Engineering Justification Paper: EJP01

Civil Interventions

Cadent
Your Gas Network

Contents

Table of Figures

Table of Tables

1 Summary Table

Name of Project[1]	Civil Interventions EJP01		
Primary Investment Driver	Asset Health - Safety		
Project Initiation Year	2026		
Project Close Out Year	2031		
Total Installed cost estimate (£) (RIIO-3)	[cost data redacted]		
Cost Estimate Accuracy (%)	±5%		
Project Spend to date (£)	Nil		
Current Project Stage Gate for RIIO-3 workplan	This is a 5-year rolling programme of reactive maintenance		
Reporting Table Ref	5.01 - Civil Intervention		
Outputs included in RIIO-3 Business Plan	Yes - volumes and costs included in above reporting table		
Proposed Regulatory Treatment for RIIO-3 work plan	Other Capex		
Spend apportionment (for RIIO-3 workplan)	**GD2**	**GD3**	**GD4**
	[cost data redacted]	[cost data redacted]	[cost data redacted]

Table 1: Summary Table

This investment case does not satisfy the criteria for late competition or early competition and pursuing these activities would not be in the interests of the customer. We recognise the benefits that competition can bring to customers through efficiency and innovation. We continue to challenge ourselves as a business to ensure that we are harnessing competitive forces where they can provide these benefits. For specific detail on how we have assessed competition, please see Chapter 6 of the Workforce and Supply Chain Strategy (Appendix 17).

All costs presented in this paper are pre-efficiency and are in 23/24 price base, unless otherwise stated.

2 Executive Summary

We have ~12,000 sites located throughout its four networks with AGIs (Above Ground Installations) accounting for below 10% of sites and with the remaining consisting of below 7bar sites.

The investment driver for the civil asset class is asset health to ensure compliance with relevant industry wide legislation to provide a safe working environment for our employees and facilitate the safe and secure operation of our gas assets.

Our preferred option is to proactively intervene following inspection, which will continue to manage the risk of our assets**.** Intervention needs for our general civil assets are identified during maintenance examinations and normal working practices. These outputs are assessed, and intervention carried out as necessary. We expect a similar level of investment from RIIO-2 into RIIO-3 to hold asset health steady.

Our preferred option has been derived using RIIO-2 baseline historical expenditure and intervention volumes, to infer a workload for RIIO-3. Our RIIO-2 approach to pre-emptively intervene before any

failures, has enabled us to maintain our assets in a good state to date. It is our intent to continue this approach in RIIO-3, responding to identified risks through our inspection programmes.

Our proposed spend for RIIO-2, RIIO-3 and RIIO-4 civil interventions programmes are summarised below.

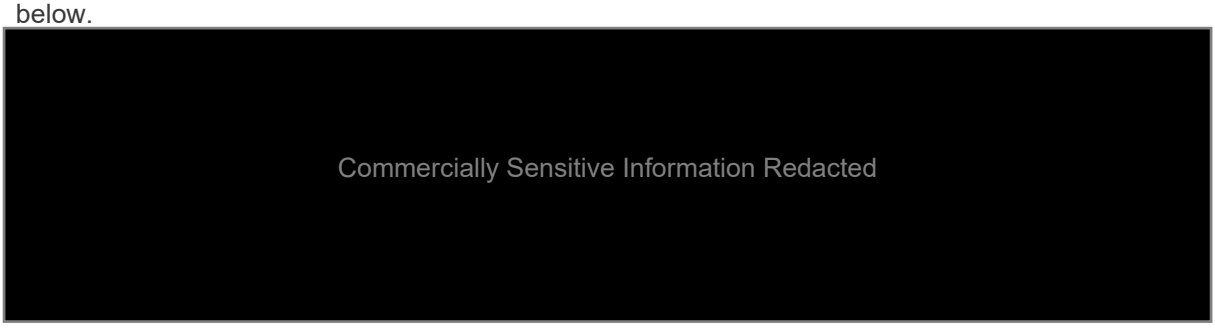

Table 2: Summary of RIIO-2 and GD3 plan: Civil interventions. (£m Totex) – 2023/24 price base

