Network Output Measures Health & Risk Reporting Methodology & Framework

IMPLEMENTATION PLAN (ALL GDNs)

Version *<1.0>*
<30/09/2015>

VERSION HISTORY

Version #	Implemented By	Revision Date	Approved By	Approval Date	Reason
1.0	SRWG	30/09/2015	SRWG	30/09/2015	Final

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1. Introduction

1.1 Purpose

The purpose of this document is to set out a common consultation approach for the NOMs Methodology which shall be used to assess the health, Criticality and associated Risk Value of network assets to meet special licence condition 4G (Methodology for Network Output Measures)

The document sets out the consultation methods, implementation and Information Gathering Plans for 2016 RRP reporting and future data quality initiatives. The collective outputs of the assessment, used for regulatory reporting purposes, are known as the Network Output Measures. The methodology can be amended subject to the change process outlined in licence condition 4G Part F.

When approved by Ofgem, this methodology will require GDNs (Gas Distribution Networks) to re-align their current processes and practices to this new standard. It will also require a re-basing of the Network Output Measures utilising the methodology detailed within this document for the RIIO-GD1 period.

1.2 NOMs Methodology Overview

Asset Health and criticality are reported under RRP table 7.3 "Asset Health and Criticality Data". This reporting structure will be superseded by the NOMs methodology which will provide a Monetised Risk value for each asset type. The Monetised Risk is derived from annual failure rates and their associated internal, societal and environmental monetary impact. Through the utilisation of this methodology asset risk can be compared across asset groups enabling effective investment and future benchmarking. Additionally, this methodology will provide a framework to evidence future trade in investment across our set allowances and the respective Network Output Measures.

1.2.1 NOMs Reporting Description

As a requirement of Special Licence 4G, the NOMs methodology will be utilised for RRP reporting of asset risk in Jul 2016. To ensure that the models are developed to a position that will enable reporting of the 19 asset groups listed in table 1, an implementation schedule is detailed in section 2.3.

1.2.2 Assumptions and Constraints

The implementation of the proposed 19 reportable categories is time constrained and the accuracy of the outputs will be dependent on the quality of the failure and financial input data that will drive the Monetised Risk value. There are some areas where data deficiencies may lead to future data cleansing and gathering initiatives which is detailed in Part 2 (GDN Specific Plan). Moreover, when determining variables such as deterioration rates for some asset groups there is sparse failure data to provide an indication of deterioration based on functional failure and material degradation due to the either current maintenance regimes, buried assets and regional/geographical variances.

1.2.3 Data Requirements Overview

In order to report on Monetised Risk in Jul 2016 it is necessary to embed the knowledge of the methodology throughout GDNs to ensure that sufficient resources and competence is available firstly to populate and manage the risk models in their current for and secondly to improve these models going forward through improved data gathering processes and statistical analysis of failure data.

Throughout the development of the Event Tree risk models each GDN shall attend a working session where business experts will conduct a form of HAZID (Hazard Identification) session to identify the applicable failure modes and their respective consequences. During these sessions likely data sources will be identified and a sense check will be performed by each GDN to ensure they hold comparable GDN specific asset repositories and failure databases.

There may be cases where this approach is not feasible due to sparse data and pooled or industry data will be utilised. As the models will be built on the data that is available to each GDN there is ample opportunity to improve currently captured asset, failure and financial data to provide firstly a more robust data set and secondly a thorough understanding of the regional, geological variances applicable to asset failure and therefore deterioration. To this end placeholders have been included within the models for specific data fields that would provide granularity in the assessment method (asset level) or would be beneficial in allocating future interventions.

Upon the completion of each risk model the GDNs will carry out an assessment of their current data against each of the data reference libraries produced in line with the developed risk maps.

In order to effectively model monetised risk accurately GDNs may choose to improve on the method of downstream impact modelling for all installation LTS and Distribution networks to accurately quantify network interruptions following an asset failure on pressure reduction installations. This will ensure that investment is accurately targeting the highest risk assets and resulting in the greatest monetised risk reduction and therefore benefiting the GDN and ensuring the best return for the customer. This is a resource intensive activity and the timescales for completion may not be value adding for specific asset groups and will be determined through monetised risk sensitivity testing.

2 SRWG Deliverables

The publication and maintenance of the Information Gathering Plans as detailed in this document and the NOMs Methodology will be managed and governed by the Safety & Reliability Working Group (SRWG) to ensure compliance with the Gas Transporters Licence objectives:

- The comparative analysis of performance over time between geographic areas of, and Network Assets within, the pipeline system to which this licence relates; and

- The communication of relevant information regarding the pipeline system to which this licence relates between the Licensee, the Authority and, as appropriate, other interested parties in a transparent manner

The SRWG are responsible for the delivery of a functional methodology that will enable the GDNs to produce risk reporting of RRP Table 7.3 in line with Special condition 4G in 2016. A common suite of Asset Groups to be used as a basis for risk assessment and reporting has been developed and agreed between all GDNs. These are defined based upon the key operational components within the gas supply system and have been prioritised based on planned investment with a view to having 95% of asset intervention spend covered by monetised risk models.

