



Enabling Energy Security

[Click here to view the Main Business Plan](#)
[Click here to view the published document list](#)

Version: 1.0

Issue: Final

December 2024

Contents

1	Summary table	3
2	Executive summary	4
3	Introduction.....	5
4	IT 005 GSO Network Capability	6
5	IT 006 Enhance SCADA	8
6	IT 007 Enhance Commercial Apps (Liferay)	11
7	IT 008 Video Wall replacement	12
8	IT 009 EDSS Replacement.....	14
9	IT 010 Operational Process Improvements	16
10	IT 011 Future Telemetry Network	17
11	IT 012 Energy Trading, Reporting and Notifications Replacement.....	19
12	IT 013 Operational System Assurance.....	20
13	IT 014 ECR Enhancements	22
14	IT 015 Resiliency and Security of Supply	23
15	IT 016 Predictive Forecasting and Network Simulation	25
16	IT 017 Whole Energy System Response.....	27
17	IT 018 Operational Safety & Compliance	28
18	IT 019 Enhance Control Room Telephony	30
19	IT 020 Future Pandemic Preparedness.....	31
20	Outcomes, priorities, commitments and price control deliverables.....	33
21	Conclusion	34

Enabling Energy Security IT investments

1 Summary table

Name of project	Enabling Energy Security		
Scheme reference	TBD		
Primary investment driver	Deliver compliance with IT asset health policy		
Project initiation year	2026		
Project close out year	2031		
Total installed cost estimate (£)	£112.931m		
Historic funding interactions	None		
Project spend to date	£0		
Current project stage gate	Not started		
Reporting table ref	6.11, 11.2		
Outputs	IT deliverables as detailed in the investment particulars		
Spend apportionment	T1	T2	GT3
	£0	£0	£112.931m

2 Executive summary

This Investment Justification Paper (IJP) sets out our planned investments to sustain, refresh or enhance our Gas Control Suite (GCS). This suite of systems provides the tools by which the National Control Centre (NCC) manage real-time operations of the National Transmission System (NTS). It includes infrastructure such as the video wall and telephony, distributed systems such as Supervisory Control and Data Acquisition system (SCADA), Telemetry and network management tools such as modelling and forecasting.

Investments are triggered by a mix of delivering compliance and delivering business outcomes. Compliance investments keep our systems secure and reliable in line with our IT Asset Health Policy, and respond to changes in regulation and legislation. Business outcomes focus on the need to grow business capacity to deliver the Asset Management Plan (AMP), further digitalisation of processes and enabling better insights for decision making.

This IJP should be read in conjunction with the IT and Telecoms Strategy document¹ which describes the context, approach and overall portfolio for IT and Telecoms in RIIO-GT3. All investments in this paper are within our baseline plan.

Investments in this paper primarily supports two Ofgem key outcomes: *Secure and Resilient Supplies* (15 investments, Totex of ██████████) and *High quality of service from regulated firms* (1 investment, Totex of ██████████).

The investments are listed below, aligned to the primary outcome and the trigger for action. Triggers are described in detail in the IT and Telecoms Strategy¹ section 3.3.3 and are summarised as:

- Deliver Compliance – keeping our systems healthy, secure and compliant with regulation / legislation.
- Deliver Outcomes – enabling enhanced capabilities which deliver key business outcomes.

Ref	Investment Line	Trigger	Totex £m	Primary Outcome	Cost sub-category
IT 005	GSO Network Capability	Deliver Compliance	██████	Secure and resilient	Digital platforms
IT 006	Enhance SCADA	Deliver Compliance	██████	Secure and resilient	Digital platforms
IT 007	Enhance Commercial Apps (Liferay)	Deliver Compliance	██████	Secure and resilient	Digital platforms
IT 008	Video Wall replacement	Deliver Compliance	██████	Secure and resilient	IT & Telecoms
IT 009	EDSS Replacement	Deliver Compliance	██████	Secure and resilient	Digital platforms
IT 010	Operational Process Improvements	Deliver Outcomes	██████	Secure and resilient	Digital processes
IT 011	Future Telemetry Network	Deliver Compliance	██████	Secure and resilient	IT & Telecoms
IT 012	Energy Trading, Reporting and Notifications Replacement	Deliver Compliance	██████	Secure and resilient	Digital platforms
IT 013	Operational System Assurance	Deliver Compliance	██████	Secure and resilient	Other
IT 014	ECR Enhancements	Deliver Outcomes	██████	Secure and resilient	Digital processes
IT 015	Resiliency and Security of Supply	Deliver Compliance	██████	Secure and resilient	IT & Telecoms
IT 016	Predictive Forecasting and Network Simulation	Deliver Outcomes	██████	High quality of service	Digital processes
IT 017	Whole System Energy Response	Deliver Compliance	██████	Secure and resilient	Digital platforms
IT 018	Operational Safety & Compliance	Deliver Compliance	██████	Secure and resilient	Digitising field works
IT 019	Enhance Control Room Telephony	Deliver Outcomes	██████	Secure and resilient	Digital processes
IT 020	Future Pandemic Preparedness	Deliver Compliance	██████	Secure and resilient	Digital processes
	Total		112.931		

Scope and volumes for each investment have undergone internal and external assurance. Costs have been developed 'bottom-up' using detailed resource plans and have been assured through benchmarking against industry comparators by Gartner, Inc.²

Options analysis has been carried out for each investment. This has considered various factors including cost, functionality, risk, alignment with IT architecture / strategy, business change impact, and the resulting ability to support the business and regulatory outcomes. Comparative analysis of these factors has prioritised achieving outcomes in the most cost effective way.

¹ NGT_A11_IT_and_Telecoms Strategy

² NGT_C01_Gartner Review of IT Costs and Benchmarking of comparable costs

3 Introduction

3.1 Scope of this paper

This Investment Justification Paper (IJP) covers the suite of systems supporting the Gas System Operator (GSO) in enabling the business processes for near term network strategy and control.

Process area	Focus
Short Term Strategy & Control	Deliver compliance – 12 investments to sustain the health of the GCS systems or replace them due to ageing or inadequate technology.
	Deliver outcomes – 4 investments to deliver increased capacity and enable better insights to support decision making.

Our GSO IT roadmap for RIIO-GT3 has considered the capabilities of our current systems and compared these with the needs of our business and our customers, as collected through internal and external engagement processes.

The Gas Control Suite (GCS) is a suite of systems used for operational planning, real-time monitoring and control of the National Transmission System (NTS) within the National Control Centre (NCC) and is designed to support the operation of the network. This capability incorporates requirements to meet Critical National Infrastructure (CNI) standards ensuring service and security of its operation.

We refer in this paper to IT investments enabling the digital transformation of the control room. The NCC IT systems are fundamental to the delivery of the service and progression of IT capabilities is a journey that we started in RIIO-T2 and will be completed over RIIO-GT3. It forms a crucial part of the GSO strategy for RIIO-GT3 and IT enablers are critical to this change. It covers what the GSO will need to do and how it needs to transform to accommodate the expected developments and enable the capabilities to drive the evolution of the energy industry. More detail on this can be found in the Gas System Operator Annexe document.

Delivery of investments will variously range over the whole of the 5-year period, as detailed in the cost profile and project plan for each investment.

3.2 How this document is structured

Each investment described in this document has been developed through an iterative process of engagement with users, solution scoping and options analysis, and benefits confirmation. We have followed our SVC standard (Cost, scope and volume data confidence standard – Non-AMP (IT)) in in this process, descoping any investments that fell short of this standard. For more detail on how the scope, volume and cost of investments were developed, see the IT & Telecoms Strategy, section 3.4.

Each investment has the following sections which provide context, analysis, proposed way forward and spend profile:

- **Background and scope summary** – This section summarises the context of the system, the investments proposed to address issues and the business and regulatory outcomes that will be enabled. The trigger for action is made clear and the IT deliverables described. A problem / opportunity statement is provided, detailing the problems with the current systems and the implications of not investing.
- **Optioneering** – This section contains a description of the options considered to address the problems described above. It should be noted that definition of specific products is not part of the investment scope and options for technology / supplier selection will be carried out as part of the project lifecycle. IT products evolve quickly and this enables the best solution to be selected nearer the time. Option analysis has compared various factors including cost, functionality, risk, alignment with IT architecture / strategy, business change impact, and the resulting ability to support the business and regulatory outcomes. Comparative analysis of these factors has enabled us to prioritise achievement of outcomes in the most cost-effective way.
- **Preferred option** – The preferred option is identified, with a summary of the reasoning behind its selection and benefits.
- **Cost and deliverability** – The investment spend profile tables show the Capex and Opex (if applicable) profile for each investment over the five-year RIIO-GT3 period. Note that Opex can be either early work that is not capitalisable or a net increase in run the business (RTB) cost e.g. from new software licences. Increased RTB Opex is captured here, rather than in the RTB business plan so that it is clear what is changing.

Costs have been developed from bottom-up analysis and informed by historic costs, supplier discussions, quotations and tenders and reach the standard set out in our policy: SVC Data Confidence Standard v1 Non-AMP (IT). These tables

also give a comparison benchmark range provided by Gartner, Inc. who have carried out a detailed examination of the scope and proposed cost and used global comparators to give an upper and lower range. See the IT & Telecoms Strategy, section 3.4.3 for more detail on the iterative process of alignment with benchmarks. The Gartner IT benchmarking consultant's report is provided separately.

A high level project plan is provided that shows activity timing by year.

This section references the IT & Telecoms Strategy document for details of cost drivers and for deliverability as these aspects are common to all investments.

4 IT 005 GSO Network Capability

4.1 Background and scope summary

Problem / Trigger	Strategy	Business Outcome	Primary Regulatory Outcome	Cost sub-category
Asset health – end-of-contract systems	Refresh and enhance	Operate safely, reliably, and flexibly – refresh systems	Secure and resilient supplies	Digital platforms

This investment covers three critical tools used in the National Control Room (NCC):

- **Simone Online** – is our real-time network analysis tool that enables real-time monitoring and simulation, decision-making and risk management. This allows us to undertake real-time and near-term operational risk assessments of assets, flows, pressures, line pack and gas quality. It uses telemetered data from the Supervisory Control and Data Acquisition system (SCADA) as well as flow notifications from the source system for the Simone data store (Liferay). Simone Online currently sits within our Critical National Infrastructure (CNI) boundary and has enhanced Service Level Agreements (SLA).
- **Simone Offline** – is a separate version of Simone, used to support long-term planning and investment decisions as well as some short-term planning such as assessing the schedule of maintenance activities on the network.
- **CNI Gateway** – is a perimeter system that provides security for the control systems, separating them from our non-CNI business network. It handles the majority of end-user access and data transfers, including to and from the telemetry network, Independent Gas Distribution Networks (IDNs), Shippers, Xoserve and third-party service providers. Its function is to inspect traffic for malicious content, provide defence in depth against cyber-attack, and routing of data traffic for the CNI applications.

