Additional Information

Non-operational IT CAPEX Re-opener

Data & Digitalisation

Version: <Final>
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Classification: <Public>

OFGEM Feedback

OFGEM Comments and references to update following SQs.

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2.1 Background to the re-opener

Ofgem recognises the energy sector needs a modern, de-carbonised, digital energy system underpinned by open systems design built on **data and digitisation foundations**. Maturity in data sharing, business process automation and digitalisation will need to continue to develop to enable this vision. SGN needs to ensure its ability to deliver repeatable, sustainable and optimised digital and data products and services that provide real benefits to data users and, in turn, consumers throughout GD2 and build solid foundations for GD3.

The introduction of Licence Condition 9.5 Digitalisation underline Ofgem's determination for the energy networks to deliver these outcomes to which SGN must align. A modern, de-carbonised digital energy system demands digital solutions, products, and platforms, many of which do not exist today and are likely to result in new operating models to support their delivery. Additionally, SGN's digital readiness assessment, detailed in Appendix B, highlights a need for capability improvements in this area, which is consistent with our industry as a whole.

This paper is seeking operational allowances to enable accelerated compliance against the Licence Condition and in particular Data Best Practice Guidelines, as required by Ofgem.The operational allowances (Opex) sought in this paper are the key enablers to the previously funded capital allowances (Capex) through the GD2 funding mechanism.

SGN's Digitalisation Strategy guides our ability to deliver towards these commitments.

Our strategy has been developed in response to the recommendations of the Energy Data Taskforce, the Energy Digitilisation Task Force (EDiT) and more recently the Data Best Practise Guidelines (DBPG).

The recommendations in the Energy Digitalisation Task Force (EDiT) report provide a clear expectation to participate and shape value for customers, drive sector level interoperability and enable carbon reporting, and foundations for these EDiT recommendations come in the form of the Data Best Practice Guidelines. For this to be successful, new digital governance will be required.

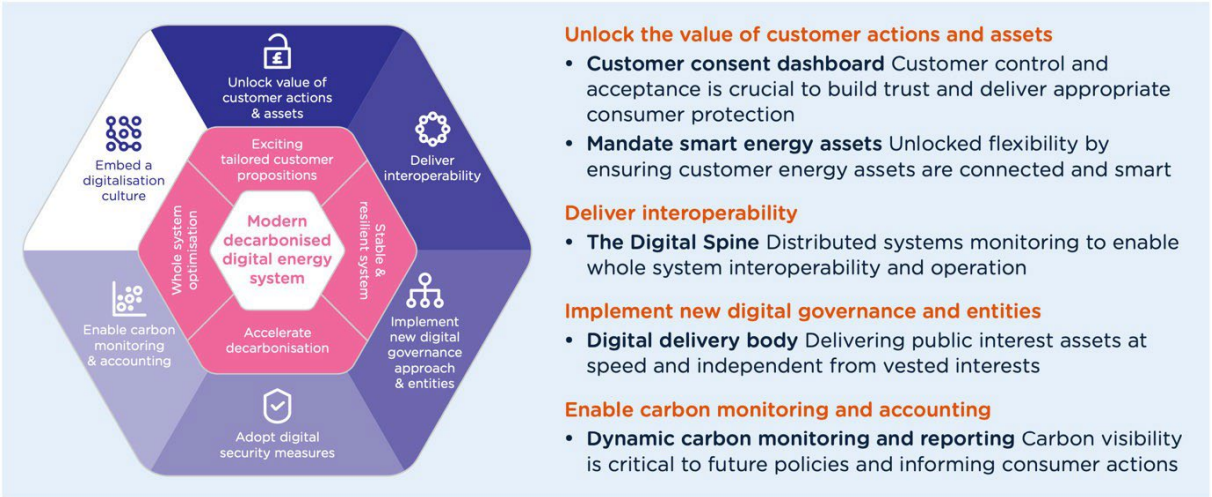


Figure 1: EDiT recommendations

At the time of preparing our GD2 plans, SGN and other Gas Distribution Networks (GDNs) were unclear on the specific requirements and expectations on data and digitalisation strategies. Included in the SGN's business plan were funding proposals that supported the move to digitalisation that were rejected at the time, whilst the Data Best Practice Guidance (DBPG) was developed. We now have clarity on the DBPG principles and open data commitment requirements and a greater understanding of the adjustments that networks need to make in order to comply with them. Although, uncertainty remains in relation to emerging expectations resulting from the EDiT recommendations and the automation of regulatory reporting.

Adhering to our Licence Obligation 9.5 Digitalisation, we have published our Digitalisation Strategy and Digital Strategy Action Plan (DSAP). The best endeavours highlighted in our DSAP requires implementing the Data Best Practice Guidance which requires investment in and development of data governance, data management, data sharing and open data framework. The investment defined within this re-opener application will help us on the journey to have the required functionality and capabilities to comply with the defined Licence Obligation requirements.

In its GD2 Capex business plan submission SGN requested funding to establish our internal core platforms in preparation for these upcoming requirements. The funding requested in our plans was to invest into fundamentals such as technology, tools and embedding of supporting processes. This has resulted in delivering the following foundational technology capabilities:

- Setting up a data management tool (Talend)
- Creation of a data lake
- Setting up integration tools for API and file transfers (MuleSoft)
- A multi-year cyber programme to support information security capability improvement.

Given the early-stage concepts in the business plan guidance, SGN supported the use of uncertainty mechanisms such as re-openers and has continued to put forward the case that the non-operational IT Capex re-opener should also include operating costs (run costs - Opex) to support the requirements of DBPG. Ofgem did not chose to make these changes in the final determination of the GD2 allowance. SGN does not believe that the Capex funding alone, provided under our GD2 allowances will allow us to deliver and sustain data best practice.

Previously, SGN raised concerns with Ofgem around funding the delivery of Data Best Practice Guideline (DBPG) principles in its response to the consultation on DBPG principles on 30 July 2021. This non-operational IT Capex re-opener provides the first opportunity for SGN formally explore this funding gap with Ofgem. Since then, SGN has received an outcome letter from Ofgem on the 19 December 2022, in response to our RFI submission to the DBPG. In it, Ofgem have assessed SGN's response to the RFI and have raised compliance concerns on the speed of implementation of DBPG. Based on Ofgem's assessment, SGN has further refined the programme plan to speed up the implementation of DBPG (as described later in the paper)[redacted]. SGN will continue to work with Ofgem on the DBPG and may need further work in other potential areas for which we may apply for more funding in the re-opener coming in the summer of 2023.

Whilst there is a mechanism to request Capex through the GD2 re-openers, we would require a re-opener mechanism to fund the operational costs (Opex) that are necessary to operationalise the capital investment (Capex). Opex funding to support enhanced data operations required to comply with the principles of Ofgem's Data Best Practice Guidance was not included within SGNs GD2 baseline allowances. The approval of any additional Capex investment requested in this re-opener

submission is underpinned by the requested Opex investment. The Opex funding is required to ensure SGN can service data user requests; operate the Open Data Triage process; and store and maintain data assets beyond the initial projects to create these products and services.

A summary of our costs is shown below:

Investment Option 1 (Recommended)

[redacted]

[redacted]

The inflation factor used to reduce the 22/23 prices to 18/19 prices was 1.17987, based on the yearly averageof 22/23 and 18/19.

This re-opener submission, requests the following adjustments to the Scottish and Southern Licences respectively.

Table 1: Requested re-opener adjustment in 2018-19 prices

Licensee	Capex	Opex
Scotland Gas Networks pie	[redacted]	[redacted]
Southern Gas Networks pie	[redacted]	[redacted]
Total	[redacted]	[redacted]

Table 1: Requested re-opener adjustments in 2018-19 prices

The funding will help us build on our foundation to deliver towards Data Best Practice Guidance (DBPG) Principles[1]1, 2, 3, 4, 5, 7, 8, & 11 and preparations for the upcoming recommendations from the Energy Digitalisation Task Force (EDiT) report for the remainder of the GD2 period.

[1] Data Best Practice Guidance principle - htt s: www.of em. ov.uk ublications/decision-data-best-practice-guidance-and-digitalisation-strategy-and-action-plan-guidance

Under this re-opener, we want to enable the previously invested GD2 capital allowances by requesting operational only costs (Opex) in delivering several objectives under three workstreams as follows:

Table 2: Re-opener workstreams and objectives

Workstream	Objective
Workstream 1: Delivering open data commitments [redacted]	**Objective 1: Automate the Open Data Triage process.** This is in meeting the Data Best Practice Guidance Principle 11. Through this, SGN will be able to respond to data requests faster and in a more automated manner.
	Objective 2: Open SGN data in line with the Data Best Practice Guidance [redacted]**.** This is in meeting the Data Best Practice Guidance principles 1 to 5, 7, 8 and 11. Principles 9 and 10 are covered under different SGN programmes in our GD2 plans. Principle 6 requires further work that would be commissioned as part of our GD3 business plans that has not been included in this reopener. SGN proposes to [redacted] from our core transactional systems into a Data Lake, apply data management and governance processes and make the data sets available through a set of open APIs.
Workstream 2: Prepare for supporting the EDiT recommendations [redacted]	**Objective 1: SGN needs to prepare for the emerging requirements to deliver towards EDiT recommendations which build on the DBPG via digital and data-smart solutions, by participating and developing the following three areas:** 1. Customer Registration Portal 2. Common Asset Register 3. Digital Spine The work required here is business analysis for the impact of these standards and to contribute towards design of these services. Further investment may be required in future reopeners or funding cycles once requirements are more detailed and better understood across our industry
Workstream 3: Prepare for Regulatory Reporting Pack (RRP) Automation [redacted]	**Objective 1: SGN needs to prepare for the upcoming automation of RRP processes anticipated to be automated at the start of GD3.** The work required here is to initiate business analysis required for the automation delivery at the start of GD3. Further investment may be required in future reopeners or funding cycles once requirements are more detailed and better understood across our industry

2.2 Alignment with overall business strategy and commitments

SGN's Digitalisation Strategy has been produced directly in response to the introduction of the Digitalisation Licence Condition and Data Best Practice Guidelines along with the founding recommendations of the Energy Data Taskforce and most recently the Energy Digitalisation Task Force (EDiT) report entitled Delivering a Digitalised Energy System.

The recommendations, further highlighted by publication of DBPG covers the need for:

1. Improved visibility and accessibility of energy data, asset and infrastructure
2. Optimisation of energy sector
3. Open system and interoperable design to enable the move to net zero, operational efficiencies and deliver customer value

Our digitalisation strategy is a means to gather and fulfil the requirements and expectations set by various stakeholders and to drive innovation within our sector through digital means. Our strategy is delivered through a "**Digital Transformation Framework**". The framework provides the fundamental building blocks required to deliver large scale digital change. Please refer to Appendix C for details around the digital transformation framework. The technology roadmap, a building block within our Digital Transformation Framework, guides us to improve the technology footprint that enhances our readiness for using technology to drive digital transformations.

Figure 2: SGN's Technology roadmap – Refer to the enlarged version in Appendix G

In the first two years of the GD2 period, we have invested in a Data Management tool from Talend. This tool will, over time, provide significantly improved data management capabilities such as data lineage, metadata management, data tagging and cataloguing. An improvement in management of data directly contributes to SGN's ability to make better decisions, create data sharing arrangements and contribute towards the wider industry goals of **open data and digitalisation** across the sector which is a core theme of this re-opener application.

Adoption of APIs as the main driver for integration with third parties is a strategic capability to be delivered with this re-opener funding. It is also a cornerstone for the expanded interoperability of the energy system and its value chain, including interfacing with participants across the larger ecosystem. SGN has limited adoption of an API architecture and there are some examples of this,

however this is not present at scale. SGN realises the value of an API architecture in fulfilling the vision set out in the recent EDiT report and Ofgem's ambition to use API technology as a means of digitalising the regulatory reporting submission process. Under this re-opener we want to start the journey to migrate SGN's integration platform from traditional interfaces to API based interfaces available to us on our chosen strategic platform – MuleSoft.

We have created and maintained a Data Lake that provides a trusted source of data for reporting, analytics and AI and ML. Our data lake has only a few use cases so far. Using this re-opener, we plan to create more capabilities that are agile in nature to further aid the use of analytics and underpin Open Data development/maturity in our business.

