

Engineering Justification Paper

Financial Planning and Reporting System Replacement

Version: Final

Date: December 2019

Classification: Highly Confidential

Reference: SGN IT – FinPlan EJPDec19



1 Table of Contents

1 Table of Contents	2
2 Introduction	3
2.1 General Background	3
2.2 Site Specific Background.....	4
3 Equipment Summary	4
4 Problem Statement	5
4.1 Narrative Real-Life Example of Problem	6
4.2 Spend Boundaries.....	6
5 Probability of Failure	7
5.1 Probability of Failure Data Assurance	7
6 Consequence of Failure	7
7 Options Considered	9
7.1 Commercial Confidentiality deployment.....	9
7.2 <small>Commercial Confidentiality</small> system deployment	10
7.3 Options Technical Summary Table	10
7.4 Options Cost Summary Table	12
8 Business Case Outline and Discussion	13
8.1 Key Business Case Drivers Description	13
8.2 Business Case Summary	16
9 Preferred Option Scope and Project Plan	16
9.1 Preferred option	16
9.2 Asset Health Spend Profile	16
9.3 Investment Risk Discussion	17
Appendix A - Acronyms	20

Tables:

Table 1: Consequences of failures.....	7
Table 2: Options Technical Summary	10
Table 3: Deployment architecture components of the preferred option.....	11
Table 4: Deployment architecture components of the second option.....	11
Table 5: Business case matrix for preferred option.	12
Table 6: Cost breakdown for the preferred option.....	12
Table 7: Business case matrix for second option.	12
Table 8: Cost breakdown for the second option.....	13
Table 9: Key value drivers in options analysis.....	14
Table 10: Summary of CBA results.	14
Table 11: Cost benefit analysis of the two options.	16
Table 12: Asset health spend profile.....	17
Table 13: Risk Matrix	17
Table 14: Sensitivity risk analysis.	18
Table 15: Capitalisation rate sensitivity	19

2 Introduction

SGN and all utilities must keep pace with technology to support the day to day operations and licenced and statutory obligations of our company. Our stakeholder evidence shows that customers expect us to do this. 78% of our Stakeholders expect SGN to utilise the latest technology (reference: SGN Stakeholder Research Report by Impact Utilities. August 2018), yet in the same research, only 38% of our stakeholders believe we are performing well or excelling in utilising the latest technology. At our Moving Forward Together workshops in November 2018, stakeholders were generally of the view that it is sensible to be taking steps to keep abreast of technological developments.

SGN's current financial planning and reporting system underpins our ability to financially govern our organisation, conduct legislative financial processes and to submit our regulatory reports to Ofgem on an annual basis. The financial reporting system is used by SGN to provide reporting to various regulatory and statutory bodies.

To continue receiving the supporting application features and to keep this service in working order and fully supported by the vendor, SGN will need to upgrade and refresh the existing application and estate within the GD2 period. This is critical in order to avoid degradation in system performance, system failure and security vulnerabilities that could result in widespread operational impact across the company.

This paper provides an engineering justification to SGN's proposal on replacing our ageing Financial planning and reporting system during the GD2 timeframes. It should be noted that SGN's business plan has a built-in cost profiles and assumed efficiency across the company of 1%. Our operational costs and current assumed levels of efficiency, in part, cannot be achieved without investment in maintaining, upgrading and where and when required, replacing ageing, end of life and/or out of support systems and underlying infrastructure.

2.1 General Background

SGN's financial planning and reporting system underpins our ability to financially govern our organisation, conduct legislative financial processes and to submit our regulatory reports to Ofgem on an annual basis. Our financial planning and reporting systems are used by SGN to provide reporting to various regulatory and statutory bodies. This system provides a range of standardised and non-standardised/ad-hoc reporting capability from our financial and operational data that is utilised in decision making for budgeting & forecasting, cash flow analysis, income estimation, payment projections, reserve calculations and expense reporting. The financial planning system is essential in managing SGN's GD2 commitments and in meeting our obligations to OFGEM, Companies House, HMRC, customers, shareholders and our staff.

Our Customer Engagement Group (CEG) and wider customer advice as referenced above, told us that they expect us to seek advice from technical and industry experts to validate the areas of technology that we should be investing in and the associated levels of spend. Upon reviewing our plan with the CEG there was a stated expectation that SGN get independent validation of their IT investment plans to ensure proposed investment is in the correct areas and the value we are expecting to spend is in line with industry analyst predictions. The IT business plan has been validated by Gartner (see supporting information Gartner benchmark report) and the proposed spend on replacing Financial planning and reporting system is

moderately placed when compared to their benchmark range. This is also SGN's experience from various independent industry forums, publications, historical evidence and our key technology suppliers as evidenced in this paper.

