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Decision

RIIO-2 Final Determinations NARM Annex (REVISED)			
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Our aim for the RIIO-2 price controls is to ensure energy consumers across GB get better value for money, better quality of service and environmentally sustainable outcomes from their networks.

In May 2019, we set out the framework for the price controls in our Sector Specific Methodology Decisions. In December 2019, Transmission and Gas Distribution network companies and the Electricity System Operator (ESO) submitted their business plans to Ofgem setting out proposed expenditure for RIIO-2. We assessed these plans and published our consultation on Draft Determinations for company allowances under the RIIO-2 price controls in July 2020.

This document and others published alongside it, set out our Final Determinations for company allowances under the RIIO-2 price control, which will commence on 1 April 2021.

Contents

1. Introduction and overall package

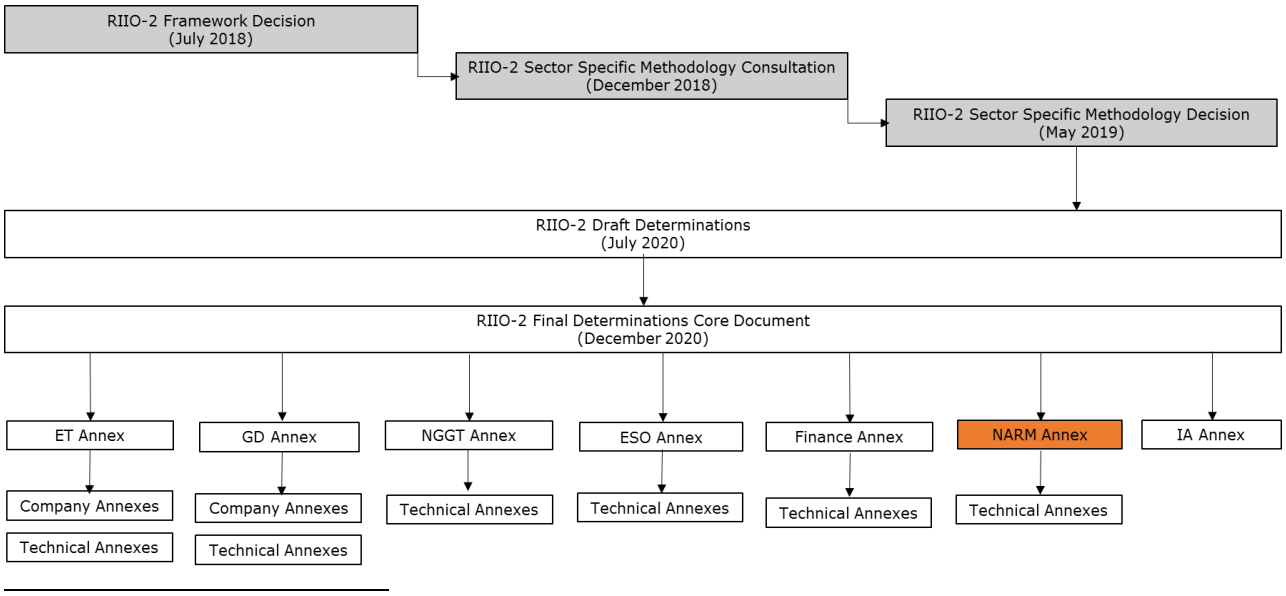
Purpose of this document

1.1 This document sets out our Final Determinations relating to the Network Asset Risk Metric (NARM) for the three Electricity Transmission Owners, National Grid Gas Transmission, and the eight Gas Distribution Networks.

1.2 It sets out the NARM outputs - Baseline Network Risk Outputs (BNRO) - that these network companies will be required to deliver during RIIO-2 as well as the associated Baseline Allowances and explains how these have been derived. It also sets out our decisions on the design and operation of a NARM Funding Adjustment and Penalty Mechanism to adjust totex allowances for different output delivery scenarios and to penalise under-delivery.

1.3 This document is part of a suite of documents which comprises Ofgem's Final Determinations. This is highlighted in Figure 1. As noted above, this document is relevant for all sectors but should be read alongside the Sector Specific documents (the NGGT, Electricity Transmission (ET) and Gas Distribution (GD) Annexes). The NARM is not applicable to the ESO's price control.[1]

Figure 1: RIIO-2 Final Determinations documents map



[1] NARM does not apply to the ESO as the ESO does not generally own long-life physical assets. We will address how the ESO manages its assets separately via its wider price control framework.

Background to NARM

1.4 Network asset risk relates to the consequence of failure of a network asset and the probability of a failure occurring. If a network company does not maintain, replace, or refurbish its assets, the probability of them failing will generally increase over time, and so would the risk of the consequence of failure materialising. To keep network asset risk within reasonable bounds, gas and electricity network companies are funded to carry out asset management activities such as replacement or refurbishment.

1.5 The NARM has been developed to allow us to quantify the benefit to consumers of the companies' asset management activities. In RIIO-2, this will be used as the output to hold the companies accountable for their investment decisions.

High-level overview of responses

1.6 In total, we received 19 stakeholder responses in respect of NARM of which 12 were from network companies. Of the non-network responses, a number provided high-level views on our proposals rather than commenting on the specific questions – these are discussed below.

1.7 There were a number of key themes that emerged from responses. These included:

- general support for the NARM Funding Categories but some concerns about complexity and specific views on the reclassification of some work categories
- requests for further guidance in key areas, including on the justification for under/over delivery and non-intervention risk changes
- some views about the challenge of justifying 'genuine' efficiencies
- concerns with the proposed NARM Funding Adjustment and Penalty Mechanism, many of which were based on the proposed approach to determining the Delivery Adjustment Factor (DAF).

1.8 A more detailed overview of responses to the questions posed in Draft Determinations and our views thereon are set out in Chapters 2-4.

1.9 Some stakeholders also raised concerns about the process for developing the NARM. We discuss these concerns and our views in the next section.

Process issues raised

1.10 In addition to points raised on the detail of the proposed arrangements, six respondents also questioned the process for developing the NARM, including changes of policy, the level of consultation and the number of iterations of the model there have been.

1.11 In relation to the NARM development process, the NARM arrangements have been developed with close working between Ofgem and the industry at each stage through a series of Working Group and bilateral meetings. Ofgem has sought to be transparent by sharing its thinking on the NARM as it has progressed and by engaging stakeholders in the development of that thinking. Changes in policy and the various iterations of the model are a reflection of that engagement. In developing Final Determinations, Ofgem has again sought to make significant use of Working Groups to ensure stakeholders had the opportunity to contribute to the development of the arrangements. A number of the changes we have made since Draft Determinations, including the provision of further guidance, reflect the outcome of this engagement.

High-level issues raised

1.12 A number of respondents raised points that were not directly related to the questions posed in Draft Determinations. Some respondents queried the complexity of the proposed arrangements and whether the approach was too removed from the actual condition of the assets. On a related point, some respondents identified the implication of data errors and inconsistencies. Finally, one respondent argued for an equivalent mechanism for workforce resilience to protect the wellbeing of human assets.

1.13 We recognise the challenge raised on complexity. At one level, network asset risk is a highly technical subject and thus some complexity is inevitable. However, in the process of developing the NARM arrangements and in reaching our Final Determinations, we have sought to both simplify the model and maximise transparency. As a result, we consider that the approach strikes an appropriate balance between complexity and accessibility.

1.14 As regards inconsistencies and data errors, as part of the 'NARM Output Setting Model' (NARM Model) redesign, we have also sought to address these, including specific issues identified by respondents.

1.15 On the issue of workforce resilience, we recognise that resilience is not just about assets. However, setting such a mechanism similar to NARM for workforce resilience could distort/constrain optimal resourcing decisions. Please see chapter 4 of the Core Document for our views on workforce resilience.

Summary of our Final Determinations

1.16 Having considered respondents' views, the following table provides a summary of the key components of our Final Determination for NARM. For completeness, it also provides a comparison to the position proposed in our Draft Determinations.

Table 1: Summary of Final Determinations

NARM parameters	Final Determinations	Draft Determinations
Monetised Risk Calculation & Setting Outputs	Calculating Monetised Risk Same as Draft Determinations.	Calculating Monetised Risk Different measure of risk for ET, GT (long-term) and GD (single year).
	Baseline Network Risk Outputs Same as Draft Determinations with some minor simplification and correction of errors.	Baseline Network Risk Outputs Based on NARM Model of monetised risk.
Baseline Network Risk Outputs (BNRO) and Baseline Funding	NARM Funding Categories Revised categories for some limited areas of work.	NARM Funding Categories Outlined proposed scope of work in individual categories.
	Baseline allowances Aligned with BNROs and set out for all companies.	Baseline allowances None proposed but noted these would be provided in Final Determinations.
	Definition of target and allowance Single target and allowance at Network level for GD;	Definition of target and allowance Single target and allowance at Network level for GD, ET and GT.

NARM parameters	Final Determinations	Draft Determinations
	Individual targets and allowances at disaggregated asset category levels for ET; and, risk category levels (high, medium, low) for GT.	
Funding Adjustment and Penalty Mechanism	Unit Cost of Risk (UCR) Benefit No cap.	UCR Benefit Capped at FD allowed value.
	DAF DAF of 0% for all sectors applied at total network level for gas distribution networks (GDNs) and at disaggregated levels for ET and GT.	DAF DAF of 95% for all sectors applied at total network level.
	Efficiency Case Remove efficiency case provision.	Efficiency Case Included provision for exceptional treatment of genuine efficiency.
	Justification of over/under-delivery Same as Draft Determinations but justification only required beyond the deadband. Guidance for justification cases is provided in Appendix 2.	Justification of over/under-delivery Justification required. Ofgem will apply a high hurdle in assessing cases.
	Deadband Inclusion of a deadband beyond which justification is required. This will vary by sector and be between 2-5%. Over-delivery and under-delivery measured from BNRO rather than from the edge of the deadband.	Deadband No deadband.
	Treatment of non-intervention risk changes Same as Draft Determinations except that faster or slower	Treatment of non-intervention risk changes Normalisations applied to output delivery for NARM methodology changes,

NARM parameters	Final Determinations	Draft Determinations
	deterioration than forecast in the BNRO will be treated as a non-intervention risk change. Further clarification for the different types of non-intervention risk change is provided in Appendix 3.	consequences of failure changes, and data cleansing.
	Clearly identifiable over or under-delivery Where a small number of projects/schemes/programmes of work are clearly identifiable as driving an over-delivery or under-delivery, these will be normalised out of the delivered output and cost out-turn and a separate adjustment will be made to the final NARM allowance.	Clearly identifiable over or under-delivery Not applicable.
	Penalty for unjustified under-delivery 2.5%	Penalty for unjustified under-delivery 2.5%

Monetised Risk Calculation and Setting Outputs

1.17 The approach to calculating monetised risk and to setting Baseline Network Risk Outputs (BNRO) is largely unchanged from Draft Determinations. A different output definition will be used for different sectors. For the ET and GT sectors, outputs will be defined using a long-term measure of risk. For GD, we will use a single year snapshot.

1.18 Similarly, the approach to setting BNRO will be largely as set out in the Draft Determinations. The NARM Model has been used to set the BNRO. Reflecting stakeholders' comments, some very minor tweaks have been made to simplify the model and to correct any outstanding errors.

1.19 Further detail is provided in Chapter 2.

Baseline Network Risk Outputs and Baseline Funding

1.20 The four NARM Funding Categories remain the same as those proposed in Draft Determinations. Chapter 3 discusses them in more detail but by way of summary, the key underlying principle remains that, unless there is a more appropriate funding mechanism, all interventions on NARM Assets should be within the A1 funding category and be subject to the NARM Funding Adjustment and Penalty Mechanism. Reflecting comments received, we have changed the categorisation of a few specific areas of work in Final Determinations.

1.21 As in Draft Determinations, our decisions on network companies' BNRO is based on their business plan proposals and reflect any adjustments to asset intervention volumes to align with baseline funding allowances. A summary of the BNRO and Baseline Allowances for all sectors is set out in Table 2.