Our future technology roadmap includes further capability development in connectivity, exploring and exploiting further Industrial IoT, robotics and artificial / augmented / virtual reality. The use of Digital Twin for 'Gas system of the Future' is a significant goal of SGN to drive digitalisation in our business and within our sector. SGN continues to track technology trends to evaluate the best emerging technologies that may further our cause to support the Data and Digitalisation agenda.

SGN's digital aspirations are driven by value creation opportunities for our customers and stakeholders. As SGN is cloud ready, it opens up the opportunity to accelerate our digitalisation ambitions through procuring from a large catalogue of Cloud Native solutions, such as using the AWS Market Place offerings that become operational almost immediately. However, the key dependency on our IT planning is the mechanism to fund the OPEX to support these improvements.

2.3 Problem Statement

Based on the Gartner 2020 Capability model for utilities (below) SGN, along with most utilities, lag significantly behind the capability curve when it comes to using data and analytics to support the drive for better insight and better decisions by making data openly available to third parties.

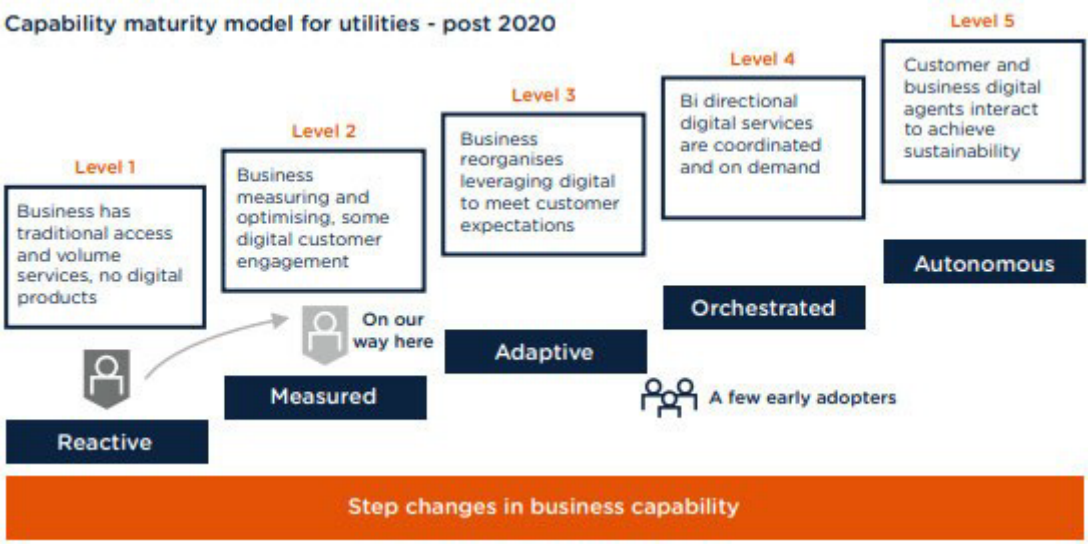


Figure 3: Capability maturity model for utilities – post 2020

Part of the challenge is that SGN, cannot deliver on our data and digitalisation Licence Obligations and needs the operational funding to develop and resource broader foundational Data Operations or "DataSecOps" capabilities. Whilst we have made capital investments in Talend and MuleSoft, our respective chosen strategic Data Management and Data Integration tools, these tools in isolation cannot deliver the benefits for consumers. [redacted].

With no corresponding Opex investment funding to operationalise these tools in a timely manner and develop the necessary skills, resources and capabilities to establish them in an open format so that multiple parties can extract the value, they represent a sunk cost for the data consumer.

DataSecOps is a collaborative data management discipline that focuses on end-to-end data management and the elimination of data silos. There are many DataSecOps definitions provided by the various thought leaders in this space, such as IBM, Gartner, Eckerson Group, Forbes, and DataKitchen, all of which essentially define it as "the orchestration of people, processes, and technology to accelerate the quick delivery of high-quality data to data users."[2].

DataSecOps offers the following benefits:

- Decreases the cycle time in deploying analytical solutions
- Lowers data defects
- Reduces the time required to resolve data defects
- Minimises data silos

Establishing and developing DataSecOps capabilities at SGN promises to, over time, develop the process of building, changing, and managing our data operations. The primary goal is to maximise the value of data enabling SGN to increase compliance and improve associated operations, services and our stakeholders experience in data delivery.

For SGN to sustainably achieve our Licence Obligations associated with Open Data and Data Best Practice Guidance, and in the future keep pace with the Energy Digitalisation Taskforce recommendations and Regulatory Reporting Automation requirements, we must invest in these core operational capabilities now. They will take the remainder of GD2 to establish and adopt, without the appropriate level of funding, delivering the data best practice guidelines with current allowances will take significantly longer..

[redacted]

DataSecOps will require us to develop pools of new skills and recruit into new job roles. These roles include, but are not limited to, Information Architects, Data Engineers, Data Analysts, Data Scientists

[2] DataOps Flipbook: https://www.ibm.com/blogs/academy-of-technology/academy-publication-dataops-flipbook/

and DataSecOps Engineers. They will all operate under an umbrella of governance, quality and standards practices and definitions set out in our Enterprise Architecture and enforced through our Data Governance teams. These teams will also need to be established and staffed, creating a robust practice of what will ultimately be, in-house Data Governance and Management expertise. These roles are critical if we are to exploit data internally and externally. Data Governance, Data Management, Data Stewards, Data Quality and Assurance, Data Privacy and Open Data licensing expertise is required across all phases of the DataSecOps lifecycle.

In the Table - 2 in Section 2.1 above, we divided the investments of this paper into three workstreams.

1. **Workstream 1: Delivering towards Open Data commitments**

Ofgem wants the Gas Distribution companies to deliver towards the Open Data commitments aligning to the Data Best Practice Guidance. This requires SGN to adopt new data standards and a digital culture. The two objectives set for Workstream 1 will help towards delivering Ofgem's requirements. As discussed in our digitalisation strategy, we have already delivered basic capabilities required to deliver this work by investing in integration and data management tools such as MuleSoft and Talend. In this workstream we plan to collect more data in our Data Lake to service data sharing requirements, deliver on open data capabilities, build a robust governance culture and processes, and automate data triage processes.

Objective 1: Automate the Open Data Triage process.

This is to align our capability to address the requirements of the Data Best Practice Guidance principle 11. Through this, SGN will be able to respond to data requests faster and in an efficient manner.

The ENA, in their Data and Digitalisation Steering Group publication, Data Triage Playbook (https://www.energynetworks.org/assets/images/ENA Data Triage Playbook.pdf) describe Presumed Open and Data Triage as follows:

"Presumed Open is the principle that data should be as open as possible. Where the raw data cannot be entirely open, the data custodian should provide objective justification for this. For data to be made 'as open as possible', it is necessary to have a formal process which can be used to identify potential issues and mitigate them as necessary, this is referred to as Open Data Triage.

Open Data Triage is a process to systematically identify issues (Privacy, Security, Commercial, Negative Consumer Impact or Legislation and Regulator Barriers) with a dataset which limit their potential openness and then identify what techniques can be used to mitigate these issues."

SGN currently services all data requests through our manual Data Triage processes. We recognise this is not an enduring or sustainable solution. Taking a position of "presumed open", we anticipate the volume and diversity of data requests to significantly increase in line with the growth of our Open Data catalogue, the increasing need for whole system visibility and emerging, as yet unknown, stakeholder requirements.

ENA's High level Data Triage Playbook process

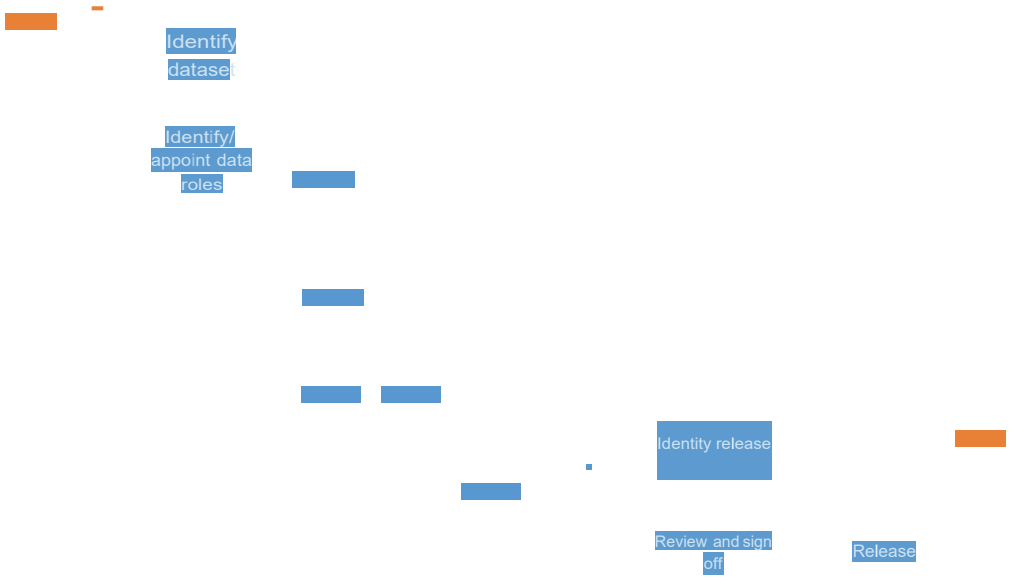


Figure 4: ENA's High level Data Triage Playbaok process

As can be seen, open data triage is a highly involved process, from handling all communication to and from requestors, to engaging internal stakeholders such as business owners and legal. Executing risk assessments, end to end process governance and service level tracking along with keeping records in line with DBPG all fall within the triage function. Perhaps the most critical role is working closely across SGN's internal teams to facilitate data sourcing and defining the pipeline of open data sets to be catalogued, curated, quality assured and ultimately shared.

Each dataset identified will need to go through a multi-stage process.

Figure 5 : Open data triage multi-staged process

To do this effectively at scale we will need new teams and new pools of skills and expertise that SGN currently do not have. These will need to be engaged as part of an enduring capability as this is not a one-time activity, rather is it perpetual and is continuously adapting to stakeholder feedback, prevailing regulations and the law, technologies and best practice, and the lifecycle of the data itself.

The Open Data Triage service will include the following resources:

Enterprise and Information Architecture

To enable Open Data triage at scale we must define and implement SGN standards and apply them as appropriate to metadata and taxonomies. To do this we need a clearly defined Enterprise

Architecture, and in support of that we will need Information Architects to establish the technical and business information architecture and data standards we will follow.

Data Governance Specialist
Data Governance Specialists are responsible for deploying and enforcing policies and procedures that ensure data is used and maintained properly.

Data Analyst
For the purposes of Open Data triage, SGN Data Analysts are responsible for screening data requests and data sources, to understand their context, suitability, and sensitivity. This contextual identification of data set requests and resolving them to, and subsequent engagement with, data owners is key to ensure the successful triage and the subsequent lifecycle management, governance, and safe sharing of requested Open Data data sets.

Legal, Regulatory, Data Privacy and Open Data Licensing Experts
The comprehensive management and governance structure we build will need to be ably supported with legal and regulatory expertise, data privacy and Open Data licensing subject matter experts (SME's) to ensure SGN maintain compliance with standards, regulations, the law and the licensing of open data.

With these skills and leveraging the tools we have already invested in we can transform our data triage processes and make more data sets available for sharing.

Establishing SGN's Data Triage service will require an extensive programme of work to develop requirements well beyond the first expressed use case, this is especially true in relation to geospatial data which is currently the most popular data requested. It will also improve internal visibility of data requests to SGN which will then, in turn, form a key identifier for new or adapted data pipelines.

Automating our data triage processes, in line with Data Best Practice Guidance principle 11, is essential to ensure we meet the needs of our stakeholders as well as our regulatory obligations. It's fundamental SGN make it easier for stakeholders to identify, apply for, license, and consume our open data sets. SGN are responsible for the data we share – we must ensure we have robust and repeatable processes in place to assure data and appropriately manage any risks around opening it up and making it available. Workstream 1, Objective 1 provides SGN with the means to achieve this.

