very structured and efficient supply chains.
- Where there is a need to source other materials which may be needed, we will proactively engage with our customers to ensure we thoroughly understand their needs, and will plan our procurement activities in line with the project delivery times so as to avoid costly delays during the mobilisation stage.
- All existing contracts will be utilised and exploited to provide best value.

Current Contract situation

- SGN currently has strategic framework contracts with key steel pipe and fittings suppliers. We will be using these relationships to extract best value.
- For all materials/services required, we will be adopting a procurement approach which will be in line with EU procurement regulations whilst ensuring that these contracts are speedily put in place with reliable and reputable contractors.

Stock holding arrangements proposed

We maintain a dedicated stock area for all spares inventory including equipment and sundries in relation to the maintenance, safety and first aid requirements for all MEL gas assets within NI. This store is a secure cabin located within the Knocknagoney AGI. The equipment held here is specific to assets in NI. All spares required for the remaining sites located in Scotland are held as part of the Scotland-based maintenance teams general inventory which will be an accumulation of spares held at Provan Gas Works in Glasgow, along with more general items carried by each maintenance team within their vehicles.

In terms of spares equipment required we maintain a spares inventory register which details the stock at the Knocknagoney stores. This register details quantities of spares held and threshold values for each item which will trigger re-ordering when nearing a minimum required stock level. PTL also maintains a stock of PTL owned emergency pipe. The MERC is responsible for ensuring that the emergency pipe (procured at construction and currently stored in Ambergate) is suitably stored and sufficiently certificated that it could be mobilised to an incident, either in NI or Scotland, and deemed fit for purpose for installation.

Although not classified as PTL stock, we have access to a wide range of emergency repair stock. This emergency preparedness is provided by the specialist repair contractor PMC through the MERC. PMC provides a broad range of highly specialised pipeline repair techniques, tools, equipment and materials including welders, welding procedures, NDT inspection and mechanical damage repairs to the UK gas industry and beyond.

PMC has based its material stock on the needs of its existing customers, which allows all PMC customers to benefit from an aggregated stock. A sample of emergency stock held is listed below.

- Pre tested pipe stock
- Transition pieces
- Bends
- HP sealing elements
- F4 split tees
- Epoxy sleeves
- Plidco clamps
- <7bar stock
- LDFS epoxy tee stock
- LDFS epoxy tee branch seal stock

6.3 Construction, maintenance and specialist services

6.3.1 Proposals for services contracts development

We envisage that our current services contracts would be extended where efficient to do so. Service contracts will be awarded in a number of different ways depending on procurement legislation practices. As part of the initial joint venture a number of services will be provided by SGN for West Transmission on terms consistent with the contracts on our existing assets. As the existing contracts expire we intend to consolidate each set of discrete services into individual group contracts to be procured through the EU competitive procurement process. This allows us to continue to take on board any learning points from previous contracts and employ our experience in the electricity market to ensure that our services contracts are continually improving.

6.3.2 Proposals for contracts award during mobilisation

Contract award during mobilisation will be governed by procurement law requirements. Where the services are not provided by our JV partner and where the extension of the contract from our existing assets is a material change in scope, the contract will be retendered. Non-material contracts will be extended in line with existing extension provisions and on the existing terms. See section 3.1.

Key Points

- Two interlocking utility procurement processes will be key to the West Transmission project: those of SGN and Mutual Energy.
- Both processes are already in place and running for a prolonged period of time.
- The SGN buying power can be utilised to maximise value for the NI consumer.
- Existing framework contracts from both SGN and Mutual Energy can be utilised to save time and cost.
- After the asset is constructed there will be the opportunity to consolidate contracts with existing NI assets and competitively tender the work.

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Chapter Seven

Business Development

7.1 System development and operation

7.2 Public Relations



7.1 System development and operation

A distinct advantage of the linked bid structure described in section 5 is the ability to communicate with the Distribution System Operator (DSO) throughout each phase of the project. There is mutual recognition that key decisions need to be agreed early in the design and planning phases.

A key task will be the development of a communication strategy in order to keep the DSO, gas suppliers and key stakeholders fully aware of gas delivery dates to each of the seven towns being supplied.

Maximising gas flow as early as possible is a key objective for both MEL and SGN. The proposed transmission system roll out programme has been developed in collaboration with SGN after due consideration of planning constraints, best engineering practice and the ability to roll out the distribution network to key customer demands.

Wherever practical the bulk distribution mains associated with the gas distribution system will be constructed in conjunction with the transmission system to minimise the delay in connecting key loads in each of the seven towns as gas becomes available.

NI gas capacity demands for the next 10 years are published by the NIAUR in the NI Gas Capacity Report. The 2013/14 NI Gas capacity statement reports the forecast capacity requirement for Gas to West Transmission until 2023. The report suggests capacity constraints as a result of the minimum acceptable inlet pressure at supply points on the North West Transmission and South North pipelines in 2017/18 and a demand greater than the current agreed capacity available to MEL in 2018/19.

A contractual relationship exists between MEL and the current DSO's through their assignment to the network code. We envisage the same requirements will apply to the network code deployed for West Transmission.

Gas capacity for non-power generation demand is booked by the DSO's following market consultation as set out in their respective licences.

We note the gas transmission system design presented by FMA is based on a minimum design pressure of 35barg. In order to maximise available capacity to the DSO we would propose reducing the minimum design inlet pressure to 15barg in line with our existing transmission assets.

The JV will regularly hold meetings to share milestones and plans as part of an agreed two-way process and as the NI network develops and matures.

7.2 Public Relations

General Approach by Mutual Energy

Our proposals in relation to Public Relations (PR) in this section of the operating plan, should be read in conjunction with our earlier proposals in section 3.6 which outline in some detail our communications, stakeholder management and PR activities and rationales for the pre-construction and construction phases of the HP pipeline project. As this approach in section 3.6 was appropriate to the mobilisation, it is logical that in Development, section 7.2 should look forward at PR/communications activities in the post-construction phase of the project.

It is also worth noting again that many of the activities set out in the table below are activities which MEL is already engaged in to a lesser or greater extent in its current businesses, as part of a clear existing communications strategy for the group.

Stakeholder	Message and rationale	communications channels
Statutory Bodies		
Department of Enterprise Trade and Investment (DETI)	Ongoing engagement with the key Government department responsible for energy policy.	Continue to meet and provide detailed briefing on project plans.
Northern Ireland Utility Regulator (NIAUR)	Maintain engagement with the regulatory authority responsible for regulating the West Transmission licensed concessions.	Continue to provide detailed briefing on MEL plans for the project. Engage positively with NIAUR on all aspects of proposed regulation impacting on the West Transmission project. Keep NIAUR informed by meetings and with briefing, of all relevant developments and issues arising in a wider interjurisdictional regulatory context.
European Commission DG Energy	Brief DG Energy on the West Transmission project so that they understand how it contributes to delivery of EU energy policy in UK/Ireland and how it fits with other MEL activities and projects of common interest	Keep briefed.
Department for Regional Development (DRD)	Engage with DRD in relation to regional development context of West Transmission and implications for infrastructure including roads.	Keep briefed. Meet as necessary.

Department of the Environment (DOE) Planning Service	Engage with planning authorities to ascertain broad planning requirements are being met.	Maintain dialogue with Planning Service ensuring understanding of detailed aspects and conditions of permission which extend beyond commissioning of the pipeline.
DOE NI Environment Agency (NIEA)	Consult with NIEA in relation to all of the environmental impacts arising in the context of the West Transmission project.	Maintain continuous dialogue with NIEA. Carry out a compliance review to ensure that all agreed mitigations have been carried out and that consent conditions have been met.
Department of Agriculture and Rural Development (DARD)	Consult with DARD on agricultural and rural development issues (including impacts on farmers) which are likely to arise in relation to West Transmission.	Maintain ongoing dialogue and provide briefing as required.
Irish Department of Communications, Energy and Natural Resources (DCENR)	MEL maintains a line of communication with the Irish energy authorities in Dublin.	Continue briefing as required.
Commission for Energy Regulation (CER)	Commission for Energy Regulation (CER) has a regulatory role in relation to other parts of MEL's business. It is therefore important that Irish regulatory authorities are briefed on MEL activities, including West Transmission.	Meet and provide briefing as required.
NI Consumer Council (CCNI)	It is important to familiarise NI's most important consumer body with the project and its benefits.	Meet face to face to deal with any consumer issues that arise.
Health and Safety Executive NI (HSENI)	There should be continuous engagement with HSENI to obtain its advice and to outline to them the plans and procedures that will be put in place to ensure safety.	Agree to keep HSENI briefed throughout the commissioning/go-live phase of the project.
Other operating stakeholders		
Other utilities, NIE, NI Water, BT etc.	It is important that the physical work planned in order to deliver West Transmission is co-ordinated with the plans of other utilities.	Maintain dialogue established in earlier phases.
Internal MEL stakeholders (members, bondholders, suppliers and contractors)	Mutual Energy brings a low cost model to bear on infrastructure provision. In order to secure this model for West Transmission, including low cost of capital, existing financiers, suppliers and contractors must understand the new project.	Meetings will continue to be held and relevant briefing will be provided to all of MEL's main internal stakeholders.
MEL operating partners System Operator, NI (SONI), Single Electricity Market Operator(SEMO)/EirGrid, Bord Gais Eireann (BGE)/Gaslink, Single Electricity Market (SEM) committee etc	MEL's assets operate in an increasingly all-island market. It is important that all of the relevant operators are adequately briefed on MEL activities, including new projects such as West Transmission.	Continue normal engagement and briefing. These stakeholders can be kept up to speed on the project via presentations/participation in energy sector events, etc MEL is already a frequent contributor to such events. A new brochure will be prepared
Individuals/communities		
Landowners along pipeline route	Perhaps the most important project stakeholders for a gas pipeline project are those landowners who are impacted directly by the pipeline route and related infrastructure, AGIs etc It is vitally important that they are not forgotten about just after the pipeline has been built. They continue to be important stakeholders.	Continue engagement following the construction phase. All landowners to be engaged individually face to face by project officers following commissioning. All issues re reinstatement, lost income etc to be resolved directly.
Farmers/Ulster Farmers' Union	It is important to engage well with the Ulster Farmers' Union (UFU) and others who can advocate on behalf of farmers generally and who can also provide very constructive assistance as an intermediary.	Dialogue to be maintained with meetings with farmers groups and UFU. Briefing to be prepared outlining any future intrusions likely to arise re maintenance etc.

General public	<p>There is a general imperative to raise public awareness of the benefits of extending the natural gas network into the West Transmission of NI.</p> <p>A secondary message is to set out how the mutual model benefits all energy consumers.</p>	<p>Communications with the wider public after the construction phase will continue to be primarily via the media (see below). MEL will run a professional social media presence for the project.</p>
Public representatives		
Local politicians/councillors	<p>In addition to engaging with those citizens immediately impacted by the West Transmission project, and citizens generally, it is vitally important to maintain a high quality dialogue with their public representatives.</p> <p>Local councillors will be intensely interested in how the project impacts their local area.</p>	<p>Meetings to continue as necessary with individual councillors and groups of councillors post construction.</p> <p>Further presentations to councils as required.</p>
MEPs, MPs and MLAs	<p>As above, senior politicians can be very influential in shaping public understanding of the project.</p>	<p>Meetings/briefing to continue with all politicians who are interested in the project.</p>
Assembly committees	<p>The NI Assembly DETI Committee should be briefed because its views and reports are important in influencing the energy policy and regulatory environment for the project.</p> <p>The Assembly Environment Committee should also be briefed, for similar reasons.</p>	<p>Meetings should continue and further briefing of the relevant Assembly committees should be offered beyond the construction phase.</p> <p>An updated briefing document should be prepared for committee members.</p>
Party Energy/Environment spokespersons	<p>Energy and Environment spokespersons of political parties are interested, knowledgeable and appreciative of good information. It is important that they are well briefed.</p>	<p>Meetings to be continued with party spokespersons and relevant briefing material provided.</p>
NI business community		
CBI/IoD/FSB and other business representative groups.	<p>The main business representative bodies are influential in determining public opinion and policy-makers' responses to business issues. It is important that they are well briefed in relation to the project.</p>	<p>Updated relevant briefing material should continue to be provided.</p> <p>Further direct engagement with business representative organisations as requested or deemed necessary.</p> <p>MEL executives should participate (as speakers etc) at business sector events.</p> <p>Carefully tailored exhibition and sponsorship platforms will be evaluated and activated where there is clear strategic value.</p>
Local chambers/business forums	<p>Much of the communication with local chambers etc will relate to the distribution roll-out phases of the project. However local chambers influence local opinion and briefing them is important.</p>	<p>Continue engagement and briefing beyond the construction phase.</p>
Other interested stakeholders, NGOs, interest groups		
Environmental groups, NGOs (NI Environment Link, Friends of the Earth, etc)	<p>The HP pipeline will continue to attract concerned environmentalists and others who will seek reassurances about impacts and mitigation even beyond the construction phase of the project.</p> <p>It is very important that there is a continuous constructive dialogue with this group of stakeholders and in particular with the more professional, active organisations operating in this sector</p>	<p>Ongoing engagement communication and briefing will be continued beyond the construction phase.</p> <p>MEL will participate in influential environment sector conferences and other events building its reputation as a highly competent operator with genuine concern for the environment.</p>

Consumer groups	In addition to dialogue with the Consumer Council, MEL should engage as necessary with other consumer interests eg fuel poverty lobby	Meetings to be continued as required after construction. MEL will continue to brief the benefits of the project to all end users of energy and participate in relevant events. All relevant briefing material will be hosted on the MEL group website and will be fully downloadable.
Media stakeholders		
Local Newspapers	Local newspapers will continue to be a vital tool in communicating with local communities along the pipeline route.	Project team will continue dialogue with local papers and ensure understanding around the need to publicise developments/ announcements in local areas.
Regional newspapers	Regional press will be useful in transporting information to the wider public and to highlight project milestones.	Dialogue to continue with editors and relevant business and environmental correspondents. MEL will organise 'open-days' after commissioning for media and other stakeholders.
Electronic media, TV and radio	TV and radio provide high quality reach in transporting information to the wider public and for highlighting project milestones. Electronic media can also give the project a 'face' or a 'voice'	Meetings will continue with relevant producers and correspondents with updated briefing supplied. MEL intends to capture all of the visually strong phases/events relating to the project so that high quality video footage can be supplied to television
Local business media	Local business media will be useful in transporting information to the 'business' public and to highlight project milestones.	Briefings will continue with editors/journalists of Ulster Business and Business Eye and other similar outlets. The magazines are good vehicles for publicising project development and human interest aspects.
Commentators, opinion-formers, economists	There is a small but influential community of economic commentators in NI who can impact on how any project is perceived and understood. It is important to engage with them.	Project team to continue to work the list of 'influencers' and arrange briefing meetings at suitable junctures after the construction phase.
Social media	Social media is a very powerful modern communications tool for providing concise, immediate information to those who are interested in receiving it. It can greatly enhance all round communications for MEL to have a professional social media presence throughout the construction phase and beyond.	MEL will devote a section of its existing group website to the West Transmission project and business. MEL to establish a professional social media interface including Facebook and Twitter and others as appropriate. Project team to assign specific responsibility for keeping this feed fresh and up to date.

Key Points

- A linked bid, with SGN providing the design, project management and sub contractor management for both transmission and distribution leads to an efficient build out programme.
- Stakeholder engagement and PR are important to the project and a PR company will be used to maintain focus in this area both pre and post construction.
- A PR plan will be developed along the lines illustrated in section 7.2.



Data quality and systems



Chapter Eight

Operational Cost Forecasts

- 8.1 Operational Cost
- 8.2 Activity build up
- 8.3 Cost management
- 8.4 Efficiency improvement plans



8.1 and 8.2 Operational cost activity build up

Under West Transmission’s licence, a range of costs will be incurred which will be in line with those currently incurred by MEL’s gas businesses, PTL and BGTL, who are experienced gas transmission operators. The group therefore has knowledge of all these activities and has internal or external resources available to undertake each one. This will allow West Transmission to benefit from only bearing marginal costs instead of the full costs for the majority of the company’s activities. There are no operational activities which will be incurred by West Transmission under its licence for which the group does not already have significant experience.

The operational cost activities will be carried out in line with West Transmission’s policies, procedures and processes which have been discussed in more detail in sections 4.3 and 5.2. The resources used for these activities, their skills and experience, and the nature of the arrangements with external resources has been set out in section 2.1, 2.2 and 2.3.

The activities required can be split into three main categories: maintenance, operations, and administration. Each of these categories, and the activities included, have been discussed in more detail below.