Our current Financial planning and reporting system was implemented more than ten years ago and has undergone numerous updates, maintenance and from time to time, significant changes through supplier provided maintenance and security patches, version updates and industry customisations. SGN's current system, IBM's Cognos TM1 version 10.2, has come to an end of life on the 30th of September 2019 and is currently serviced by the Supplier (IBM) under a limited time extended support contract until SGN can upgrade or replace the system. This extended support will expire in September 2022. SGN is now paying significantly more in extended support costs to the supplier for this arrangement. The extended support contract only provides critical and security related patching from the supplier which means any new regulatory or other significant changes cannot be incorporated into the product and would need manual & high cost workarounds.

Reduced or no direct investment in an ageing system will result in increased risk of failure, degradation of performance, reduced availability and higher operational costs to cater for compensating workarounds and controls and / or maintaining an obsolete or unsupported technology estate. No investment in replacing the Financial Planning and reporting system will also create operational risks for SGN due to high failure rates and lack of supplier support available on the technology platforms. Ultimately, not investing in these areas could directly impact customers with degrading technology platforms and the consequential impact of this.

2.2 Site Specific Background

The technologies called out in section 1.1 will underpin our corporate functions serviced out of our head office in Horley, our other satellite offices and depots across the country. The deployment of the new technology solution is likely to be in the software provider's cloud with no physical deployment in any of SGN locations.

3 Equipment Summary

Financial Planning and reporting system

SGN plans to implement a new Financial Planning and Reporting system that is well integrated with our back office and front office systems. After initial evaluation, **Commercial Confidentiality** and Budgeting system deployment on the cloud is our preferred option at this point in time. The deployment of **Commercial Confidentiality** and Budgeting system (also known as Hyperion) on the Cloud as a SaaS (Software as a Service) will provide SGN with the most integrated solution with our core back office systems running **Commercial Confidentiality** eBusiness suite (details of our Back-Office replacement is presented in a separate engineering justification paper as part of SGN's overall GD2 submission). It should be noted however, that a full regulated tender and procurement exercise would be undertaken to ensure that the most cost-effective solution is selected. However, for the purpose of this paper and in advance of such a procurement exercise, we have based our cost estimates on this solution.

We have estimated the cost to deploy **Commercial Confidentiality** cloud solution (also known as **Commercial Confidentiality**) to be £0.5M. The cost includes SaaS licenses, project management, data transfer, integration and training.

Technical skills development and internal capability building within SGN will also be an element of this investment.

4 Problem Statement

SGN is proposing to replace an ageing and unsupported technology system that has been in use for over 10 years with end of support expected during the start of GD2 timelines. Although currently operational, IBM's Cognos TM1 system is out of support from Sep 2019, after this it is on extended support until end of September 2022 with additional cost for the same (or reduced) features thereafter. During the extended support, the product will only be serviced for critical security updates that means there will be no feature enhancement or fixes required by the industry in general.

Continuing with TM1 beyond September 2022 will provide a significant risk to meeting SGN's need to perform regulatory and statutory reporting. In addition, the replacement will enhance the capability to drill down to transaction level for resources, equipment and suppliers to ensure right investment and financial and budgetary decisions are made. This will reduce manual intervention resulting in less errors and faster turnaround in financial planning and reporting across all parts of SGN operations. The **Commercial Confidentiality** module is integrated with the **Commercial Confidentiality** this is the core ERP system that is currently in use by SGN). This will provide much better and granular information exchange with actual expense lines, provide transparency for budgeting therefore, will be much more effective **Commercial Confidentiality** and even better than continuing with the current TM1 solution. This is also in keeping with our cloud strategy and our policy of having fully supported and maintained IT systems which are sure and have a defined support and development path. This particular solution has the added benefits of a highly integrated and therefore agile system, due to it being cloud based service, thus providing a Financial Reporting service that integrates well with our other IT systems with easy to use user interfaces.

Upon engagement with the CEG we were advised to seek advice from technical and industry experts to validate the level of spend and that we were spending in the right areas. Upon reviewing our plan with the CEG group it was clear there was also an expectation that SGN get independent validation of their IT investment plans to ensure proposed investment is in the correct areas and the value we are expecting to spend is in-line with industry analyst predictions. The IT business plan has been validated by Gartner (report available as part of GD2 submission) and the proposed spend on Financial Planning and Reporting System Replacement and Redesign, is moderately placed when compared to their benchmark range. SGN's ability to analyse financial data, provide accurate reporting (statutory, regulatory and management) is directly dependent on having the right software working accurately and that this is fully supported and maintained on an ongoing basis with a credible, trusted and reliable supplier. It is also critical that we have a high level of security built-in to this service given the increasing cyber threat that all UK utilities face.

Maintaining and running our planning cycles accurately, forecasting for future operations and budgeting accurately is critical to ensuring that SGN is able to operate efficiently and effectively. In order to meet our stakeholder expectations of keeping the gas flowing safely, sustaining our future, keeping energy affordable, improving our service and supporting our

communities, it is critical that we continue to invest in our core applications that provide systemised support for these commitments and obligations.