Data pipelines will form a key part of this. A data pipeline is a set of tools and processes used to automate the movement and transformation of data between a source system and a target repository. The technical capability to execute on the resulting pipeline of validated Open Data requests also needs to be funded and resourced – this is addressed in Workstream 1, Objective 2.

Objective 2: Open SGN data in line with the Data Best Practice Guidance.

This is in meeting the requirements of Data Best Practice Guidance principles 1 to 5, 7,8 and 11. Principles 9 and 10 are covered under different SGN programmes and outside the scope of this re-opener. Through this re-opener whilst we are becoming aligned with Principle 6. Full compliance across all data sets will require further work to be commissioned under GD3.The high-level steps involved in opening the data is summarised in the figure below:

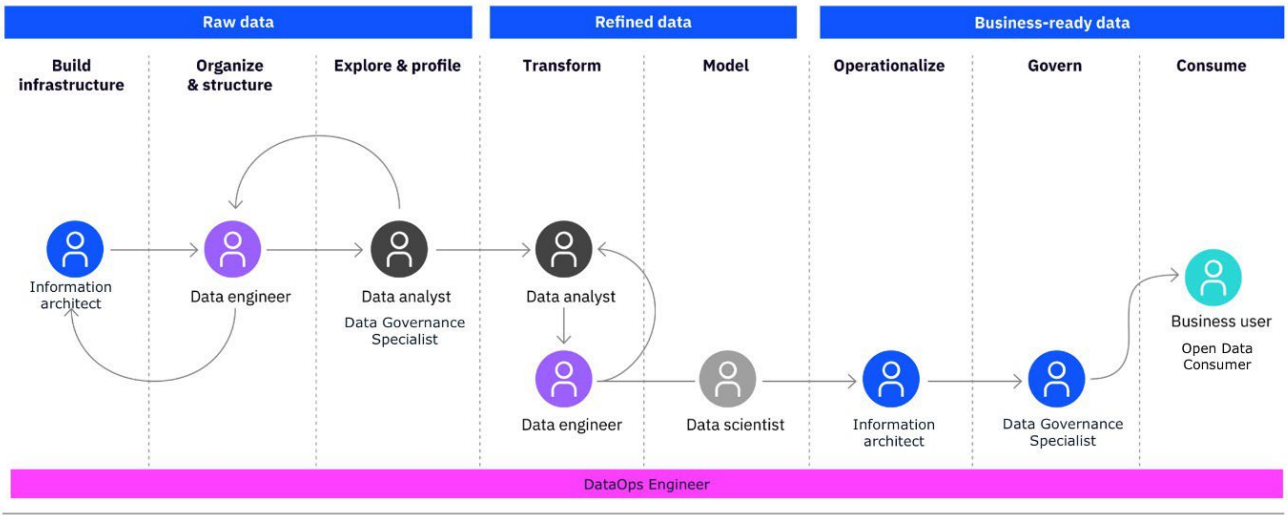


Figure 6: DataSecOps workflow by roles

This would require SGN to extract data from our core transactional systems into a Data Lake, apply data management and governance processes and make the data sets available through a set of open APIs.

However, SGN cannot become a data ready organisation without an increase in Opex funding from Ofgem to develop, deliver and sustain the new DataSecOps and Data Governance capabilities required. Our Capex investment in tools alone, such as Talend and MuleSoft, (our respective chosen strategic Data Management and Data Integration tools) in isolation cannot deliver the Open Data services and DBPG compliance required.

This requires us to significantly expand the harvesting and cataloguing of data and the curation of Open Data sets from across the SGN organisation. These will be triaged as per Objective 1, catalogued and curated with Talend, stored in ADaPt, our Open Data data lake and made available via API's using MuleSoft. As part of this re-opener, we are requesting the funding to establish and maintain the core skills and teams to deliver our capability to ingest, store, make discoverable and assure the data quality of the open data we will be harvesting at scale, transitioning SGN from a technology ready, to a data ready organisation. With our ADaPt Data Lake being a cloud-based service, this expansion and its subsequent growth will also drive increased operating costs for hosting, administration and maintenance.

Currently, given the maturity in our capability and data operations, SGN do not share any data from our ADaPt data lake externally through APIs. Our ambition is to provide API access to many Open Data data sets by the end of GD2.

Security, as always, remains a key consideration. Whilst the expansion of our Cyber Security capability and associated funding is handled separately to this re-opener, security remains central to the assured delivery of our DataSecOps services. Similarly, to DevOps, which can often be referred to DevSecOps because of the integrated nature of security assurance throughout the DevOps process, DataOps is often referred to as DataSecOps.

This continuous security assurance is applied throughout the data's journey from identification to publication. It is facilitated through the data triage service (as highlighted in Workstream 1, Objective 1 above) along with the design and testing of associated data pipelines, its safe exposure

(e.g., APIs) and for its entire lifecycle. These DataSecOps assurance practices are not conducted in isolation and are closely co-ordinated with the secure hosting of our ADaPt Data Lake and the secure exposure of our selected interfaces.

This security domain (and its associated governance) will grow increasingly complex over time as our exposed Open data catalogue increases. SGN recognise we will need to continuously review new and existing requests, assessing the data and risk associated with its open publication.

To achieve this, we must change the way we view and manage our Data Assets, shifting from a siloed view of data through our applications and systems legacy to an Enterprise Architecture view with the supporting repositories, policies and governance structure that is enabled and delivered through a modernised DataSecOps culture. As highlighted in Objective 1, this will require us to establish significant new services, including teams of Data and DataSecOps Engineers, Information Architects, Data Governance and Management skills, Data Analysts and associated experts in areas of Data Privacy and Open Data Licensing.

In addition to the roles already defined to meet our triage aspirations in Workstream 1, Objective 1 we will need additional and new resources to open our data through APIs:

Enterprise and Information Architecture
To enable DataSecOps at scale we must define and implement SGN standards and apply them as appropriate to metadata and taxonomies. To do this we need a clearly defined Enterprise Architecture, and in support of that we will need Information Architects to establish the technical and business information architecture and data standards we will follow.

Data Engineering
Data Engineers who are responsible for data availability, curation, and cleansing. They play a key role in the data triage process and provide the mechanisms to capture and understand data from different sources across the enterprise. Publish core datasets after cleansing and transforming captured data.

DataOps Engineering
DataOps engineers who are responsible for the frequent and timely releases of data pipelines and data products into productive use. They manage and automate end to end the provision of environments, data on data platforms, deployment, testing, release, security, and monitoring processes.

Data Governance Specialist
Data Governance Specialists are responsible for deploying and enforcing policies and procedures throughout the data cataloguing, curation, API development and data sharing processes to ensure data is used and maintained properly. This responsibility spans the entire data lifecycle and Open Data supply chain.

Data Analyst
SGN Data Analysts are responsible identifying and contextualizing any available data sources across the business, working closely with data owners they are key to ensuring the accurate cataloguing and classification of data feeding directly in subsequent lifecycle management, governance and policy development.

Legal, Regulatory, Data Privacy and Open Data Licensing Experts

Our comprehensive management and governance structure will need to be ably supported with legal and regulatory expertise, data privacy and Open Data licensing subject matter experts (SME's). to ensure SGN maintain compliance with standards, regulations, the law, and the licensing of open data.

Other IT Functional Support

Other IT functions such as infrastructure architects and engineers, Cyber Security and IT Operations and support will also constantly be engaged to ensure the necessary compute environments and services are allocated and maintained.

The diagram below describes at a high level a DataSecOps structure capable of supporting all three workstreams and all objectives in this re-opener, showing the key capability areas that need resourcing to deliver the end-to-end orchestration of people, processes, and technology to accelerate the secure delivery of high-quality data to data users.

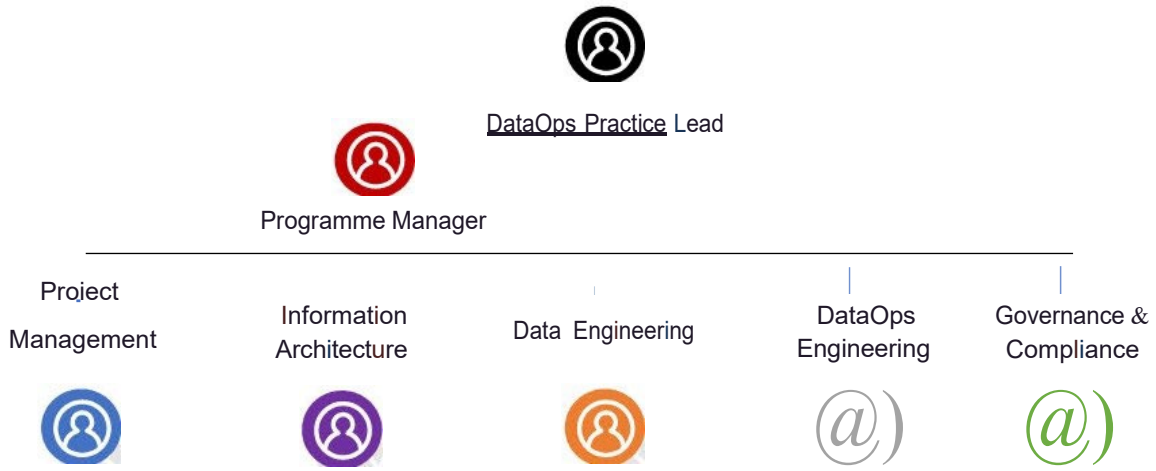


Figure 7: OataSecOps hierarchy

Developing our Enterprise Architecture capability, we must define and implement SGN standards and apply them as appropriate to metadata and taxonomies as well as data policies from data governance though to full data lifecycle management. This must then be executed through the implementation of repeatable practices and data pipeline processes to ensure we maintain our Data Asset log in line with requirements and populate Talend with the key systems metadata and tags for data owners. This must all be conducted while maintaining a tight integration with ADaPT, our Data Lake of Open Data data sets which will be the trusted and quality assured source.

To provide access to our Open Data via API's we must build out an enduring DataSecOps Engineering capability to infuse the delivery of Open data products through APIs via our MuleSoft platform. Infusing data products is more than a technical discipline, it involves close collaboration with internal and external stakeholders to ensure the data products integrate. This can be as simple as ensuring the data inputs and outputs are clearly defined, or as complex as assisting in the design and implementation of new data representations necessary to support them, and everything in between.

With the lack of current data standards, it is essential SGN have strong representation and take an active role in their definition, championing their development and deployment.

All of this will require a programme and investment for continuous development and will need to be done in conjunction with other GDN's, continuing the feasibility study to establish a gas data interoperability model.

It will also require us to establish an enterprise data improvement programme to ensure data quality throughout the development and execution of our data pipeline processes. This will include setting up new processes, bringing data quality reporting and monitoring into Talend and Tableau.

Equally SGN must develop policies and practices for the lifecycle management of data. As part of opening data, the current archive and retrieval services will need to accommodate non- repudiation services on published data as well as to allow for time slicing of published data sets particularly if third parties will build their own business models using the published data. This will require significant operational investment in people to define policies, deploy controls, test and publish. This operational funding is not currently available to SGN.

Having invested in tools and applications that promote open sharing with highly interoperable interfaces, to implement these data exchanges other forms of operational cost is incurred. Open interfaces may result in SGN systems requiring changes at source (application level), or in the SGN data fabric (such as metadata layers, integration layers, data schemas, data ingestion pipelines etc). Such changes will need to be managed and will incur operational costs, the magnitude of which will vary on a case-by-case basis.

This is based on the phased build out of our capability to automate triage and align with DBPG and Open Data compliance requirements. It will enable SGN to - throughout its lifecycle - triage, govern, curate, socialise, provide API's, deliver and maintain Open Data. Our capability ramps up over the three-year period, scaling out to the extent we believe SGN will be in a position to compile and expose 6 data sets per annum by the end of GD2 (assuming they are a fair mix of size and complexity).

The cost break-down and timeline have been provided in Section 3 and Section 4 below.

2. Workstream 2: Prepare for Supporting EDiT recommendations

The EDiT recommendations describe the clear necessity to digitalise our systems to manage the impact of new assets such as heat pumps, Hydrogen, Biomethane etc... on our systems. The new and existing assets must seamlessly coordinate and deliver a stable system.

