

Climate Resilience Strategy



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Legal Notice

This paper forms part of Wales & West Utilities Limited Regulatory Business Plan. Your attention is specifically drawn to the legal notice relating to the whole of the Business Plan, set out on page 3 of Document 1 of WWU Business Plan Submission. This is applicable in full to this paper, as though set out in full here

Acronym Key

ARP	Adaptation Reporting Power
HILP	High Impact Low Probability
BPDT	Business Plan Data Table
CBA	Cost Benefit Analysis
EJP	Engineering Justification Paper
NFSIS	Non-Financial Sustainability Information Statement
IPCC	Intergovernmental Panel on Climate Change
AGI	Above Ground Installations
ESG	Environmental, Social and Governance
NARM	Network Asset Risk Metric
FES	Future Energy Scenarios

1. Introduction

Wales & West Utilities (WWU) is committed to delivering a safe and reliable gas network whilst providing value for money to consumers. Assessing the risks associated with climate change against our commitments is a fundamental part of our wider business strategy and our approach to managing risk in general. Since our establishment in 2005, we have identified a range of physical and transitional climate related risks that affect our assets, land holdings, and staff. These are documented, maintained, and updated in a climate risk register that has generated reports for UK Government under the Adaptation Reporting Power (ARP), part of the Climate Change Act 2008, which enables the Government to require infrastructure providers and bodies with functions 'of a public nature' to provide reports on how they manage climate risk.

As a manager of strategic infrastructure, we submit a climate risk assessment report to the government approximately every three years. To bolster this, and to complement the work being undertaken across the whole of UK infrastructure to adapt to climate change and embed resilience, we follow the requirements set out by Ofgem for a climate resilience strategy that would be considered essential and best practice. In table 1, we clarify how this document meets these requirements.

In July 2024 we conducted a climate risk assessment in accordance with the UK Government Adaptation Reporting Power (ARP) requirements. While this analysis informed our ARP4 report submitted to Defra in December 2024, it is also the basis of this strategy.

Table 1: how this document meets Ofgem requirements

Baseline strategy expectations	Best practice	How we deliver
Signpost to relevant hazards from ARP4	N/A	Number of risks & risk types are identified for RIIO-GD3, mid and end centuries. See section 5 & ARP report
Scenario planning supported through ENA climate change resilience working group in collaboration with Ofgem	Scenario planning led within organisation	We have worked with external consultants to undertake scenario planning within the organisation. ARP4 Report
Stress-testing for High Impact Low Probability events by developing fragility curves	Stress-testing for HILP events by undertaking detailed modelling and qualitative approaches such as workshops	Planned for RIIO-GD3 – see page 20
Estimated cost of recent events	Actual costs of recent event	Actual cost of recent event
Begin the adaptation pathway process by identifying decisions that need to be made now, and those that can be left for the future, for each climate risk out to 45 years from the present	Undertake a full adaption pathway plan in line with BS8631, for the next 45 years and out to 2100	We begin the adaptation pathway in 2025 using the ARP4 risks scores as starting point.
Outline key BPDT categories for climate resilience, and the short- and long-term plans for climate resilience assessment	N/A	See page 17
Signpost to other submitted documents which relate to climate resilience	N/A	Asset Management Strategy Ref. 56
N/A	Explain any alternative financial assessment tools outside of CBAs and EJPs used for climate resilience justification	Not relevant in RIIO-GD3 – no other tools used.
Explain any barriers to making a viable business case for climate resilience projects.	Identify potential mitigations to this issue	Not applicable in RIIO-GD3
Continue participating in development of climate resilience metrics and indicators.	Monitor and report on climate resilience metrics and indicators in annual reports	We will continue to report via the ARP cycle and work with other utility and infrastructure organisations to develop resilience metrics.

2. Climate Risk Analysis to date

We previously assessed our climate related risks in 2011(ARP1), 2015 (ARP2) and 2021 (ARP3) and submitted reports to Defra. ARP3, the current report, is available on our website.¹ and the ARP4 report will be added to the website in January 2025.

Between 2017 and 2022 we specifically assessed the vulnerability of our network to river and coastal flooding using expert analysis and advice. Details of this are given on page 5.

In 2023, following the hot summer of 2022, we undertook an assessment of how extreme heat affects our assets, work programmes and staff. This has informed our subsequent risk analysis.

In 2024 we submitted our first Non-Financial Sustainability Information Statement (NFSIS) in anticipation of aligning our financial reporting with the ISSB S-2 climate related financial disclosures requirements in 2025. The NFSIS documented high-level climate risks we consider material to our financial resilience. These were drawn from the work mentioned above and have since been checked against the updated 2024 risk assessment.

