Network Output Measures Health & Risk Reporting Methodology

IMPLEMENTATION PLAN PART 2

Wales & West Utilities' DATA GATHERING AND INITIATIVE PLANS

Version 1.0
07/09/2015

VERSION HISTORY

Version #	Implemented By	Revision Date	Approved By	Approval Date	Reason
1.0	Ian Dunstan	30/09/2015	WWU	30/09/2015	

Table of Contents

1 Part 2 – Network Deliverables

1.1 Overview

The NOMs Methodology, requires each individual GDN to provide input values that are reflective of their failure rates, asset deterioration (where failure data can demonstrate significant variance), and maintenance and intervention costs. This will ensure that the Monetised Risk value is reflective of the network assets and current maintenance regimes of each individual GDN. The GDN specific values will be defined within the Global Values table and each of the Data Reference Libraries applicable to individual Event Tree risk maps.

Each GDN will be responsible for the capture and alignment of available data from their core systems to the format of the base data tables required to run the risk model.

1.2 Performance Monitoring – All GDNs

The performance of implementing the risk models will be completed against the specific asset data reference libraries produced during the development of the individual risk models. GDNs will chart their data gaps and quality issues against each nodal value that is specific to the individual GDNs i.e. Probability of Failure (PoF), Probability of Consequence (PoC), internal financial costs.

The future data improvements or data gathering initiatives outlined within this document will be updated and communicated to Ofgem through an Annual Report. This will include updates covering:
- The current status of asset data applicable to the derivation of Monetised Risk
- The forecasted timescales for the completion of the Implementation Plan

The review process will take into account those factors where it is appropriate to make them consistent across all GDNs and additionally, GDN specific factors to be employed within the methodology (e.g. deterioration factors, Information Gathering Plans).

This review process will ensure that:
- Monetised Risk and the associated nodal value drivers are monitored and reviewed on a regular basis to verify that assumptions about the derived Monetised Risk remain valid
- Assumptions on which the risk assessment is based, including the external and internal context, remain valid
- Event Tree Analysis techniques are being properly applied through a consistent application of the processes outlined within the "Network Output Measures Health & Risk Reporting Methodology & Framework" document
- Validation of results on Asset Health and Monetised Risk outputs against expected values
- Innovation interventions are being correctly modelled

1.3 Gap Analysis (Distribution Mains)

As per the NOMs Methodology Data Assessment section (4.2), the Mains Risk Map is accompanied with details of global values applied (see section 3.6.2 of NOMs Methodology)

and a Data Reference Library (see section A2.5 of NOMs Methodology). The Data Reference Library details the inputs required. Gap analysis of WWU's data quality levels against these data reference libraries will ensure that we work towards having the required asset, fault and financial data structure to enable consistent annual reporting of asset risk, health and criticality.

The risk map for Distribution Mains has been finalised and the specific data requirements are documented within the Mains Data Reference Library. In order to understand WWU's current asset data position, a gap analysis has been completed to ensure that we are able to meet the NOMs reporting requirements. This analysis is split into 2 main areas:

- Core Asset Data
- Top 6 Risk Drivers

1.3.1 Distribution Mains – Core Asset Data

Gap analysis has been undertaken for asset data that will be used in the determination of PoF values along with financial data for each anticipated asset cohort. These include:

- Location
- Diameter
- Length
- Material
- Failures

There are four key data categories that will impact the development and implementation of the risk model and these are (see Appendix A for description):

1. Asset Functional location data
2. Asset Health data
3. Failure data
4. Financial data

The tables on the following pages provides details on our current data gaps against these data areas that will be utilised for the production and future modification of the Event Tree Risk Maps developed under the NOMs methodology and states a timeframe for completion of data capture.

Where the Data Assessment Levels are amber or green, data is of sufficient quantity/quality to enable the consistent application of the methodology. Red indicates a significant gap which would prevent the application of the methodology.

Data Type	Key: Red: Significant Gap Amber: Data Gap - Assumptions Applied Green: Complete /Consistent Data Assessment Level	Key: Red – End of GD1 Amber – Mid-Point GD1 Green – July 2016 Indicative Delivery	Comment
Asset Functional location data	🟩	N/A	Records on mains assets are of a good quality with no gaps that prevent the application of the monetised risk methodology
Asset health data	🟩	N/A	Records on mains assets are of a good quality with no gaps that prevent the application of the monetised risk methodology
Failure data	🟩	N/A	Collected live and at a granular level with many system validations in place to drive quality. No gaps that prevent the application of the monetised risk methodology
Financial data	🟩	N/A	Captured to a level and a quality that supports the methodology.