Table 2: Summary of Baseline Network Risk Outputs and Baseline Allowances for the ET, GT, and GD Sectors

			Baseline Network Risk Outputs (R£m, 2019/20 Prices)			Baseline Allowances (£m)
Sector	**Company**	**Network**	**Draft Determinations**	**Change from DD to FD**	**Final Determinations**	**Final Determinations**
ET	NG	NGET	308.2	190.54	498.71	347.26
	SSE	SHET	7,865.3	968.07	8833.36	752.33
	SPEN	SPT	24,317.5	4994.69	29312.17	343.32
GT	NG	NGGT	181.3	19.51	200.77	368.98
GD	Cadent	EoE	5.5	0.2	5.7	105.4
		Lon	9.1	1.0	10.1	144.4
		NW	9.8	0.3	10.1	72.4
		WM	4.6	-0.2	4.4	51.2
	NGN	NGN	10.3	0.3	10.0	176.6
	SGN	Sc	3.6	2.4	6.0	58.8
		So	20.2	3.9	24.1	195.1
	WWU	WWU	17.2	-0.9	16.3	89.5

			Baseline Network Risk Outputs (R£m, 2019/20 Prices)	Baseline Allowances (£m)
* Please note that due to methodological and other differences, absolute values cannot be compared across companies. ** A breakdown by NARM Asset Category for each company can be found in Appendix 7. *** Baseline Allowances associated with NARM for the GD sector are indicative, but remain subject to update following reconciliation of final input data.				

1.22 For the GD sector, the Baseline Allowances associated with NARM remain subject to update between the publication of Final Determinations and the implementation of RIIO-GD2. This is to ensure that the final targets we set for GDNs accurately reflect the decisions we have made at Final Determinations, including ensuring a consistent approach is taken across GDNs as to which assets are included within the NARM. We will work with the GDNs to ensure these values are updated to accurately reflect our Final Determination positions, as outlined in Chapter 2.

NARM Funding Adjustment and Penalty Mechanism

1.23 The fundamentals of the approach of the NARM Funding Adjustment and the associated Penalty Mechanism remain unchanged from those proposed in Draft Determinations. Specifically, there will be a mechanism within the NARM arrangements in RIIO-2 which:

- adjusts network risk delivery by excluding the impact of non-intervention risk changes; and
- adjusts funding for under-delivery and justified over-delivery by setting the final NARM allowance based on the total adjusted output multiplied by an adjusted unit cost, together with a penalty for unjustified under-delivery.

1.24 There were a wide range of responses to our Draft Determinations in this area. Many focussed on the proposed approach to the adjustments while others sought further guidance on key components of the proposed arrangements.

1.25 Having considered those responses and undertaken further work as part of a series of both cross-sector and sector-specific industry working group meetings, we have made changes to the following elements:

- calibrated parameter values, e.g. revised the values of DAF for each sector
- incorporated a deadband around the BNRO

- removed the requirement for companies to present an efficiency case to secure an exemption from the DAF and instead factored assumptions on the ability to achieve efficiencies into the calculation of the revised DAF
- provided further clarification on the treatment of non-intervention risk changes and on the justification requirement for under- and over-deliveries.

1.26 These changes are discussed in further detail in Chapter 4.

2. Monetised Risk Calculation and Setting Outputs

2.1 This chapter sets out our decisions on how we have used the companies' submitted business plan data to derive their NARM BNRO.

2.2 Network Risk Output Definition Chapter 6 of the RIIO-2 Sector Specific Methodology Decision (SSMD) set out our decision that network risk output will be set by calculating the relative long-term monetised risk reduction delivered by interventions associated with NARM baseline funding allowance.

Final Determination

2.3 We have decided to implement our DD position of using a long-term measure of risk to define outputs for ET and GT and to use an end-of-period single-year measure as was used in RIIO-1 for GD.

Final Determination rationale and Draft Determination responses

2.4 The majority of respondents did not provide views on our proposed network risk output definition. Only one respondent, a transmission network company, commented that setting different types of targets for GDNs could potentially lead to unfairness in terms of requirements for the level of risk removed by the end of RIIO-2. It suggested that this may result in different abilities to outperform the BNRO and reduce comparability of network risk across networks.

2.5 We disagree that setting different types of outputs for GDNs than for other sectors will lead to unfair outcomes. The BRNO have been set to reflect the workloads that each network company has justified through its business plan and in supplementary submissions. Any over-delivery or under-delivery will be subject to the same levels of scrutiny and justification requirements regardless of how the outputs have been defined.

Our approach to setting BNRO

2.6 As part of their Business Plans, network companies submitted their proposed BNRO that will be delivered through their proposed asset management investments. Our view of the BRNO is based on our analysis of the companies' proposals, and other evidence from stakeholders, and reflects any adjustments to asset intervention volumes to align with baseline allowances.

Final Determination

2.7 For DD, we derived BNRO (through an Excel-based NARM Model) by reducing network companies' submitted BNRO on a pro-rata basis to reflect any proposed volume disallowances associated with each Risk Output Unit. All Baseline Risk Output values were then added together to give total Baseline Network Risk Output.

2.8 Our Final Determination on the overall approach to deriving BNRO is unchanged from our Draft Determinations. However, we have worked with the network companies since DD to resolve issues they had identified and to improve the modelling accuracy. The NARM Model has been redesigned to make it more intuitive to understand, and to correct some errors. The full NARM Model (excluding confidential input data) will be published on Ofgem's website in the coming weeks.

2.9 The data we used for deriving the BNRO was at a much more aggregated level than the data available to network companies and the data that will be used for deriving Outturn Network Risk Outputs (ONRO). Our NARM Model can therefore only provide indicative views of the risk benefits expected to be delivered by a network company's relevant FD allowed interventions. To ensure that BNRO, Baseline Allowances and ONRO and Outturn Allowances are comparable, we require network companies to recalculate their BNRO to reflect their FD allowed volumes.

2.10 For the GD sector, we will also need to update our view of Baseline Allowances to ensure it is consistent with the final set of inputs used to calculate BNRO. This will involve ensuring that the percentage share used to disaggregate top-down cost allowances into NARM accurately reflects the final workloads on BNRO is calculated. For clarity, any adjustment we make to Baseline Allowances will only adjust the relative NARM share of totex, but will not change totex or the value of other outputs, such as PCDs.

2.11 We expect this process to be completed ahead of the start of RIIO-2 to ensure that all stakeholders have clarity on RIIO-2 delivery requirements.

2.12 We set out below the three-step to process for recalculating BRNO and finalising Baseline Allowances, as set out in Table 3 below. In order for the process to be completed before the start of RIIO-2, network companies must submit their view of final BRNO no later than the middle of February. If final submission has not been received by the deadline date then the Authority may confirm the BNRO and Baseline Allowance published at FD or consult on any changes to such levels to account for uncertainty in the current modelling.

Table 3: Process for Calculating BNRO

Step	Explanation	Deadline
1. Input data agreement	In order to ensure that final BNRO and Baseline Allowances properly reflect our Final Determinations, network companies and Ofgem should agree relevant model data inputs ahead of model runs. This will include intervention volumes, and may include risk distributions and other data as necessary.	29 January 2021
2. Model run and submission	Network companies should run their models with the agreed model inputs and will submit final BNRO along with any necessary explanatory or supporting information to the Authority for approval.	12 February 2021
3. Authority approval	If final submission has not been received by the deadline date then the Authority may confirm the BNRO and Baseline Allowance published at FD or consult for a period of no less than 28 days on any changes to such levels to account for uncertainty in the current modelling. The final Network Asset Workbooks will be published on Ofgem's website.	31 March 2021 (indicative)

Final Determination rationale and Draft Determination responses

2.13 Some network companies expressed concerns on the appropriateness of assumptions applied in the NARM Model. Some network companies also commented that model data errors combined with inappropriate assumptions led to discrepancies between the BNRO calculated by Ofgem and by companies. Two network companies disagreed with the removal of intervention works that generated negative risk benefit in our model.

2.14 We acknowledge that our NARM Model can in most cases only provide an indicative views of the risk benefits expected to be delivered by a network company's relevant FD allowed interventions. To ensure that BNRO and ONRO are comparable, we require network companies to recalculate their BNRO to reflect their FD allowed volumes.

3. Baseline Network Risk Outputs and Baseline Funding

3.1 This chapter sets out our decisions on the projects and activities that will be within the scope of the NARM Funding Adjustment and Penalty Mechanism, and on its interaction with other funding mechanisms.

NARM Funding Categories and Arrangements

3.2 Many different types of asset interventions have an impact on monetised risk. This includes asset replacement and refurbishment interventions where the primary driver is to reduce asset risk, but also other types of intervention such as new connections and reinforcement. It is important that clarity is provided on the work within scope of the NARM Funding Adjustment and Penalty Mechanism, and on its interactions with other funding mechanisms. This should ensure appropriate funding is provided across the price control and should avoid the double-funding of any work.

Final Determination

3.3 To provide clarity on how the NARM Funding Adjustment and Penalty Mechanism would work and how it would interact with other funding mechanisms, we proposed in Draft Determinations four Funding Categories as follows:

- **A1 – NARM Funding Adjustment and Penalty Mechanism**: this is work within the initial scope of the NARM Funding Adjustment and Penalty Mechanism and which contributes to a company's BNRO. Network companies have discretion to design their delivery programmes to efficiently delivery their BNRO (i.e. trade risk).

For the ET and GT sectors, our Final Determination is to further segment the A1 category into 7 and 3 Risk Sub-Categories respectively (see Appendix 6). The NARM Funding Adjustment and Penalty Mechanism will operate independently for each Risk Sub-Category, and network companies will not be permitted to automatically trade risk across Risk Sub-Categories. However, there may be crossover considerations when it comes to justifying over-delivery or under-delivery of BNRO (e.g. over-delivery in one Risk Sub-Category might justify under-delivery in another). See Appendix 2 for further detail on justification requirements.

- **A2 – Funding Under a Separate Mechanism**: this is work delivering Network Risk Outputs that is not currently within the scope of the NARM Funding

Adjustment and Penalty Mechanism (e.g. replacement or refurbishment work carried out and funded as part of a load related scheme). The Network Risk Outputs associated with this work does not contribute to the BNRO. However, should the case for funding under the original mechanism fall away then, subject to any specified qualifying criteria, the Network Risk Output associated with this work may contribute to a company's final ONRO.

- **A3 – Ring-fenced Project/Activity**: this is work that will deliver Network Risk Outputs but which is not within the scope of the NARM Funding Adjustment and Penalty Mechanism. The Network Risk Output associated with this work will not contribute to a company's final ONRO.

- **B – Non-NARM Assets**: this is work on assets or interventions not currently covered by a network company's NARM Methodology. Some assets may be brought into the scope of NARM during RIIO-2 for including in future price controls. This will be dependent on development of suitable methodologies for deriving Network Risk Outputs.

Electricity Transmission

3.4 For the ET sector, we proposed in Draft Determinations that all non-load related schemes delivering lead asset replacement or refurbishment would be assigned to Category A1, with some specific exceptions to be allocated within Category A3. We also proposed that all replacement and refurbishment work to be delivered through load-related schemes fall within Category A2.

3.5 Our decision is to implement our DD proposals, with the following exceptions:

- A1 Category is sub-divided into 7 separate Risk Sub-Categories equivalent to the seven lead asset categories (Circuit Breaker, Overhead Line Conductor, Overhead Line Fittings, Overhead Line Tower, Reactor, Transformer, Underground Cable). An ETO project allocated to a Risk Sub-Category according to the asset category delivering the highest risk benefit
- NGET overhead line (OHL) conductor schemes have been moved from Category A1 to A3 and will be funded under a separate Price Control Deliverable (PCD). The OHL PCD will cover the full scheme costs, including the replacement or refurbishment of secondary assets

- London Power Tunnel related schemes have moved from Category A1 to A3 and will be funded under a separate Price Control Deliverable (PCD).

Gas Transmission

3.6 For the GT sector, we proposed in Draft Determinations that certain interventions (such as on air intakes, cab ventilation, and fire suppression systems) would be ring-fenced with separate PCDs and assigned to Category A3, and all other asset health work on the 37 NARM asset categories would be assigned to Category A1.

3.7 Our decision is to implement our DD proposals, with the following exceptions:

- A1 Category is sub-divided into 3 separate Risk Sub-Categories (High, Medium, and Low). Interventions are assigned to one of the three Risk Sub-Categories depending on the average Unit Cost of Risk Benefit.

Gas Distribution

3.8 For the capex projects in the GD sector, we proposed in Draft Determinations that those assigned as separate PCDs would be allocated to Category A3, and that all other capex NARM asset allowed replacement and refurbishment workload would be allocated to Category A1.

