

## **Safety Management Framework**

### **Management Procedure for Planning, Design and Recording of <7bar Pressure Regulating Installations**

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**APRIL 2021**

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## Management Procedure for Planning, Design and Recording of <7bar Pressure Regulating Installations

SGN/PM/NP/38

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Issue Date: 20<sup>th</sup> April 2021

### Context

#### Who is this Management Procedure for?

All those involved in the planning and design of all Pressure Regulating Installations (PRI's) supplied from upstream systems with operating pressures up to 7bar.

#### What does this Management procedure do?

This procedure sets out the requirements for each key stage in the planning and design of new and replacement PRI's, including service governors, supplied from upstream systems with operating pressures up to 7bar.

#### Scope

PRI's are installed at strategic locations in order to regulate the gas pressure and/or flow between each pressure tier. This procedure applies to the planning and design of all PRI's supplied from upstream systems with operating pressures up to 7bar. It is primarily aimed at the design and project planning processes associated with new and replacement District and I&C governors. Service governors, previously covered in SGN/WI/NP/39 are now incorporated in this procedure.

In the case where a new or replacement PRI is proposed, it is important that the installation is planned and designed in a manner that fully considers all the construction and future maintenance of the asset, the risks associated with it and those risks it is exposed to.

There are a number of key stages in the planning of such projects from the initial identification of need, which can include consideration of potential sites, in depth study of the suitability of the various site options, land acquisition, procurement, construction, records and subsequent maintenance. [Appendix D](#) provides an overview of that process.

#### Why do we need this Management procedure?

To ensure that new or replacement PRI's are planned and designed to avoid the risk of over pressurisation, have sufficient capacity and are suitably located to support the downstream network. As such, consideration must be given to the health, safety and environmental requirements of applicable legislation.

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## 1. OBJECTIVE

- 1.1.1 SGN owns, operates and develops a gas distribution transportation system that transports gas from the National Transmission System (NTS) to the consumers' emergency control valve (ECV).
- 1.1.2 In order to regulate the gas pressure and/or flow between each pressure tier and the end user, Pressure Regulating Installations (PRI's) are installed at strategic locations. The design and planning of new or replacement PRI's, in addition to ensuring any installation is designed to avoid the risk of over pressurisation, should also have sufficient capacity and be suitably located to support the downstream network or user.
- 1.1.3 Further consideration must also be given to the health, safety and environmental requirements of the applicable legislation. As such, consideration should be given to the proposed location, the layout within the site, the need for security of the installation and any housing for the PRI.

## 2. CONSULTATION WITH KEY DEPARTMENTS

- 2.1.1 The Project Planner ([see Definitions](#)) must ensure that the [Pre-Installation Certificate](#) is reviewed and signed by a representative from each department during the design stages of a project. This certificate should be submitted to the Network Planning Manager or their representative for approval and retention in the project file.
- 2.1.2 When planning projects that may require Operations and/or Maintenance to attend site on a regular basis, it is critical to involve Maintenance staff as early as possible, not only to support the planning process but also to highlight future projects in which they may have some involvement.
- 2.1.3 Operations Maintenance staff will also provide key input when reviewing accessibility and suitability for future maintenance, particularly in consideration of the duty of care to employees. Consultations should be particularly thorough where a below ground installation is being considered.

## 3. LOCATION, LAYOUT AND SECURITY

- 3.1.1 PRI's must be designed, located, constructed and operated taking into consideration the safety and environmental requirements of applicable legislation.

### 3.2 Location

- 3.2.1 When selecting a suitable location for any site, consideration should be given to the following factors:
  - Proximity to target area of influence and likely resultant length of inlet/outlet mains.
  - Accessibility of the site.
  - Proximity to other plant.
  - Proximity to roadways and fast-moving traffic.
  - Proximity to car parking bays.
  - Proximity to vehicle turning areas.
  - Proximity to driveways or entrances.

- Vulnerability of staff working on the installation to injury as a result of any traffic accident (including off-road or in private property).
- Vulnerability to damage from vehicles (including off-road or in private property) and resultant risk to security of supply (SOS).
- Clearance from overhead electric cables.
- Clearance from nearby tree canopies.
- Proximity to tree roots.
- Proximity to occupied buildings.
- Current and future flooding and other climate impacts such as heatwaves (using the climate risk and opportunities assessment tool).
- Potential future ground movement / requirement for retaining wall.
- In the case of below ground modules, these should be located well away from any carriageway.
- The hazardous zones classification in line with the Dangerous Substances and Explosive Atmospheres Regulations (DSEAR) – taking account of its proximity to properties or potential ignition sources.

3.2.2 There is a risk that the above factors are considered primarily with a view to the suitability of any location in terms of future operation and maintenance. However, they are equally applicable to the construction period, see **SGN/PM/SHE/03** for further guidance on CDM requirements.

### 3.3 Vehicle Protection Risk Assessment

3.3.1 There are several factors to consider when carrying out a risk assessment for the potential of a vehicle impact to a PRI; however, the biggest contributing factors are the speed limit of the nearest road and the distance from the road to the nearest point of the PRI housing.

3.3.2 The **Data Capture Form for Vehicle Impact Damage** can be used as a tool to capture all required information onsite. It can also be used for the reassessment of PRI sites to assess any changes. All captured information must be input to the Risk Assessment for Vehicle Impact Damage.

3.3.3 The Project Planner must complete the **Risk Assessment for Vehicle Impact Damage** to determine if any vehicle protection measures are required. Where the risk assessment indicates that vehicle protection measures are required, the design must be updated accordingly with the recommended measures. Alternatives may be considered such as a new site location or, if necessary, below ground apparatus.

3.3.4 The Project Planner must also complete the **PRI Site Selection Risk Assessment** and return (with all other relevant surveys) to Asset Management for retention to enable comparison with any future reassessments.

*Note - Subsequent reassessments will be achieved through existing maintenance procedures for scheduled activities. Concerns raised over the change in risk to the installation are to be relayed to Asset Management who will determine the appropriate action.*

### 3.4 Layout

3.4.1 The health and safety of operatives while they are attending site is paramount and should be addressed throughout the layout process.

3.4.2 The layout of the site should be adequate to accommodate the plant in question plus ancillary equipment and provide sufficient scope to carry out maintenance work, consultation with maintenance may be carried out to clarify the maintenance works required (see section 2). If on-street parking is not readily available, consideration should be given to the provision of off-street parking.

3.4.3 Consideration should also to be given to access to, or egress from, any housing or fenced area, with particular attention given to the opening of doors or gates onto a footpath or roadway.