Table 1 – Mains Data Quality Position

1.3.2 Distribution Mains - Top 6 Risk Drivers

The current model was developed utilising Northern Gas Networks data, although a refresh and validation of this data is required for reporting in 2016, it is expected that there is unlikely to be a significant deviation to the mains cost drivers identified.

The approach is to look at the main 6 cost drivers, defined below, and provide a risk status for current data quality for each nodal value along each of the 6 branches on the risk map.
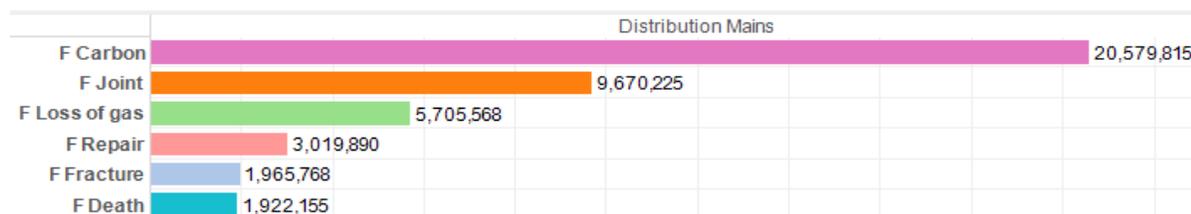

Distribution Mains

Driver	Value
F Carbon	20,579,815
F Joint	9,670,225
F Loss of gas	5,705,568
F Repair	3,019,890
F Fracture	1,965,768
F Death	1,922,155

Fig 1. Top 6 Monetised Risk Drivers – Distribution Mains

Associated nodes for Mains	
F Carbon – Driver 1	**F Repair – Driver 4**
General Emissions	Corrosion Failure
Joint Failure	Interference Failure
Interference Failure	**F Fracture – Driver 5**
Corrosion Failure	Fracture Failure
Fracture Failure	**F Death – Driver 6**
F Joint – Driver 2	Corrosion Failure

Joint Failure	Death Major
F Loss of gas – Driver 3	Explosion
Corrosion Failure	Fracture Failure
Fracture Failure	Gas Escape
Gas Escape	Gas Ingress
General Emissions	Interference Failure
Interference Failure	Joint Failure
Joint Failure	
Loss of gas	

Table 2. Associated Nodes – Distribution Mains

Following the data gap analysis of the Distribution Mains risk models, table 2 has been populated detailing WWU's current asset data position for each of the nodal values that form part of the calculation of the top 6 Monetised Risk drivers:

	Key: Red: Significant Gap Amber: Data Gap - Assumptions Applied Green: Complete /Consistent	Key: Red – End of RIIO-GD1 Amber – Mid-Point Green – July 2016	
Nodal for top 6 risk drivers	**Data Assessment Level**	**Indicative Delivery**	**Comment**
Corrosion Failure		N/A	Collected live and at a granular level with many system validations in place to drive quality. No gaps that prevent the application of the monetised risk methodology
Fracture Failure		N/A	Collected live and at a granular level with many system validations in place to drive quality. No gaps that prevent the application of the monetised risk methodology
General Emissions		N/A	Utilises the nationally used and Ofgem approved Leakage Reduction Monitoring Model (LRMM)
Interference Failure		N/A	Collected live and at a granular level with many system validations in place to drive quality. No gaps that prevent the application of the monetised risk methodology
F Joint Failure (£)		N/A	Captured to a level and a quality that supports the methodology.
Joint Failure		N/A	Collected live and at a granular level with many system validations in place to drive quality. No gaps that prevent the application of the monetised risk methodology

