Digitalisation

RIIO-ED2 Re-opener Submission [Redacted]

30 January 2026

Electricity Distribution

Version Control

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Redaction statement:

This is a redacted document. To make this document suitable for publication, redactions have been made to the original Re-opener application. These are clearly demarked in the document through the use of black out [redacted]. Redactions are made with regard to confidential information, commercially sensitive information and information that may pose a risk to national security; and any other information suitably justified for redaction, including those to ensure compliance with our legal obligations and statutory constraints.

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Executive Summary

The UK energy system is undergoing significant transformation to meet **Clean Power 2030** and support the delivery of the Government's **Net Zero** objectives. In parallel, the expectations of customers and stakeholders around digital engagement and enablement continue to increase, with utilities being expected to offer the same solutions and level of service as digital market leaders.

Ofgem's regulatory framework for RIIO-ED2, and the upcoming ED3 price control, highlights the role and rapid evolution of digitalisation as a key enabler of smarter networks, consumer flexibility, and efficient integration of low-carbon technologies. Since the RIIO-ED2 Final Determination was published in November 2022, significant **new obligations and guidance** has been set out by Ofgem that materially change the activities and outputs National Grid Electricity Distribution (NGED) has to deliver. These include:

- **Market-wide Half-Hourly Settlement (MHHS)**: Requires Local Distribution System Operators (LDSOs) to undergo significant technical, procedural, and operational changes to support the transition to faster, data-driven settlement, starting in October 2025.
- **Smart Optimisation Output Licence Obligation (SOOLO)**: Requires the delivery of governed, transparent and repeatable Smart Optimisation Outputs in line with Data Best Practice principles, supported by appropriate digital and data capabilities.
- **Connections Reform obligations**: Requires digitalisation of end-to-end connections processes in an enduring platform, to ensure reformed connections processes can operate efficiently and fairly, to support delivery of Clean Power 2030

These changes, which are focussed on delivering wider, whole system benefits to consumers, create **additional, non-discretionary costs** for NGED beyond the outputs and allowances set in RIIO-ED2 Final Determinations. As such, and in line with the RIIO-ED2 Digitalisation re-opener that Ofgem set out in Final Determinations, we are now seeking the necessary funding to deliver these additional requirements.

There are a number of specific drivers that require this work to be progressed within the current price control period, including:

- **Customer value:** Greater transparency under Connections Reform digitalisation improvements will give customers the clear, accurate, and transparent connections data they need to make better investment decisions, enabling customers to understand likely timelines, queue positions, and system constraints earlier in the process
- **Strategic need to deliver system reform now that enables Clean Power 2030 and Net Zero:** providing suppliers and consumers access to granular price signals through MHHS, enabling flexibility, improving efficiency, and lowering whole system cost; and delivery of Connections Reform to accelerate delivery of clean energy projects which brings forward low-cost renewable generation, reduces long-term consumer bills, locks up to £40bn in annual investment, and avoids inefficient network spending[1].
- **Regulatory deadlines**: MHHS go-live by September 2025 and transition from October 2025; SOOLO compliance during RIIO-ED2; new Connections Reform milestones embedded in Ofgem's 2025–2026 Directions.

[1] NESO implements electricity grid connection reforms to unlock investment in Great Britain | National Energy System Operator

- **Operational risk**: Current systems are unable to effectively support MHHS data flows, SOOLO governance, or the revised end-to-end connections reform processes.
- **Strategic need to provide future-proofed solutions delivered ready for ED3:** The focus of this submission is to react to current needs in RIIO-ED2. However, to be efficient, our approach will ensure that we establish ED3 ready digital solutions, data and reporting capabilities as far as possible.

This re-opener consolidates three interdependent projects into a programme, each directly linked to the changing and evolving Distribution Network Operator (DNO) roles and responsibilities since RIIO-ED2 was determined. These are set out below:

1. **MHHS Implementation Programme**
    - Deliver full **Market-wide Half Hourly Settlement (MHHS) compliance** by upgrading NGED's settlement, modelling and data exchange systems (including [redacted] to process high-volume half-hourly smart meter data, replace withdrawn Profile Class/Time Pattern Regime (TPR) datasets and meet all Balancing Settlement Code (BSC) and Retail Energy Code (REC) and Qualification/Migration requirements
    - **Provide the mandated digital and data capabilities** needed to support MHHS go-live in September 2025 and end-to-end migration through to 2027 - covering MHHS compliant data pipelines, industry interface testing, DIP-based message exchange, Meter Point Administration Number (MPAN) lifecycle changes and assured settlement/billing continuity across the transition
    - **Enable whole system and consumer benefits** by delivering granular consumption data that supports smart tariffs, improves load forecasting and network efficiency, underpins flexibility markets, and contributes to Ofgem estimated long-term system benefits (up to £4.5bn by 2045)[2], while positioning NGED for ED3-ready digital and analytical capabilities
2. **Smart Optimisation Output Licence Obligation (SOOLO) Programme:**
    - **Deliver a compliant, enduring SOOLO capability** by implementing an integrated cloud-based platform that publishes governed Smart Optimisation Outputs in Common Information Model CIM format, automates redaction and metadata management, and fulfils licence obligations under SLC10A and SpC 9.13, aligned with Data Best Practice (DBP) and the DSAP.
    - **Enhance the digital and data infrastructure and products required for RIIO-ED2 and ED3** through the development of three core components - Connected Data Portal, Regulatory and Reporting Platforms, and a Digital Twin decision engine - in support of transparent network data publication, predictive modelling, scenario analysis, and interoperability with MHHS, Connections Reform, Data Sharing Infrastructure (DSI), National Energy Outage Programme (NEOP), GC0139 planning data and LAEP+.
    - **Address structural limitations in legacy systems** by replacing manual, fragmented reporting processes with governed, automated, reproducible data products, enabling consistent planning evidence, secure consumption data

[2] Ofgem PPIR: Cost Analysis Guidance | MHHS Programme, May 2024

handling, improved stakeholder access, and a future-proof architecture that reduces long-term cost and supplier dependency.

3. **Connections Reform Digitalisation Programme:**

    - **Implement the mandatory, readiness-based Connections Reform framework by delivering a fully digitised end-to-end platform that supports CMP434 and CMP435 obligations** - enabling structured Gate 2 evidence submission, readiness assessments for both new and existing projects, and compliant, timely data exchange with NESO under the TMO4+ reform package.

    - **Replace tactical, manual and fragmented processes** with an integrated NGED-owned digital platform comprising Connections Web (customer/staff interface), the Connections Platform (workflow and data orchestration) and [redacted], ensuring consistent decision-making, improved auditability and transparent milestone and queue management and provide customers the clear, accurate information they need

    - **Future-proof NGED's connections capability for ED3** by enabling automated workflows, centralised evidence and document handling, structured reporting, scalable data architecture and alignment with SOOLO and the Digital Twin - reducing long-term operating costs, improving customer experience and supporting delivery of Clean Power 2030.

Collectively, these initiatives are designed to enhance customer benefit by enabling NGED to facilitate an accelerated transition to a smarter, more flexible electricity system that underpins the UK's ambition of achieving a net-zero carbon grid, while ensuring we continue to deliver against all new regulatory obligations introduced since the start of RIIO-ED2.

The proposed investments are **additional to existing RIIO-ED2 allowances** and are strategically timed to avoid cost escalation and compliance risk. They also ensure NGED will enter ED3 with a robust digital platform to deliver smarter networks, enhanced customer outcomes, and national decarbonisation goals.

This submission is made in accordance with the requirements specified in Part H of Special Licence Condition (SpC) 3.2 of the Electricity Distribution Licence and the Re-opener Guidance and Application Requirements Document (version 4 published 28th October 2025).

The proposals span three projects and propose a total modification to the DIGIt Licence term of £27.76m (in 2020/21 prices) across the four NGED licence areas:

Project	23/24 (£'m)	24/25 (£'m)	25/26 (£'m)	26/27 (£'m)	27/28 (£'m)	Total (£'m)
MHHS	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
SOOLO	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Connections Reform	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Total	**0.66**	**0.99**	**1.60**	**8.80**	**15.71**	**27.76**

This application comprises the following six documents:

1. NGED IT&T Digitalisation Reopener Jan26 – the core narrative document to address the core requirements as specified in the Re-opener Guidance (this document)

2. Annex 1 - NGED RIIO-ED2 Digitalisation Reopener – Project Costing Template Jan26 [not published]

3. Annex 2 – NGED SOOLO - Investment appraisal model Jan26 [not published]

4. Annex 3 - NGED Connections Reform - Investment appraisal model Jan26 [not published]
5. Annex 4 - NGED RIIO-ED2 Digitalisation Re-opener - Application Alignment Jan26
6. Annex 5 - NGED RIIO-ED2 Digitalisation Re-opener - Licence Condition Mapping Jan26

We look forward to continuing our engagement with Ofgem to progress this submission, and to delivering the digital foundations required for a smarter, more resilient, and future-ready energy system.

1 Introduction and Needs Case

1.1 Introduction

In line with RIIO-ED2 price control requirements, NGED is submitting this application for a RIIO-ED2 Digitalisation Re-opener Submission. This submission details the changes required to our systems to allow us to continue to effectively meet changes in licences, codes, and regulatory obligations due to changing requirements that exceed the RIIO-ED2 Materiality Threshold.