### **3.5 Security**

3.5.1 In designing any site, while consideration should be given to providing ease of access to staff, the site should be secured against entry by unauthorised individuals. Where felt appropriate to install security fencing, the nature of that fencing must be selected following consideration of:

- The importance of the site to the Network.
- Locality and degree of vandalism in the area (e.g. In consultation with local Operations Department, where appropriate).
- Future maintenance requirements.
- Planning requirements.
- Landowners requirements.
- Environmental issues (e.g. where prepared Feasibility or Conceptual Study Reports, or Environmental Impact Studies, may identify potential issues such as visibility to bird life (especially protected species), burrowing depth of animals etc).
- Any customer requirements.
- In particularly high-risk locations, consideration should be given to fitting intruder monitoring devices.

3.5.2 Providing the above general requirements are not compromised, it may be permissible to omit the requirement for security fencing; such an omission is only permissible where all above ground plant in the installation is contained within adequately secure housings or enclosures.

3.5.3 Further guidance relating to fencing requirements can be found **SGN/SP/CE/9: Specification for The Design Construction and Testing of Civil and Structural Work; Part Nine, Security Fencing.**

### **3.6 Unavoidable Hazards**

3.6.1 Where hazards have been identified that cannot be avoided, additional protective measures should be considered. For example, where the presence of nearby livestock could cause a hazard, the use of safety barriers or additional fencing should be considered, see Section 3.2.

### **3.7 Non-domestic and Small Residential Service Governors**

3.7.1 Where a new connection is being made for a small residential dwelling, development or commercial unit - the design, location, layout and security principals are the same as installing a District Governor.

3.7.2 The location and design of the asset will be carried out through a joint review by the New Connections Design Team, the New Connections Surveyor and the customer. During this investigation the following points must be considered:

- If no alternative is found and the governor must be sited within 2m of a raised kerb - barriers or bollards should be installed. If a raised kerb is not present, but the installation is within 3m of a vehicle route or parking/turning area, protective barriers or bollards should be installed.
- Hazardous Area considerations (IGEM/SR/25): As a general rule, no installation should be installed closer than 3m to a building. A hazardous area calculation sheet should be provided to clarify the distances required. If the required distance cannot be adhered to, planning staff should be consulted for advice.
- There should be no openings into a building or electrical hazards/sources of ignition within the immediate vicinity. If there are, planning staff should be consulted for advice. (An opening to a building can be: Windows, doors, airbricks, vents etc).
- Isolation valves need to be fitted before any governor. The isolation valves should be fitted not closer than 2m and ideally not further than 10m away from the kiosk, see **SGN/SP/E/28** for further details.
- Non-domestic services should be terminated in a GRP kiosk, however other options are available for which the customer would have to provide the sizes. Any kiosk to be used shall conform to **GIS/PRS35**.
- When installing a single stream governor to feed a group of customers, it should be fitted with full bore accessible bypass points, thereby enabling maintenance to be carried out without interruption to the gas supply.
- Any proposed works where inlet pressures exceed 2bar must be submitted, appraised and authorised in line with the process documented in **SGN/PM/PS/5: Management Procedure for Managing New Works, Modifications & Repairs**. (This paperwork may be used to support this process).
- **Above ground installations will always be the preferred choice.** In the exceptional situation where a below ground governor is used, it must not be situated on or within 3m of vehicle access or turning unless protective measures such as barriers/bollards are used, or the pit construction is suitable for vehicle loading.

## 4. DESIGN

### 4.1 General Principles

4.1.1 The Project Planner should complete the **PRI Design Sheet** for all new PRI installations. When designing a new or replacement installation, the following principles should be adhered to:

- The entire life cycle should be taken into consideration.
- It should not present an unacceptable risk to any person or adversely affect the surrounding environment.
- Any hazard associated with the installation should be identified, risks evaluated, and measures taken to reduce the risk to as low as reasonably practicable (ALARP), see *IGEM/G/7: Risk Assessment Techniques*.
- Pipework, plant and equipment should be designed to allow the necessary levels of inspection and maintenance to be carried out.
- Adequate safety systems should be installed to protect the downstream network in the event of a failure of the regulating device.
- Location and accessibility of the inlet and outlet fire valves.

- Achieving the required level of reliability, taking account the requirements for the safe operation of the system, continuity of supply, plant and equipment failure and redundancy. For example, the inclusion of multiple streams.
- To minimise the impact on the environment by gas venting through the operation of control devices etc.

## **4.2 Active/Slam Governor Configuration $\leq 2$ bar Inlet**

- 4.2.1 Active/Slam is the preferred configuration for new or replacement district governors with inlet pressures not exceeding 2bar. Active/Monitor configuration (for inlet pressures not exceeding 2bar) should not be considered unless:
- The scale of any pressure surge upon failure of the active regulator is fully assessed.
  - The impact of such a pressure surge is modelled and assessed.
  - The impact of a full failure of such a system leading to significant over-pressurisation of the downstream system be fully assessed and documented.
- 4.2.2 The Asset Engineering Manager must approve the installation of active/monitor configuration for any new or replacement district governor with inlet pressures not exceeding 2bar.

## **4.3 The Written Scheme of Examination (>2 bar sites only)**

- 4.3.1 The Pressure Systems Safety Regulations 2000 (PSSR) are intended to reduce the risk of failure of pressurised systems (See **SGN/PM/PS/3: Management Procedure for ensuring compliance with the Pressure Systems Safety Regulations 2000 for gas pressure systems**).
- 4.3.2 The main tool for achieving this is the examination in accordance with the Written Scheme of Examination. Regulation 4 of PSSR covers the design, construction, repair and modification of pressure systems and puts a duty on all concerned to ensure that the pressure system is fit for purpose. To ensure compliance with PSSR, it is necessary to follow SGN's procedures for the appraisal and approval of the design of new plant.
- 4.3.3 **SGN/PM/PS/5: Management Procedure for Managing New Works, Modifications & Repairs** provides a framework for management and control of such works and applies to a range of assets utilised for Gas transportation systems, which include:
- Gas transportation equipment operating above 2 bar or with slam shut protective devices set above 2.7 bar or greater than 250 bar litres in volume.
  - All electrical, instrumentation and control systems and any associated software.
  - The installation of profilers and loggers, this will fall under the category of 'instrumentation and control system'.
- 4.3.4 Generally, profilers and loggers will be ATEX certified and normally housed in kiosks, where gas could possibly be present. The location of telephone / telemetry equipment needs to be considered as modems etc are not normally certified and should be placed in a safe area outside of any gas zone.
- 4.3.5 Any proposed works falling into either category must be submitted, appraised and authorised in line with the process documented in **SGN/PM/PS/5**.