Under Workstream 2 for this re-opener, SGN wants to prepare for the emerging requirements to deliver towards the EDiT recommendation by participating and developing the following three activities:

- Customer registration portal
- Common asset register
- Digital spine for energy system

In previous GD2 submissions and determinations, there has been no budget allocated for delivering EDiT recommendations. In this re-opener, we are requesting Opex over the next three years to

support the above three EDiT activities. [redacted].

At the time of writing this re-opener, Ofgem has only requested GDN's to participate in activities associated with the three EDiT recommendations identified above. As a result, the Opex costs requested here for Workstream 2 are calculated purely on that basis. Any requirement for SGN to undertake additional EDiT related activity, or a material change in scope or expectations associated with these three activities, will require SGN to seek further funding through another re-opener in order to suitably resource our involvement.

3. Workstream 3: Prepare for Regulatory Reporting Automation

Under Workstream 3, we want to prepare for the upcoming automation of regulatory reporting processes anticipated to be automated at the start of GD3. We are requesting Opex funding to initiate the business analysis required for the regulatory reporting automation delivery at the start of GD3. We need a Subject Matter Expert (SME) to represent SGN in the consultation work for regulatory reporting automation with Ofgem and other GDNs.

We want to automate the regulatory reporting in line with the Ofgem's requirements to improve reporting accuracy, clarity, consistency and speed. The current process of regulatory reporting is time consuming and requires teams to curate the required data from various systems and databases. The automation will reduce the manual dependency to automate high-fidelity processes of data extraction and consolidation.

Additionally, The Regulatory Reporting automation will provide base foundation to support the future Ofgem's requirements around Network Asset Risk Metric (NARM) Regulated Reporting Pack (RRP). Ofgem is currently consulting on the NARM RRP smart reporting process. Ofgem is assessing whether it is possible to structure regulatory data in ways that will improve efficiency in data submission, processing and analysis. The first part of this process is to design a data schema that maps the various data types and data sets. Ofgem has provided an illustrative draft of the NARM data schema to provide an indication of how the data might look (refer to Appendix D). Ofgem expects the smart reporting process in line with the agreed data schema for 2022/23 reporting.

[redacted] This ensures that SGN continues to support Ofgem's intentions to automate the RRP but does not jump into any solution work without clarity on the strategy and approach to deliver the solution.

3 Option Selection

3.1 Preferred options detail

3.1.1 Detailed Options Comparison

Option 1 - Do Nothing - Reject

To Do Nothing will significantly extend the time necessary to bring SGN into compliance with the data best practice guidelines and the recommendations of EDiT.

Aligning with and preparing for requirements resulting from the EDiT recommendations is critical for modernising the energy system to unlock flexibility, drive clean growth towards net zero emission by 2050. Anticipating future updates to regulatory framework, being unable to achieve compliance with resulting EDiT recommendation derived requirements could have an impact on SGN's available funding, license to operate, subsidy schemes and market access.

It is SGN's view that the ultimate cost of a 'Do Nothing' approach will be significantly higher compared to the timely investment in technology and capability

Furthermore, as requirements associated with data dependant EDiT recommendations such as the Digital Spine become defined, without the foundational DataSecOps capabilities identified in this re-opener being in place, SGN will not be in a position to engage or progress these recommendations in any meaningful way.

Due to the dynamic and evolving nature of these requirements and associated industry practices, it is currently not possible to accurately quantify the financial impact of associated penalties/losses/risks/missed opportunities/subsequent increased costs.

Option 2 - Industry provides or appoints a centralised/ partially centralised service - Reject

Industry could provide or appoint a centralised or partially centralised managed service that provides/facilitates the Open Data triage, curation, staging and sharing services for all network operators. For this option, SGN would not be required to make the same level of investments and deliver the same level of capabilities identified in this paper.

SGN would instead provide raw data to the Industry appointed third party operator who would be responsible for the data triage, ingestion, curation, staging and sharing of Open Data along with all associated governance, information and data management, Data and DataSecOps engineering services.

Under this option it is likely Industry, and the third party would also be responsible for data standards and, as such, SGN may be required to conduct some ETL (Extract, Transform, Load) as part of the data transfer process. This would still result in SGN requiring an Information Architecture and Data Engineering capability although more limited than requested in this paper. Additional SGN operating costs associated with ADaPt storage growth would still be incurred by SGN, although assuming all data lifecycle management responsibilities for Open Data sets rests with the third party operator these would be materially lower.

It is likely, under this option, SGN will also incur a cost for utilising the required 3rd party services.

Option 3 - SGN Deliver DBPG and Open Data Services - Recommend

This option, as recommended in this paper represents the minimum set of actions required for the necessary expansion of SGN digitalisation capabilities to meet Ofgem's regulatory expectations. This includes the digitalisation of critical manual processes, the automation of our Open Data triage process and delivering Open SGN Data in line with DBPG as outlined in Workstream 1, and positions SGN to actively support those existing EDiT and automated regulatory reporting activities as detailed in Workstream 2 and 3.

3.1.2 Consideration for preferred project option selection

3.1.2.1 Description

The investment case outlined above is in recognition that, at current course and speed, SGN will fall short of our DBPG and the expectations of stakeholders.

With Do Nothing, or the use of an alternative Ofgem assured service being non-viable options, SGN must take appropriate action to ensure compliance to our Licence Obligations. As mentioned in Section 2.1, the letter received recently from Ofgem demonstrates the need for SGN to show continued progress against its DBPG obligations.

Investing in the development and adoption of modern DataSecOps capabilities and practices and benefitting from the resulting improvements in data governance, data pipeline operations and improved data visibility, access and quality in such a considered way is precisely in line with the wants and needs of the energy ecosystem, our industry and our stakeholders.

It is also consistent with IT industry recognised good practice and is the foundation SGN seek to establish by the end of GD2. It will also form the basis on which we can build to provide increasingly digitalised services in support of increased efficiency, the energy transition and the UK's journey to Net Zero in GD3 and beyond.

The other option available for SGN is not to make these investments. Maintaining the status quo ensures failure and will not ultimately avoid the costs associated with slowly surfacing data of questionable quality in expensive labour-intensive processes in an attempt maintain compliance. Failing to make these investments will result in driving higher costs elsewhere; increasing operational risk as our workforce changes; may impact decarbonisation efforts amidst a climate crisis; and ultimately contribute to SGN being unable to meet its obligations as a Gas Network operator and an enabler of energy system change.

SGN's proposal is to invest through this paper, over the remaining 3 years of the GD2 period, starting the DataSecOps journey that we and industry experts consider to be essential to run and maintain secure, reliable, integrated and affordable data operations.

The capabilities defined in the paper and associated investment levels are a prerequisite and key enabler to achieving compliance. Lack of operational investment and allocating funds will result in compliance not being achieved.

Our investments in, and existing projects with, enabling technologies (i.e., Talend, MuleSoft, AWS, ADaPt etc.), including our Open Data MVP and initial PoC's have established and identified the requirements and interventions highlighted in this re-opener.

Establishing and developing comprehensive data Governance and DataSecOps capabilities at SGN promises to, over time, streamline the process of building, changing, and managing our data operations. The primary goal is to maximise the value of data enabling SGN to increase compliance and improve associated operations, services and our stakeholders experience in data delivery.

For SGN to sustainably achieve our licence condition 9.5 Digitalisation and our obligations associated with Open Data and Data Best Practice, and in the future keep pace with the Energy Digitalisation Taskforce Recommendations and Automated Regulatory Reporting requirements, we must invest in these core operational capabilities.

Failure to appropriately resource and develop the capabilities we have identified will mean SGN cannot deliver on our obligations. We also run the risk of failing to maintain critical operational knowledge and skills to ensure a safe, secure and resilient supply. This will result in regulatory non-compliance, unacceptable exposure to operational risk, irretrievable loss of industry knowledge and, failure to deliver on our digitalisation strategy.

3.1.3 Project delivery and monitoring

See section 3.3 below for the scope, objectives, governance methodology and project plan.

3.2 Technical feasibility and consumer benefit

The technical feasibility for all the workstreams in this re-opener is already proven.

The proposed extension of Data Lake is already built on a scalable, reliable and secure AWS (Amazon Web Services) platforms. Similarly, SGN uses a highly reliable Integration Engine for API from MuleSoft (part of SalesForce.com) and Data Governance is managed using standard reliable tools from Talend.

The feasibility of the platforms that are proposed in this paper are already proven through the use of Capex funding from GD2. This reduces the risk on this investment as the technology platform are already proven.

The funding request through this paper is enablement of these platforms for services to the various data users in the industry. This is in line with meeting the Data Best Practice Guidance issued by Ofgem in October 2019.

The consumer benefits of Open Data are identified through the EDTF and the EDiT reports as well as through the publication of the Data Best Practice Guidance by Ofgem. This paper is to seek funding to realise these benefits by working towards the Data Best Practice Guidance.

3.2.1 Requirement

The key purpose and scope of this application is to secure the investment required to enable SGN to adhere to our regulatory obligations. This includes our requirements in relation to licence condition 9.5 Digitalisation, the digitalisation of critical processes, compliance with Data Best Practice Guidance principles 1 to 5, 7,8 and 11 and our Open Data obligations to our stakeholders.

This application also addresses SGN's need to engage in and prepare for the finalisation of requirements and solution optioneering associated with the EDiT activities identified below. At this time our funding request does not account for the delivery of, or activities to ensure compliance with, the following:

1. Customer registration portal
2. Common asset register
3. Digital spine for energy system

Any other scope or programmes identified by EDiT requiring SGN's participation or adoption are out of scope and will require additional funding to be sought via a future re-opener.

Ofgem is expected to redesign the NARM Regulated Reporting Pack (RRP) smart reporting process and has provided an early illustrative draft NARM data schema (see Appendix E). This re-opener will fund SGN's active participation in the development of these requirements and identify SGN capability gaps associated with their adoption. It will be used to identify and acquire the software automation tooling, and supporting infrastructure, needed in preparation for delivering automated reporting early in GD3. This request does not account for any costs associated with actual delivery of or compliance with any finalised expectations.

The business need and resulting benefits of DBPG compliance and Open Data exposure have already been defined externally through work conducted by the EDTF, EDiT and other external parties and consultations. Ofgem have translated these into the subsequent Licence Obligations and guidelines driving this submission.

Establishing and developing core SGN DataSecOps capabilities promises to, over time, streamline our data operations. It will position us to maximise the value of data and achieve compliance, improve associated operations, services and our stakeholders experience in Open Data access and delivery.