All of these components will reach end-of-contract in RIIO-GT3 and need investment to maintain security and compliance.

For Simone, we will:

- Consolidate the two versions of Simone into a single tool (with two physical instances) in order to streamline the estate, support new capability requirements and improve user interaction. We will also assess whether Simone is the right tool to deliver the enhanced capabilities required, such as the ability to simulate more complex models and scenarios, or whether these should be enabled by another tool. Following a review and selection of available technologies in the early part of RIIO-GT3 we will run a project to design and deploy the most appropriate solution in line with business requirements. Note that we also share Simone models with NESO to support whole energy system management and will continue to ensure that this element of interoperability continues.
- Investigate the viability of cloud hosting for Simone Offline instance to reduce infrastructure environment costs.
- Automate time-consuming inputs to network analysis for scenario modelling, releasing capacity for more modelling required for higher numbers of planned outages. This builds on understanding from previous prototype work which explored automation but was lacking in necessary alerts for mismatches between the model and reality.
- Improve the user interface for Winter Scenario Modelling.
- Use Simone (and any successor) with advanced analytics tools such as Artificial Intelligence (AI) or machine learning (ML) to provide automated decision support using network models. This will build on the RIIO-T2 prototype of a solver for a dynamic network model running against Simone, increasing the resolution of the forecasts from daily to hourly. We will continue to improve predictive analysis of the network under different operational conditions, to evaluate operational strategies and enhance understanding of network vulnerabilities. This will increasingly employ the use of Data Science and Artificial Intelligence (AI) models built in our Data and Insights platform on top of the network models.

For the CNI Gateway, we will:

- Maintain the asset health of these critical components of the CNI landscape which are essential to providing a secure and safe gas control systems operation environment and to ensure compliance with cyber security regulations and CNI guidance. In addition, we will invest in enhancing the CNI Gateway by adding Message Queue (MQ) technology to the gateway to enforce sequencing, replacing our legacy batch file solution.
- Revisit the CNI boundary Service Level Agreements (SLA) with the aim to make more operational data available to business systems. This will enable enhanced decision-making through a better simulation capability, pairing network modelling with a digital twin for experimentation in a virtual environment, and directly link the data with SCADA for live scenario modelling.

This investment strengthens compliance with the following Data Best Practice principles:

- 9. Protect Data Assets and systems in accordance with Security, Privacy and Resilience (SPaR) best practice.
- 10. Store, archive and provide access to Data Assets in ways that ensure sustained benefits.

Problem / opportunity statement

Simone (online and offline)

The Simone hydraulic model consists of two parts: a network model and scenarios. The network defines the static properties of the network components whilst a scenario describes the hydraulic settings for a specific simulation. Scenarios are time consuming, and it can take several hours to set up and resolve a single configuration. A project can involve hundreds of scenarios and take a month or more to set up and analyse. This impacts our ability to manage the increasing demand for outages to support the RIIO-GT3 asset plan.

Users also find that the uploading and browsing of results is slow and find the visualisation of analysis results does not have the level of fidelity and granularity required and is not suitable for situational awareness as envisioned for the digital transformation of the control room. Simone is a reasonable overview tool for network modelling but not suitable for combining with a digital twin that goes down to compressor or Above Ground Installation (AGI) level. As an example, Schneider's Digital Control Room offers a much richer user experience for graphical representation of an asset and the ability to control those assets.

CNI Gateway

The CNI environment has two parts: the Telemetry Control Network (TCN) which is the main SCADA that controls the NTS, and the Retained Services Network (RSN) which is a read only performance firewall for the Non-Telemetry Apps area (Simone Online and Commercial Apps). There is data on the RSN network which would be useful for better insights that is subject to the same level of access restriction as SCADA and is therefore currently not available to the wider business.

4.2 Optioneering

The options for this investment were selected to contrast the outcome of not investing with alternative levels of target outputs. These alternatives are to continue to sustain the current systems (A) or to carry out a market review and then either continue with the current system or change to a new system.

The table below sets out the options considered for this capability.

Ref.	Option Description	Pros	Cons
DNI	Do not invest	<ul style="list-style-type: none"> • N/A 	<ul style="list-style-type: none"> • Failure to comply with license and safety case: software and infrastructure components will exceed end of life. Vendors will withdraw support with risk that system issues may increase and could become a serious risk to our operational processes. • Increases cyber security risk for these CNI systems. • Likely increase in ongoing opex costs for support. • Inability to access data needed for network modelling and analysis, which is tightly managed within our CNI environment. Inability to combine this with other non-CNI sources.
A	Sustain / maintain the core GCS network modelling systems.	<ul style="list-style-type: none"> • No degradation in capability. 	<ul style="list-style-type: none"> • Will not meet future business requirements as the amount of asset replacement increases.

		<ul style="list-style-type: none"> Reduced cyber risk compared with DNI option as standard upgrades are incorporated. 	<ul style="list-style-type: none"> Sub-optimal service, not taking opportunity to refresh or replace with more efficient service. Increased cost of maintenance in the long-term as systems are enhanced during RIIO-GT3. May increase risk of vendor lock in and a “lopsided dependency” risk for our CNI systems.
B	As Option A except feasibility to enhance / replace the core GCS network modelling systems Recommended	<ul style="list-style-type: none"> Increased system performance to support a rise in planned outages required in the future. Increased system resiliency. System and platform optimisation. Increase in productivity. Enhanced data quality and forecast accuracy. Enhanced risk mitigation strategies. Manage end of life risk. 	<ul style="list-style-type: none"> Enhanced and refined systems are likely to require increased spend for support. Increased cost for training, etc. Higher investment cost Increased risk to business continuity while new systems are embedded into the operating model.

4.3 Preferred option

We recommend Option B. This option gives opportunity to review our IT strategy and either replace or maintain platforms dependent on the IT architectural roadmap and allows us to better manage risk to the network through a period of reduced asset availability.

Consumer / stakeholder benefits

Improved technologies for core GSO systems will benefit our customers through:

- A more reliable service with a quicker route to identifying and remedying any issues that might arise in the NTS and less disruption.
- Our ability to manage the increasing demand for outages to support the RIIO-GT3 asset plan.

4.4 Cost and deliverability

The cost drivers for this investment are in common with other IT investments and are described in the IT & Telecoms Strategy document, section 3.4.3. Costs are for the full scope of deliverables as described above. Deliverability of this investment is in common with other IT investments and are described in the IT & Telecoms Strategy document, section 3.4.5.

The spend profile and delivery plan are shown below.

IT 005 GSO Network Capability							Gartner Benchmark Range		Gartner Rating
Investment (£m)	FY26/27	FY27/28	FY28/29	FY29/30	FY30/31	Totals	Low	High	
CAPEX	■	■	■	■	■	■	■	■	

IT 005 GSO Network Capability	FY 26/27	FY 27/28	FY 28/29	FY 29/30	FY30/31
Asset health Simone Online Offline	■	■	■	■	■
CNI Message Queues				■	■
Simone Replacement	■	■	■	■	
Simone Cloud Hosting		■			
CNI Gateway Asset health	■	■	■	■	■
Network Capability AI modelling and MLOps	■	■	■	■	■

5 IT 006 Enhance SCADA

5.1 Background and scope summary

Problem / Trigger	Strategy	Business Outcome	Primary Regulatory Outcome	Cost sub-category
Asset health – ageing asset. New requirements.	Sustain and enhance while planning follow-on solution.	Operate safely, reliably, and flexibly	Secure and resilient supplies	Digital platforms

Real-time monitoring, operating, and running the network are capabilities provided by Supervisory Control and Data Acquisition

(SCADA). The SCADA system comprises central software and an eco-system of networks, outstations and sensors. Sensor data coming from assets enables alarms and a real-time view of the state of the NTS, and the ability to remotely control the system using facilities such as electric valve actuators. SCADA data is used for modelling in Simone but SCADA itself has no modelling capability.

SCADA was implemented in 2016 and is reaching end-of-life, with newer technologies and products now available. In addition the business requires more granular information and control, which drives the need for a full re-evaluation of the solution.

We will conduct feasibility and analysis work to determine what technologies are available to extend and enhance the solution in line with business requirements and provide the most cost-effective solution. This analysis will consider the life of our current SCADA system against other technology roadmaps and set out an implementation roadmap for RIIO-GT4. We will sustain the current implementation until then through investment in upgrades to ensure a secure and reliable system.

In RIIO-GT3, we will respond to business requirements stemming from our asset business plan to enable predictive maintenance and predictive NTS behavioural analysis, by expanding SCADA data to feed those capabilities. Doing this is critical to releasing Operations capacity to manage outages and NTS availability for outages in support of AMP delivery in RIIO-GT3. We will also invest in enhancing our SCADA to enable us to control and to receive alarms and alerts from more points.

We will collect additional information from remote sites that is not asset SCADA, such as weather data, to provide a more holistic understanding of the NTS and greater insight for operational processes improvements. This data will use appropriate security and availability levels, being less critical than SCADA data.

We will also augment the data acquisition from remote sites by integrating IoT (Internet of Things) and SCADA capability, adding a wider perspective to NTS operational processes using simpler internet facilities. This provides a more economical and flexible means of communicating with remote sensors that do not have the need for the same elevated level of security, availability and service levels as SCADA itself.

These enhancements will further the digitalisation of operational processes and strengthen compliance with the following Data Best Practice principles:

- 9. Protect Data Assets and systems in accordance with Security, Privacy and Resilience (SPaR) best practice.
- 10. Store, archive and provide access to Data Assets in ways that ensure sustained benefits.

Problem / opportunity statement

The age of the SCADA system mandates that we develop a plan for its replacement, in line with our IT Asset Health Policy. This system is critical to the real-time monitoring and control of the NTS and reductions in performance, reliability and security associated with ageing software must be avoided. As the SCADA system comprises the central software and an eco-system of networks, outstations and sensors, and will be a large and complex programme. We will plan the programme in RIIO-GT3 for delivery in the following period.

Meanwhile, the existing SCADA system must be sustained to ensure a secure and reliable service. Along with this, we will address requirements for greater data granularity and control points, together with augmentation with other data, to provide enhanced control capability.