While we have considered which interventions we might be able to defer until ED3, we have concluded that all the proposed interventions in this submission are critical now to meet consumer needs, and to enable continuing compliance with industry wide regulatory changes and the efficient operation of the business. In determining which interventions should be part of the re-opener, we have considered the following overarching factors:

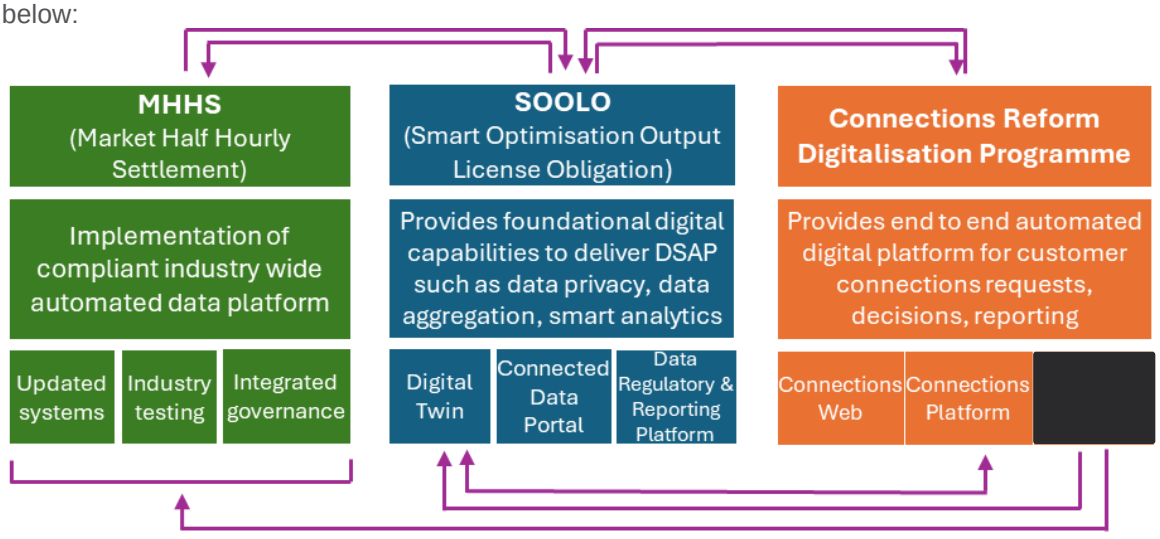
- Changes required to meet our ongoing licences, codes, and obligations
- Most efficient use of resource to ensure an overall minimal impact on consumer bills
- Longevity of solutions that are effective and 'future-proofed' into ED3 and beyond

The approach and projects outlined in this re-opener submission enable us to meet our obligations to the regulator and consumers, while allowing us to continue to operate our networks efficiently in the short and medium term. To ensure our approach to delivery fits in with our wider initiatives being developed as part of RIIO-ED2 we have ensured there is effective alignment and synergy with our overall digitalisation strategy. Our digitalisation strategy is driving a smart and efficient energy system, delivering on our commitment to net zero carbon emissions by 2050.

The three key drivers for this re-opener are set out below:

- **Smart Optimisation Output Licence Obligation (SOOLO)**: Requires the delivery of governed, transparent, and repeatable Smart Optimisation Outputs in line with Data Best Practice principles, supported by appropriate digital and data capabilities.
- **Market-wide Half-Hourly Settlement (MHHS)**: Requires LDSOs to undergo significant technical, procedural, and operational changes to support the transition to faster, data-driven settlement, starting in October 2025.
- **Connections Reform obligations**: Requires digitalisation of end-to-end connections processes in an enduring platform, to ensure reformed connections processes can operate efficiently and fairly, to support delivery of Clean Power 2030

The key components of each of our re-opener elements and how they are inter-related are shown below:



1.2 Needs Case: Change in Licensee roles and responsibilities

Changes in licence roles and responsibilities through RIIO-ED2 that necessitate the proposed digital programmes are summarised below:

- **Market-wide Half-Hourly Settlement (MHHS)**: This is the Ofgem policy mandated industry change programme. This requires Licensed Distribution System Operators (LDSOs) such as NGED to implement granular settlement processes as their distribution licence required compliance with BSC and the MHHS requirements are implemented through the BSC and related reporting under Elexon and REC governance.

  This means that NGED will need to integrate with Elexon's Data Integration Platform (DIP) through a fully functional DIP adaptor; build enhanced data pipelines and modelling tools to replace withdrawn datasets; ensure systems meet updated REC, BSC, and Distribution Connection and Use of System Agreement (DCUSA) code requirements; and develop migration-ready services to support MPAN transfers, data cleansing, and new schemas, as well as updating internal applications to use MHHS-compliant data formats amongst other changes.

- **Smart Optimisation Output Licence Obligation (SOOLO)**: This relates to the specific settlement rules needed to allow MHHS to proceed. Ofgem's rules now require DNOs to lawfully use smart-meter data, publish standardised and interoperable datasets, and provide expanded planning and load data under frameworks such as SLC10A, SPC9.13, Data Best Practice (DBP) /DSAP, GC0139, and the Connections Action Plan. This is mandated through the Significant Code Review and the BSC modifications.

  The need to align with the MHHS means it is necessary to have accurate, governed, and reusable data. The scale, frequency, and interoperability requirements cannot reasonably be met through manual processes or incremental upgrades, thus requiring a modern future-proof data architecture providing assured and compliant data.

- **Connections Reform obligations**: This has been introduced through Ofgem/ Department for Energy Security and Net Zero (DESNZ) policy letters, code modifications (CMP434/435), requiring digitalisation of end-to-end connections processes. These modifications ensure the implementation of Ofgem's Grid Connection Reform.

  This requires a major shift in how NGED manages customer applications, introducing stricter transparency, greater evidence provision, more intensive data exchange with NESO, and closer milestone monitoring. The code modifications include digital-enablement duties. CMP434 replaces "first-come, first-served" with a readiness-based model for new applicants, while CMP435 applies the same Gate 2 criteria to existing contracted projects, restructuring the legacy queue.

  Together they drive a whole-system move to "first-ready, first-needed, first-connect", requiring NGED to apply Gate 2 criteria consistently, collect and validate customer evidence via a digital platform, automate NESO data submissions, issue bulk Gate 2 offers, provide real-time constraint and curtailment insights, and digitise queue and readiness data to meet strengthened transparency and reporting expectations ahead of ED3.

1.3 Needs Case: Timeline for Implementation

For MHHS, the industry-wide requirements evolved iteratively with Ofgem from 2021, but with final direction only set at the beginning of 2025, and for go-live implementation by September 2025. Full migration for MHHS is due for completion by the middle of 2027, removing any legacy settlements.

For SOOLO, these requirements need to be implemented before the end of RIIO-ED2 to ensure compliance with licence obligations, DSI, DBP, and alignment with our DSAP. In addition, some of the outputs from SOOLO feed directly into Connections Reform and MHHS. Therefore, the implementation of these solutions is time critical.

Under the Connections Reform Package (TM04+), CMP434 (new connections process) and CMP435 (reform applied to existing queue) are both approved. This means that the reformed process is expected to apply fully to both existing and future connections customers moving forwards.

1.4 Needs Case: Required System Solutions

The specific systems solutions outlined and justified through this re-opener submission to address the needs case are set out in the summary below:

Projects	Solution	Description
MHHS	Updated systems: [redacted] DIP adapter. Upgrading Internal Applications and Downstream Tools [redacted]	[redacted] tool produces accurate Half-Hourly data; Holds official MPAN data; Tools manage connection data, model LV networks, and assess transformer loading so that MPAN updates, network forecasts, and planning decisions remain accurate under MHHS
	Industry testing	This has been ongoing, including systems testing to ensure the new system is ready for implementation
	Integrated governance	Ensuring our governance matches the Elexon governance requirements
SOOLO	Digital Twin	Artificial Intelligence (AI) integration that uses data to generate predictive constraints and scenario analysis to support consistent planning
	Connected Data Portal - Open Data Platform	Master dataset platform will allow all data from MHHS and connections reform to be stored in one place
	Regulatory and Reporting Platforms	Reporting and publication of data
Connections Reform	[redacted]	[redacted]
	Connections Web	Customer interface for applications and costings
	Connections Platform	This is the back end to manage workflows

1.5 Needs Case: Implication on Costs

These changes create **additional, non-discretionary costs** beyond RIIO-ED2 ex-ante allowances and require action to maintain compliance. Specific drivers for progressing the work and incurring the costs in RIIO-ED2 include:

- **Customer value:** To provide greater transparency through Connections Reform digitalisation improvements, which will give customers the clear, accurate, and transparent connections data they need to make better investment decisions, enabling them to understand likely timelines, queue positions, and system constraints earlier in the process
- **Regulatory deadlines**: MHHS go-live by September 2025; SOOLO compliance during ED2; and Connections Reform milestones embedded in Ofgem's 2025–2026 directions.
- **Cost escalation risk**: Delay compresses delivery into ED3, increasing complexity and cost, and risks NGED not meeting its licence conditions.
- **Operational risk**: Current systems are unable to fully support MHHS data and legacy processes, SOOLO data governance, or reformed connections processes.

1.6 Summary

This re-opener is essential to deliver regulatory obligations introduced by Ofgem since RIIO-ED2 final determinations, maintain operational resilience, and accelerate the UK's transition to a low-carbon future. The proposed investments are **additional to RIIO-ED2 allowances**, efficient, and strategically timed to avoid cost escalation and compliance risk while being future-proofed. They support Government objectives to deliver the wider economic benefits and regional investment of Connections Reform. It is critical that action is taken now and within the RIIO-ED2 period to accelerate connection projects that remain in the reformed queue in order to deliver the required economic benefit associated with Connections Reform and meet CP2030 targets. Investment now will ensure NGED enters ED3 with a robust digital foundation, ready to deliver smarter networks, enhanced customer outcomes, and national decarbonisation goals while increasing customer and investor confidence in delivery.

2 Mapping to submission requirements

This Re-opener submission is made in accordance with the requirements specified in Part H of Special Licence Condition (Sp.C) 3.2 of the Electricity Distribution Licence and the Re-opener Guidance and Application Requirements Document (version 4, published 28 October 2025).

The Guidance Document requires that re-opener submissions contain a table that cross references the content of the submission against the requirements specified in the Licence and section 3 of the Guidance.

The cross-reference table for this Re-opener submission is provided in Annex 4**.**

3 Digitalisation Strategy and Action Plan (DSAP)

3.1 Overview of the DSAP

NGED publishes its Digitalisation Strategy and Action Plan (DSAP) every six months, with the most recent edition published on 17 December 20253. In demonstration of NGED's ongoing commitment to transparency and regulatory engagement, archived previous versions are also available publicly.

The DSAP explicitly links digitalisation activity to business objectives, including customer outcomes, operational performance, infrastructure capability, and system flexibility. Digital investments are directly structured to support business outcomes, regulatory obligations, and stakeholder value. Each project is characterised against three underpinning strategic pillars:

- Improved data management
- Increased network insight and operation
- Delivering for stakeholders

The DSAP provides transparency on NGED's planned and ongoing digitalisation activity and how these initiatives support operational, customer, and system transformation objectives across RIIO-ED2, and the future-proofing of digital solutions for readiness into ED3 and beyond.

The DSAP includes delivered and planned customer-facing digital capabilities such as the Connected Data Portal, self-service connection tools for G98/G99 applications, electric vehicle chargers, and heat pumps, and enhanced customer portals and virtual site visit capabilities. These initiatives are intended to improve customer experience, reduce friction in the connections process, and increase transparency and accessibility of network data.

Operational and employee digital capabilities include the integrated network model, digitalised field processes, data dashboards and analytics platforms, and new planning and design tools. These capabilities support improved operational efficiency, enhanced decision-making, and a more digital and data-enabled workforce.

The DSAP also outlines infrastructure and data platform investments, including the development of a data warehouse and data pipelines, advanced analytics capabilities, smart meter alerting, and predictive maintenance tools. These initiatives provide the foundational digital infrastructure required to enable advanced analytics, improve asset management, and enhance network reliability and resilience. Smart and flexible system enablers within the DSAP include flexibility trading platforms, low-voltage network visibility tools, and load flow modelling platforms.