3.2.2 Solution

The solutions proposed in this paper are all existing and proven platforms in SGN. A simplified view of proposed process is as below:

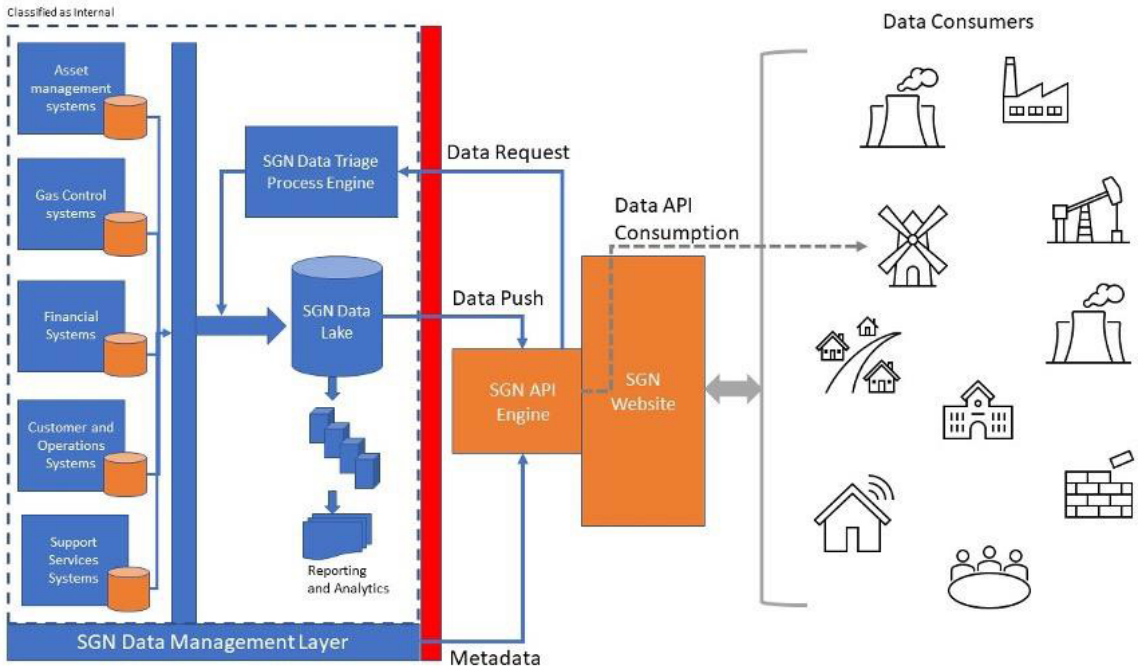


Figure 8: SGN high-level reference architecture

SGN has a data lake in AWS (Amazon Web Services). The data lake currently has Maximo data, and we want to bring data from other systems and applications used withing SGN. Transaction systems data will be brought into the lake to service various needs of the data users while protecting our core transaction systems. The data user needs are priorities based on the input from our stakeholder engagements. As part of our overall engagement plans, SGN is an active member of the Energy Networks Association (ENA) Data & Digitalisation Steering Group (DDSG), which provides a collaborative forum through which the energy sector can engage, inform, influence, and deliver on the common opportunities and challenges brought about by the major transition to a smarter digital energy system. The forum engages with key strategic stakeholders such as Ofgem, the department for Business, Energy & Industrial Strategy, and UK Research and Innovation who have and continue to develop the UK's strategy on energy system digitalisation.

In addition, as part of our commitment to stakeholder engagement and gathering requirements on digitalisation, SGN held a specific event on digitalisation, which included open data, with contribution from a broad cross section of approximately 100 stakeholders with representatives from Local Authorities and Government; consumer groups; environmental organisations and representatives from the energy sector itself. The feedback primarily focused on our stakeholders' requirement for operational gas data, along with metering data, to support the development of growth and environmental plans as the UK aligns itself to net zero energy. This feedback provided a key source of input to this reopener. As a direct result of the last stakeholder engagement, SGN has been able to prioritise and deliver to more than 20 data requests received from various councils and

Greater London Authority infrastructure work planning purposes. SGN has been work plans with the geographies (shape files) with all interested parties. SGN will continue to engage key stakeholders to further prioritise the data sets to deliver through the funding requested in this paper. Our next stakeholder event is already scheduled for 10th of March 2023.

See Appendix E for the Data Lake Reference Architecture that provides high-level flow from the transactional system.

SGN has already procured Data Management tools from Talend. The data from transaction systems and the data lake will be managed from Talend for Metadata, Data Catalogues, Data Lineage and Data Quality assessments.

SGN has already invested in our preferred API (Application Programming Interface) tool called MuleSoft (from Salesforce). This tool will utilise data from the data lake to service data requests for various data users and support the data with metadata, catalogue and quality assertions.

The solutions for Workstream 2 and 3 will be developed as we engage in the process with Ofgem and other GDNs.

3.3 Project delivery and monitoring

3.3.1 Project Scope

The fundamental scope of this re-opener is to enable SGN to establish the new core DataSecOps capabilities we need. This will enable us to realise the value from our capital investments in software tooling, and progress toward regulatory compliance associated DBPG and Open Data. It will also equip us to engage in defining, and prepare us for, emerging EDiT and automated regulatory reporting expectations.

This includes enabling SGN to:

- Establish an Enterprise Architecture and associated policies, practices and controls
- Building out and maturing SGN's data governance and management capabilities
- Populate Talend with key systems metadata, including data tagging and lineage information from multiple sources across the enterprise.
- Automate our Open Data Triage process
- [redacted]
  - [redacted]
  - [redacted]
  - [redacted]
  - [redacted]
  - [redacted]
- Provide Data Assurance through enhanced data quality management, monitoring and reporting
- Publish[redacted] by the stakeholder and subject to suitability assessments through the data triage processes.

Preparatory allocations and resourcing for the support of developing recommendations and requirements for:

- EDiT:
  - Support the Customer Registration Portal and prepare for the emerging requirements
  - Support the Common Asset Register and prepare for the emerging requirements
  - Support the Digital Spine and prepare for the emerging requirements

- Regulatory Reporting Automation:
  - Support and facilitate design
  - Identify and fix data / automation issues gaps

3.3.2 Project Out of Scope

We have decided that a wholesale business transformation programme to transform the digital culture of SGN, in line with DBPG principle 6, is out of scope. It is anticipated this will be a part of our GD3 agenda once we have established the necessary DataSecOps foundational capabilities we wish to develop through this re-opener.

Whilst we have included preparatory activities associated with ensuring the business is able to actively support and contribute to the developing recommendations and requirements of the EDiT report and regulatory reporting automation in our scope, we have assumed the delivery and practical implementation of any resulting solutions or services is out of scope.

3.3.3 Project Objectives

Workstream 1 - delivering on our open data commitments through our two objectives to:

- Automate the Open Data Triage process.
- Open up [redacted] in line with the Data Best Practice Guidance

Workstream 2 - prepare for emerging requirements resulting from the EDiT recommendations, specifically by resourcing and actively participating in business analysis for, and actively contributing towards the design of these three services:

- Customer Registration Portal
- Common Asset Register
- Digital Spine

Workstream 3 – to prepare for the upcoming automation of Regulatory Reporting Processes (RRP) anticipated to be automated at the start of GD3 by participating and contributing to industry discussions led by Ofgem.

3.3.4 Project Assumptions

- There will be a clear plan agreed with Industry to participate in workshops / industry engagement to ensure availability of key resources to deliver outcomes of Workstreams 2 & 3
- There are sufficient skills available to setup the DataSecOps capability which underpins the delivery of outcomes of the project
- There will be consensus within the industry on the way forward to progress the outcomes of Workstreams 2 & 3

3.3.5 Constraints

Uncertainty associated with changes in scope driven by industry or Ofgem and outside of our control could have a significant impact on our ability to predict, with confidence associated Capex and Opex costs to achieve compliance.

If standards or requirements transpire to be different to those assumed, we will need to revisit the funding mechanism to ensure programmes can be appropriately financially resourced for success and realisation of consumer and stakeholder benefits.

For example, we have assumed business transformation associated with DBPG principle 6, Automation of RRP, work products associated with the development of or connections with the Digital Spine or any other requirements resulting from other EDiT recommendations are all out of scope.

Currently the EDiT recommendations are still very high level and conceptual. As a result, there is a significant uncertainty regarding the expectations of SGN in aligning with them. This is particularly

acute in relation to the potential adaption to, or adoption of, new industry platforms, standards and practices/ways of working. As we engage and interact with interested parties during the sectors' transformation under the EDiT recommendations, a more informed set of expectations will emerge. SGN are constrained by the information available at the time of writing this re-opener application. If there are material gaps between anticipated versus eventual requirements and expectations that need to be addressed before the end of GD2, further re-opener(s) will be required to request any additional funding required.

3.3.6 Dependencies

There will be many interlinked dependencies between the workstreams and their objectives. These dependencies will exist across objectives within the same workstream and across workstreams.

However, all workstreams and objectives fundamentally depend on SGN being able to establish, develop and maintain a DataSecOps capability and the underlying architecture, standards, policies, processes and practices upon which it must be established.

When our three workstreams are established, associated supporting Control Documents will be created. Typically, a Project Control Book (PCB) is created, this workbook is the formal project management document used to manage and control the project. This includes a detailed list of all the dependencies on the project which Project Managers ensure is maintained continuously.

3.3.7 Project Deliverables (Documentation)

The following documents will be created and updated as appropriate during the project lifecycle:

- Business Outcome Statement (BOS)
- Project Proposal
- Investment Paper
- Cost Benefit Analysis
- Data Privacy Impact Assessment (DPIA)
- Assurance Gateway Checklists
- Project Definition Document (PDD)
- Programme Risk, Issue, Assumption Dependency log (RAID log)
- Project Plan
- Requirements Specification
- Architectural Treatment Agreement
- High-Level Architecture
- Architectural Review Board (ARB) Tech Note
- Weekly highlight Report
- Finance Control Sheet
- Stakeholder Mapping & Engagement Plan
- Communications Plan
- Quality Plan
- Test & Release Strategy
- Test Plans
- Test Cases & Scripts
- ITT / Work Order / RFQ / SoW
- Supplier Service Assessment Request (SSAR)

- Project Change Request
- Project Exception Report
- Technical Recovery and Action Plan (TRAP)
- Technical Run Manual (TRM)
- Service Overview (SO)
- Automated Build Scripts created for End-to-end Environment Build
- Basic Security Requirements (BSR)
- Security Project Engagement Form
- High-Level Vendor Assessment Questions
- Third-Party Security Assessment Questions
- Security Assurance Process
- Technical Implementation & Cut-Over Strategy
- Baselined Release Plan
- Test Execution Plan
- Change Impact Assessment
- Cut-Over and Post-Go-Live Support Plan
- Detailed Workstream Plan
- Service Onboarding Guide (SOG)
- Go/No-Go Checklist
- Lessons Learned Log
- Project Completion Report

3.3.8 Implementation of Preferred option, Project Plan and Timeline

The high level project plan to deliver the outcomes of the project is provided below.

Task Name	Duration	Start	Finish	Predecess
Data & Digitalisation Reopener	**661 days**	**Mon 18/09/23**	**Mon 30/03/26**	
Internal Approval Received	0 days	Mon 18/09/23	Mon 18/09/23	
Project Setup and Mobilisation	18 days	Tue 10/10/23	Thu 02/11/23	1FS+16 d
Project kick-off	0 days	Thu 02/11/23	Thu 02/11/23	2FF
Wk 1 - Delivering open data commitments	**620 days**	**Fri 03/11/23**	**Thu 19/03/26**	**3**
Wk 1 - Obj 1 Data Triage	**615 days**	**Fri 03/11/23**	**Thu 12/03/26**	**3**
Wk 1 - Obj 2 Open Api Service	**615 days**	**Fri 03/11/23**	**Thu 12/03/26**	**3**
Wk 2 - Supporting EDiT	**620 days**	**Fri 03/11/23**	**Thu 19/03/26**	**3**
Wk 3 - RRP Automation Engagement	**620 days**	**Fri 03/11/23**	**Thu 19/03/26**	**3**
Snagging and lessons learned	7 days	Fri 20/03/26	Mon 30/03/26	22,56,62,
Project closure	7 days	Fri 20/03/26	Mon 30/03/26	4
Project closed	0 days	Mon 30/03/26	Mon 30/03/26	69

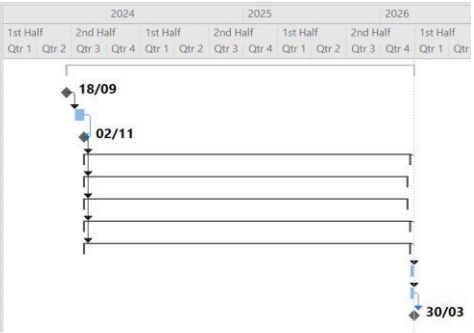


Figure 9: High-level project plan for the workstreams

Task Name	Duration	Start	Finish	Predecess
Wk 1 - Obj 1 Data Triage	**615 days**	**Fri 03/11/23**	**Thu 12/03/26**	**3**
Workstream Mobilisation / Kick-off	10 days	Fri 03/11/23	Thu 16/11/23	
Initiation Activities	20 days	Fri 17/11/23	Thu 14/12/23	6
Phase 1 Delivery	**75 days**	**Fri 15/12/23**	**Thu 28/03/24**	**7**
Understand Data Sources	20 days	Fri 15/12/23	Thu 11/01/24	
Open Data Triage	20 days	Fri 22/12/23	Thu 18/01/24	9SS+5 da
Mitigate Issues	10 days	Fri 29/12/23	Thu 11/01/24	10SS+5 d
Classify Data	30 days	Fri 05/01/24	Thu 15/02/24	11SS+5 d
Agree Approach to Share	20 days	Fri 16/02/24	Thu 14/03/24	12
Review & Sign-off Phase 1	10 days	Fri 15/03/24	Thu 28/03/24	13
Phase 2 Delivery	**230 days**	**Fri 26/04/24**	**Thu 13/03/25**	**8FS+20 d**
Understand Data Sources	60 days	Fri 26/04/24	Thu 18/07/24	
Open Data Triage	100 days	Fri 03/05/24	Thu 19/09/24	16SS+5 d
Mitigate Issues	60 days	Fri 10/05/24	Thu 01/08/24	17SS+5 d
Classify Data	90 days	Fri 24/05/24	Thu 26/09/24	18SS+10
Agree Approach to Share	80 days	Fri 27/09/24	Thu 16/01/25	19
Review & Sign-off Phase 2	40 days	Fri 17/01/25	Thu 13/03/25	20