5.2 Optioneering

The options for this investment were selected to contrast the outcome of not investing with alternative levels of target outputs. Option B reflects sustaining the current system to continue supportability and security whilst option A adds analysis of a plan and roadmap for SCADA. Option C does the planning without sustaining the current system.

The table below sets out the options considered for this capability.

Ref.	Option Description	Pros	Cons
DNI	Do not invest	<ul style="list-style-type: none"> • N/A 	<ul style="list-style-type: none"> • System reaching end-of-life. • Failure to take advantage of emerging technologies. • Likely increase in ongoing opex costs for support. • Not taking opportunity to add functionality to improve business processes / productivity. • May not meet future business requirements. • System fragility / risk of loss of system service.

IT 006 GSO Enhance - SCADA	FY 26/27	FY 27/28	FY 28/29	FY 29/30	FY30/31
Maintain Asset Health SCADA					
Extend SCADA Points					
Procurement for T4 Replacement					
Non SCADA data acquisition					
CNI SCADA Gateway Asset Health					

6 IT 007 Enhance Commercial Apps (Liferay)

6.1 Background and scope summary

Problem / Trigger	Strategy	Business Outcome	Primary Regulatory Outcome	Cost sub-category
Asset health – ageing asset. New requirements.	Sustain and enhance while planning follow-on solution.	Operate safely, reliably, and flexibly	Secure and resilient supplies	Digital platforms

Our Digital Experience Platform (Fusion) was replaced by a new Commercial Apps platform (Liferay) during RIIO-T2. Such platforms support integration across multiple systems. This integration is used in the forecast ahead of the Gas Day and then manages the commercial regime on the day and day ahead to ascertain predicted Linepack positions based on customer notifications. After the day values are then captured and processed for onwards accounting.

The current Commercial Apps application (Liferay) was delivered on a like-for-like basis, and there is a need to assess this system as part of a digital transformation of the control room. The current contract consists of 4 years premium support plus 3 additional years of limited support, giving the latest replacement date as 2030.

This investment will assess the Commercial Apps with a view to integrating it as part of a digital transformation of the control room (NCC), conducting feasibility and analysis to determine whether it can provide a richer real-time picture of the NTS. We will continue to invest as required to sustain Commercial Apps and to keep it aligned to changes to the IT architectural roadmap systems strategy.

Moving applications to cloud infrastructure has a benefit of cost efficiencies, scalability, performance, and sustainability. This investment will move Commercial Apps to the Cloud (along with the other non-SCADA related capabilities which sit within the Retained Services Network (RSN) inside the CNI boundary). As part of this exercise, we will review the support contract structure for all of the underlying technology.

This investment strengthens compliance with the following Data Best Practice principles:

- 9. Protect Data Assets and systems in accordance with Security, Privacy and Resilience (SPaR) best practice.
- 10. Store, archive and provide access to Data Assets in ways that ensure sustained benefits.

Problem / opportunity statement

The Commercial Apps system support contract end date requires us to assess the follow-on solution, also considering requirements defined in the GSO control room digital transformation plan. This system is out of alignment with our cloud-first architecture policy as it sits on the RSN within the CNI boundary.

The existing system must be sustained to ensure a secure and reliable service while the follow-on solution is assessed.

6.2 Optioneering

The options for this investment were selected to contrast the outcome of not investing with alternative timing and confidence of target outputs. Options A and B reflect different planning and timing in the replacement of the Commercial Apps at the end of the support contract.

The table below sets out the options considered for this capability.

Ref.	Option Description	Pros	Cons
DNI	Do not invest	<ul style="list-style-type: none"> • N/A 	<ul style="list-style-type: none"> • Likely increase in ongoing opex costs for support. • Not taking opportunity to add functionality to improve business processes. • May not meet future business requirements. • Growing issues of security and reliability.

A	Invest to maintain, sustain and enhance current capability. Feasibility and Analysis work to determine whether Commercial Apps needs to be replaced. Recommended	<ul style="list-style-type: none"> No degradation in capability. Reduced cyber risk as compared with DNI option as standard upgrades are incorporated. Opportunity to review current processes and look to reengineer these in line with demands from the industry to improve the experience for the NCC. Ensure that value for money is maintained within Commercial systems. Improved scalability, performance, and sustainability. 	<ul style="list-style-type: none"> Increased cost of maintenance in the long-term as is enhanced during RIIO-GT3.
B	As Option A except replace Commercial Apps in RIIO-GT3	<ul style="list-style-type: none"> Minimal safety and operational risks. 	<ul style="list-style-type: none"> Gains may not be large enough to justify the replacement.

6.3 Preferred option

We recommend Option A – This option gives opportunity to review our IT strategy and architectural roadmap to develop the approach to enhance or replace Commercial Apps. During RIIO-GT3 we will invest to maintain, sustain, and enhance current capability of Commercial Apps and maintain the asset health as well as review its suitability to support digital transformation of the control room. Option B does not have a proven business case, which is why we are opting for analysis work, and option DNI would lead to degradation in system performance and increasing risk and costs.

Consumer / stakeholder benefits

Commercial Apps is a business-critical system within the National Control Center (NCC). As with critical systems, sustaining and maintaining Commercial Apps (Liferay) will contribute to managing the NTS in a safe and reliable way.

6.4 Cost and deliverability

The cost drivers for this investment are in common with other IT investments and are described in the IT & Telecoms Strategy document, section 3.4.3. Costs are for the full scope of deliverables as described above. Deliverability of this investment is in common with other IT investments and are described in the IT & Telecoms Strategy document, section 3.4.5.

The spend profile and delivery plan are shown below.

IT 007 GSO Enhance - Commercial Apps (Liferay)							Gartner Benchmark Range		Gartner Rating
Investment (£m)	FY26/27	FY27/28	FY28/29	FY29/30	FY30/31	Totals	Low	High	
CAPEX	■	■	■	■	■	■	■	■	
OPEX	■	■	■	■	■	■			

IT 007 GSO Enhance - Commercial Apps (Liferay)	FY 26/27	FY 27/28	FY 28/29	FY 29/30	FY30/31
Comm Apps Feasibility and analysis to enhance or replace	▶	▶			
Comm Apps Maintain Sustain and enhance	▶	▶	▶	▶	
Move Comm Apps to Cloud		▶			
CNI Gateway COMM APPS Asset health	▶	▶	▶	▶	▶

7 IT 008 Video Wall replacement

7.1 Background and scope summary

Problem / Trigger	Strategy	Business Outcome	Primary Regulatory Outcome	Cost sub-category
Asset health – ageing asset. New requirements.	Sustain and refresh.	Operate safely, reliably, and flexibly	Secure and resilient supplies	IT & Telecoms

Display wall and monitoring capabilities in the NCC are fulfilled by the Video Wall. This Video Wall is critical to situational awareness in the control centre, providing the control engineers with multiple and dynamic (changeable) views of the state of the NTS, fed by our IT systems. In RIIO-T2 a new Video Wall was installed which has a 6-year life span and will be end-of-life in 2030.

In the latter stages of RIIO-GT3 we will replace the Video Wall in the NCC. This investment will consider the increased complexity of the NTS operational environment which is driving the need for configurable displays and support for enhanced decision making through access to situational awareness content.

We will invest to maintain and sustain the current Video Wall security and reliability until it is replaced as part of this investment.

This investment strengthens compliance with the following Data Best Practice principles:

- 9. Protect Data Assets and systems in accordance with Security, Privacy and Resilience (SPaR) best practice.
- 10. Store, archive and provide access to Data Assets in ways that ensure sustained benefits.

Problem / opportunity statement

Video wall assets are reaching end of life in RIIO-GT3. Like-for-like replacements do not provide the features required to support the vision for digital transformation of the control room which includes the ability for more operational information displayed and to be configurable.

7.2 Optioneering

The options for this investment were selected to contrast the outcome of not investing with alternative timings of target outputs. Options A and B reflect different timing in the replacement of the Video Wall.

The table below sets out the options considered for this capability.

Ref.	Option Description	Pros	Cons
DNI	Do not invest	<ul style="list-style-type: none"> • N/A 	<ul style="list-style-type: none"> • End of life in 2030. • Increased likelihood of display board failure resulting in impact on situational awareness within the control room due to lack of network visibility. • Ultimately this could lead to safety and operational issues and challenges seeing the network in real-time.
A	Invest to maintain and sustain current capability. Feasibility and implementation work to enhance / replace Video Wall and replace in RIIO-GT4	<ul style="list-style-type: none"> • Reduced likelihood of display board failure compared to the DNI option. • Reduced safety and operational risks compared to the DNI option. • Gives more time to find the best solution for RIIO-GT4 given possible size parameter constraints. • Delays full investment cost. 	<ul style="list-style-type: none"> • Increased likelihood of display board failure compared to option B. • Increased safety and operational risks compared to option B.
B	As Option A except replace the Video Wall in RIIO-GT3. Recommended	<ul style="list-style-type: none"> • Reduced likelihood of display board failure compared to the DNI option. • Reduced safety and operational risks compared to the DNI option. • Minimal risk of a display board failure. • Minimal safety and operational risks. 	<ul style="list-style-type: none"> • Less time to find a suitable Video Wall replacement. • Brings forward investment cost compared to option A.

7.3 Preferred option scope and project plan

We recommend Option B – This option gives opportunity to review our IT strategy and architectural roadmap to develop the approach to replace Video Wall in the first part of RIIO-GT3, followed by replacement near the end of the period. We will also invest to sustain the current capability of the Video Wall and maintain asset health until replacement.

Consumer / stakeholder benefits

The new video wall in RIIO-GT3 will reduce the risk of failure from ageing equipment, optimise user experience in the NCC, keep disruptions in the NTS to a minimum through high levels of situational awareness, and provide high quality services to customers.

7.4 Cost and deliverability

The cost drivers for this investment are in common with other IT investments and are described in the IT & Telecoms Strategy document, section 3.4.3. Costs are for the full scope of deliverables as described above. Deliverability of this investment is in common with other IT investments and are described in the IT & Telecoms Strategy document, section 3.4.5.

The spend profile and delivery plan are shown below.