These capabilities support the transition to a more active distribution system operator role, enabling flexibility markets, improving network planning and operation, and supporting the integration of low-carbon technologies.

Collectively, these initiatives are framed within the DSAP as accelerating business performance, improving reliability, enabling flexibility markets, and enhancing stakeholder engagement, thereby directly supporting NGED's business objectives and regulatory commitments.

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[3] https://commercial.nationalgrid.co.uk/digitalisation-and-data/digitalisation-action-plan

3.2 Alignment to the Digitalisation Re-opener

The re-opener submission has been shaped by the DSAP to align with NGED's digitalisation strategy pillars. Specific key examples include the Connected Data Portal and Digital Twin Platforms within the SOOLO project. The proposed investment directly supports improved data management, increased network insight, and stakeholder delivery. An agile delivery model ensures rapid value realisation and iterative benefits delivery. The proposals will be governed under the established governance structure with project level guiding steering committees and sponsors. Outputs and outcomes in this re-opener also align to DSAP success metrics including data quality improvement operation performance, customer engagement and digital capability maturity.

This re-opener will deliver the following specific digital outputs that are aligned to the DSAP:

Outputs	MHHS	SOOLO	Connections Reform
Enhanced network visibility and digital twins	Yes	Yes	Yes
Improved data platforms and integration	Yes	Yes	Yes
Automation of operational processes	No	No	Yes
Digital tools for flexibility, connections and customer self-service	Yes	No	Yes
Analytics and decision-support capabilities	Yes	Yes	Yes

These outputs directly support the DSAP's three strategic pillars and the four driver areas (customers, employees, infrastructure, smart and flexible system).

4 NGED Delivery Model

4.1 Delivery Philosophy

Since the submission of the RIIO-ED2 Business Plan, a new Chief Information and Digital Officer (CIDO) has been appointed in NGED and a new agile delivery model has been mobilised in NGED's IT&D function, which underpins delivery of the projects within this submission. This section provides an overview of what agile delivery means and how references to delivery teams and ways of working should be interpreted throughout the remainder of this document.

Under agile delivery, work is prioritised and delivered incrementally, with regular review points used to assess progress, manage risk, and adapt plans where necessary. This approach enables earlier visibility of outcomes, improved responsiveness to change, and greater confidence that delivered solutions continue to meet business and user needs. For NGED, agile delivery supports the successful delivery of complex digital and technology-enabled change while reducing the risks associated with large, long-running programmes.

NGED has specifically selected the Scaled Agile for Enterprise (SAfE) agile delivery framework to apply agile principles at scale across large organisations and programmes. SAfE provides a structured framework that enables multiple teams to work in parallel while remaining aligned to shared objectives, funding models, and governance arrangements. This allows NGED to combine the flexibility of agile delivery with the coordination and oversight required for enterprise-scale initiatives, ensuring delivery remains predictable, transparent, and aligned to strategic priorities.

4.2 Delivery Approach

Delivery is carried out by small, cross-functional teams, commonly referred to as scrum teams. A scrum team brings together the skills required to design, build, test, and deliver outcomes within a single team, rather than working across separate functional silos. Each team is responsible for delivering defined pieces of value and works collaboratively with both business and technical stakeholders.

NGED strategy is to deliver through in-house agile scrum teams in order to retain control of our product roadmap, tailor solutions to our specific business needs, and build long-term digital capability, rather than relying on inflexible off-the-shelf enterprise solutions. We believe this approach will be efficient and effective in the long-term.

A scrum team typically includes several key disciplines:

- The Product Owner is responsible for defining and prioritising the work to be delivered by the team, ensuring that outcomes align to business objectives and stakeholder needs.
- The Scrum Master supports the team by facilitating the delivery process, removing impediments, and ensuring agile practices are applied consistently and effectively.
- System Engineers provide oversight of how solutions fit within the wider technology landscape, ensuring alignment to architectural standards, integration requirements, and non-functional considerations such as security, resilience, and performance.
- Quality Assurance (QA) Engineers are responsible for assuring the quality of what is delivered, defining appropriate testing approaches, and ensuring outcomes meet agreed standards before release.
- Software Engineers design, build, and maintain the technical components of the solution. This includes back-end engineering teams, often referred to as platform teams, who focus on core services, integrations, and shared capabilities that underpin multiple products or solutions.

- User Interface (UI) Engineers focus on the user interface and user experience, ensuring that solutions are intuitive, accessible, and consistent with agreed design standards.

The scrum teams each average nine people per platform as based on agile best practice. This is optimal size to maximise development productivity and efficient pace of delivery (ensuring sufficient critical scale to effectively deliver while minimising coordination activities). These dedicated scrum teams are overseen by lead roles for each of the scrum disciplines.

In addition, for this re-opener, a Programme Manager will ensure effective coordination (such as facilitating steering groups) and integration of the specific platforms, both within Connections Reform and the parallel SOOLO programme, along with programme governance and reporting.

Scrum teams deliver work in short, time-boxed delivery cycles of two weeks, known as sprints. At the end of each sprint, the team produces a tangible outcome that can be reviewed and assessed. This does not necessarily represent a fully complete solution, but it provides regular opportunities to demonstrate progress, validate assumptions, and identify risks or issues early. Over time, these incremental outcomes combine to deliver the full scope of the project.

4.3 Delivery Assurance

In our SAFe-aligned delivery model, RAID (Risks, Assumptions, Issues and Dependencies) is managed through defined ownership, escalation, and governance controls. Delivery teams and Scrum Masters act as the first line of defence, identifying, recording, and mitigating operational risks, assumptions, issues, and dependencies within delivery artefacts and sprint/PI (programme increment) ceremonies. Cross-team and dependency risks are escalated through the Scrum of Scrums for coordinated mitigation and impact management.

Portfolio and senior Digital and Technology leadership provide the second line of defence, overseeing systemic and strategic risks, prioritising mitigation actions, and ensuring alignment to business outcomes and regulatory obligations through portfolio governance forums.

Assurance and audit functions provide the third line of defence, offering oversight, challenge, and evidence-based assurance on the effectiveness of risk controls, escalation processes, and delivery governance. Regular reviews at PI and portfolio levels ensure traceability, transparency, and documented evidence of proactive risk management.

5 Expenditure Requirement Summary

The following tables provide an overview of the expenditure profiles for each of the required projects and for each NGED Licence area.

These are additional costs above existing RIIO-ED2 allowances, and these costs exceed the materiality thresholds in each of NGED's Licence areas.

All costs are presented in the 2020/21 price base through this document and the supporting annexes.

The total costs per project are:

Project	23/24 (£'m)	24/25 (£'m)	25/26 (£'m)	26/27 (£'m)	27/28 (£'m)	Total (£'m)
MHHS	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
SOOLO	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Connections Reform	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Total	**0.66**	**0.99**	**1.60**	**8.80**	**15.71**	**27.76**

The total costs that have/will be incurred in each Licence area are:

NGED	23/24 (£'m)	24/25 (£'m)	25/26 (£'m)	26/27 (£'m)	27/28 (£'m)	Total (£'m)	Materiality Threshold per SpC1.2.4 (£'m)
WMID	0.20	0.30	0.48	2.64	4.71	**8.33**	**4.20**
EMID	0.20	0.30	0.48	2.64	4.71	**8.33**	**4.23**
SWALES	0.10	0.15	0.24	1.32	2.36	**4.16**	**2.12**
SWEST	0.17	0.25	0.40	2.20	3.93	**6.94**	**3.06**
Total	**0.66**	**0.99**	**1.60**	**8.80**	**15.71**	**27.76**	**13.61**

The total costs per expenditure type are:

Expenditure	23/24 (£'m)	24/25 (£'m)	25/26 (£'m)	26/27 (£'m)	27/28 (£'m)	Total (£'m)
CAPEX (IT&T (Non-Op))	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
OPEX (IT&T (Business Support))	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
TOTEX	**0.66**	**0.99**	**1.60**	**8.80**	**15.71**	**27.76**

In line with RIIO-ED2 Regulatory Instructions and Guidance, the cost of the purchase, development and installation of new systems is reported as capex. Forecast costs are based on known labour rates and supplier quotations and so no further consideration of Real Price Effects (RPEs) is required within this submission.

For a detailed breakdown of costs, please refer to the 'Annex 1 - NGED RIIO-ED2 Digitalisation Re-opener - Project Costing Template Jan26' document.

6 Impact on Regulatory Mechanisms

6.1 Proposed modification to DIGIt

This submission proposes modifications to the value of DIGIt in Appendix 1 of SpC3.2 as shown in the table below, and in accordance with Part H, paragraph 3.2.61(b) of SpC 3.2.

		23/24	24/25	25/26	26/27	27/28	Total allowance (all years)
DIGIt	WMID	0.20	0.30	0.48	2.64	4.71	**8.33**
DIGIt	EMID	0.20	0.30	0.48	2.64	4.71	**8.33**
DIGIt	SWALES	0.10	0.15	0.24	1.32	2.36	**4.16**
DIGIt	SWEST	0.17	0.25	0.40	2.20	3.93	**6.94**

6.2 Other Regulatory Mechanisms

No other uncertainty mechanisms have provision to provide the requested additional allowances which are proposed in this Digitalisation re-opener submission, and these costs are not funded in existing RIIO-ED2 allowances.

Cost Recovery Mechanism for Connections Reform[4]

In December 2025, Ofgem published the connections reform cost recovery mechanism, which provided a pass-through funding mechanism for costs associated with TMO4+ implementation. Recoverable costs within this new mechanism must meet the criteria that these are not funded by any other means. In accordance with this, we believe that the programme and costs proposed in this re-opener application are best funded within the digitalisation re-opener framework as an existing mechanism. We are therefore submitting these costs here rather than in the pass-through recovery mechanism.

'Enhancing asset visibility: Distribution Network Operator options' consultation[5]
This consultation was recently published by Ofgem in December 2025, with responses due on 6th February 2026, after this re-opener submission window closes.

This consultation sets out a clear case for improving the visibility of small scale distributed energy assets, citing fragmented data, incomplete reporting, and limited interoperability as key barriers to efficient planning, flexibility, and whole system coordination.

We recognise the issues raised by Ofgem in this recent consultation. We support Ofgem's direction of travel set out in the consultation, and want to emphasise that the primary requirement as we see it is the need for standardisation of asset data identifiers and interfaces, rather than a focus on where the data is stored.