¹ [climate-change-adaptation-third-round-report-september-2021.pdf](#)

3. External Guidance and Stakeholder Insight

Our Climate Resilience Strategy has been informed by legislation, expert guidance and input from stakeholders.

Climate resilience is generally discussed at specialist forums that involve other utilities and infrastructure operators. We are participants in the [CS-NOW Project](#) (Climate Services in a Net Zero Resilient World) that is funded by UK Government, members of the cross-sector Climate Change Resilience Working Group and the Infrastructure Operators Adaptation Forum. These connections mean that we receive news of best practice, the latest analysis, and support tools. The messages we have received from engagement through these groups with other business and economic sectors are;

- There is agreement on the proposed long-term GDN approach to embedding climate resilience, acknowledging it relies on cycles of analysis and review to build a suitable evidence case for valuing costs and benefits of adaptation actions.
- Climate resilience should be considered as one aspect of wider business resilience and addressed collaboratively with stakeholders and customers.
- There are distinct physical differences between electricity and gas networks, which result in different climate change risks.
- There is a need to balance reactive and proactive activities and a mechanism to apply for funding as proposals develop further.
- Balancing climate resilience and security with consumer value and decarbonisation is challenging.
- Agreement with the approach for focusing on climate resilience analysis in RIIO-GD3 with medium and long-term horizon scanning, consistent with evolving requirements of mandatory financial sustainability reporting.

Where the topic has been discussed with a more general audience, stakeholders have emphasised the importance of addressing the needs of customers in vulnerable situations and enhancing community resilience through work on our own company resilience. This view was strongly expressed by the charity sector. The Climate Resilience Strategy will continue to evolve as we engage with stakeholders, other networks and specialist advisors.

To support use of best practice and an external perspective, we engaged Frazer-Nash consultancy to help us develop our strategy. They established the background for relevant staff by delivering a webinar on climate models used in the UK and the climate change scenarios used to inform UK policy and business planning. We then ran a risk scoring workshop with our consultant in which managers from Operations, Health and Safety, Procurement, Facilities, Net Zero & Sustainability, and Environment scored the identified risks for the RIIO-GD3 period (to 2031) and for 2050 at two degrees of warming scenario, and for 2100 at two and four degrees of warming scenarios.

The exercise identified which parts of the business would be affected and whether risks were specific, business-wide or cascading – that is, they are part of a wider system change that could involve other energy sources, utilities or parts of national infrastructure.

The risk register that was compiled for ARP now informs our strategy for RIIO-GD3 and beyond. The ARP4 report will be submitted to Defra in December 2024 but the Climate Resilience Strategy will continue to evolve as we engage with stakeholders, other networks and specialist advisors.

Between 2017 and 2021 we worked with data specialist Landmark Information, and flood modelling experts Ambient Risk Analytics to undertake detailed analysis of pressure reduction sites and gas pipelines known to be vulnerable to river and coastal flooding. We used 2-D hydraulic modelling software, "Flowroute-iTM" to predict flood depth and extents at a five metre resolution for one in one hundred year undefended flood events. The modelling also included quantified river erosion risk. This generated a series of detailed case studies that assessed vulnerability under three emission scenarios – high, medium, low – across a timeframe of 2017 to 2080. This continues to enable asset managers to understand future flood risks on existing assets and infrastructure, and create a plan to adapt in a phased, responsible and appropriate manner, removing the need to create manual estimations. This work continues to inform asset management and will still be relevant in RIIO-GD3 and beyond. To date, this has been the only detailed site-specific climate risk modelling we have undertaken but we see this as the precedent for further work in RIIO-GD3 as a component of this strategy.

4. Overview of Risk Assessment Approach

Following the guidance of our consultant, we developed an understanding of risk based on the following components:

- **Climate Variable** – although this phrase is used with more precise definition in climate science, for our purposes we take climate variables to be the main weather patterns and physical conditions that define a region. We expect these to change for our region as the world warms.
- **Hazard** – The potential occurrence of a natural or human-induced physical event or trend (such as a heatwave, heavy rainfall event, or sea level rise) that may cause loss of life, injury or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, service provision, ecosystems and environmental resources.
- **Exposure** – The presence of people; livelihoods; species or ecosystems; environmental functions, services, and resources; infrastructure; or economic, social, or cultural assets in places and settings that could be adversely affected (e.g., homes in a flood plain).
- **Vulnerability** – The propensity or predisposition of people or physical structures to be adversely affected

Risk emerges from the interactions of these components.