IT 008 GSO Video Wall replacement							Gartner Benchmark Range		Gartner Rating
Investment (£m)	FY26/27	FY27/28	FY28/29	FY29/30	FY30/31	Totals	Low	High	
CAPEX	■	■	■	■	■	■	■	■	

IT 008 GSO Video Wall replacement	FY 26/27	FY 27/28	FY 28/29	FY 29/30	FY30/31
Procure and Replace Video Wall			■	■	■
Maintain and Sustain Video Wall	■	■	■	■	

8 IT 009 EDSS Replacement

8.1 Background and scope summary

Problem / Trigger	Strategy	Business Outcome	Primary Regulatory Outcome	Cost sub-category
Low system security and resilience	Replace	Operate safely, reliably, and flexibly	Secure and resilient supplies	Digital platforms

The Electronic Data Submission System (EDSS) provides an automated system to allow the input and validation of Daily Flow Notifications (DFNs) and Offtake Profile Notifications (OPNs) into the NCC Gas Control System (GCS). Both Shippers and National Gas as System Operator, are incentivised to balance NTS inputs and outputs on a daily basis. Balancing is a core process for the management of the NTS and the DFNs and OPNs form an essential part of that process.

In RIIO-GT3 we will replace this system with both an Application Programming Interface (API) and a Web Form solution, replacing email as the channel of communication. As part of this process, we will engage with the industry and consider required modifications to the Uniform Network Code (UNC). Whilst this feasibility and assessment is taking place, we will continue to invest in this key system as required to maintain and sustain the capability until it is replaced.

In addition to changes to the primary route for inbound and outbound data flows, we will invest in an additional backup Web Form solution to provide a resilient Business Continuity Management (BCM) solution.

This innovation will further the digitalisation of operational processes and strengthen compliance with the following Data Best Practice principles:

- 8. Ensure Data Assets are interoperable with Data Assets from other data and digital services.
- 10. Store, archive and provide access to Data Assets in ways that ensure sustained benefits.

Problem / opportunity statement

The Uniform Network Code (UNC) defines email as the transport mechanism for DFN and OPN information flows, but this process is vulnerable to email failure and there are more reliable technologies available. Technical reviews have concluded that the current process is not robust enough and can cause major disruptions to the operational process that ensure gas pressures stay within safe and acceptable limits. This solution needs to be redesigned to use a more robust data transfer mechanism and due to the importance of this capability there also needs to be a very extensive testing period.

EDSS suffers from being vulnerable to a potential single point of failure and the original back up was Fax. Fax is no longer supported, and the only alternative is now voice which is not considered to be a robust business continuity management (BCM) solution.

8.2 Optioneering

The options for this investment were selected to contrast the outcome of not investing with alternative levels of change to address issues. Option A simply maintains the current capability whereas option B adds planning and replacement to address the issues.

The table below sets out the options considered for this capability.

Ref.	Option Description	Pros	Cons
DNI	Do not invest	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> System becoming out-of-date, insecure and unreliable. System fragility. Functionality limitations.
A	Sustain / maintain EDSS	<ul style="list-style-type: none"> Reduced impact of change on the NCC. 	<ul style="list-style-type: none"> The NCC process will continue to be problematic with periodic failures and interruption to the business process for all parties. System will remain vulnerable to a potential single point of failure.
B	As option A except replace EDSS in latter part of RIIO-GT3. Design and deliver new Electronic Data Submission System and backup (BCM) solution. Recommended	<ul style="list-style-type: none"> Improved capability resilience – in both primary and back-up. Improved functionality – easier and more reliable to use. Improved interface – more efficient way of capturing the information. 	<ul style="list-style-type: none"> Enhanced and refined systems are likely to require increased spend for support. Increased cost for training, etc.

8.3 Preferred option

We recommend Option B – This option supports review of our IT strategy and architectural roadmap and replace EDSS during RIIO-GT3 with an API and back up Web Form based solution. It is considered that the current solution vulnerabilities are too significant to continue, and the system needs changing within RIIO-GT3. During RIIO-GT3 we will continue to invest to sustain the current capability of EDSS and maintain the asset health (e.g. with security upgrades) to continue the service until its replacement is in place.

Consumer / stakeholder benefits

A quicker, more accurate and resilient data exchange concerning gas flow will enable us to make operations more efficient and make accurate decisions on matters affecting our consumers. This investment will benefit all users of the current EDSS system, most of whom are Shippers, by providing a more reliable means of communicating with NGT.

8.4 Cost and deliverability

The cost drivers for this investment are in common with other IT investments and are described in the IT & Telecoms Strategy document, section 3.4.3. Costs are for the full scope of deliverables as described above. Deliverability of this investment is in common with other IT investments and are described in the IT & Telecoms Strategy document, section 3.4.5.

The spend profile and delivery plan are shown below and reflect annual maintenance of the solution plus the replacement project in the last two years.

IT 009 GSO EDSS Replacement							Gartner Benchmark Range		Gartner Rating
Investment (£m)	FY26/27	FY27/28	FY28/29	FY29/30	FY30/31	Totals	Low	High	
CAPEX	■	■	■	■	■	■	■	■	

IT 009 GSO EDSS Replacement	FY26/27	FY27/28	FY28/29	FY29/30	FY30/31
Maintain and sustain EDSS					
Replace EDSS and provide a BCM solution					

9 IT 010 Operational Process Improvements

9.1 Background and scope summary

Problem / Trigger	Strategy	Business Outcome	Primary Regulatory Outcome	Cost sub-category
Inefficient processes and reliance on end user computing for critical processes	Continuous improvement of processes	Operate safely, reliably, and flexibly	Secure and resilient supplies	Digital processes

During RIIO-T2 it has been identified that there are a large number of operational processes that need to be improved due to the volume of manual steps causing inefficiency and risk of error. We have documented the GSO “as-is” process model and have identified areas for improvement (c. 500 pain points). The use of end user computing (EUC) tools is a common contributing factor to issues and this investment will improve efficiency and reduce error risk by digitalising manual steps and streamlining processes.

An example of where opportunities were identified is in the preparation of the asset maintenance plans. In RIIO-GT3 we will be replacing significantly more NTS assets than in RIIO-T2 and process improvements are required to create increased capacity for outage management and address security, resilience and availability issues stemming from the use of end user computing (EUC) tools to support the processes. The processes targeted for improvement are:

- Unaccounted for Gas (UAG) Reporting
- Meter Checks
- System Capability & Risk
- Last Mile Commissioning
- Charging Assurance
- Carbon Intensity Tracking
- Forecasting

This investment will deliver a programme of continuous improvements in the IT supporting operational processes. These will progressively replace EUC tools with IT-supported business intelligence and workflow management tools such as PowerBI to make the processes more efficient, and enhance quality, auditability, and productivity, with improved business continuity back up.

This investment strengthens compliance with the following Data Best Practice principles:

- 5. Make Data Assets discoverable for potential Data Users.
- 9. Protect Data Assets and systems in accordance with Security, Privacy and Resilience (SPaR) best practice.

Problem / opportunity statement

Over time there has been a proliferation of end user computing solutions developed within the business to support operational processes many of which have become mission critical. EUCs present risks as they are dependent on the users who created them to maintain them, as well lacking proper version, data, and security controls. They are inefficient and from a cost perspective they often require a lot of manual effort to extract, transform, and enter the data. Furthermore EUCs lack resilience and the required availability, with data often residing on network shared drives or personal hard drives.

An example of the manual re-entry of data is as follows: MS Project Data and customer contact details from CRM are rekeyed into two SharePoint lists. A spreadsheet is used to link to these lists and create a Customer Notice by cutting and pasting rows from the linked list to another worksheet and populate a template using formula. The new notice is saved to the local filesystem before being attached to a new email in outlook. The email is addressed by looking up the customer details in one of the SharePoint lists. Once sent the SharePoint lists are updated and new spreadsheet is used to link to the SharePoint lists and checked daily to track the passing of time and notify when a reminder needs to be sent in which event the whole process is repeated.

9.2 Optioneering

The options for this investment were selected to contrast the outcome of not investing with an alternative to address issues. There is only one option as the business assessment and efficiency targets have prescribed the scope of issues to be addressed and the most appropriate existing systems have been selected to enable the required capabilities.

The table below sets out the options considered for this capability.

Ref.	Option Description	Pros	Cons
DNI	Do not invest	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> Continuing risk of error from manual data manipulation. Continuing inefficiencies, having impact on costs and on the capacity needed to deliver the AMP. Missed opportunity to integrate data-driven technologies in daily operations.
A	Assess and deliver improvements and efficiencies for GSO operations. <p style="text-align: center;">Recommended</p>	<ul style="list-style-type: none"> Increased operational efficiency. Reduced risk of errors from manual process steps. Reduced total IT cost of ownership to support operational processes. Reviewing current processes and reengineer these in line with demands from the industry will improve the stakeholder experience. Improvements to a wide range of Operational Processes e.g. Network Planning and Network Access. Optimised and upskilled GSO workforce. 	<ul style="list-style-type: none"> Enhanced and refined systems are likely to require increased spend for support. Increased cost for training, etc. as part of the project roll out. Investment cost.

9.3 Preferred option

The recommendation is Option A – During RIIO-GT3 we will identify and improve the GSO operational processes and reliance on end user computing.

Consumer / stakeholder benefits

Process improvements will increase quality and efficiency, resulting in better outcomes in operation of the NTS, in delivery of the NTS asset management plan (AMP) and in the cost profile of the service.

9.4 Cost and deliverability

The cost drivers for this investment are in common with other IT investments and are described in the IT & Telecoms Strategy document, section 3.4.3. Costs are for the full scope of deliverables as described above. Deliverability of this investment is in common with other IT investments and are described in the IT & Telecoms Strategy document, section 3.4.5.

The spend profile and delivery plan are shown below and reflect a process of continuous improvement.

IT 010 GSO Operational Process Improvements							Gartner Benchmark Range		Gartner Rating
Investment (£m)	FY26/27	FY27/28	FY28/29	FY29/30	FY30/31	Total	Low	High	
CAPEX	■	■	■	■	■	■	■	■	

IT 010 GSO Operational Process Improvements	FY26/27	FY27/28	FY28/29	FY29/30	FY30/31
Platform solution development					

10 IT 011 Future Telemetry Network

10.1 Background and scope summary

Problem / Trigger	Strategy	Business Outcome	Primary Regulatory Outcome	Cost sub-category
Asset Health – end of life networks. Issues with current satellite usage.	Replace	Operate safely, reliably, and flexibly	Secure and resilient supplies	IT & Telecoms



[Redacted text block]

10.2 Optioneering

[Redacted text block]

[Redacted]	[Redacted]	[Redacted]
[Redacted]	[Redacted]	[Redacted]
[Redacted]	[Redacted]	[Redacted]

10.3 Preferred option

The recommendation is Option A – During RIIO-GT3 we will invest in the telemetry network and to enhance its capabilities and resiliency.

Consumer / stakeholder benefits

Greater resiliency for transmitting data allows us to ensure safe, reliable and flexible operations.