Failure to replace this system could result in SGN being unable to meet statutory financial reporting, inability to provide accurate forecast and inability to submit mandatory financial reporting to various stakeholders, including Ofgem. Not investing in this platform, directly impacts SGN's ability to analyse and report on the operational performance, manage effectiveness and undertake financial due diligence against our various regulatory and statutory obligations. SGN's licence to operate requires us to be compliant with legislative requirements (HMRC, Companies House, employment law, procurement regulations, RRP reporting, and RIIO GD2 planning). The uniform network code and the supply point administration agreement also require accuracy of reporting. It is critical that we can comply with legislation in regard to how we manage our operation on a daily basis. By investing in a supported, well maintained and integrated system, SGN will continue to provide financial and employee information to Regulatory bodies, Industry and Government bodies. Our budgeting and planning activities are key in our ability to operate in the most cost-effective way for our customers. The reporting system provide analysis on our procurement and work management processes that underpin our ability to operate and to meet our Regulatory Output Measures including our ability to respond to Emergencies as well as repair and replace our network efficiently. It provides us with the ability to provide a financial oversight that ultimately enables our employees to work safely, efficiently and reliably.

4.1 Narrative Real-Life Example of Problem

SGN has maintained and ensured this platform has been patched, managed and well supported. As such, we have not experienced any catastrophic failure of process. However, as an example of the type of impact to our business a failure of this service can have, we recently experienced significant degradation of performance on this platform which resulted in our inability to close the month end accounts. Ultimately this issue was resolved quickly, as the current platform is supported. However, had this issue continued or increased, it would have resulted in a critical failure of our core financial processes which ultimately would have led to our inability to report, plan and manage on the company finances to Ofgem, HMRC and Companies House.

4.2 Spend Boundaries

The deployment of **Commercial Confidentiality** as a replacement of our current IBM's Cognos TM1 will be in scope. The deployment will make use of the Cloud technology, running the systems on a pay by subscription basis (SaaS service).

We have estimated the overall cost to deploy the **Commercial Confidentiality** to be £0.5M. The cost includes SaaS licenses, project management, data transfer, integration and training.

Technical skills development and internal capability building within SGN will also be an element of this investment. Along with the project costs, that will largely be capitalised, there will an ongoing opex cost required to run, enhance, maintain and replace the services from time to time that will be in line with the current system maintenance costs built in our IT opex costs to running or systems.

5 Probability of Failure

The investment case presented is for information technology therefore cannot be linked directly to engineering equipment failures. However, SGN assumes the probability of failure of the service to be 100% should the system not be adequately kept supported, maintained and secure.

5.1 Probability of Failure Data Assurance

SGN assumes the probability of failure of the service to be 100% should the system not be adequately kept supported, maintained and secure. This will result in an inability to report on our financial statutory and regulatory obligations and would fundamentally affect the quality and availability of data.

6 Consequence of Failure

Failure to invest in a replacement of an unsupported Financial planning and reporting system create significant risk to SGN, our stakeholders and customers. The consequences of a failed Financial planning and reporting system would require SGN to compensate reporting and controls on manual data processing and reporting. This will lead to significant exposure of errors and mistakes.

The following table outlines the consequence of failing to invest in ongoing support and maintenance of SGN IT assets.

Table 1: Consequences of failures.

Reason for failure	Consequence of Failure
Failure to deliver mandatory change to applications driven by legislative or regulatory requirements	SGN's licence to operate requires us to be compliant with the Uniform Network Code and the Supply Point Administration Agreement. It is critical that we can comply with legislation in regard to how we manage our organisation and run operations on a daily basis. Failure to comply could lead to a breach of licence conditions leading to significant fines or a failure to comply with the law which could lead to fines and / or legal action being taken against SGN.
Failure to carry out upgrade or replacement activity required within 3rd party contracts to remain in support	Critical process and system failures ultimately leading to leading to failure in emergency standards, gas explosion and loss of life (£16m loss of life, up to £100m/10% of turnover fine, unlimited HSE Penalty).
Failure to carry out upgrade or replacement activity due to applications or infrastructure being deemed 'end of life' by 3 rd party providers	Loss of licence to operate.

Failure to carry out upgrade or replacement activity driven by the need to remain secure against an ever-increasing cyber security threat	
Failure to carry out upgrade or replacement activity deemed critical by SGN to ensure we continue to meet our licence obligations and regulatory outputs	

Without continued investment in ageing systems, SGN will not be able to report to the various industry bodies. Our ability to perform in line with our regulatory and legislative obligations will be at significant risk due to our inability to utilise systemised processes. This therefore, is a 'must' and mandatory requirement rather than a 'should / could' requirement for our company.