## 4.4 Site Selection

- 4.4.1 The **PRI Site Selection Risk Assessment** summarises the key specifications and issues to be considered when reviewing the various options and finalising the proposed PRI site. This form should be completed by the Project Planner for assessing all new PRI sites.
- 4.4.2 The requirement to install a new PRI is normally driven by a requirement either to reinforce an existing downstream network, to replace an existing installation or to connect a new customer.
- 4.4.3 In such cases there may be a number of reasons why this may be required, including:
- Having insufficient capacity to meet predicted future demand levels.
  - Condition based replacement (including those with high failure rates).
  - Being situated in an area where works planned by a third party present an unacceptable risk to the safety of the installation and therefore security of supply.
  - A commercial customer with a high supply demand.
  - A domestic customer requires a new connection.
  - Obsolescence, i.e. spare parts not being readily available to support the required level of maintenance.
  - Any significant current or future climatic risks, such as risk from flooding.
- 4.4.4 The initial identification of the requirement of a new installation to support system reinforcement will be made by Network Planning. The choice of optimum location for the new installation will involve investigating which location provides greatest benefit to the downstream system or supply.
- 4.4.5 To achieve this, an assessment of the costs associated with the required inlet/outlet mains, what areas of ground are available that might be suitable for a PRI that an owner might consider selling/leasing, see Section 5 for further details.
- 4.4.6 The design should be risk assessed for hazards at all stages to prevent foreseeable issues throughout the life of the PRI. It is also important that the whole range of issues are considered, including even the less obvious such as cosmetic issues associated with screening/planting or the finish of the kiosk which may arise from constraints imposed via the granting of planning permission or objections from local residents.
- 4.4.7 In the case where the project involves replacing an existing installation, similar considerations must be made. This may also include whether the existing site is suitable for the proposed PRI (see Section 3), and/or whether there is any other benefit to the network to be gained by relocating the PRI at the same time as replacing it.

## 4.5 Sizing the PRI Unit

- 4.5.1 In the case of small domestic or commercial units, the sizing will be carried out based on the customers predicted requirements.
- 4.5.2 Having established the preferred location and initiated any land purchase process, Network Analysis (as specified in **SGN/PM/NP/16: Management Procedure for Below 7bar Network Analysis**) should be carried out in order to confirm the design parameters of the PRI. These will be provided to manufacturers to allow the necessary quotations to be reviewed and to ensure that the unit installed is fit for purpose, see Section 4.7 for further details.

- 4.5.3 In establishing the design parameters, consideration must be given to design flow, safety devices, security of supply (e.g. twin stream), inlet pressure range and outlet pressure range.
- 4.5.4 As specified in **SGN/PM/NP/18: Management Procedure for Network Planning for Systems Operating at Pressures not exceeding 7 bar**, where a scheme suggests a one-off opportunity / high value feature, (e.g. a river crossing or new PRI), the design must be evaluated at a 10-year horizon. This must reflect the expected pipe configuration as at 31st March to meet the anticipated 1 in 20 demand of that winter period.
- 4.5.5 The assessment of the design parameters of any installation must be based upon the worst-case scenario likely to be experienced at any point during a ten-year period. As a result, consideration should be given as to whether a planned change in the system may take place within that horizon (e.g. reduction in flow). Alternatively, the flow on Forecast Year 10 model (FY10), may be based upon the flow experienced the year prior to the change in question taking place.
- 4.5.6 Similarly, with regards to inlet pressures, consideration should also be given to not only the anticipated pressure in FY10, but should take account of the design minimum pressure of the system the PRI is supplied from, where the installation is situated relative to the tail of the system and how the system might be operated in an emergency.
- 4.5.7 In the case of downstream systems constructed fully in PE, the maximum outlet pressure to be quoted will be 75mbar, while in the case of mixed material system that figure will be 50mbar.

#### **4.6 Low Flow Installations**

- 4.6.1 When sizing a new installation, forecasted flow for year 1 (FY1) and year 10 (FY10) should be investigated. Where the anticipated flow in FY1 is very small and minimal load increase has been identified on the downstream network through to FY10, a smaller installation can be considered. However, there is always a risk that some form of unpredicted load can come on stream that the new installation may not be able to supply. If it will not significantly compromise associated costs, the recommendation is to consider allowing enough scope in the installation to reduce the risk from unexpected loads.

#### **4.7 Interaction with Manufacturer**

- 4.7.1 The design parameters provided to the manufacturers are a best estimate of the anticipated demand and associated pressures within the specified design horizon, therefore it is important they are recognised as that.
- 4.7.2 Discussions regarding the unit best suited to meet the criteria specified should be an iterative one and should consider the sensitivity of costs relative to the parameters provided, e.g. in certain situations a smaller PRI than that required to meet the parameters initially provided may be appropriate. If significant cost savings can be achieved, it must be established that the smaller PRI meets the design specification including flow rate, maximum noise level and other requirements.
- 4.7.3 The information given to the manufacturer should include, but is not limited to:
- Specific Human Factors information.
  - Designers risk register.
  - Design specification.
  - Type of load.
  - Painting specifications.

- Welding specifications.
- Other fabrication specifications.

4.7.4 The final order placed with the manufacturer should be submitted using an appropriate enquiry form. The enquiry form found in [GIS/E34](#) is suitable for this purpose and the design specifications found in both [SGN/SP/E/28](#) and [GIS/E34](#). The enquiry and design specification should be complete and clarify any ambiguous requirements.

#### 4.8 Pressure Monitoring and Control

- 4.8.1 Pressure monitoring and control may not be appropriate for all new installations, however, strategic PRI locations that are nominated by Network Planning must have pressure monitoring equipment installed. Such PRIs are usually defined by the location and the impact of the influencing downstream system. The availability of telemetry from these sites is critical for security of supply and invaluable for incident management, the more sites available the more robust the system will be.
- 4.8.2 It is recommended that with all mixed material systems, the PRI is purchased with profile control and fitted with a telephone line (or some form of remote communication or telemetry). Only in exceptional circumstances would clock control be considered for a mixed material network.
- 4.8.3 In the case of a single feed network where the new installation has been fitted with profile control, consideration should also be given to installing a low-pressure control point with phone line, thereby fully facilitating operation on 'self-learn' profile control.
- 4.8.4 Even on an integrated system where profiling has not been installed on the surrounding PRIs, profile control is still a much superior and more refined pressure control method than clocking. Where a telephone line is installed, but not part of a fully profiled 'self-learn' control network, the PRI can still be operated remotely and profiles adjusted at short notice providing greater overall refinement of pressure management. This configuration is greatly beneficial in the event of a pressure related incident.
- 4.8.5 A PRI configured this way reduces the frequency of manual pressure monitoring/adjustments required on site and the associated cost of managing this maintenance activity on an ongoing basis. Installing 'self-learn' control systems is consistent with SGN's strategy to reduce overall risk by lowering operating pressures, reducing shrinkage and site visit frequencies.
- 4.8.6 When profiling is not fitted (e.g. all-PE systems) it is still recommended that the majority of installations will be fitted with a data logger and telephone line (or some form of remote communication or telemetry) to support the monitoring of both inlet (monitor the feeding MP/IP system) and outlet (monitor downstream LP system) pressures. In such cases the inlet pressure may be the only channel which is monitored, but this will still provide valuable information from the upstream system.