3 Introduction

This investment case has been derived by reviewing our historical baseline expenditure within the civil asset class and using this historic spend profile to forecast expenditure for RIIO-3. The historic expenditure levels have enabled us to maintain a stable level of risk. Our asset data pertaining to our gas carrying assets are well documented whilst those associated with our civil assets are limited. The deterioration of civil intervention assets does not have a direct impact on service risk and performance, we are not able to quantify the probability and consequence of failure on performance. These assets do not have a health grade and are managed through periodic general inspections and operational visits. Our investment case is based on a cost run rate from RIIO-2, to manage the wide array of civil assets within the civil intervention asset class. We have not produced a Cost Benefit Analysis (CBA) to inform decision making, because the relationship between civil asset health and consequence is implicit and is asset and site-specific regarding mode of intervention to remediate (Refurbishment/ Replacement). This investment case has not used asset models to support any failure modes, risk reduction or CBA, as discussed and agreed with Ofgem during our bilateral with Ofgem dated September 2024.

The scope of this paper includes civil investment such as brickwork (e.g. roadways, pits, retaining walls), structures and traffic collision protection (please see Section 4 for comprehensive list of work types). It excludes investment for EJP06-Housing Interventions, or civil assets directly associated with our Mechanical or Electrical, Instrumentation and Telemetry (EI&T) programmes of work which are covered separately; please see EJP03-Filters on Offtakes 7 PRS, EJP04-Governor Interventions, EJP15-Asset Health Preheat Final Submission, EJP17-Pressure reduction on Offtakes and PRS, EJP02-Electrical, Instrumentation and Telemetry on Offtakes & PRS, EJP16-Presssure Monitoring and Control on Governors.

4 Equipment Summary

All sites have civil assets that support our gas carrying assets in their operation and from this we can infer the scale of the civil asset base by the number of sites within each network. There are [sensitive data redacted] AGIs across our Network and [sensitive data redacted] below 7bar sites. We also have several civil structures within our portfolio that are associated with pipelines. Table 3 and Table 4 provide the global count of our AGIs (PRS, Block Valves and National Transmission System (NTS) Offtakes) and below 7bar sites.