SGN's ability to deliver to our financial obligations could not be guaranteed without a timely investment in replacement of this unsupported system. A set of high-level baseline assumptions are noted as follows:

- SGN manage its IT estate in line with the HSEs ALARP (as low as reasonably practicable) risk management principles. On that basis SGN have assumed a failure to invest in required adoption of technology, replacement or refresh activity for safety critical systems, would lead to catastrophic system failure as well as a lack of 3rd party support (based on support contracts, 3rd party roadmaps, architectural standards and internal policies, designed to ensure upgrade, replacement or refresh activity is carried out at the appropriate point in time to in order to prevent a non-recoverable functional, technical or security failure).
- SGN have assumed that a lack of investment combined with a lack of support into new technologies would prevent the reinstatement of systems should they fail.
- SGN have assumed a catastrophic failure of safety critical systems that are on old technologies and an inability to reinstate systems after failure would lead to an inability to respond to gas emergencies, an inability to know where our assets are and an inability to track performance and regulatory outputs.
- SGN have assumed a catastrophic failure of safety critical systems and an inability to reinstate systems after failure would lead to an inability to manage Personal Identifiable Information and would inevitably lead to a significant breach of GDPR legislation (up to £40m fine)
- SGN have assumed an inability to respond to gas emergencies, an inability to know where our assets are and an inability to track performance and regulatory outputs would inevitably lead to a catastrophic incident e.g. explosion and loss of life (£17.73m). This assumption is supported by section 2 of the Health and Safety at work act which identifies scenarios that would result in loss of life.
- SGN have assumed an inability to respond to gas emergencies, an inability to know where our assets are and an inability to track performance and regulatory outputs would inevitably lead to an inability to operate. This would lead to a catastrophic breach of license conditions (up to £100m fine)
- SGN have assumed catastrophic failures in regard to loss of life (up to £17.73m), a breach of license conditions (up to £100m) and/or a breach of GDPR legislation (up to £40m) will occur within a year of failing to adhere to support contracts, 3rd party roadmaps, architectural standards and internal policies designed to ensure upgrade,

replacement or refresh activity is carried out at the appropriate point in time to in order to prevent a non-recoverable functional, technical or security failure.

7 Options Considered

In line with SGN's strategy of cloud first, a list of potential SaaS solutions was created and mapped against Gartner's Magic Quadrants for top performing solutions. Further qualifying criteria to assess suitability within the UK gas distribution sector, alignment and ease of integration with SGN's operations & systems was then applied. A further assessment based on cost and the associated change management effort and cost required was applied on the potential solutions. As a result, two options were shortlisted which are as follows:

- The first option considered is to deploy **Commercial Confidentiality** as a replacement to IBM's Cognos TM1 system,
- The second option considered is to deploy **Commercial Confidentiality** as a replacement to IBM's Cognos TM1 system.

Commercial Confidentiality was shortlisted as the preferred choice on the basis of ease and low cost of implementation due to the SaaS nature of the product, easier integration with SGN's back office systems and familiarity of SGN staff to use **Commercial Confidentiality** interfaces and lowest cost.

Commercial Confidentiality solution was rejected on the basis of high cost of implementation in SGN. The higher costs are attributed to higher cost of integration with SGN's other systems, a significantly higher effort of training and change management associated with a different type of technology being introduced into the organisation.

Costs have been derived at the time of writing this paper and do not factor any change in labour or market price changes that may occur during GD2. It is also assumed that no external or internal significant event/threat will occur that requires a radical re-think of the rollout plans, costs or the use of these preferred solution but clearly, this will be reassessed at the time of project initiation through a formal, regulated procurement exercise.

7.1 **Commercial Confidentiality** deployment

SGN must replace our ageing Financial planning and reporting system. One of the two options available to SGN is the deployment of **Commercial Confidentiality**. SGN plans to invest £500,000 on the deployment of a SaaS based financial planning and budgeting system from **Commercial Confide**

A project of this nature will be required to run a formal tender process that will be governed by the SGN procurement team working with the project manager. It is quite a common practice for many players to bid for such a transformation project as systems integrators. The SaaS licences would be procured directly from the service provider, **Commercial Confide**. This may also be subject to a formal procurement exercise.

The deployment / rollout plans will be synchronised with other activities such as month end / year-end closing, our financial accounts publication, OFGEM reporting etc. to minimise interruption to our business and reduce costs. The costs provided are on the basis of SGN experience of running similar projects.

7.2 Commercial Confidentiality system deployment

SGN plans to invest in replacement of our ageing Financial planning and reporting system. One of the options available to SGN is the deployment of Commercial Confidentiality system (Commercial Confidentiality

Commercial Confidentiality SGN estimates the cost to deploy the Commercial Confidentiality will be £900,000 as a SaaS based financial planning and budgeting system. Due to higher cost of integration and adoption SGN would also incur an additional £80,000 per annum to our opex costs.

SGN's capacity in deploying IT staff to deliver the solution can easily be supplemented at similar price through our pre-approved development and test partners.