10.4 Cost and deliverability

The cost drivers for this investment are in common with other IT investments and are described in the IT and Telecoms Strategy document, section 3.4.3. Costs are for the full scope of deliverables as described above. Deliverability of this investment is in common with other IT investments and are described in the IT & Telecoms Strategy document, section 3.4.5.

The spend profile and delivery plan are shown below and reflect the telemetry replacement programme starting in 2026 and lasting three years.

IT 011 GSO Future Telemetry Network							Gartner Benchmark Range		Gartner Rating
Investment (£m)	FY26/27	FY27/28	FY28/29	FY29/30	FY30/31	Total	Low	High	
CAPEX	■	■	■	■	■	■	■	■	

IT 011 GSO Future Telemetry Network	FY26/27	FY27/28	FY28/29	FY29/30	FY30/31
Telemetry refresh					

11 IT 012 Energy Trading, Reporting and Notifications Replacement

11.1 Background and scope summary

Problem / Trigger	Strategy	Business Outcome	Primary Regulatory Outcome	Cost sub-category
Asset Health – end of life systems.	Sustain and then replace	Operate safely, reliably, and flexibly	Secure and resilient supplies	Digital platforms

Energy trading capability is currently provided by a number of third-party platforms, such as Entrader (enTrader®) where shrinkage trades are recorded (essentially providing a trading book/ledger) and the Intercontinental Exchange (ICE) system which provides broker services.

Entrader was a shared system between the gas and electricity system operators (GSO and ESO). Whilst we now have our own instance of this system, the inherited version is a poor fit for our business, development having been biased towards the needs of electricity.

This investment will replace Entrader with a trading platform that meets user experience and functionality requirements and is optimised for gas markets. We will continue to invest in Entrader as required to maintain and sustain the capability until it is replaced. The ICE system replacement is planned for RIIO-GT4, with early feasibility and analysis work to determine the best strategy, carried out in the latter part of RIIO-GT3.

This investment strengthens compliance with the following Data Best Practice principles:

- 10. Store, archive and provide access to Data Assets in ways that ensure sustained benefits.

Problem / opportunity statement

We now have our own instance of Entrader, but its development has been biased towards the needs of ESO and is a poor fit for the gas business. The platform cannot cost-effectively be configured and optimised for Gas to enable better trading strategies. It also lacks the ability to do forecasting so that we can make accurate predictions of natural gas price movements to help the shrinkage team make informed decisions and to do seasonal trend analysis to augment trading strategy.

The ICE system has been supporting the residual balancing market under the UNC for circa 20 years. Whilst the system is still functionally capable, it is ageing and Ofgem have suggested that a market review should be carried out to identify and evaluate options.

11.2 Optioneering

The options for this investment were selected to contrast the outcome of not investing with alternative levels of target outputs. Option A sustains the current system but does not address the issues. Option B addresses Entrader issues and determines a plan for ICE.

The table below sets out the options considered for this capability.

Ref.	Option Description	Pros	Cons
DNI	Do not invest	<ul style="list-style-type: none"> • N/A 	<ul style="list-style-type: none"> • System becoming out-of-date. • System fragility.

			<ul style="list-style-type: none"> • Severe functionality limitations, e.g. forecasting and trend analysis. • Not cost-effective for future improvements to better fit the business.
A	Sustain / maintain energy trading platforms	<ul style="list-style-type: none"> • Leverages the existing investment in Entrader and maintains the vendor support 	<ul style="list-style-type: none"> • Severe functionality limitations, e.g. forecasting and trend analysis. • Not cost-effective for future improvements to better fit the business.
B	As Option A except replace Entrader in latter part of RIIO-GT3. Feasibility and Analysis work to determine whether ICE should be replaced in RIIO-GT4. Recommended	<ul style="list-style-type: none"> • Introduce new available technology to increase efficiency and effectiveness of the solution, addressing functional limitations. • Ensure that value for money is maintained within Commercial systems. • Efficient shrinkage trading will minimise industry costs which reflect in consumer costs. • Improved functionality. • Improved user interface. • Improved capability resiliency. • Improved overall customer service. • Well defined strategy for ICE replacement. 	<ul style="list-style-type: none"> • Enhanced and refined systems are likely to require increased spend for support. • Increased cost for training, etc.

11.3 Preferred option

The recommendation is Option B – This option enables us to review our IT strategy and architectural roadmap and replace Entrader during RIIO-GT3 and ICE in RIIO-GT4. During RIIO-GT3 we will invest to maintain and sustain current trading capabilities and maintain the asset health on existing and then replacement systems. We will replace Entrader during RIIO-GT3 and carry out feasibility and analysis to determine the strategy for ICE in RIIO-GT4.

Consumer / stakeholder benefits

Efficient shrinkage trading will minimise industry costs which are effectively passed through to end consumers.

11.4 Cost and deliverability

The cost drivers for this investment are in common with other IT investments and are described in the IT & Telecoms Strategy document, section 3.4.3. Costs are for the full scope of deliverables as described above. Deliverability of this investment is in common with other IT investments and are described in the IT & Telecoms Strategy document, section 3.4.5.

The spend profile and delivery plan are shown below and reflect annual investment to sustain the trading platforms, with replacement of Entrader and discovery /procurement work on ICE in the last two years.

IT 012 GSO Energy Trading, Reporting and Notifications Replacement							Gartner Benchmark Range		Gartner Rating
Investment (£m)	FY26/27	FY27/28	FY28/29	FY29/30	FY30/31	Total	Low	High	
CAPEX	■	■	■	■	■	■	■	■	

IT 012 GSO Energy Trading, Reporting and Notifications Replacement	FY26/27	FY27/28	FY28/29	FY29/30	FY30/31
Maintain and sustain Entrader					
Replace Entrader					
Procurement for ICE replacement					

12 IT 013 Operational System Assurance

12.1 Background and scope summary

Problem / Trigger	Strategy	Business Outcome	Primary Regulatory Outcome	Cost sub-category
Security risk and compliance	Regular update	Operate safely, reliably, and flexibly	Secure and resilient supplies	Other data best practice investments

Keeping system security compliant with regulations needs continual investment that requires consistent, regular risk and threat assessments and gap analysis. Even though our IT solutions are rigorously designed to guard against potential security threats, the security landscape is constantly evolving, and we need to be able to react in a timely manner to remove risks as soon as they are identified and to respond to updates in standards. This investment will put in place the required changes to in-flight projects which have already had design approval but then require changes to address a new security position.

Our Security team collaborate with organisations such as UK National Cyber Security Centre (NCSC), Centre for the Protection of National Infrastructure (CPNI), and Department for Energy Security and Net Zero (DESNZ) and will alert the IT Delivery team to new requirements or threats which need action.

This investment sustains our compliance with the following Data Best Practice principle:

- 9. Protect Data Assets and systems in accordance with Security, Privacy and Resilience (SPaR) best practice.

Problem / opportunity statement

Cyber threats are constantly evolving and we need to keep our systems abreast of changes in standards and new threats. In-flight IT projects are subject to reacting to these changes, causing rework and extra expense. Without this investment, these projects would not be fully funded as intended by their allowance.

12.2 Optioneering

The options for this investment were selected to contrast the outcome of not investing with a single alternative. There is only one option as this is an allowance to enable in-flight projects to react to changing security circumstances. This is a continuation of the policy agreed for RIIO-T2.

The table below sets out the options considered for this capability.

Ref.	Option Description	Pros	Cons
DNI	Do not invest	<ul style="list-style-type: none"> • N/A 	<ul style="list-style-type: none"> • Increased risk exposure from cyber threats to NGT systems, potentially resulting in significant impact to availability of gas and reliability of gas network data. • Non-compliance with regulations.
A	Assure in-flight projects for compliance with security guidelines and retrofit security updates. Recommended	<ul style="list-style-type: none"> • Minimised risk associated with a variety of cyber attacks. • Ability to react and put in place any required security changes to approved designs in a timely way. • Least risk of a costly damage to us and to industry partners using our systems. • Compliance with regulations. 	<ul style="list-style-type: none"> • Individual system impact assessment. • Cost of reworking systems for security updates.

12.3 Preferred option scope and project plan

Our recommended investment approach is Option A – During RIIO-GT3 we will ensure IT projects in development are updated to respond to changes in security guidance. Changes to design, build or test work already completed but not yet in production will be funded by this investment.

Consumer / stakeholder benefits

By having up to date system assurance practices in place, we put our ability to service our consumers at the highest priority to enable a secure and reliable service.

12.4 Cost and deliverability

The cost drivers for this investment are in common with other IT investments and are described in the IT & Telecoms Strategy document, section 3.4.3. Costs are for the full scope of deliverables as described above. Deliverability of this investment is in common with other IT investments and are described in the IT & Telecoms Strategy document, section 3.4.5.

The spend profile and delivery plan are shown below.

The cost profile for this investment is based on an annual allowance for security changes to in-flight projects and is based on our experience through RIIO-T2. We have considered the comparative volume of projects in each period and the level of change in security regulations to arrive at an annual cost of security re-engineering in RIIO-GT3 projects. We have reviewed the scope of this work with Gartner and they have agreed that it is a reasonable sum for this scope, hence the single figure in the high and low range limits.

IT 013 GSO Operational System Assurance							Gartner Benchmark Range		Gartner Rating
Investment (£m)	FY26/27	FY27/28	FY28/29	FY29/30	FY30/31	Total	Low	High	
CAPEX	■	■	■	■	■	■	■	■	

IT 013 GSO Operational System Assurance	FY26/27	FY27/28	FY28/29	FY29/30	FY30/31
Apply project updates					

13 IT 014 ECR Enhancements

13.1 Background and scope summary

Problem / Trigger	Strategy	Business Outcome	Primary Regulatory Outcome	Cost sub-category
Risks associated with sub-optimal replica of the NCC for the ECR	Enhance	Operate safely, reliably, and flexibly	Secure and resilient supplies	Digital processes

The Emergency Control Room (ECR) is a key facility as it provides an emergency back-up facility for the NCC in the event of an emergency.

In RIIO-GT3 we will enhance the facilities in the ECR to make them as close a replica of the NCC as is reasonably practicable given the physical limitations. Within this update, we will add video wall capability to the ECR, which will include some infrastructure enhancements to the facility. As part of these improvements, we will make it possible to operate the Network simultaneously from both sites and this would then also allow it to serve as an environment where the gas control training programme can be carried out. In doing this, we will improve the effectiveness of training and maintain emergency control room compliance with regulations and its ability to deliver a safe, reliable, and flexible service.