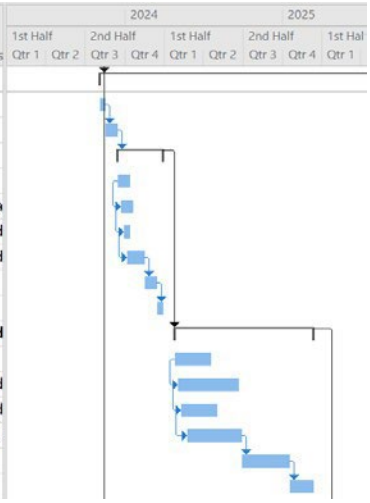


Figure 10: High-level project plan for Workstream 1: Objective 1

Task Name	Duration	Start	Finish	Predecess
Phase 3 Delivery	**230 days**	**Fri 25/04/25**	**Thu 12/03/26**	**15FS+30**
Understand Data Sources	60 days	Fri 25/04/25	Thu 17/07/25	
Open Data Triage	100 days	Fri 02/05/25	Thu 18/09/25	23SS+5 d
Mitigate Issues	60 days	Fri 09/05/25	Thu 31/07/25	24SS+5 d
Classify Data	90 days	Fri 23/05/25	Thu 25/09/25	25SS+10
Agree Approach to Share	80 days	Fri 26/09/25	Thu 15/01/26	26
Review & Sign-off Phase 3	40 days	Fri 16/01/26	Thu 12/03/26	27

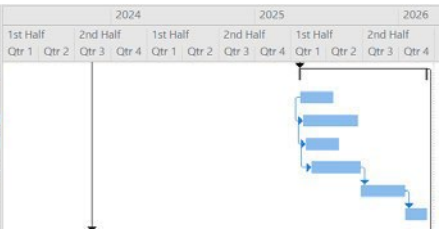


Figure 11: High-level project plan for Workstream 1: Objective 1 continued...

Task Name	Duration	Start	Finish	Predecess
Wk 2 - Supporting EDIT	**620 days**	**Fri 03/11/23**	**Thu 19/03/26**	**3**
Workstream Mobilisation / Kick-off	10 days	Fri 03/11/23	Thu 16/11/23	
Initiation Activities	20 days	Fri 17/11/23	Thu 14/12/23	111
Wk 2 Supporting Activities - Y1	70 days	Fri 22/12/23	Thu 28/03/24	112
Wk 2 Supporting Activities - Y2	250 days	Fri 05/04/24	Thu 20/03/25	113FS+5
Wk 2 Supporting Activities - Y3	250 days	Fri 04/04/25	Thu 19/03/26	114FS+1(
Wk 3 - RRP Automation Engagement	**620 days**	**Fri 03/11/23**	**Thu 19/03/26**	**3**
Workstream Mobilisation / Kick-off	10 days	Fri 03/11/23	Thu 16/11/23	
Initiation Activities	20 days	Fri 17/11/23	Thu 14/12/23	117
Wk 3 Supporting Activities - Y1	70 days	Fri 22/12/23	Thu 28/03/24	118
Wk 3 Supporting Activities - Y2	250 days	Fri 05/04/24	Thu 20/03/25	119FS+5
Wk 3 Supporting Activities - Y3	250 days	Fri 04/04/25	Thu 19/03/26	120FS+1(

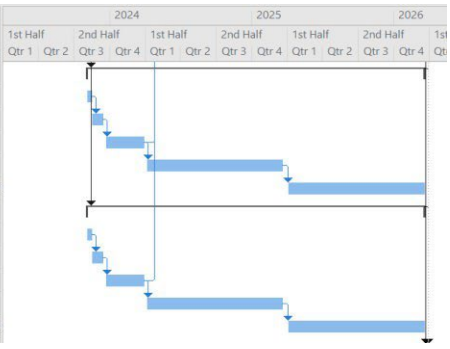


Figure 12: High-level project plan for Workstream 2 & 3

As part of project initiation following funding approval and in line with our project governance processes a project control book will be created and the project manager will adapt the plan above and will baseline it. Details of our project gateway process can be found in Appendix F on Project Governance and Control Summary.

3.3.9 Project Governance

Please see Appendix F on Project Governance and Control Summary for details.

3.3.10 Project Communications

Please see Appendix F on Project Governance and Control Summary for details.

3.4 Cost Information

3.4.1 Cost Breakdown of preferred option.

The below tables outline the Capex/Opex/Totex costs for the Data & Digitalisation re-opener of —by the workstreams set out in the sections above (22/23 prices). The costs shown are only for the GD2 period and on-going costs beyond GD2 will be included within the GD3 plans.

[redacted]

[redacted]

The inflation factor used to reduce the 22/23 prices to 18/19 prices was 1.17987, based on the yearly average of 22/23 and 18/19.

The split between the two networks is summarised as follows:

[redacted]

Scotland Project Costs (22-23 prices)	[redacted]
Scotland Project Costs {18-19 prices)	[redacted]

[redacted]

Scotland Project Costs {22-23 Prices)	[redacted]
Southern Project Costs (18-19 Prices)	[redacted]

Table 3: CAPEX/OPEX/Totex costsfor re-opener

[redacted]

[redacted]

Project Opex	Summary	2023-24	2024-25	2025-26	2026-27	2027-28	Total
	Staff	[redacted]					
	Contractors						
	Software						
	Hardware						
	Third Party						
	AWS (software project costs)						
	AWS (environment project costs)						
	Risk						
	Total						

[redacted]

Table 4: Cost break-down by cost components

3.4.2 Justification and efficiency of costs

The costs identified in the section above are based on costs from our framework partners and are unnegotiated or have been through our formal procurement process. In addition, at this stage the solutions and plans are high level and have not been through the formal project life cycle and hence subject to change both in scale and complexity. We have where possible based our estimates on previous project experience and all estimates and plans have been through our internal review

process. For details about our project gateway process please see Appendix F on Project Governance and Control Summary.

3.5 Level of detail of cost information

See detailed cost break-down spreadsheet included with the supporting documents for how estimates have been developed.

3.6 Assessment Process

Project Justification: See section 2.3 above, on the problem statement, the impact of not delivering this project as well as section 3.2 on technical feasibility and consumer benefits.

Project Definition: See section 3.3 above on scope, deliverables, objectives, assumptions and dependencies.

Project Resources and Cost Assurance: See section 3.4.1 above on the cost model and resource assumptions to deliver the project.

4 Appendix – Supporting Documents

SGN NOIT Capex Reopener Data Digitalisation - Project Plan v3.pdf
NOIT Capex D&D Wk 1 2 3 CBA v2.xlsm
SGN IT Capex DandD OFGEM CBA.xlsb

Appendix A - Data Best Practice principles

1. Identify the roles of stakeholders of Data Assets.
2. Use common terms within Data Assets, Metadata and supporting information.
3. Describe data accurately using industry standard Metadata.
4. Enable potential Data Users to understand Data Assets by providing supporting information.
5. Make Data Assets discoverable for potential Data Users.
6. * Learn and deliver to the needs of current and prospective Data Users.
7. Ensure data quality maintenance and improvement is prioritised by Data User needs.
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.
10. * Store, archive and provide access to Data Assets in ways that ensure sustained benefits.
11. Treat all Data Assets, their associated Metadata and Software Scripts used to process Data Assets as Presumed Open.

***Note:** DBPG principle 6 is out of scope and will be revisited in GD3 business plan. DBPG principle 9 is being addressed through cyber security reopeners. DBPG principle 10 is delivered under BAU.

[redacted]

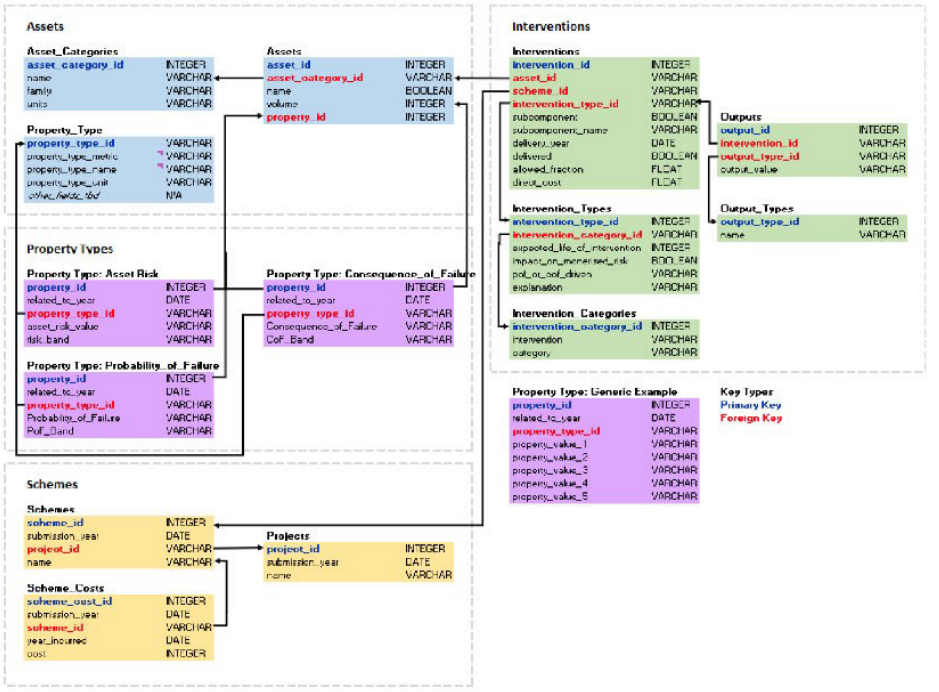
[redacted]

Appendix C - SGN's digital transformational framework

Figure 14: SGN's digital transformational framework

Appendix D - Illustrative NARM Data Schema proposed by Ofgem

Please note that this is simplified illustrative example to provide an indication of how data schema might be developed. We are not requesting views on this illustrative schema as part of this consultation.