Ofgem's proposed options signal increasing expectations for governed, interoperable digital capabilities aligned to DSI and Flexibility Market Asset Registration (FMAR), which will require

[4] Modifications to electricity distribution licence Special Conditions to enable TMO4+ connections reform | Ofgem

[5] https://www.ofgem.gov.uk/consultation/enhancing-asset-visibility-distribution-network-operator-options

enhanced digital architecture, data governance and assurance beyond existing RIIO-ED2 allowances. Ofgem has indicated that delivery of these capabilities may be funded through the RIIO-ED2 Digitalisation re-opener, supporting the case for inclusion of the proposed costs within this submission.

We believe our SOOLO proposals in this re-opener can be an enabler for the options in this consultation irrespective of the outcome. This re-opener includes costs that directly enable the governed, interoperable capabilities highlighted in the consultation. While standardisation is key, delivering this in practice requires DBP-aligned metadata, lineage and assurance, and interoperability with Digital Spine services including FMAR.
Depending on the decisions made by Ofgem following this consultation, and the changes required to be made by DNOs in RIIO-ED2, then an additional Digitalisation re-opener window may also need to be directed by Ofgem.

6.3 Reporting Mechanisms

We are submitting three projects within this re-opener. We propose these are reported within the annual RRP (Annex B Cost, Volumes & Revenue Reporting Pack) as IT&T (Non-Op) (table C4) and IT&T (Business Support) (table C13) as outlined above in section 5.

We do not propose any bespoke reporting. However, a separate memo within these two tables, and additional commentary requirements in the strategic performance overview to explain variances to allowances and delivery progress, may aid transparency on delivery.

In line with the approach for existing IT&T ex-ante allowances, we propose no additional Price Control Deliverables for this re-opener. The shift from traditional, rigid product development to Agile methodologies in IT software is a strategic transformation driven by the need for speed, flexibility, and enhanced user value. Moving away from “product” to Agile means embracing iterative development, continuous feedback loops, and cross-functional teams, focused on delivering the requirements to meet evolving customer needs. As such we do not consider PCDs are the right measure. DNOs will be held accountable through the feedback they receive from a range of stakeholders on the wider DNO and DSO services we offer. With rising customer expectations and varying needs, Agile methodologies help us continue to meet these stakeholder requirements.

Should Ofgem wish to apply PCDs, we propose these are separately considered and discussed in the Supplementary Questions (SQ) and draft determination process following this submission.

7 Project 1: Market-wide Half-Hourly Settlement (MHHS)

7.1 Project Summary

Purpose of Submission	NGED seeks approval through the Digitalisation Re-opener to recover the additional, mandatory costs of implementing MHHS. MHHS introduces new statutory code obligations under the **Balancing and Settlement Code (BSC)**, **Retail Energy Code (REC)** and wider Ofgem direction, requiring NGED to deliver compliant data pipelines, updated systems, **Data Integration Platform (DIP)** integration, migration-ready services and MHHS aligned modelling capability. Since the RIIO-ED2 Final Determinations, MHHS requirements have **expanded significantly**, including enhanced qualification/ testing, revised migration milestones (**CR055**), replacement of legacy datasets, and higher reporting and data governance expectations. **These activities were not funded in RIIO-ED2 allowances** and exceed NGED's existing system capability.
Regulatory and Policy Context	MHHS is driven by several **mandatory obligations** introduced or strengthened since the start of RIIO-ED2: • Ofgem MHHS Significant Code Review (SCR) decision - mandates the transition to half-hourly settlement and establishes the regulatory framework for delivery. • BSC & REC modifications - require DIP integration, updated schemas, enhanced settlement data flows, qualification testing and strengthened reporting. • Elexon's DIP - compulsory industry platform for MHHS message exchange. • CR022 & CR055 timetable changes - extend migration and qualification windows and increase data cleansing and readiness requirements. • Withdrawal of legacy datasets (Profile Class, TPR) - requires new MHHS-aligned modelling inputs and upgraded downstream tools. Together, **these obligations require NGED to maintain MHHS-compliant systems**, deliver assured settlement data, MPAN management, forecasting and planning throughout the transition.
Need for Investment	To meet MHHS obligations and maintain continuity of service, NGED must upgrade and operate systems that can: • Exchange settlement data through the DIP • Process materially higher volumes of half-hourly MPAN-level data • Replace withdrawn legacy datasets with compliant MHHS structures • Support qualification, migration and market-wide testing • Maintain modelling, forecasting and settlement support functions during transition Current systems rely on Data Transfer Network (**DTN) based, legacy data structures** and **cannot support MHHS** without targeted upgrades. Manual workarounds **cannot scale**, creating **risks of non-compliance**, inaccurate settlement data, MPAN processing errors and reduced planning accuracy.

Options Appraisal	NGED assessed a full range of options consistent with Ofgem guidance: • **Do Nothing** – rejected due to mandatory compliance obligations • **Delay to ED3** - rejected due to mandatory compliance obligations and fixed industry deadlines. • **Adapt/ Upgrade existing systems** - shortlisted, as it provides a feasible, timely and cost-proportionate means to meet MHHS requirements. • **Build new system in-house** - rejected due to unnecessary cost, delivery risk and duplication of capabilities. • **Accelerated/ enhanced functionality** - rejected due to increased cost and lack of regulatory justification. • **Third-party SaaS** (Software as a Service)- rejected as solutions cannot provide required integration depth or industry-aligned features. Because MHHS is a **code-mandated programme with no discretionary scope**, only the option capable of meeting compliance quickly and efficiently was shortlisted.
Preferred Option - Upgrade/adapt (Option 3)	**Option 3 was the only suitable option** because it provides **full MHHS compliance**, minimises delivery risk and retains NGED control over core settlement critical systems. It offers the **most efficient and proportionate route** to meeting mandated industry obligations, with lower cost and **stronger operational performance** than new-build or SaaS alternatives.
Proposed Solution	NGED is delivering an integrated MHHS-compliant capability including: • Integration with the DIP through a compliant adaptor enabling MHHS-standard data exchanges with Elexon central services. • Upgrade of core systems and data pipelines ([redacted]) to replace Profile Class/ TPR, support MPAN lifecycle changes and process MHHS-aligned data. • Delivery of migration and downstream updates, including data cleansing, schema changes and enhancements to [redacted] and modelling tools to support operations through M11-M16.
Delivery Approach	NGED is following the **industry-mandated MHHS programme** plan set by Ofgem and Elexon, incorporating **CR022** and **CR055** timetable revisions. Delivery includes: • Enablement of [redacted] to participation in System Integration Testing (SIT) • Qualification Testing and Migration windows • Ongoing data cleansing, defect resolution and DIP integration testing • Controlled updates to internal systems and downstream tools • Structured governance, reporting and assurance aligned with Ofgem Directions This approach ensures alignment with industry milestones and maintains **operational resilience through to 2027** and beyond.
Cost	The total cost of delivering the MHHS programme is [redacted] (20/21 prices).
Conclusion	MHHS is a **mandatory, time-critical regulatory programme** that underpins the transition to granular, data-driven settlement and supports whole-system efficiency. The selected option provides the **only compliant solution** to maintain settlement accuracy, operational continuity and readiness for future market reforms. **NGED therefore seeks Ofgem's approval through this Digitalisation re-opener.**

7.2 Project Introduction

The UK energy landscape is undergoing rapid transformation, shaped by the dual imperatives of sustainability and innovation. MHHS is a mandatory industry wide Ofgem reform, designed to transform electricity settlement by moving all customers to half-hourly data reporting. It will provide granular price signals, drive consumer flexibility, and support whole-system efficiency – key enablers for Clean Power 2030 and Net Zero.

Under Ofgem's mandated MHHS governance framework (administered by Elexon), all market participants, including NGED, are required to implement the necessary systems and processes for MHHS – ready for Go Live by September 2025, for migration to start in October 2025, and for completion by May 2027. Compliance was and continues to be mandatory under Ofgem's Electricity Settlement Reform Significant Code Review (SCR) and associated code modifications – Retail Energy Code (REC) and Balancing and Settlement Code (BSC). Under Standard Licence Condition 20, NGED must comply with significant code review changes.

MHHS provides a near real-time visibility of energy consumption through smart meter data. Under the new arrangements, energy usage will be reported in 30-minute intervals, giving the industry a consistent and granular view of demand across the day. Electricity settlement already operates on a half-hourly basis, but most households and businesses have historically used meters that can't record consumption at this level of granularity. As a result, customer usage for half-hourly readings has been estimated by placing them into one of four standard profile classes to approximate how customers typically consume energy across the day.

This historical approach has masked real-time differences in how individual customers use electricity and, importantly, shielded suppliers from the true cost variations of serving customers at different times. This has limited the opportunity for suppliers to introduce innovative smart tariffs or services that encourage customers to shift their demand away from peak periods.

Ofgem's CBA of MHHS demonstrates the scale of system-wide benefits expected from the reform, forecasting long-term economic efficiency and net consumer benefits of £1.6-4.5bn by 2045[6]. These benefits arise not only from more cost-reflective settlement, but also from enabling smarter retail propositions, improving utilisation of low-carbon generation, and reducing whole-system reinforcement requirements.

The implementation of MHHS therefore delivers more accurate insights into network usage, empowering consumers to make informed choices, enabling the development of innovative tariffs and services, and driving cost efficiencies for both residential and commercial customers.

NGED's MHHS programme and activity is fundamentally driven to align with changes in Industry Codes. We have applied our solutions to ensure we meet our revised obligations in the most efficient way possible to meet the programme timings and objectives. The solutions lay the groundwork for a data-driven, customer-centric, and digitally enabled distribution network that meets code obligations while supporting the UK's long-term climate and energy goals. In summary, MHHS enables the following for a wide range of stakeholders:

1. **Consumer Benefits**: Enables smart tariffs to drive consumer engagement and demand-shifting behaviour, leading to lower overall energy bills and improved transparency.
2. **System Efficiency**: Provides near real-time visibility of demand, reducing peak strain and avoiding some infrastructure reinforcement.

[6] Ofgem PPIR: Cost Analysis Guidance | MHHS Programme, May 2024

3. **Strategic Alignment**: Positions us for ED3 readiness by embedding data-driven capabilities and supporting future flexibility in markets.

7.3 Needs case

7.3.1. Regulatory triggers

The need for MHHS investment is triggered by material changes in NGED's industry code obligations since submission of the RIIO-ED2 business plan in December 2021. These changes have significantly expanded the digital and data services NGED must deliver to remain compliant.

Ofgem's statutory decision in April 2021 to implement MHHS formally set this reform in motion across the GB electricity sector[7], with major implementation activities extending throughout RIIO-ED2. As MHHS was mandated independently of the RIIO-ED2 price control, NGED was required to deliver these new capabilities regardless of RIIO-ED2 outcomes. Due to the timing of industry decisions, NGED could make no forecast for the implementation of MHHS in the RIIO-ED2 business plan submission.