Costs have been derived at the time of writing this paper and do not factor any change in labour or market price changes that may occur during GD2. It is also assumed that no external or internal significant event/threat will occur that will require a radical re-think of the rollout plans, costs or the solutions available but clearly, this will be reassessed at the time of project initiation through a formal, regulated procurement exercise.

7.3 Options Technical Summary Table

Table 2: Options Technical Summary

Option	First Year of Spend	Final Year of Spend	Volume of Interventions	Equipment / Investment Design Life	Total Cost
Baseline - Do nothing	2025	2025	0	0	0.00
Replace TM1 with <small>Commercial Con</small>	2022	2022	1	5	0.50
Replace TM1 with <small>Commerc</small>	2022	2022	1	5	0.90

Commercial Confidentiality

deployment:

The Commercial Confidentiality will be deployed on Commercial Confidentiality with interfaces developed by SGN integration team in order to move data between our Commercial Confidentiality Commercial Confidentiality

Commercial Confidentiality SGN intends to procure the SaaS licences for Commercial Confidentiality alongside our procurement of SaaS licences for Commercial Confidentiality Cloud to optimise licence costs and make use of any discounts that may become available. Any localised data processing will be done on users' individual laptops/desktops with SGN provided Office 365 tools.

The following technologies are most likely to be deployed:

Table 3: Deployment architecture components of the preferred option.

User access window	Any standard supported browser, Internet Explorer, Firefox, Google Chrome etc.
User identification	SaaS- SGN Okta plug-in for single sign-on
User authorisation	SaaS- Commercial Confidentiality user configuration services
Data integration	SaaS - SGN’s Mulesoft licence with various existing plug-ins (including Commercial Confli)
User system	SaaS - Commercial Confidentiality tool
Local data access	SaaS - SGN Office 365 employee licence, MS Excel, MS Word, MS Access, etc.
Data sources	SaaS – Commercial Confidentiality (for Finance and HR data), other SGN front office systems hosted on Amazon public cloud.

Commercial Confidentiality system deployment cost summary:

The **Commercial Confidentiality** will be deployed on **Commercial Confidentiality** with integrations developed by SGN integration team for moving data between our **Commercial Confide** eBusiness suite **Commercial Confidentiality**. SGN will procure the SaaS licences for **Commercial Confidential**. Any localised data processing will be done on users’ individual laptops/desktops with SGN provided Office 365 tools.

The following technologies are most likely to be deployed:

Table 4: Deployment architecture components of the second option.

User access window	Any standard supported browser, Internet Explorer, Firefox, Google Chrome etc.
User identification	SaaS- SGN Okta plug-in for single sign-on
User authorisation	SaaS- Commercial Confidenti user configuration services
Data integration	SaaS - SGN’s Mulesoft licence with new plug-ins for Commercial Confidential
User system	SaaS – Commercial Confidenti tool
Local data access	SaaS - SGN Office 365 employee licence, MS Excel, MS Word, MS Access, etc.

Data sources

SaaS – **Commercial Confidentiality** back office system (for Finance and HR data), other SGN front office systems hosted on Amazon public cloud.

7.4 Options Cost Summary Table

Commercial Confidentiality cost summary:

Table 5: Business case matrix for preferred option.

Option	Template	Cost Breakdown	Total Cost (£m)
Replace TM1 with Commercial Confidentiality	IT Capex	Resources	0.30
		Software	0.20
		Hardware	
		Contingency	
		Total	0.5

The following table provides the cost breakdown for investment as in the preferred option of investing into **Commercial Confidentiality**

Table 6: Cost breakdown for the preferred option.

Investment type	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	Totals
No of users	25					25
Architecture and design (£)	£10,000					£10,000
Data Governance (£)	£10,000					£10,000
Customisation and testing (£)	£120,000					£120,000
Project Management (£)	£90,000					£90,000
Data management (£)	£15,000					£15,000
Integration (£)	£40,000					£40,000
Software licences (£)	£200,000					£200,000
Training and change management (£)	£15,000					£15,000
Total capex investment (£)	£500,000					£500,000
Total capex investment (£M)	£0.50	£0.00	£0.00	£0.00	£0.00	£0.50
Total opex investment (£M)	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00
Total investment (£M)	£0.50	£0.00	£0.00	£0.00	£0.00	£0.50

Commercial Confidentiality system deployment cost summary:

The following table provides the cost breakdown for investment as in the second option of investing into **Commercial Confidentiality**

Table 7: Business case matrix for second option.

Option	Template	Cost Breakdown	Total Cost (£m)
Replace TM1 with Commercial Confiden	IT Capex	Resources	0.65
		Software	0.25
		Hardware	
		Contingency	
		Total	0.9

Table 8: Cost breakdown for the second option.