3.9 For repex Tiers 1 and 2A mains and associated services, we proposed that these be allocated to Category A2. For works within those Tiers that would be associated with PCDs, we proposed that any over-delivery would contribute to the final ONRO and would therefore fall within the scope of the NARM Funding Adjustment and Penalty Mechanism. All other repex replacement and refurbishment not tied to a PCD or a volume driver was proposed to be allocated to Category A1.

3.10 Our decision is to implement our DD proposals, with the following exceptions:

- Tiers 1 and 2A mains and associated services have been fully removed from the NARM Funding Adjustment and Penalty Mechanism and therefore moved to Category A3. Any under-delivery or over-delivery in these categories will be dealt with under the relevant PCDs/volume drivers.

Final Determination rationale and Draft Determination responses

3.11 Most respondents agreed with our proposals as did a non-network respondent. Despite this, one Electricity Distribution (ED) company questioned whether it was appropriate to ringfence relatively small cost areas within separate PCDs. Another agreed with including relevant interventions on secondary assets in the NARM where they contribute to NARM outputs but considered they should otherwise be excluded.

3.12 However, most GDNs' responses disagreed with our proposed NARM funding categories and arrangements. One GDN pointed out that the scope and investment associated with the NARM scope has been reduced so significantly that effective asset risk trading will not be feasible in RIIO-GD2. Another GDN commented that our proposal to take some assets and some asset investments outside of the NARM assessment significantly reduces the ability to use the NARM as a tool to assess total asset risk across asset populations and respond to changing requirements. However, the same respondent agreed that load-driven investment should be outside the NARM.

3.13 Some respondents also disagreed with the specific allocations of funding categories for certain projects we had proposed. Key points included:

- suggesting that all named capex projects should be in Category A1
- to avoid confusion in situations where the inclusion of other work in Category A1 where risk mitigation is not the primary driver, this work must be clearly specified or, alternatively, the outputs should not be included.

One electricity transmission owner (ETO) whilst it broadly agreed with the proposed categories, highlighted what it considered to be a number of errors, including:

- the removal of non-load related expenditure (NLRE) schemes which generate a negative Long-Term Risk Benefit (LTRB) means that companies will be unfairly penalised for undertaking such work
- the mismatch in asset and intervention definitions between Cost and Volume (CV) tables and the NARM business plan data templates (BPDT) wrongly resulted in disallowed volumes
- the exclusion of all refurbishment works is inconsistent with the need to refurbish in order to maintain a safe and reliable network
- the exclusion of 132kV wood poles (25% of OHL structures, which, in its view, must be lead assets) and certain schemes.

3.14 We agree with the majority of respondents that the Funding Category definitions are correct. However, some valid point were raised in regard to the allocation of projects and/or activities to these Categories. We have updated our allocation to funding categories as appropriate.

Costs Associated with BNRO

Final Determination

3.15 We proposed in DD that BNRO be associated with full project costs including costs associated with interventions on secondary assets (i.e. non-NARM Assets) as well as indirect costs, such as project management. We had not aligned and consulted in DD on the proposed BNRO with the associated baseline costs and we explained that we would set this out in our Final Determinations.

3.16 Our decision is to implement the proposal to associate full project costs with BNRO where it is appropriate to do so. This applies primarily to ET, where costs are reported and assessed at project level. Where costs are not reported at project level but at activity level we have allocated costs to align with the cost assessment process.

3.17 The cost allowances set out in this document reflect these decisions.

Final Determination rationale and Draft Determination responses

3.18 Most respondents did not provide specific views on our proposals.

3.19 One GDN commented that the NARM allowances should not be determined at the scheme/project level, and emphasised that the disaggregation of NARM expenditure should not be lower than asset type to ensure full alignment with the NARM models. One electricity distribution network operator (DNO) expressed particular concern about the inclusion in our proposal of indirect costs. It argued that the need to capture indirect costs associated with projects would mean a fundamental change to how companies account for indirect resource time and would require changes to cost capture and management systems. It suggested that it would be more appropriate to only include in NARM allowances the direct costs of delivery.

3.20 The respondents views have been factored into our Final Determinations. and NARM allowances have been set at the level reported by individual network companies.

4. NARM Funding Adjustment and Penalty Mechanism

4.1 This chapter sets out our decisions on the NARM Funding Adjustment and Penalty Mechanism to calculate financial adjustments and penalties for all potential delivery scenarios. The mechanism includes two parts:

- Adjusting network delivery to exclude the impact of non-intervention risk changes
- Adjusting funding by setting the final NARM allowance based on the total adjusted risk output multiplied by an adjusted unit cost, together with a penalty for unjustified under-delivery.

4.2 In developing the approach for Final Determinations, we have undertaken further analysis of delivery scenarios including Monte Carlo simulations for each of the sectors as described in Appendix 3. Together with responses to Draft Determinations and discussions in the NARM working groups and bilateral meetings, this has allowed us to refine our approach including updating key parameters such as the DAFs. We have decided that some elements of the NARM Funding Adjustment and Penalty Mechanism such as the level of aggregation of the BNRO will be sector-specific.

NARM funding adjustment principles and associated arrangements

4.3 We have further developed the NARM Funding Adjustment and Penalty Mechanism based on the principles set out in our SSMD, on our analysis of potential delivery scenarios and in light of the responses to our Draft Determinations we received and engagement with stakeholders in working groups and bilaterals.

Final Determination

4.4 Table 4 sets out a summary of our Final Determination on the NARM funding adjustment principles and associated arrangements. It also compares this to the position proposed at Draft Determinations.

Table 4 Summary of key elements of FD on NARM Funding Adjustment and Penalty Mechanism

NARM element	Final Determination	Draft Determination
Treatment of non-intervention risk changes	Same as at Draft Determinations except that faster or slower deterioration than forecast in the BNRO will be treated as a non-intervention risk change. Further clarification on the different types of risk change is provided in Appendix 3.	Normalisations will be applied to output delivery for NARM methodology changes, consequences of failure changes and data cleansing.
Calculation of final NARM allowance	Same as DD except for: Gas Transmission: the NARM Funding Adjustment and Penalty Mechanism will be applied separately to each of the 3 Risk Sub-Categories set out in Table 5 based on NGGT's own NARM outputs and Unit Cost of Risk Benefit. Electricity Transmission: the NARM Funding Adjustment and Penalty Mechanism will be applied separately to each of the 7 Risk Sub-Categories based on its own NARM outputs and Unit Cost of Risk Benefit. For the avoidance of doubt, the mechanism will be applied based on the aggregate NARM output for Gas Distribution as proposed in DD.	The final NARM allowance will be based on the adjusted output delivered multiplied by an adjusted unit cost based on the DAF. Delivery adjustment mechanism applied based on the aggregate NARM output.
Cap on the Unit Cost of Risk (UCR) Benefit	No cap.	UCR capped at FD allowed value.
Delivery Adjustment Factor	Single common DAF of 0% applied for all sectors.	Single common DAF of 95% applied for all sectors.
Genuine cost efficiency	No longer applicable.	Provision to justify cost efficiencies to receive full TIM benefit.
Deadband	Inclusion of a deadband beyond which justification is required. This will vary by sector and be between	No deadband.

NARM element	Final Determination	Draft Determination
	2% and 5%. Over-delivery and under-delivery measured from the BNRO rather than the boundaries of the deadband.	
Justification of over-delivery and under-delivery	Same as at DD but justification only required beyond the deadbands. Further guidance for justification cases is provided in Appendix 2.	Justification required for over-delivery and under-delivery. Ofgem will apply a high hurdle in assessing these cases.
Clearly identifiable over-delivery or under-delivery	Where a small number of projects/schemes/programmes of work are clearly identifiable as driving an over-delivery or under-delivery, these will be normalised out of the ONRO delivered output and cost out-turn and a separate adjustment more reflective of the relevant outputs and costs will be made to the final NARM allowance.	Not applicable.
Penalty for unjustified under-delivery	2.5%	2.5%

4.5 For both the ET and GT sectors, the network companies will still be able to provide justification in a manner that looks across the Risk Sub-Categories so, for example, over-delivery in one Risk Sub-Category can be balanced off against under-delivery in another.

4.6 Applying a 0% DAF means that the Unit Cost of Risk Benefit is fixed at the Final Determination level. This element of the mechanism for adjusting the Unit Cost of Risk will therefore effectively be dormant for RIIO-2. We will gather further data and evidence during RIIO-2 to enable us to ascertain with more confidence whether the application of a non-zero DAF is appropriate for future price controls.

4.7 A 0% DAF also means that the provision for network companies to justify genuine unit cost efficiencies is no longer required as all cost savings and over-spends will automatically be fully subject to the Totex Incentive Mechanism (TIM).

4.8 As was the case in RIIO-1, funding adjustments and/or penalties will be applied at the end of the RIIO-2 price control period when a full assessment of delivery can be done.

4.9 At the end of the RIIO-2 period, the network companies will be required to submit a performance report to Ofgem that sets out:

- their outturn expenditure and Network Risk Outputs delivered
- justification for any over-delivery or under-delivery against their BNRO
- quantification and justification of material non-intervention risk changes.

Final Determination rationale and Draft Determination responses

4.10 Most network companies disagreed with our funding mechanism principles and proposals, though some of them did state that companies should not be rewarded for windfall gains. Of the non-network stakeholders, two supported our proposals and the remainder did not provide any strong views.

4.11 Some network companies were of the view that our proposal represented ex-post input-focused regulation rather than RIIO's ex-ante output-oriented principles. Network companies were also concerned that our proposals add significant complexity to an already complex and data-intensive process. One network company argued that the proposed approach amounted to micro management by Ofgem. Another company interpreted the proposals as meaning that tracking of cost and risk would be at a scheme level within an asset category. One GDN questioned its ability to trade risk due to the Pipeline Safety Regulations (PSR).

4.12 Some companies commented that our proposals would encourage companies to stick exactly to their business plans in order to minimise funding adjustment risk and that, as a result, beneficial risk trading under NARM would be discouraged. Some GDNs remarked that the formulation of the proposed funding adjustment was unfounded for the GD sector as Ofgem's analysis was based on electricity transmission data and was therefore not reflective of an equivalent analysis of GDN data. One GDN noted that the proposed fund adjustment would introduce significant data submissions that are not proportionate to the lower levels of spend for GD.

4.13 One network company proposed an alternative mechanism based on the RIIO-1 Network Output Measures (NOMs) Incentives Methodology. The alternative

mechanism proposed involved excluding interventions likely to result in excessive under-delivery or over-delivery of risk output from the NARM mechanism, using a statistically robust outlier process, so that the proposed DAF would be removed and efficiency sharing would be managed through the TIM as per the RIIO-1 arrangements. One GDN also advocated retaining the current RIIO-1 NOMs arrangements.

4.14 One non-network company, whilst agreeing with the funding principles, noted that the implementation of those principles left residual opportunity for windfall gains or losses.

4.15 Our further analysis of delivery scenarios including Monte Carlo simulations has not definitively identified significant scope for windfall gains through asset or intervention switching.

4.16 We do not consider that our approach is input-focused or that it amounts to micro-management by Ofgem. The NARM arrangements are based on a monetised risk output and enable trading of risk. However, having taken in account stakeholder views, we have applied a number of simplifications and refinements, including removal of the need for justification of genuine efficiencies and the introduction of a deadband to remove the need for justification of smaller over-deliveries and under-deliveries. The revised approach to the NARM Funding Adjustment and Penalty Mechanism avoids the need for ex-post project-by-project assessment except in rare cases where a small number of projects are clearly identifiable as driving an over-delivery or under-delivery.

4.17 In terms of the DAF, we have carried out simulations of the range of delivery scenarios to assess a value that would represent the potential opportunities for windfall gain versus that for efficiency improvement.

4.18 For GD, our analysis concluded that the scope for gaining from asset switching is sufficiently limited such that a 0% DAF at total network level is appropriate. For ET and GT, our simulations indicated that the available range of delivery scenarios could give rise to potential undue windfalls for companies. However, our analysis did not provide a statistically strong basis for particular non-zero values. After discussing with the NARM working group and having undertaken further analysis, we have decided to take an alternative approach that would effectively protect consumers from network companies benefitting from windfall gains and which would retain incentives to encourage cost efficiency. This approach is to segment the ET and GT

BNRO into 7 and 3 Risk Sub-Categories respectively, and to apply the NARM Funding Adjustment and Penalty Mechanism independently for each individual Risk Sub-Category. See Appendix 4 for further detail.