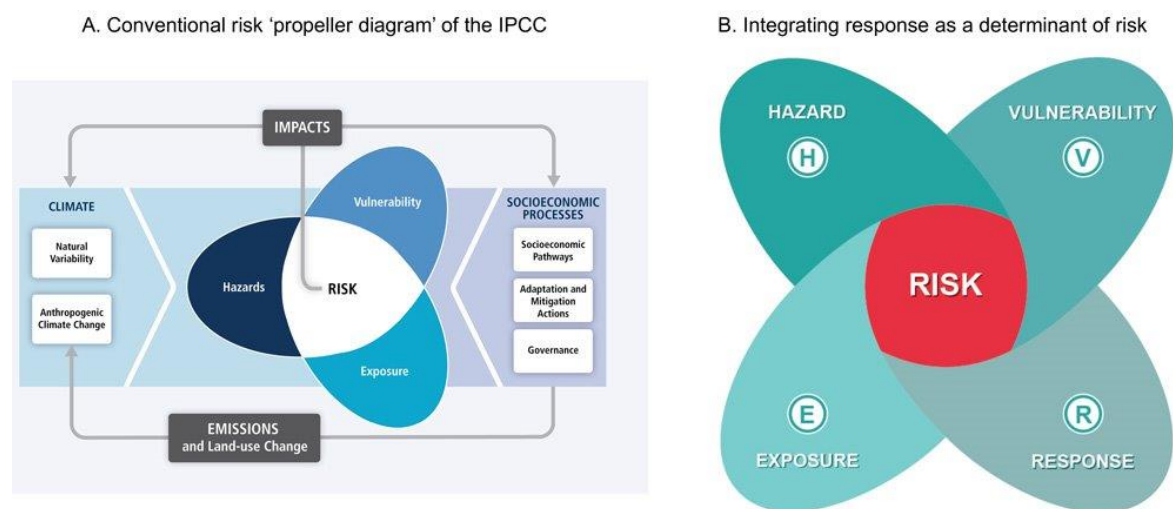


Fig. 1: Methods for Assessing Climate Risk

Figure source: © IPCC (left) and Simpson et al. (2021) (right)

4.1 Hazards Summary

Underground gas infrastructure is less vulnerable to extreme weather than overhead cables or other above surface energy infrastructure but when extreme weather causes ground movement, the integrity of buried assets can be threatened. Above ground gas installations (AGIs) are vulnerable to hazards that affect any built infrastructure - such as floods, extreme heat, fire, and high winds. In the long-term, sea-level rise is relevant to both buried assets and AGIs. Extreme weather and long-term shifts in climate that disrupt supply chains and/or lead to geo-political instability are hazards that need to be planned for in a time horizon that extends to the end of the century. Sea level rise, and permanent changes to regional climates, will produce political and financial hazards that translate into transitional risks. These are defined by the International Sustainability Standards Board as;

“Risks that arise from efforts to transition to a lower-carbon economy. Transition risks include policy, legal, technological, market and reputational risks. These risks could carry financial implications for an entity, such as increased operating costs or asset impairment due to new or amended climate-related regulations. The entity's financial performance could also be affected by shifting consumer demands and the development and deployment of new technology.”

From a list of eight climate variables, we have identified 36 climate hazards as relevant to our company. The climate hazards translate to 109 risks. For each of the risks, we have established relevant locations, business areas affected and assessed whether the risk is controlled by current process or needs a new control mechanism.

5. Overview of Risks

In our ARP4 analysis we used a five by five risk scoring matrix to identify the highest priority risks in three time periods (R110-GD3/2031, 2050, 2100) over four scenarios (current climate, two degrees of warming in 2050, two and four degrees of warming in 2100). We scored likelihood between 1 and 5 and consequence between 1 and 5. Multiplying these gave us a risk score between 1 and 25.

Table 2: Risk Matrix

Likelihood	Consequence				
	Insignificant 1	Minor 2	Moderate 3	Significant 4	Serious 5
5 Almost Certain	5	10	15	20	25
4 Likely	4	8	12	16	20
3 Possible	3	6	9	12	15
2 Unlikely	2	4	6	8	10
1 Rare	1	2	3	4	5

Of the risks identified in our 2024 assessment, half are related to asset integrity. Other categories include 'facilities management' and 'procurement'.

Table 3: Distribution of risks across business area

Business area affected	Percentage of total risks
Asset Integrity	50
Physical operations	28
System Operations	2
IT and Cyber functionality	2

Within these broad categories, we have identified the risks to physical assets but also to people – our staff and customers, and to processes that maintain a safe and effective network. We have identified cascading risks where climate hazards produce cascading consequences across integrated systems. For example, storms that cause electricity or telecommunication dropouts. We also identified systemic risks where vulnerabilities are inherent in procedure and managerial oversight.