Under Ofgem's MHHS regulatory framework, implemented through Elexon's governance, compliance is non-negotiable for all market participants.[8]

7.3.2. Limitations

The current infrastructure for transferring data was inadequate to handle the growing volume of information exchanged between NGED, suppliers, and industry stakeholders. Previously flows were exchanged over the Data Transfer Network (DTN) which was built and established in 1998, and NGED systems were built appropriately around the DTN. To address the challenge of a significantly larger volume of data, following its appointment in 2022, Elexon began development of the Data Integration Platform (DIP), which Ofgem mandated all parties use for operational data sharing. However, the associated governance arrangements, connection processes, and transfer of ownership did not commence until 2024. NGED required an adaptor to connect to the DIP because we did not have capacity to build our own individual connection.

The transition to MHHS will also fundamentally change the data available to DNOs. Several datasets that NGED currently relies upon for network planning and modelling will no longer be provided in their existing form. These include, but are not limited to:

- Profile Class - a designation assigned to each Meter Point Administration Number (MPAN) that reflects typical consumption behaviour and load shape of customers. This classification underpins the modelling assumptions used today.
- Time Pattern Regime (TPR) code - This is a numeric code that indicates the specific time periods in which energy usage took place. For a customer with a multi-rate tariff, such as Economy 7, the Estimated Annual Consumption (EAC) associated with their MPAN would be broken down into multiple TPR codes, which DNOs can use to estimate how much energy the customer uses at peak and off-peak times, and how this translates into power magnitude and profile shape at different times of the day.

These data points are currently used extensively in NGED's low-voltage network modelling – via [redacted] – and in distribution transformer assessments using in-house analytical scripts. Outputs from these tools feed directly into

[7] Electricity Retail Market-wide Half-hourly Settlement: Decision Document | Ofgem, April 2021
[8] Market-Wide Half-Hourly Settlement Governance Framework | Ofgem, May 2025

high-voltage models and inform investment decisions. Once MHHS is implemented, this cannot be retained because the underlying classification and tariff-specific indicators will no longer exist in the same form. It has been necessary to address this as part of the re-opener through the SOOLO work programme (see chapter 8).

System upgrades were therefore required to enable NGED to interface compliantly with Elexon's DIP; process materially higher volumes of half-hourly MPAN-level data; replace withdrawn Profile Class and TPR inputs with MHHS-aligned data structures; and meet strengthened qualification, assurance, reporting and governance obligations.

These requirements could not be met through manual workarounds or incremental changes to legacy systems. Without upgrading core systems and interfaces, NGED would have been unable to maintain MHHS compliance or ensure continuity of settlement support, network planning and data governance. The upgrades were therefore unavoidable and directly driven by industry wide regulatory changes introduced since the RIIO-ED2 Final Determinations.

7.3.3. Objectives

As set out by Ofgem, granular price signals are a critical enabler for innovation and market reform. Current initiatives, such as Review of Electricity Market Arrangements (REMA) and network charging reforms, aim to deliver clearer signals to support a low-cost transition and incentivise consumer behaviour[9]. MHHS is central to this strategy, ensuring suppliers receive these signals.

The objectives and benefits of the wider MHHS programme span consumers, network assets and the wider society:

Consumers

- Provide accurate, half-hourly consumption data so consumers receive fairer, more cost-reflective bills.
- Enable smarter, flexible energy use by giving households and businesses clearer price signals and visibility of their consumption patterns.
- Support participation in demand-response and flexibility services, helping consumers reduce costs and engage more actively in the energy transition.

Network Assets

- Improve visibility of demand at a granular (30-minute) level to support more accurate load forecasting and efficient planning.
- Enable networks to operate more efficiently by smoothing peak demand, reducing strain on assets, and informing more targeted and cost-effective investment decisions.
- Replace outdated, profile-based assumptions with real consumption data to improve modelling accuracy across low-voltage and high-voltage networks.

Wider Society

- Align electricity demand more closely with renewable generation, enabling better use of low-carbon energy and reducing curtailment.
- Accelerate progress toward national climate goals, including Clean Power 2030 and Net Zero, by empowering a system that rewards flexibility and low-carbon behaviours.
- Deliver long-term economic efficiency, with Ofgem estimating significant net consumer benefits by 2045 (£1.6-4.5bn).

NGED's key objectives are to ensure we meet all the significant milestones of the programme, to remain compliant, and to act as a central force among DNOs to deliver MHHS.

[9] Innovation in the energy retail market | Ofgem, October 2024

7.4 Options Appraisal and Selection

Our approach to optioneering has been to consider all viable solutions for our need and then proceed with further analysis of the shortlisted options dentified. We have sought to include the following array of options for all the projects in this re-opener:

- A do-nothing approach: This means there is no specific intervention in the foreseeable future (including ED3) and business continues as usual.
- Delay to ED3: In this case no further investment would be made until ED3.
- Adapt / Upgrade Existing Systems: This would involve working with existing systems to meet the need, with some further investment as needed.
- Build a New System In-house: A new system would be developed by the internal NGED team to meet the need.
- Accelerated Rollout / Enhanced Functionality: The option either delivers the work sooner than is needed or it provides functionality that is greater than the basic need identified.
- External purchase: Whereby a suitable system is procured from an external third-party.

The governance of our decision-making processes are outlined in Appendix B.

7.4.1. Optioneering

To identify the most effective delivery approach for MHHS, NGED considered six options against a set of key criteria. The table below summarises the evaluation:

Criteria	Option 1: Do Nothing	Option 2: Delay to ED3	Option 3: Adapt/ Upgrade Existing Systems	Option 4: Build New System In-House	Option 4a: Accelerated Roll Out/ Enhanced Functionality	Option 5: Purchase SaaS system
Regulatory Compliance	✗	✗	✓	✓	✓	✓
Strategic & Customer Needs	✗	✗	✓	✓	✓	✓
Future-Proofing Capability	✗	✗	✓	✓	✓	✓
Cost Efficiency	✗	✗	✓	✗	✗	✗
Technical Feasibility	✓	✓	✓	✓	✗	✗
Delivery timeliness	✗	✗	✓	✗	✓	✗
Shortlisted options	No	No	Yes	No	No	No
Preferred option	No	No	Yes	No	No	No

Option 1- Do Nothing

- Not viable, as it would lead to non-compliance with MHHS requirements and prevent us from maintaining essential modelling, planning, and settlement supporting functions.

Option 2 – Delay to ED3

- Not viable, as MHHS is mandated within RIIO-ED2 and delaying action would create material regulatory non-compliance and operational and customer-service risks.

Option 3 – Adapt/ Upgrade Existing Systems

- This focuses on modifying and enhancing current systems to meet MHHS compliance requirements. It builds on the existing architecture, reduces disruption to downstream systems, and enables delivery of necessary enhancements aligned with MHHS milestone

Option 4 – Build New System In-House

- Technically possible but significantly more costly and slower to deliver. It would duplicate capabilities already in place and introduce substantial development and testing risk during a period of regulatory change.

Option 4a – Accelerated Roll Out/Enhanced Functionality

- Delivers additional capabilities beyond compliance needs but at disproportionately higher cost and complexity. Given MHHS uncertainty and evolving data formats, we believe this level of investment would not have been justified.

Option 5 – Purchase SaaS system

- Current market solutions do not sufficiently meet NGED's requirements or allow the necessary level of integration with legacy systems, modelling tools, and regulatory interfaces.

7.4.2. Cost-Benefit analysis (CBA)

A CBA was not conducted for MHHS optioneering because the programme was mandatory, code-driven obligation with no discretionary scope. All participants were required to deliver the necessary capabilities irrespective of cost or alternative options. As a result, NGED did not have the option to reject, delay, or materially redesign MHHS delivery, meaning any CBA would not have influenced the decision-making process or the preferred option.

Out of the solutions considered, Option 3 was chosen for MHHS implementation as the only feasible and cost-efficient option that meets compliance requirements. All alternative options carried additional delivery, integration and compliance risks, including the need for major system replacements or extensive integration work with MPRS, DIP and downstream modelling tools. These alternatives would have resulted in significantly higher costs once the additional development, migration, interface redesign and operational impacts were accounted for.

The preferred option supports NGED's operational needs and maintains alignment with future market reforms. It represents the lowest-risk and most proportionate route, as it builds on existing architecture, minimises disruption to downstream systems, and allows NGED to deliver enhancements in line with MHHS milestones.

7.4.3. Preferred option

Our wider optioneering framework above outlines the preferred option for MHHS as the option which adapts/upgrades existing systems. However, it is useful to call out the specific decisions which have influenced our approach to the project:

The preferred option aligns strongly with the assessment criteria outlined in the optioneering:

- Regulatory Compliance:
    - Option 3 ensures full compliance with MHHS obligations by upgrading the systems and data pipelines that underpin settlement related processes, network planning, and downstream operational tools.
    - It directly supports NGED's requirement to maintain continuity of service as legacy datasets such as Profile Class and TPR are withdrawn under MHHS. This ensures that the business continues to meet BSC, REC and DCUSA related obligations throughout the transition.
- Strategic & Customer Needs:
    - Upgrading existing systems provided the fastest and least-disruptive route to ensure maintenance of modelling capability, support for smart-tariff development, and consumer benefit from more accurate, near-real-time consumption insights.
    - This approach also kept NGED aligned with strategic objectives such as delivering smarter networks, strengthening data visibility, and enabling customer-focused innovation that MHHS is designed to unlock.
- Future-Proofing Capabilities
    - A major upgrade was chosen upfront to avoid repeated, costly iterations later. The systems have been designed to integrate longer-term solutions such as Elexon's Load Shaping Service (LSS) when reliable MHHS data becomes available.
    - Interim measures, such as continuing to pass historical values like Profile Class and TPR to downstream tools, ensure operational continuity today while maintaining flexibility for a fully MHHS-compliant architecture once sufficient operational data is accumulated.
    - The DIP adaptor will allow the future transfer of DTN traffic to the DIP to be an easier transition
- Cost Efficiency (see section 7.7 for further detail and breakdown of the costs incurred / to be incurred for MHHS implementation)

- Option 3 mostly avoids the disproportionate costs of building entirely new systems or procuring third-party software that would require complex integration and bring uncertain long-term value. The approach maximises existing investments. NGED had already undertaken extensive preparatory work, including three years of data cleansing between 2023-2025, to align supplier and internal records.
- Bare-minimum compliance was ruled out as it would have failed to meet wider MHHS obligations and would have increased long-term costs by requiring further corrective upgrades.
- [redacted]

- Technical Feasibility
  - Building on proven internal systems ensured the lowest technical risk because the required data pipelines, modelling workflows, and analytical tools already exist and are well understood by operational teams.
  - [redacted]
  - Enhancing the current design avoided the complexity, delay, and fragility that accompany wholesale system replacements, particularly during a period of significant regulatory transition.
- Delivery Timeliness
  - The revised MHHS timetable, including the latest CR055 shift in all programme milestones (see section 7.6), requires NGED to continue resourcing programme management, and migration through to 2027. [redacted]

7.5 Output and Scope of works

Following the optioneering and selection process, this section sets out the specific systems, integrations and operational capabilities that NGED has delivered and is delivering to establish and operate a fully MHHS-compliant settlement and data capability. The objective of this work is to ensure NGED can continue to meet its statutory and industry code obligations as legacy settlement arrangements are replaced by MHHS, while also maintaining continuity of settlement support, MPAN lifecycle management and network planning throughout the migration period.