4.19 We consider that the revised overall NARM arrangements for each of the sectors in Final Determinations will provide sufficient flexibility and incentive for the network companies to update their investment plans and enable them to prioritise interventions as new information becomes available or as circumstances change. We consider that this strikes an appropriate balance between incentivising network companies to achieve asset management efficiencies and protecting consumers from the risk of windfall gains as a result on asset or intervention switching.

4.20 We consider that the introduction of a deadband, within which justification is not required, appropriately addresses concerns that the cost of compiling the NARM submissions could become disproportionate compared to the costs involved.

Treatment of non-intervention risk changes

4.21 We considered key factors that could make it easier or harder for the network companies to deliver NARM outputs, and how to treat these factors so as to allocate risks and gains in a fair manner between the network companies and consumers.

Final Determination

4.22 Where we can objectively identify factors that cause changes to network company NARM output delivery and these factors are unrelated to their asset intervention actions, our DD proposal was to exclude the impact of these factors from the network companies' delivery before considering any funding adjustments.

4.23 We have decided to implement the principles for non-intervention risk changes proposed in DDs except that higher or lower deterioration than forecast in the BNRO will also be normalised. We will hold the companies neutral for the following non-intervention risk changes:

- **Deterioration changes** – where deterioration is higher or lower than that forecast as part of the BNRO but is not as a result of action by the network company.

- **NARM Methodology changes** – where these do not require Authority approval and formal rebasing of the BNRO.
- **Consequence of failure changes** – which are not part of a formal methodology change or the result of action by the network company.
- **Data cleansing** – network companies will be held neutral for all properly-evidenced data cleansing that has been carried out. In addition, any data cleansing above the reasonable levels we would expect from a company that is effectively managing its assets could raise wider concerns and may be subject to case-by-case investigation and appropriate action.

4.24 We provide further clarification on the definition and treatment of different non-intervention risk changes in Appendix 3.

4.25 As we will be applying a 0% DAF for all of the sectors, we have decided to revised the approach to dealing with changes in deterioration from forecast from that proposed in Draft Determinations, i.e. that they would be normalised prior to the application of the NARM Funding Adjustment and Penalty Mechanism.

Final Determination rationale and Draft Determination responses

4.26 Most network companies' responses supported our proposal in principle, however, concerns were expressed about the actual implementation and clarification on certain aspects was sought. Some network companies were also concerned that the extent of the information required might be disproportionate.

4.27 Two GDNs questioned the impact on reporting. One noted that additional reporting would be required to track changes due to non-intervention factors. The other queried what would be practical and achievable to deliver in determining the requirements for non-intervention adjustments within annual reporting timescales.

4.28 Some GDNs also questioned the proportionality of information requirements for non-intervention risk changes compared to the level of expenditure included within the scope of the NARM. One GDN was concerned about the complexity of the approach to non-intervention risk changes and felt that this could lead to spurious results.

4.29 Two ETOs asked for details of the treatment for consequence of failure, specifically the system consequences. One DNO was of the view that there would potentially be perverse incentives against undertaking data cleansing, and another DNO noted that there was a very specific definition for data cleansing in RIIO-ED1 and they would

not expect any impact on risk changes delivered by interventions through data cleansing.

4.30 There was a proposal from one DNO that justification for non-intervention risk changes (and associated adjustments) should only be required where the changes are relevant to a company's performance with respect to achieving the BNRO targets.

4.31 Three DNOs were concerned about the complexity of the approach to non-intervention risk changes. One DNO highlighted that deterioration changes should feed into risk benefit delivery.

4.32 One ETO noted that in order to keep non-intervention risk changes neutral, a mechanism to handle the difference between forecast and actual risk of an asset will need to be determined.

4.33 We have provided further clarification for each of the relevant types of non-intervention risk change and their treatment in Appendix 3. This incorporates some of the suggestions that were put forward by the network companies.

4.34 In our view, adjustments for non-intervention risk changes are necessary to enable like-for-like comparison between BNRO and ONRO and to ensure potential risk and gains from such changes are fairly allocated between the company and consumers. These are not dependent on the particular form of the NARM Funding Adjustment and Penalty Mechanism.

4.35 It is also important to note that non-intervention risk changes are part of the existing NOMs asset risk arrangements in RIIO-1 and will be taken into account in assessing over-delivery or under-delivery against the monetised risk output in RIIO-1. The arrangements for the RIIO-2 NARM build on this and refine the treatment of the various types of non-intervention risk change. It is important that these factors are appropriately documented, quantified by the network companies and reported on as they could make it easier or harder to deliver their outputs.

4.36 We recognise the potential complexity of factoring changes in system consequences of failure into the NARM output calculations throughout the RIIO-2 period. As a result, we have therefore decided that system consequences of failure should be fixed as per the configuration of the network at the time of the preparation of the Business Plan submission. For these changes, no normalisation adjustments need to

be applied. However, network companies must still account for changes in these parameters in their decision-making.

4.37 We do not need to apply separate treatment to SHET and SPT because of the mechanistic differences that arise between forecast and actual deterioration under their methodologies. These are covered by the general provision to normalise the delivered risk output for changes between forecast and actual deterioration.

4.38 We agree that justification for non-intervention risk changes is only needed where they are relevant to the companies performance against the BNRO.

4.39 We have taken account of the RIIO-ED1 definition of data cleansing together with the definitions for the other sectors in the further guidance on non-intervention risk changes in Appendix 3.

Approaches to calculating funding adjustments

4.40 We decided that we will be applying an integrated financial adjustment for the calculation of the final NARM allowance as proposed at Draft Determinations. This addresses both changes in output delivery and the Unit Cost of Risk. In our view, this strikes an appropriate balance between protecting customers from the risk of windfalls gains for the network companies, and providing sufficient incentives to those companies to seek out asset management efficiencies.

Final Determination

4.41 The key steps in how the NARM Funding Adjustment and Penalty Mechanism will be applied are summarised below and set out in more detail in Appendix 5.

4.42 The NARM cost allowance and the BNRO will be set up-front. At the end of RIIO-2, the network companies will report their out-turn expenditure and the Network Risk Output they have delivered. The delivered Network Risk Output will be adjusted to normalise out any relevant non-intervention risk changes and also, where relevant, a small number of clearly identifiable projects that are causing an over-delivery or under-delivery.

4.43 As the DAF has been set to 0% for each of the sectors the Unit Cost of Risk Benefit will be fixed at the baseline level and the element of the mechanism for adjusting the unit cost will remain dormant.

4.44 The final NARM allowance will then be calculated using the adjusted output delivery (revised to add in justified over-deliveries and remove under-deliveries) and the Unit Cost of Risk Benefit. Where justified, any clearly identifiable projects that have caused an over-delivery or under-delivery will then be added back in.

4.45 Finally, a penalty of 2.5% will be applied to any unjustified under-deliveries.

4.46 For the ET and GT sectors, the NARM Funding Adjustment and Penalty Mechanism will be applied for each of the disaggregated output Risk Sub-Categories. In GD, it will be applied at the total network level.

4.47 The DAF for each of the sectors/companies is 0% as set in the table below and applies for all over-delivery and under-delivery scenarios.

Table 5 Level of DAF Application

Sector	DAF	Level of application
ET	0%	Disaggregated into 7 Risk Sub-Categories. Individual projects are allocated to one of those 7 Risk Sub-Categories equating to 7 lead asset categories (Circuit Breaker, Overhead Line Conductor, Overhead Line Fittings, Overhead Line Tower, Reactor, Transformer, Underground Cable). A project is allocated to the Risk Sub-Categories according to the asset category delivering the highest Monetised Risk Benefit.
GT	0%	Disaggregated into 3 Risk Sub-Categories. Individual Unique Identifiers (UIDs) are allocated to one of 3 Risk Sub-Categories (Low, Medium, and High) based on the expected Unit Cost of Risk Benefit (UCR). UID allocation is fixed for the period of RIIO-2.
GD	0%	Total network level.

Final Determination rationale and Draft Determination responses

4.48 Most network companies disagreed with our proposed approaches to calculating funding adjustments. Some supported the principles underlying the approach as well as the 2.5% penalty proposed for the unjustified portion of under-delivery. Two non-network stakeholders broadly supported our proposals and one of them suggested that even the application of the DAF in the funding adjustment would not completely remove the opportunity for windfall gains or losses. The other non-network respondents did not give any strong views on our proposal. ENWL and WPD supported the principles but saw issues with the proposed approach.

4.49 One of the key aspects in network companies' responses is about the use of the DAF in the adjustment. They either questioned the need for the use of the DAF in the mechanism or commented on the high value of DAF proposed (95%) was asymmetric in nature. One GDN noted that the mechanism penalises companies for increased out-turn costs even if the increase is appropriately justified. One DNO suggested a DAF of 75% would allow companies to keep a greater proportion of

savings and would encourage licensees to make changes to plans where such changes are required. However, most network companies did not provide evidence in support of their arguments for the value of DAF, except the three ETOs.

4.50 The three ETOs provided detailed scenario examples in their responses and argued that there are some fundamental flaws in the mechanism that would lead to disproportionate/unfair outcomes. The first ETO's scenario analysis concluded that the DAF is not required because the DAF would stifle innovation and result in random penalties. It claimed that the existing over/under delivery mechanism in RIIO-1 was adequate. Another ETO's scenario showed that the ETO would be dis-incentivised to act in consumers' interests and rather would be incentivised to stick with its business plan under any circumstances. The third ETO's scenario analysis showed that adjusting the Unit Cost of Risk Benefit delivered raises different issues since there is not a linear relationship between the cost and the risk benefit delivered by the different interventions. Two ETO suggested that assessing under- or over-delivery should be done on a scheme-by-scheme basis through the RIIO-T2 close-out process.

4.51 Another key area highlighted by the network companies was the efficiency case requirement. Most network companies were concerned about the vast amounts of data, evidence and justification that would be required for an ex-post assessment of genuine cost efficiencies. Some companies argued that it is not appropriate to include a further efficiency test within the NARM mechanism on top of the cost assessment within the business plan submission process and TIM. One company commented that this would potentially reduce within-period asset management efficiencies to unit cost efficiency. Some companies commented that burdensome justifications for cost efficiency may deter companies from developing improvements and innovations so that the incentive to seek efficiency is lost, resulting in higher longer-term costs to consumers. Others sought further clarifications and guidance on the definition of and process of justifying efficient delivery. One company was concerned that only project management and procurement costs were being considered as genuine efficiencies.

4.52 As noted in some of the responses to Draft Determinations, there is a clear need to protect consumers from potential windfalls gains from asset or intervention switching. We have updated the NARM Funding Adjustment and Penalty Mechanism to strike an appropriate balance between such protection based on the scope for

gains in each sector and providing sufficient incentive for companies to achieve asset management efficiencies.

Justification for over-delivery and under-delivery

4.53 An important part of the overall NARM Funding Adjustment and Penalty Mechanism is the requirement for network companies to appropriately justify over-or under-deliveries from the BNRO. In both the SSMD and Draft Determinations, we made clear that we would consider cases for over-delivery and under-delivery on an exceptional case-by-case basis and that we would set a high hurdle for companies wishing to make such cases.

Final Determination

4.54 The principles that we set out in SSMD still stand, which include that companies will be expected to justify any deviation in delivery from their output targets and that we will apply a high hurdle in assessing such cases.

4.55 For GT and ET, where the NARM Funding Adjustment and Penalty Mechanism will be applied for a number of different categories, the network companies will still be able to provide justification in a manner that looks across the categories. So, for example, over-delivery in one category can be netted off against under-delivery in another.

4.56 We have decided to introduce a deadband around the BNRO within which justification will not be required. However, delivery will still be measured from the BNRO rather the edge of the deadband as was the case in RIIO-1.

4.57 The size of the deadband for each of the sectors is set out in Table 6 below.

Table 6 – Deadbands for Each Sector

Sector	Deadband
ET	±2%
GT	±5%
GD	±5%

4.58 We have also developed further guidance on the requirements for justification which is set out in Appendix 2. This guidance will be developed further on a sector-specific

basis in discussion with the network companies and other stakeholders together with the work on developing the Regulatory Instructions and Guidance for costs and NARM reporting.