Nodal for top 6 risk drivers	Key: Red: Significant Gap Amber: Data Gap - Assumptions Applied Green: Complete /Consistent Data Assessment Level	Key: Red – End of RIIO-GD1 Amber – Mid-Point Green – July 2016 Indicative Delivery	Comment
F Repair (£)	(green)	N/A	Captured to a level and a quality that supports the methodology.
F Fracture (£)	(green)	N/A	Captured to a level and a quality that supports the methodology.
F Loss of Gas (£)	(green)	N/A	Utilise data from DECC
Loss of gas	(green)	N/A	Utilises the nationally used and Ofgem approved Leakage Reduction Monitoring Model (LRMM)
Capacity	(green)	N/A	Robust records process for poor pressure reports and for capacity interventions
Supply Interruptions	(green)	N/A	Robust process in place that maps that used for GSOS payments
GIB_Joint	(green)	N/A	Collected live and at a granular level with many system validations in place to drive quality. No gaps that prevent the application of the monetised risk methodology
GIB_Interference	(green)	N/A	Collected live and at a granular level with many system validations in place to drive quality. No gaps that prevent the application of the monetised risk methodology
GIB_Corrosion	(green)	N/A	Collected live and at a granular level with many system validations in place to drive quality. No gaps that prevent the application of the monetised risk methodology
GIB_Fracture	(green)	N/A	Collected live and at a granular level with many system validations in place to drive quality. No gaps that prevent the application of the monetised risk methodology

Table 3 – Mains Nodal Value Data Quality Position

1.4 Data Improvement Initiative (Mains)

WWU focuses on continual improvement in data quality. We have undergone a number of significant data accuracy projects on mains data in recent years. We have system validations in place and a dedicated data accuracy team ensuring quality of data collected

through our day to day business. We update mains data on a daily basis through our mains replacement and repair activities.

1.5 Implementation of Reporting (Mains)

Following the completion of the gap analysis, further processes are being developed to ensure Distribution Mains RRP is completed for July 2016. All of the model's data variables and parameters required have been mapped against data sources. Where a full dry-run of the model isn't possible in the timeframe, a high-level validation exercise will be undertaken to ensure the RRP process (data collection) can commence soon after 15/16 year-end. *Please note: Data collection and analysis is dependent on data capture post-March 2016 and completion of other RRP tables.*

The following tasks will be completed (timescales are indicative):

Data Process & Collection – *Oct 2015 to May 2016*
Finalisation of Mains and Services Excel Risk Model
Training of appropriate personnel
Data collection from defined sources & validation

Data Analysis – *Mar to Jul 2016*
Perform data calculations
Population of risk model base data table
Population of intervention plans
Run Mains Risk Model
Model validation incl. comparison of scenarios to business plan
Populate 2015/16 RRP
Re-state 2013, 2017 and 2021 with-without intervention

Review – *Aug to Sep 2016*
Review population process and capture lessons learnt.
Review and update Implementation Plan.

1.6 Gap Analysis (Services)

As per the NOMs Methodology Data Assessment section (4.2), the Service Risk Map is accompanied with details of global values applied (see section 3.6.2 of NOMs Methodology) and a Data Reference Library (see section B2.5 of NOMs Methodology). The Data Reference Library details the inputs required. Gap analysis of WWU's data quality levels against these data reference libraries will ensure that we work towards having the required asset, fault and financial data structure to enable consistent annual reporting of asset risk, health and criticality.

The risk map for Services has been finalised and the specific data requirements are documented within the Services Data Reference Library. In order to understand WWU's current asset data position, a gap analysis has been completed to ensure that we are able to meet the NOMs reporting requirements. This analysis is split into 2 main areas:
- Core Asset Data
- Top 6 Risk Drivers

1.6.1 Services - Core Asset Data

Gap analysis has been undertaken for asset data that will be used in the determination of PoF values along with financial data for each anticipated asset cohort. These include:
- Location
- Diameter

- Material
- Failures
- Criticality/Customer

There are four key data categories that will impact the development and implementation of the risk model and these are (see Appendix A for description):

- Asset Functional location data
- Asset Health data
- Failure data
- Financial data

The tables on the following pages provides details on our current data gaps against these data areas that will be utilised for the production and future modification of the Event Tree Risk Maps developed under the NOMs methodology and states a timeframe for completion of data capture.

Where the Data Assessment Levels are amber or green, data is of sufficient quantity/quality to enable the consistent application of the methodology. Red indicates a significant gap which would prevent the application of the methodology.