NGED is therefore delivering an integrated MHHS capability that:

- Enables compliant exchange of settlement and operational data with central industry systems.
- Replaces withdrawn legacy datasets used for settlement and network modelling
- Maintains the operability of critical industry and internal systems during migration
- Supports Qualification, Migration and enduring operation under MHHS governance

To meet these requirements, as shown in the table below, NGED has had to develop a suite of new or significantly enhanced digital and data services, including:

- **Upgrading data pipelines and modelling capabilities** to replace legacy datasets (Profile Class and Time Pattern Regime) withdrawn under MHHS, ensuring continuity of settlement support, network planning and forecasting.
- **Integration with Elexon's Data Integration Platform (DIP) and deployment of a fully functional DIP adaptor** to support automated, standards-compliant message exchanges between NGED, suppliers, and central systems.

- **Migration-ready digital services**, including systems that support MPAN migration, data cleansing, schema changes, and compatibility with Load Shaping Service (LSS) data for future modelling.

System	Description	How it operates	What the solution delivers/ outputs
DIP	Central industry data-exchange platform operated by Elexon to support MHHS, enabling secure, standardised settlement and operational data flows between market participants.	NGED connects to DIP via a compliant adaptor that sends and receives structured MHHS messages (e.g. meter data, event notifications, settlement files) in line with BSC and REC requirements. The platform validates, routes and logs data exchanges.	• Mandatory MHHS-compliant exchange of settlement and operational data • Enables Qualification, Migration and ongoing MHHS operation • Provides auditable, governed data flows required under BSC and REC obligations
[redacted]	NGED's new system for managing unmetered supply inventories and calculating unmetered load under MHHS-aligned data structures.	Loads and validates customer unmetered inventories, applies industry-agreed load profiles and calculates aggregated unmetered consumption. Produces MHHS-compliant data outputs for settlement and interfaces with industry systems and internal billing/reporting tools.	• MHHS-compliant unmetered consumption datasets • Supports withdrawal of legacy Profile Class and TPR data under MHHS • Enables compliant settlement for unmetered supplies under BSC and REC changes
[redacted]	Industry service used to register, maintain and validate MPAN data and lifecycle events for electricity meter points.	Processes MPAN registrations, updates and lifecycle changes using MHHS document schemas, ensuring consistency of registration data across market participants. Interfaces with DIP and	• Accurate, MHHS-aligned MPAN registration and lifecycle management • Supports Migration and enduring settlement arrangements

		downstream systems under REC and BSC governance.	• Ensures data integrity across market participants
[redacted]	NGED's billing and settlement reporting system used to calculate and report chargeable volumes and financial outputs affected by MHHS.	Consumes MHHS-compliant data from [redacted], Elexon ([redacted]) and other upstream systems, applies regulated charging logic, and produces structured billing and settlement reports in line with updated industry code requirements.	• MHHS-compliant billing and settlement reporting • Accurate, auditable charge calculation under revised settlement rules • Supports Ofgem-mandated reporting and financial reconciliation

A significant proportion of the MHHS scope has already been delivered through NGED's ongoing readiness activities, including targeted upgrades to data pipelines and associated applications. NGED have also played an active role in shaping the system design alongside other DNOs, ensuring that the emerging processes and data exchanges are operationally viable and reflect real-world constraints, which has been overseen and approved by Ofgem.

The scope delivered to date aligns with the MHHS governance framework and has already been subject to regulatory scrutiny. Ofgem has approved both the activities undertaken and the revised implementation timetable following Change Request CR055, confirming that NGED's resourcing, testing participation and system readiness remain appropriate for the updated programme schedule. The MHHS scope has evolved iteratively, with increasing requirements for testing, qualification, migration readiness, and performance reporting. This has materially increased compliance complexity and resource demands to which NGED has continued to adapt.

MHHS data structures will evolve throughout the migration period. Therefore NGED has implemented interim solutions to maintain operational continuity. For example, where necessary, database views passed from [redacted] to [redacted] temporarily include historical values (including Profile Class and TPR) to avoid disruption during the transition. These measures ensure the stability of downstream tools until sufficient MHHS data is available to define an enduring, fully compliant solution.

The long-term architecture will be determined within the SOOLO project once NGED has received several months of operational MHHS data, enabling a robust assessment of data quality, granularity, and completeness. Once this is understood, NGED anticipates utilising Elexon's Load Shaping Service (LSS) to inform planning and investment assumptions where smart meter data is incomplete or unavailable. For DSO-led transformer assessments, NGED expects to incorporate MPAN-level smart metering consumption data (as used for Distribution Use of System (DUoS) calculations), subject to the availability of an adequate dataset spanning at least several months to one year.

7.6 Project delivery and monitoring plan

7.6.1. Delivery Programme

The delivery programme has been determined by Industry driven and mandated timelines, which have been further extended through programme 'change requests', CR022 and CR055, which we are now working towards.

CR022 (June 2023) re-baselined several Level 1 Milestones after finalisation of the MHHS system design, to ensure the emerging architecture was deliverable and participants had sufficient time to align their internal systems.

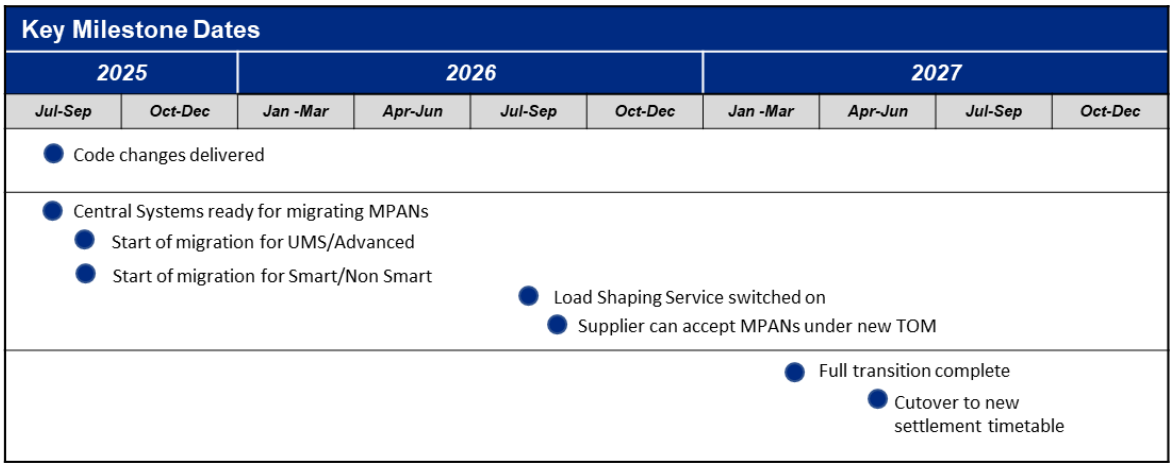
Change Request CR055, approved in October 2024, resulted in a further material shift to the MHHS programme timetable. CR055 was issued to address delays and performance issues identified during system integration testing, which affected the readiness of several market participants and Central Services. These challenges made it clear that the industry could not safely transition to the migration phase without additional time to complete testing cycles, stabilise interfaces, and address defects.

The delivery programme is also aligned with (and constrained by) the timing of industry code releases, as updates to BSC, REC and other central artefacts determine when participants can implement system changes and progress through testing.

The timelines set through CR022 and subsequently CR055 are shown below.

Milestone	Title	Previous CR022 Baseline	Revised CR055 date
M8	Code changes delivered	07/03/2025	13/08/2025
M10	Central systems ready for migrating MPANs	07/03/2025	13/08/2025
M11	Start of migration for UMS/Advanced	04/04/2025	10/09/2025
M12	Start of migration for Smart/Non-smart	07/03/2025	10/09/2025
M13	Load Shaping Service switched on	01/10/2026	13/08/2026
M14	Supplier can accept MPANs under new Target Operating Model (TOM)	16/03/2025	07/09/2026
M15	Full transition complete	05/10/2026	15/03/2027
M16	Cut over to new settlement timetable	07/12/2026	14/05/2027

In light of CR055, NGED's timeline for delivery is now as follows:



A major proportion of the MHHS implementation has already been completed by NGED up to this point in RIIO-ED2:

- Initial mobilisation activity began in the last part of RIIO-ED1, following Ofgem's approval of the MHHS Business Case in April 2021. This triggered industry-wide architecture development, early code drafting, and preparation for system design under Ofgem's Transition Timetable. Any costs incurred in RIIO-ED1 do not form part of this submission.

- As the programme progressed into 2023 (RIIO-ED2), Ofgem approved Change Request CR022 (June 2023)[10], which re-baselined several Level 1 Milestones after design finalisation, extending the Code-Drafting (M6) and Qualification (M14) Milestones and shifting the original migration window to allow additional time for design completion and participant readiness. These timetable adjustments lengthened the period during which NGED was required to support programme governance, data preparation, internal system changes, and engagement with central system design and testing.
- Following Ofgem approval of Change Request CR055 (October 2024)[11], implementation shifted again, moving the M10 Migration Milestone from March 2025 to late September 2025 due to delays in System Integration Testing (SIT). This further extension prolonged the period during which NGED must resource programme management, data cleansing, testing, compliance activities and integration with the Data Integration Platform (DIP).

NGED have applied a structured monitoring, reporting, and assurance framework to ensure we maintain timely programme delivery. In line with Ofgem directions[12]:

- NGED have maintained and complied with MHHS Participant Plans, in order to align with the Programme's Migration Plan and Qualification processes.
- NGED have identified, allocated, and deployed sufficient budget and appropriately skilled resources across internal teams and contracted suppliers. NGED has evidenced these arrangements to the MHHS Implementation Manager/ Independent Programme Assurance (IPA) when requested.
- NGED have and will provide timely progress and risk reporting to enable corrective actions that preserve the timetable. This includes responding to reasonable information requests from Ofgem, Elexon (as Implementation Manager), IPA, and code bodies with the migration window.
- NGED are applying its internal governance model to oversee delivery of the MHHS programme, ensuring robust decision-making, assurance, and early escalation of risks.