4.59 We remain of the view that it is not appropriate to make specific adjustments to our Draft Determinations to account for any forecast impact on RIIO-1 delivery imposed by the COVID-19 pandemic, and instead intend to carry out this assessment at RIIO-1 Close-Out. We will take into account the COVID-19 impact in closing-out the RIIO-1 NOMs Incentive Mechanism and will take a pragmatic approach when dealing with minor delays caused by COVID-19.

Final Determination rationale and Draft Determination responses

4.60 Most network companies broadly agreed with our proposed justification principles for over-delivery and under-delivery. One ED company agreed that the four principles for justification were reasonable but queried whether any company should need to meet all as any one of the principles could be sufficient justification. Another company highlighted a potential overlap between the justification of efficient delivery (lower unit costs), and the overall justification of under- or over-delivery, and suggested that the two steps should be merged into a single, intervention-by-intervention, justification process.

4.61 A key theme from respondents was the need for further clarification and guidance in relation to the nature and quality of the evidence required for justifications. Among the areas where guidance was sought were: the process and criteria to justify efficient delivery; on how Ofgem would assess data cleansing actions; and, the need to define key terms such as 'a significant net benefit'. One ETO suggested that Ofgem go further and include a template to be completed as a minimum requirement. Another ETO offered to work with Ofgem in developing the guidance. Two network companies argued that guidance should be issued before Final Determinations to allow companies to design systems and processes for collecting sufficient information.

4.62 Some respondents expressed concerns that the requirements for justifications may be disproportionate with one noting that it should be proportionate to the unit costs and volumes of activity. On a related point, some network companies disagreed with our proposal not to apply a deadband. They stated the need to introduce a materiality deadband to minimise the regulatory burden for both the companies and Ofgem, and two GDNs suggested a 5% deadband. One ETO also suggested removing

outlier interventions into a ring-fenced volume PCD mechanism. Two DNOs noted that a degree of pragmatism is needed on the requirement for justification and felt that a deadband was needed.

4.63 Some companies comments on the timing and approach to the justification cases. One ETO proposed that cases could be reviewed on an ongoing basis and not 'ex-post' at the end of the price control period. It noted that by using this approach, network companies could learn from early justification cases, making improvements and increasing efficiency and innovation throughout the period as lessons are learnt. Another ETO noted that the only feasible approach in ET was a scheme-by-scheme assessment through the RIIO-T2 close-out process and that it would be up to ETOs to demonstrate delivery against their plans and provide justification through a performance assessment report.

4.64 Non-network stakeholders did not provide strong views in their responses on the justification for over-delivery and under-delivery. One respondent noted that ex-post assessment would give Ofgem the most evidence available to assess the justification for investment. The same respondent also supported providing guidance on when a company should consider unplanned spending to encourage investment to maintain the network.

4.65 We have decided to retain our principles for the justification of over-deliveries and under-deliveries as we continue to consider these are appropriate. We note that they were supported by most of the network companies and other stakeholders. However, we recognised that further clarification was needed on the requirements for justification and have expanded our guidance and addressed these points in Appendix 2.

4.66 We have decided that we will set a high hurdle for the quality of justifications as proposed in Draft Determinations to ensure that there is appropriate protection for consumers. We therefore expect companies to meet all of the requirements for justification rather than some elements of them.

4.67 We accept that the proposed removal of a deadband could have led to a disproportionate requirement for justification for smaller over-deliveries and under-deliveries. We have therefore decided to retain a deadband for all sectors for RIIO-2. The lower deadband for ET reflects the relatively higher cost of the individual investments. We expect that for ET a change in a small number or individual

projects should be sufficient to breach the deadband and to trigger justification requirements.

4.68 In our approach to providing additional guidance for the justification cases, we have highlighted the importance of the network companies making Ofgem aware of potential over-deliveries and under-deliveries during the RIIO-2 period, thereby enabling further discussions to take place on the factors driving the over and -under-delivery and how the company is addressing them. However, Ofgem's assessment of the justification can only take place at the end of the RIIO-2 period once the full picture is available.

4.69 We do not consider it necessary to do a project-by-project or programme-by-programme review at the end of RIIO-2 to carry out this assessment. This risks increasing regulatory burden and it is unlikely that a large proportion of the investment plan will have changed. However, we have introduced an additional element to the NARM Funding Adjustment and Penalty Mechanism for cases where the over-delivery and under-delivery is driven by a small number of clearly identifiable projects or schemes. In such cases there would be a review of the relevant projects or areas of work. This will the adjustment for the under or over-delivery more reflective of the cost and outputs for that work.

Appendix 1 – NARM Glossary

Please note that these definitions may be amended through the licence modification process. In the case of any conflicting definitions, the relevant licence definition will take precedence.

Table 7 – NARM General Definitions

Term	Definition
Baseline Allowance	The allowed expenditure associated with the Baseline Network Risk Output
Baseline Network Risk Output	The total Network Risk Output that a network company has been funded to deliver through its RIIO-2 baseline, excluding Network Risk Outputs associated with other mechanisms or PCDs.
Baseline Unit Cost of Risk Benefit (UCRB)	The Unit Cost of Risk Benefit derived from Baseline Network Risk Output and associated baseline allowance values.
Delivery Adjustment Factor (DAF)	A proportion of the difference between Baseline Unit Cost of Risk Benefit and Outturn Unit Cost of Risk Benefit. DAF can have a value of between 0% and 100%.
Final Unit Cost of Risk Benefit (UCRF)	The Unit Cost of Risk Benefit applied to a network company's adjusted Outturn Network Risk Output to calculate its final allowance.
Monetised Risk	A risk value associated with a NARM Asset(s) as derived in accordance with the relevant network company's Network Output Measures (NOMs) methodology or NARM Methodology. Unless otherwise stated, reference to 'Risk' in a NARM context means 'Monetised Risk'.
Monetised Risk Benefit	Analogous to Network Risk Output.
NARM Asset	An asset specified within the NARM Methodology and where its associated Monetised Risk can be estimated by applying the NARM Methodology.
NARM Asset Category	A group of assets with similar function and design as specified in the NARM Methodology.
NARM Delivery	The forecast or outturn delivery of Network Risk Outputs.
NARM Funding Adjustment and Penalty Mechanism	The mechanism for adjusting a network companies' funding to reflect the Network Risk Outputs delivered during RIIO-2, and for applying penalties in certain delivery scenarios. This mechanism takes account of, among other things, the outturn level of Network Risk Output delivered in RIIO-2 relative to a companies' Baseline Network Risk Outputs.
NARM Funding Category	Broad categorisation used to indicate scope of NARM Funding Adjustment and Penalty Mechanism and interaction with other mechanisms. A1 – NARM Funding Adjustment and Penalty Mechanism A2 - Funding Under a Separate Mechanism A3 - Ring-fenced Project/Activity B - Non-NARM Assets
NARM Methodology	Means the methodology (sector or company specific) for the Network Asset Risk Metric. The NARM Methodology and NOMs

Term	Definition
	Methodology are equivalent until the former is superseded by the latter from the start of RIIO-2.
NARM Target	Analogous to Baseline Network Risk Output.
Network Asset Risk Metric (NARM)	The Monetised Risk associated with a NARM asset or the Monetised Risk Benefit associated with a NARM Asset intervention.
Network Output Measures (NOMs)	RIIO-1 equivalent of Network Asset Risk Metric (NARM).
Network Risk Output	The risk benefit delivered or expected to be delivered by an asset intervention, and: • is the difference between without intervention and with intervention Monetised Risk • can be measured over one year or over a longer period of time • includes both direct (ie on the asset itself) and indirect (ie on adjacent assets or on the wider system) risk benefit.
NOMs Incentive Mechanism	The RIIO-1 mechanism for adjusting a network company's RIIO-1 funding dependent on its delivery of its NOMs Targets and for applying a reward or penalty in certain delivery scenarios.
NOMs Methodology	The RIIO-1 Methodology (sector- or company specific) used for deriving Monetised Risk and Monetised Risk Benefit values. The NOMs Methodology will be superseded by the NARM Methodology for RIIO-2.
NOMs Target	The required outputs related to relevant asset management work for each network company in RIIO-1.
Outturn Network Risk Output	The ex post assessed Monetised Risk Benefit delivered during RIIO-2 through a network companies asset interventions and suitable for assessment of overall delivery against Baseline Network Risk Outputs.
Outturn Unit Cost of Risk Benefit (UCRO)	The Unit Cost of Risk Benefit derived from a network company's Outturn Network Risk Output and outturn associated cost values.
Risk Sub-Category	A subdivision of Baseline Network Risk Output. • Electricity Transmission – 7 Risk Sub-Categories equivalent to the seven lead asset categories (Circuit Breaker, Overhead Line Conductor, Overhead Line Fittings, Overhead Line Tower, Reactor, Transformer, Underground Cable). An ETO project allocated to a Risk Sub-Category according to the asset category delivering the highest risk benefit. • Gas Transmission – 3 Risk Sub-Categories (Low, Medium, and High). Interventions are allocated to Risk Sub-Category according to the average Unit Cost of Risk Benefit they deliver. • Gas Distribution – no subdivision of BNRO. The NARM Funding Adjustment and Penalty Mechanism operates independently for each Risk Sub-Category.
Risk Pound (R£)	The unit used to denote Monetised Risk values. R£ is used to differentiate from financial monetary values. However, provided methodologies for deriving monetised risks have been properly calibrated then Risk Pounds can be considered like-for-like with other monetary costs and benefits.

Term	Definition
Unit Cost of Risk Benefit (UCR)	The average cost of delivering a single unit (one Risk Pound, R£1) of Monetised Risk Benefit for a given asset population or intervention volume.

Appendix 2 - Justification for over-delivery and under-delivery

1. The following guidance provides further clarification on the justification for over-delivery and under-delivery against the BNRO for the GD, GT and ET sectors. The equivalent arrangements for the ED sector will be consulted on and decided as part of the RIIO-ED2 process. We may issue supplementary guidance on a sector-specific basis at a later date if needed.

Guidance for justification of over-delivery and under-delivery

2. The overall extent of justification for over-delivery and under-delivery will depend on the size of the variation from the BNRO and complexity of the changes in the intervention plan that underpin the variation, including offsetting over-recovery and under-recovery elements and the net impacts. An over-delivery or under-delivery will be defined as material and therefore requiring justification when it is beyond the deadband around the BNRO. For the avoidance of doubt, under- or over-deliveries within the deadband will be classed as non-material and therefore will not require justification.

3. For some or all of the over-delivery and under-delivery to be considered justified, the company should satisfactorily complete all of the following requirements as part of its NARM Performance Report to Ofgem:

    - set out the proportion of the over-delivery or under-delivery that it considers to be justified together with supporting rationale

    - provide an explanation of why the factors driving over-delivery/under-delivery could not reasonably have been forecast as part of the price control setting process and been factored into the company's final NARM Business Plan submission. For example, new Health and Safety requirements, the Electricity Safety, Quality and Continuity Regulations (ESQCR), faults, or obsolescence of equipment, or constraints on the ability to carry out work which were outside the licensee's control

    - set out the steps that have been taken to provide Ofgem with early notice of the potential over or under-delivery including reference to relevant communications,

such as information submitted as part of the annual Regulatory Instructions and Guidance (RIGs) submissions and/or notification letters to Ofgem

- clearly explain and tabulate the changes to its intervention plans from the assumptions supporting the expenditure allowances at Final Determinations that have led to the over or under-delivery including:
    - additional interventions that have been brought forwards from RIIO-3 or deferred into RIIO-3
    - trading-off of interventions between schemes, asset classes or categories, programmes of work or types of intervention
    - the changes in cost associated with the changes in interventions and the net change in cost associated with the over-delivery or under-delivery.

- provide rationale for the high-level asset management decision to over-delivery or under-delivery and an explanation of what other options were considered, including:
    - an overarching engineering justification
    - engineering justification papers for the most material changes in the plan at the scheme/project level, asset class or asset category level, or based on programmes of work, including evidence of stakeholder engagement and views on the changes in NARM output delivery
    - an explanation of mitigating actions taken for the potential over-delivery or under-delivery including justification for those actions.