	Key: Red: Significant Gap Amber: Data Gap – Assumptions Applied Green: Complete /Consistent	Key: Red – End of RIIO-GD1 Amber – Mid-Point Green – July 2016	
Data Type	**Data Assessment Level**	**Indicative Delivery**	**Comment**
Asset Functional location data			Service material is a key driver in the assessment of risk. Historical records are in some cases incomplete and some assumptions are applied to enable application of the monetised risk model. A recent modification to the Shrinkage model includes a method to validate assumptions on service material. This involves reviewing service materials encountered during mains replacement and applying ratios of metallic/PE to the larger service population. For WWU this is circa 40,000 per annum. The gap is to apply the methodology approved for the shrinkage model to the monetised risk modelling.
Asset health data		N/A	Records on service assets have no gaps that prevent the application of the monetised risk methodology
Failure data		N/A	Collected live and at a granular level with many system validations in place to drive quality. No gaps that prevent the application of the monetised risk

Data Type	Data Assessment Level	Indicative Delivery	Comment
Key: **Red: Significant Gap** **Amber: Data Gap - Assumptions Applied** **Green: Complete /Consistent**	**Key:** **Red – End of RIIO-GD1** **Amber – Mid-Point** **Green – July 2016**		
	[green]		methodology
Financial data	[green]	N/A	Captured to a level and a quality that supports the methodology.

Table 4 –Services Data Quality Position

1.6.2 Services - Top 6 Risk Drivers

The current model was developed utilising Northern Gas Networks data, although a refresh and validation of this data is required for reporting in 2016, it is expected that there is unlikely to be a significant deviation to the mains cost drivers identified.

The approach is to look at the main 6 cost drivers, defined below, and provide a risk status for current data quality for each nodal value along each of the 6 branches on the risk map.
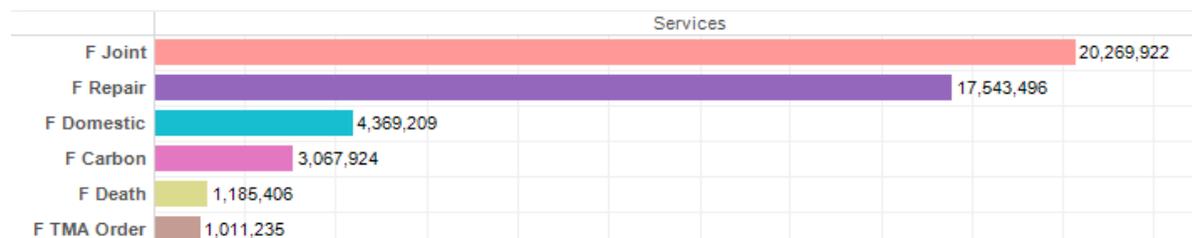

Services
F Joint	20,269,922
F Repair	17,543,496
F Domestic	4,369,209
F Carbon	3,067,924
F Death	1,185,406
F TMA Order	1,011,235

Fig 2. Top 6 Monetised Risk Drivers – Services

Associated nodes for Services	
F Joint – Driver 1	**F Carbon – Driver 4**
Joint Failure	General Emissions
F Repair – Driver 2	Joint Failure
Corrosion Failure	Interference Failure
Interference Failure	Corrosion Failure
F Domestic – Driver 3	Fracture Failure
Joint Failure	**F Death – Driver 5**
Interference Failure	Joint Failure
Corrosion Failure	Interference Failure
Fracture Failure	Corrosion Failure
Capacity	Fracture Failure
Gas Escape	GIB_Joint
Supply interruptions	GIB_Interferance
Props Domestic	GIB_Corrosion
	GIB_Fracture

Table 5. Associated Nodes – Services

Following the data gap analysis of the Services risk models, table 4 has been populated detailing WWU's current asset data position for each of the nodal values that form part of the calculation of the top 6 Monetised Risk drivers:

Nodal for top 6 risk drivers	Data Assessment Level (Key: Red: Significant Gap, Amber: Data Gap - Assumptions Applied, Green: Complete /Consistent)	Indicative Delivery (Key: Red – End of RIIO-GD1, Amber – Mid-Point, Green – July 2016)	Comment
Corrosion Failure	🟩	N/A	Collected live and at a granular level with many system validations in place to drive quality. No gaps that prevent the application of the monetised risk methodology
Fracture Failure	🟩	N/A	Collected live and at a granular level with many system validations in place to drive quality. No gaps that prevent the application of the monetised risk methodology
General Emissions	🟩	N/A	Utilises the nationally used and Ofgem approved Leakage Reduction Monitoring Model (LRMM)
Interference Failure	🟩	N/A	Collected live and at a granular level with many system validations in place to drive quality. No gaps that prevent the application of the monetised risk methodology
F Joint Failure (£)	🟩	N/A	Captured to a level and a quality that supports the methodology.
Joint Failure	🟩	N/A	Collected live and at a granular level with many system validations in place to drive quality. No gaps that prevent the application of the monetised risk methodology
F Repair (£)	🟩	N/A	Captured to a level and a quality that supports the methodology.
F Fracture (£)	🟩	N/A	Captured to a level and a quality that supports the methodology.
F Loss of Gas (£)	🟩	N/A	Utilise data from DECC

Nodal for top 6 risk drivers	Key: Red: Significant Gap Amber: Data Gap - Assumptions Applied Green: Complete /Consistent — Data Assessment Level	Key: Red – End of RIIO-GD1 Amber – Mid-Point Green – July 2016 — Indicative Delivery	Comment
Loss of gas	🟩	N/A	Utilises the nationally used and Ofgem approved Leakage Reduction Monitoring Model (LRMM)
Capacity	🟩	N/A	Robust records process for poor pressure reports and for capacity interventions
Supply Interruptions	🟩	N/A	Robust process in place that maps that used for GSOS payments
GIB_Joint	🟩	N/A	Collected live and at a granular level with many system validations in place to drive quality. No gaps that prevent the application of the monetised risk methodology
GIB_Interferance	🟩	N/A	Collected live and at a granular level with many system validations in place to drive quality. No gaps that prevent the application of the monetised risk methodology
GIB_Corrosion	🟩	N/A	Collected live and at a granular level with many system validations in place to drive quality. No gaps that prevent the application of the monetised risk methodology
GIB_Fracture	🟩	N/A	Collected live and at a granular level with many system validations in place to drive quality. No gaps that prevent the application of the monetised risk methodology

Table 6 –Services Nodal Value Data Quality Position

1.7 Data Improvement Initiative (Services)

WWU focuses on continual improvement in data quality. We have undergone a number of significant data accuracy projects on service data in recent years. We have system validations in place and a dedicated data accuracy team ensuring quality of data collected through our day to day business. We update service data on a daily basis through our replacement, repair and customer driven activities which equates to circa 55,000 services per annum.

1.8 Implementation of Reporting (Services)

Following the completion of the gap analysis, further processes are being developed to ensure Services RRP is completed for July 2016. All of the model's data variables and

parameters required have been mapped against data sources. Where a full dry-run of the model isn't possible in the timeframe, a high-level validation exercise will be undertaken to ensure the RRP process (data collection) can commence soon after 15/16 year-end. *Please note: Data collection and analysis is dependent on data capture post-March 2016 and completion of other RRP tables.*

The following tasks will be completed (timescales are indicative):

> **Data Process & Collection –** *Oct 2015 to May 2016*
> Finalisation of Mains and Services Excel Risk Model
> Training of appropriate personnel
> Data collection from defined sources & validation
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> **Data Analysis** – *Mar to Jul 2016*
> Perform data calculations
> Population of risk model base data table
> Population of intervention plans
> Run Services Risk Model
> Model validation incl. comparison of scenarios to business plan
> Populate 2015/16 RRP
> Re-state 2013 and 2021 with-without intervention
>
> **Review –** *Aug to Nov 2016*
> Review population process and capture lessons learnt.
> Review and update Implementation Plan.

1.9 Other Asset Groups

Gap analysis will be undertaken as and when Event Trees are developed, in line with the primary assets identified within Table 1 of the Implementation Plan Part 1.

When initial Event Trees are drafted, an interim analysis is undertaken to ensure that the Event Tree is fit for purpose and that current and future data requirements can be, or will be, met.

When Event Trees are finalised and approved, a full analysis is undertaken to identify data sources, data gaps, processes and the data improvements required to enable the use of this methodology for Regulatory Reporting in 2016 and beyond.

The completed Gap Analysis for each Asset Group will be published and updated within the body of this document (Implementation Plan – Part 2).

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