In the ARP4 assessment 109 risks were identified. The main climate variables considered were precipitation, temperature and wind. Others included: sea level, cloud cover, humidity, and lightning. The key hazards associated with each climate variable are:

- Precipitation: Increased intensity and frequency in heavy rainfall events resulting in increase in surface water flooding, seasonal changes in average rainfall resulting in fluctuations to peak water in rivers, river flows and shape and pro-longed periods with less than average or no rainfall.
- Temperature: Increases in annual mean temperature, seasonal average and extreme temperatures in summer, as well as prolonged periods of hot weather.
- Wind: Increased intensity and frequency of strong winds.
- Sea Level Rise: Sea level rise resulting in increased coastal flooding or increase in ground saturation and rise in the water table with salt inundation.
- Cloud Cover: Increase in seasonal cloud cover resulting in decrease in sunlight.
- Humidity: Increases in annual mean humidity resulting in increased moisture in the atmosphere.
- Lightning: Increasing frequency of lightning strikes.

The number of risks by hazard type is summarised in Table 4 below.

Precipitation	Temperature	Sea Level Rise	Cloud Cover	Humidity	Lightning	Wind	Multiple
42	29	11	5	3	2	9	8

Table 4. Number of risks per hazard type

Table 5 outlines the risks identified in ARP4 by severity. There is a significant increase in the number of risks considered very high by end of century, under the 4 degree Celsius scenario.

	RiIO-GD3 2031	Mid Century +2 Scenario	End Century +2 Scenario	End Century +4 Scenario
Number of very high risks	1	2	5	22
Number of high risks	7	16	31	28
Number of medium risks	35	48	32	22
Number of low risks	66	43	41	37
Total	109	109	109	109

Table 5. Number and type of risk against climate projections

Further detail on risks can be found in the ARP4 report (appended).

6. Strategy

6.1 Strategic Approach to Risk

Our Board is responsible for identifying the major business risks faced by the Company and determining a suitable response.

The Risk Management and Compliance Committee, as a committee of the Board, operates under delegated authority from the Board to discharge this responsibility on their behalf. The Board is responsible for reviewing the effectiveness of control of our key business risks.

Climate related risks and opportunities are assessed and managed as part of the Risk Management and Compliance committee. Detailed actions and KPI reporting are overseen by the Executive and senior managers either through the Business Performance Delivery Committee or the Environmental, Social and Governance (“ESG”) Committee. The latter reports to the Board ESG Committee.

Our active management of climate risks is primarily embedded within day-to-day inspection and maintenance operations and feeds through to the intervention programme; for example, identifying erosion during river crossing surveys and determining appropriate actions to mitigate the risk to protect the integrity of the asset.

Our Asset Management team (comprising Asset Integrity and Asset Strategy business units) evaluate climate change impacts on their maintenance and inspection programme, with adaptation considered a core component of our ongoing asset management.

We were the first gas network in the world to achieve accreditation to ISO55001 (in 2013) and have continued to maintain compliance since. The updated ISO 55001:2024 standard marks a significant advancement in asset management by explicitly incorporating climate change considerations. Organisations must now recognise and respond to the environmental impacts on their operations, ensuring that asset management systems are resilient and adaptive.

Asset management performance and condition targets translate Asset Policy, Strategy and Objectives into practical metrics that are used to manage asset performance, risk and expenditure. This requires a set of informative, measurable and reliable Performance Indicators that can be used for the purpose of ensuring asset plan delivery and effecting improvements where they may be necessary. We recognise that other performance indicators may exist in parallel. These may be required by regulatory bodies such as Ofgem or HSE or may be financial reporting KPI’s required by investors.

Transitional risks and opportunities are captured by our Sustainability Strategy, the Net Zero Strategy, our Business Evolution programme, and the work of our Net Zero & Sustainability team, with input and support from around the business. These are overseen by our ESG Board Committee, with internal governance provided by our ESG Management Committee, Strategy Development Committee and Net Zero & Sustainability Steering Group, all of which have Executive oversight and membership. The long-term strategic relevance of transition risks and opportunities are elevated to the Board via the Risk and Compliance Committee.

6.2 Strategic Responses to Climate Change Opportunities

Under all climate change scenarios, the UK must move away from the use of fossil fuels including natural gas. We recognise most of the gas transported to our customers today is a fossil fuel and that our operations have a direct and indirect impact on the environment. We support the commitment of the UK and Welsh governments to reaching net zero carbon emissions and believe the investments we are making in reducing emissions and decarbonising heat, power and transport can help deliver a net zero energy system.

Our Net Zero Delivery Plan, Innovation Strategy, and Business Evolution work programme which is informed by NESO's Future of Energy scenarios are dedicated to identifying transition opportunities and achieving a successful transition to a business model which replaces fossil fuel with greener gases such as biomethane and hydrogen.