Going forward, NGED are managing the Migration phase (started in late October 2025) through to May 2027. This will position NGED to be ready for M16 in May 2027 when cutover is completed.

Operationally, NGED will:

- Ensure that migrations are completed in line with BSC Service Level Agreements (SLAs)
- Apply strengthened reporting mandated by Ofgem's Directions to preserve timetable integrity and surface risks early (DIP exceptions, data-quality anomalies, qualification issues).[13]

Ofgem has also committed to putting in place the right mechanisms and governance to accelerate MHHS delivery and maximise benefits for consumers. Some examples include (but not limited to):

- Enhanced programme oversight, with Elexon acting as the MHHS Implementation Manager and the Independent Programme Assurance (IPA) body providing ongoing scrutiny of progress, risks, and testing outcomes, and placing restrictions;
- Prevention of suppliers who have not qualified on time from taking on new customers, ensuring strong commercial pressure to meet the timetable.

A MHHS Programme Board group was also set up to the monitor MHHS qualification, migration and wider issues. As of January 2026, this was due to close, [redacted] After its closure the MHHS Programme Board group activities will revert to the [redacted] Service Management Group (SMG) managing the [redacted] service. There may be a

[10] Decision on Market-wide Half-Hourly Settlement Change Request CR022 ('MHHS Programme Replan') | Ofgem, June 2023
[11] Decision on Market-wide Half Hourly Settlement Change Request CR055 ('Amendments to M10 and corresponding milestones') | Ofgem, November 2024
[12] Directions to Market-wide Half-Hourly Settlement Participants | Ofgem, May 2025
[13] Directions to Market-wide Half-Hourly Settlement Participants | Ofgem, May 2025

possible gap in addressing and influencing of MHHS decisions and issue resolution, which will be monitored through the SMG who will consider whether an alternative approach or resource is needed to resolve MHHS issues going forward.

7.6.2. Risk Management

NGED's approach mirrors the industry direction set out by Ofgem's 2025 MHHS Directions, which emphasise the need for MHHS participants to maintain clear internal governance, allocate sufficient budget and skilled resources, and provide timely risk/progress reporting to the MHHS Implementation Manager and the Independent Programme Assurance (IPA).

Ofgem's public position has been explicit that no further delays will be tolerated, and that participants must meet milestones with adequate resourcing and governance. NGED's supplier and delivery model is designed to meet those expectations while minimising delivery risk.

Ofgem have also considered some wider industry risks relating to MHHS, which have formed part of our wider risk mitigation approach.

Risk	Description	Mitigation
Risk 1	Transitional risks while the industry prepares for and implements MHHS, including interdependencies with other programmes that could affect the quality and speed of delivery	Adopt Ofgem's enhanced reporting schedule (fortnightly/monthly checkpoints) and escalate variances early through Implementation Manager/IPA routes; align internal reporting to Elexon/Ofgem direction templates to reduce duplication.[14] Plan to the CR055 baseline (shifted M10/M11/M12/M15/M16) and run scenario tests on dependency failure (e.g., delayed SIT cohort) with pre-agreed recovery actions.
Risk 2	Ongoing post-implementation risk – consumer concern about sharing half-hourly (HH) consumption data	Acknowledge MHHS enables more accurate settlement and system-wide benefits, reinforcing consumer confidence in how their energy-use data contributes to fairness and decarbonisation, as described in Ofgem's Impact Assessment.[15]
Risk 3	Ongoing post-implementation risk – low uptake of smart tariffs (e.g., Time-of-Use)	Support consumers in identifying and benefiting from opportunities to shift their energy use, reflecting Ofgem's view that some customers may require assistance to recognise and act on the benefits of flexible consumption.[16]

[14] Proposed Directions to Elexon about reporting on Market-wide Half-Hourly Settlement (MHHS) implementation and about managing MHHS Testing cohorts | Ofgem, January 2025
[15] Market-wide Half-Hourly Settlement: Final Impact Assessment | Ofgem, April 2021
[16] Potential consumer impacts following the implementation of Market-Wide Half-Hourly Settlement | Ofgem, April 2020

Risk 4	Ongoing post-implementation risk – potential distributional impacts if smart tariff uptake is widespread (e.g., customers unable to shift load could be disadvantaged)	Provide support to consumers who may face adverse impacts if they cannot materially change how and when they use electricity.
Risk 5	While the migration is expected to be automated, data quality and system dependencies may drive manual intervention, with a risk that effort and resource needs are underestimated.	Agree priority rules for MHHS-driven incidents vs Business as Usual (BAU) work. Track operational load and adjust resourcing if thresholds are exceeded.
Risk 6	A high volume of unplanned patches could lead to rushed or bypassed change governance, increasing production risk.	Establish a streamlined but controlled emergency change process for MHHS-related fixes. Maintain traceability of patches, approvals, and post-implementation reviews.

7.7 Cost information

7.7.1. Breakdown and justification of costs

The full cost breakdown is provided in 'Annex 1 - NGED RIIO-ED2 Digitalisation Reopener - Project Costing Template Jan26'.

The costs have been allocated across the four licence areas of NGED according to the following percentages: WMID 30%, EMID 30%, SWALES 15%, SWEST 25%. This is consistent with other regulatory reporting and submissions where costs are incurred on a shared basis. The overall requirements and impact are consistent across the NGED licence areas.

The breakdown by type of costs is summarised in the table below, and further detail on type of cost for each system is included in the above annex.

Summary	23/24 (£'m)	24/25 (£'m)	25/26 (£'m)	26/27 (£'m)	27/28 (£'m)	Total (£'m)
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

MHHS readiness activity delivered to date
Given the mandatory and time-critical nature of MHHS, NGED has already delivered significant readiness activity to ensure compliance with industry and regulatory obligations.

This includes:

- Upgrading core systems and data pipelines to support MHHS-aligned schemas: [redacted]
- Deployment of the industry-standard DIP adaptor
- Introduction of the [redacted] for unmetered supplies

- Extensive participation in cross-industry design, testing and assurance

This delivery has been underpinned by:

- Three years of MPAN data cleansing
- Active participation in System Integration Testing (SIT) [redacted]
- Implementation of interim data solutions to maintain operational continuity during the MHHS transition

[redacted] which relate to:

- Professional services
- Ongoing service and licence costs
- Testing and assurance activity
- Data cleansing and transition support

Internal resourcing requirements

In addition to system implementation and development costs, NGED has incurred costs from 2025/26 associated with the recruitment of [redacted] additional internal roles within the National Systems team.

These roles are required because NGED must:

- Operate Legacy and MHHS processes in parallel
- Manage increased enquiry volumes relating to MHHS datasets
- Support enhanced billing frequency
- Liaise with Suppliers and Customers to resolve complex MPAN-related queries and protect migration integrity

These costs are captured under 'Internal Resources' in the cost table above.

Remaining MHHS delivery scope

NGED must now complete the remaining MHHS phases through to 2027, including:

- Completion of MHHS Qualification and Migration
- Ongoing DIP integration and defect resolution
- Final system updates across [redacted] and modelling tools
- Adoption of the Load Shaping Service (LSS) once operational

These activities and associated costs are included within 'Licence and ongoing costs'.

Exclusions

Where changes have been required to internally developed systems (e.g., [redacted]), these costs have **not** been included in this submission, as they have been delivered and funded through existing NGED IT&D resources.

Summary

These activities and associated costs were not foreseen at the time of the RIIO-ED2 Business Plan submission, and therefore no ex-ante allowances were provided.

All MHHS milestones, original and revised, were and remain mandatory under the MHHS governance framework. NGED has had no discretion to reduce scope or delay delivery.

The MHHS programme has evolved iteratively, requiring NGED to adapt delivery and incur additional, unavoidable costs to remain compliant. Significant expenditure has already been incurred in advance of go-live (September 2025) and to address programme delays arising from CR022 and CR055.

Ofgem is aware of this position and recognises that NGED has made these investments as part of its commitment to meeting the MHHS timetable.

The purpose of this re-opener is therefore to ensure that:

- Unavoidable, already-incurred costs are appropriately recovered, and
- NGED can complete migration and maintain compliance through to the end of RIIO-ED2.

7.7.2. Efficiency of costs

NGED's procurement strategy provides a general framework to ensure the cost of delivery of proposed solutions is effective and then delivered effectively. For an outline of this strategy please see Appendix A.

8 Project 2: Smart Optimisation Output Licence Obligation (SOOLO)

8.1 Project Summary

Purpose of Submission	NGED seeks approval through the Digitalisation Re-opener to invest in an enduring SOOLO platform required to comply with statutory obligations under **SLC10A** and **SpC 9.13**. These obligations require NGED to publish **Smart Optimisation Outputs**, provide a compliant **System Visualisation Interface (SVI)**, and deliver governed, interoperable data products aligned with **DBP** and the **DSAP**. Since the RIIO-ED2 Final Determination, these requirements have expanded significantly and now intersect with **Connections Reform**, **GC0139** planning updates, **LAEP+** rollout and **MHHS reporting and metadata needs**, creating **interdependencies and digital capability requirements not funded in RIIO-ED2 allowances**.
Regulatory and Policy Context	SOOLO is driven by **several mandatory obligations** introduced or strengthened since the start of RIIO-ED2: • SLC10A - lawful use, privacy and aggregation of smart-meter data • SpC9.13 - publication of Smart Optimisation Outputs, collaboration requirements and delivery of an SVI • DBP/ DSAP - interoperable datasets, metadata, lineage, redaction. • GC0139 - CIM-aligned power system models and expanded planning data • Connections Action Plan - publishable load and constraint data • LAEP+ rollout - accurate datasets for local energy planning • MHHS - consistent reporting, metadata alignment, assured redaction and structured dataset governance **Together, these obligations require NGED to deliver an integrated digital platform** capable of governed and reproducible publications.
Need for Investment	To meet the growing regulatory expectations for **transparent and standardised network data**, NGED must modernise how Smart Optimisation Outputs are produced and governed. **SOOLO**, **SLC10A**, **DBP**, **SVI** obligation and **GC0139** all require NGED to deliver **privacy compliant**, **CIM**-aligned data products through automated and auditable processes aligned with **DSAP**. Current systems are **fragmented**, rely on spreadsheets, batch extracts and manual handling, and do not provide a unified CIM-aligned network model. As a result, NGED cannot reliably: • Produce governed, repeatable **SOOLO** publications • Apply automated **SLC10A** redaction and metadata standards • Provide interoperability needed for **DSI**/ **DSAP** • Scale to meet **GC0139** or MHHS data-exchange requirement Incremental upgrades or increased resourcing **cannot resolve the underlying architectural limitations**. Without investment, NGED would face increasing manual effort, higher operational costs and **elevated risk of non-compliance** across multiple regulatory requirements.
Options Appraisal	NGED assessed a full range of options consistent with Ofgem guidance: • Do Nothing/ Delay to ED3 - rejected due to licence compliance risk

