

[sensitive  
information] **Fatigue  
Re-opener Submission**

**September 2024**

Classification: Confidential

In this application we have redacted all costs information on the basis that this is commercially sensitive. Other areas have been redacted on the basis that information is considered sensitive.



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# Ofgem Requirement

The table below outlines where each chapter of this application relates to Special Condition 3.17 of our Gas Transporter licence as well as Ofgem’s requirements as set out in Special Condition 9.4.

Ofgem requirement	Application chapter
<b>GT licence – Special Condition 3.17 [sensitive information] Re-opener (REPt)</b>	
Circumstances for applying to Ofgem for re-opener (Para 3.17.4)	Chapter 1 – Executive Summary Chapter 3.1 – Problem Statement and Needs Case
Application requirements (para 3.17.6)	Chapter 3.1 – Problem Statement and Needs Case Chapter 3.2 – Options Considered Chapter 3.3 – Preferred Option Rationale Chapter 3.5 – Cost Information
<b>RIO-2 Re-opener Guidance and Application Requirements Document: Version 3 (Feb 2023)</b>	
Introduction (Para 3.1 - 3.5)	Chapter 1.0 – Executive Summary
Gas Distribution Sector (Para 3.6 - 3.7)	Chapter 1.0 – Executive Summary Chapter 3.1 – Problem Statement and Needs Case Chapter 3.5 – Cost Information
Needs Case and Preferred Option (Para 3.8 – 3.12)	Chapter 3.1 – Problem Statement and Needs Case Chapter 3.3 – Preferred Option Rationale
Consideration of options and methodology for selection of the preferred option (Para 3.13)	Chapter 3.2 – Options Considered
Preferred Option (Para 3.14)	Chapter 3.3 – Preferred Option Rationale
Stakeholder engagement and whole system opportunities (Para 3.16)	Chapter 3.4 – Stakeholder Engagement
Cost Information (Para 3.19 – 3.20)	Chapter 3.5 – Cost Information

## Point of Contact

The table below provides a point of contact for this re-opener application should you wish to discuss any elements of it or have further questions. To ensure any correspondence is picked up in a timely manner, should the point of contact be out of office, please also copy in our mailbox referenced below.

Name	Position	Email	Telephone
[Personal Detail Info]	[Personal Detail Info]	[Personal Detail Info]	[Personal Detail Info]

# Chapter 1.0

## Executive Summary

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This paper is Cadent's application to the Authority requesting an adjustment to our RIIO-GD2 allowances under the [sensitive information] re-opener mechanism. This modification is necessary to support Cadent's compliance [sensitive information] on the management of fatigue.

Cadent Gas Limited ("**Cadent**") are making a re-opener submission under Special Condition 3.17 [sensitive information] Re-opener, Part C, Para 3.17.6 for the opportunity to recover costs associated with fatigue management to ensure the safety of our network, our colleagues and our customers

[sensitive information] Cadent having [sensitive information] identified the risk of fatigue induced errors. This focussed on the hours worked by colleagues in our operational teams and whether the working patterns, which are standard in the Gas Distribution industry, were liable to lead to an increased risk of error due to fatigue. [sensitive information]

The working patterns in place at the time had been the basis of the industry's (not just Cadent's) operating model, aiming to drive the most cost-effective solution for consumers. [sensitive information] good practice in other industries, as none are available specifically in Gas Distribution (such as Rail, Aviation and the NHS), [sensitive information] concluded that [sensitive information] improvement needed to be made. [sensitive information] to meet statutory requirements in future, all GDNs would need make significant improvements in the management of fatigue, and in particular, the hours people are expected to work.

[sensitive information]

Cadent has always sought to reduce the risk to our employees' Health and Safety and ensure the integrity of our network; [sensitive information], Cadent has led the industry on the management of this risk by reducing and managing the fatigue of our operational workforce by implementing additional workforce management systems ([system]) and processes (Fatigue Risk Assessments), as well as employing Human Factors (Fatigue) Specialists, a Fatigue Project Manager and Fatigue Assessors to develop new working practices and making changes to terms and conditions.

However, to make the step change required, to reduce the risk so far as is reasonably practicable, we need to fundamentally change the operating model which has been in place for decades, thereby resulting in this submission.