Beyond July 2016 the SRWG will, in line with Licence Condition 4G, at all times keep the NOMs Methodology under review. This could include development of monetised risk models for further asset groups if they are needed to demonstrate risk trading or if investment is being sought in future Price Controls.

There are 10 primary Asset Groups, for which Event Trees will be developed and 19 reportable asset groups as per Table 1 below:

Primary Assets for Event-Tree Analysis	Maximum Assets Reported
1. LTS Pipelines	1. OLI1 LTS Pipelines
	2. OLI4 LTS Pipelines
2. Distribution Mains	3. Iron Mains
	4. PE Mains
	5. Steel Mains
	6. Other Mains
3. Services	7. Services
4. Risers	8. Risers
5. Offtake/PRS Filters	9. Offtake Filters
	10. PRS Filters
6. Offtake/PRS Pre Heating	11. Offtake Pre-heating
	12. PRS Pre-heating
7. Offtake/PRS Slamshut & Regulators	13. Offtake Slam/Regs
	14. PRS Slam/Regs
8. Offtake Odorant	15. Odorisation
9. Offtake Metering	16. Metering
10. District, I&C and Service Governors	17. District Governors
	18. I&C Governors
	19. Service Governors

Table 1 – Monetised Risk Asset Groups and Reportable Categories

2.1 Description of Implementation

The 10 primary asset groups listed in table 1 above will be reported for asset risk in 2016 encompassing the 19 reportable categories. To achieve this all asset risk models will need to be finalised and agreed by the end of March 2016. This will provide sufficient time for the GDNs to initiate trial runs of the new RRP risk reporting process to ensure that the business understand the timescales required for the population of the risk maps with asset base data, financial costs and generate risk reports at the agree level for risk reporting required for the formal RRP submission in July.

As each risk model is finalised and agreed through the SRWG the GDNs may then perform either a high-level validation of the outputs and/or a dry run of the RRP reporting process for RRP table 7.3. The purpose of undertaking validation and/or a dry run of the RRP process will be to familiarise the user and data providers with the requirements of the population of the base data tables, risk model GDN specific values and intervention scenarios that are inherent to producing a Monetised Risk value for each of the risk models.

Due to the nature of the data requirements for the asset risk models there are certain PoC (Probability of Consequence) and financial consequence values that shall be treated as common across all Asset Groups (termed "Global Values") and values that shall be treated as common across all GDNs. These common values will be reviewed at a frequency dependant on their material impact (sensitivity analysis) to the monetised risk value for the asset groups and additionally the overall monetised risk value across the 10 primary asset groups. Where specific data items are sourced from periodically updated sources, such as the cost of carbon, any changes to these values will be reviewed and considered for update as part of the governance process outlined in section 6 of the NOMs Methodology document.

The Global Values that can be applied to all risk models are shown in table 2 below:

Node ID / Variable	Sensitivity	Description	Unit
General Assumption	L	Number of people in a property	Nr
F_Loss_Of_Gas	H	Cost per m3 of loss of gas	£/m3
F_Legal_Penalty	L	Legal penalty payment	£/incident
F_Carbon	H	Cost of carbon	£/tonne
F_Com_large	L	Cost of large commercial supply interruption	£/premises
F_Com_small	L	Cost of small commercial supply interruption	£/premises
F_Complaint	L	Cost of complaint	£/complaint
F_Critical	L	Cost of critical customer supply interruption	£/premises
F_Domestic	M	Cost of domestic customer supply interruption	£/prop
F_Building_damage	L	Cost of building damage	£/prop
F_Minor	L	Cost of minor injury	£/person
F_Death	M	Cost of death	£/person
Discount Rate	n/a	Financial discount rate	%
Carbon_Equivalent	H	Scalar value for carbon methane uplift	Nr

Table 2– Derived Global Values for all Asset Groups

Note: This is not an exhaustive list and as the remaining event tree maps are developed additional values that would be considered to be "Global" may be included.

2.2 Major Tasks

To ensure the delivery of the 10 asset groups by March 2016 the SRWG will be developing event tree risk maps in parallel. Each GDN will nominate a business expert to attend specific asset workshops where the risk map will be developed and finalised. This results in the staggered delivery of the risk maps through the period. The risk maps will be incrementally development with consultation between GDNs to ensure that there is consistency in data availability and structure.