6.3 Costs and Investments

The network of assets that we own and operate is critical for a reliable energy supply across Wales and the South West of England. This is true today and for all credible future energy scenarios. Whether our gas powers a central heating system to warm a home at the height of winter or fires a furnace to enable steel production in a factory, our assets are vital for fulfilling our duties to both domestic and commercial users, so that they in turn can do what they need to do, with the gas they use.

While we are a conscientious company doing all we can to look after customer needs whether these are the needs of householders wanting choice in how they heat their homes, or businesses looking for low carbon fuels for industry and transport, meeting laws that exist to ensure the correct management of assets is a central motivation for our asset strategy. We have built a methodical process of developing, operating, maintaining, upgrading, and disposing of assets in a cost-effective manner, which we consider to be best practice.

The updated ISO 55001:2024 standard marks a significant advancement in asset management by explicitly incorporating climate change considerations. Organisations must now recognise and respond to the environmental impacts on their operations, ensuring that asset management systems are resilient and adaptive. Climate resilience is therefore already a core component of asset management where inspection and monitoring provides evidence for the impacts of extreme weather.

The ISO accreditation recognises our strong leadership, our willingness to learn and improve, and is an indication that our asset investment strategy is understood and embraced at all levels of our organisation. The structured approach required to achieve accreditation helps us to manage the lifecycle of assets to maximize value, control risks, and ensure sustainability. Our asset management strategy aligns with our organisational objectives, resulting in clear guidance for our asset team in the actions we need to take, to manage our assets efficiently.

New challenges such as cyber resilience, increased security threats and closer integration of the gas and electricity networks mean that we have adapted our approach to include new ways of looking after our assets that we did not previously need to consider. For example, we have added additional layers of data sampling and monitoring between gas offtakes and the control room to meet new UK Network Information regulations and appointed a new Senior Physical Security Manager to ensure our sites are resilient to any physical and criminal threats.

We make investment decisions based on high-quality data and on sophisticated predictive and prescriptive analytics. While predictive analytics forecast outcomes to help with decision-making, prescriptive analytics recommend the optimal course of action or strategy. With this methodical approach to investment, we manage risk, keep costs as low as possible.

Our investment drivers - the reasons behind the money we invest in our assets - can be broadly split into three categories:

- **Mandatory** investment is essential to adhere to the law of the land.
- **Discretionary** investment is to deliver a stakeholder-required outcome or is driven by Cost Benefit Analysis (CBA)/NARM.
- **Customer driven** investment is as a direct result of customer requests to connect to our network or to move our assets.

The Network Asset Risk Metric (NARM) is designed to demonstrate that Gas Distribution Networks (GDN) are targeting investment in the right areas so that risk is managed effectively. By monitoring NARM, this makes sure the GDN can continue to deliver their primary outputs - in other words, their priority work – and protects the network to make sure it will be fit for future purpose. When it comes to measuring the health and risk of our assets, we use NARM, and our stakeholders have approved their current levels.

For the period covered by RIIO-GD3, we do not foresee any need for special or additional funding to address climate resilience beyond our planned investment and net zero innovation and delivery activity. Gas infrastructure is designed to withstand some of the most extreme environments on Earth and being largely underground is not as exposed to extreme weather as are, for example, overhead cables. Our analysis work to date, particularly on flooding, has already informed our asset management approach and will continue to guide our Adaptation Plan as we explain below.

Network actions identified in the Climate Resilience Business Plan Data Table will be documented in the Adaptation Plan as climate resilience activities although they are also part of asset management base costs. The main categories are;

Direct Opex work execution

- River bed crossing maintenance and interventions - £6.34M
- Trigger and Winter surveys - £1.52M

Non-load related controllable

- Pipe diversions requiring capital expenditure - £0.44M
- Depth of cover inspections and interventions - £0.1M

We believe that impacts of climate change contribute to the rising costs of asset management, and this is reflected in the climate resilience memo table and commentary.

The ARP4 report (appended) specifies the risks we think are material (by score) in RIIO-GD3 and the control responses for these are 'business as usual' activities covered by base Opex.

The inherent unpredictability of climate change however makes high impact low probability events material to our financial management. We provide an example below of such an event. While our base opex and capex provisions can fund remedial actions to cover the routine wear and tear of a changing climate, we believe that it is essential to maintain a climate change re-opener. As a country we can expect at least one high impact event in RIIO-GD3 but we cannot be sure which part of the UK will experience the most damage.

We believe that it is vital to use the RIIO-GD3 period to better understand the growing threats of climate change and the potential for major disruption as climate hazards increase in frequency and scale over a thirty-to-fifty-year timespan. We intend to prioritise research and analysis in RIIO-GD3 to build an evidence base for investment in resilience in RIIO-GD4 and beyond. Major risks, (i) including high impact low probability and (ii) cascading events are likely to require capital expenditure across the whole energy and civil infrastructure sector. We therefore intend to build upon existing collaborations and develop innovative approaches with our partners, anticipating that these will benefit from and contribute to a national investment in resilience from the late 2020s through to 2050.