There are 3 key principles which Cadent need to implement, [sensitive information]:

1. 12-hour maximum shift length
2. 60 hours maximum in a 7-day rolling period
3. A minimum of 11 consecutive hours rest between shifts

It is worth noting that the [sensitive information] position regarding 11 consecutive hours of rest between shifts was challenged and subsequently amended. Cadent are continuing to use this principle in the shift design process and related resource plan, this is outlined in more detail below.

All of these principles being caveated that in exceptional circumstances, these may be deviated from in a controlled manner in order to protect gas supplies, life and property.

[sensitive information]. For this reopener, we are prioritising implications to the Emergency and Repair Operations. We have also factored in second order implications to teams, such as HR and Fatigue Assessors. Following this reopener, and ahead of RIIO-GD3, Cadent will assess potential direct impacts [sensitive information] to other teams such as the Energy Control Centre (ECC), Dispatch, Connections.

The intent of the reopener is to request additional funding for i) all eligible historic costs from 1 April 2021, and ii) all eligible future costs for the remainder of this price control period.

We have assessed several options ranging from full compliance to continuing with no further changes. Through this assessment and option analysis, it has been identified that the best route of action is to make the changes required to comply [sensitive information].

In order for Cadent to comply, change is required to our work pattern design process to ensure that the risk of resources working more than 12 hours in a day, or 60 hours in a rolling 7-day period, is prevented, whilst still ensuring a minimum of 11 consecutive hours rest between shifts. Rather than modelling an 8-hour shift, followed by an 8-hour standby period, we have taken a risk-based approach to understand the likelihood of call out whilst on standby, and ensured that shifted time plus potential call out time is below 12 hours / 60 hours. There are also changes required to the fatigue assessment process, as well as to employee contracts and detailed terms and conditions. Our proposed option ensures shift pattern fatigue compliance is met and meets our exemplar aspirations using contract labour to support night shifts and ensuring there is sufficient resources to respond to P1 and P2 emergencies, complete repair activities and respond to faults in our critical above ground assets.

This modelling has led to the funding request summarised in Table 1.

£m	2021/22	2022/23	2023/24	2024/25	2025/26	Total	Materiality Threshold
<b>EN</b>	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]
<b>NL</b>	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]
<b>NW</b>	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]
<b>WM</b>	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]
<b>Total</b>	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]	

*Table 1 – Assessment of request versus materiality threshold*

The changes in work patterns does create a potential risk of attrition and risk of employee relations issues. There is also a risk of securing and retaining workforce in a competitive labour market. These will be monitored and mitigated as effectively as possible.

## Chapter 2.0

# Alignment with our RIIO-GD2 business plan and future price control

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### *Chapter 2.1 - Alignment with our RIIO-GD2 business plan*

Fatigue can lead to errors and accidents, ill-health and injury, and reduced productivity, potentially resulting in a significant process safety or personal safety incident. Cadent are obliged to manage risk, so far as is reasonably practicable, and therefore the threat that fatigue poses to the safety of our colleagues, customers and network, through the Health and Safety at Work Act 1974, and the management of Health and Safety at Work Regulations 1999. [sensitive information].

[sensitive information] the HSE have undertaken annual interventions as part of the Annual Intervention Plans. [sensitive information]. The HSE have stated in meetings with Cadent that they have increased the expectations year-on-year because they believed this was the most effective way of driving improvements in the industry.

- [sensitive information]
- [sensitive information]
- [sensitive information]
- [sensitive information]
- [sensitive information]

There are 3 key requirements which Cadent are still working towards [sensitive information]:

1. 12-hour maximum working length [sensitive information]
2. 60 hours maximum in 7 day rolling period [sensitive information]
3. 11 hours consecutive rest between shifts [sensitive information], later rescinded by the HSE in Oct 2023)

[sensitive information], because the legal basis for doing so (risk assessment) does not stipulate a specific amount of time. It is incumbent on the employer to establish what is a reasonable amount of time to give people between shifts is and demonstrate this through risk assessment. It is Cadent's view that we should seek to achieve as close to 11 hours consecutive rest as is reasonably practicable and as such have included this requirement in our submission.

[sensitive information]

## ***Chapter 2.2 - Alignment with our future price control***

The additional resource requirements to manage fatigue of Emergency and Repair have been built into our RIIO-GD3 business plan. We are assessing potential direct impacts of HSE enforcement to other teams such as Energy Operations, the Energy Control Centre (ECC) and Dispatch. This has not been reflected in this submission or the future business plan.