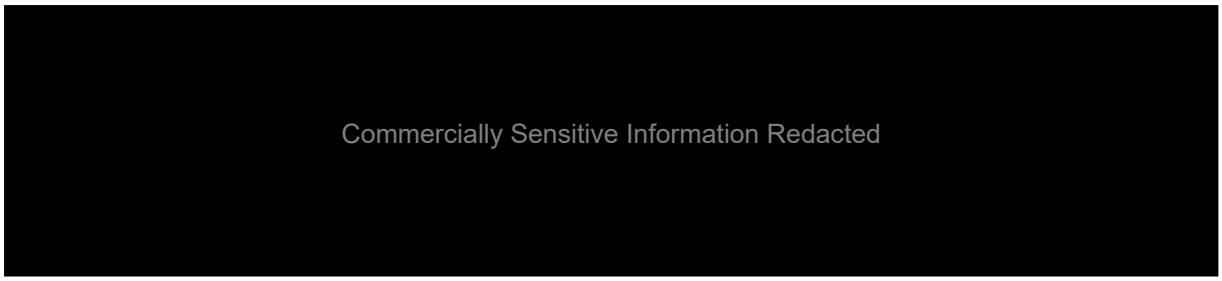

Table 3: Summary count of all sites & pipeline structures

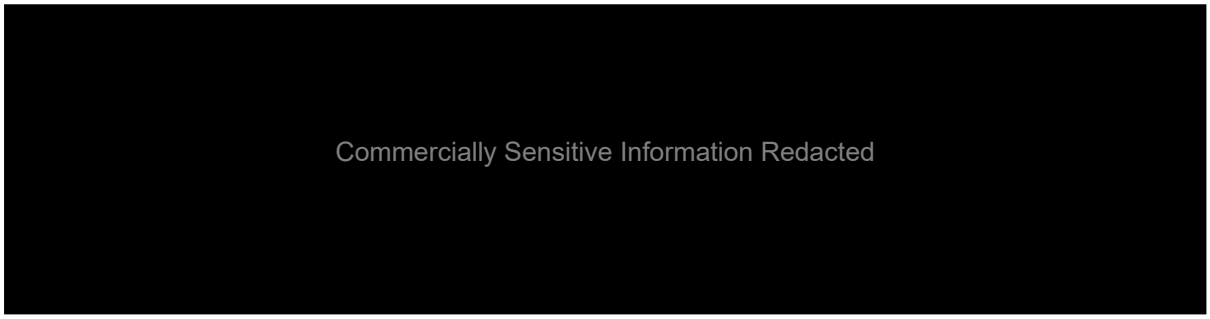

Table 4: Summary count of AGI sites

This investment case covers an amalgamation of civil assets comprising of structures and brickwork inherent with site/pipeline construction as well as civil assets to control a legislative risk (e.g. noise and vibration). Asset types included are:

1.1.1 Structures and Brickwork

- Access roads & pathways: These civil assets cover a wide variety of onsite roads and pathways maintained by us using a broad range of construction methods (concrete, bitumen, paving slabs, gravel)
- Civil Structures: These include purpose built structural assets to support pipe crossings over transport and waterways used to distribute gas in the network. These maybe shared with other asset owners, dedicated to us only and include legacy bridge assets, where gas carrying assets have been decommissioned. These can be located both within our sites or found within the distribution network
- Facilities: These include permanent welfare facilities and buildings across operational sites and AGIs where Cadent staff and contractors have access to any of the following: toilets, washing facilities, potable water, first aid stations and resting areas
- Groundworks: Our operational sites are situated on varied geology, and some are former gasworks, landfill sites or comprise made-ground, as such they may suffer ground-movement, or subsidence, which may pose a health and safety risk or put load-assets at risk. For this reason, some level of groundworks and remediation is required
- Pipe supports: These are typically concrete or steel and are an integral part of protecting above ground pipe-integrity. They ensure that above ground pipework is supported to prevent excessive stresses, joint-leakage and vibration / fatigue failures
- Pits and chambers: There are a wide range of pits and chambers on our operational sites, which provide easy access to valve or ducts for ease of maintenance and repair. These can be concrete or metallic in construction with a wide variety of covers based on location and loading requirements. Some have integral ladders

- Retaining walls: A large variety of different retaining walls are in use across our operational sites, ranging from sheet piles, gabions, reinforced soil, concrete or interlocking blocks. These can either protect or support our gas-assets

1.1.2 Civil Solutions

- Asbestos management: Within some building and structures asbestos containing material have been used (doors, ceilings, coating, cement sheets) These need management plans and control measures. Asbestos cement pipelines are excluded
- Noise Attenuation: Gas-assets can occasionally generate nuisance or excessive noise, posing a health and safety risk to employees and disturbing local residence. This may be caused by changes in flow or pressure or due to the make/model of asset. Mitigation may comprise installing soundproofing
- Protective coatings: We use painting as a protective coating system to prevent pipework and other exposed metalwork from corrosion and degradation. Through our 6-yearly inspections we identify coating defects requiring patch repairs and full re-paints
- Traffic collision protection: We have a range of existing steel or concrete crash barriers, bollards and containment beams which prevent the risk posed to our assets and employees from vehicular impact. Risks to assets are continuing to be identified, as part of ongoing surveys, also driving the need for new traffic collision protection installations
- Working at height protection: A wide variety of handrailing, toe plates, ladders, platforms, guard rails exist to provide safe working access to gas-assets

Asset registers exist for asbestos where routine inspections are carried out in accordance with Control of Asbestos Regulation 2012. A summary of these assets is shown in Table 5.