Maintenance

The following table outlines the key areas in respect of pipeline maintenance:

Activity	Description	Cost Rationale	Tendering	Risks
Landowner liaison and crop and drainage works	Liaison with landowners including dealing with landowner enquiries, response to aerial surveys regarding third party interference with the pipeline and supervision of any works carried out in close proximity to the pipeline. Crop drainage and legal costs associated with any drainage issues arising from original construction.	Landowner liaison officer required to deal with all enquiries. This function is necessary to mitigate risk of damage to the pipeline or possible rupture if landowners dig near the pipeline. This function will be performed within the MERC contract. Landowner liaison officers are used to ensure appropriate engagement with landowners, who are key stakeholders. Legal resources are used as required to assist with any claims or legal issues.	Landowner liaison tendered as part of MERC contract. Legal advisors are tendered periodically—see Other admin costs in Administration section.	Landowner liaison costs will be fixed for the tender period with only rises in line with labour rates occurring. Crop drainage and legal costs are driven by the quality of the ground works and drainage carried out as part of the construction project. The costs required are likely to be more significant in the early years of the business but should be minimised going forward by any remedial works performed.

Security	Security measures put in place include cameras, alarms, security staff, double fencing and electrified inner fencing in order to maintain appropriate site security to prevent third-party access.	Costs incurred will be the cost of providing equipment, staff and monitoring as an extension to the group's existing security arrangements. Cost increases as part of this contract will be marginal.	Three yearly tendering of security contract on behalf of the entire group is carried out to ensure appropriate expertise employed and economies of scale achieved.	Security costs are expected to remain fairly stable over the licence period with only inflationary rises expected. The cost of inadequate security could be extremely large due to risk of sabotage, vandalism or terrorism if security was not effective.
Maintenance and emergency response	All routine maintenance including pipeline surveillance, equipment inspections and servicing, along with emergency response.	Costs of the group's existing contract include: charges for three staff members dedicated to the group, along with other staff used to perform maintenance or available for emergency response; charges for each routine maintenance activity performed (these are set at the tender stage for planned maintenance or agreed in advance for non-routine works); costs of any call outs required; and management charges.	Periodic tendering carried out.	Costs for management, planned maintenance and fixed emergency response charges are fixed for a five year period and affected only by labour rate variations. Charges for additional call outs and services are charged in line with the charging methodology included in the contract with only a set uplift on any additional costs allowed. As time-based maintenance and inspections are carried out costs will vary per year depending on the amount of works scheduled in that period. Costs should not vary significantly from those planned unless issues are experienced which require significantly increased call outs.
Engineering works	Engineering projects including equipment upgrades and major overhauls/refurbishment.	Charges for each project will be agreed in advance (at the outset of the contract if requirement known). Costs required will be marginal only, based on additional activities to be undertaken and additional resources required.	Engineering projects are included within the MERC contract and procured by SGN on our behalf with at least three prices being obtained for each project and capped management uplifts applied. Approval of project costs is carried out by West Transmission following review of tendered costs.	The costs of engineering works will vary year on year in line with the level of works required. Costs are expected to be lower in the early years and will increase over the life of the asset as equipment becomes older and more upgrades/refurbishments are required. All engineering projects are tendered so that market rates will be obtained for each.
Engineering compliance	Activities include periodic emergency exercises (see section 5.8), a competent person as required by Pressure System Safety Regulations (PSSR), consultancy support, engineering audit, health and safety including HSE safety case and compliance with Dangerous Substances and Explosive Atmospheres Regulations (DSEAR).	The group considers engineering compliance for its gas network as a whole. West Transmission will be included in the group's emergency exercises and within the current health and safety management system, without any additional costs to the group. West Transmission will use the group's external resources, including competent person, as required without any fixed costs such as retainers.	Tendering for these activities is carried out on a periodic basis unless it is not cost effective to do so. Activities are performed, as required, either in house or using external consultants, who have extensive knowledge of the business.	These costs are reasonably stable over the long-term with variations year on year in line with activities required, eg emergency exercises. More significant variations in engineering compliance costs are only expected where there is a major change in regulations which requires additional work by the group.

Operations

The operational activities to be performed by the company are set out below:

Activity	Description	Rationale	Tendering	Risks
System planning	Network analysis and modelling, eg the NI Capacity Statement, Ten Year Network Development plan and winter outlook or the impact of any potential new major demand connection. Assessing the future demand on the system is vital to ensure that we anticipate any potential issues at an early stage in order to plan any appropriate action such as additional investment in the network. We must ensure that the contracted capacity can be supplied at the contracted pressure and identify at an early stage if additional capacity will be required in the future to allow time for measures to be put in place to ensure delivery.	Software licences are required in order to carry out the modelling and an external consultant is used to provide specialist knowledge of system modelling. System modelling, including production of the NI Capacity Statement is carried out cumulatively on behalf of the MEL gas businesses therefore there would be no additional licence cost for West Transmission and only marginal cost in terms of incorporating West Transmission's network into the model. Further costs of assessing potential new connections are only incurred upon the request of potential customers and these costs are recharged to the customers through the connection policy.	With a very high fixed cost in developing the model, once a consultant is appointed in this area tendering is at long intervals to recover the fixed costs.	System planning costs will largely be driven by demand for large connections. However significant modelling will be carried out as part of the mobilisation work performed and the cost of running this model for new connections should not be significant. The costs of modelling the NI Capacity Statement are already borne by the group and following initial modelling of West Transmission no further additional costs in respect of West Transmission are expected. The potential cost of not performing this modelling could be the cost of a shipper claim in respect of breach of contract if contractual capacities and pressures are not met.
Network code	Gas Transmission Meter and Billing System licence fees, application support contract, maintenance, and server hosting, support and management are all required in order to record the system data and allow production of customer bills. An external consultant is also used for support of the GTMBS application and servers and their interface with SCADA (see below). The NIAUR has requested that TSOs work together to develop a single system operator, including a single IT system. The timeline for delivery for this is not yet certain, however this has been discussed in the Single System Operator (SSO) section below. West Transmission is also required to develop (as part of its mobilisation) and maintain a network code and this will be developed as part of the EU compliance work discussed below. Development will be carried out by the Gas Contracts Manager and Gas Business Analyst whose costs have been discussed in the staff costs section within Administration. External consultants will be used where specialist knowledge is necessary – see EU compliance section.	Costs are required for licences, support, maintenance and server hosting as noted. However PTL currently has such a system in place which carries out these activities on behalf of both PTL and BGTL. The system is capable of carrying out these activities for West Transmission for minimal additional costs following mobilisation costs. SSO costs have been discussed in the SSO section below. EU Compliant code development and staff costs have been discussed within EU compliance below and staff costs in the Administration section.	Current contractors tendered at regular intervals in line with workload. In advance of large expected workload a retender process is carried out.	Ongoing costs of the current system are relatively stable and bear low cost risk. However costs under the SSO are likely to be significantly different and have been considered in the SSO section below. Costs in relation to the network code have been discussed in the EU compliance section below and within staff costs in the Administration section.

Communications	Costs here relate to communications between the telemetry provided by the system operations contract and the onsite field instruments. This effectively enables communication between the control system in the control room and the Remote Terminal Units (RTUs) at the sites. The communications costs include maintenance and support of PLCs, development of PLC logic and flow computer software.	The costs incurred are the maintenance and support contract for the PLCs and RTUs, including response to issues encountered and any modification to the communications required, along with external consultant costs.	Communications are tendered periodically.	MEL has experience of these activities and their costs through its other gas businesses and these are relatively stable with minimal cost risk. Cost drivers are the number of sites and RTUs.
System operation	System operation includes operational services, IT services, contract management and any additional services when required. Operational services relate to the control room which carries out physical and commercial operations, including system monitoring and flow control. IT services include all the IT infrastructure and hosting, management and support of these systems. Systems include SCADA, GTMBS hardware and telemetry communications costs. SCADA is the control system used to monitor flows, pressures and temperatures etc. Contract management services include reporting, auditing and training.	Costs incurred include IT hardware, software, server hosting and support along with control room facilities and staff costs and contract management. PTL already has a system operations contract in place which was marginally increased for the addition of BGTL in 2003. A similar contract has been agreed as part of the JV agreement. SCADA and GTMBS systems are already in place for PTL (which is the major IT cost) and the only additional costs for these systems due to the addition of West Transmission are expected to be the communications between its sites and the SCADA and a marginal increase in support costs.	System operations are tendered. The current contract is for a period of five years with an option to extend for a further two years.	These costs are set for the duration of the contract and are fixed except for performance payments which are linked to targets being met and annual inflationary rises throughout the contract period. No other cost variations will occur unless variations to the contract are made. Cost risk is therefore low for this contract.
Other systems	Includes Leakfinder mass balance software which interfaces with SCADA to automatically identify system leaks and forms part of the gas business safety case. A Geographic Information System is used to accurately record the pipeline location and maintain data integrity. A predictive model will also be installed in order to predict the time it would take the system to fail based on prevailing gas supply and demand.	Costs include software licences and support for these safety critical systems. These systems are currently in place for the Premier Transmission Pipeline System (PTPS) and can be extended to include West Transmission at no additional cost.	Before acquiring software potential systems are assessed and the preferred system is selected based on functionality and price. Following implementation no further tendering will be performed unless the costs of the system increase significantly or the system no longer meets the company's needs.	The costs of these systems are driven by the number of licences required and are not volatile in nature. No additional licences will be required for extension of the software to include West Transmission.

EU compliance	Significant changes to the NI gas market rules are required as a result of EU energy legislation (IME3). These have been discussed in more detail in section 5.4.3 . Costs required will include representation at EU stakeholder meetings, participation in EU network code development, NI network code development, IT system changes and other commercial and contractual changes. Once NI is fully compliant there is still potential for future costs as further changes to EU regulations are made.	MEL is already actively involved in the EU network code development, with its key focus being minimising the risks to NI consumers. MEL is at the forefront of the development of the NI code and required commercial and IT changes. MEL will perform these functions on behalf of the group, including West Transmission, ensuring throughout all of the developments that the group's needs are appropriately addressed. This work is already being performed by MEL staff on behalf of the group and there will be no additional resources requirement as a result of the addition of West Transmission.	The majority of the work is carried out by internal MEL resources. Where external consultants are required consultants have been selected based on a tender process.	This is an area where costs are much more variable as the development is still at an early stage. Costs will depend on decisions made by the NIAUR and interactions with other TSOs and are not fully controllable by MEL. As MEL is already actively involved in this process, however, there is no additional cost risk through the addition of West Transmission to the group. Indeed there is likely to be less risk as there will not be an additional TSO who will need to participate in the development process and therefore result in additional costs for NI gas consumers.
Single System Operator	Although not required by EU regulations the NIAUR has decided that this presents an opportunity to create an SSO for NI, with a single code and single control room. The requirements for producing a single code have been discussed in more detail in section 5.4.2 .	MEL is already actively involved in this process on behalf of its two existing gas businesses PTL and BGTL and will consider West Transmission throughout this process. There will therefore be no additional costs required with respect to West Transmission for the development of an SSO, single code and single control room.	N/A	Cost risks for this are high as this project is still at an early stage and is not fully defined. As MEL is already actively involved in this process, however, there is no additional cost risk through the addition of West Transmission to the group. As noted above, there is likely to be less risk as there will not be an additional TSO who will need to participate in the development process and therefore result in additional costs for NI gas consumers.

Administration

The administration activities to be performed by the company are set out below:

Activity	Description	Rationale	Tendering	Risks
Rates	Business rates will be payable to Land and Property services.	There is a legal requirement for payment. This will be based on the determination of Net Annual Value. MEL has experience of rates reviews through its other businesses and has had previous success in challenging the determinations.	Not applicable. Rates advisors are tendered (see below).	Rates are relatively stable however the costs will be dependent on public policy.
Insurance	Insurance will be required to cover all risks, liability and terrorism.	Costs will be based on the current market rate and the asset's risk profile. MEL procures its insurance on a group basis thereby achieving very competitive rates.	Insurance brokerage is tendered	Costs of insurance will vary depending on market conditions but it is expected that West Transmission will be considered lower risk than MEL's other assets as it does not include any subsea assets.

Office costs	Office costs include property rent, rates, heating and electricity, office equipment, IT and communication costs.	MEL already has offices and equipment in place which will facilitate the addition of the West Transmission business without any additional office costs for the group.	Most office costs are not of the nature to be suitable for tendering. At each rent review MEL considers the cost of renewing the contract vs the cost of alternative accommodation and relocation. The group also considers costs when choosing energy and other suppliers and tenders its IT contract periodically.	The main office costs are rent and rates which are relatively stable but dependent on market conditions and public policy. Office equipment, computers and communications costs are also dependent on market rates and are relatively stable. Heating and electricity costs for the offices are not material for the group and will be dependent on market rates.
Staff costs	Costs for internal resources, described in section 2.2, who manage the operations of the group including the two other gas businesses.	The current resources working solely for the group's gas businesses manage the key contracts such as MERC and system operations (for which West Transmission will be an extension) and maintain the commercial arrangements including the network code (which will be extended to West Transmission, or which West Transmission will align with). Management of these activities for West Transmission will be performed using existing staff as part of their current role. The remaining staff perform group functions such as governance, finance, commercial, project, IT and office management. All of these functions are currently in place and West Transmission can again be incorporated within the work already performed, without any additional cost to the group.	Tendering is not applicable to staff costs.	There is little variability in staff costs apart from inflationary pay rises. As the group is already experienced in gas transmission management there are adequate resources already in place who are capable of performing all the required activities therefore little cost risk exists in this area.
Procurement	Procurement consultants, lawyers and other specialists are used, where required, for the tendering of key contracts.	The main operational contracts for West Transmission which will require procurement advice will be the MERC and system operations which will be tendered on behalf of the group and therefore the group costs in relation to this are not expected to increase with the addition of West Transmission.	Procurement/legal advisors are tendered periodically.	Procurement costs vary according to the level of complexity of the contracts, however West Transmission is not expected to have any contracts of a different nature than those already procured by the group. The group is already experienced in this area and costs should be largely in line with expectations.
Licence fee	Fees will be payable to the NIAUR in relation to the gas transmission licence held.	Annual fees will be determined by the regulator for each gas transmission licensee in order to fund the activities of the NIAUR's gas transmission department.	Tendering is not applicable to this cost.	Costs will vary in line with the costs of the NIAUR and will be largely linked with energy market and legislative changes, such as increases for activities required to implement EU legislative changes.

Postalisation	Fees will be payable to fund the postalised system in NI.	Costs of the postalised system are shared between the TSOs in NI. No additional costs will arise as a result of West Transmission, however, it is likely that the costs will be shared amongst all the TSOs, resulting in a share being borne by West Transmission.	Tendering of this contract is done by the TSOs collectively on a regular basis.	This is a very stable cost. The work required is not variable and tendering ensures a market rate is obtained.
Other admin	Legal and professional fees including audit, tax compliance and PR.	Annual audits and tax compliance work are required to ensure compliance with Company Law and tax legislation. Legal work is carried out, as required, in areas including financier interactions, contracts, compliance, procurement etc. MEL will gain legal advice on a group basis where possible in order to reduce costs.	Audit and tax compliance are tendered every five years in order to maintain competitive rates and auditor independence. Tendering is carried out periodically for legal work and a panel of legal advisors are appointed.	Costs will vary depending on the nature of work required. However, the group has significant experience in gas transmission operations and therefore the level of expected legal work. Legal work with respect to financier interactions is expected to be relatively stable during stable market conditions. The key cost driver is likely to be changes to the energy market, however, these changes will affect the whole group and few additional costs will be expected in relation to West Transmission, excluding financier interactions. Landowner legal costs are considered within landowner liaisons above.
Group costs	Costs of governance including non-executive directors' and directors' insurance, AGMs, member meetings and production of the annual report.	Costs are for governance of the group and group costs will not increase as a result of the addition of West Transmission as West Transmission will be considered within the existing governance structure.	Tendering is not applicable to governance costs.	These costs are stable and not subject to variances other than inflationary rises.
Financing costs	Costs of financing the business including interest and indexation on the bond.	These costs are discussed in more detail in section 10		

8.3 Cost management

8.3.1 Review processes

As described elsewhere, West Transmission Ltd will become part of the Mutual Energy group of companies and will be subject to the same cost management processes used in the existing mutual gas and electricity transmission businesses. The overall approach to cost management has several layers of control which range from board level oversight of business plans and budgets down to individuals being accountable for each specific cost incurred.

The overall controls around cost management can be described as follows:

- Five year business plans are prepared annually. These set out the key strategic goals and identify any projects or expected business changes over the period. The main purpose of the business plan is for the executive management and board to consider and approve all major activities and forecast costs over the coming five year period.
- Five year budgets developed alongside business plans. Detailed budgets are developed and approved by the board for each entity as part of the business planning process. The budgets align with the strategy set out in the business plan and are developed with input from individuals responsible for cost items (cost owners) with Executive Director review to agree appropriate budgets for board approval. The budgeted numbers then form the basis for staff targets with incentives in place to deliver within and below budget.
- This budgeting process flows down from the cost owner to the contractors providing services. For example, for the MERC and Control Room contracts the Gas Operations Manager and Engineer hold monthly meetings with SGN. Activities and costs under the contracts are planned in advance with progress, cost and performance being reported and reviewed at these meetings with action being taken on any variances.
- Performance against budget reviewed – the Executive Directors review management accounts monthly with the Operations Manager and finance team. This process identifies variances from budget, reasons for same and any corrective action required. In addition, a detailed review of financial performance is provided to the board at every board meeting covering, inter alia, income and operating costs versus budget, progress on major projects versus budget, cash management, forecast annual outturn and key performance indicators.