4. The engineering justification papers should include clear cross-references to the company's final RIIO-2 business plan, Final Determinations, and include cost-benefit analysis in accordance with the RIIO-2 business plan and Investment Decision Pack guidance which meets the following requirements:

    - includes options for delivery both in line with the BNRO and with the actual Network Risk Output delivered
    - includes cost and benefits based on the lifetime of interventions and relevant benefits beyond those captured by the NARMs
    - explains why the actual Network Risk Output delivered provides a better outcome for consumers than lower/higher levels of delivery, including delivery in line with the BRNO

- explains why the work that led to the over-delivery or under-delivery could not reasonably have been deferred/carried out
- explains why the company could not, without a significant consumer disbenefit, have traded risk against other assets not originally within its NARM business plan submission to deliver on target
- includes sensitivity analysis, where suitable, because the results are sensitive to the value of key assumptions. The CBAs should include clear referencing to the company's final RIIO-2 business plan and Final Determinations
- explains and provides relevant references to any interlinkages with their RIIO-3 business plan
- provides an explanation of any key changes other than asset risk which may have driven the over-delivery/under-delivery such as Health and Safety requirements, ESQCR, faults, obsolescence, or work constraints, together with quantification of the impact of these factors on the Network Risk Output delivery
- clearly articulates the impact of over-delivery/under-delivery on other areas of work such as broader price control deliverables, price control obligations or license requirements.

Appendix 3 – Non-intervention Risk Changes

1. The following guidance is intended to provide a framework for the treatment of non-intervention risk changes in respect of the GD, GT and ET sectors. The equivalent arrangements for the ED sector will be consulted on and decided as part of the RIIO-ED2 process.

2. For the avoidance of doubt, the guidance provided in this appendix relates to changes to the BNRO only. Non-intervention risk changes related to other assets sit outside of this process and are not required to be reported.

Faster or slower deterioration than forecast

3. Companies will be held neutral for faster or slower deterioration that forecast in the BNRO where the change has not been driven by company action.

NARM Methodology changes

4. Companies will be held neutral for changes in the NARM methodology that do not trigger a formal approval by Ofgem and rebasing. Non-intervention risk adjustments will only be required where the changes have an impact on the company's performance relative to the BNRO. The treatment of consequence of failure methodology changes should be grouped with other consequence of failure changes.

Consequence of failure changes

5. Consequence of failure changes will be grouped into three categories:

   - *Parameters that are fixed for the RIIO-2 period for the purpose of the NARM Funding Adjustment and Penalty Mechanism.* For example, system consequences of failure for ET should be fixed as per the configuration of the network at the time of the submission of the Business Plan i.e. in December 2019. For these cases, no adjustments need to be applied. However, network companies must still account for changes in these parameters in their decision-making. This should be done based on the position at the time the companies make decisions. As long as they have been appropriately taken into account in decision-making, they will be taken as part of a valid justification for over-delivery or under-delivery, provided other justification criteria (as outlined in Appendix 2) are also met.

- *Consequence of failure parameters that are variable and where adjustments will be made to ensure neutrality.* For example, there may be changes in financial parameters such as the cost of carbon and the cost of replacement equipment. The impact of these changes should be estimated and adjustments to the Network Risk Output delivered will be made to keep the companies neutral. This is required for the purposes of normalisation as the BNRO will be set using values for key parameters at that point whereas performance will be measured based on values at different positions in time.

- *Indirect interventions to reduce the consequence of failure.* These will be treated in the same way as a work substitution to allow some benefit to be retained by the companies. This means that they will feed through the NARM Funding Adjustment and Penalty Mechanism.

Data cleansing

6. Network companies will be held neutral for all properly-evidenced data cleansing that has been carried out. However, if data cleansing exceeds reasonable levels that Ofgem would expect from a company that is effectively managing its assets, in addition this may be subject to a case-by-case investigation and appropriate actions taken.

7. For the avoidance of doubt, any data cleanse would be determined as a change relative to the figure provided when the data item was original inputted into the licensee's asset management systems.

Definition of data cleansing

8. Data cleansing will be defined as: "The activity of detecting and correcting missing or inaccurate records where correction results in a change to the Asset Register volumes, condition, or criticality data." This includes:

    - changes in asset volumes due to a measurement, survey or transcription error, e.g. if previous surveys had given OHL route length at 1.0 km but some volumes had been missed which results in a corrected route length of 1.1 km
    - changes in previously reported data due to an error or omission in a previously assessed condition score or other NARM input variable. For example, if an ETO had previously given a transformer a Dissolved Gas Analysis (DGA) score of 150, however, on review, the scoring did not consider a relevant piece of information that was available at the time and should have resulted in a DGA score of 200.

Or, if a previously omitted key component of criticality is entered, such as the number of customers affected for an outage for a particular asset

- transcription errors, e.g. if a physical inspection document had a DGA score of 15 but this was entered into the asset management system used for reporting as a score of 51
- removal of duplicate asset entries.

9. For the avoidance of doubt, the definition of data cleansing does not include:

- updated asset condition or criticality information as part of a new inspection or survey
- faster or slower deterioration of assets
- installation of new assets or disposals of assets
- any other change based on new information that was not available at the time the previous assessment was made.

Definition of 'reasonable'

10. For the specific purposes of data cleansing, 'reasonable' will be defined as: "The position where the volume of data cleansing is less than 0.5% of the network company's total NARM asset base". This is an indicative figure. The final position should be determined for each sector following further engagement during the RIIO-2 period linked to companies' regulatory reporting.

Regulatory reporting

11. For relevant non-intervention risk changes specified above, where Ofgem will apply adjustments prior to the application of the NARM Funding Adjustment and Penalty Mechanism, companies will be expected to report material changes as part of their annual RIIO-2 RIGs reporting.

12. In providing its reporting, each company should provide details of:

- the change
- the reasons for the change
- the estimated impact of the change on the Network Risk Output delivery
- any associated implications for other delivery.

13. For smaller (de minimis) changes, the estimated aggregate impact on the Network Risk Output delivery should be identified.

Appendix 4 – NARM Funding Adjustment and Penalty Mechanism: DAF Calibration

1. The purpose of setting a Delivery Adjustment Factor (DAF) is twofold:
    i. to ensure that consumers are provided sufficient protection from network companies making unearned gains by changing their investment plans (we refer to this as asset or intervention switching)
    ii. to provide appropriate incentives to network companies to optimise their delivery in response to new information that suggests overall better consumer outcomes can be achieved.

2. Provided there is sufficient protection for consumers from unearned gains, a DAF of 0% is preferable as it allows all savings and over-spends to be fully subject to TIM and therefore affords the maximum level of incentivisation to network companies.

3. At Draft Determinations, we proposed setting the DAF to 95% as this gave close to the maximum levels of consumer protection. However, it gave relatively low levels of incentivisation to network companies to optimise their plans. Additionally, the 95% DAF did not distinguish between savings delivered through asset switching and genuine efficiency savings. In order to fully incentivise network companies to deliver genuine efficiencies, we proposed that they could provide evidence of efficiency savings delivered, and these efficient costs would be excluded from the NARM Funding Adjustment and Penalty Mechanism so that they would retain the full TIM benefit.

4. We have taken the decision not to have cap on the Unit Cost of Risk (UCR) Benefit to reduce the asymmetry of the mechanism. Without a cap on UCR, we do not think it would be appropriate to have an 'efficiency case' provision as it would overly insulate network companies from cost increases, but would give them scope to benefit from cost savings.

5. The remainder of this appendix details the process to calibrate the DAF values and ultimately to take a decision on the setting of the DAF for RIIO-2 in the electricity transmission, gas distribution and gas transmission sectors.

DAF Calibration Exercise

6. To inform the initial DAF value we undertook further analysis of delivery scenarios including Monte Carlo simulations for each of the sectors. The aim of the Monte Carlo

analysis was to assess the potential NARM Funding Adjustment and Penalty Mechanism outcomes arising from network companies' engaging in asset or intervention switching over the RIIO-2 period.

- Only the effect of asset switching was considered
- DAF values were calibrated by comparing outcomes across all network companies for the scenario that would give the highest potential gains through asset switching:
    - This was found to be the scenario where the company over-delivers but has reduced costs by selecting assets with lower unit cost of risk benefit (UCR)
- DAF was chosen to ensure roughly equivalent outcomes for each company and to balance scope for unearned gains and incentive for asset switching:
    - Maximum potential company gain of 10%. Rather than using the maximum values from Monte Carlo, we the 75th percentile values to account for modelling uncertainty.

DAF Calibration Results

7. The results of the calibration exercise for all sectors are as set out below:

- Electricity Transmission: The initial run that considered all projects together indicated a DAF in the range of 30% to 60%. We would expect that segmenting the output into 7 disaggregated Risk Sub-Categories would provide a significantly lower value, closer to 0%, for each output category. However, due to the lumpy nature of ET projects and the sparsity of data available, the results of any modelling at this level of disaggregation would be unreliable. We have therefore set the DAF for ET for each Risk Sub-Category at 0% for RIIO-2 and will continue to gather more data and refine the modelling to ascertain whether a non-zero DAF is appropriate for future price controls.

- Gas Transmission: The initial run for all Unique Identifiers (UIDs) gave a DAF in the region of 30%. Subsequently, segmenting NGGT's assets based on the expected UCR Benefit into High, Medium, and Low categories gave a DAF of 0% for each segment.

- Gas Distribution: The results indicated that for GDNs, the potential for gains to be made through asset switching was less than the maximum 10% gain threshold for all DAF values.

Decision on DAF and Next Steps

8. Overall, the analysis did not provide a statistically strong basis for particular non-zero values for DAF in any sector. On this basis, a single common DAF of 0% will be applied to the electricity transmission, gas transmission and gas distribution sectors for RIIO-2. This means the DAF will effectively be dormant for RIIO-2.

9. We will gather further data and evidence during RIIO-2 to enable us to ascertain with more confidence whether the application of a non-zero DAF is appropriate for future price controls.

Appendix 5 – NARM Funding Adjustment and Penalty Mechanism: Funding Adjustment and Penalty Calculation Methodology

Section A: Purpose of this Guidance

1. The Authority will determine the value of adjustments to be made to licensees' allowed revenue in the next price control period (to commence 1 April 2026) under the NARM Funding Adjustment and Penalty Mechanism in accordance with the assessment Methodology set in Sections C-I below.

Section B: Status of this Methodology and modification process

2. This Methodology is currently a draft version. The final version will form part of the RIIO-3 Handbook and will be subject to the RIIO-3 Handbook consultation and approval process.
3. Ofgem may additionally issue updates to this Methodology during the RIIO-2 period following consultation with stakeholders.
4. This Methodology applies independently to each Risk Sub-Category.

Section C: Baseline Unit Cost of Risk Benefit

5. The Baseline Unit Cost of Risk Benefit (UCR_{BL}) for each licensee is set out the licensee's Network Asset Risk Workbook.
6. The Baseline Unit Cost of Risk Benefit (UCR_{BL}) is calculated according the Formula 1 below in total for gas distribution and for each of the Risk Sub-Categories in electricity and gas transmission.

Formula 1

$$UCR_{BL} = \frac{NXP_{BL}}{NRO_{BL}}$$

Where**:**

- NXP_{BL} is the total Baseline Allowed NARM Expenditure for the RIIO-2 period as set out in Table 1 of Special Licence Condition 3.1, and
- NRO_{BL} is the total Baseline Network Risk Output as set out in the Network Asset Risk Workbook under Part A of Special Licence Condition 3.1.

Section D: Licensee's Reported Delivery

7. By 31 October 2026, the licensee will be required by Special Licence Condition 3.1 to provide to the Authority a NARM Closeout Report, which includes the licensee's views of

the value of the following terms in total for gas distribution and for each of the Risk Sub-Categories in electricity and gas transmission (units in parentheses):

(a) NRO_{OR} (R£m): the licensee's Outturn Network Risk Output.

(b) NXP_{OR}: the total costs incurred by the licensee in delivering its NRO_{OR} (in £m).

(c) NIR_{OR} (R£m): the total contribution of identified Material Non-Intervention Risk Changes on NRO_{OR}.

(d) CIO_{OR} (R£m): the Network Risk Outputs from projects that in the licensee's view meet specified criteria for Clearly Identifiable Over-Delivery or Under-Delivery projects.

(e) CIX_{OR} (£m): the licensee's view of the additionally incurred costs or unspent allowances associated with projects that meet specified criteria for Clearly Identifiable Over-Delivery or Under-Delivery projects.