The main tasks involved in the development and implementation of the asset risk maps for 2016 RRP reporting are as follows:

1. Identify which GDN will provide data for risk map development
2. Asset Working group held to ensure that all failures and possible consequences are captured within the risk map
3. Working Group to identify that asset data is available across all GDNs
4. Risk Map populated with common values (shared by GDNs) and GDN specific asset and financial data
5. Intervention Plans detailed and inputted into the risk model
6. Assessment of Monetised Risk outputs and comparisons to actual costs and business plans
7. AIM model sign off
8. Development of excel based risk model
9. Generation of user manuals for excel risk models
10. Provision of appropriate training on the utilisation of the risk models
11. Excel model sign off and business acceptance
12. Data gathering from core systems (excluding global values)
13. Perform data conversion where required
14. Data validation
15. Population of each risk model by individual GDNs
16. Run models and produce annual risk report for RRP table 7.3

2.3 Implementation Schedules

At this stage the indicative risk model development timeline is shown in figure 2.1 below, detailing the timescales for the development of each individual risk model as defined in section 6 of the Network Output Measures Health & Risk Reporting Methodology & Framework document. Adherence to this timeline will ensure that GDNs can initiate their RRP reporting of table 7.3 post March 2016.

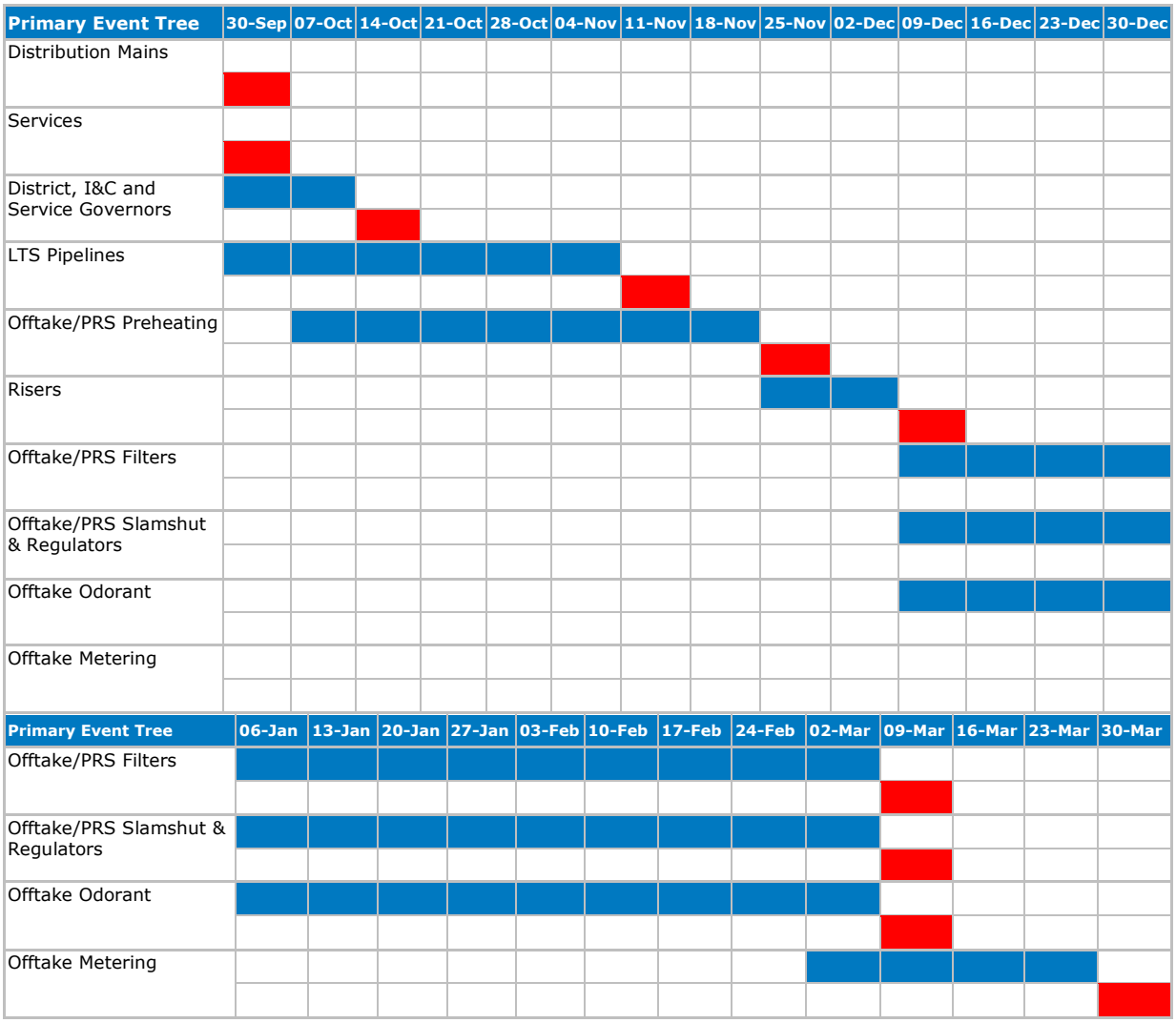

Fig 1 – Risk Tree Development Schedule

Following on from the development and sign-off of each Event Tree and Excel model, the GDNs will then undertake the necessary data process and collection tasks (as per 2.3.1), enabling the utilisation of the models for Regulatory Reporting purposes (as per 2.3.2).