Investment type	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	Totals
No of users	25					25
Architecture and design (£)	£40,000					£40,000
Data Governance (£)	£10,000					£10,000
Customisation and testing (£)	£300,000					£300,000
Project Management (£)	£110,000					£110,000
Data management (£)	£25,000					£25,000
Integration (£)	£140,000					£140,000
Software licences (£)	£250,000					£250,000
Training and change management (£)	£25,000					£25,000
Total capex investment (£M)	£0.90	£0.00	£0.00	£0.00	£0.00	£0.90
Total opex investment (£M)	£0.08	£0.08	£0.08	£0.08	£0.08	£0.40
Total investment (£M)	£0.98	£0.08	£0.08	£0.08	£0.08	£1.30

A higher cost of transition for Commercial Confidential system is estimated due to this being a new technology platform introduction into SGN's IT ecosystem. Similarly, a high integration cost is estimated due to the creation of new interfaces for the Commercial Confidential system.

8 Business Case Outline and Discussion

8.1 Key Business Case Drivers Description

SGN's licence to operate requires us to be compliant with legislative requirements (safety, reliability, affordability and environmental). The uniform network code and the supply point administration agreement also require SGN to work towards the improvement in these areas. It is critical that we can comply with legislation in regard to how we manage our operation on a daily basis. By investing in supported, well maintained and integrated technology solutions, SGN will continue to provide the operational and safety information to Regulatory bodies, Industry and Government bodies as we are obliged to under our statutory and licenced conditions.

Failure to replace the Financial planning and reporting system could result in SGN being unable to meet statutory financial reporting requirements, unable to provide accurate forecast information and unable to submit mandatory plans to various stakeholders, including the regulators. The annual submission of our Regulatory Reports is entirely dependent on our reporting and planning system. As well as the above, not investing directly impacts SGN's ability to analyse operational performance, effectiveness and financial due diligence against the various regulatory and statutory obligations.

This investment also underpins our ability to report and plan to meet our Regulatory Output Measures including our ability to ensure adequate resources are allocated to respond to our Gas escape emergency response service as well as the repair and replacement of our network efficiently.

SGN expects to further develop people and process capabilities in reporting and planning to be able to leverage the technology advancement in these areas. Our recent utilisation of Cloud Platforms (Amazon Web Services), the move of our back-office systems to Cloud and our investments in integration technologies will provide a firm foundation to meet our future obligations and responsibilities as a GDN.

Further investment in technology, may result in IT opex increase which is required to sustain the platform and to continue delivery of benefits over the course of the price control period. This is offset by the cost profile and efficiency levels already built into and across our wider business plan.

Table 9: Key value drivers in options analysis.

Option No.	Desc. of Option	Key Value Driver
1	Commercial Confidentiality deployment	<ul style="list-style-type: none"> Supported technology platform Improved in regulatory, financial and project reporting Reduced risk of inaccuracy in planning, budgeting and forecasting
2	Commercial Confidentiality deployment	Alternative to option 1 with a higher cost to implement, more complexity in integration and significant increase in annual support cost.

A summary of the cost benefit analysis of the two options is provided as below:

Table 10: Summary of CBA results.

Option No.	Desc. of Option	Preferred Option (Y/N)	NPVs based on Payback Periods (absolute, £m)					
			Total Forecast Expenditure (£m)	Total NPV	2030	2035	2040	2050
Baseline	Do Nothing / Do minimum	N	0.00	-96.62	-96.62	-96.62	-96.62	-96.62
1	Replace TM1 with <small>Commercial Con</small>	Y	-0.50	-2.52	-0.68	-1.01	-1.31	-1.82
	Absolute NPV							
2	Replace TM1 with <small>Commercial Confider</small>	N	-0.90	-4.54	-1.23	-1.82	-2.36	-3.28
	Absolute NPV							
1	Replace TM1 with <small>Commercial Con</small>	Y	-0.50	-2.52	95.93	95.61	95.31	94.80
	NPV Relative to Baseline							
2	Replace TM1 with <small>Commercial Confider</small>	N	-0.90	-4.54	95.39	94.80	94.26	93.34
	NPV Relative to Baseline							

Key Assumptions:

Probability of fatalities / other societal cost: SGN manage its IT estate in line with the HSEs ALARP (as low as reasonably practicable) risk management principles. On that basis SGN have assumed a failure to invest in required adoption of technology, replacement or refresh activity for safety critical systems, would lead to catastrophic system failure as well as a lack of 3rd party support (based on support contracts, 3rd party roadmaps, architectural standards and internal policies, designed to ensure upgrade, replacement or refresh activity is carried out at the appropriate point in time to in order to prevent a non-recoverable functional, technical or security failure).

Probability of fatalities / other societal cost: SGN have assumed that a lack of investment combined with a lack of support into new technologies would prevent the reinstatement of systems should they fail.

Probability of fatalities / other societal cost: SGN have assumed a catastrophic failure of safety critical systems and an inability to reinstate systems after failure would lead to an inability to respond to gas emergencies, an inability to know where our assets are and an inability to track performance and regulatory outputs.