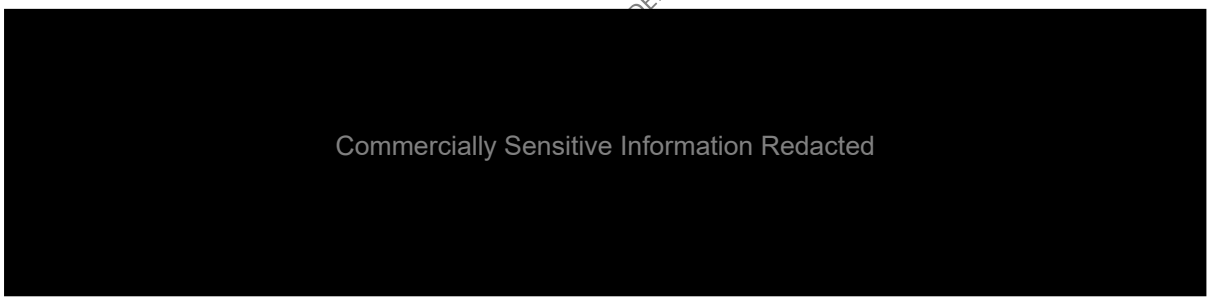

Table 5: Regional and Cadent Total No. of Sites Containing Asbestos

As stated in Section 3, these assets do not have a health grade and are managed through periodic general inspections and operational visits. Our investment case is based on a cost run rate from RIIO-2, to manage the wide array of civil construction assets. We therefore have not provided start and end of period health scores. In RIIO-2, we have invested a total of [cost data redacted] within the civil intervention asset class with an additional [cost data redacted] spent undertaking our inspection programme.

5 Problem/Opportunity Statement

5.1 Why are we doing this work?

The primary driver for this investment case is asset health, specifically safety, pertaining to the compliance with legislative obligations. We must maintain the asset health of our civil assets to comply

with all relevant H&S legislation to provide a safe working environment for our employees, site visitors and the public, and to facilitate the safe and secure operation of our gas assets.

Defects can arise from ground conditions, mechanical failure, corrosion, interference, or environmental factors which pose a risk to the civil assets which can have implicit consequences to those assets they support e.g. corrosion of pipe support leading to loss of pipeline integrity and subsequent failure. The legislative framework for this investment case is summarised in Figure 1 below.