8.3.2 Information systems

The main financial information system employed by Mutual Energy is Sage accounting software. The key features and uses of this are:

- Recording of all sales and purchase invoices
- Management of VAT
- Recording and reconciliation of bank balances
- Production of statutory and management accounts (profit and loss, balance sheets and cashflows)
- Running of customisable management information reports eg performance versus budgeted/historic costs
- Forecasting of future performance and production of long-term budgets

Only the Finance team may access Sage. For an invoice to be entered on Sage it must be signed off by the relevant 'cost owner' and passed to the Finance team for posting. This has the dual effect of recording the invoice in the accounts and initiating the payment process. When items appear on Sage they will appear in management accounts for monthly review. A further control is that payment of invoices that are signed off must be approved by two directors – this ensures that two directors will have had sight of all payments.

Costs incurred by the SGN main contractor will be managed using the Oracle ERP. This allows strict control of processes and governance of the cost sign off procedure, ensuring that all spend is appropriately authorised. It has a hierarchical approach, with any spend request being escalated to the relevant person with the necessary authorised spending limit.

Oracle ERP links into the Cognos based reporting tool to allow the summary information on the project progress to be generated. More detailed reports are available directly from the Oracle Discoverer reporting tool.

8.4 Efficiency improvement plans

8.4.1 Efficiency improvements

The integration of West Transmission Ltd into the Mutual Energy Group will immediately realise efficiencies to the benefit of the NI consumer both within our existing businesses and in West Transmission Ltd. It is expected that West Transmission Ltd can be managed using the existing group overhead and skills base within Mutual Energy. We do not envisage that the addition of West Transmission Ltd to the group would result in any additional board, finance, regulation or engineering staff costs being incurred. These existing costs will be spread over a wider asset base resulting in efficiency savings for Premier Transmission Ltd, Belfast Gas Transmission Ltd and West Transmission Ltd.

The resourcing strategy is to utilise the existing Mutual and SGN resources already employed in the operation and maintenance of the Scotland to Northern Ireland Pipeline (SNIP), Belfast Gas Transmission system and the associated Above Ground Installations, particularly in the initial phase of construction and the phased commissioning of the new HP pipelines and AGIs. This resource comes to the project fully qualified and experienced in the requirements of operating and maintaining HP gas systems in NI and will be supported as required by additional resources from SGN.

In addition to increased efficiency from 'sweating' the existing group overhead, there are specific items of expenditure related to the gas transmission assets in particular that will benefit from economies of scale:

- Currently MEL has the management structure and systems in place to operate the existing gas assets through two main contracts, namely the Control Room Services and MERC contracts. As the same contract structure is adopted for West Transmission much of the IT infrastructure is already in place and currently being utilised to deliver operational services from SGN to MEL. To incorporate the new West Transmission assets new telemetry will have to be installed to the various sites. However other IT infrastructure will be utilised to 'bolt on' the additional software required. There will be minimal additional IT hardware required to be procured to deliver the additional services for the West Transmission assets. The Control Room Services contract transferred to SGN in 2013 so both Mutual Energy and SGN staff have recent experience of the activities required to integrate new/additional HP pipelines to a control room system. The post project review of this transition included a detailed register of 'lessons learnt' which will inform the process of integrating the West Transmission pipeline system to the SGN control room – learning from this recent experience will improve the efficiency of this particular aspect of mobilisation.
- In ongoing operational cost terms, future rationalisation of the Control Room Services contracts represents a potential future efficiency improvement over the already significant savings of using the same IT, staff and processes.
- Similar to the above, our existing maintenance and emergency response contract will be the model for the extended service to West Transmission Ltd. This will require specific resource given the different geographical locations but there are efficiencies versus initiating a brand new contract where there wouldn't be existing staff and depots in place. Our experience in managing the existing MERC contract means that we appreciate the appropriate level of resource and we can efficiently manage the contract costs.
- Central procurement of other services eg security, IT support, consultancy support will all benefit from the increase in scale.

The relationship with SGN gives access to its innovation processes developed to support the move to 'RIIO' regulation in 2013, RIIO being Revenue = Incentives + Innovation + Outputs. To maximise performance under this regime, SGN has developed its 'RIIO approach' which is now embedded in the business. The main thrusts are: efficiency, customer service, innovation and stakeholder engagement. All business processes are subject to ongoing critical review to identify opportunities for improvements using the ERIC principle (Eliminate, Reduce, Innovate, Control) and all business functions, including those which support West Transmission, have their own RIIO business plan. SGN is also very active in the field of Innovation, as evidenced by its recent success in Ofgem's National Innovation Competition. Programmes are also in place with the objective of positioning SGN as the lead GDN in the UK for customer service and stakeholder engagement.

The expected benefits from these RIIO initiatives and improvement plans will flow through and benefit consumers in West Transmission.

Mobilisation efficiency improvements

As set out in **section 3.4** there are multiple areas where efficiency improvements will be realised by way of utilising existing resources and contracts. Our experience in satisfying a mutual conveyance licence is unrivalled, our bid structure and existing contracts mean we can run efficient procurement processes for the major support contracts required (control room and MERC). Similarly, our experience in operating gas transmission assets means that contracts such as telemetry support and security can be tendered using in-house expertise with economies of scale taken advantage of and costs spread across the larger group.

Utilising SGN Framework agreements

SGN has a number of framework agreement contracts for the provision of key services required to deliver capital projects including: design services, project management services, quantity surveying services, and CDM Regulation services. Furthermore, SGN also has frameworks in place for the supply of some items of equipment eg pre-heating, boiler packages, distribution governor skid units. All framework agreements are competitively tendered and contracts may be awarded to one or more service provider. This resource is tried, tested and readily available without procurement costs and delays. Part of the overall efficiency improvement regime is to utilise this buying power both for initial capital construction and ongoing capital replacement programmes across the MEL system.

Developing the market place

Another efficiency improvement target is to increase the range of suppliers to the gas market. The gas industry is a specialist market with few suppliers in some key areas. In conjunction with SGN and in order to stimulate competition and drive down prices, we seek to work with and support new suppliers or contractors who wish to provide goods or services. A recent example is where we awarded construction contracts to two companies who had limited experience in transmission work, but had other gas-related experience and were keen to break into this field. We supported and coached both companies throughout the contract and both projects were successfully completed on time and budget. Similarly a German supplier of high-pressure steel ball valves whose prices are very competitive, but could not supply to the UK market because their production processes had not been approved to the UK gas industry specifications. SGN arranged for a competent Quality Assurance Inspector to visit their factory and review their processes, which were subsequently approved by SGN, opening up the efficient supplier to the UK market.

Materials

We are constantly seeking ways to minimise or reduce our materials costs and whenever possible we re-use and/or refurbish materials such as ball-valves or filters and meters. In a small system such as NI this is hard to make work effectively. By co-ordinating with SGN all surplus materials from completed projects throughout their systems as well as the MEL owned system are retained for future use and a stock list of all these items is regularly circulated to project managers to avoid purchasing new.

Steel pipe manufacturers will only produce minimum production quantities of circa 500 metres. To avoid purchasing this quantity of pipe when a much shorter length is required (eg PRS rebuild or pipeline diversion), we have access to SGN's collaboration agreement with the other GB DSOs. This agreement gives access to a large supplier with a stock-holding of steel pipe, from which all can call off short lengths, as required.

Lessons learned register

We review issues and lessons learned during the planning and construction of a project. This information is circulated to managers so that any learning can be incorporated in future projects as appropriate.

8.4.2 Innovation

SGN is also very active in the field of Innovation, as evidenced by its recent success in Ofgem's National Innovation Competition. SGN has acquired major funding to support its innovation programme and is currently undertaking a plethora of field trials of new products and processes that have potential to be rolled out in order to reduce operating costs in the gas industry (50+ Innovation trials). Given the JV arrangement with MEL, these innovations will be accessed by West Transmission to bring, where appropriate, their potential benefits to the licence area. Some examples associated with HP transmission are detailed below.

Control room

Since its establishment in 2008, SGN Gas Control has made great strides in rationalising and consolidating its application portfolio and infrastructure allowing for process improvements, greater efficiencies and the propensity to handle more work. This greatly contributed to SGN Gas Control winning a contract with Premier Transmission Limited (PTL) in 2013, for the provision of systems and support for the Physical & Commercial Operation of the Gas Transmission Pipeline (Interconnector) that transports gas between Scotland and NI. SGN Gas Control was able to undertake this additional work without an associated increase in resource levels. Going forward, SGN Gas Control will maintain this improvement and efficiency ethos. This evidenced from the following current and planned initiatives:

Gas Network Simulator

In April 2014, SGN Gas Control initiated a project to establish a Gas Network Simulator that interfaces the DNCS SCADA system to an online network model, providing real time data and analysis of the complete gas network. This simulator should be in place by the end of year, and will provide a range of benefits:

- The provision of Within Day and Day Ahead predictions.
- Increased decision support – ability to run scenarios before execution.
- Increased levels of automation.
- Increased accuracy – meter validation/instrumentation/telemetry validation.
- The provision of a realistic operator training environment to reduce training times, improve quality and manage the assessment process end-to-end.
- Allows Operators to test strategies to optimise new innovative areas that SGN is actively moving into. These include bio-methane sites and turbo expanders.

The simulator can be readily configured to cover the Gas to the West Distribution and Transmission Networks and with simulated data, can cover all potential scenarios – emergencies, winter operations, summer operations, etc.

Telemetry and communications

A range of pilot projects are in flight to assess the introduction of new communication technologies and how to get more from our existing infrastructure:

- Better use of satellite bandwidth to support more devices.
- Replacement of the existing ISDN/PSTN estate with new emerging technologies, eg SIP Trunking.
- Studies to assess how the existing communications infrastructure can be made more resilient to adverse weather conditions such as snow, tropospheric ducting and coronal mass ejections. To date, these studies have elicited trials in satellite dish heating, aerial replacements and the use of 4RF and Long-Range Radio.

Learnings from these initiatives will be applied to the Telemetry and Data Logger deployments in the Gas to the West Transmission and Distribution Networks respectively.



Control and efficiency

In April 2015, SGN Gas Control will replace its Offtake Profile Forecaster (OPF) and Time to Fail (TTF) applications. OPF is used to predicted flows through key parts of the system. The TTF application is used in emergency situations by the Operator to simulate risk to achieving the end of day stock balance. West Transmission will assess the suitability of these applications to the NI context and whether they generate cost savings by subsuming them into core Gas Control systems used in NI.

Personal Atmosphere Monitor (PAM)

Personal Atmosphere Monitors (PAM) are provided as supplementary Personal Protective Equipment (PPE) to all operations personnel. They will provide an automatic early warning alarm of an unsafe atmosphere within a work area. They will be used on all works being carried out on operational gas installations, mains, services and when working in excavations containing live or decommissioned apparatus (unless it has been purged to air), all gas emergency work and potential or designated confined spaces. This initiative demonstrates a major concern for the safety and wellbeing of the all employees.

SGN Biomethane



The Biomethane Didcot project involved the construction of the UK's first Biomethane to Grid plant at Didcot Sewage Works, Oxfordshire. The pioneering works included the clean up, quality monitoring and injection to trial biomethane injection into our network. Its success has shown that contributions can be made to the transition to a low carbon economy as the productions of biogas and biomethane are carbon neutral.

Building on the previous success and learning from work at Didcot, scoping and specification development followed for biomethane connection to the network at Poundbury, Dorset. The objectives of this work were to develop Renewable Heat Incentive (RHI) compliant operational plant layouts, to reduce equipment costs associated with network entry requirements and to develop new suppliers and equipment for network entry plant. In addition to the improvements towards aspects of the environment, there were a number of benefits gained from this work. It identified the plant ownership which was consistent with Gas Transporter (GT) licence, Regulatory and Uniform Network Code (UNC). This work has shown alignment with managing the transition to a low carbon economy, as biomethane to grid efficiency is at least 50% more favourable than electricity only applications. This supported the UK Government to meet and exceed its 2020 carbon emission targets. To date SGN has processed over 360 enquiries for Biomethane plants within the UK and since 2013 the number of enquiries have increased by 25%.

This technology is readily applicable to the NI network should NI Water be in a position to move to this method of sewage treatment, with the main MERC contractor for West Transmission leaders in this field.

Ground source heat pumps (GSHP)

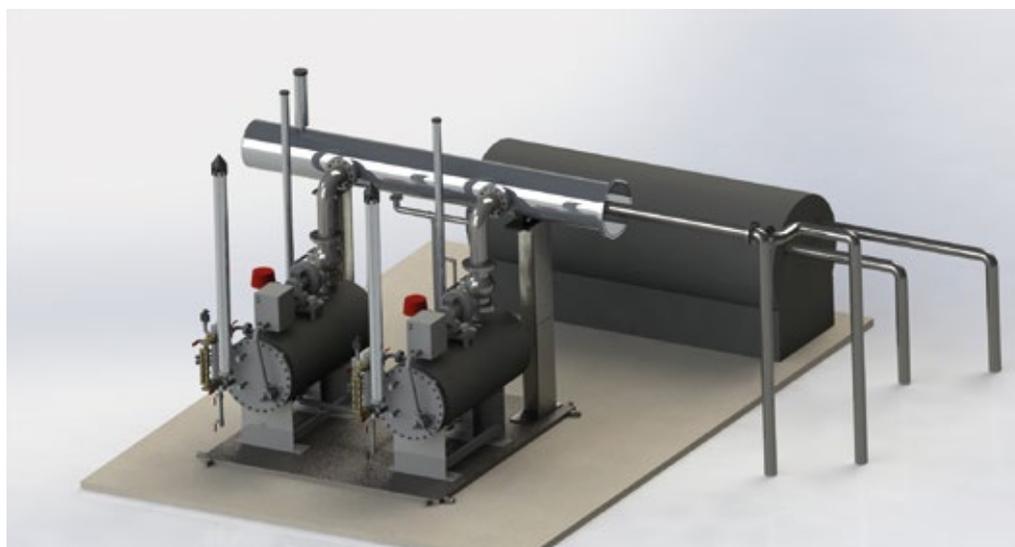
An integral part of the NI transmission network is the need for pre-heating of gas. SGN is installing a ground source heat pump to extract heat from an array of closed-loop vertical bore-holes to supplement the existing gas pre-heating requirement at Bradpole PRS in Dorset. This innovative approach could be used at the PRSs in this project to support traditional gas pre-heating equipment. There are major environmental benefits in utilising such a system as well as reducing gas shrinkage and comparable operating costs. As the coefficient of power of GSHP increases with advancing technology, additional benefits will be realised.

Micro-CHP (Ecogen)

The Ecogen comprises a modular, gas-fired boiler combined with a Stirling engine that can generate electricity via the thermodynamic process within the boiler. The unit is being installed to operate in the existing boiler house at Hardwick offtake. The heat will be utilised to pre-heat gas while the electricity generated will contribute to the on-site power demand. Again, this has potential to be used by West Transmission.

Immersion Tube Preheating Modifications/Field Trials

The Immersion Tube Preheating project supported the technical development of a new concept in gas pre-heating at pressure reduction sites called Immersion Tube Pre-heating and carried out field trials to assess its viability. The project has supported improvements towards the environment as the combination of reduced carbon emissions and reduced energy consumption made the new system more environmentally friendly than traditional pre-heating systems.



In addition to the economic benefits, the project had acquired the improvement in efficiency compared to WBH (50%), the improvement in efficiency compared to MBH (15%), a reduction in installation cost compared to MBH (30%), reductions in failures/unplanned maintenance (75%) and the elimination of third-party maintenance (100%). This technology will be assessed as part of the design phase for West Transmission.

CWT Natural Gas Line Heaters

We are in early talks with Cold Weather Technologies (CWT) of Canada regarding the field trial of one of their line heaters. These heaters utilise two phase thermosyphon technology with no pumps or moving parts and operate on the principle of energy release which occurs when steam transforms from a vapour to condensed state water. They are more efficient in operation than traditional water bath heaters or condensing boilers. CWT is re-designing its heater to conform to EU standards and we will carry out a trial when this has been completed.

New Intervals Methodology for ILI

This project is developing a revised methodology for the scheduling of in line inspection on HP pipelines with a consistent compliance with Pipeline Safety Regulations and IGEM/TD1. This work is continuing in close liaison with the HSE (UK) and has potential to make substantial operational savings by optimising the frequency of inspections and the consequential reduction in maintenance requirements.

With ILIs scheduled to be a regular occurrence on the West Transmission network, the ability to benefit from this project could make important savings on long-term operational costs.