Probability of fatalities / other societal cost: SGN have assumed a catastrophic failure of safety critical systems that are on old technologies and an inability to reinstate systems after failure would lead to an inability to respond to gas emergencies, an inability to know where our assets are and an inability to track performance and regulatory outputs.

Probability of fatalities / other societal cost: SGN have assumed an inability to respond to gas emergencies, an inability to know where our assets are and an inability to track performance and regulatory outputs would inevitably lead to a catastrophic incident e.g. explosion and loss of life (£17.73m). This assumption is supported by section 2 of the Health and Safety at work act which identifies scenarios that would result in loss of life.

Probability of fatalities / other societal cost: SGN have assumed an inability to respond to gas emergencies, an inability to know where our assets are and an inability to track performance and regulatory outputs would inevitably lead to an inability to operate. This would lead to a catastrophic breach of license conditions (up to £100m fine)

Probability of fatalities / other societal cost: SGN have assumed catastrophic failures in regard to loss of life (£17.73m), a breach of license conditions (up to £100m) and/or a breach of GDPR legislation (up to £40m) will occur within a year of failing to adhere to support contracts, 3rd party roadmaps, architectural standards and internal policies designed to ensure upgrade, replacement or refresh activity is carried out at the appropriate point in time to in order to prevent a non-recoverable functional, technical or security failure

Capex expenditure: Demand for regulatory and legislative change in GD2 and therefore investment required will be broadly similar to that in GD1.

Capex expenditure: Brexit may impact level of spend required in year 1 (hence front loading of spend within the GD2 period).

Capex expenditure: Transition from GD1 to GD2 may impact level of spend required in year 1 (hence front loading of spend within the GD2 period).

Capex expenditure: Regulatory and Legislative change could impact any application within the SGN estate.

Capex expenditure: Standard SGN investment approval process will be followed for individual change items at the point of change throughout the GD2 period.

8.2 Business Case Summary

This engineering justification considers the options of investing in the areas required to deliver SGN's GD2 plans. The business case matrix of two options available are provided in the tables below.

The summary of the cost benefit analysis for the two options is presented as below:

Table 11: Cost benefit analysis of the two options.

	Replace TM1 with Commercial Confidentiality	Replace TM1 with Commercial Confidentiality
GD2 Capex (£m)	0.50	0.90
Number of Interventions	1.00	1.00
Carbon Savings ktCO ₂ e (GD2)	0.00	0.00
Carbon Savings ktCO ₂ e /yr	0.00	0.00
Carbon Emission Savings (35yr PV, £m)	0.00	0.00
Other Environmental Savings (35yr PV, £m)	0.00	0.00
Safety Benefits (35yr PV, £m)	0.00	0.00
Other Benefits (35yr PV, £m)	96.62	96.62
Direct Costs (35yr PV, £m)	-2.05	-3.68
NPV (35yr PV, £m)	94.57	92.94
High Carbon Scenario		
Carbon Emission Savings (35yr PV, £m)	0.00	0.00
High Carbon NPV (35yr PV, £m)	94.57	92.94

9 Preferred Option Scope and Project Plan

9.1 Preferred option

This engineering justification recommends the options of investing in the area required to deliver SGN's GD2 plans and associated outputs.

The investment listed above relate to maintaining, supporting financial planning and reporting services in a minimalistic manner. These are considered modest in line with external assurance provide by Gartner. If we were not to make this investment in order to avoid the associated cost, it will result in significantly higher costs elsewhere within our business and more importantly, increased risks that will ultimately contribute to SGN being unable to meet its obligations as a Gas Network operator.

SGN's proposal is to spend a total of £0.5 Million in the first year of GD2 on replacing the unsupported financial planning and reporting system that is considered to be essential to run and maintain a safe, reliable and affordable gas network.

9.2 Asset Health Spend Profile

SGN plans to invest up to £0.5 million on replacing our financial planning and reporting system in the first year of the GD2 commitments. This will be a project driven capex investment.

Table 12: Asset health spend profile.

Asset Health Spend Profile (£m)						
	2021/22	2022/23	2023/24	2024/25	2025/26	Post GD2
Replace TM1 with <small>Commercial Confidential</small>	0.50	0.00	0.00	0.00	0.00	Investment profile continues post GD2

This investment will be based on the procurement of a SaaS software, and the delivery framework including design and architecture. The procurement will also include data and integration, consulting for specialist software skills required to design, implement and maintain the solution. The cost also includes the project management and technology skill hiring and/or development costs consisting of internal staff, contractors and specialists to deliver the new solution.

Along with the project costs, that will largely be capitalised, there will an ongoing opex cost required to run and maintain the service and this is included within our Opex plan submission.