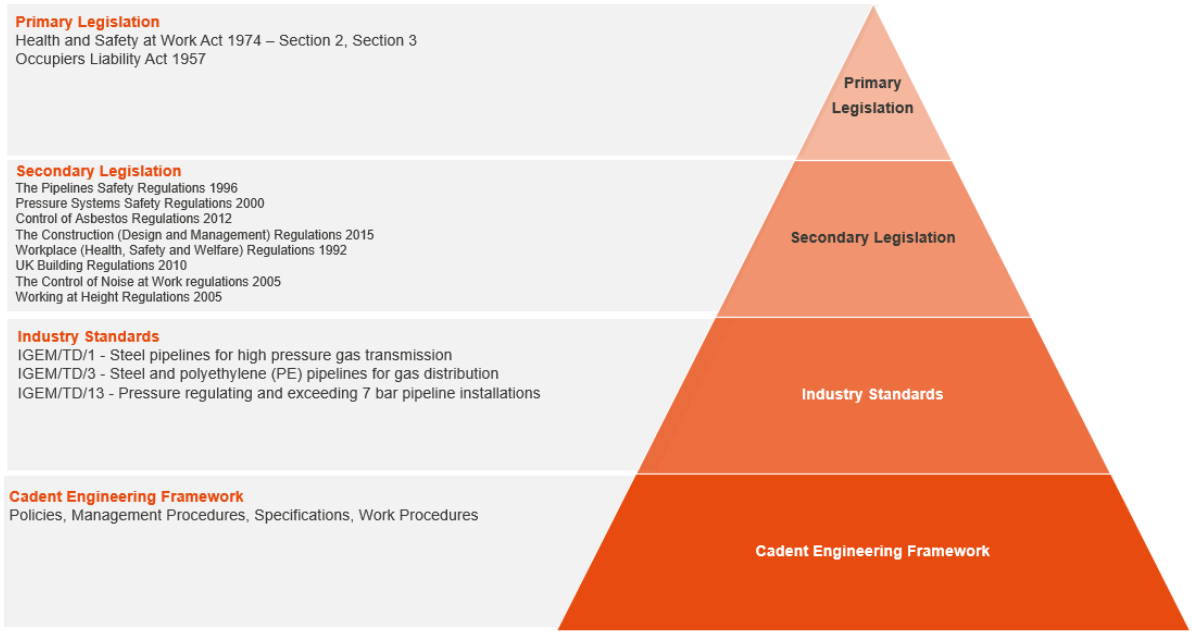

Figure 1: Summary of relevant legislation

On 31st July 2019 we received an improvement notice from the HSE [sensitive data redacted] involving traffic collision with a district governor in the [sensitive data redacted], had been subject to historical near misses for which bollards had been installed. Following the incident, it was concluded that bollards were not sufficient to protect members of the pubic, employees or the asset, and that improvements should be made to our traffic collision protection measures. We have since installed crash barriers at this site, designed to spread any impact force to protect both vehicle occupiers and assets on the other side. Further, and in keeping the HSE notice recommendations, we have initiated proactive surveys of our wider portfolio of district governors to determine their traffic collision risk and subsequent protection requirements. In September 2024, more than [sensitive data redacted] of these surveys had been completed, with [sensitive data redacted] sites [sensitive data redacted] as having an unacceptable risk and subsequently requiring protection.

In RIIO-3 we will continue our programme of proactive inspection at the remaining sites to determine their traffic collision protection needs. Any subsequently identified TCP intervention requirements will draw from the funding proposed in this investment case.

We are expecting there to be a continuing need for new traffic collision protection installations, as well as the maintenance of existing installations and expect the work mix in RIIO-3 to be comparable to RIIO-2.

It is critical that we manage and maintain these assets through effective inspection, and by carrying out repair and replacement where necessary. In RIIO-3 we will continue our routine inspection and maintenance examination programmes and will need to intervene where risk control is identified to maintain an operationally safe working environment and in accordance with regulatory requirements.

5.2 What happens if we do nothing

[Commercially sensitive information – section redacted]

5.3 Key Outcomes and Understanding Success

5.3.1 How will we understand if the spend has been successful?

[Commercially sensitive information – section redacted]

5.3.2 What is the outcome we want to achieve?

[Commercially sensitive information – section redacted]

5.4 Narrative real-life example of problem

[Commercially sensitive information – section redacted]

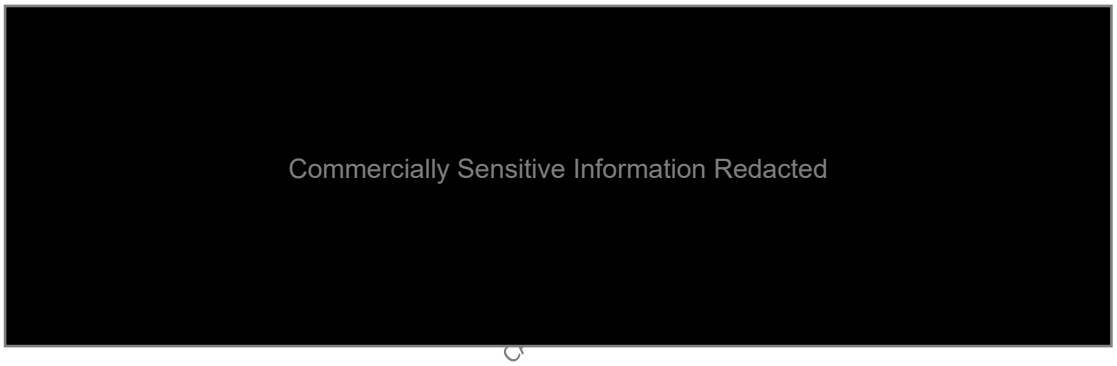

Figure 2: Traffic Collision Installation (Blackrod)

5.5 Project Boundaries

[Commercially sensitive information – section redacted]

6 Probability of Failure

6.1 Failure Modes

[Commercially sensitive information – section redacted]

6.2 Failure Rates

[Commercially sensitive information – section redacted]