Turbo expander

At various points on the NI network, pressure is reduced from the higher transmission pressures down to the levels to move into the distribution network. Using current standard designs energy is lost at this point. An alternative to be considered is the use of turbo expanders.

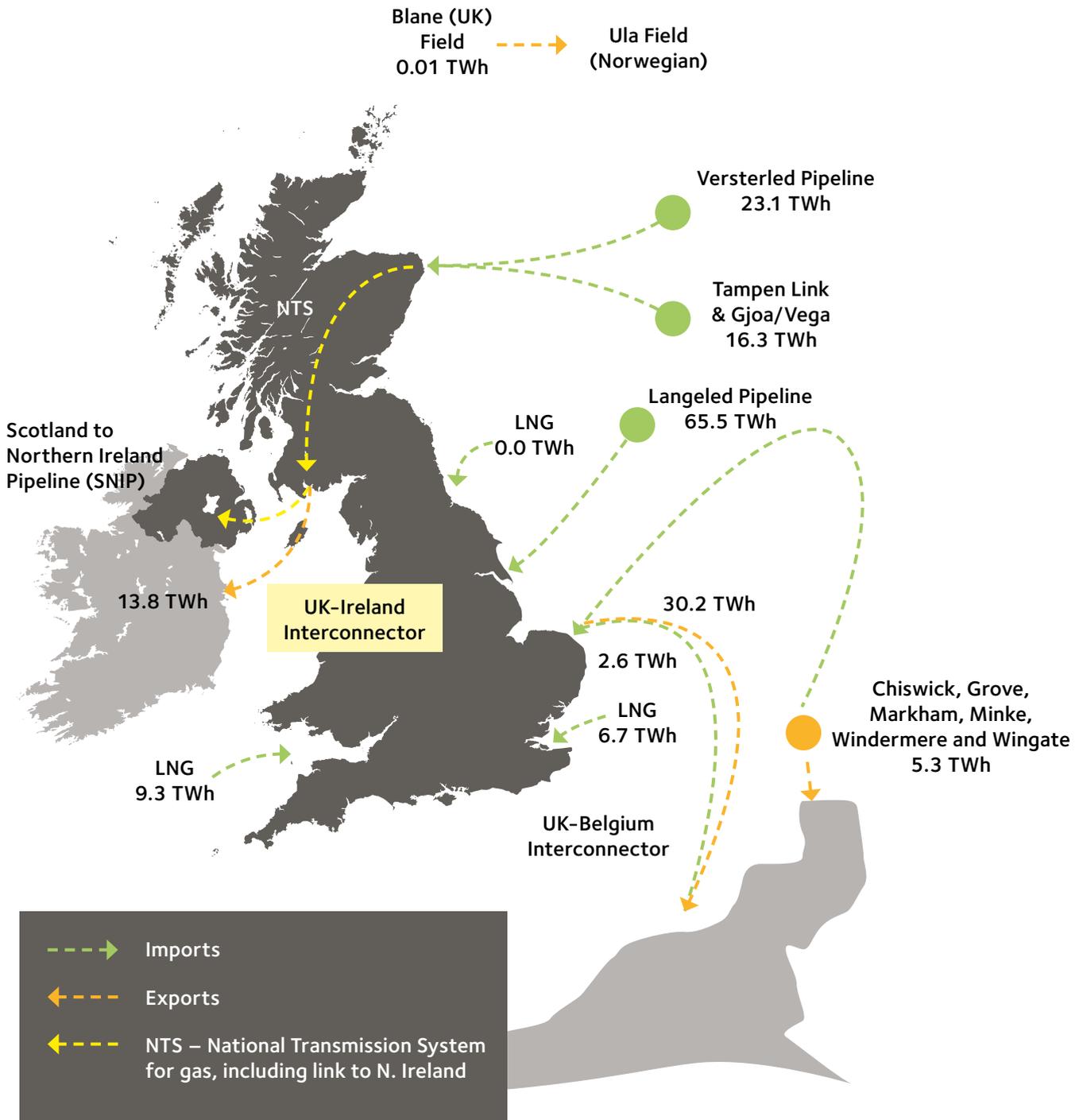
At an existing pressure reduction site next to SGN's St Mary Cray Office, SGN has built and are now operating a 4.5MW turbo expander. While reducing the gas pressure it affords an opportunity for energy harvesting. This plant will, in the process, generate enough electrical power for around 5,000 homes. SGN has also installed a combined heat and power plant that will provide pre-heat for the turbo expander and enough electricity for a further 2,000 homes. The plant will also be able to supply electricity for its office, making the building carbon neutral when the plant is fully operational. This system and process can be replicated in small scale or large scale.



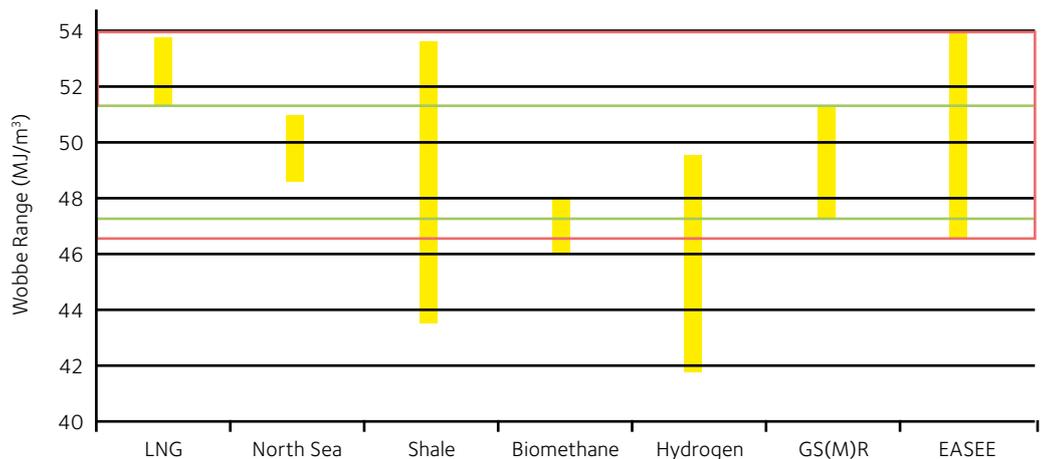
Opening up the gas market

The objective of this project is to demonstrate that gas which meets the European Association for the Streamlining of Energy Exchange-gas (EASEE Gas) specification but sits outside of the characteristics of gas specified within GB Gas Safety (Management) Regulations (GS(M)R) 1996 can be distributed and utilised safely and efficiently in GB. This project if successful will reduce the cost of gas for customers through opening up the market to new sources, reducing the requirement for expensive processing and improve security of supply.

GB gas prices exhibit volatility, given the short-term and/or spot market conditions. Whilst the sources of new natural gas are numerous, gases have different compositions and GB's specification for gas composition is very prescriptive, therefore limiting the gas market.



Expensive gas processing is required to bring them within these specifications. This limits the type and source of gases which can be used in GB and, in turn, ultimately leads to increased costs for the consumer. The following diagram shows the various composition ranges of different sources of gas compared to the GB specification and where we are seeking to widen.



Phased Array Ultrasonic Testing

Looking at the construction process of West Transmission, a current field trial of Phased Array Ultrasonic Testing (PAUT) at a number of construction sites throughout SGN, gives rise to potential efficiencies.

Our specifications require that all high pressure welds have to be non-destructively tested before commissioning. This is normally carried out by radiography. However due to the potential hazard of ionising radiation to the workforce or members of the public, radiography is normally done on-site at night or off-site in specially designed test bays. This generates significant cost and disruption to a construction programme. PAUT utilises hand-held ultra-sonic equipment, is non-hazardous, and can be carried out on-site at any time. Our field trial is to verify the processes involved, evaluate results with those achieved by radiography, and to ultimately gain acceptance as an approved process.

Remote monitoring of Cathodic Protection (CP)

CP is the use of electric current on steel pipelines to prevent corrosion. It is typically monitored periodically using a CIPS survey, which are carried out periodically and quarterly inspections.

MEL has been one of the first companies to introduce remote monitoring of CP to its gas assets. This allows more representative and greater accumulation of data than periodic maintenance. In addition depending on the model employed significant alarm functions can exist giving information on fault conditions that would in all likelihood have gone unnoticed during periodic monitoring. For instance AC corrosion is commonly associated with fault conditions from the grid which can occur outside working hours, during freak weather conditions, which periodic monitoring would miss.

Cost savings is a feature of remote monitoring:

- It reduces the frequency of the CIPS surveys and quarterly review costs by approximately 40%
- The information gathered allows for real time calculation to be carried out on actual amount of time that a pipeline has been without CP. Worst case scenario metal loss can be calculated more accurately helping tailor maintenance to suit the pipeline, helping compliance with the risk based maintenance advocated by IGEM/TD1

Emergency call handling

SGN plans to use the 0800 002 001 emergency phone number currently utilised in NI. However, we will explore alternative arrangements for providing this service in collaboration with other interested parties. We recently initiated and led a similar piece of work in the UK to assess the practicality and economics of utilising our own emergency call number, as an alternative to procuring the service from National Grid.

SGN has taken a leading role in challenging the provision of call handling services in the UK. We therefore expect to reduce the number of received emergency calls by communicating more clearly how customers can relay non emergency calls to our customer service centre. In addition we will introduce best practice from our current call handling arrangements with National Grid to ensure better categorisation and prioritisation of the calls received. Currently only 64% of emergency calls are uncontrolled and we believe by more efficient scripting this figure can be reduced, allowing better use of First Call resources. We would be willing to discuss with the other NI DNOs how we could leverage advantage from our existing call handling arrangements and take a lead on introducing the benefits to the NI gas industry.

The above innovations, the majority funded through the Ofgem Innovations Funding Incentives (IFI), once adopted, implemented and rolled out across SGN, shall be considered where appropriate, for the design, construction and maintenance of the West Transmission network.

System Design

With regard to the network development in NI, the JV will ensure that, from a design perspective, we can co-ordinate all aspects of the transmission and distribution design and construction. We will work closely to establish the existing and future load requirements and will plan jointly the most suitable locations for the PRSs, optimising both distribution and transmission designs. We will carry out in-depth assessment of the market forecasts utilising existing policies and procedures, to ensure our design can meet future demands to industrial, commercial and domestic gas consumers.

We believe, from analysis, there are options to substitute sections of the proposed HP steel pipelines with LP operating at 7 or 4 barg, realising substantial construction and operational cost savings. We would welcome the opportunity to discuss this further with the NIAUR and what account should be taken in the design for potential loads in adjacent communities. Examples of this relate to the sections: to Strabane, Omagh, Enniskillen, Coalisland, and Derrylin.

8.4.3 Benchmarking

As one of the two owners of existing gas transmission businesses in NI we are in a strong position to benchmark.

The scale and scope of Regulatory output reporting in the UK (Ofgem, the HSE) is such that SGN is benchmarked against other gas transporters in all key areas of its business. Using a selection of the UK metrics will effectively facilitate benchmarking of MEL performance in NI against gas transporters in the UK. SGN will also be able to share 'informal benchmarking intelligence' through its participation in a number of gas industry groups and forums.



Chapter Nine

Capital Expenditure Costs

- 9.1 Alignment with the business plan
- 9.2 Activity build up
- 9.3 Cost management

9.1 Alignment with the business plan

Explanation of how activity and cost forecasts are in accordance with the business plan

The nature of the mutual model means that a mutual entity must bear minimal risk in order to achieve a very low cost of capital on its 100% debt funding. For this reason, it is particularly suited to gas transmission assets in the NI postalised system. West Transmission is obviously a new asset and with this comes additional risk, in particular construction risk. Because the mutual entity that we propose would ultimately own and hold the licence for West Transmission and would have no shareholders or no underlying equity, it cannot bear the construction risk. In order to share risk in a way that minimises its overall cost, we propose to allocate risk to the party which is best able to effectively manage that risk; in this case, this is SGN.

The MEL and SGN partnership is such that SGN will take on the risk of any construction over-runs (and benefit of savings) under the Regulator's proposed pain-gain mechanism. In exchange for transferring this risk to SGN, it is proposed that SGN will be paid a premium of 12.5% of the verified controllable capital expenditure required to deliver West Transmission by the new mutual entity. This premium compares favourably with those paid to the vendors of other mutualised transmission assets in NI, particularly as it is in exchange for risk rather than simply being a pure premium. Such a structure substantially reduces the risk that the mutual entity is exposed to and facilitates a low-cost mutualised fundraising exercise.

Using the numbers hard-keyed into the accompanying workbook, and our forecast design and project management costs, this premium is calculated at £10.8m as shown in the Contingency box below.

Materials	14.398
Construction	49.477
Wayleaves	16.144
Design/Project Management	3.645
Site Investigation/C & I/ Commissioning	2.924
Contingency	10.824

The explanation for how our design and project management costs have been derived and accord with the business plan is set out in project management and design costs rationale below.

9.2 Activity build up

Range of activities set out cover all capital expenditure costs which will be incurred under the licence, including those listed in table 1 of the High Pressure workbook notes. Each activity is fully detailed. Rationale is set out. Proposals for which activities will be tendered

We have based the project management and design costs on the project schedules given in FMA feasibility study for the transmission construction:

“Cross-country transmission pipeline projects generally evolve through three key stages: design, planning and construction. Fingleton McAdam’s experience of gas pipelines is that each stage in this process takes approximately nine to 12 months, with an overall project schedule of three years. However, significant time savings may be made through careful planning/design.”

Taking the nine-month duration for each section gives an overall duration of 27 months which translates to approximately 116 weeks. For the build duration of nine months, this gives approximately 40 weeks. The following staff have been allowed for:

- One Project Manager
- Five project supervisors – one per section as per the methodology
- One senior QS to manage the finance, risk registers and programme
- Two junior QSs
- One Document Controller/admin support

For the build duration while the MWC is employed onsite, the additional resource will be required to manage the contract:

- One senior QS
- Two junior QSs

For the design, we allow six months for a lead designer and design team for the pipelines, and three months for the design of the PRSs. This assumes the PRS design will be consistent allowing for variations in design parameters and parity can be gained through stress analysis models.

	Supervision and Management	Quantity Surveyors and Admin	Design	Total
Mileage, Vehicle costs, Subsistence	£427,540	£276,574	£0	£704,114
Full salary costs including Employer's NI, Pensions etc	£1,513,195	£818,968	£608,400	£2,940,563
Total	£1940,735	£1,095,542	£608,400	£3,644,677

We have detailed the activities that will be undertaken in the construction of the HP network in Chapters 2 and 3.