More efficient work patterns will reduce the number of handovers, as well as the number of callouts just to make safe, prevent fatigue within the workforce, less compensatory rest (and therefore more consistent and forecastable work patterns), and better planning and scheduling.

We are exploring innovative techniques that manage fatigue including the use of advanced emission detection and other approaches to proactively reduce incoming work as opposed to headcount increases. The HSE are looking to Cadent and the rest of the gas industry to aspire to a step change in fatigue management with the adoption of further principles such as 11 hours consecutive rest including of standby and maximum 12 hour working. To do this would require a significant change to working patterns driving significant additional cost. We are working with the HSE to understand future requirements, but these are not known in full and agreed at this point in time.

# Chapter 3.0

## Formal Application

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### *Chapter 3.1– Problem Statement and Needs Case*

[sensitive information], Cadent has already implemented additional workforce management systems ([system]), and processes (Fatigue Risk Assessments), as well as employed additional Human Factors Specialists, Fatigue Project Managers, and Fatigue Assessors. However, to comply with the remaining requirements such as a 12-hour maximum shift length and 11-hour consecutive rest between shifts, a material change is needed to the way that we create work patterns and staff work, these changes will have significant associated costs. Within our analysis in this re-opener, we have factored in second order implications to teams such as HR and Fatigue Assessors.

The scope of the [sensitive information] approach changes relates to Safety Critical Workers. For this reopener, we are prioritising implications to the Emergency and Repair teams. The roles of these teams are in line with “Emergency and Repair costs”:

- Emergency - First Call Operatives respond as a priority to emergency and unsafe situations to make safe where practical internally and determine the next steps in the lifecycle of those jobs. They also complete purge and relights alongside internal works to ensure Gas Safety Management Regulations 1996 (GSMR) compliant. They also undertake survey work for various compliance, customer and other work stacks. Beyond their first call responsibilities they also do further safety rechecks on deferred gas escapes
- Repair – They make site safe as a priority and their role is to stop gas. They do this gas repair work as a priority alongside ensuring the network is safe and compliant which includes customer work (relays, pressure problems, etc) and compliance work which could be to update asset records (DR4), isolate gas supplies (under both Pipeline Safety Regulations 1996 (PSR) and Gas Safety ‘Installation and Use’ Regulations 1998 (GSR) as well as Water Ingress investigations. They also support working on mains replacement activities and Energy Operations groundwork.

We have also considered the impact on our Energy Operations workforce. They are responsible for maintaining pipelines, offtakes, above ground installations and governor installations, and respond to faults and alarms to ensure our networks are operating safely and securely.

Fatigue can lead to serious errors and accidents, by adversely affecting motivation, vigilance/monitoring, reaction times, sustained attention, visual tracking, logical reasoning and calculation, encoding and decoding of information, memory, communication, multi-tasking and complex decision-making.

Cumulative fatigue is a significant risk factor in front-line safety critical work, which, if performed poorly, can result in safety problems. It is Cadent’s priority to safeguard life and property, and to continue to



ensure that teams onsite have made our customers safe, and provisions have been put in place for customers in vulnerable situations.

## Chapter 3.2 – Options Considered

Cadent have considered the following options:

### Option 1 – Minimal work

In this option we continue as we have done in RIIO-GD1 except for the process and systems changes that we have already implemented in the early years of RIIO-GD2 to comply [sensitive information]. We would continue to measure working time using the [system] and conduct regular Fatigue Risk Assessments at 11 and 14 hours to limit exceedances of 16 hour working. This approach incurs the lowest costs but leaves us at risk of non-compliance [sensitive information] (e.g. 12-hour maximum shift length, 60 hours maximum in 7 day rolling period, 11 hours consecutive rest between shifts (including call-out and overtime)).

### Option 2 – RIIO-GD2 / RIIO-GD3 [sensitive information] (direct labour approach)

For this option we will ensure that we are compliant [sensitive information]. To do this, we would continue to improve processes and systems, but also make fundamental changes to the way in which we create shift patterns. Under this option, all additional required resource would be directly recruited to Cadent. We would begin recruitment and training in RIIO-GD2, but time taken to recruit, train and reach competence would mean full compliance would not be achieved until RIIO-GD3.

### Option 3 – RIIO-GD2 [sensitive information] (Contracted labour) – Preferred Option

For this option we will ensure that we are compliant [sensitive information]. To achieve this we would continue to improve processes and systems, but also make fundamental changes to the way in which we create shift patterns. We have enhanced our terms and conditions for our existing field force to minimise the number of additional resources required to be compliant with fatigue management principles. We would seek to source the required labour immediately through contractors providing trained and competent resource.