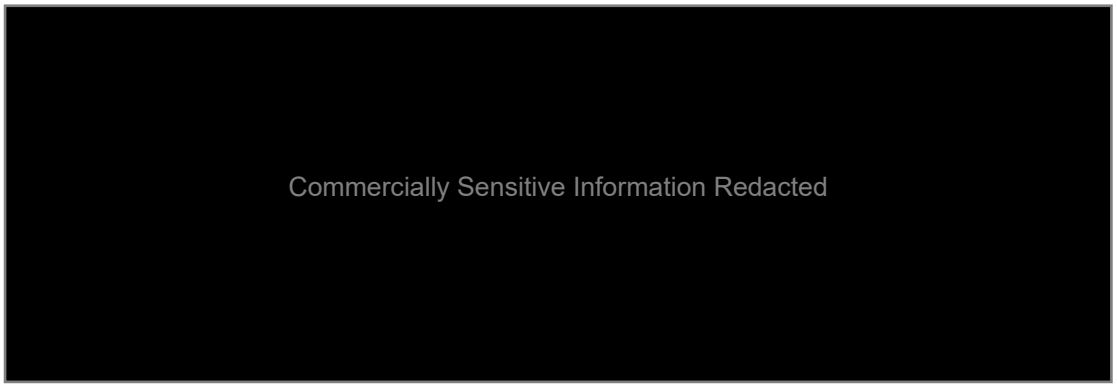

Figure 3: RIIO-2 annual capital expenditure spend for Civil Intervention asset class (with overlaps with over asset-investments removed)[1]

6.3 Probability of Failure Data Assurance

[Commercially sensitive information – section redacted]

7 Consequence of Failure

[Commercially sensitive information – section redacted]

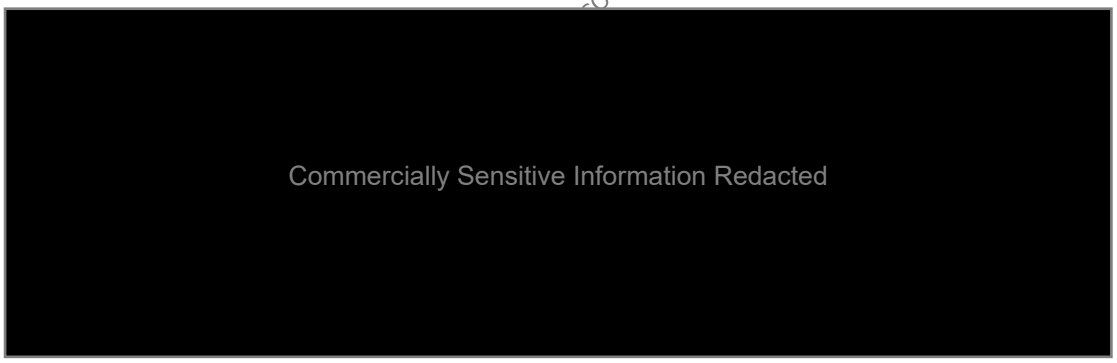

Table 6: Civil Intervention Failure modes and consequences

7.1 Future Energy Scenarios

[Commercially sensitive information – section redacted]

8 Options Considered

[1] Such as our Governor improvement programme undertaken in year 1 to 3 of RIIO-GD2.

8.1 How we have structured this section

[Commercially sensitive information – section redacted]

8.2 Modes of Intervention

[section redacted]

Table 7: Examples of Intervention options considered

8.3 Timing Choices

[Commercially sensitive information – section redacted]

8.4 Programme Options

[Commercially sensitive information – section redacted]

9 Business Case Outline and Discussion

[Commercially sensitive information – section redacted]

9.1 Key Business Case Drivers Description

[Commercially sensitive information – section redacted]

9.2 Business Case Summary

[Commercially sensitive information – section redacted]

10 Preferred Option Scope and Project Plan

10.1 Preferred Option

[Commercially sensitive information – section redacted]