This investment is specific to the ECR, as other investments such as IT 008 Video Wall are specific to the NCC. Enhancements to the ECR will replicate the capabilities of the NCC as closely as possible.

Problem / opportunity statement

The Emergency Control Room (ECR) is currently not a complete replica of the NCC and provides reduced NTS situational awareness due to limitations such as the lack of a video wall. Also, the ECR is not used for training, as being less than a full replica, it provides an insufficient training platform to maintain gas control expertise. Finally, ECR response times for gas related emergencies are currently impacted by the differences between it and the NCC.

This investment strengthens compliance with the following Data Best Practice principles:

- 9. Protect Data Assets and systems in accordance with Security, Privacy and Resilience (SPaR) best practice.
- 10. Store, archive and provide access to Data Assets in ways that ensure sustained benefits.

13.2 Optioneering

The options for this investment were selected to contrast the outcome of not investing with an alternative to address issues. There is only one option as the business assessment of requirements have prescribed the minimum viable scope of issues to be addressed and the most appropriate existing systems have been selected to enable the required capabilities. The choice is between taking action or not.

The table below sets out the options considered for this capability.

Ref.	Option Description	Pros	Cons
DNI	Do not invest	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> Network security and operational risks due to the differences between the ECR and the NCC, for users and for IT support
A	Deliver ECR improvements. <p style="text-align: center;">Recommended</p>	<ul style="list-style-type: none"> Ability to respond quickly to gas related emergencies. Mitigates network risks. Maintains compliance with UNC. Resilient communications and collaboration. Better and more comprehensive training process. More upskilled and prepared workforce. 	<ul style="list-style-type: none"> Investment cost.

13.3 Preferred option

We recommend Option A – During RIIO-GT3 we will improve the ECR equipment to better replicate the NCC and enable more effective NTS emergency response and daily operations.

Consumer / stakeholder benefits

Having an emergency control room (ECR) that is better aligned to the primary National Control Centre (NCC) provides significant benefits which flow through to the security, reliability and flexibility of the service:

- The ability to seamlessly co-ordinate and oversee operations when moving between sites.
- The ability to respond optimally to gas related emergencies with access to core systems which are fully aligned across both control rooms.
- Providing a better training environment to develop and maintain gas control expertise.

13.4 Cost and deliverability

The cost drivers for this investment are in common with other IT investments and are described in the IT & Telecoms Strategy document, section 3.4.3. Costs are for the full scope of deliverables as described above. Deliverability of this investment is in common with other IT investments and are described in the IT & Telecoms Strategy document, section 3.4.5.

The spend profile and delivery plan are shown below.

IT 014 GSO ECR Enhancements							Gartner Benchmark Range		Gartner Rating
Investment (£m)	FY26/27	FY27/28	FY28/29	FY29/30	FY30/31	Total	Low	High	
CAPEX	■	■	■	■	■	■	■	■	

IT 014 GSO ECR Enhancements	FY26/27	FY27/28	FY28/29	FY29/30	FY30/31
Maintain and Enhance ECR capability					
Procure suitable video wall capability					
Enable simultaneous control from NCC and ECR and Training capability					

14 IT 015 Resiliency and Security of Supply

14.1 Background and scope summary

Problem / Trigger	Strategy	Business Outcome	Primary Regulatory Outcome	Cost sub-category
Service limitations under load	Regular updates and continuous improvement enhancements	Operate safely, reliably, and flexibly	Secure and resilient supplies	IT & Telecoms



[Redacted text block]

14.2 Optioneering

[Redacted text block]

[Redacted]	[Redacted]	[Redacted]
[Redacted]	[Redacted]	[Redacted]
[Redacted]	[Redacted]	[Redacted]

14.3 Preferred option

We recommend Option A – During RIIO-GT3 we will improve the communications service and supply continuity procedures that support our major emergency response capability.

Consumer / stakeholder benefits

Improved emergency communication enables us to operate safely and more reliably for our customers.

14.4 Cost and deliverability

The cost drivers for this investment are in common with other IT investments and are described in the IT & Telecoms Strategy document, section 3.4.3. Costs are for the full scope of deliverables as described above. Deliverability of this investment is in common with other IT investments and are described in the IT & Telecoms Strategy document, section 3.4.5.

The spend profile and delivery plan are shown below and reflect up front investment in the improved service followed by annual maintenance to sustain its security and reliability.

IT 015 GSO Resiliency and Security of Supply							Gartner Benchmark Range		Gartner Rating
Investment (£m)	FY26/27	FY27/28	FY28/29	FY29/30	FY30/31	Total	Low	High	
CAPEX	■	■	■	■	■	■	■	■	

IT 015 GSO Resiliency and Security of Supply	FY26/27	FY27/28	FY28/29	FY29/30	FY30/31
Sustain and enhance					

15 IT 016 Predictive Forecasting and Network Simulation

15.1 Background and scope summary

Problem / Trigger	Strategy	Business Outcome	Primary Regulatory Outcome	Cost sub-category
Opportunity to apply new technologies to better inform.	Extend functionality	Deliver sustainable value for customers and stakeholders	High quality of service from regulated firms	Digital processes

In RIIO-T2 we have enhanced our understanding of how datasets gathered from various sources can be combined to enable more informed decision-making in the NCC. We also looked at “Probabilistic Forecasting” which explored mathematical techniques to deliver more robust forecasting for a range of network scenarios, required as a key input to automated modelling and prediction of network behaviour.

This work is a constituent part of the larger NIA funded Probabilistic Projections project being overseen by our Innovations team which is looking at longer term models. A number of the workbooks have already been delivered and are being implemented in our Exploratory Data Analysis (EDA) area for in house validation prior to before proceeding to productionisation. In addition, we have created an ML/AI policy based on advice from the British standards ART/1 personnel who provided expertise drawn from the ISO42000 standards for AI Systems, the University of Bath Safety Critical Systems module and from the ART-AI DTP (Accountable, Responsible, Transparent AI).

This investment will take the next steps on predictive forecasting and network simulation through application of AI and ML technologies. We will extend our capability to identify patterns and trends, and we will review automating the decision-making process and prediction of network behaviour. This investment is complementary to IT 005 GSO Network Capability (above) and builds specific new capabilities for forecasting.

The benefits from this investment will include improved demand understanding, enhanced real time gas quality forecasting and tracking, and more accurate gas pressure and supply forecasts. This will deliver comprehensive insights into both historical and real-time data which will see a significant improvement in the NCC daily operations and ensure an optimal environment for making data-driven decisions.

To further enable this capability, we will procure additional datasets (market data, shipping data, high resolution weather data, and data from asset Digital Twins) to better inform insights into market behaviour and to improve the integration with core operational systems (e.g. SCADA).

We will also invest in new processes to support the creation and ongoing support for Machine Learning Operations (MLOps) to maintain the integrity of the models produced and implement governance processes to guard against the risk of automated systems operating on poorly governed data and models leading to poor decision making in a safety critical environment.

This investment strengthens compliance with the following Data Best Practice principles:

- 6. Learn and deliver to the needs of current and prospective Data Users.

Problem / opportunity statement

Currently the results of Network Capability studies are difficult to visualise. In addition, it is difficult to track gas quality at offtake points, and to assess the forecast pressure at entry and exit points based on predicted supply and demand flows into the network.

Opportunities exist to apply innovative technologies such as AI and ML to forecasting models for greater insight generation and which consider wider datasets than those used today.

15.2 Optioneering

The options for this investment were selected to contrast the outcome of not investing with an alternative to address issues. There is only one option as the business assessment of requirements have prescribed the minimum viable scope of issues to be addressed and the most appropriate existing systems have been selected to enable the required capabilities. The choice is between taking action or not.

The table below sets out the options considered for this capability.

Ref.	Option Description	Pros	Cons
DNI	Do not invest	<ul style="list-style-type: none"> N/A 	<ul style="list-style-type: none"> Unused potential for data. Falling behind the latest technological trends. Impaired decision-making. Increased risk for network operations. Lacking capability to make smarter decisions and manage the system risk under increasing pressure from the capital plan.
A	Enhance existing forecasting, simulation, AI and ML capabilities. <p style="text-align: center;">Recommended</p>	<ul style="list-style-type: none"> Introduce new technology to increase efficiency and effectiveness of the solution. Employ additional datasets to enhance decision making. Greater ability to predict what will happen in network stress situations. Real-time detection of anomalies in the gas network. More reliable and robust decision-making process. More resiliency from better diagnostics and preventative data-driven solutions. Improved NCC daily operations from better forecast insights on NTS behaviour. 	<ul style="list-style-type: none"> Establishing necessary data storing and sharing practices to allow creation of predictive forecasting solutions.

15.3 Preferred option

We recommended Option A – During RIIO-GT3 we will continue improving our forecasting, simulation, AI and ML capabilities delivered during RIIO-T2 by applying wider datasets and further advanced analytics to improve decision making.

Consumer / stakeholder benefits

The benefits gained by external parties are optimised decision-making to ensure we deliver the best value for money and provide full transparency over our decision-making process in line with our AI/ML policy.

15.4 Cost and deliverability

The cost drivers for this investment are in common with other IT investments and are described in the IT & Telecoms Strategy document, section 3.4.3. Costs are for the full scope of deliverables as described above. Deliverability of this investment is in common with other IT investments and are described in the IT & Telecoms Strategy document, section 3.4.5.

The spend profile and delivery plan are shown below.

IT 016 GSO Predictive Forecasting and Network Simulation							Gartner Benchmark Range		Gartner Rating
Investment (£m)	FY26/27	FY27/28	FY28/29	FY29/30	FY30/31	Total	Low	High	
CAPEX	■	■	■	■	■	■	■	■	

IT 016 GSO Predictive Forecasting and Network Simulation	FY26/27	FY27/28	FY28/29	FY29/30	FY30/31
Predictive forecasting AI modelling and MLOps					

16 IT 017 Whole Energy System Response

16.1 Background and scope summary

Problem / Trigger	Strategy	Business Outcome	Primary Regulatory Outcome	Cost sub-category
Limitations in emergency data sharing mechanisms	Enhance	Operate safely, reliably, and flexibly	Secure and resilient supplies	Digital platforms

The Strategy and Policy Statement (SPS) for energy policy in Great Britain requires us along with the wider industry to consider gas and electricity interactions to support the resilience and security of downstream gas and electricity systems. Optimisation of a whole system with multiple energy sources, each with financial, carbon cost and operational factors is complex but essential. The journey to net zero needs to minimise gas for electricity generation, whilst satisfying system risk and cost factors. We recognise that strong collaboration with NESO and other parties is particularly important during days with operational irregularities, disruptions and emergencies and is a key driver for a capability that enables strong decision-making.