- Pre-construction
 - Project management and design
 - Route confirmation and planning
 - Materials
 - Tendering the MWC(s)
- Mobilisation, including GCC
- Construction and land drainage

The following table explains the activity and the cost drivers associated with them:

Activity	Table 1 Cost	Cost Driver	Tender or Source	Description and rationale
Site Investigations	Aerial photography	<ul style="list-style-type: none"> • Scale of the survey • Demand/Availability of survey contractors. 	Existing contract	Following initial routing being established, the route will be flown and high definition photographs taken of all possible routes and AGI sites. These will then be used to aid the routing process. Initial routing will require a mix of desktop and vantage point surveys.
	Aerial video	<ul style="list-style-type: none"> • Scale of the survey • Availability of survey contractor. 	Existing contract	
	Topographical surveys	<ul style="list-style-type: none"> • Pipeline routing Options • Planning Constraints 	Design framework	The first objective for the construction of the transmission system process will be to verify the pipeline route corridors or establish new corridors as appropriate. Each section of the pipeline will have a Project Supervisor dedicated to running that section of pipeline, with the exception of Derrylin where it is anticipated that the supervisor responsible for Strabane will move to this section on completion of Strabane. In addition, Project Engineers will be employed throughout the life of the project to assist in the design. They will then be available onsite during the build process to assist the Project Manager and make engineering decisions where necessary.
	Route investigation	<ul style="list-style-type: none"> • Pipeline routing 	<p>In order to achieve this, Routing Engineers will be required for each section of the pipelines as soon as possible. To achieve a fast response to the requirement, SGN would seek to employ Routing Engineers and CAD operators from SGN's existing Design Framework contract which currently has eight design houses, of varying sizes, engaged.</p> <p>Supervisors will be sourced through existing Project Management Framework Contracts or via the Design Framework as appropriate.</p>	

	Ground investigations	<ul style="list-style-type: none"> • Pipeline routing Options • Planning Constraints 	Tendered Environment contract	As information is gathered from environmental surveys and feedback from landowners and tenants via the Land Agents, the routes will be refined and locations for the PRSs established allowing the detail design for the pipelines and the PRSs to be undertaken.	
	Noise and Emissions studies	<ul style="list-style-type: none"> • Pipeline routing Options • Planning Constraints 	During this initial routing process, site-specific scopes and tenders will be produced for the environmental works and the Land Agents. These tenders will be tendered and let in accordance with European Requirements as one tender for all the environmental works and a Land Agent per section of pipeline.		
	Safety Evaluation	<ul style="list-style-type: none"> • Pipeline routing Options • Planning Constraints 	CDM and Safety framework		Safety evaluation is an integral part of the design process.
	Landowner identification	<ul style="list-style-type: none"> • Pipeline Routing • Quality of Land Agent • Quality of Statutory records 	Tendered Land Agent contract		The Land Agents will produce a schedule of interests listing all landowners and tenants who will potentially be affected by the works. They will then contact each party individually, explain the works and negotiate the areas of land required for pipe storage and site accommodation and all acquisitions, wayleaves, accesses and entry agreements. In conjunction with the Land Agents, once the site works start it is intended to employ local Agricultural Liaison Officers via the Inspection Framework to monitor the ground works onsite and assist the Land Agents.
Wayleaves and acquisition	Standard wayleaves	<ul style="list-style-type: none"> • Location, • Market conditions • Successful negotiation with landowners 	Negotiated by Land Agent	Wayleaves will be based upon recognised industry standards and engagement with landowners will be in line with the communication strategy. Local experienced solicitors will be used and interaction with the Ulster Farmers' Union will be essential.	
	Development wayleaves		Negotiated by Land Agent		
	Necessary wayleaves		Negotiated by Land Agent		
	AGI sites		Negotiated by Land Agent		
	CP wayleaves	<ul style="list-style-type: none"> • Local Land Agent liaison 	Negotiated by Land Agent		
	Crop loss and disturbance payments	<ul style="list-style-type: none"> • Pipeline routing • Project duration 	Negotiated by Land Agent		
	ALOs	<ul style="list-style-type: none"> • Level of Agency liaison 	Inspection framework		
	Public bodies	<ul style="list-style-type: none"> • Location, • Market conditions • Successful negotiation with landowners 	Tendered Environment contract		
	DETI oral hearings	<ul style="list-style-type: none"> • Frequency and Duration • Attending Resources 	Tendered Environment contract		
	Licence holder internal costs	<ul style="list-style-type: none"> • Level of internal participation 	Internal existing resource		
Public Relations	<ul style="list-style-type: none"> • Selected Approach 	Tendered contract			

Materials	Linepipe, bends and fittings	<ul style="list-style-type: none"> • Global demand and associated market price for steel • Exchange Rates • Material Design Specification • Pipeline length • Transport crossings • Water courses 	Competitive tender SGN currently has a number of framework agreements in place across a range of activities. This enables the business to procure the materials and services necessary to keep it running effectively without the delays of going out for a full tender every time a need is identified.	As the designs are developed, material schedules for each pipeline and PRS will be produced and the long lead time items such as pipe, bends and valves will be tendered and sourced.
	MTO design	<ul style="list-style-type: none"> • Complexity of the Pipeline and AGI design 		
	AGI materials	<ul style="list-style-type: none"> • Global demand and associated market price for steel • Exchange Rates • Design Specification • Adjacent TSO requirements 	The framework agreements generally run for three or four years with the option to extend for a further one or two years, therefore encompassing the requirements for the West Transmission Project. Any necessary adjustments or contract variations required will be carried out by the SGN Procurement department in time for the West Transmission Project preferential bidder being announced. Procurement under the framework contracts is described in more detail in Section 6.	
	Pipe storage and site lease	<ul style="list-style-type: none"> • Duration, • Location • scale of the proposed materials storage area(s). 	Negotiated by Land Agent or MWC	

Location will be driven by the MWC. Within the works information for the MWC will be the requirement to establish a site compound with sufficient accommodation for the contractor's personnel and the SGN project staff working on each section of pipeline. The accommodation will be self-contained with offices, meeting rooms, welfare facilities, utilities and storage. The areas will be fenced, top soil stripped, and stoned and paved for walkways. The area will be large enough to accommodate sufficient portacabins for the site staff, parking for all vehicles and storage for materials. In addition to the main office areas, will be areas along the route where pipe will be delivered and stored prior to stringing. These areas will be fenced and topsoil stripped.

<p>Third party inspection</p>	<ul style="list-style-type: none"> • Detail and frequency of inspection • Availability of suitably Qualified Inspectors 	<p>Inspection framework</p>	<p>On placing orders for these materials, a Quality Inspector will be employed via the current SGN Inspection Framework to oversee the procurement and production of the materials and equipment. The pipe will delivered and stored at the pipe dumps. Each pipe will be checked on receipt, and any coating or bevel damage will be noted and marked. All pipe numbers will be recorded. Following top soil strip, the pipe will be strung along the pipeline route end to end on wooden skids. Any coating or bevel damage will be rectified at this stage. The pipes are then welded together. This is a critical part of the pipeline construction and is subject to a high level of inspection. The weld procedures will be checked and approved for the grade and wall thickness of pipe. The welding consumables will be checked to ensure they are compliant with the procedure and correct storage methods have been employed prior to use. All Welders will be tested to ensure they meet the required standards and automatic welding machines will be checked for compliance. All test welds are tested to destruction under laboratory conditions to determine the capabilities of the weld. The pipe ends are checked ultrasonically prior to welding to ensure there are no defects that could affect the integrity of the weld. All welds are visually inspected during welding and then radiographed. The inspectors also ensure that the correct amount of pre-heat is maintained in the pipe during the welding operation. On a long pipeline, several teams of Welders or machines will complete the different passes of the weld until the weld is complete to ensure the process is maintained at pace. The welding operation is susceptible to the weather and so a welding shelter may be required. These are also advisable where members of the public may be present in order to prevent the arc from the weld causing eye damage.</p> <p>When the weld is passed from the radiography, the area is grit blasted and coated with a multi-component liquid or epoxy to a standard at least as good as the factory applied coating on the rest of the pipe. The whole pipeline is then checked for coating defects prior to ditching.</p>
<p>Material/weld testing</p>	<ul style="list-style-type: none"> • Pipeline Design Code • Method of testing deployed • Number of individual Front Ends 		

Construction		<ul style="list-style-type: none"> • National Market demand, • Contractual Framework • Tenderers perception of risk • Project duration • Deployment • Availability of Local Labour • Pipeline route • Topography • Ground conditions generally • Environmental & Planning Constraints • Local transport facilities • Delays • Interference 	Tendered via EU procurement as outlined in section 6.	<p>The MWC is the largest visible part of the project and can be let either in sections or as one large contract.</p> <p>It is envisaged that the section to Strabane will be suitable to lay as a below 7bar pipeline, possibly in PE100 for the majority of the route and it is therefore intended that this section be laid in 2016. Routing and design for this section and associated PRSs will be prioritised so that the ITT document for the MWC can be produced by August 2015 to be let by November 2015 for a site start in January 2016. Materials for below 7bar operation should be sourced during this tendering process. Providing there are no major environmental or landowner issues this will allow operational commencement at Strabane in October 2016.</p> <p>The sections from Portadown to Enniskillen will be tendered during 2016 for a site start in January 2017. Gas will be brought across from Portadown from to Enniskillen over a three-week period in October 2017. Owing to the length of pipeline to be constructed in this period, it is envisaged that the final reinstatement of this area will be undertaken during the following year in 2018. Due to the challenging nature of the ground conditions between Enniskillen and Derrylin, it is proposed to construct this section in 2018 to allow more detailed geological surveys to be carried out and more in depth consultations with drilling contractors to establish the best route and material for the pipeline. The working width will then be reinstated as far as possible to its original state. The sub soil will be ripped to a depth of at least 300mm to break up compaction caused by the running track. The topsoil will be spread and the width will again be ripped to include the top layer of the subsoil.</p> <p>Depending on the land, post construction drainage may be required and as necessary a specialist land drainage consultant will be employed to design and install any land drainage system.</p>
	Fixed price scope	<ul style="list-style-type: none"> • Chosen Contractual Framework • Contract specification • Contract terms 	Project services framework(PE,QS)	
	Re-measurable work	<ul style="list-style-type: none"> • Chosen Contractual Framework • Activity rates schedule 	Competitive tender (MWC)	
	Schedule of day works	<ul style="list-style-type: none"> • Day works activity schedule • Defined day works scope 	Under MWC competitive tender	
	Additional works	<ul style="list-style-type: none"> • Contract Terms 	Under MWC competitive tender	
	Commission pipeline with external parties	<ul style="list-style-type: none"> • Deployment • Commissioning Programme • Construction delivery 	Under MWC competitive tender	
	Accommodation, amenity and restoration works	<ul style="list-style-type: none"> • Pipeline routing • Topography • Environmental and planning constraints 	Under MWC competitive tender	
	Planting, environmental and landscape works	<ul style="list-style-type: none"> • Pipeline routing • Topography • Environmental and planning constraints 	Competitive tender	
	Pre-construction archaeology	<ul style="list-style-type: none"> • Pipeline routing design and selection 	Locally supplied	
	Legal and Insurances	<ul style="list-style-type: none"> • Local market conditions 	Internal existing resource	

Construction SCADA and C&I Commissioning		<ul style="list-style-type: none"> • Specification & design • Communication design, • Local Communication Infrastructure • National SCADA developer and support contractor demand • Deployment • Hardware costs • Extent of Software development • Extent of interface development 		<p>SCADA and communications design will be an integral part of the project. The mobilisation process is described in detail in section 3.3.</p> <p>A key part of the approach will be ensuring that equipment design is standardised to integrate seamlessly with the existing communications</p>
	AGIs	• See above	E&I framework	<p>SCADA and communications design will be an integral part of the project. The mobilisation process is described in detail in section 3.3.</p> <p>A key part of the approach will be ensuring that equipment design is standardised to integrate seamlessly with the existing communications</p>
	Pipeline	• See above	E&I framework	
	SCADA	• See above	E&I framework	
	C&I design	• See above	E&I framework	
	C&I commissioning	• See above	E&I framework	
	Others	• See above	E&I framework	
	Gas and initial live gas operations	<ul style="list-style-type: none"> • Duration of commissioning operations • Phasing/commissioning programme • Deployment 	Existing Qualified SGN personnel	<p>SGN are one of the leaders in this activity, having commissioned the majority of the HP pipelines for Northern Ireland. In addition pigging framework contracts exist which are costed based upon a much larger volume of work</p>
	Intelligent pigging	<ul style="list-style-type: none"> • Phasing/commissioning programme • Deployment 	Existing contract	<p>SGN are one of the leaders in this activity, having commissioned the majority of the HP pipelines for Northern Ireland. In addition pigging framework contracts exist which are costed based upon a much larger volume of work</p>

9.3 Cost management

9.3.1 Explanation of review processes for costs incurred

Construction/capital costs will be controlled using a project and task approach to drive robust management and review. This will allow comparison of performance across all areas of the business and reflects SGN's existing culture where taking responsibility for expenditure and efficiency is second nature and ensures we derive maximum value from all that we do.

Construction costs will be managed by the construction project team and monitored in line with the governance structures detailed in Section 3.2.1, with a reporting cycle as set out in 3.2.2.2, and risk/issue management as per 3.2.2.3.

In addition, costs will be shared with the Regulator in line with any relevant licence obligations or any reporting structure that is agreed between the parties outside of the licence.

9.3.2 Explanation of information systems for managing costs

As the party responsible for construction, management of capital costs will be within SGN's remit and they will be appropriately incentivised in line with the proposed pain-gain mechanism. Costs incurred will be managed through the leading Oracle Financial Enterprise Resource Planning (ERP) system. This provides strong governance through an authorised spend hierarchy which will ensure that all procurement is signed off in advance. A contractor payment system that allows easy analysis, review and query of all costs submitted by contractors will also be used.

The Oracle ERP provides detailed reporting at a line-by-line level for scrutiny of all costs. Any variances to budgeted spend will be investigated and reviewed. Monthly reporting will be undertaken to produce management accounts and provide management information on spend levels.

High level reporting will be delivered through the Cognos (IBM business intelligence and performance management) reporting tool.

Mutual Energy's contractual relationship for the construction of West Transmission will be with SGN rather than multiple contractors. Progress will be monitored via the project steering group meetings and invoices paid only where accompanied by the appropriate backup such as Project Manager signoff and QA reports.

TEN

Chapter Ten

Finance Costs

10.1 WACC (work book submission)

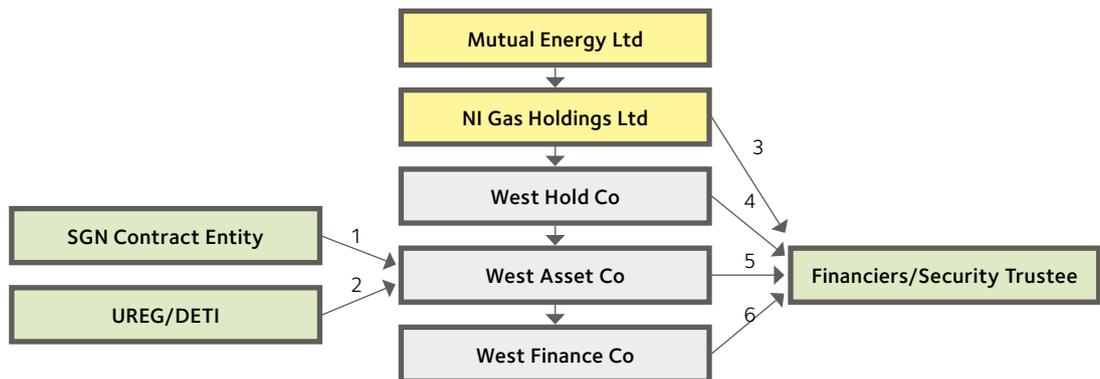
10.1 WACC (work book submission)

Proposed Mutual Financing Strategy for Transmission Company

The Consortium proposes to finance the transmission asset on a 100% debt funded mutual basis, adopting both the proven governance and financing structures delivered for Mutual Energy’s other Energy assets. With an ability to use an established and professional mutual board and governance platform, we offer a mutual solution that will deliver not only the lowest cost of capital available, but also drive maximum efficiencies in operating and maintenance costs. No other bidder can offer this efficiency combined with a proven mutual operating model.

Proposed Financing Structure

We propose to use a similar financing structure to the Moyle Interconnector (2003), Scotland Northern Ireland pipeline (2005) and Belfast Gas Transmission pipeline (2008) which together have a solid track record and credibility with the rating agencies and investors. A new holding company will be set up under Northern Ireland Gas Holdings Ltd to hold the regulated investment and financing companies. The diagram below provides high level detail of the various relationships:



Relationship	Description
1	NEC 3 Construction contract
2	Licence award and comfort letters for financing (including any grant subordination)
3	Security provided – shares of West Hold Co
4	Security provided – shares of West Asset Co
5	Fixed and floating security over all assets and also the shares of West Finance Co
6	Fixed and floating security over all assets

Northern Ireland Energy Holdings Ltd is West Asset Co in the diagram and will be awarded the gas transmission licence. In turn it will contract with SGN to design, build and deliver the transmission pipeline network under an NEC 3 construction contract. Under this contract SGN will provide Letters of Credit (LoCs) to allow West Asset Co to raise short term bank debt such that it can make staged payments under the construction contract. The comfort letter from Scotia Gas (attached with this application) provides assurance in respect of meeting the Financial Standing Criteria, and the deliverability of construction financing.

Once construction is complete in the final quarter of 2017 or early 2018 the Consortium intends to issue long-term RPI linked bonds to match the long-term regulated revenue of the asset. The proceeds of the bond issue will be used to repay the short term bank debt and any remaining obligations under the construction contracts.

MEL have three outstanding, publicly traded bond financings, with similar risk profiles to the financing being considered. This provides confidence regarding both efficiently structuring any financing, and the ability to secure investors to purchase the bonds.

Since we are a mutual company with no equity, we cannot take unlimited risk including the risk that financing rates will rise before we lock into financing rates on or soon after designation of the pipeline. The Cost of Capital bid reflects a reasonable expectation of the cost of financing in today's markets using MEL's tried and tested structure. The actual pass through financing cost will reflect the actual (whether higher or lower) financing costs incurred.

MEL has commits to a transparent and competitively tendered process of procuring long-term finance to ensure that these costs are minimised.

Our base case financing assumption supporting the cost of capital bid is that on completion of the construction and commissioning of the new pipeline, West Finance Co will issue a 40-year index linked bond in late 2017/ early 2018. Due to investor confidence in MEL's ability, and proven track record to successfully operate and finance gas transmission assets, we believe we can finance this asset at a spread of 175bps over index linked gilts of a similar average life.

Basis of WACC

We considered three different bases for our underlying WACC. These are explained in the table below:

Option Description	Real WACC Before Adjustments	Comments
1. Precedent Rate from Previous Transaction	2.21%	All-in real financing rate achieved on Belfast Gas during the financial crisis in 2008
2. Credit Spread from Belfast Gas over current relevant real Gilt yield	0.75%	All-in real financing rate applying the issue creditspread of 0.8% achieved on the Belfast Gas transaction to the current relevant real Gilt yield of (0.05)%
3. Credit Spread reflecting market new issue premium over current relevant real Gilt yield	1.70%	Reflects a market benchmarked current new issue credit spread of 1.75% plus the current relevant real Gilt yield of (0.05)%.