*Note: the inlet pressure data can also be used to extrapolate the differential pressure across the PRI. This can indicate a capacity issue with the PRI without having the outlet pressure data, any instance would merit further onsite investigation. However, without data loggers such instances would be missed until poor pressures were reported on the downstream network. In such a scenario SGN could only claim to operate a reactive approach to pressure management as no preventative measures (such as installing a logger in the inlet/out of a PRI) are in place.*

## 4.9 Above or Below Ground Installations

4.9.1 Below ground installations can provide the opportunity to install PRIs in locations previously not considered practical – particularly in urban locations. Below ground units can be more aesthetically pleasing to the public, but there can also be a number of difficulties, primarily:

- The potential for siting units too close to traffic.
- Increased potential for flooding.
- Access for maintenance process including appropriate parking.
- Manual handling issues associated with lifting of the unit's cartridges.
- Potentially hazardous working in confined spaces.

4.9.2 As such, every possible effort should be made (as a first option) to acquire sites suitable for above ground installations. It is, however, recognised that above ground installations are generally more susceptible to vehicle damage and vandalism. Where these risks are identified and cannot be effectively mitigated, a below ground unit should be considered.

4.9.3 Where it is not feasible to acquire land suitable for an above ground site and distant alternatives are unsuitable, locations suitable for a below ground unit should be investigated.

4.9.4 The [Risk Assessment for Vehicle Impact Damage](#) and the [PRI Site Selection Risk Assessment](#) must be used when considering site selection, see sections 3.3 and 4.4 for further details. These risk assessments prompt the planner to consider the issues pertinent to site selection but should also draw out key factors which might influence the use of above or below ground modules.

## 4.10 Hazardous Area Classification

4.10.1 **IGEM/SR/25:** Hazardous Area Classification of Natural Gas Installations takes a pragmatic approach to the determination of safe dispersion of gas distances in a form of reference tables. It enables the hazards to be identified and the associated risks minimised. Provision of hazardous area classification drawings and subsequent compliance is the preferred method of satisfying legal obligations to keep such risks to a minimum. Other methodologies for classifying hazardous areas to comply with DSEAR may be considered. For a new installation, hazardous area classification drawings should be considered at the following stages:

- Pre-financial approval (preliminary drawings - where buildings/ electrical sources exists adjacent to proposed site).
- Post financial approval / pre-construction.
- Completion drawings ('as-built' drawings).

4.10.2 The degree of detail at each stage will be governed by the scale of project and the objective of each.

## 4.11 Lifetime Costs

4.11.1 In selecting a new PRI from a range which meets the required design criteria, in addition to the capital cost, consideration should be given to the lifetime costs of each (where not covered by a framework agreement). Factors to consider include (these should be considered in conjunction with Operations):

- RCM (Reliability Centred Maintenance) model review and recommended maintenance programmes/frequency.
- Trends in historical fault data / practical experience.

- Training costs in the case of equipment not previously utilised.
- Any new tooling which may be required.
- Any new lifting equipment which may be required (particularly for below ground units).
- In the case of below ground units, the existing availability of spare cartridges for the units under consideration.
- The housing of the PRI and possible replacement of that housing should the need arise.
- Any particular special constraints imposed via the planning permission process.

4.11.2 Over the lifetime of the asset, fault data should be collected to inform decisions made by Asset Management to maximise the life of assets, minimise the risk of failures and to ensure that safety regulatory obligations (PSSR) are being met. For fault reporting requirements see **SGN/PM/FAULT/1: Management Procedure for the reporting of faults on gas transmission, distribution and gas supply metering assets.**

## 4.12 Inlet / Outlet Mains Configuration

4.12.1 When designing the outlet mains configuration, a primary factor is that any pressure loss across that pipe will impact across the whole downstream network. It is therefore critical that the pressure loss across the outlet is kept to a minimum. Ideally, in the case of installations feeding low pressure networks, the pressure loss across the outlet manifold should not exceed 1mbar.

4.12.2 Consideration should also be given to the site isolation valves, to ensure these can be accommodated. Isolation valves should be situated in a safe position, protected from damage and interference. They should be clearly identifiable and uniquely referenced designated as M2 valves, see **SGN/PM/V/1: Management Procedure for Mains Valves ≤7bar Operation.** The distance between any isolation valve and the PRI should be kept to a minimum, commensurate with the level of risk and the need for safe access in an emergency, see **SGN/PM/MSL/1** for distances.

4.12.3 For buried steel mains, the requirements in **SGN/PM/ECP/2: Management Procedure for Cathodic Protection of Buried Steel Systems** must be followed.

## 4.13 Velocity

4.13.1 Pipework should be sized such that the gas velocity will not exceed 20ms<sup>-1</sup> for unfiltered gas and 40ms<sup>-1</sup> for filtered gas on the outlet of a PRI under conditions of maximum flow and lowest pressure.

## 4.14 Housing

4.14.1 PRI housing and its site should cater for:

- Space for the PRI and associated equipment.
- Space for construction and subsequent maintenance, including adequate headroom.
- Space for subsequent installation of anticipated additional equipment.
- Clearways to allow safe egress in an emergency.

4.14.2 In considering housing requirements, reference should be made to of **SGN/SP/E/28: Specification for The Design of Pressure Regulating Installations with Inlet Pressures Not Exceeding 100bar.**

- 4.14.3 As part of the selection process, manufacturers should be asked to provide an estimate of anticipated noise levels. A PRI can generate noise and vibration which, if untreated, may create an environmental nuisance in the locality of the site. Maximum permissible noise levels for district regulators are specified in [GIS/E34](#).
- 4.14.4 Where necessary, consideration should be given to the installation of an acoustic housing. Following commissioning, the acoustic performance should be checked to confirm it is within the levels anticipated.