Section E: The Authority's Delivery Assessment

8. Following review and assessment of the licensee's NARM Closeout Report, the Authority will determine values for the following terms in aggregate for gas distribution and for each of the Risk Sub-Categories for electricity transmission and gas transmission (units in parentheses):

(f) NIR_{OD} (R£m): the determined total contribution of identified Material Non-Intervention Risk Changes on the NRO_{OR};

(a) CIO_{OD} (R£m): the determined Network Risk Outputs from projects that meet specified criteria for Clearly Identifiable Over-Delivery or Under-Delivery projects. CIO_{OD} is positive in the case of Over-Delivery and negative in the case of Under-Delivery.

(b) CIX_{OD} (£m): the determined efficient additionally incurred costs or unspent allowances associated with project's full risk output that meet specified criteria for Clearly Identifiable Over-Delivery or Under-Delivery projects. CIX_{OD} is positive in the case of Over-Delivery and negative in the case of Under-Delivery.

(c) NRO_{OAD} (R£m): the Outturn Network Risk Output adjusted for CIO_{OD}, calculated in accordance with Formula 2:

Formula 2

$$NRO_{OAD} = NRO_{OR} - CIO_{OD}$$

(d) JUS (%):

- In an over-delivery case (i.e. where $NRO_{OAD} > NRO_{BL}$), JUS is the proportion of over-delivery ($NRO_{OAD} - NRO_{BL}$) the Authority determines to be justified
- In an under-delivery case (i.e. where $NRO_{OAD} < NRO_{BL}$), JUS is the proportion of under-delivery ($NRO_{BL} - NRO_{OAD}$) the Authority determines to be justified.

(e) NXP_{OAD} (£m): the licensee's incurred costs (NXP_{OR}) adjusted for CIX_{OD} in accordance with Formula 3:

Formula 3

$$NXP_{OAD} = NXP_{OR} - CIX_{OD}$$

(f) UCR_{OAD} (R/R£): the adjusted out-turn Unit Cost of Risk Benefit is calculated in accordance with Formula 4:

Formula 4

$$UCR_{OAD} = \frac{NXP_{OAD}}{NRO_{OAD}}$$

(g) UCR_{BLF} (R/R£): the Final Unit Cost of Risk Benefit associated with the baseline portion of delivery.

(h) UCR_{OJF} (R/R£): the Final Unit Cost of Risk Benefit associated with any portion of Over-Delivery (excluding CIO_{OD}) determined to be justified.

(i) UCR_{OJU} (R/R£): the Final Unit Cost of Risk Benefit associated with any portion of Over-Delivery (excluding CIO_{OD}) determined to be unjustified.

(j) UCR_{UJF} (R/R£): the Final Unit Cost of Risk Benefit associated with any portion of Under-Delivery (excluding CIO_{OD}) determined to be justified.

(k) UCR_{UJU} (R/R£): the Final Unit Cost of Risk Benefit associated with any portion of Under-Delivery (excluding CIO_{OD}) determined to be unjustified.

Section F: Funding Adjustment Calculation

9. Final allowed expenditure (NXP_{AF}) will be calculated in aggregate for gas distribution and for each of the Risk Sub-Categories in gas transmission and electricity transmission in accordance with Formula 5

Formula 5

$$NXP_{FAC} = \sum_{Delivery\ Element\ (DE)} (NRO_{FAC} \times UCR_{FAC}) + CIX_{OD}$$

The values of NRO_{FAC} and UCR_{FAC} will be calculated as per the formula for the relevant delivery scenario given in Table 8.

Table 8: NROFAC and UCRFAC formula for relevant delivery scenarios

Delivery Element (DE)	**NRO_{FAC}**	**UCR_{FAC}**
Baseline	$=NRO_{BL}$	$= UCR_{BL} - DAF_{BL} \times (UCR_{BL} - UCR_{OAD})$
Justified Under-Delivery	$=\text{Minimum } [0, JUS \times (NRO_{OAD} - NRO_{BL})]$	$= UCR_{BL} - DAF_{UJ} \times (UCR_{BL} - UCR_{OAD})$
Unjustified Under-Delivery	$=\text{Minimum } [0, (1 - JUS) \times (NRO_{OAD} - NRO_{BL})]$	$= UCR_{BL} - DAF_{UU} \times (UCR_{BL} - UCR_{OAD})$
Justified Over-Delivery	$=\text{Maximum } [0, JUS \times (NRO_{OAD} - NRO_{BL})]$	$= UCR_{BL} - DAF_{OJ} \times (URC_{BL}\ \ UCR_{OAD})$
Unjustified Over Delivery	$=0$	$= UCR_{BL} - DAF_{OU} \times (URC_{BL} - UCR_{OAD})$

DAF_{BL}, DAF_{UJ}, DAF_{UU}, DAF_{OJ}, and DAF_{OU} are the applicable Delivery Adjustment Factors (DAFs) for baseline, justified under-delivery, unjustified under-delivery, justified over-delivery, and unjustified over-delivery Delivery Elements respectively. All have a value of 0% (zero) for RIIO-2 for the electricity transmission, gas transmission and gas distribution sectors.

Section G: Interaction with Other Funding Mechanisms

10. The items allocated to NARM Funding Category A2 as per the Network Asset Risk Workbook are funded under other mechanisms. Any Network Risk Outputs from these projects or activities, if funded under other mechanism will not count towards the licensee's Outturn Network Risk Output (NRO_{AD}).
11. Should the items listed no longer be eligible for funding under the original mechanism then, in the event of them being delivered, any Network Risk Outputs from them may count towards the licensee's Outturn Network Risk Output (NRO_{AD}).

Section H: NARM Excluded Price Control Deliverables

12. The items allocated to NARM Funding Category A3 as per the Network Asset Risk Workbook have been ring-fenced with separate PCDs and funding. Any Network Risk Outputs from these projects or activities will not count towards the licensee's Outturn Network Risk Output.

Section I: Application of a penalty for under-delivery

13. A penalty (PEN) will be applied in the case of unjustified under-delivery. The penalty value will be 2.5% of the funding adjustment associated with the unjustified under-delivery, in accordance with Formula 6. No penalty will be applied in other delivery scenarios.

Formula 6

$$PEN = 2.5\% \times (1 - JUS) \times (NXP_{BL} - NXP_{FAC})$$

Appendix 6 – Risk Sub-Category and Asset Category Breakdown of Baseline Network Risk Outputs

Baseline Network Risk Outputs (BNRO) relate only to the A1 Funding Category.

See Chapter 3 for explanation of the NARM Funding Categories.

Section A: Risk Sub-Category Breakdown of Baseline Network Risk Outputs

Table 9: Electricity Transmission - National Grid Electricity Transmission (NGET)

Risk Sub-Category		Network Risk Output (R£m)	Baseline Allowance (£m)	Unit Cost of Risk Benefit, UCR (£/R£)
Circuit Breaker	CB	113.08	70.98	0.63
Overhead Line Conductor	OC	-	-	-
Overhead Line Fittings	OF	134.15	50.14	0.37
Overhead Line Tower	OT	-	-	-
Reactor	RX	43.05	70.63	1.64
Transformer	TX	182.86	115.86	0.63
Underground Cable	UC	25.57	39.65	1.55

Table 10: Electricity Transmission - SHE Transmission (SHET)

Risk Sub-Category		Network Risk Output (R£m)	Baseline Allowance (£m)	Unit Cost of Risk Benefit, UCR (£/R£)
Circuit Breaker	CB	204.37	27.99	0.14
Overhead Line Conductor	OC	6.19	22.27	3.60
Overhead Line Fittings	OF	6377.20	53.81	0.01
Overhead Line Tower	OT	1262.42	213.84	0.17
Reactor	RX	-	-	-
Transformer	TX	564.63	409.19	0.72
Underground Cable	UC	418.55	25.23	0.06

Table 11: Electricity Transmission - SP Transmission (SPT)

Risk Sub-Category		Network Risk Output (R£m)	Baseline Allowance (£m)	Unit Cost of Risk Benefit, UCR (£/R£)
Circuit Breaker	CB	991.99	83.08	0.08
Overhead Line Conductor	OC	3110.21	48.97	0.02
Overhead Line Fittings	OF	18736.89	149.02	0.01
Overhead Line Tower	OT	4625.62	20.25	0.00
Reactor	RX	-	-	-
Transformer	TX	754.05	21.22	0.03
Underground Cable	UC	1093.40	20.78	0.02

Table 12: Gas Transmission - National Grid Gas Transmission (NGGT)

Risk Sub-Category		Network Risk Output (R£m)	Baseline Allowance (£m)	Unit Cost of Risk Benefit, UCR (£/R£)
Low UCR	L	199.70	276.53	1.38
Medium UCR	M	0.92	45.42	49.23
High UCR	H	0.15	47.03	321.25

Table 13: Gas Distribution - Cadent - East of England (EoE)

Risk Sub-Category		Network Risk Output (R£m)	Baseline Allowance (£m)	Unit Cost of Risk Benefit, UCR (£/R£)
Network Level	NET	5.7	105.4	18.4

Table 14: Gas Distribution - Cadent - London (Lon)

Risk Sub-Category		Network Risk Output (R£m)	Baseline Allowance (£m)	Unit Cost of Risk Benefit, UCR (£/R£)
Network Level	NET	10.1	144.4	14.3

Table 15: Gas Distribution - Cadent - North West (NW)

Risk Sub-Category		Network Risk Output (R£m)	Baseline Allowance (£m)	Unit Cost of Risk Benefit, UCR (£/R£)
Network Level	NET	10.1	72.4	7.2

Table 16: Gas Distribution - Cadent - West Midlands (WM)

Risk Sub-Category		Network Risk Output (R£m)	Baseline Allowance (£m)	Unit Cost of Risk Benefit, UCR (£/R£)
Network Level	NET	4.4	51.2	11.7

Table 17: Gas Distribution - Northern Gas Networks (NGN)

Risk Sub-Category		Network Risk Output (R£m)	Baseline Allowance (£m)	Unit Cost of Risk Benefit, UCR (£/R£)
Network Level	NET	10.0	176.6	17.7

Table 18: Gas Distribution - Scotia Gas Networks (SGN) - Scotland (Sc)

Risk Sub-Category		Network Risk Output (R£m)	Baseline Allowance (£m)	Unit Cost of Risk Benefit, UCR (£/R£)
Network Level	NET	6.0	58.8	9.9

Table 19: Gas Distribution - Scotia Gas Networks (SGN) - Southern (So)

Risk Sub-Category		Network Risk Output (R£m)	Baseline Allowance (£m)	Unit Cost of Risk Benefit, UCR (£/R£)
Network Level	NET	24.1	195.1	8.1

Table 20: Gas Distribution - Wales and West Utilities (WWU)

Risk Sub-Category		Network Risk Output (R£m)	Baseline Allowance (£m)	Unit Cost of Risk Benefit, UCR (£/R£)
Network Level	NET	16.3	89.5	5.5

Section B: Asset Category Breakdown of Baseline Network Risk Outputs

Table 21: Electricity Transmission - National Grid Electricity Transmission (NGET)

Asset Category	Baseline Network Risk Output (R£m)		
	Draft Determinations	Change from DD to FD	Final Determinations
132kV Circuit Breaker	4.88	145.58	150.46
132kV OHL Conductor	0.00	0.00	0.00
132kV OHL Fittings	35.20	0.01	35.21
132kV OHL Tower	0.00	0.00	0.00
132kV Reactor	3.67	21.02	24.69
132kV Transformer	0.00	3.67	3.67
132kV Underground Cable	0.00	0.00	0.00
275kV Circuit Breaker	0.43	21.35	21.78
275kV OHL Conductor	7.80	-7.80	0.00
275kV OHL Fittings	31.35	-4.03	27.32
275kV OHL Tower	0.00	0.00	0.00
275kV Reactor	2.99	-2.99	0.00
275kV Transformer	37.97	25.09	63.06
275kV Underground Cable	0.00	25.57	25.57
400kV Circuit Breaker	1.13	1.79	2.92
400kV OHL Conductor	32.35	-32.35	0.00
400kV OHL Fittings	89.28	-17.66	71.62
400kV OHL Tower	0.00	0.00	0.00
400kV Reactor	5.42	0.00	5.42
400kV Transformer	55.70	11.29	66.99
400kV Underground Cable	0.00	0.00	0.00
Total	308.17	190.54	498.71