The timescales are indicative as specifics task may vary depending on the resource requirement of the data collection, validation and model population processes. Due to the volume of data collection and the intensity of the data analysis involved in the application of this methodology it may be necessary to undertake some of the tasks listed at an earlier point in time with the assumption that there are no data backlogs from the previous financial year and that the associated risk model has been finalised and approved.

2.3.1 Data Process & Collection – *from Model Sign-Off to May 2016*

Finalisation of Event Tree and Excel Risk Model
Undertake gap analysis
Training of appropriate personnel
Data collection from defined sources & validation

2.3.2 Data Analysis & Modelling – from *March to July 2016*

Perform data calculations
Population of risk model base data table
Population of intervention plans
Run Risk Models
Model validation incl. comparison of scenarios to business plan
Populate 2015/16 RRP

2.4 Methodology for Consultation

A common framework is set out in this document to detail a structured approach to consultation. The consultation process will be utilised to ensure effective consultation of the Monetised Risk Assessment methodology and for any future modifications as defined in special licence condition 4G.

The SRWG can at any time propose a modification to the NOMs methodology that it believes would better meet the NOMs Objectives and wider Licence Obligations.

Fig 2 – Consultation steps

Planning

The planning stage will consist of multiple meetings with the SRWG to define the requirements of each individual risk model developed through the application of the NOMs Methodology. This will include discussions on whether the NOMs Methodology is best suited for the accurate derivation of a Monetised Risk value and whether the available data sources and/or the Event Tree Risk Map structure remain appropriate. Due to the complexity of the proposed methodology it is deemed that the level of consultation shall be relatively in-depth and the SRWG will be required to produce a detailed consultation plan as defined in section 6.4 of the methodology document.

Pre-consultation Communication

If a modification is required as a result of an SRWG review meeting a detailed report will be drafted and agreed with each GDN as described in section 6.4 of the Methodology document. This draft will be submitted to Ofgem prior to Formal Consultation.

Formal Consultation

The GDNs will jointly publish a consultation via the SRWG on any proposed changes as required by the Gas Transporters Licence. This consultation will include any supporting information, data and analysis used to support the proposed modification including any independent assessment of the proposed modification as required. This will be submitted to the authority through the SRWG secretary

Feedback on Consultation

Following consultation, feedback will be considered and implemented where required. All feedback will be received and logged through the SRWG secretary and a response will be submitted in a timely manner.

Finalised Proposal to Ofgem

Any proposed modification to the Methodology Statement will be set out in a separate report as defined in section 6.4 of the methodology document.

Each Modification Report will be presented to Ofgem and the Authority for approval/direction. The Methodology Statement will be updated following approval from the Authority.

Following the implementation of any approved modification to the methodology the GDNs will appoint an independent expert to review and report on that implementation. This report will be submitted to the Authority and made publically available.

2.5 Training of Implementation Staff

In order to fully validate and implement the risk models across the GDNs training will be required for key personnel who will be responsible for the validation and business acceptance of the models. This relates to the excel versions of the risk models which are in two components, a cohort generator utilising Microsoft Access and the asset event tree risk map excel spreadsheet.

2.6 Implementation Impact

The implementation and ongoing application of the Monetised Risk Methodology for RRP reporting will have a significant impact to GDNs as the data requirements for this type of risk assessment is substantially data intensive and will require continual assessment and evolution to ensure that risk is successfully quantified due to emerging technologies and improved data. This methodology will shape our future data strategies and significant resources (both personnel and computational) will be required to manage the risk systems that will be develop under this methodology.

APPENDIX A: KEY TERMS

The following table provides definitions and explanations for terms and acronyms relevant to the content presented within this document.

Term	Definition
Asset Functional location data	This is the asset base data of individual asset records from the core SAP system and may include the following attributes: • Asset classifications • Asset IDs • Asset Location • Asset operational status • Asset Configuration
Asset Health data	This includes all asset health related data such as, but not limited to: • Asset design specification • Asset Age • Observed Condition • Duty • Capacity • Location & Environmental health factors
Failure data	This includes all functional failure data collected through the core system and the PSSR fault recording process
Financial data	This includes all financial data held in the core systems that will be utilised within the risk models