6.4 Example of Climate Impact Requiring Re-opener Funding

Climate projections for our region predict warmer and wetter conditions with an increase in the frequency and severity of extreme rainfall. As an example, in February 2020 we became aware that a pipeline bridge in Porth, South Wales which carries an 8" diameter ST IP pipeline, had been hit by floating debris during two severe storm events (Storms Ciara and Dennis) which had resulted in record water levels in the River Rhondda. The impact and the load on the structure from the fast-flowing water resulted in the pipeline bridge and the 8" IP pipeline being significantly deformed. The pipeline was commissioned in 1987 and is a single feed to more than 5,000 supply points in the towns of Porth and Tonypany.

A structural survey determined that the above ground crossing and the supporting structure would need to be replaced or diverted to another location to restore the integrity of the pipeline and ensure continuity of the gas supply. We considered the options and the possible alternative routes to divert the pipeline around surrounding streets and over a road bridge. Replacement under the river by Horizontal Directional Drilling ("HDD") was also considered. However, following detailed assessment of these alternatives and their estimated costs, we concluded that replacement with a new above ground crossing installed at an increased height above the water course was the most viable and cost effective option.

The preferred, most efficient and therefore chosen option which mitigated the risk of damage from floating debris based on predicted future flood levels was;

- Install a new 33m 200mm IP steel above ground crossing, 6m downstream of the damaged crossing and at an increased elevation.
- Install two short-length below ground sections of 200mm IP steel to tie back into the existing below ground pipeline, a total diversion length of 63m.
- Commission the new crossing then abandon and demolish the original 44m 8" steel crossing.



Fig. 2: Final diverted crossing above predicted flood height.

The work was carried out between 2020/21 and 2023/24 regulatory years and cost £892,000.

High impact, low probability events like this make the case for retaining a climate change re-opener in RIIO-GD3. Climate projections cannot accurately predict the localised impacts of events such as Storm Dennis which caused damage to 1,476 properties in the Rhondda Cynon Taff local authority area. The council calculated the gross costs borne by the council alone as £3.762m with estimates of £180m quoted for the wider local economy.

6.5 Transition Risks

The transition of the UK energy system to net zero presents inherent risks and opportunities for gas distribution networks and their customers. While the future role of the gas system is unclear, it requires ongoing investment to reduce emissions, support resilience, and provide options under a range of future scenarios. In our [Sustainability Strategy \(2023\)](#), we set a vision for the future role of our network, with targets and actions which are guiding activity through this uncertainty.

Our practical preparations for the future are co-ordinated via a dedicated Business Evolution work programme overseen by our System Operation Manager with Executive sponsorship and steer. This work programme is informed by Future Energy Scenarios (FES) from NESO, by local area energy plans, and by the outputs of our 2050 Energy Pathfinder model. This unique tool models future energy supply and demand at an hourly level to provide insight on the sustainability and security of energy supplies. It supports identification of opportunities, risks and trade-offs when designing the energy system of the future at local, regional and national levels. It enables policy makers and asset managers to take a whole systems approach to future investment and planning, making sure that our gas and electricity networks and suppliers work together rather than in isolation. We are working on a range of projects and schemes that will help deliver our vision of a reliable, affordable and green whole energy system. Ahead of a strategic decision on heat from the UK Government, these are all 'no-regrets' initiatives that can start delivering the decarbonisation of heat today.

While there is uncertainty on the role of the gas network in a net zero system, during the RIIO-GD3 period we need to prepare for a range of potential futures by:

- Investing £37.9m in energy system transition innovation, as detailed in our Innovation Strategy, by working with a wide range of partners
- Investing £38m in small net zero facilitation projects, and development projects which could develop into larger reopener-funded activity
- Supporting Local Area Energy Planning, and the new National Energy System Operator (NESO) including in its Regional Energy System Planning Function
- Continuing to reduce the emissions associated with our activity and improve our environmental impact, as set out in our Environmental Action Plan
- Preparing the business and our customers for future changes to come

To find out more, please read our [Innovation strategy](#) (submission ref. 55)

There are three Transitional Risks that require particular focus.

1. A full electrification energy scenario in the UK could lead to the stranding of distribution system assets and loss of value / business.

Risk Mitigation: We are pro-active in assembling evidence and make practical preparations in support of the FES Holistic Transition scenario and ensuring that we are prepared for a range of future scenarios. Our activity and plans in this area are set out in the Net Zero section of our business plan.