Whilst arguments could be made for submitting a real WACC anywhere within the ranges set out above, MEL believes that only method 3 has the credibility of being a market financing rate. This is because neither method 1 nor 2 reflects current market yields for bonds similar to the one that will be issued to finance the transmission asset. We have sought to give comfort that this rate is deliverable by including a methodology of how we have benchmarked our relative financing costs. We would expect this benchmarking basket to remain relevant through to the date that the long-term finance is incurred, particularly where new issues are added to this basket over time.

In addition to a commitment to provide transparency, we can also commit that any efficiencies or lower cost of capital achieved will be passed through to consumers.

10.1.1 Explanation of build-up of the WACC

The WACC in the workbook is 1.98%.

Figure 10.1.1 – How the WACC has been built up

	%	%
1) Underlying real yield		(0.05)%
2) Current Credit Spread		1.75%
3) Capitalised upfront transaction costs	0.35%	
4) Less: Capitalised upfront transaction costs to be paid by MEL	(0.21)%	
Capitalised Upfront transaction costs		0.14%
5) Funding costs of liquidity		0.14%
MEL bid Cost of Capital		1.98%

Source: MEL Workbook. Real yield at 9 April 2014

Explanatory notes

- (1) Underlying real yield – this is the yield on a UK index linked gilt maturing in 2047 at 9 April 2014. This is used as a benchmark for a ‘risk free’ investment. This gilt has 33 years to maturity, which is the nearest currently traded to the average life of our assumed bond.
- (2) Current Credit Spread – this is the premium that MEL will have to pay above the level paid by the UK government to reflect the higher risk of the investment. This is based on comparable bonds traded today.
- (3) Capitalised upfront transaction costs – this is the cost of funding £4.6m of upfront costs on top of the RAB of £71m.
- (4) Capitalised upfront transaction costs paid by MEL – this represents the lower of £3m (including VAT) or 60% of the costs in (3) which will be met by MEL from its reserves rather than being passed on to customers.
- (5) Funding costs of liquidity – this is the cost of having to finance various reserves and a £5m (representing c one years’ worth of required revenues as working capital) revolving credit facility to satisfy credit rating agency requirements.

The WACC has been applied to a RAB of £71m built up as follows:

	£m
Materials, Construction, Wayleaves	80.019
Design/Project Management	3.645
Site Investigation/C & I/Commissioning	2.924
Contingency (Construction Premium)	10.823
Uncontrollable	4.609
Capital Expenditure	102.020
Less: Subvention	(32.500)
Mobilisation	0.542
Capitalised Interest	0.649
Other Applicant Costs	0.000
RAB	70.711
Capitalised Upfront Costs	1.840
Additional Drawdown for Working Capital	1.750
Bond Issued	74.301

10.1.2 Explanation of assumptions used and their appropriateness

Our base case financing assumption is that the new pipeline will be paid for through the issue of an amortising index-linked long-term bond which will be repaid over the useful life of the pipeline asset. Upfront costs (including the allowable costs of financing during construction) will be capitalised and repaid over the same period.

This is on the basis that we are able to give confidence to creditors and rating agencies alike that, our financing and operating costs will be allowed by NIAUR to be recovered through the postalised gas transmission tariffs in NI.

(1) Underlying real yield

Based on a proposed capital repayment amortisation schedule, our bond will have an average life of 34 years. Principal will be repaid semi-annually over the entire life of the bond. The index linked gilt with the most similar tenor (UK Treasury Gilt 3/4% 2047) was trading at a -0.05% yield in the market as at 9 April 2014.

Evidence on real yield

The real yield is based on the yield of the UK Treasury Gilt 3/4% 2047. This is a widely traded bond with a price which reflects the current market expectations around interest and inflation rates. Within the last two years, this bond has traded within a range of 0.7%. However it was below 0.1% for 75% of the last two years.

Figure 10.1.2a – Yield on comparable gilt 2012–2014



Source: UK Treasury Gilt ¾% 2047; Bloomberg

(2) Current Credit Spread

The credit spread reflects the higher risk of lending to MEL than the UK government. Factors which influence the credit spread include where comparable bonds are trading and relative investor demand for assets at the time of issuing the bonds.

Evidence on credit spread

This credit spread has been validated with the providers of our comfort letters, (Barclays and RBC Capital Markets) who have approved the inclusion of their secondary market data which form the basket of comparative bonds which have been compiled to support the reasonableness of our cost of capital bid. This data can be found in Annexe 2. We would expect that this basket of comparative bonds will maintain its relevance as an indicator of an appropriate new issue credit spread, especially when combined with subsequently issued comparative bonds. The premiums for an index linked bond and a new issue are based on the experience of our advisors and the prospective bond lead managers.

(3) Capitalised upfront costs

The following table illustrates the forecast cost make up of the upfront transaction costs which are met from the proceeds of the bond:

MEL has assumed upfront transaction costs totalling £4.6m, split as follows:

Transaction Cost Item	Estimated Amount £m (excl VAT)	Comments/Assumptions
Bank, Underwriting and Other Fees	1.175	This covers Bank underwriting and ancillary facility fees
Legal Fees	1.125	Assumes both construction and term financing transactions covered
Technical Advisory	0.850	Assumes acting over construction phase of project
Financial Advisory	0.800	Assumes both construction and term financing covered
Ratings Agency	0.300	Assumes two ratings required
Accounting, Tax and Model Audit Fees	0.200	Assumes support for both construction and long-term refinancing
Other Fees	0.150	
Total Incurred	4.600	
Less: Capitalised upfront costs paid by MEL	(2.760)	The lower of £3m (including VAT) or 60% of the costs
Total passed on to customers	1.840	

Evidence on transaction costs

MEL has raised bonds on the public markets three times in the past on a mutualised structure under the NI regulatory regime and is the only company with experience of doing so. Whilst the total transaction costs in the precedent transactions were substantially less as a percentage of the quantum raised (Premier Transmission £3.1m or 2.9%, Belfast Gas £2.7m or 2.5%), this transaction is different in that many of the banking institutions will be required to provide services for both construction phase financing and the term financing on or soon after designation of the pipeline. The quantum set aside for legal and financial advisory are comparable to both Premier Transmission and Belfast Gas transactions whilst we have taken a cautious approach to the additional fees required to cover Technical Advisory and Bank underwriting and facility fees. MEL will ensure that these costs are no more than they need to be.

MEL has secured the consent of existing financiers to release cash from the reserves of the existing gas companies which it intends to utilise to help increase the economic efficiency of all three gas assets. Assuming NIAUR are content with our bid and this approach, the released cash will offset a portion of the arrangement costs inherent in a two staged financing caused by the mutual pass through licence only being available post construction. MEL is prepared to pay the lower of 60% or £3m (including VAT) of the long-term financing transaction costs from its own resources to demonstrate its commitment. We have, therefore, adjusted our WACC bid to reflect this offer.

(4) Funding costs of liquidity

We have adjusted the cost of capital bid by 0.14% to cover the estimated costs of providing liquidity to support the financing structure. We have assumed that liquidity will be provided in the form of committed bank facilities that can be drawn down during certain circumstances to cover the payment of operating and debt costs to avoid a default. This allows a higher credit rating because it ensures that the company can survive periods of short term stress on cashflow.

The full costs of maintaining the liquidity facilities for 40 years have not been included because it is the intention of MEL to replace these facilities over the first 10 years with cash from the sale of tax losses to other group companies. No other mutual solution can offer these advantages which offer genuine benefit to customers, and allow us to reduce the cost of capital whilst not jeopardising the integrity of the financing structure.

The costs of funding liquidity can be summarised as follows:

Liquidity Cost Item	Estimated Required Adjustment to Cost of Capital	Comments
12 months Debt Service Facility	0.04%	£3m facility for the first 10 years. After this point assumed to be funded from tax losses sold to the MEL group.
O&M Reserve Facility	0.03%	£2m facility for the first 10 years. After this point assumed to be funded from tax losses sold to the MEL group.
Revolving Credit Facility	0.07%	£5m facility throughout the life of the project
Total Adjustment	0.14%	

The debt service reserve facility is designed to be sufficient to pay the following 12 months' debt service costs (interest and principal) based on the proposed amortisation schedule (an annuity in real terms, as shown in the cashflows graph on the following page).

The O&M reserve facility is designed to be sufficient to pay the following 12 months' O&M costs. O&M costs are based on MEL's experience of operating similar assets.

The revolving credit facility is not expected to be used but provides additional liquidity in the event of unexpected costs, or delays in recoveries from the postalisated pot.

Evidence on liquidity costs

The cost of the liquidity and revolving credit facility is based on discussions with potential providers of such facilities that have been conducted by our advisors. In addition MEL has over £25m of similar facilities across three businesses, the facility costs assumed are consistent with these existing facilities. The costs are inevitably indicative and will not be known precisely until they are required.

Total cash Raised and Application of funds

The source and use of funds is summarised in the table below (all figures are at March 14 values).

Sources	%	£'000s
Subvention Payments	30.43%	32,500
Bond Issuance	69.57%	74,301
Total	100%	106,801

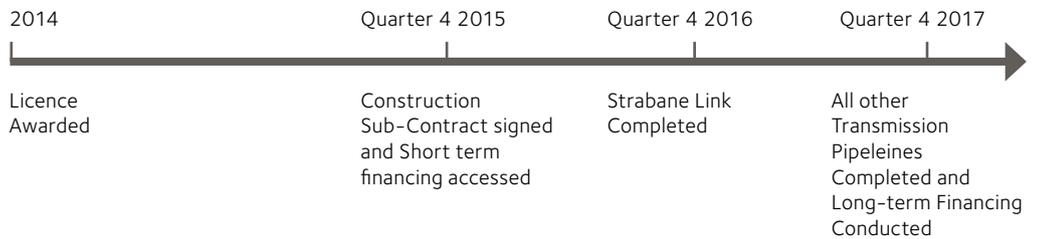
Uses	%	£'000s
Construction Costs	85.39%	91,197
Construction Premium	10.13%	10,823
Capitalised Interest	0.61%	649
Mobilisation	0.51%	542
Upfront Costs	1.72%	1,840
Additional Drawdown for Working Capital	1.64%	1,750
Total	100%	106,801

Proposed Financing Timetable

To secure the highest possible credit rating for the bonds (and therefore to secure a lower long-term financing cost), it is important to limit both the construction and ongoing event risks that long-term financiers are exposed to. The Consortium's strategy is, therefore, to time the procurement of long-term financing with designation of the pipeline. To reduce ongoing event risk for financiers, and to take advantage of the uplift in credit ratings that are typically given for such features, it is proposed to grant security over all assets of West Asset Co, and to structure the financing, as set out above, such that West Asset Co has access to liquidity to protect it against unexpected delays in recovering its ongoing financing and operational costs.

In the short term, West Asset Co will need to finance the working capital and construction stage payments under the sub-contract with Scotia Gas. To provide the necessary security to financiers, West Asset Co will need the same set of documents as provided for previous gas asset mutualisations.

Figure 10.1.2b – Expected financing timeline

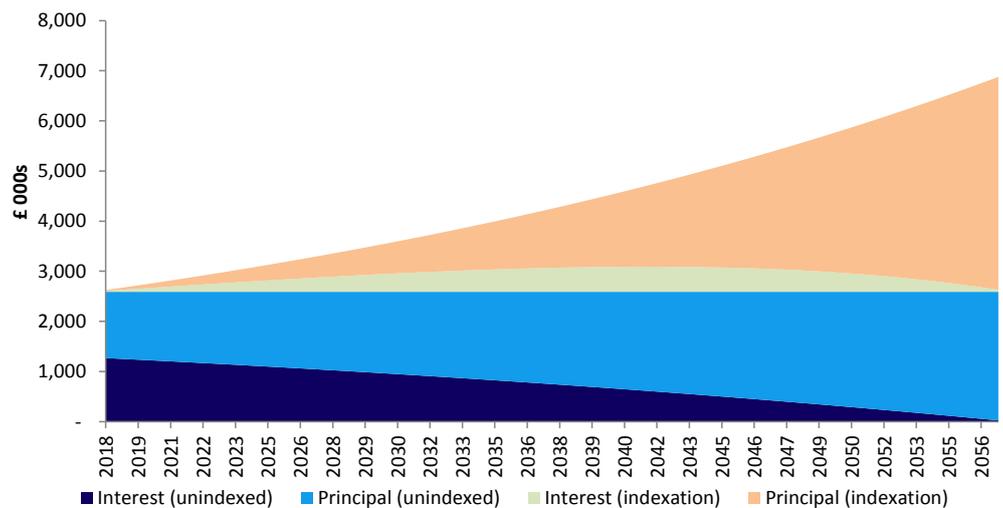


Source: Mutual Energy and Consortium

While the licence is expected to be awarded in 2014, long-term financing will not be accessed until construction completion and delivery by Scotia Gas of the transmission pipelines to various towns. This is advantageous because it will avoid incurring construction risk financing premiums for the operating phase of the pipeline, and unnecessarily complicating the financing structure.

The chart below shows expected nominal interest and capital repayments over the lifetime of the bond based on a £74m bond with a coupon of 1.70% (Gilts + 175bps) and RPI at 2.5% (in line with the current Bank of England target of 2% for CPI plus a 50 bps wedge to RPI in line with the observed trend). While payments are made semi-annually, the chart below shows the costs on an annual basis (ie two payment periods).

Figure 10.1.2c – Bond Cashflows



Source: Mutual Energy and Consortium



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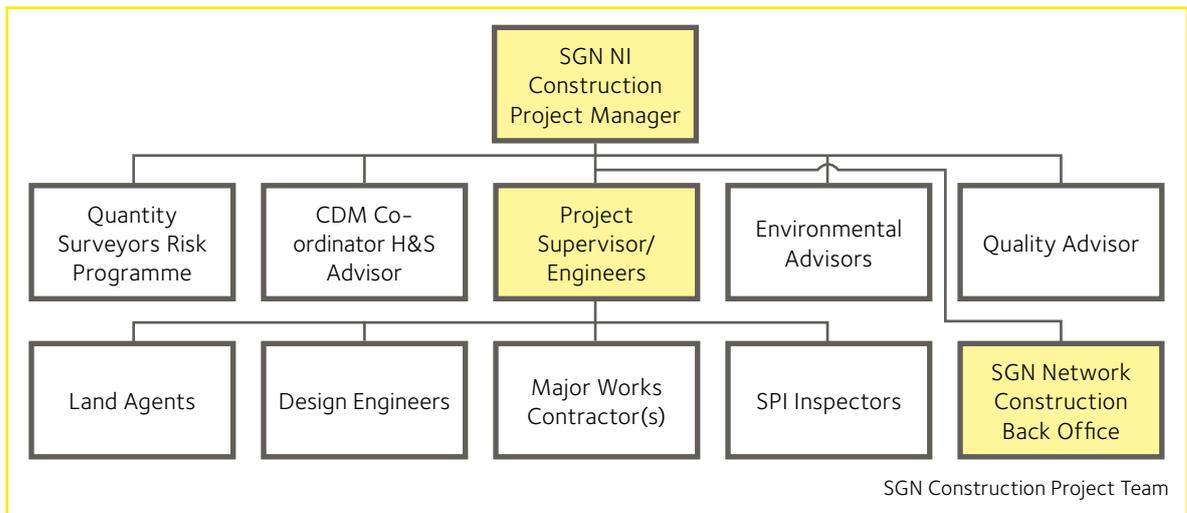
Annexes and Glossary

- 11.1 Annexe 1 – Job descriptions and project organisation
- 11.2 Annexe 2 – Basket of Comparative Bonds to Benchmark Cost of Capital bid
- 11.3 Glossary



11.1 Annexe 1 Job descriptions and project organisation structure

Construction Project Team Roles and Responsibilities



The following job descriptions are used as part of the recruiting process:

Project Manager

An SGN Project Manager shall be appointed as the Project Manager for the works. It is the responsibility of the Project Manager to:

- Act as the client representative and ensure that the project progresses in accordance with agreed timescales and budget.
- Ensure input has been received from all relevant specialist sources (technical, health and safety, environmental, financial/taxation etc).
- Ensure that SGN procedures relating to approved projects and the investment guidelines are observed and that procurement and other related policies and procedures are followed.
- Allow sufficient time and resources for all stages of the project, ensuring that project milestones are defined.
- Ensure that a project and contract budget is established and monitored, and project expenditure is in accordance with SGN Financial Governance guidelines.