#### **4.15 Gas Conditioning**

- 4.15.1 When replacing a PRI with a Gas Conditioning Unit (GCU), either operational or non-operational, the viability of this installation should be reviewed. Where non-viable, arrangements should be made to remove the unit. Where potentially viable then Network Planning should be contacted to assess if it should be re-commissioned at the same time as the new PRI.
- 4.15.2 In the case of a new reinforcement PRI supplying an integrated network on which a number of existing PRIs are fitted with GCUs, the impact of the new PRI on the effectiveness of those existing units should be assessed. Where it is considered such units are no longer cost effective, consideration should be given to decommissioning units.

### **5. LAND PURCHASE**

- 5.1.1 In most cases, Network Planning should provide the Wayleave Officer with the completed [Instruction to Acquire Easement & Operational Site form](#) when initiating land purchase requests.
- 5.1.2 Throughout negotiations there should be close and regular liaison between Network Planning, the Wayleave Officer, Operations and, where appropriate, the Major Projects and Construction Department.
- 5.1.3 In addition to identifying a number of potential options at the outset, the criticality of the project and associated timelines should be clearly established. Key milestones should be agreed and subject to regular review. Where the satisfactory conclusion of the project could be at risk, Network Planning must be made aware at the earliest opportunity so alternative options can be considered.
- 5.1.4 When establishing the scope of the project, consideration will have been given to alternative solutions not involving a PRI - most likely to have been discounted on financial grounds. Indirectly this will allow an indicative value to be placed on the acquisition of any site and could support consideration to paying a higher than normal fee for the site.
- 5.1.5 In exceptional circumstances, where all other avenues have failed, where all alternative options are infeasible or costs prohibitive, consideration may be given to initiating compulsory purchase proceedings.
- 5.1.6 Where negotiations between SGN and landowners find agreement, or variation to an existing agreement, which has not been formally negotiated via the Wayleave Officer, the Wayleave Officer and Legal Department must be advised to enable the necessary Title Deed / Easement to be put in place. Failure to do so may lead to significant legal issues and costs in the future.

## 6. RECORDS

- 6.1.1 On commissioning of the new installation, all appropriate records systems, primarily Maximo and GIS, should be updated in line with the timescales set out in **SGN/PM/DR/2: Management Procedure for Recording and Maintenance of Non-Maintained Pipe Asset Records** and **SGN/PM/RE/2: Management Procedure for the Capture of Plant and Equipment Records**. The PRI commissioning should be completed in accordance with the [Commissioning <7bar District and I&C Regulators form](#).
- 6.1.2 Planning records associated with the work, including any of the risk assessments referred to within this document should be retained within the project file.
- 6.1.3 Network Planning must have a process in place to track the commissioning of such equipment in order to ensure the appropriate network analysis models and associated systems reflect any significant changes to the supply system. This must include data relating to the capacity of the new PRI. Such changes should be captured on the appropriate systems within five days of commissioning.
- 6.1.4 The [Risk Assessment for Vehicle Impact Damage](#) and the [PRI Site Selection Risk Assessment](#) must be returned to Asset Management upon completion.
- 6.1.5 For further guidance on the commissioning process for >2bar installations, see **SGN/WI/PLANT/1: Work Instruction for the Delivery of Plant Projects**.

### 6.2 Design Recommendations

- 6.2.1 Following the design stage (see Section 4) the designer's recommendations should be collated and held on file. These recommendations should be recorded in the format shown in the [PRI Design Sheet](#) and is for internal planning use only.
- 6.2.2 The information presented to the fabricator/supplier should be recorded on an enquiry form such as that in [GIS/E34](#). Additional information given to the fabricator should include the designer's recommendations, the designers risk assessment, and fabrication specifications.

### 6.3 Recording of District and I&C PRIs < 2bar

- 6.3.1 The requirements to capture the asset records associated with ≤2bar sites are primarily outlined in this procedure which are consistent with the record capture principles outlined in section 6.
- 6.3.2 The record capture requirements set out in this procedure also support the compliance with the ISO 55001 standard for asset management and requirements for regulatory reporting, making it essential that SGN can demonstrate that all records (including ≤2bar sites) that are held in SGN's asset repository are up to date and accurate.
- 6.3.3 Each department involved in the design and build process have a responsibility concerning the flow of asset records paperwork and notification of any changes to assets on site. The process flow chart in [Appendix E](#) should be followed to ensure that Asset Records staff are notified of all programmed work relating to new or replacement pressure reduction equipment with inlet pressures ≤2bar.

### 6.4 Third Party Connections

- 6.4.1 For Third Party Connections, SGN Connections, Operations Planning or Replacement teams, where an adoption pack has been received, a quotation accepted or project approval provided, the Distribution Asset Management team must be notified via [asset.management@sgn.co.uk](mailto:asset.management@sgn.co.uk) to

confirm that a new or replacement asset is to be installed. The notification must include (as a minimum) – the location, address, co-ordinates, reason for installation, and proposed commissioning date.

## **6.5 Operations Planning Diversion Team**

- 6.5.1 Where a customer accepts a quotation for any diversion works affecting a district or I&C PRI, the Distribution Asset Management Team must be notified via [asset.management@sgn.co.uk](mailto:asset.management@sgn.co.uk) to confirm that new or replacement assets are to be installed. The notification must include (as a minimum) – the location, address, co-ordinates, reason for installation, and proposed commissioning date.

## **6.6 Asset Records < 7bar requirements**

- 6.6.1 When a notification is received for a new or replacement PRI being installed, the Asset Records Team must record the details in Maximo for monitoring purposes and then raise the necessary commissioning work orders and issue to a Maintenance team:
- On receipt of all commissioning paperwork by the Asset Records Team, Maximo will be updated with the asset details and the appropriate preventative maintenance scheduled. The Maintenance Teams will then be notified to confirm that the records have all been updated and the asset is 'operational' within the designated SLA's.
  - A report should be run on a regular basis by the Asset Records Team to ensure that the correct commissioning paperwork has been received from the Maintenance Teams and/or other relevant parties.
- 6.6.2 All outstanding paperwork should be monitored on a weekly basis to ensure that all ongoing work is tracked and records are updated as soon as reasonably practical.

## **6.7 Maintenance Requirements**

- 6.7.1 The Operational Maintenance teams must ensure that the commissioning work order number is provided to Network Control, who will provide approval of the RO/NRO to be granted. They must also ensure that the commissioning work order is completed on the day of commissioning and that the [Commissioning <7bar District and I&C Regulators Form](#) is completed and returned to the designated Maintenance point of contact. The designated Maintenance point of contact must ensure that the commissioning data capture form is scanned and attached to the associated commissioning work order.

## **6.8 Network Control Requirements**

- 6.8.1 When an NRO is received that involves the installation of a new or replacement district/I&C PRI, clearance to proceed must only be provided if the correct commissioning work order number has been provided and confirmed as correct.
- 6.8.2 The Network Control team, on providing clearance to proceed, will notify both the Distribution Asset Management Team via [asset.management@sgn.co.uk](mailto:asset.management@sgn.co.uk) and Strategic Planning team via [strategicplanning@sgn.co.uk](mailto:strategicplanning@sgn.co.uk).