2. Reputational risk through association with fossil fuel

Risk Mitigation: Internally the Company is constantly striving to reduce our operational emissions in many cases linked to regulatory outputs which support government policy. For example, there is opportunity to decarbonise our fleet in a wider context of a developing hydrogen economy where heavy goods and commercial vehicles, with high energy demand duty cycles that cannot be adequately met by battery electric vehicles, are powered by hydrogen fuel cells or direct combustion of hydrogen, once these vehicles become available commercially. We are also supporting a range of innovative projects to support the development of decarbonised gasses and the transition away from unabated fossil fuels.

The use of non-fossil gas reduces the environmental impact of the gas we distribute within our network. By proactively supporting external business to connect their green gas to our network, we are working towards the decoupling of heat from anthropogenic global warming. As of 2024, we have 21 biomethane sources connected to our network providing the capacity to deliver 1.81 TWh of green gas which is enough to heat around 160,000 homes. We're working with developers to connect and commission a further seven sites that have booked capacity with us over the next few years. In total, the 28 sites could provide heat to 200,000 homes.

We are leading the industry by enabling a first of its kind third party owned and operated reverse compressor. The compressor overcomes seasonal capacity constraints experienced by an existing entry site when demand is very low in the summer months. This is a common problem for the biogas industry. The technology will enable biomethane to flow to the higher demand, high pressure system all year round. This particular unit will contribute to a renewable energy network for North Devon. We estimate that it will supply 6,000 homes. We are also enabling the automatic control of a large distribution network to maximise biomethane entry whilst maintaining security of supply. This medium pressure network runs from Swindon to Honiton and contains over 679km of gas pipes; that's approximately 100 miles of network area as the crow flies. Once the control and monitoring equipment has been commissioned at the 19 natural gas sites involved, we will be able to allow connection of additional biomethane sites in an area where there is significant interest through removal of an existing capacity constraint.

In RIIO-GD3 we will measure progress through the number of enquiries we transition into active supply points, the volume and energy value of the gas supplied into the network, and the tonnes of carbon dioxide equivalent emissions avoided by this.

3. Disruption of global supply chains because of extreme weather or political instability of which climate change is a contributing factor

Risk Mitigation: Conduct analysis on the sensitivity of our supply chain. Identify where components come from: secondary supply chains of raw materials, points of manufacture, shipping methods. Discuss common risks with UK GDNs and utilities sector and identify ways to collaborate to build resilience into the supply chain.

6.6 The Adaptation Plan

We have been identifying and implementing adaptation actions since our first ARP report in 2011. We were praised by Defra in October 2011 where it stated that our understanding of the barriers and interdependencies with others was instructive, detailed and inclusive of external stakeholders and the company's supply chain. In 2013 our work on integrating climate adaptation into land remediation of former gasworks sites was recognised by the Gas Industry Awards. In 2021, with our partners Ambiental and Landmark, we launched Great Britain's first national flood map that incorporates current and future predictive flood scenarios for the 2020s, 2050s and 2080s. We are also members of local resilience forums as category two responders. The Local Resilience Forum (LRF) is the principal mechanism for multiagency cooperation under the Civil Contingencies Act 2004. We have collaborated with other organisations in building physical resilience after the experience of storm Ciaran in November 2023.

In preparing this strategy, we have consulted with a variety of stakeholders from civil society, infrastructure operators and academia. Stakeholders fully support our greater involvement in local resilience forums and strongly recommend that we share information with other responders involved in these forums. They also urge us to regularly participate in resilience training events.

Building on this past work, using the ARP4 risk register, we will create in 2025, an Adaptation Plan that will document risk control actions in the short-term. The Adaptation Plan will create coherence between the [Asset Management Strategy](#), the Health and Safety Strategy, Health, Safety and Environmental Management Procedures, Environmental Impacts and Aspects, and property and estate management.

The Adaptation Plan will help to co-ordinate our collaborations to build resilience in our region, including addressing the need to support vulnerable communities and individuals, and provide opportunities for us to measure progress through outputs and outcomes.