- Ensure that financial reconciliation occurs and receive SGN's monthly financial summaries of project expenditure
- Ensure that there are suitable management arrangements for the project and that a monthly status report is prepared and issued in accordance with SGN Governance procedures.
- Ensure that the relationship with external agencies is managed and maintained.
- Ensure that financial authorisation approval levels and signatories are established.
- Appoint project resources and principal contractor, ensuring that the project organogram and manning levels are established, checking the competency of all appointees.
- Ensure that a post completion review has been carried out.
- Chair commercial and progress meetings, acting as the primary contact and focal point for the project for formal communications and information to and from the contractor.
- Ensure that a Project Plan is established. The plan shall identify each activity, the person responsible and all project review stages. The plan shall be updated as the project evolves.
- Ensure that risk and risk mitigation strategies are reviewed and monitored.
- Fulfil the role of Project Manager as defined by the New Engineering Contract/Engineering Construction Contract (NEC/ECC).
- Manage the financial and contractual aspects of the project, providing Management Reports to SGN Senior Management as required.
- Ensure that SGN Security Guidelines are adhered to in terms of confidentiality and sensitive information.
- Ensure that the Project Construction Management System is implemented and maintained.
- Ensure that Project Health and Safety and Environmental Inspection Plans are agreed and completed.
- Ensure that construction inspections and tests are witnessed as required by the Quality and Inspection Test Plan.
- Ensure that all goods and services are procured in accordance with specification and order requirements in a timely and efficient manner.
- Ensure that all specifications and requirements are clearly identified within purchase orders.
- Ensure that relevant certification has been requested and to provide information as required by the project.
- Ensure that the client's duties under the Construction (Design and Management) Regulations 2007 are fulfilled. See CMS 02.

Project Engineer

It is the responsibility of the Project Engineer to:

- Undertake duties associated with project delivery, receiving delegated powers as required from SGN's Project Manager. Assist SGN's Project Manager and ensure the smooth flow of information between all members of the team and other interested parties.
- Manage the project, including liaison with contractors as well as all other personnel/companies appointed to the project and overall supervision of on site construction activities.
- Chair and attend meetings as required and provide progress reports.
- Ensure the smooth operation of the project to deadlines and completion. Monitor progress against contract programme.
- Ensure compliance with SCO procedures including production of all relevant documentation.
- Ensure that safe working and environmental procedures are adhered to in accordance with the project Health, Safety and Environmental Inspection/ Management Plans in place.
- Ensure ongoing technical and engineering support to the PMT for the detail design and construction processes.
- Ensure compliance with relevant legislation and standards, recommendations, guidelines and codes of practice as required by the Gas Requirements Manual (GRM).
- Work with the contractor(s) and sub-contractors, Land Agent/ALO. To assist in the evaluation of submitted designs and to check compliance with current SGN and IGE specifications/standards and all relevant legislation.
- Assist in ensuring the work meets the requirements of the IGE/GL5/G17 modifications procedures process. Ensure that all technical queries are answered and to monitor specifications and drawings.
- Liaise with the project Programme Engineer in the production of programmes;
- Provide programme advice to the Project Manager and data for use by the Programme Engineer.
- Co-ordinate, liaise and deal with planning issues on the project.
- Ensure production of reports, for employer use.
- Liaise with CDM Co-ordinator.
- Ensure that a watching brief is undertaken on archaeological and environmental issues.
- Fulfil contractual duties under the ECC form of contract; acting under clearly defined delegated powers instructed by the Project Manager.
- Fulfil contractual duties defined as the supervisor when appointed by the employer under the terms defined within the ECC form of contract.
- Ensure construction tests are witnessed, as required by the project quality plan.
- Monitor and report on site activities, initiating audits with support from HS&E specialists as necessary.

- Ensure the requirements of statutory authorities are carried out.
- Ensure effective management of the site document control systems.
- Identify and co-ordinate resolution of potential and actual problems.
- Assist in managing the financial management systems to be put into place for delivery of the projects.
- Ensure that reviews are undertaken on contractors' method statements.
- Ensure all necessary consents are obtained and all legislation is complied with.
- Liaise with statutory bodies (eg NI Rail, DTI, EA, HSE, English Nature, Police, Highways Agency etc).
- Ensure the maintenance and management of the SGN Project Construction Management System.
- Provide an interface with Maintenance personnel.
- Support SGN's Project Manager to ensure that all goods and services are procured in accordance with specification and order requirements in a timely and efficient manner.

Project Supervisor

It is the responsibility of the Project Supervisor to:

- Act as the formal SGN representative at the interface with the contractor(s) for all day to day construction site activities.
- Assist the Project Manager and the Project Engineer as directed.
- Ensure the smooth flow of information between all members of the team and other interested parties.
- Support the Project Engineer in controlling and reviewing costs that will provide key financial information that may be requested by SGN.
- Instruct the project team members to provide additional support and reports as necessary.
- Identify and co-ordinate resolution of potential and actual problems.
- Ensure the maintenance of the site document control system.
- Ensure that the Project Health and Safety and Environmental Inspection Plan is completed by competent persons in a timely manner.
- Monitor and report on site activities, initiating audits with support from HSE specialists as necessary.
- Attend regular site meetings.
- Fulfil the role of Contract Supervisor as defined by ECC forms of contract.
- Implement the SGN Project Construction Management System.
- Interface and liaise with SGN's Maintenance Operations.
- Witness construction tests as required by the Quality and Inspection Test Plan.
- Support the Project Manager and the Project Engineer by ensuring that the procurement process is effectively carried out.

Procurement and Logistics Officer

It is the responsibility of the Procurement and Logistics Officer to:

- Ensure all aspects of applicable Purchasing Legislation, Regulations and Directives are adhered to.
- Provide professional advice on Conditions of Contract and related issues.
- Assist in the development of evaluation techniques and auditable and equitable Contract Award Criteria.
- Evaluate commercial tender submissions and input into technical and financial submissions including management of information flow during the tender evaluation period.
- Immediately inform the Project Manager of anticipated delays, queries etc.
- Attend project meetings as required.

Quality Advisor (QA)

It is the responsibility of the QA to:

- Provide professional advice on contractors' QA arrangements.
- Be part of the CDM Co-ordinator team with regard to the specification, collection and review of information required for the Health and Safety file.
- Evaluate quality issues within tender submission.
- Provide ISO 9001 Assessments of Contractors/Sub-contractors.
- Review and accept the contractor's quality and inspection and test plan.
- Audit construction activities for compliance with procedures and the contractor's quality and inspection and test plan.
- Review and monitor compilation of construction records and handover documentation as appropriate.
- Review and monitor compilation of construction records and handover documentation (Health and Safety file) as appropriate.
- Attend project meetings as required.
- Assist in the identification and selection of inspection personnel as appropriate.
- Ensure that the Project Construction Management System has been issued and implemented.
- Co-ordinate and monitor the Project Construction Management System;
- Carry out periodic QA meetings with the contractor(s).
- Review other relevant QA/QC documentation and advise the PMT of the required actions.

Quantity Surveyor (QS)

It is the responsibility of the QS to:

- Support and advise the Project Manager in financial and contractual aspects of the project.
- Provide data to assist in the preparation of monthly financial reports and accruals.
- Assist in compensation event notification, assessment and implementation.
- Update the Project Change Control Registers with details of all contractual changes occurring on each of the contracts placed to deliver the scope of works.
- Undertake cost monitoring and provide advice to the Project Manager (Construction).
- Assist with the evaluation of the commercial tender submissions, including the production of the Commercial Tender Evaluation Report.
- Liaise closely with the Risk Manager and develop the project Risk Management programme.
- Support and advise the Project Manager in matters of a contractual nature;
- Provide for the evaluation and certification of interim and periodic valuations.
- Monitor the contractor's systems to ensure that comprehensive substantiation of Prime Cost and Provisional Sums is provided.
- Attend progress meetings and ensure the provision and issue of minutes.
- Co-ordinate, monitor and update the SGN Project Construction Management System.

Project Health and Safety Advisor (CDM Co-ordinator)

It is the responsibility of the CDM Co-ordinator to:

- Provide assistance to SGN in its role as the CDM client to ensure it is fulfilling its duties under the Construction (Design and Management) Regulations 2007.
- Act as the client's competent source of advice for all CDM and construction health and safety related issues.
- Take the lead in the CDM Co-ordinator team and meet the competency requirements for construction health and safety related issues as defined in Appendix 5 of CDM 2007 ACOP.
- Provide advice to SGN on assessing the competency of designers and contractors that they intend to appoint, with reference to the competency framework set out in Appendix 4 of the CDM ACOP.
- Provide advice to SGN on the adequacy of the project health and safety management arrangements it intends to implement. Review this assessment as required.

- Ensure there is adequate co-operation and co-ordination between SGN's project team, designers, principal contractor and contractors, attending meetings, briefings and document handovers as required.
- Ensure that suitable and sufficient pre-construction information is assembled by SGN's project team and supplied to designers and contractors in a timely manner.
- Manage with the design Co-ordinator the health and safety communication between client, designer and principal contractor.
- Ensure that the project is notified to the Health and Safety Executive as soon as possible and updated as necessary. Ensure copies of the notification are sent to and displayed by the principal contractor.
- Ensure that hazard and risk assessments are undertaken and reviewed as necessary. Ensure advanced risk assessment tools such as HAZID, HAZOP, HAZCON and SIL are used where appropriate and where required by the contract.
- Assist the design Co-ordinator and QA in specifying the documentation required for the health and safety file.
- Assess the competence of contractors with respect to health and safety matters and attend meetings with prospective contractors.
- Assist the design Co-ordinator and QA in co-ordinating design work and designers. Ensure that designs meet the requirements of the Workplace (Health, Safety and Welfare) Regulations 1992.
- Assist the Design Co-ordinator in reviewing designs to ensure that information on significant risks associated with construction, maintenance or use is recorded and accompanies the design.
- Ensure that the principal contractor has an adequate Construction Phase Health and Safety Plan before the start of construction, has made adequate welfare provision for the project and is fulfilling its other duties under Regulation 22 of CDM 2007. Keep these under review as necessary.
- Liaise with the principal contractor in relation to on-going design and design changes during construction, attending site at project locations as required.
- Review and comment on contractor risk assessments and method statements.
- Undertake health and safety audits and inspections as required.
- Ensure that the health and safety file is delivered to the client.
- Attend project progress meetings as required.
- Carry out accident and incident investigations for SGN following any LTI, near miss or injury to the public associated with the project.
- Ensure compliance with the requirements of the network and construction QMS documents and procedures.

Senior Pipeline Inspector

It is the responsibility of the Senior Pipeline Inspector to:

- Supervise the client inspection team.
- Monitor construction activities for technical compliance with established procedures.
- Co-ordinate the approval of welding and NDT procedures and other process procedures.
- Act as central body for the compilation of vendor material certification.
- Provide ad-hoc technical advice to Project Supervisor.
- Report inappropriate working practices.
- Interface with the QA on quality related issues.
- Ensure the provision of construction inspection records.
- Attend project meetings as appropriate.
- Ensure compliance with the requirements of the network construction QMS documents and procedure.

Project Environmental Advisor

It is the responsibility of the Project Environmental Advisor to:

- Reviewing drafts of the contractor's PEMP and associated documentation, risk assessments and method statements.
- Promoting and communicating environmental issues.
- Advising SGN's Project Manager or other nominee, of statutory/other environmental requirements and alerting them in a timely manner regarding problems that may delay project completion.
- Weekly environmental inspections and monthly audits of the contractor in accordance with SGN CMS 03.
- Manage specialist environmental sub-contractors, if required, on behalf of SGN's Project Manager; and provide guidance on environmental incidents, ensure these are reported on the SEARS hotline and ensure these are logged and closed out on site.
- Monitor, review and audit the contractor's project environment plan.
- Ensure environmental competence of contractors prior to contract award and undertake pre-construction audits.
- Ensure compliance with the requirements of the network construction QMS documents and procedures.

Land Agent

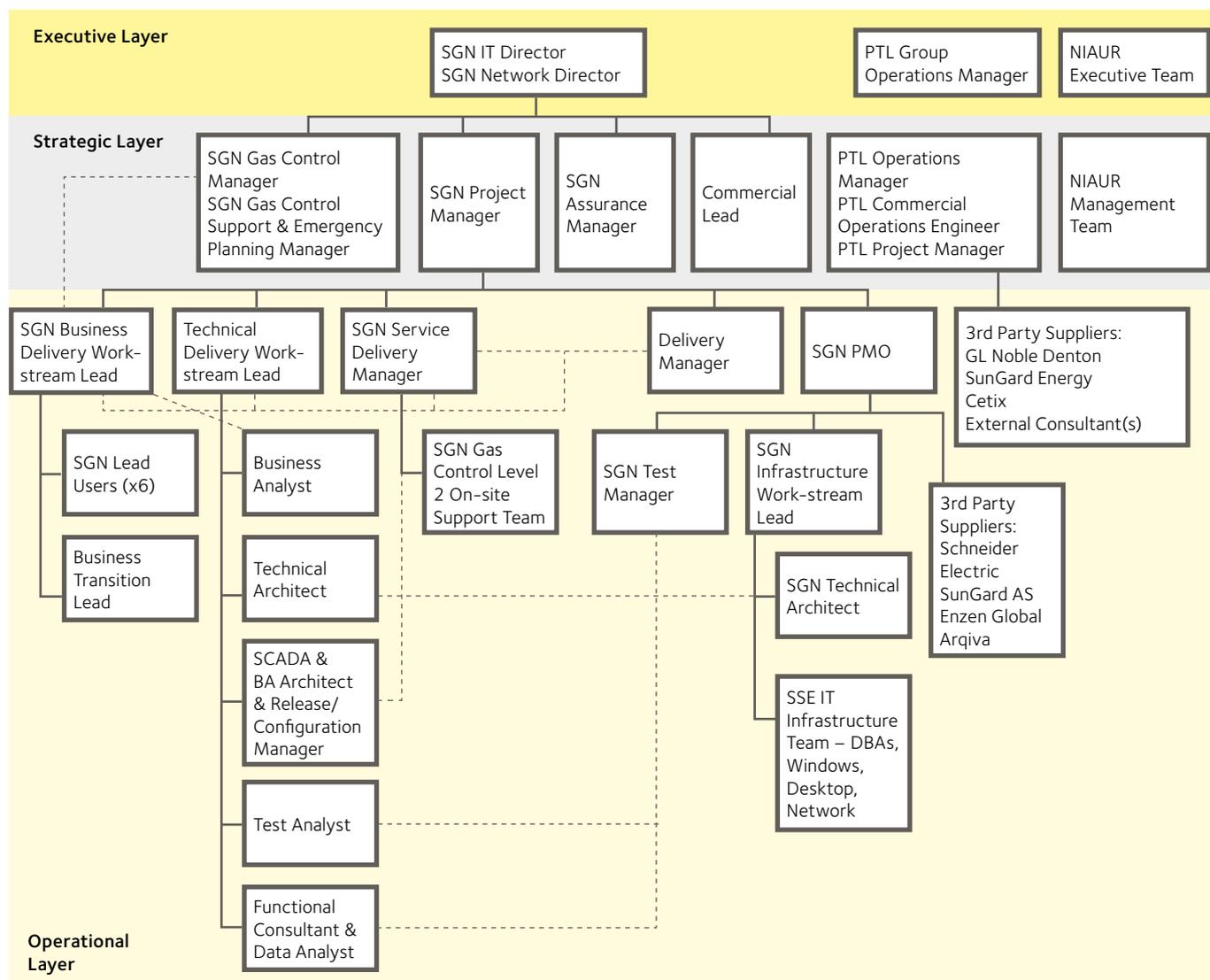
It is the responsibility of the Land Agent to:

- Liaise with all statutory and local authorities as appropriate.
- Assist in the acquisition of the pipeline construction authorisation.
- Progress all easement and land acquisitions together with obtaining owner/tenant consents.
- Liaise with the appointed Land Agents and solicitors.
- Assist in producing the pre-entry land requirements.
- Supervise the contractor(s) during agricultural related construction activities.
- Prepare a schedule of defects during maintenance period.
- Advise the appropriate Land Agents on settlements of landowner claims.
- Provide a monthly progress report of activities.

Commissioning Engineer

It is the responsibility of the Commissioning Engineer to:

- Ensure non-routine procedures are prepared and available.
- Ensure commissioning procedures are reviewed and available.
- Ensure commissioning test equipment is suitable and calibrated.
- Ensure as-built drawings are available at the commissioning stage.
- Provide operational support during commissioning.
- Review method statements and risk assessments associated with commissioning.
- Ensure permits are available and complied with.
- Monitor E&I and telemetry testing and commissioning.
- Liaise with Control Rooms as appropriate.
- Ensure adequate gas monitoring is in place during commissioning.
- Provide an interface between activities and groups that overlap.
- Ensure compliance and support GL5/G17 process as applicable.
- Ensure that commissioning handover records are available.



Operational mobilisation Roles and Responsibilities

The key roles and responsibilities within this proposed project organisation are as follows:

MEL Delivery Team – Operations Manager, Commercial Engineer, Project Manager and External IT Consultant:

- Accountable for defining business requirements.
- Accountable for managing the delivery of MEL dependencies.
- Accountable for supplying training materials that fully cover all aspects of West Transmission Physical and Commercial operations.
- Accountable for supporting training delivery to MEL and SGN Gas Control staff.
- Accountable for mitigating MEL risks.