This investment will deliver the ability to collaborate and support external parties (NESO, Distribution Networks, Ofgem, DESNZ and other energy participants) in near real-time on a shared platform/portal, with the ability to share sensitive information (such as market and network conditions) in a secure manner. Sharing of operational data may be sensitive and the IT solution will meet the correct security requirements but also provide fair and equitable access to data, following the “presumed open” principle defined by Ofgem Data Best Practice.

This investment will deliver improvements within the Incident Room, to provision better situational awareness during a National Gas Security of Supply Emergency (NGSE) and to upgrade our collaborative data sharing capability by providing authenticated and role-based access to our data.

This investment sustains our compliance with the following Data Best Practice principles:

- 5. Make Data Assets discoverable for potential Data Users.
- 8. Ensure Data Assets are interoperable with Data Assets from other data and digital services.
- 9. Protect Data Assets and systems in accordance with Security, Privacy and Resilience (SPaR) best practice.
- 11. Treat all Data Assets, their associated Metadata and Software Scripts used to process Data Assets as Presumed Open.

16.2 Problem / opportunity statement

We currently have limited and inefficient means of communicating information with the National Energy System Operator (NESO) and other industry stakeholders during an emergency. An example of this is sharing NETMAN 1 forms from the Distribution Networks and information on power generation embedded in the Distribution Networks, which are intended to communicate their strategies to us.

This investment also responds to the learning points from the Gas Industry’s annual Network Gas Supply Emergency (NGSE) Network Emergency Coordinator (NEC) assurance exercises³. Information sharing deficiencies cited in 2022 were reported in 2023 as “now well embedded” but “Further technical mechanisms to support this capability now require development”. The listed points include a whole energy system information sharing dashboard, pre-emptive sharing of data and information, and a modernised online approach to information sharing.

16.3 Optioneering

The options for this investment were selected to contrast the outcome of not investing with an alternative to address issues. There is only one option as the business assessment of requirements have prescribed the minimum viable scope of issues to be addressed and the most appropriate existing systems have been selected to enable the required capabilities. The choice is between taking action or not.

The table below sets out the options considered for this capability.

Ref.	Option Description	Pros	Cons
DNI	Do not invest	<ul style="list-style-type: none"> • N/A 	<ul style="list-style-type: none"> • Inability to securely share data with other stakeholders – impacting whole system management capabilities.

³ <https://www.nationalgas.com/safety-and-emergencies/network-gas-supply-emergencies-ngse>

			<ul style="list-style-type: none"> • Impaired trust from external organisations. • Inability to meet regulatory obligations relating to interoperability.
A	Secure role-based access to near real-time data for whole energy system stakeholders. Recommended	<ul style="list-style-type: none"> • Improved collaboration between us and other organisations, supporting whole system management. • Improved flexibility in data sharing capabilities as whole system management processes mature. • More secure ways of sharing information across companies. • More streamlined processes for all parties. • Regulatory compliance – data sharing and interoperability. • Improved emergency management. 	<ul style="list-style-type: none"> • Increased cyber support costs. • Investment cost.

16.4 Preferred option

We recommended Option A – During RIIO-GT3 we will enhance our ability to share data securely with other stakeholders for the purpose of whole energy system response. We will enhance the incident management capability facilities to provide more detailed information that will enable emergency situations to be tackled in the quickest and the most secure and effective way.

Consumer / stakeholder benefits

This investment will support critical interactions between NGT and NESO and other parties involved in whole system management. For all parties, it will enable easier, faster and more integrated processes than possible today, facilitating the new whole energy system industry model as it matures. Consumers can expect to benefit through efficient management of the whole energy system in collaboration with NESO.

16.5 Cost and deliverability

The cost drivers for this investment are in common with other IT investments and are described in the IT & Telecoms Strategy document, section 3.4.3. Costs are for the full scope of deliverables as described above. Deliverability of this investment is in common with other IT investments and are described in the IT & Telecoms Strategy document, section 3.4.5.

The spend profile and delivery plan are shown below.

IT 017 GSO Whole Energy System Response							Gartner Benchmark Range		Gartner Rating
Investment (£m)	FY26/27	FY27/28	FY28/29	FY29/30	FY30/31	Total	Low	High	
CAPEX	■	■	■	■	■	■	■	■	

IT 017 GSO Whole Energy System Response	FY26/27	FY27/28	FY28/29	FY29/30	FY30/31
Enhance data sharing and role based access control					

17 IT 018 Operational Safety & Compliance

17.1 Background and scope summary

Problem / Trigger	Strategy	Business Outcome	Primary Regulatory Outcome	Cost sub-category
Asset health – refresh and enhance	Refresh	Operate safely, reliably, and flexibly – refresh	Secure and resilient supplies	Digitising field works

Safe and reliable operation of the network requires that we have an effective system to manage work on the NTS. The process involves competency management and fieldwork requirements definition and through matching the two, permits to work. In RIIO-T2 we updated the core applications and underlying processes to address operational and safety compliance requirements, driven by the evolving configuration of the NTS, operational learning, and industry best-practice. This fragmented system is inefficient and continues to represent risks to safe working and compliance.

This investment will deliver a new system for managing Permits (issuing, tracking and closing permits to work), with comprehensive digital audit trails to assure compliance audits and investigations, and automation of the Gas Distribution Network Non-Routine Operations (NRO). We will further enhance our current GSO capability by carrying out regular risk assessments and applying the latest technology to ensure we adhere to good policies and practices and react to meet emerging security threats.

This investment strengthens compliance with the following Data Best Practice principles:

- 6. Learn and deliver to the needs of current and prospective Data Users.

Problem / opportunity statement

The current capability to manage Permits is supported by multiple systems (principally the SCO Database and Origin) which creates inefficiencies and risk of inconsistency and process breakdown. Compliance reporting is difficult, slow and time consuming, with associated risk of inaccuracies.

17.2 Optioneering

The options for this investment were selected to contrast the outcome of not investing with an alternative to address issues. There is only one option as the business assessment of requirements have prescribed the minimum viable scope of issues to be addressed and the most appropriate approach has been selected to enable the required capabilities, using available tools to further digitalise the processes.

The table below sets out the options considered for this capability.

Ref.	Option Description	Pros	Cons
DNI	Do not invest	<ul style="list-style-type: none"> • No investment. 	<ul style="list-style-type: none"> • Increasing risk of non-compliance with regulations. • Greater risk of unsafe practice due to errors in matching skills / competencies to the work required. • Inefficiencies from manual processes across multiple systems.
A	Deliver an integrated safety and compliance solution. <p style="text-align: center;">Recommended</p>	<ul style="list-style-type: none"> • Improved safety of our workforce through improved competency management and matching of competencies to work. • Improved NTS safety through risk reduction. • Improved audit capability for ensuring compliance. • Improved efficiency of audit processes. 	<ul style="list-style-type: none"> • Investment cost.

17.3 Preferred option scope and project plan

We recommended Option A – During R110-GT3 we will replace our Permits solution. This further progresses digitalisation of this process area, reducing manual effort and associated risk.

Consumer / stakeholder benefits

Improved operational efficiency and reduction in the number of events resulting from non-compliance will lead to a reduced cost to operate the network, which will benefit consumers.

17.4 Cost and deliverability

The cost drivers for this investment are in common with other IT investments and are described in the IT & Telecoms Strategy document, section 3.4.3. Costs are for the full scope of deliverables as described above. Deliverability of this investment is in common with other IT investments and are described in the IT & Telecoms Strategy document, section 3.4.5.

The spend profile and delivery plan are shown below and reflects a smoothed annual activity level for the progressive replacement of current systems and enhancement of processes.

IT 018 GSO Operational Safety & Compliance							Gartner Benchmark Range		Gartner Rating
Investment (£m)	FY26/27	FY27/28	FY28/29	FY29/30	FY30/31	Total	Low	High	
CAPEX	■	■	■	■	■	■	■	■	

IT 018 GSO Operational Safety & Compliance	FY26/27	FY27/28	FY28/29	FY29/30	FY30/31
Maintain, sustain, enhance	▶	▶	▶	▶	▶

18 IT 019 Enhance Control Room Telephony

18.1 Background and scope summary

Problem / Trigger	Strategy	Business Outcome	Primary Regulatory Outcome	Cost sub-category
Asset health – refresh and enhance	Refresh	Operate safely, reliably, and flexibly – refresh	Secure and resilient supplies	Digital processes

In RIIO-T2 a cloud-based solution was introduced for NCC telephony as the previous solution was out of support and increasingly costly to maintain.

This investment will integrate the telephony service into control room operations. This will enable improved communications through enhanced coordination between the control room and field operations, more robust communication capability in emergency situations, and will result in improved safety. The investment will enable accurate decision-making, enhance situational awareness, and facilitate the analysis and gathering of insights from call data.

This investment strengthens compliance with the following Data Best Practice principles:

- 5. Make Data Assets discoverable for potential Data Users.
- 8. Ensure Data Assets are interoperable with Data Assets from other data and digital services.
- 9. Protect Data Assets and systems in accordance with Security, Privacy and Resilience (SPaR) best practice.

Problem / opportunity statement

The replacement for the previous out of support NCC telephony solution (TMC) was implemented on a like-for-like basis, lacking the key features to support the future vision for the digital transformation of the control room. Issues include:

- The telephony system does not support the sharing of critical information as there is a lack of real-time communications between control room operatives and field operations.
- There is no capability to generate automatic alerts and notifications to enhance situational awareness.
- It is not possible to produce transcripts of conversations to analyse call data.
- It is not possible to remain connected and responsive while on the move.

18.2 Optioneering

The options for this investment were selected to contrast the outcome of not investing with an alternative to address issues. There is only one option as the business assessment of requirements have prescribed the minimum viable scope of issues to be addressed and the most appropriate existing systems have been selected to enable the required capabilities. The choice is between taking action or not.

The table below sets out the options considered for this capability.

Ref.	Option Description	Pros	Cons
DNI	Do not invest	<ul style="list-style-type: none"> • N/A 	<ul style="list-style-type: none"> • Failure to increase efficiency and effectiveness and address the issues set out in the problem statement. • Not improving the risk level caused by limited communication in emergency situations.
A	Sustain / maintain and enhance Control Room Telephony Recommended	<ul style="list-style-type: none"> • More resilient NTS through better coordination between NCC and the field. 	<ul style="list-style-type: none"> • Investment cost.