9.3 Investment Risk Discussion

As part of annual operating planning process, SGN management will study and prioritise the individual cases for proposed investment every year in order to align these planned investments and to optimise the costs for the benefit of customers. All investments will follow our stringent investment case governance and will be reported on a periodic basis in line with legal, regulatory and financial reporting obligations that apply to SGN and any UK GDN.

At a high-level planning perspective, we have assumed a steady state, flat phased approach to investment in the first year.

The key risk associated with the proposed option is on data transition and user training. SGN will mitigate these through our structured approach to data governance and compliance, as well as using our tried and tested project delivery methodology to deliver change programmes.

Table 13: Risk Matrix

Risk Description	Impact	Likelihood	Mitigation/Controls	Comments
Change in capex expenditure	Capex expenditure	<=20%	Proper project planning in consultation and Corporate Finance on timelines and testing commitments will provide mitigation against the likely risk.	A likely disruption to Financial Reporting for SGN during the migration phases.
Change in capital expenditure	Capex expenditure	>20% & <=40%	An early licence agreement has been agreed with preferred supplier to baseline a discount plan that applies for 6 year period starting from 2020.	The cost of the new solution might exceed the original estimates.

CAPEX Sensitivity:

A sensitivity-based risk analysis was performed with a mid-level sensitivity applied to the investment plan. The impact on the plan based on the three sensitivity levels is presented in the table below as a reference.

Table 14: Sensitivity risk analysis.

	Low	Mid	High
GD2 Capex (£m)	0.50	0.50	0.75
Number of Interventions	1	1	1
Carbon Savings ktCO2e (GD2)	-	-	-
Carbon Savings ktCO2e /yr	0	0	0
Carbon Emission Savings (35yr PV, £m)	0.0	0.0	0.0
Other Environmental Savings (35yr PV, £m)	0	0	0
Safety Benefits (35yr PV, £m)	0.0	0.0	0.0
Other Benefits (35yr PV, £m)	96.6	96.6	96.6
Direct Costs (35yr PV, £m)	-2.0	-2.0	-3.1
NPV (35yr PV, £m)	94.6	94.6	93.5

We believe the preferred option is for keeping up with technology advancement. For the purpose of sensitivity analysis, the following has been applied to the preferred option:

Low Case: SGN have applied an 80% reduction to the Safety Benefits associated with the risk of a fatality and Other Benefits associated with the impact of a Breach of Licence Conditions.

Mid Case: no changes have been applied, this is the expected output required for the GD2 time period.

High Case: SGN have applied an additional 50% on the CAPEX expenditure, as this is believed to be the potential cost increase if SGN do not go to tender and achieve best possible market prices. This could also be impacted by political changes which may impact on resource availability or material costs. This increase in cost also allows for any issues in obtaining generic designs for the full volume of works or SGN not being able to delivery these projects efficiently due to internal processes which would increase contract labour costs.

Project payback has not been carried out as part of this analysis due to the effect of the Spackman approach. For a cash-flow traditional project payback period please see scenario 4 of our Capitalisation Sensitivity table.

Capitalisation Rate Sensitivity

Consumers fund our Totex in two ways – opex is charged immediately though bills (fast money – no capitalisation) and capex / repex is funded by bills over 45 years (slow money – 100% capitalisation). The amount deferred over 45 years represents the capitalisation rate. Traditionally in ‘project’ CBA’s the cashflows are shown as they are incurred (with the investment up front which essentially is a zero capitalisation rate). Therefore, we have developed scenarios that reflect both ways of looking at the investment – from a consumer and a ‘project’.

The scenarios are summarised as follows:

- Scenario 1 - we have used the blended average of 65%, used in previous iterations of this analysis.
- Scenario 2 - we have represented the Capex and Opex blend for the two networks, as per guidance.
- Scenario 3 - addresses our concerns on capitalisation rates whereby Repex and Capex spend is deferred (100% capitalisation rate) and Opex is paid for upfront (0% capitalisation rate).
- Scenario 4 - this reflects the payback period in 'project' / cash-flow terms and provides a project payback.

We have taken a view of the NPV in each of the scenarios, except for scenario 4, at the 20, 35 and 45 Year points, to demonstrate the effect of Capitalisation Rate on this value.

Table 15: Capitalisation rate sensitivity

Scenario	1	2 SGN	3	4
Capex (%)	65	41	100	0
Opex (%)	65	41	0	0
Repex (%)	100	100	100	0
Output				
NPV (20yr PV, £m)	95.43	95.28	95.63	
NPV (35yr PV, £m)	94.67	94.57	94.82	
NPV (45yr PV, £m)	94.30	94.23	94.40	
Payback	4.00	4.00	4.00	4.00

Appendix A - Acronyms

Acronym	Description
CEG	Customer Engagement Group
<small>Commercial Confidential</small>	Commercial Confidentiality
SGN	Scotia Gas Network
TM1	IBM Cognos’s Tables Manager 1 (TM1) Financial reporting system