## **6.9 Site Specific Risk Assessment**

- 6.9.1 On completion of the design, best practice is that a site-specific risk assessment be completed by Maintenance and Asset Management staff to identify any site-specific issues or configurations that might prevent maintenance activities being safely carried out in accordance with existing written procedures. Where these are found, they should be recorded and either action taken to



resolve the issue or alternative procedures agreed. These alternatives may take the form of additional permitry or a site-specific procedure.

## APPENDIX A - REFERENCES

This Management Procedure makes reference to the documents listed below:

<b>SGN/PM/SHE/03</b>	-	Management Procedure for the Construction (Design and Management) Regulations 2015
<b>IGEM/SR/25</b>	-	Hazardous area classification of Natural Gas installations
<b>IGEM/TD/13</b>	-	Pressure regulating installations for Natural Gas, Liquefied Petroleum Gas and Liquefied Petroleum Gas/Air
<b>IGEM/TD/3</b>	-	Steel and PE pipelines for gas distribution
<b>SGN/PM/PSR/4 Part 2</b>	-	Management Procedure for Ensuring Compliance with The Pipelines Safety Regulations For 7bar and Below Pipelines
<b>NJUG Volume 4</b>	-	NJUG Guidelines for The Planning Installation and Maintenance of Utility Apparatus in Proximity to Trees.
<b>SGN/SP/CE/9</b>	-	Specification for The Design Construction and Testing of Civil and Structural Work; Part Nine, Security Fencing.
<b>SGN/SP/E/28</b>	-	Specification for The Design of Pressure Regulating Installations with Inlet Pressures Not Exceeding 100bar
<b>GIS/E34</b>	-	Specification for The Procurement of Pressure Regulating Modules with Inlet Pressures Above 75 Mbar but Not Exceeding 7 Bar for Regulators with Design Flow Rates Greater Than 6 m <sup>3</sup> /hr
<b>GIS/PRS/35</b>	-	Specification for GRP Housings for Gas Meter Installations and Regulator Installations
<b>SGN/PM/PS/5</b>	-	Management Procedure for Managing New Works, Modifications and Repairs
<b>SGN/PM/PS/3</b>	-	Management Procedure for ensuring compliance with the Pressure Systems Safety Regulations 2000 for gas pressure systems
<b>SGN/PM/NP/16</b>	-	Management Procedure for Below 7 Bar Network Analysis
<b>SGN/PM/NP/18</b>	-	Management Procedure for Network Planning
<b>SGN/PM/DR/2</b>	-	Management Procedure for Recording and Maintenance of Non-Maintained Pipe Asset Records
<b>SGN/PM/RE/2</b>	-	Management Procedure for the Capture of Plant and Equipment Records
<b>SGN/PM/V/1</b>	-	Management Procedure for Mains Valves up to and Including 7bar Operation
<b>SGN/WI/PLANT/1</b>	-	Work Instruction for the Delivery of Plant Projects
<b>SGN/PM/FAULT/1</b>	-	Management Procedure for the reporting of faults on gas transmission, distribution and gas supply metering assets

**SGN/PM/ECP/2**      -      Management Procedure for Cathodic Protection of Buried Steel Systems

## APPENDIX B - DEFINITIONS

The definitions applying to this Management Procedure are given below.

<b>Gas Conditioning Unit</b>	- An assembly of equipment used to support the gas conditioning of lead/yarn jointed systems with MEG (mono-ethylene glycol)
<b>ECV</b>	- Emergency Control Valve
<b>GIS</b>	- Graphical Information System
<b>LTS</b>	- Local Transmission System – owned by SGN
<b>Maximo</b>	- SGNs Network Asset Repository and work scheduling system.
<b>NTS</b>	- National Transmission system – owned by National Grid
<b>Pressure Profiling Equipment</b>	- System which allows the system owner to either pre-programme a variable PRI setting or which can be used in conjunction with network low point to continuously optimise PRI settings.
<b>PRI</b>	<p>- Pressure Regulating Installation. An assembly of equipment designed to regulate, or reduce, the pressure of gas. A PRI comprises all pressure-containing and associated equipment between the upstream face of the PRI and the downstream face of the PRI outlet isolation valve.</p> <p><i>Note in the context for this procedure 'PRI' also covers all other terms used to denote PRIs such as TRS, DPG, CGS, DG, RRI &amp; SG.</i></p>
<b>Project Planner</b>	<p>- The SGN person responsible for initiating and planning any new PRI. Depending on the initiation route, it may be a member of staff from:</p> <ul style="list-style-type: none"><li>• Network Planning – Reinforcement PRI's.</li><li>• SGN Connections, Third Party Connections – PRI's associated with new connections.</li><li>• Maintenance Projects - Replacement PRI's.</li><li>• Regional Operations Depot – PRI's associated with diversions.</li></ul> <p>Note: The above list should only be used as a guide as there may be instances where different departments are involved in the process.</p>
<b>'Self-Learn' Profile Control</b>	- Profile system which uses current information fed back from network low point along with previous trends to establish pressure setting profiles without manual input.
<b>RO/NRO</b>	- <i>Routine Operation or Non- Routine Operation</i> – Safe control of operation process to protect both operational personnel that are engaged in various types of hazardous operations and the integrity of the network as defined in the SCO gas industry standards.