	<ul style="list-style-type: none"> • Improved efficiency of NCC staff. • More operational data insights and data-driven solutions. • Improved monitoring and situational awareness for NCC staff. • Improved data accessibility. • Uninterrupted communication access. 	
--	---	--

18.3 Preferred option

We recommended Option A – During RIIO-GT3 we will be enhancing the features of the cloud-based telephony solutions and integrating it into the wider control room systems.

Consumer / stakeholder benefits

Improved automation of routine communication tasks will lead expert resource better prepared to deal with potential challenges and, therefore, provide a more reliable service to our consumers.

18.4 Cost and deliverability

The cost drivers for this investment are in common with other IT investments and are described in the IT & Telecoms Strategy document, section 3.4.3. Costs are for the full scope of deliverables as described above. Deliverability of this investment is in common with other IT investments and are described in the IT & Telecoms Strategy document, section 3.4.5.

The spend profile and delivery plan are shown below.

IT 019 GSO Enhance - Control Room Telephony							Gartner Benchmark Range		Gartner Rating
Investment (£m)	FY26/27	FY27/28	FY28/29	FY29/30	FY30/31	Total	Low	High	
CAPEX	■	■	■	■	■	■	■	■	

IT 019 GSO Enhance - Control Room Telephony	FY26/27	FY27/28	FY28/29	FY29/30	FY30/31
Telephony maintain, sustain and enhance					

19 IT 020 Future Pandemic Preparedness

19.1 Background and scope summary

Problem / Trigger	Strategy	Business Outcome	Primary Regulatory Outcome	Cost sub-category
Pandemic risk	Enhance capabilities to support emergency operations	Operate safely, reliably, and flexibly	Secure and resilient supplies	Digital processes

The recent pandemic forced operations to be adapted to enable more flexible working arrangements and, ultimately, being able to carry out NCC system operation work from home. We recognise that there are other types of extreme circumstances that may have a significant impact on working arrangements, such as natural events, and technological and operational failures.

Facilities such as the Emergency Control Room (ECR) have limited or no utility in situations where social distancing is required. Whilst we can enable remote access to the control room in the event of a future pandemic, we must also consider the security of the connection, the suitability of IT equipment (monitors, etc.) in the home or other remote locations, and the security and resilience of any collaborative communications channels that are required.

In RIIO-GT3 we will evaluate and improve the resiliency of our control room operations by enhancing secure remote access from various location types (home, site, etc.). This will include optimising portable device compatibility with secure remote work arrangements and the possibilities for providing a seamless fail-over to a virtual control room and associated training.

This investment strengthens compliance with the following Data Best Practice principles:

- 9. Protect Data Assets and systems in accordance with Security, Privacy and Resilience (SPaR) best practice.

Problem / opportunity statement

The recent pandemic has heightened understanding of the constraints and requirements for business continuity under extreme circumstances. As the risk of pandemics and extreme weather conditions grows, we need better ways of enabling the control centre capabilities to be carried out remotely when the Emergency Control Room (ECR) is not appropriate. Current technology implementations provide limited capabilities and would restrict operations.

19.2 Optioneering

The options for this investment were selected to contrast the outcome of not investing with alternative levels of change to address issues. The two options, A and B, reflect the minimum viable product to address the issues (A) and the additional use of new technologies (augmented reality) to provide enhanced capabilities (B).

The table below sets out the options considered for this capability.

Ref.	Option Description	Pros	Cons
DNI	Do not invest	<ul style="list-style-type: none"> • N/A 	<ul style="list-style-type: none"> • Increased risk exposure from unforeseen extreme circumstances, potentially resulting in significant impact to availability of gas and reliability of gas network data. • Non-compliance with regulations. • Increased cost of implementing a solution under limiting circumstances.
A	Assess and deliver improvement for remote working arrangements. Recommended	<ul style="list-style-type: none"> • Minimised risk associated with a variety of unforeseen extreme circumstances. • Least risk of a costly damage to our operations. • Supports flexible working arrangements. • Supports employee wellbeing in case of unfavourable live working circumstances. 	<ul style="list-style-type: none"> • Requires pragmatic approach to avoid considering unrealistic circumstances.
B	Same as A with the addition of Augmented Reality (AR) control room	<ul style="list-style-type: none"> • Resilience for shift teams to work collaboratively during a pandemic. • Safer operations during a pandemic. • Resilient workforce during a pandemic. 	<ul style="list-style-type: none"> • Expensive implementation.

19.3 Preferred option

We recommended Option A – During RIIIO-GT3 we will optimise the NCC operating approach during a pandemic by providing secure remote access to the relevant GSO systems. Option B was discounted as the cost would be very high and it would require success of an untried technology at scale.

Consumer / stakeholder benefits

Increasing the security and resilience of the NTS by ensuring that during a pandemic we can continue operations to keep the gas flowing in an optimal way without compromising the service.

19.4 Cost and deliverability

The cost drivers for this investment are in common with other IT investments and are described in the IT & Telecoms Strategy document, section 3.4.3. Costs are for the full scope of deliverables as described above. Deliverability of this investment is in common with other IT investments and are described in the IT & Telecoms Strategy document, section 3.4.5.

The cost profile for this investment is based on an estimate for the project to provide improved facilities for remote working. It is based on our experience in the recent pandemic and the lessons learnt and requirements gathered at the time. The cost is based on providing the capability to 75 seats, split out into individual costings for mobile equipment, CNI server side infrastructure and procurement activities and project resourcing for delivery based on templates that can be compared with similar delivery activities.

We have reviewed the scope of this work with Gartner and they have agreed that it is a reasonable sum for this scope, hence the single figure in the high and low range limits.

IT 020 GSO Future Pandemic Preparedness							Gartner Benchmark Range		Gartner Rating
Investment (£m)	FY26/27	FY27/28	FY28/29	FY29/30	FY30/31	Total	Low	High	
CAPEX	■	■	■	■	■	■	■	■	

The project plan for this investment is set out below and shows a project in the first two years to develop better facilities for NCC staff working remotely during circumstances such as a pandemic.

IT 020 GSO Future Pandemic Preparedness	FY26/27	FY27/28	FY28/29	FY29/30	FY30/31
Pandemic preparation					

20 Outcomes, priorities, commitments and price control deliverables

20.1 Ofgem outcomes

Select all priorities that are supported by this programme/scheme.

- Secure and resilient supplies
- High quality of service from regulated firms
- System efficiency and long-term value for money
- Infrastructure fit for a low-cost transition to net zero

20.1.1 How will the programme/scheme support the regulatory priority/priorities?

Secure and resilient supplies. Investments in this IJP aligned to this priority are to:

- Refresh the technology or maintain technology health through regular updates to sustain these business critical systems and ensure they operate securely and reliably.
- Respond to changes in regulation and legislation and ensure our systems remain compliant.
- Increase business capacity, e.g. for planning outages in support of AMP delivery, through better IT tools to increase productivity and improve decision making.
- Increase the safety of our workforce and the NTS by ensuring safe working and matching competencies to work.

High quality of service from regulated firms. One investment in this IJP is aligned with this priority (IT 016 Predictive Forecasting and Network Simulation). This investment will enhance the quality of information that we provide to industry participants for managing the capacity, safety and reliability of the NTS and enabling their business processes.

20.2 Our business priorities

Select all priorities that are supported by this programme/scheme.

- Drive positive environmental and community impact
- Shape the energy markets of the future
- Operate safely, reliably and flexibly
- Invest in our people, grow our capability, and value everyone’s contribution
- Deliver sustainable value for customers and stakeholders

20.2.1 How will the programme/scheme support our business priority/priorities?

Operate safely, reliably and flexibly. Investments to refresh the technology or support technology health through regular updates enable us to sustain these business critical systems and ensure they operate securely and reliably. Other investments respond to requirements in continuing improvement in our core functions of system operations, all aimed at delivering a safe, secure and reliable NTS. These investments also strengthen our compliance with Data Best Practice.

Deliver sustainable value for customers and stakeholders. One investment in this IJP is aligned with this priority (IT 016 Predictive Forecasting and Network Simulation). This investment will enhance the quality of information that we provide to industry participants for managing the capacity, safety and reliability of the NTS and enabling their business processes.

20.3 Price control deliverables

Not applicable.

20.4 Commitments

The commitments related to this IJP are shown in the table below. All investments enable commitment number 12: Transforming our activities through our IT and data.

The investments also support commitments relating to the Gas System Operator (#4: Delivering a resilient network fit for the future, #7: Leading the energy transition to clean power and net zero, #10: Operating the system safely, reliably and flexibly) and Security (#2: Keeping our critical systems secure).

Ref	Investment Line	Commitment
IT 005	GSO Network Capability	4, 10, 12
IT 006	Enhance SCADA	4, 12
IT 007	Enhance Commercial Apps (Liferay)	4, 12
IT 008	Video Wall replacement	4, 12
IT 009	EDSS Replacement	4, 12
IT 010	Operational Process Improvements	4, 12
IT 011	Future Telemetry Network	4, 7, 10, 12
IT 012	Energy Trading, Reporting and Notifications Replacement	4, 10, 12
IT 013	Operational System Assurance	2, 4, 12
IT 014	ECR Enhancements	4, 12
IT 015	Resiliency and Security of Supply	4, 12
IT 016	Predictive Forecasting and Network Simulation	4, 10, 12
IT 017	Whole System Energy Response	4, 10, 12
IT 018	Operational Safety & Compliance	4, 12
IT 019	Enhance Control Room Telephony	4, 12
IT 020	Future Pandemic Preparedness	4, 12

21 Conclusion

This Investment Justification Paper (IJP) sets out our planned investments to sustain, refresh or enhance our Gas Control Suite (GCS). This suite of systems provides the tools by which the National Control Centre (NCC) manage real-time operations of the National Transmission System (NTS). It includes infrastructure such as the video wall and telephony, distributed systems such as Supervisory Control and Data Acquisition system (SCADA), Telemetry and network management tools such as modelling and forecasting.

Investments are triggered by a mix of delivering compliance and delivering business outcomes. Compliance investments keep our systems secure and reliable in line with our IT Asset Health Policy, and respond to changes in regulation and legislation. Business outcomes focus on the need to grow business capacity to deliver the Asset Management Plan (AMP), further digitalisation of processes and enabling better insights for decision making.

Investments in this paper primarily support two Ofgem key outcomes: *Secure and Resilient Supplies* (15 investments, Totex of ██████████) and *High quality of service from regulated firms* (1 investment, Totex of ██████████) giving a total of £112.931m.