- Accountable for managing the resolution of MEL issues.
- Accountable for liaising with the Regulator on operational and migration issues.
- Accountable for brokering timely access to MEL third parties as required – GL Noble Denton, SunGard Energy, Cetix and external Consultants.
- Accountable for all dealings with external regulatory bodies.
- Accountable for notifying all relevant stakeholders of progress.

SGN Project Manager:

- Overall accountability for a successful transition.
- Accountable for delivery of systems which meet business and technical requirements.
- Accountable for developing strategies and plans to enable the smooth assimilation of West Transmission operations.
- Delivery of the West Transmission Solution Framework against agreed plans.
- Ensuring appropriate levels of project reporting are in place and delivered.
- Accountable for project financial control, including, budgets, forecasts and day to day tracking of expenditure.
- Provide clear direction and leadership to the Project Team.
- Advise SGN Legal and Commercial regarding transition completion.

SGN Gas Control Manager and SGN Gas Control Support and Emergency Planning Manager:

- Accountable for the safe and effective operation of the current SGN Gas Control operation.
- Accountable for the safe and secure transition to the new operation.
- Accountable for accepting all delivered systems and business processes are fit for purpose.
- Accountable for ensuring that the business is prepared and competent to accept the extended/modified business processes and systems.
- Accountable for ensuring that the SGN business users are prepared for the physical and commercial operation of the Gas to the West Network using the extended/modified systems and processes provided.
- Supporting the SGN Business Delivery Work-Stream Lead with the release of resources for training, requirements workshops and testing activities.
- Liaising with external regulatory bodies applicable to SGN operations.
- Advising SGN Legal and Commercial regarding transition completion.

SGN Business Delivery Work-Stream Lead:

- Accountable for the successful implementation of business changes required for the transition.
- Accountable for defining SGN business requirements.
- Accountable for ensuring that delivered IT systems meet the business requirements.
- Accountable for ensuring that the extended/modified business processes are fit for purpose and fully tested prior to operational implementation.
- Accountable for providing business resources at each stage of the project requiring user input.
- Accountable for the development of all staff training materials.
- Accountable for ensuring all gas control staff are competent in the use of the extended/modified systems and business processes.
- Ensuring that the new operational environment provides a safe and secure gas supply system for Gas to the West Transmission and existing SGN/PTL operations.

SGN Technical Delivery Work-Stream Lead:

- Accountable for the successful implementation of technical changes required for the transition.
- Accountable for defining the technical requirements and design.
- Accountable for ensuring that all environment specifications meet the requirements for enduring Gas to the West Transmission operations.
- Accountable for all infrastructure procurement and the development of a Gas to the West Transmission Equipment Register.
- Accountable for ensuring that delivered IT systems meet the technical requirements.
- Accountable for ensuring that the extended/modified systems are fully tested prior to operational implementation.
- Accountable for ensuring that support requirements are met.

Other Key Roles:

Executive Steering Group – MEL Group Operations Manager; SGN IT Director; SGN Network Director; SGN Finance Director; Head of Network Management; SGN Project Manager; SGN Commercial Lead; SGN Assurance Manager:

- Resolve escalated issues.
- Approve changes where required.
- Take corrective action where required.
- Ratify decisions where required.
- Support project communications as required.

SGN Assurance Manager:

- Ensure that the project observes the required SGN quality standards.

SGN Delivery Manager:

- Management of third party implementation support from: Schneider Electric, Enzen Global, SunGard Availability Services, Arqiva, GL Noble Denton, SunGard Energy, Cetix; manage production of project lifecycle deliverables; progress tracking; management of risks, issues and dependencies.

SGN PMO Manager:

- Ensure that the project observes the required SGN PMO standards.

SGN Infrastructure Work-Stream Lead:

- Manage relationship with SSE IT for the provision of technical resources; manage delivery of architectural designs; ensure all required environments and networks are delivered on time; sign-off the commissioning process.

SGN Test Manager:

- Ensure that the project observes the required SGN testing standards; define Test Strategy; produce Test Plan; report of defect status; accept systems into UAT and Pre-Production; approve systems for deployment.

SGN Service Delivery Manager:

- Develop service transition strategy; manage production of service related documentation; undertake relevant communications with the business; accept production deployment.

SGN Release and Configuration Manager:

- West Transmission system release management.

NOTE: the number of required third party resources cannot be confirmed at this stage but all third parties will be bound by fixed price contracts based upon the system extension work required. Estimates for this work have been included in the cost breakdown in Section 3.4.

11.2 Annexe 2

Basket of Comparative Bonds to Benchmark Cost of Capital bid

Issuer	Coupon	Size (£m)	Inflation Linked?	Sector	Maturity	Rating (M/S & P/F)	RBC Spread	Barclays Spread	Average Spread	Premium for Linker	Adjusted Spread
Greater Gabbard OFTO	4.137	305	No	Utility	29/11/2032	A3/--/--	120	120	120	20	140
Northern Gas Networks	5.625	200	No	Utility	23/03/2040	Baa1/BBB+/--	121	120	121	20	141
Heathrow	7.075	200	No	Transport	04/08/2028	A-/A/--	132	128	130	20	150
Scotia Gas	6.375	225	No	Utility	15/05/2040	Baa1/BBB/BBB+	121	117	119	20	139
SSE	6.250	350	No	Utility	27/08/2038	A3/A-/A-	112	116	114	20	134
Yorkshire Water	3.307	128	Yes	Utility	29/07/2033	A3/A-/A	150	150	150		150
Yorkshire Water	2.718	260	Yes	Utility	30/12/2039	--/A-/A-	150	150	150		150
Affinity Water	1.548	150	Yes	Utility	01/06/2045	A3/A-/A-	130	150	140		140
Thames Water	3.375	175	Yes	Utility	21/07/2021	A3/A-/A-	145	150	148		148
University Partnership Programme	2.729	75	Yes	Infra-structure	31/08/2047	Baa1/A/--	200	219	210		210
Heathrow	1.382	50	Yes	Transport	28/01/2039	A3/A-/A-	175	157	166		166
Heathrow	1.372	75	Yes	Transport	28/01/2049	A3/A-/A-	175	157	166		166
National Grid	1.208	40	Yes	Utility	27/08/2038	A3/A-/A	135	150	143		143
Average Spread							144	145	144		152
Premium for New Issue											23
Indicative Final Spread											175

Source of Secondary Market trading data: Barclays, RBC Capital Markets, 15 April 2014.
Please note that all RBC and Barclays spreads are indicative

The Consortium has worked with prospective bond lead managers who are providing comfort letters to MEL to support this bid.

Bonds were selected for inclusion in our comparable basket based on the following criteria:

1. Comparable industry sector and risk profile
2. Sufficient trading volume to imply an accurate spread over gilts
3. Mix of inflation linked and nominal bonds

We have not included any of MEL's previous bonds as its illiquidity has meant that it has rarely traded and the 'market' level of the bonds might not be representative of a new issue credit spread.

For each bond we averaged the spreads from both banks, and took an unweighted average of these to give the average spread for our comparable bonds.

We then adjusted this average for two factors:

1. Premium for Inflation Linked (Premium for Linker column) – because many of the comparison bonds are not inflation linked, we needed to increase the average to reflect the fact that inflation linked bonds generally trade at wider spreads than nominal fixed rate bonds. This estimated premium is based on the experience of our advisors and the prospective bond lead managers.
2. Premium for New Issue – because this will be a new issue, there is generally a premium paid compared to secondary bond credit spreads to reflect the risk of switching into a new issue. This estimate is based on the experience of our advisors and the prospective bond lead managers.

Note:

There has been recent evidence that there is an additional premium paid (c 20bps) for large (greater than £100m) inflation linked bonds. Given the assumed size of this financing, no such premium has been assumed but if this ceases to be the case an additional premium could be relevant.

11.3 Glossary

ACO	Amounts of Controllable Operational Expenditure actually incurred
ACoP	Approved Code of Practice
AESB	AES Ballylumford
AGI	Above Ground Installation
AGM	Annual General Meeting
Alcatel Rules	Mandatory Standstill Period
ALO	Agricultural Liaison Officers
AONB	Areas of Outstanding Natural Beauty
ArcGIS	Is a geographic information system (GIS) for working with maps and geographic information
ARR	Actual Required Revenue
ASSI	Areas of Specific Scientific Interest
AV solution	Audio Visual
BATNEEC	Best Available Technology Not Entailing Excessive Cost
BCO	Budgeted Controllable Operational Expenditure
BGN	Bord Gais Networks
BGTL	Belfast Gas Transmission Limited
BLC	Belfast Lough Crossing
BSS	Basic Safety Standards
C&I	Control and Instrumentation
CAD	Computer Aided Design
CAS	Competency Assurance System
CBI	Confederation of British Industry
CCGT	Combined Cycle Gas Turbine
CCNI	NI Consumer Council
CDM	Construction Design Management
CDMC	Construction Design Management Consultants
CEO	Chief Executive Officer
CER	Commission for Energy Regulation
CESB	Coolkeeragh ESB
CIPS	Close Interval Potential Surveys
CMS	Construction Management System
Cognos	Business intelligence and performance management software
COP	Code of Practice
Cost Owners	Individuals Responsible for cost items
CP	Cathodic Protection
CPT	Construction Project Team
CSCS	Construction Skills Certification Scheme
CTR	Cost, Time, Resource Schedule
CWT	Cold Weather Technologies

DARD	Department of Agriculture and Rural Development
DCENR	Irish Department of Communications, Energy & Natural Resources
DETI	Department of Energy Trade & Investment
DG Energy	Director General for Energy
DNCS	Digital Network Control System
DOE	Department of the Environment
DRD	Department for Regional Development
DS33 assessor	Qualified NVQ Assessor
DSEAR	Dangerous Substances and Explosive Atmospheres Regulations
E&I	Electrical & Instrumentation
EC	Emergency Controller
ECC	Engineering Construction Contract
EIA	Environmental Impact Assessment
EL6 Authorisation	Authorisation in compliance with the Electricity at work Regulations
ENTSOG	European Network of Transmission System Operators
ERIC Process	Eliminate, Reduce, Isolate, Control
ES	Environmental Statement
ESD	Emergency Shut-down
EU	European Union
EUS	Energy Utility Skills
FCO	First Call Operatives
FCP	Final Circulating Pressure
FMA	Fingleton McAdam Limited
FOA	Form of Authority
FRR	Forecast Required Revenue
FSB	Federation of Small Business
GCC	Gas Control Centre
GCM	Gas Control Manager
GDN	Gas Distribution Network
GIS	Geographic Information System
GL5	Procedures for managing new works, modifications and Repairs
GPRS	General Packet Radio Service
GPS	Global Positioning System
GRM	Gas Requirements Manual
GTMBS	Gas Transportation Management and Billing System
HAZCON	Hazards in Construction
HAZID	Hazard Identification
HAZOP	Hazard and Operability Study
HDD	Horizontal Directional Drilling
HMRC	HM Revenue & Customs
Hotfixes	a single, cumulative package that includes information that is used to address a problem in a software product.
HP	High Pressure
HSE	Health and Safety Executive
HSENI	Health and Safety Executive Northern Ireland

HSMC	Health and Safety Management Committee
HSSE	Health, Safety and Security Environment
IBM	International Business Machines
IC	Incident Controller
ICE	Information on Chemicals for Employees
Idn	Independent distribution network
IFI	Innovation Funding Incentive
IGE or IGEM	Institution of Gas Engineers & Managers
ILI	In-line inspected
IME3	EU Third Internal Energy Package
IoD	Institute of Directors
IOW	Isle of Wight
IP	Intermediate Pressure
ISL	Interconnector Services Limited
ITT	Invitation to Tender
JV	Joint Venture
KPI	Key Performance Indicator
LDZ	Local Distribution Zone
LF	Leakfinder
LLC	Larne Lough Crossing
LOP	PTL Local Operations Procedure PTL/OP/001
LP	Low Pressure
LTI	Lost Time Incident
LTO	Licence to Operate
LTS	Local Transmission Systems
MAPD	Major Accident Prevention Document
Maximo	Computer based maintenance management system
MEL	Mutual Energy Limited
MEP	Member of European Parliament
MERC	Maintenance Emergency Response Contract
Micro-CHP (Ecogen)	Micro Combined Heat and Power
MIMIC	These visual schematics include overviews of the entire pipeline system or systems
MLA	Member of the Legislative Assembly
MP	Member of Parliament
MPI	Magnetic Particle Inspection
MPOP	Maximum Permissible Operating Pressure
MTO	Material Take Off
MWC	Major Works Contractors
NCE	Network Control Engineer
NDT	Non Destructive Testing
NEBOSH	National Examination Board in Occupational Safety and Health
NEC	New Engineering Contract
NG	National Grid
NGO	Non-Governmental Organisation

NI-NEC	Northern Ireland Network Emergency Co-ordinator
NIAUR	Northern Ireland Authority for Utility Regulation
NIE	Northern Ireland Electricity
NIEA	Northern Ireland Environment Agency
NIFRS	Northern Ireland Fire Rescue Service
NILGA	Northern Ireland Local Government Association
NINOA	Northern Ireland Network Operators Agreement
NNR	National Nature Reserve
NRO	Non Routine Operations
NTS	National Transmission System
OPC interface	Open Platform Communications
Oracle ERP	Oracle Enterprise Resource Planning (ERP) which is a software application which includes Financials, Project Portfolio Management, Procurement, and Governance, Risk, and Compliance solutions
ORR	Operational Risk Register
OTP	Operational Transition Plan
P&L	Profit & Loss
PAS55	Asset Management Standards
PAT	Project Assurance Team
PAUT	Phased Array Ultrasonic Testing
PDF	People Development Framework
PE	Polyethylene
PE100	High Density Polyethylene
Pearson	Survey used to detect coating defects on buried pipelines
PEMP	Performance Evaluation and Measurement Plan
Pig Runs	Practice of using devices known as 'pigs' to perform various maintenance operations on a pipeline
Pig Traps	Pig launch and receiver trap. Pig traps are used for inserting pigs into a pipeline then launching, receiving, and finally removing them without flow interruption.
PIMS	PTL Pipeline Integrity Management System
PLC	Programmable Logic Controller
PMC	Specialist Pipeline Repair Contractor
PMO	Project Management Office
PMT	Project Management Team
PNG	Phoenix Natural Gas
PPE	Personal Protective Equipment
PQQ	Pre Qualification Questionnaire
PR	Public Relations
PRS	Pressure Reducing Station
PSNI	Police Service Northern Ireland
PSSR	Pressure System Safety Regulations
PTL	Premier Transmission Limited
PTPS	Premier Transmission Pipeline System
QA	Quality Advisor
QC	Quality Control

QMS	Quality Management Systems
QS	Quantity Surveyor
RA	Risk Assessment
RAB	Regulatory Asset Base
RAID	Risk, Assumption, Issue and Dependency
RAM	Risk Assessment Matrix
RAR	Remedial Action Register
RCM	Reliability Centred Maintenance
RE	Responsible Engineer
RIDDOR	Reporting of Injuries, Diseases and Dangerous Occurrences Regulations
ROSPA	The Royal Society for the Prevention of Accidents
RTU	Remote Telemetry Unit
Safety Case	The information required by Schedule 1 of the Gas Safety Management Regulations
Sage	Accounting Software
SAN	Storage Area Network
SCADA	System Control and Data Acquisition
SCCM	Systems Centre Configuration Manager
ScGN	Scotland Gas Networks
SCO	Safe Control of Operation
SCOTVEC	Scottish Vocational Education Council
SEARS	Safety, Environment, Accident Reporting System
SEMO	Single Electricity Market Operator
SGN	Scotia Gas Networks
SGN LDZ	Southern Gas Networks Local Distribution Zone
SHE	Safety Health & Environment
SIL	Safety Integrity Levels
SNMP	Simple Network Management Protocol
SOA	System Operator Agreement
SoGN	Southern Gas Networks
SOMSA	System Operator Management Service Agreement
SONI	System Operator Northern Ireland
SPI	Senior Pipeline Inspector
SQL	Structured Query Language
SSO	Single System Operator
STC	Safety and Technical Competence
Symology	Company offering Infrastructure Asset Management Systems
TD1	Institution of Gas Engineers and Managers Steel pipelines and associated installations for high pressure gas transmission.
TD13	Institution of Gas Engineers and Managers Pressure regulating installations for natural gas, liquefied petroleum gas and liquefied petroleum gas/air.
TNA	Training Needs Analysis
UAG	Unaccounted for Gas
UFU	Ulster Farmers' Union
UREG	Northern Ireland Utility Regulator

UVDB	Utilities Vendor Database
VCE	Verified Capital Expenditure
VRF	Virtual Reverse Flow
Vsat	Very Small Aperture Terminal
WACC	Weighted Average Cost of Capital
WAN	Wide Area Network



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