The Office of Gas and Electricity Markets 9 Millbank London SW1P 3GE Tel 020 7901 7000 Fax 020 7901 7066 www.ofgem.gov.uk

Figure 15: Illustrative NARM Data Schema proposed by Ofgem

Appendix E - Data Lake Reference Architecture

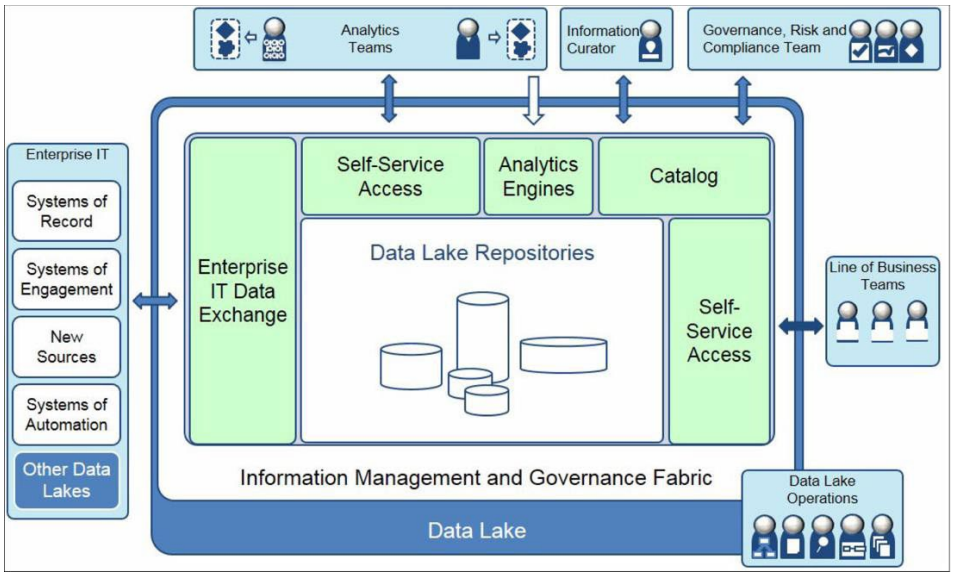


Figure 16: Data Lake Reference Architecture

The catalogue data lake service is the heart of the data lake controlling what data people can find and access and controlling the processing of the various engines operating inside the data lake. The catalogue consists of the following tightly integrated types of metadata:

- Governance metadata: Defines the governance program and the glossaries of business terminology that describes the types of data held and used by the organisation.
- Technical metadata: Provides the inventory of the data assets of the organisation. These data assets are used by numerous run times, such as applications, data movement and transformation engines, and databases and reporting platforms.
- Operational metadata: Provides transparency on the operation of the information supply chains as they copy data between the systems and data platforms, which is often referred to as lineage.

The Enterprise IT Data Exchange services enable data to flow in and out of the data through both batch and real-time interfaces.

Finally, many different types of people need self-service access to the data in the data lake. We divide these types of people into two broad groups. The data scientists and business analysts are building new analytics and executable rules that will be deployed into the production systems. They need access to raw data, just as it appears in the production systems so that they can produce analytics that work on real data. Other users tend to need data that has had some level of processing to make it simple to use in different tools. Thus, the data lake has two different self-service access points. The access points determine the scope of the data that the person can see. The metadata in the catalogue determines exactly what a specific individual is allowed to see. The self-service access points enforce these restrictions.

Appendix F - Project Governance and Control Summary

Project Stages

This proposed project investment will flow through the project management stages outlined below. This process applies to all IT change and covers both mandatory change and benefit driven IT initiatives.

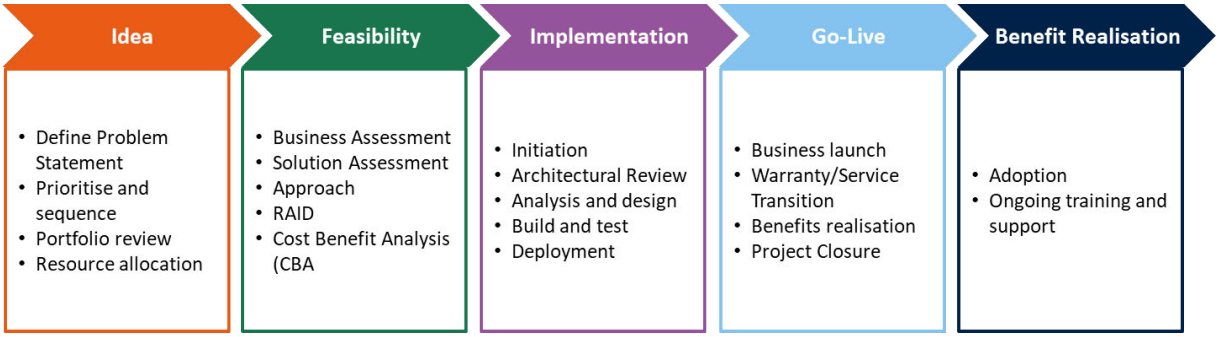


Figure 17: Project Governance and Control Summary - Project stages

This project has already been reviewed and approved by our Executive Committee and Non-Executive Board as part of our essential "mandatory" IT programme of work during GD2 on which our safe and reliable business plan is based. However, as the requested investment is over £250k an Executive paper will be written and presented to the SGN Executive Committee at the end of the feasibility stage for formal approval to commence delivery of the solution.

Each of the stages above are broken down into further sub stages. This helps to ensure that the investment remains viable and that all of the relevant stakeholders are engaged at the appropriate stage.

Benefits will be assessed at the Idea, Feasibility and Implementation stages. If at any stage the benefits are no longer viable the project will be stopped.

The diagram below shows the different sub stages and the key stakeholders involved at each sub stage.

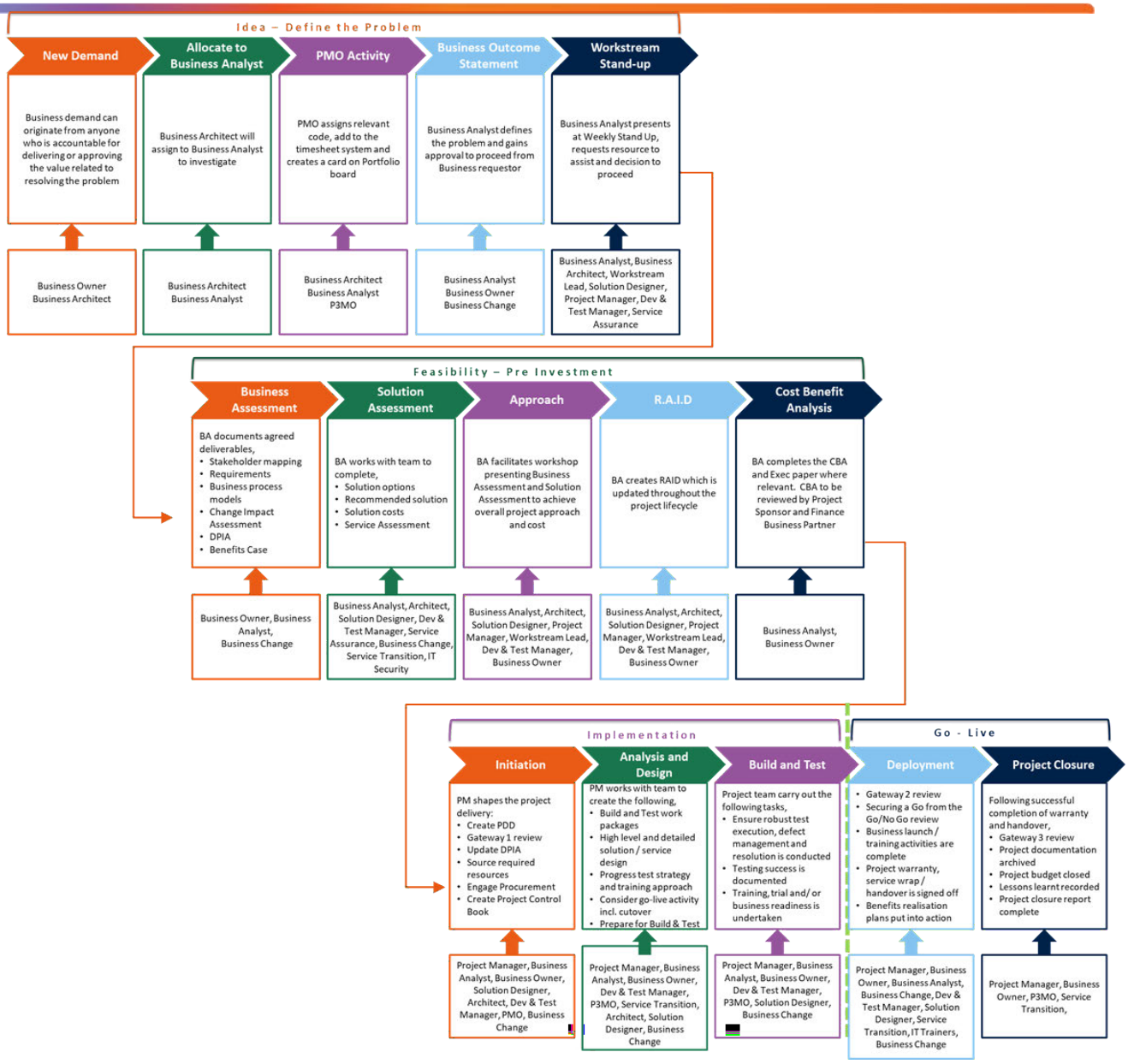


Figure 18: Project Governance and Control Summary: Sub-stages and the key stakeholders

Gateway Process

IT & Telecoms projects follow a gateway process which is tailored to fit the size and complexity of the work being undertaken. The Gateways are designed to provide SGN and stakeholders with independent assurance by IT Assurance (a function within P3MO) on the status of projects being run within the IT department. There will be a minimum of 3 gateway meetings for this investment.

- Gateway 1 Meeting – Wil happen prior to financial approval towards the end of feasibility stage when there is a detailed Business Case / Minimal Viable Product / Conceptual Design
- Gateway 2 Meeting – Will happen at go / no go decision point(s) during the implementation stage. On larger investments such as this one, there will be multiple Gateway 2 meetings to ensure that the project is adhering to governance standards and meeting its stated objectives
- Gateway 3 Meeting – Will happen at the end of warranty to allow the project to close and handover to business-as-usual support.
- Gateway review meetings are chaired by IT Assurance and the outcome of these meetings are final.

- There are two possible outcomes:
  - Approved - Approved to proceed to the next stage or approval to close the project
  - Not Approved (Failed) – The project is not approved to proceed or there are outstanding actions preventing the project from closing. These must be resolved before the project can continue

Governance Forums

Following formal investment approval by the SGN Executive Committee at the end of the feasibility stage the project will become subject to the following regular governance forums to ensure that the project is achieving its stated objectives.

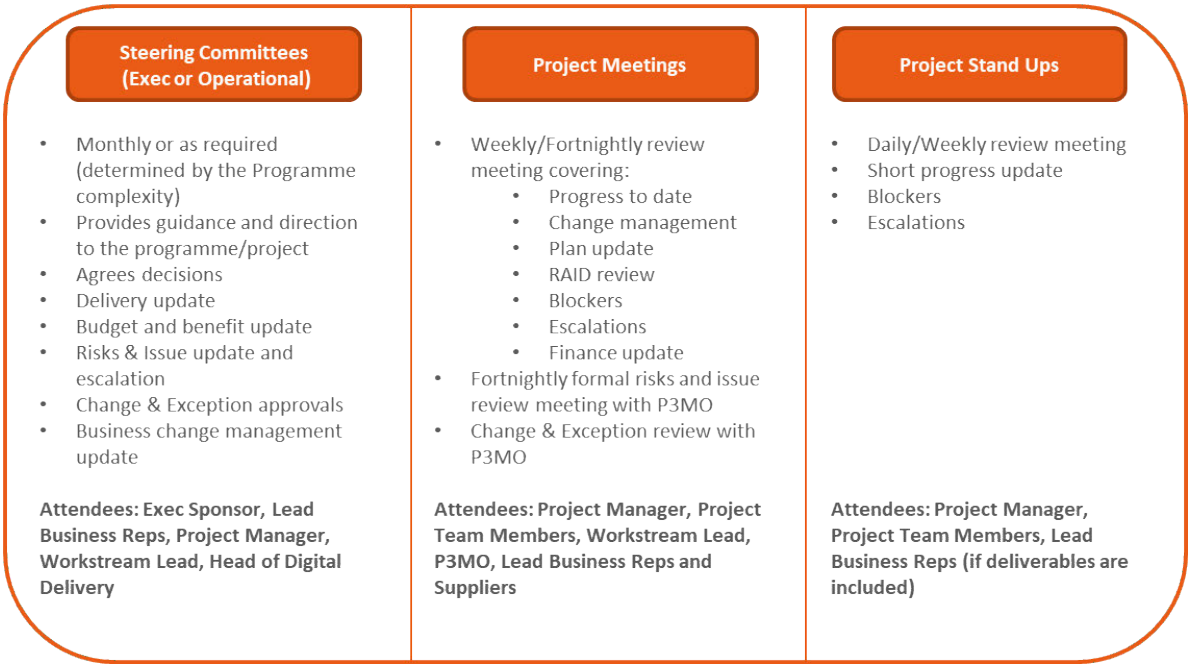


Figure 19: Governance Forums

Control Documents

In addition, once the investment has been approved, the Project Control Book (PCB) is created. This workbook is the formal project management document used to manage and control the project. The PCB contains the following information:

Table 5: Control Documents

PCB Control Tab	Frequency of Update
Action Log	Contains all the project actions. PMs to update at least weekly
Assumptions	A list of all the project assumptions. PMs to update at least weekly
Changes	A list of all the changes on the project, including pending and approved changes. PMs to update as required
Dependencies	A list of all the dependencies on the project. PMs to update at least weekly
Exceptions	A list of all the exceptions on the project, including pending and approved exceptions. PMs to update as required
Gateway Assurance	Depending on the type of project, there will be a variable number of Gateways. These will be completed as part of P3MO assurance processes
Health Check	Automated from other Control Documents - For P3MO Use Only
Health Check PM Actions	PMs to update as required (in response to P3MO review action requests)
Highlight Report	PMs to complete weekly (COP Wed)
Issues	A list of all the project issues. PMs to update at least weekly
Lessons Learnt	PM to update throughout life of project
Log	To be used for decisions and other notes
RACI	The RACI outlines all the deliverables of the project. This needs to be updated every time the status changes on any of the project deliverables
Risks	A list of all the project risks. PMs to update at least weekly
Stakeholders	List of key contacts and roles

Risk Management

Project risks will be documented in the PCB. Each risk will be assessed in terms of impact and probability which automatically calculates the risk exposure and risk RAG priority. Each risk must have a risk response associated to it. The risk could represent either a threat or an opportunity. Threat responses are:

- AVOID - Action will be taken to remove the cause of the risk (the action MUST remove the chance of the risk ever happening)
- REDUCE - Action will be taken to change the probability of the risk occurring and/or the impact of the risk
- TRANSFER - Action will be taken to pass part of the risk to a third party (e.g. insurance where the insurer picks up the cost)
- SHARE - Seeks for multiple parties (e.g Suppliers) to share the risk on a pain/gain share basis
- ACCEPT - The organisation 'takes the chance' that the risk will occur, with its full impact, if it did
- PREPARE CONTINGENT PLANS - This option involves preparing plans now, but not taking action now. Most usually associated with the accept option, preparing contingency plans in this instance is stating that we will accept the risk for now, but we will plan for what we will do if the situation changes.

Opportunity responses are:

- EXPLOIT - Action to implement the cause of an opportunity and make it happen
- ENHANCE - Action to make the opportunity more likely to occur

A mitigation plan and contingency plan, should the risk occur will be created for each risk. Each risk will have an escalation level associated with it. The risk escalation level specifies the forum the risk is reported to.

- Project - The risk has been logged for monitoring and tracking purposes only and can be managed within the project. No escalation required.
- Programme - **Either** the Risk / Issue is within the Project Manager's control but the nature of it requires it to be escalated to the IT Leadership Team so they are aware of it, (this will then appear on the weekly highlight report) **OR** the risk / issue is outside the project manager's control and requires a decision or approval from the IT LeadershipTeam on the course of action to take to mitigate/resolve it.
- Enterprise - The Risk / Issue requires escalation to the Programme Steering Group for the Project Sponsor to approve and make a decision on (i.e. the action to address the risk / issue would cause the project to exceed a tolerance threshold or the nature of the decision to be made or risk requires the Project Board to approve or be aware of it).
- Supplier - The risk / issue is supplier related and should be escalated and communicated in the specific supplier monthly review for a mitigation plan to be agreed.

Risks will be assessed informally by the Project Manager every week and as the project moves stages. They are also assessed formally in the fortnightly programme RAID review, with escalations discussed at the programme steering groups. Depending on the severity of the risk, Enterprise risks may be assigned to a member of the IT Leadership Team and added to the IT Operational Risk Register which is reviewed at the quarterly SGN Risk Committee.

Financial Management

The finances for the project are documented outside of the PCB in a finance forecast workbook. These workbooks feed into the monthly finance review with the Head of Digital Delivery, where the phasing of project spend, dependencies and progress against budget are discussed. The output from this meeting feeds into the monthly budget Finance reviews held between the Director of IT, the CFO and the CEO.

Business Change Management

SGN have developed a change management framework to support the planning and delivery of business change. The process reduces business risk by ensuring that the impacted areas are ready for change. The process is circular by design as in many instances each segment will be revisited multiple times over the course of the project.

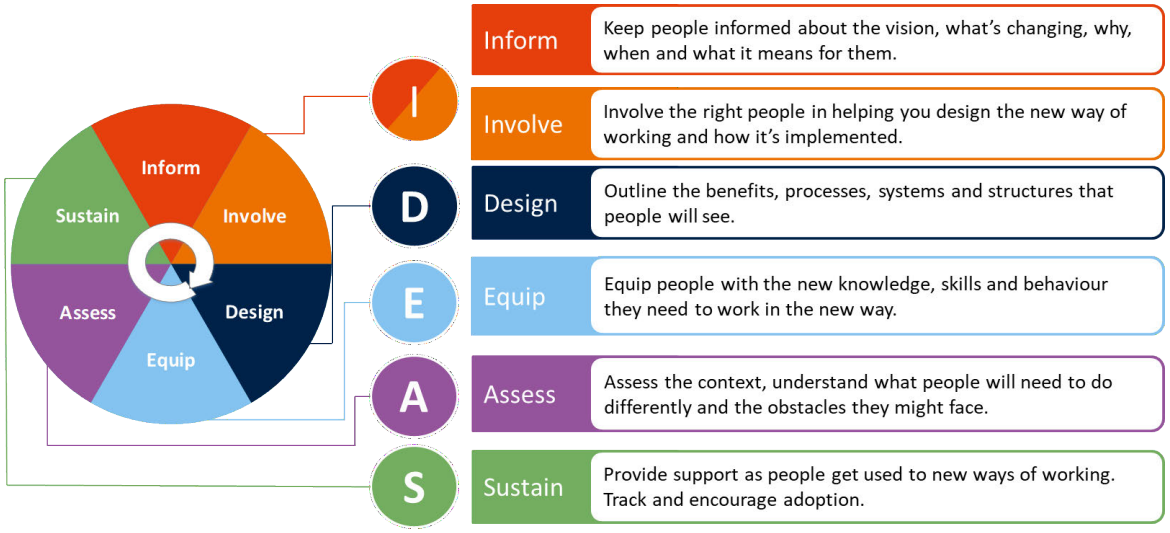


Figure 20: Business Change Management framework

The business change management framework is aligned to the project stages and is scalable depending on the complexity of the project. The business change management team and P3MO provide support and guidance on choosing the appropriate tools for the investment.

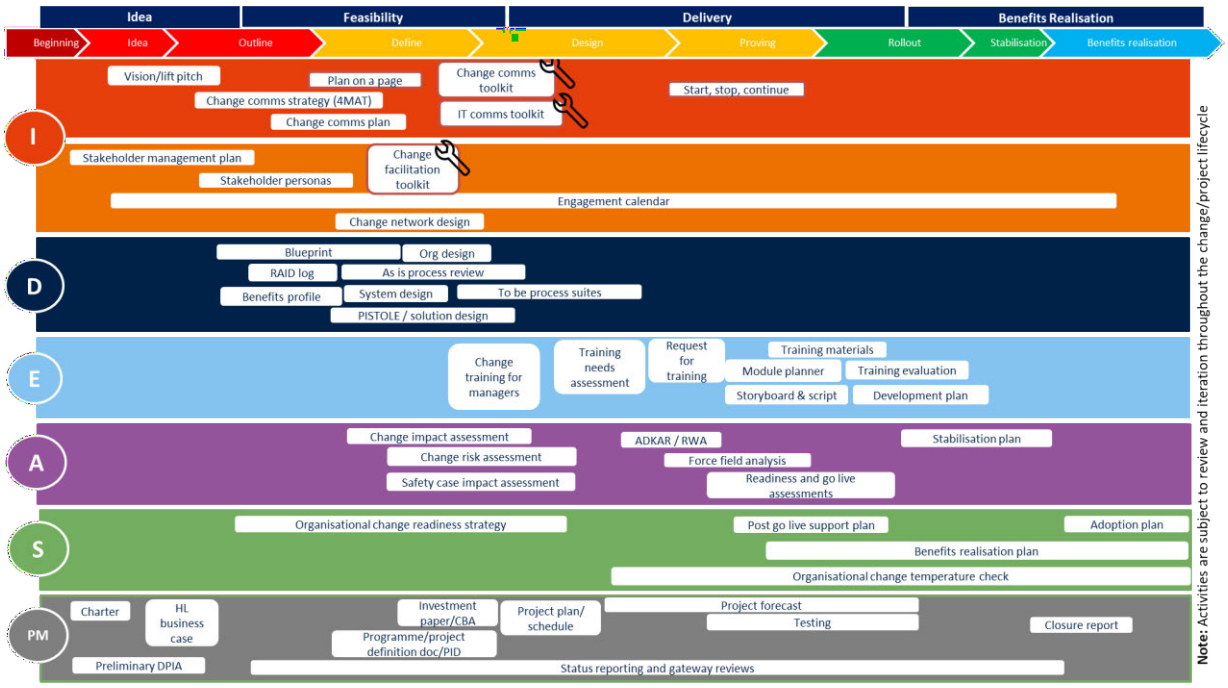


Figure 21: Business Change Management detailed

Summary

The combination of the governance meetings, the PCB, the finance reviews, the risk reviews, the business change management framework and the P3MO assurance process ensures that all of the

key stakeholders are kept informed of the projects progress against its stated objectives, enabling them to make informed decisions during the project lifecyle

Appendix G - SGN's Technology roadmap

Enlarged version of

Figure 22: SGN's technology roadmap

Our future technology roadmap includes further capability development in connectivity, exploring and exploiting further Industrial IoT, robotics and artificial / augmented / virtual reality. The use of Digital Twin for 'Network Control of the Future' is a significant goal of SGN to drive digitilisation in our business and within our sector. SGN continues to track technology trends to evaluate the best emerging technologies that may further our cause to support the Data and Digitilisation agenda.

5 Glossary of terms

Table 6: Glossary of terms

Acronym / Notation / Term	Acronym / Definition	Description
ADaPt	Analytics Data Platform	SGN's platform to store and visualise analytics data to business users
AWS	Amazon Web Services	SGN's cloud hosting platform
Capex	Capital Expenditure	Funds used by a company to acquire, upgrade, and maintain physical assets such as property, buildings, an industrial plant, technology, or equipment.
DBPG	Data Best Practice Guidance	Energy network companies who are licensed under the RIIO-2 price controls (gas and electricity transmission, gas distribution network companies and the electricity system operator) are required to comply with this guidance when they are preparing and updating their Digitalisation Strategy and Digitalisation Action Plan
DataSecOps	Data Security Operations	DataSecOps is an agile, holistic, security-embedded approach to coordinating the ever-changing data and its users, aimed at delivering quick data-to-value while keeping data private, safe, and well-governed.
ELT	Extract, Load and Transform	The activities undertaken to populate the data platform with consistent data sets from source systems.
ENA	Energy Networks Association	Organisation for all Energy Networks with responsibility for coordinating discussions on energy policy, also hosts the innovation smarter networks portal for registering innovation projects
GDN	Gas Distribution Network	Gas needs to travel through the high pressure transmission system, then through the medium and low

		pressure distribution networks to reach the consumer. The gas distribution networks (GDNs) are the penultimate stage in the delivery process.
IIoT	Industrial Internet of Things	The Internet of things is the network of devices, vehicles, and home appliances that contain electronics, software, actuators, and connectivity which allows these things to connect, interact and exchange data. The industrial internet of things is the use of internet of things technologies to enhance manufacturing and industrial processes
Opex	Operating Expenditure	Operating expenses include rent, equipment, inventory costs, marketing, payroll, insurance, step costs, and funds allocated for research and development.
P3MO	Portfolio, Programme and Projects Management Office	Central IT function to provide project governance, control and reporting.
RRP	Regulatory Reporting Pack	Ofgem annual workload and finance reporting mechanism
SaaS	Software as a Service	A software licensing and delivery model in which software is licensed on a subscription basis and is centrally hosted. It is sometimes referred to as "on-demand software"