Table 22: Electricity Transmission - SHE Transmission (SHET)

Asset Category	Baseline Network Risk Output (R£m)		
	Draft Determinations	Change from DD to FD	Final Determinations
132kV Circuit Breaker	147.97	767.84	915.81
132kV OHL Conductor	1505.75	-1505.75	0.00
132kV OHL Fittings	4951.08	2388.04	7339.12
132kV OHL Tower	252.92	-238.25	14.67
132kV Reactor	0.00	0.00	0.00
132kV Transformer	240.20	-187.54	52.66
132kV Underground Cable	446.55	-28.00	418.55
275kV Circuit Breaker	18.07	32.38	50.45
275kV OHL Conductor	0.00	0.00	0.00
275kV OHL Fittings	0.00	0.00	0.00
275kV OHL Tower	0.00	0.00	0.00
275kV Reactor	13.47	-13.47	0.00
275kV Transformer	286.66	-244.56	42.10
275kV Underground Cable	2.62	-2.62	0.00
400kV Circuit Breaker	0.00	0.00	0.00
400kV OHL Conductor	0.00	0.00	0.00
400kV OHL Fittings	0.00	0.00	0.00
400kV OHL Tower	0.00	0.00	0.00
400kV Reactor	0.00	0.00	0.00
400kV Transformer	0.00	0.00	0.00
400kV Underground Cable	0.00	0.00	0.00
Total	7865.29	968.07	8833.36

Table 23: Electricity Transmission - SP Transmission (SPT)

Asset Category	Baseline Network Risk Output (R£m)		
	Draft Determinations	Change from DD to FD	Final Determinations
132kV Circuit Breaker	298.05	7.49	305.54
132kV OHL Conductor	1432.34	968.39	2400.73
132kV OHL Fittings	2658.96	637.24	3296.20
132kV OHL Tower	1057.45	1526.83	2584.28
132kV Reactor	0.00	0.00	0.00
132kV Transformer	280.62	-0.11	280.51
132kV Underground Cable	544.15	-0.01	544.14
275kV Circuit Breaker	622.25	6.08	628.33
275kV OHL Conductor	311.47	-15.72	295.75
275kV OHL Fittings	3552.26	5648.68	9200.94
275kV OHL Tower	1667.17	-1055.79	611.38
275kV Reactor	0.00	0.00	0.00
275kV Transformer	338.59	0.01	338.60
275kV Underground Cable	549.25	0.00	549.25
400kV Circuit Breaker	99.64	-41.51	58.13
400kV OHL Conductor	1085.08	-472.41	612.67
400kV OHL Fittings	9493.10	-3253.36	6239.75
400kV OHL Tower	192.15	1038.87	1231.02
400kV Reactor	0.00	0.00	0.00
400kV Transformer	134.94	0.00	134.94
400kV Underground Cable	0.00	0.00	0.00
Total	24317.47	4994.69	29312.17

Table 24: Gas Transmission - National Grid Gas Transmission (NGGT)

Asset Category	Baseline Network Risk Output (R£m)		
	Draft Determinations	Change from DD to FD	Final Determinations
Above Ground Pipe and Coating	0.00	2.21	2.21
After coolers	0.00	0.00	0.00
Air Intake	0.00	0.00	0.00
AntiSurge System	0.00	0.00	0.00
Below Ground Pipe and Coating	52.81	-0.05	52.76
Boundary Controllers	0.00	0.00	0.00
Cab ventilation	0.00	0.00	0.00
Cathodic Protection	0.18	39.55	39.73
Cladding	0.04	-0.02	0.02
Compressor	2.27	0.19	2.46
Electrical - including standby generators	3.09	1.95	5.04
Electrical - safe shutdown	0.00	1.00	1.00
Electrical variable speed drive	12.97	-4.37	8.60
Exhausts	0.00	0.00	0.00
Filters and Scrubbers (incl. Condensate Tanks)	0.59	-0.25	0.34
Fire and gas detection	0.00	0.00	0.00
Fire Suppression	0.00	0.00	0.00
Flow or pressure regulator	25.36	-3.22	22.14
Fuel gas metering	0.00	0.00	0.00
Fuel tanks & bunds	0.01	0.75	0.76
Gas analyser	0.00	0.00	0.00
Gas Generator	28.07	-9.19	18.88
Locally actuated valves	0.23	0.05	0.28
Metering	0.00	0.00	0.00
Network control and instrumentation	0.00	0.00	0.00
Non Return Valve	0.14	0.00	0.14
Odorisation Plant	0.00	0.00	0.00
Pig Trap	0.00	0.00	0.00
Power turbine	45.35	-7.14	38.21
Preheaters	3.29	-0.11	3.18
Process valves	1.11	-0.72	0.39
Remote Isolation Valves	0.97	-0.11	0.86
Slam shut	0.00	0.00	0.00
Starter motor	0.00	0.00	0.00
Station process control system	0.00	0.00	0.00
Unit Control System	0.00	0.00	0.00
Vent System	4.78	-1.03	3.75
Total	181.26	19.51	200.77

Table 25: Gas Distribution - Cadent - East of England (EoE)

Asset Category	Baseline Network Risk Output (R£m)		
	Draft Determinations	Change from DD to FD*	Final Determinations*
District Governors	0.05		
LTS Pipelines	n/a		
Mains other	n/a		
Risers	0.60		
NTS Offtakes	n/a		
PRS	n/a		
Service Governors	0.00		
Services Not Associated with Mains Replacement	n/a		
Services_Mains other	n/a		
Services_Steel Mains <=2"	n/a		
Services_Tier 1	n/a		
Services_Tier 2A	n/a		
Services_Tier 2B	n/a		
Services_Tier 3	n/a		
Steel Mains =<2"	n/a		
Tier 1	n/a		
Tier 2A	n/a		
Tier 2B	n/a		
Tier 3	n/a		
Total	5.53	0.20	5.73

* For breakdown see Network Asset Risk Workbook to be published on the Authority's website.

Table 26: Gas Distribution - Cadent - London (Lon)

Asset Category	Baseline Network Risk Output (R£m)		
	Draft Determinations	Change from DD to FD*	Final Determinations*
District Governors	0.37		
LTS Pipelines	n/a		
Mains other	n/a		
Risers	3.04		
NTS Offtakes	n/a		
PRS	n/a		
Service Governors	0.00		
Services Not Associated with Mains Replacement	n/a		
Services_Mains other	n/a		
Services_Steel Mains <=2"	n/a		
Services_Tier 1	n/a		
Services_Tier 2A	n/a		
Services_Tier 2B	n/a		
Services_Tier 3	n/a		
Steel Mains =<2"	n/a		
Tier 1	n/a		
Tier 2A	n/a		
Tier 2B	n/a		
Tier 3	n/a		
Total	9.14	0.96	10.10

* For breakdown see Network Asset Risk Workbook to be published on the Authority's website.

Table 27: Gas Distribution - Cadent - North West (NW)

Asset Category	Baseline Network Risk Output (R£m)		
	Draft Determinations	Change from DD to FD*	Final Determinations*
District Governors	0.97		
LTS Pipelines	n/a		
Mains other	n/a		
Risers	2.52		
NTS Offtakes	n/a		
PRS	n/a		
Service Governors	0.00		
Services Not Associated with Mains Replacement	n/a		
Services_Mains other	n/a		
Services_Steel Mains <=2"	n/a		
Services_Tier 1	n/a		
Services_Tier 2A	n/a		
Services_Tier 2B	n/a		
Services_Tier 3	n/a		
Steel Mains =<2"	n/a		
Tier 1	n/a		
Tier 2A	n/a		
Tier 2B	n/a		
Tier 3	n/a		
Total	9.78	0.28	10.06

* For breakdown see Network Asset Risk Workbook to be published on the Authority's website.

Table 28: Gas Distribution - Cadent - West Midlands (WM)

Asset Category	Baseline Network Risk Output (R£m)		
	Draft Determinations	Change from DD to FD*	Final Determinations*
District Governors	0.03		
LTS Pipelines	n/a		
Mains other	n/a		
Risers	1.72		
NTS Offtakes	n/a		
PRS	n/a		
Service Governors	0.00		
Services Not Associated with Mains Replacement	n/a		
Services_Mains other	n/a		
Services_Steel Mains <=2"	n/a		
Services_Tier 1	n/a		
Services_Tier 2A	n/a		
Services_Tier 2B	n/a		
Services_Tier 3	n/a		
Steel Mains =<2"	n/a		
Tier 1	n/a		
Tier 2A	n/a		
Tier 2B	n/a		
Tier 3	n/a		
Total	4.61	-0.24	4.37

* For breakdown see Network Asset Risk Workbook to be published on the Authority's website.

Table 29: Gas Distribution - Northern Gas Networks (NGN)

Asset Category	Baseline Network Risk Output (R£m)		
	Draft Determinations	Change from DD to FD*	Final Determinations*
District Governors	0.50		
LTS Pipelines	n/a		
Mains other	n/a		
Risers	0.03		
NTS Offtakes	n/a		
PRS	n/a		
Service Governors	0.02		
Services Not Associated with Mains Replacement	n/a		
Services_Mains other	n/a		
Services_Steel Mains <=2"	n/a		
Services_Tier 1	n/a		
Services_Tier 2A	n/a		
Services_Tier 2B	n/a		
Services_Tier 3	n/a		
Steel Mains =<2"	n/a		
Tier 1	n/a		
Tier 2A	n/a		
Tier 2B	n/a		
Tier 3	n/a		
Total	10.33	0.35	9.98

* For breakdown see Network Asset Risk Workbook to be published on the Authority's website.

Table 30: Gas Distribution - Scotia Gas Networks (SGN) - Scotland (Sc)

Asset Category	Baseline Network Risk Output (R£m)		
	Draft Determinations	Change from DD to FD*	Final Determinations*
District Governors	0.24		
LTS Pipelines	n/a		
Mains other	n/a		
Risers	0.17		
NTS Offtakes	n/a		
PRS	n/a		
Service Governors	0.03		
Services Not Associated with Mains Replacement	n/a		
Services_Mains other	n/a		
Services_Steel Mains <=2"	n/a		
Services_Tier 1	n/a		
Services_Tier 2A	n/a		
Services_Tier 2B	n/a		
Services_Tier 3	n/a		
Steel Mains =<2"	n/a		
Tier 1	n/a		
Tier 2A	n/a		
Tier 2B	n/a		
Tier 3	n/a		
Total	3.63	2.32	6.0

* For breakdown see Network Asset Risk Workbook to be published on the Authority's website.

Table 31: Gas Distribution - Scotia Gas Networks (SGN) - Southern (So)

Asset Category	Baseline Network Risk Output (R£m)		
	Draft Determinations	Change from DD to FD*	Final Determinations*
District Governors	0.44		
LTS Pipelines	n/a		
Mains other	n/a		
Risers	1.01		
NTS Offtakes	n/a		
PRS	n/a		
Service Governors	0.25		
Services Not Associated with Mains Replacement	n/a		
Services_Mains other	n/a		
Services_Steel Mains <=2"	n/a		
Services_Tier 1	n/a		
Services_Tier 2A	n/a		
Services_Tier 2B	n/a		
Services_Tier 3	n/a		
Steel Mains =<2"	n/a		
Tier 1	n/a		
Tier 2A	n/a		
Tier 2B	n/a		
Tier 3	n/a		
Total	20.18	3.90	24.1

* For breakdown see Network Asset Risk Workbook to be published on the Authority's website.

Table 32: Gas Distribution - Wales and West Utilities (WWU)

Asset Category	Baseline Network Risk Output (R£m)		
	Draft Determinations	Change from DD to FD*	Final Determinations*
District Governors	0.58		
LTS Pipelines	n/a		
Mains other	n/a		
Risers	0.99		
NTS Offtakes	n/a		
PRS	n/a		
Service Governors	0.46		
Services Not Associated with Mains Replacement	n/a		
Services_Mains other	n/a		
Services_Steel Mains <=2"	n/a		
Services_Tier 1	n/a		
Services_Tier 2A	n/a		
Services_Tier 2B	n/a		
Services_Tier 3	n/a		
Steel Mains =<2"	n/a		
Tier 1	n/a		
Tier 2A	n/a		
Tier 2B	n/a		
Tier 3	n/a		
Total	17.25	-0.9	16.3

* For breakdown see Network Asset Risk Workbook to be published on the Authority's website.