The terms and conditions changes apply to our Emergency, Repair and Energy Operations workforce. We are continuing to assess the need for additional resource in Energy Operations but have not included any incremental resource at this time.

To determine the most suitable solution to deliver the resolution required, each potential option was evaluated against the overall Cadent business objectives.

The criteria we considered these options against are listed below. Table summarises the outcomes of our assessment.

1. [sensitive information] compliance
2. Safety risk
3. Deliverability
4. Impact of the cost of resourcing on consumers

	Option 1	Option 2	Option 3
[sensitive information] compliance	Non-compliant with [sensitive information] expectations.	Compliant with [sensitive information] expectations within RIIO-3.	Compliant with [sensitive information] expectations within RIIO-2.
Safety risk	Medium safety risk.	Low safety risk.	Low safety risk.
Deliverability	Most deliverable	Significantly challenging deliverability given i) recruitment constraints due to current tight labour market and scale of training required, ii) challenges in terms of retaining existing FTE despite changes to working patterns.	Challenging deliverability given i) availability of contract resource in a current tight labour market (although lower number of FTEs required) ii) challenges in terms of retaining existing FTE despite changes to working patterns.
Cost impact to consumers	Lowest cost to consumers – We would continue with our current FTE.	High cost to consumers – This would require significant additional FTE with associated recruitment, training, salary and overhead costs.	High cost to consumers – This would require significant additional FTE with associated contractor costs.

Table 2 – Assessment of considered options

Externally, [sensitive information] there have been multiple stakeholder engagements [sensitive information] with the other GDNs to clarify interpretation [sensitive information] (e.g. through the Gas Transporter Occupational Safety Group (GTOSG)).

### Chapter 3.3 – Preferred Option

3 details the changes that Cadent will need to make in order to deliver Option 3:

#	Area	Change required
1	Workforce planning / work pattern design process and subsequent scheduling for Emergency and Repair.	<p>There have been several changes to the way in which we model work pattern design for resources on standby rotas<sup>1</sup>:</p> <ul style="list-style-type: none"> <li>We have re-baselined our patterns to ensure that they meet core demand above a threshold of likelihood to occur.</li> <li>We have designed patterns around resources not being asked to work more than 12 hours in a day, 60 hours in a rolling 7 day period, or 48 hours average per week over a 17 week rolling period. This is assuming that the maximum likely callout per 8 hour standby period is 2 hours for Emergency and 4 hours for Repair.</li> <li>We have ensured 11 hour rests between shifts in all instances.</li> <li>We have ensured that workers are shifted for a maximum of 7 consecutive days.</li> </ul> <p>In order to ensure that the resultant work patterns are workable we have also applied the following design principles:</p> <ul style="list-style-type: none"> <li>Evenly distribute shifts/ shift types.</li> <li>Minimise weekend working (where possible).</li> <li>No isolated shifts.</li> </ul>

<sup>1</sup> We have not modelled changes for resources within Emergency and Repair teams who do not work standby shifts. This represents a small portion of our workforce, [sensitive information]

		<ul style="list-style-type: none"> <li>No isolated rest days (where possible).</li> <li>Standby not less than 1:4.</li> <li>All standby modelled finishes at 07:59am the next morning regardless of start time.</li> </ul>
2	Fatigue assessment process	The Fatigue assessment process needs to be updated to ensure assessments at the correct time. Currently this is completed at 11 and 14 hours. In the future it will need to be completed at 8 and 10 hours worked per day, and at 48 and 55 hours worked per rolling 7-day period.
3	Contracts / Terms and Conditions	To be updated to reflect updated working hours (e.g. maximum operational shift length of 12 hours) and subsequent pay protection changes. These changes will likely require Trade Union and Staff consultations.
4	Second order, indirect impacts to other teams	For example, an increase in FTE requirements resulting in the need for additional fatigue assessors and Compliance officers. Further details in <b>Error! Reference source not found.7</b> .

## Chapter 3.4 – Stakeholder Engagement

[sensitive information], we are continually reviewing fatigue management [sensitive information] in terms of best practice and practical solutions to improve our compliance. Following the extension to the reopener window in 2024 we have held several cross GDN discussions to ensure that we are managing fatigue in a consistent and clear way where possible. [sensitive information] Cadent to be industry leading in our approach to fatigue, something that we will look to build on in the current and future regulatory periods.