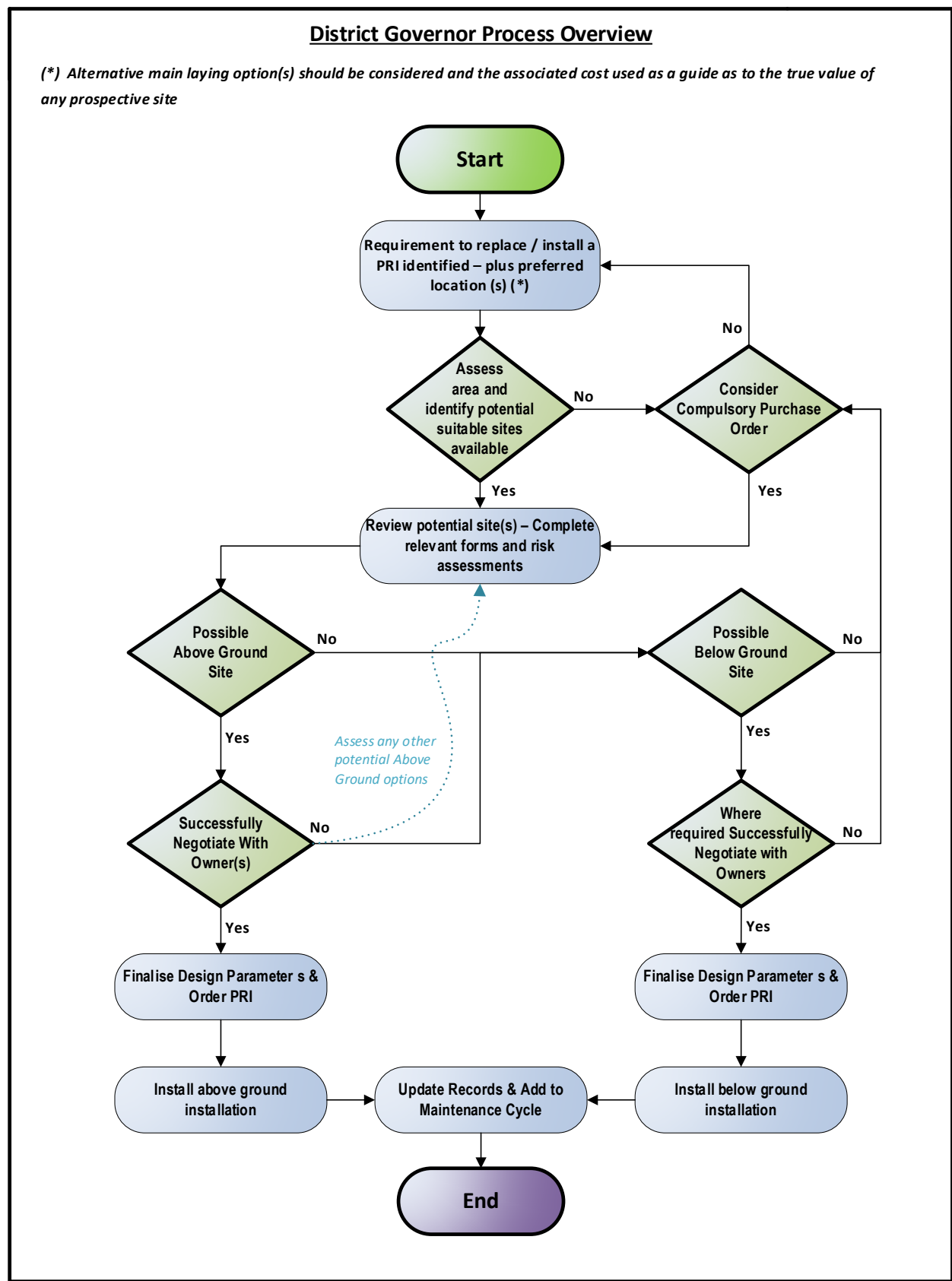
## APPENDIX C - APPLICABLE FORMS

The following forms can be located on Digitalhub or the SMF App under SGN/PM/NP/38:

Form	Link
Acquire Easement for an Operational Site	<a href="https://sgngas.sharepoint.com/:w:/s/DigitalHub/Businesses/SHE%20&amp;%20Engineering/ETLM4eLvXO1NgLLvfxPMn1QBXyH948pl87w6vc1i_BRt_A?e=3Qsy6K">https://sgngas.sharepoint.com/:w:/s/DigitalHub/Businesses/SHE%20&amp;%20Engineering/ETLM4eLvXO1NgLLvfxPMn1QBXyH948pl87w6vc1i_BRt_A?e=3Qsy6K</a>
Commissioning <7bar Domestic and I&C Regulators	<a href="https://sgngas.sharepoint.com/:w:/s/DigitalHub/Businesses/SHE%20&amp;%20Engineering/ER3btvoiKZNNNoNbbiYT-DoEBEUHIBaJSAdF9-it_Rx-w?e=uAH2jO">https://sgngas.sharepoint.com/:w:/s/DigitalHub/Businesses/SHE%20&amp;%20Engineering/ER3btvoiKZNNNoNbbiYT-DoEBEUHIBaJSAdF9-it_Rx-w?e=uAH2jO</a>
Data Capture Form for Vehicle Impact Damage	<a href="https://sgngas.sharepoint.com/:w:/s/DigitalHub/Businesses/SHE%20&amp;%20Engineering/EW2FhWARZExGrDWwtQqdndcB1HNzrIdP-inloilcnQuByQ?e=bNtxHI">https://sgngas.sharepoint.com/:w:/s/DigitalHub/Businesses/SHE%20&amp;%20Engineering/EW2FhWARZExGrDWwtQqdndcB1HNzrIdP-inloilcnQuByQ?e=bNtxHI</a>
Pre-Installation Certificate	<a href="https://sgngas.sharepoint.com/:w:/s/DigitalHub/Businesses/SHE%20&amp;%20Engineering/EeAz-SuNctBGh44TF_wk81ABEHiaRHozGwDm4xDomi_aPA?e=F5074Q">https://sgngas.sharepoint.com/:w:/s/DigitalHub/Businesses/SHE%20&amp;%20Engineering/EeAz-SuNctBGh44TF_wk81ABEHiaRHozGwDm4xDomi_aPA?e=F5074Q</a>
PRI Design Sheet	<a href="https://sgngas.sharepoint.com/:w:/s/DigitalHub/Businesses/SHE%20&amp;%20Engineering/EVDvKtwsd8dHq66la8K2uzcBMhl7e_w1Ybjw0odKTUYI1g?e=qv0hX9">https://sgngas.sharepoint.com/:w:/s/DigitalHub/Businesses/SHE%20&amp;%20Engineering/EVDvKtwsd8dHq66la8K2uzcBMhl7e_w1Ybjw0odKTUYI1g?e=qv0hX9</a>
PRI Site Selection Risk Assessment	<a href="https://sgngas.sharepoint.com/:w:/s/DigitalHub/Businesses/SHE%20&amp;%20Engineering/EVcNHY3wLKZHvEBrxFsznD4BA3UxIKmsipPYH5INmaq9aw?e=UiCyyN">https://sgngas.sharepoint.com/:w:/s/DigitalHub/Businesses/SHE%20&amp;%20Engineering/EVcNHY3wLKZHvEBrxFsznD4BA3UxIKmsipPYH5INmaq9aw?e=UiCyyN</a>
Risk Assessment for Vehicle Impact Damage	<a href="https://sgngas.sharepoint.com/:w:/s/DigitalHub/Businesses/SHE%20&amp;%20Engineering/EQvshPRBrbVHm7nKeM8KKokB_6d3CzHDAnCPYsz-ETVAyw?e=nFnbbP">https://sgngas.sharepoint.com/:w:/s/DigitalHub/Businesses/SHE%20&amp;%20Engineering/EQvshPRBrbVHm7nKeM8KKokB_6d3CzHDAnCPYsz-ETVAyw?e=nFnbbP</a>