This Resilience Strategy, as an evolving strategic document focused on the medium to long-term, will materially affect the Adaptation Plan that will evolve in step with strategy as we improve our understanding of the impacts of climate change through local analysis and national collaboration. The following example illustrates how the Strategy, Adaptation Plan and core management plans will interact:

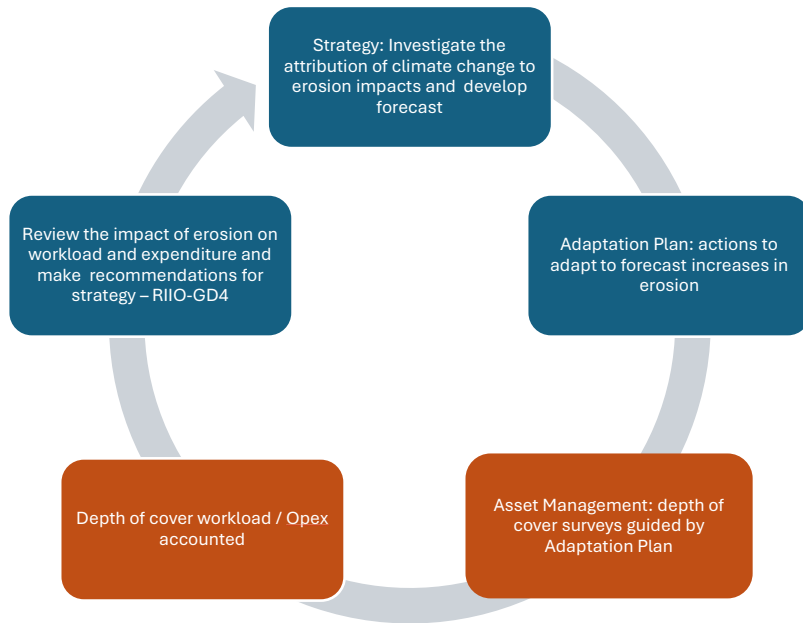


Fig. 3: Adaption-Strategy Continuous improvement cycle

7. Strategic Actions for RIIO-GD3

1. **2025 – 2031: Continue to use our previous analysis of flood risk to inform the monitoring and maintenance of above ground gas pipeline infrastructure.** The flood maps produced with Ambiental and Landmark (see section3) will continue to be relevant in RIIO-GD3 as we pay close attention to predicted and observed fluvial and surface water flooding. They will continue to guide intervention to ensure that infrastructure such as pressure regulating installations, local governor kiosks and local offtakes are not at risk. We will also continue to monitor buried pipes with reference to changes in the water table and associated ground movements, acting where necessary to ensure the pipelines are secure and safe.
2. **2025 –2031: Continue to monitor the impacts of heat.** Since our ARP3 report in 2021, the extreme heat of the summer of 2022 has made real the climate science predictions for more frequent and intense heat events. We will continue to factor heat into our occupational health and safety monitoring, advice and guidance to protect our operational teams, and continue to monitor, develop and implement responses to the impacts of heat on gas pressure management.
3. **2026: Hold discussions with Ofgem, other GDNs and stakeholders to factor climate risks into NARM methodology.** The calculation of the Network Asset Resilience Metric (NARM) does not currently include a quantification of climate risk. The ENA, Ofgem, the Environment Agency and UK Government have been collaborating with DNOs and GDNs to develop a ‘resilience metric’. We will continue to contribute to these discussions and be open to working with others on any innovation project that would aim to update the NARM to include a climate resilience score.
4. **2026-31: Commit to regular annual review of climate risk scores.** Scores will be reviewed annually through consultation between Asset Management, Health and Safety and Sustainability managers. In 2027 we will conduct a major review through workshopping with internal stakeholders to re-score the risks identified for ARP4 and provide an opportunity to identify new ones in anticipation of ARP5. In the next ARP cycle, we aim to integrate interdependencies and cascading risks within the risk register, quantitatively scoring risks. We will review HS&E, engineering and customer care procedures identified in the Adaptation Plan to assess fitness relative to risk score.
5. **2028-29: Model asset and business risk for longer timescales.** In 2028 we will model sub regional climate impacts at significant locations and for asset types up to 2100 to include flood, heat, ground movements, and sea level rise and undertake stress-testing for High Impact Low Probability (HILP) events. This will provide a granular analysis of our network with geo-location of most vulnerable assets. We expect to require support from academics and/or specialist consultants.
6. **2029 -2031: Climate Resilience to Influence RIIO-GD4 business plan.** Conduct a fitness review by analysing weather events experienced since the start of RIIO-GD2, their impact and our response, assessing the degree to which these events/impacts can be attributable to climate change, projecting forwards and stress testing for HILP events. National Gas Transmission have identified a need to quantify the attribution of climate change to extreme weather impacts and we will be ready to learn from their work and provide data and information to utility sector collaborations working on this topic. In 2029 our RIIO-GD4 business planning will include analysis on the capex intervention required to safeguard assets deemed vulnerable by the modelling analysis (action 5). During RIIO-GD3 we will also maintain analysis of transition risks and develop a transition plan in line with emerging mandatory requirements on financial reporting, and this will also inform our RIIO-GD4 business plan.
7. **Maintain engagement, collaboration and information sharing with all stakeholders.** We will create opportunities for shared learning through events, training and collaborative projects with other infrastructure operators, government, advisors and customers.