Fatigue is one of the main topics in our engagement with trade unions and our direct labour work force, we work with the unions [sensitive information] to ensure that our approach to managing fatigue is both practicable and in the interest of our work force.

## Chapter 3.5 Cost Information

Our preferred option ensures compliance with fatigue management principles by addressing the following:

- Changing terms and conditions of the existing workforce to allow us to maximise shift patterns
- Bringing in contract labour to support the night shifts to ensure sufficient coverage to respond to P1 and P2 Emergencies and carry out repair work
- Managing fatigue closely through monitoring working time, risk assessments, compliance audits, and continued engagement [sensitive information]

### Enhanced Terms & Conditions

Through continued effort, negotiation and refinements to our existing work patterns we have been able to minimise the number of additional contractors required to ensure compliant shift patterns. The changes in terms and conditions have [cost & sensitive information] but by extending the onerous hours window and reducing working hours from 42 to 40, we are able to better meet demand.

When making changes to Terms and Conditions we have done this across our Emergency, Repair and Energy Operations workforce.

£m	2021/22	2022/23	2023/24	2024/25	2025/26	Total
EN	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]
NL	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]
NW	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]
WM	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]
<b>Total</b>	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]

*Table 3 – Enhanced T's & C's*

## Contract Labour

We have assessed the level of resource required to ensure compliance and have identified a shortfall particularly in rural areas where additional shifts are required. We have determined that the most efficient way of doing this is through contract labour undertaking night shifts.

	FCO resources	Repair resources
EN	[sensitive data]	[sensitive data]
NL	[sensitive data]	[sensitive data]
NW	[sensitive data]	[sensitive data]
WM	[sensitive data]	[sensitive data]
<b>Total</b>	[sensitive data]	[sensitive data]

*Table 4 – Contactor resource requirements*

The costs for the contracted labour have been derived from our local distribution partner contract framework. We have modelled these costs based on our contracted labour rates with adjustments for regional factors. These resources are fully competent and should require minimal training.

The contractor costs are fully inclusive of:

- Supervision
- Plant tools and equipment
- Support and traffic management

£m	2021/22	2022/23	2023/24	2024/25	2025/26	Total
EN	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]
NL	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]
NW	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]
WM	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]
<b>Total</b>	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]

*Table 5 – Contracted labour total cost*

[system] implementation and running costs

We have implemented the [system], a workforce management system, to track how many hours people have worked and better monitor working time. The implementation and running costs have been pro-rated by network and are detailed in Table 12.

£m	2021/22	2022/23	2023/24	2024/25	2025/26	Total
EN	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]
NL	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]
NW	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]
WM	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]
<b>Total</b>	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]

*Table 6 – Contracted labour total cost*

## Support Costs

Our support costs represent the cost of Cadent resources that we require to monitor and manage fatigue appropriately. Further breakdown of these costs is available [sensitive information]. These are:

- Fatigue Risk Assessors - We require Fatigue Assessors in each network to support in our transition to compliance [sensitive information]. These roles are to complete and review the outcomes of Fatigue Assessments within each of the networks.
- SHE's compliance/assurance – additional compliance officers are required to undertake assurance activities on any resource working in our networks.
- Human Factors Specialist – We have hired a Human Factors Specialist to support in our transition to compliance [sensitive information]. This role is to provide expert advice and input in the design of processes and work patterns which demonstrate continuous improvement regarding fatigue.
- Fatigue Project Manager - We have hired a Fatigue Project Manager to support in our transition to compliance [sensitive information]. This role is to manage engagement with the HSE and implementation of the required changes (e.g. adoption of [sensitive information], changes to the Fatigue Assessment Process).
- Process implementation - we expect to spend a period of time amending contracts, terms and conditions, and business processes (e.g. Fatigue Assessment process). This requires a small project team to run consultations etc in conjunction with the Fatigue Project Manager.