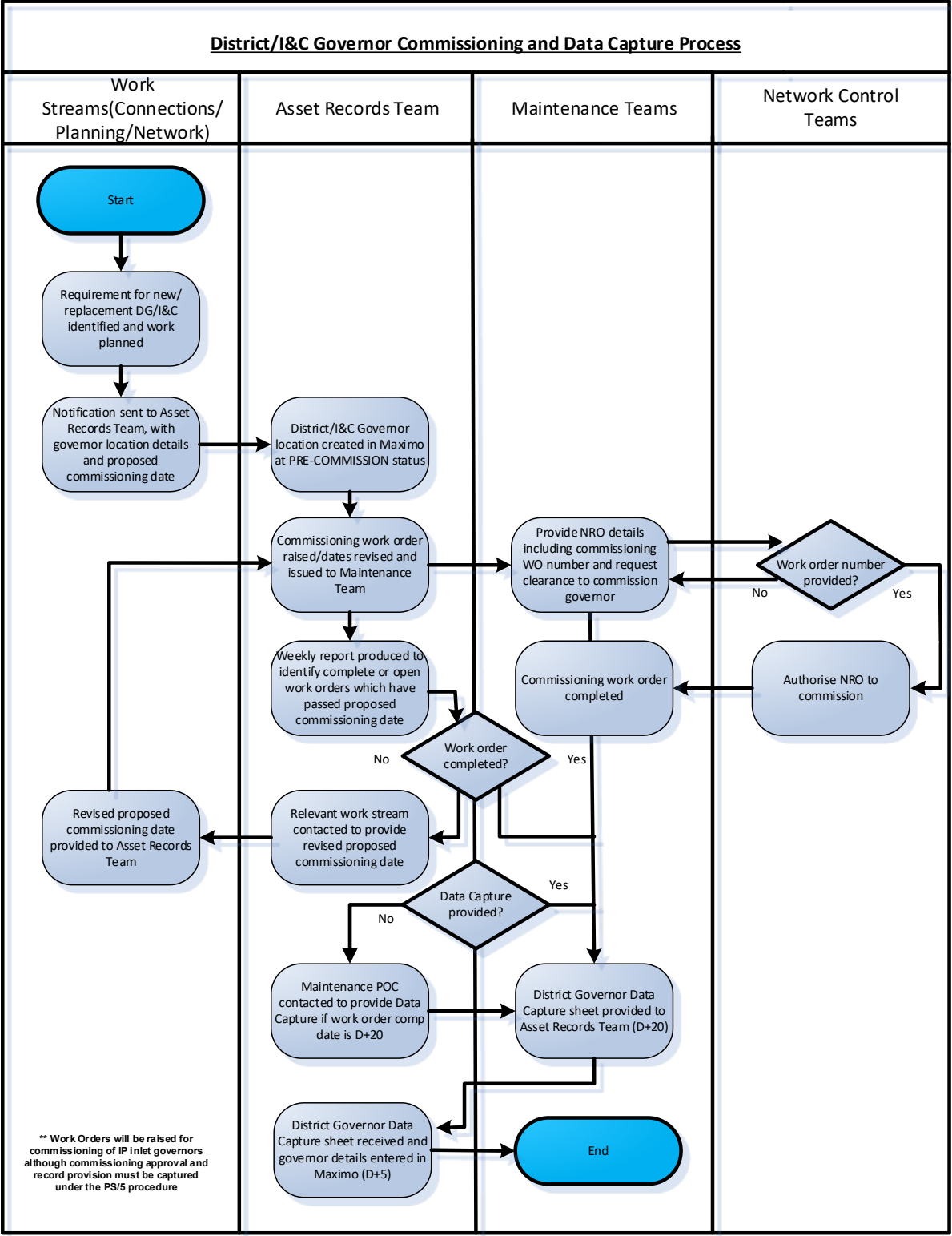
APPENDIX D - OVERVIEW OF PROCESS (DISTRICT GOVERNOR)

Where the construction cannot be completed as per the initial design, the design changes must be agreed by the appropriate parties. The new design must be thoroughly risk assessed prior to construction.



APPENDIX E- RECORDING OF DISTRICT/I&C PRESSURE PRI'S ≤2BAR

*\*\* Work Orders will be raised for commissioning of IP inlet PRI's although commissioning approval and record provision must be captured under the PS/5 procedure*



## APPROVAL

This Management Procedure was approved by John Kenny on 20/04/2021 for use by managers, engineers and supervisors throughout Scotia Gas Networks (SGN).

SGN documents are revised, when necessary, by the issue of new editions. Users should ensure that they are in possession of the latest edition by referring to the SHE & Engineering Document Library available on DigitalHub.

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## BRIEF HISTORY

First Published as SGN/PM/NP/38	November 2007	DESC – 0103 - 5102007
Revised in emphasise requirements in SGN/PM/G17	September 2008	DESC – 0187 - 19062008
Revised to SMF format, incorporate SEI 603, updated SGN/PM/PS/5 document references and minor editorial changes.	January 2018	DESC - 1861-24052017
Revised to include additional vehicle protection measures and updated references, and to include the requirements of SGN/PR/NP/39. Updated grammar and language for ease of understanding.	March 2020	SMF - 670-25032020
Revised to include the requirement to complete a 'Pre-Installation Certificate' at the planning stages.	April 2021	SMF – 730-16072020

## KEY CHANGES

Section	Amendments
2	New section to include requirements for the stakeholder engagement between key departments at the initial planning and design stages. New 'Pre-Installation Certificate' for stakeholder sign-off added, as requested by Asset Management.
3.3	New requirements to complete a Vehicle Protection Data Capture Form (if necessary) for input to the Risk Assessment for Vehicle Impact Damage.
4.2	Requirements for Active/Slam as the preferred configuration for new and replacement PRI's ≤2bar, as approved by ESC in August 2020.
All	'Project Planner' term added to the procedure, as defined in Appendix B - Definitions
Appendices	All forms removed from procedure and replaced with links to them on DigitalHub and the SMF App.



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## MANDATORY AND NON-MANDATORY REQUIREMENTS

In this document:

**Will:** indicates an aspirational requirement

**Must:** indicates a mandatory requirement.

## END NOTE

### Comments

Comments and queries regarding the technical content of this safety and engineering document should be directed to The SHE and Engineering Registrar at:

[engineering.registrar@sgn.co.uk](mailto:engineering.registrar@sgn.co.uk)

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