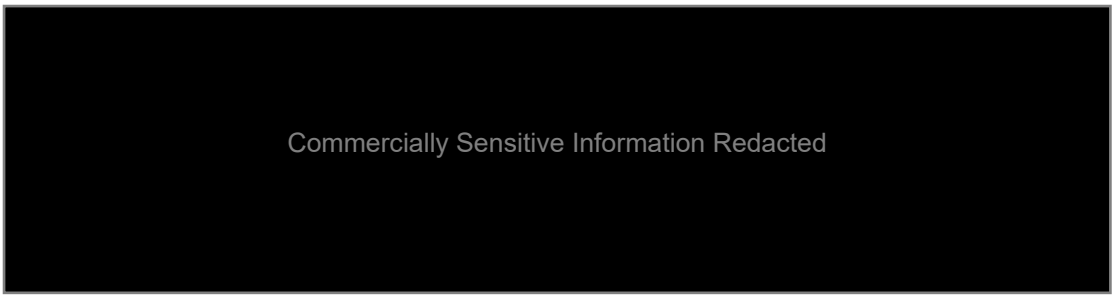

Table 8: RIIO-3 volume by Network (civil assets)

Asset Health Spend Profile

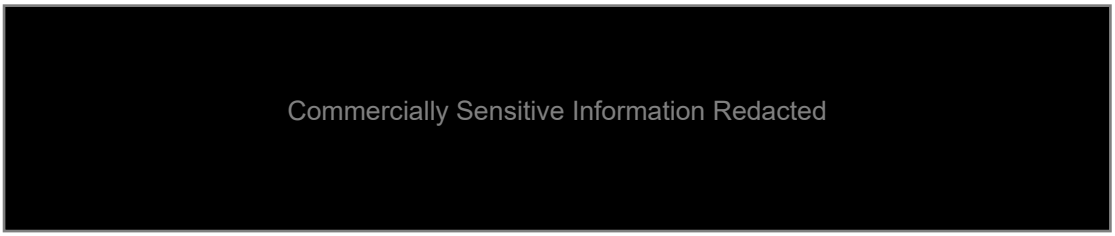

Table 9: RIIO-3 expenditure by Network (civil assets) – 23/24 price base pre-efficiency3

10.2 Project Plan

[Commercially sensitive information – section redacted]

10.3 Key Business Risks and Opportunities

[Commercially sensitive information – section redacted]

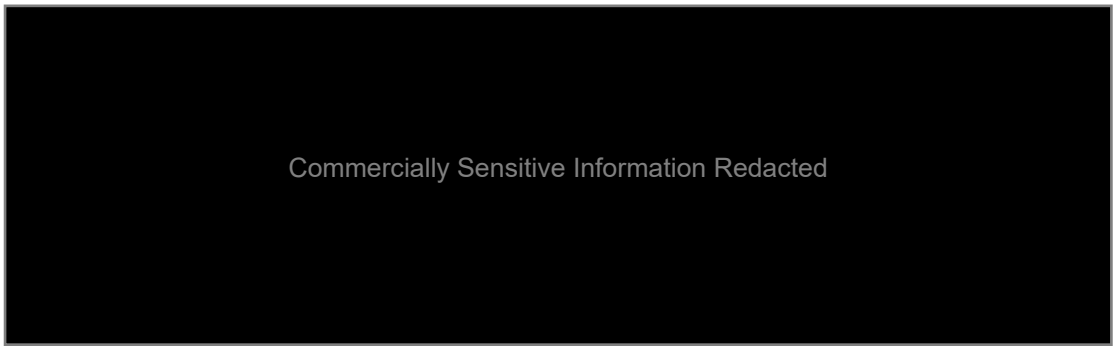

Table 10: Business Risks for Civil interventions.

[Commercially sensitive information – section redacted]

10.4 Outputs included in RIIO-2 Plans

[Commercially sensitive information – section redacted]

11 Regulatory Treatment

[Commercially sensitive information – section redacted]

12 Glossary

No.	Document Name
CBA	Cost Benefit Analysis
FES	Future Energy Scenarios
NAMS	Network Asset Management Strategy
AGI	Above Ground Installations

Table 11: Glossary Table