£m	2021/22	2022/23	2023/24	2024/25	2025/26	Total
EN	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]
NL	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]
NW	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]
WM	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]
<b>Total</b>	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]

*Table 7 – Support costs*

## Overall cost

The table below summarises the total costs we have incurred to date and expect to incur across the remainder of the period:

£m	EE	NL	NW	WM	Total
T&Cs for existing Field Force	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]
Additional Contractors	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]
[system]	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]
Supporting costs	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]
<b>Total</b>	[cost data]	[cost data]	[cost data]	[cost data]	[cost data]

*Table 8 – Summary of overall costs*

## Chapter 3.6 – Cost Uncertainty and efficiency

There are 2 key variables in driving cost efficiency and uncertainty:

#	Cost driver	Scale	Uncertainty	Controllability / Efficiencies
1	Contractor resource cost	High	Medium – Modelling has been completed to understand the shift patterns required to comply [sensitive information]. We have completed modelling for every patch within every network for both Emergency and Repair which reduces uncertainty.	Medium – The incremental FTE required to meet [sensitive information] expectations has been minimised. We have iterated and refined our modelling identifying the need for [software] incremental resources within Emergency and Repair. This has been achieved through: <ul style="list-style-type: none"> <li>• Assessment of a days and call approach vs a night shift approach.</li> <li>• Assessment of risk of call out and subsequent refinement of our treatment of standby time as working time.</li> <li>• Engagement [sensitive information] to re-clarify our assumptions and subsequent removal of the requirement that all work patterns adhere to a maximum relative risk value of 1.5 and Fatigue Index of 30.</li> </ul>
2	Project / Process / Systems costs	Med	Low – [software] implementation and running costs as well as costs for Human Factors Specialists and the Fatigue Project Manager are low uncertainty given these are all in situ.	Low – [software] implementation and running costs as well as costs for Human Factors Specialists and the Fatigue Project Manager are low controllability given these are all in situ.

			Medium - Forecast expenses to change processes and T&Cs are medium uncertainty given that we have not done a detailed assessment of the changes required.	
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**Table 9 – Assessment against cost uncertainty and controllability / efficiencies**

### Chapter 3.7 – Technology considerations

There are minimal technology considerations within the proposed solution. The [sensitive information] has been implemented in 2023 to allow the monitoring of working hours. The main consideration to be made is to ensure appropriate adoption of this tool. This is an ongoing process, and we have a high degree of confidence that this will be complete at point of recruitment commencing.

Although not factored into the analysis underpinning this submission, we are looking at the benefits of accelerating advanced emission detection to identify emissions and remediate assets before they are identified as a publicly reported gas escapes.

### Chapter 3.8 – Risks and Dependencies

Key risks and dependencies are detailed in Table 10.

#	Type	Description	Likelihood	Severity	Mitigation
1	Risk	Risk of attrition due to change in working patterns.	M	H	We are aiming to mitigate this with our work pattern design, and enhanced T&Cs.
2	Risk	Risk of industrial action due to change in working patterns.	M	H	We are aiming to mitigate this with our work pattern design, and enhanced T&Cs.
3	Risk	Risk of lack of availability within the labour market, exacerbated by the fact that [sensitive information] at a similar period, and that HyNet will be going live during the same period, as well as other cross industry events [sensitive information]	H	H	We are looking to mitigate by utilising contractor resource rather than an extensive direct labour recruitment and training programme.

**Table 10 – Project risks and dependencies**

## Chapter 4.0

# Glossary of terms and Appendices

- **Appendix 01:** Glossary of Terms
- **Appendix 02:** [sensitive information]
- **Appendix 03:** [cost information]

## Appendix 1 – Glossary of Terms

Acronym	Description
<b>CMO</b>	Contract Management Organisation (Larger contractors)
<b>ECC</b>	Emergency Control Centre
<b>ERO</b>	Engineering Response Operative
<b>GDN</b>	Gas Distribution Network
<b>GTOSC</b>	Gas Transporter Occupational Safety Group
<b>HSE</b>	Health and Safety Executive
<b>LDP</b>	Local Delivery Partner (Smaller contractors)
<b>SHES</b>	Safety, Health, Environment & Security

Term	Definition
<b>Called Out</b>	A Callout is any occasion falling in a normal rest period (including Saturdays, Sundays and Public Holidays but excluding meal breaks) on which an employee attends at work in response to a specific call.
[system]	Workforce management software which logs hours worked, breaks etc.
<b>On Call</b>	Same as standby.
<b>Shift</b>	Time spent working per pre agreed shift pattern (not inclusive of called out time).
<b>Standby</b>	Standby is the duty whereby prior arrangement an employee is available (including Saturday, Sunday and Bank Holidays) to be contacted and called upon to attend work without delay. Standby is intended to be used to respond to emergency and urgent customer work.



## Appendix 2 – [sensitive information]