	• Upgrade or adapt existing systems - rejected due to legacy constraints, fragmentation and limited scalability • Build in-house (Option 4a) - shortlisted as the option can meet all compliance, interoperability and future-proofing requirements • Enhanced in-house build - rejected due to unnecessary scope and early capex • Third-party SaaS solution - shortlisted as it can provide initial data platform and compliance requirements.
Preferred Option - Build In-House (Option 4a)	**Option 4a was selected as the preferred option because it provides full regulatory compliance, architectural control and future-proofing**. Cost-benefit analysis confirms that this preferred option delivers **stronger value and performance** than the third-party SaaS alternative.
Proposed Solution	NGED will deliver an integrated cloud-based suite consisting of: • Connected Data Portal - governed datasets, metadata, lineage, privacy controls and automated redaction • Regulatory Platform and Reporting Platform - compliant publication of Smart Optimisation Outputs and visualisation of network data • Digital Twin Decision Engine - predictive constraints, scenario modelling and auditable evidence for network planning and optimisation **Together, these components create a single, governed data system for ED3** and fully support **LAEP+**, **GC0139** interoperability and assured **MHHS reporting**.
Delivery Approach	NGED will adopt a phased, agile delivery model, prioritising SOOLO obligations during RIIO-ED2 and ensuring alignment with regulatory timelines. Delivery will be undertaken by dedicated NGED scrum teams across the Digital Twin, Connected Data, Regulatory and Reporting platforms/ SVI, supported by specialist capability where required. This approach: • Limits delivery and compliance risk • Enable early value realisation • Future-proof capability
Cost	[redacted]
Conclusion	**SOOLO is a mandatory, time-critical regulatory programme** that underpins NGED's digitalisation strategy and ED3 readiness. The preferred option provides the **most resilient and value-for-money** solution to meet **SLC10A**, **SpC9.13**, **DBP**, **DSI**, **GC0139**, **NEOP** and wider obligations. **NGED therefore seeks Ofgem's approval through this Digitalisation Re-opener.**

8.2 Project Introduction

The SOOLO project is not only a compliance response, but also a programme to meet Ofgem's digitalisation expectations and to contribute to industry-wide data improvement. The project operationalises the regulatory requirements for Smart Optimisation Output publication. It also aligns to the sector's shared infrastructure direction through the Data Sharing Infrastructure (DSI)[17] and Digital Spine[18], so that energy data is secure, interoperable and reusable across markets.

SOOLO addresses the obligation to publish governed Smart Optimisation Outputs and provide accessible, governed data to customers and stakeholders in line with Data Best Practice (DBP)[19] and our Digitalisation Strategy and Action Plan (DSAP). These regulatory drivers, which interact with setting interdependencies and delivery dates of other projects (Connections Reform and MHHS), materialised since NGED's RIIO-ED2 business plan, and therefore were not addressed in the RIIO-ED2 Final Determinations allowances.

Under current RIIO-ED2 processes, fragmented batch extracts and manual reporting cannot reliably support governed, repeatable publication of SOOLO outputs within required timescales, or provide consistent metadata and lineage for MHHS assurance and DSAP transparency. This also raises the risk in handling Priority Service Register (PSR) data under SLC10A[20]. SOOLO aims to modernise the technology stack, so that publications, redactions, and audit trails are clear.

The SOOLO platform proposed in this re-opener application will include capabilities to:

- Publish Smart Optimisation Output in Common Information Model (CIM)[21], reusable format with automated redactions.
- Provide self-service access to trusted datasets for customers and stakeholders, aligned to DSAP and DBP.
- Implement metadata and data lineage across system stack to ensure data interoperability
- Support Local Area Energy Planning Plus (LAEP+)[22] use-cases with curated capacity and constraints data, so that local authorities and DNOs can consume granular energy data and net-zero modelling outputs.
- Enable Digital Twin to generate predictive constraints and scenario analysis to support consistent planning.
- Reflect relevant grid code changes and governance in publications.

These capabilities will strengthen transparency and lower whole system cost while meeting DSI/DBP expectations. They are aligned to our DSAP and provide auditable evidence for regulatory reporting. SOOLO is essential for ED3 readiness. It delivers mandated outputs and accelerates sector data maturity. By ED3, following delivery of this reopener, NGED will be operating an SVI and connected-data portal, publishing common format data, and providing assured redaction and timely publication in line with Ofgem expectations. Digital Twin supplies forward-looking constraints and analysis to speed DSO decisions and provide transparent connections evidence, alongside automated reporting that supports MHHS timelines.

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[17] NESO – DSI Overview
[18] NGED Data & AI strategy
[19] Ofgem – Data Best Practice guidance
[20] SLC10A Condition 10A. Smart Metering – Matters Relating to Obtaining and Using Consumption Data
[21] GC0139 – Enhanced planning data exchange
[22] LAEP+ (Advanced Infrastructure)

8.3 Needs case

8.3.1. Regulatory triggers

The Smart Optimisation Output Licence Obligation (SOOLO) sets out NGED's obligations for publishing, assuring, and sharing network and consumption-derived data. While the underlying scope and assurance requirements remain consistent, customer and stakeholder expectations around the timeliness, transparency and usability of this information have increased through RIIO-ED2. Meeting these expectations in practice requires an enduring digital delivery approach that supports more consistent publication, evidence-based network and connections decisions, and efficient long-term planning.

SOOLO is underpinned by SLC10A[23], which requires NGED to obtain and use smart meter consumption data lawfully and to maintain robust privacy controls. Special Condition 9.13[24] further requires DNOs to publish Smart Optimisation Outputs, maintain a collaboration plan, and provide a System Visualisation Interface. This means that SOOLO is an ongoing licence compliance obligation rather than a discrete digital initiative.

Ofgem's Data Best Practice guidance requires continuous management of data activities rather than one-off compliance. Licensees must maintain live data catalogues, actively manage data risks, and keep Digitalisation Action Plans up to date, with expectations evolving over time as sector practice matures.

In this context, the National Energy Outage Platform and its successor capabilities are delivered through ongoing SOOLO and wider digitalisation activity. Continued investment ensures outage and resilience data remain consistent, timely and interoperable. While not mandated through licence conditions, this is in alignment with Ofgem's expectations on system resilience and effective data use.

DSAP guidance links digitalisation obligations to RIIO-ED2 business objectives. For consumption data, NGED's Data Privacy Plan reflects Ofgem's position that aggregated and anonymised smart meter data may be published where grouped at an appropriate network level, including in low-density areas.

Grid Code modification GC0139 significantly increases planning and data exchange responsibilities for DNOs. It introduces twice-yearly submission of CIM-compliant power system models alongside expanded standardised planning datasets covering demand, distributed energy resources, fault levels, and long-term forecasts. These requirements strengthen whole-system coordination and create a clear obligation for NGED to derive, assure, and publish planning data in structured and reusable formats ahead of implementation in January 2027.

The Government and Ofgem's Connections Action Plan further sharpens the requirements for transparency and evidence-based decision making. While connections obligations were recognised in RIIO-ED2, there is now a clear expectation for publishable and explainable load and constraint data to support reformed connections workflows. In parallel, the LAEP+ tool is being rolled out across all DNOs, increasing the requirement for consistent and reusable planning datasets aligned to DBP and DSAP.

Market-wide Half-Hourly Settlement increases data volumes and assurance expectations across the sector. Although SOOLO does not directly deliver MHHS, misalignment between publication, metadata, and redaction practices risks the introduction of inconsistent or misleading datasets into the public domain, and therefore the undermining of transparency and governance expectations.

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[23] SLC10A Condition 10A. Smart Metering – Matters Relating to Obtaining and Using Consumption Data

[24] Special Condition 9.13. Smart Optimisation Outputs & SVI

8.3.2. Current limitations

NGED's technology landscape has developed over time to support a traditionally passive DNO operating model, resulting in multiple systems of record with separate databases and workflows for assets, operations, and planning. These systems were designed for batch processing and manual hand-offs and do not provide a single, integrated view of the network suitable for governed publication, repeatable analysis, or regulatory assurance.

The Integrated Network Model (INM) was originally delivered as an innovation project to address this fragmentation by creating a reconciled, network-wide representation of electricity assets and topology. It brings together data from core systems such as Supervisory Control and Data Acquisition (SCADA), Geographic Information System (GIS) and asset registers into a single model aligned to CIM and Common Grid Model Exchange Specification (CGMES) standards. Through this innovation activity, NGED demonstrated that a unified network model is essential to support consistent planning, publication and evidence, and to meet emerging Data Best Practice, DSAP[25] and Digital Spine interoperability expectations.

INM has since been adopted as a foundational capability and provides the data backbone required for SOOLO. However, it remains a data integration layer rather than an operational decision engine. While INM enables a consistent representation of the network, it does not on its own support real-time analytics, scenario modelling or operational optimisation. Learning from innovation activity across INM and related initiatives has shown that additional capability is required to move from integrated data to active operational use. SOOLO and the Digital Twin therefore build on INM to enable reproducible Smart Optimisation Outputs and support operational and planning decisions, rather than duplicating its function. Previous modernisation efforts have delivered localised improvements, but the underlying architecture remains fragmented. Operational and planning data, and assets are still separately governed and handled, with no end-to-end audit trail across the system. Retrofitting near real-time publication or regulatory metadata into these legacy stacks would require major re-architecture across multiple systems, risking inconsistent implementation and potential non-compliance with GC0139, MHHS data windows and DBP/ DSAP requirements. These limitations form an integrated compliance gap that cannot be closed through traditional resourcing or incremental upgrades. SOOLO, supported by the Digital Twin, connected Data Portal and governed reporting layers, is required to build on INM, converting integrated data into repeatable and auditable Smart Optimisation Outputs.

8.3.3. Objectives

Current processes cannot address all the requirements of the Licence obligations (SLC 10A, SpC 9.13), the additional governance drivers (DBP/ DSAP, GC0139, Connections Reform, MHHS), and the roll-out of the innovation product LAEP+., The following section defines the specific outcomes NGED must achieve. These objectives will be used for assessing solution options in the Optioneering section that follows. The aim is to enhance SOOLO compliance and publication capability required in RIIO-ED2 and beyond.

Primary regulatory compliance objectives:

- Continue to deliver SOOLO/ SVI publication compliance: Publish the Smart Optimisation Output and updates on NGED's website in CIM formats with formal redaction statements and metadata/ lineage, in line with SpC 9.13 guidance and DBP requirements, with automated (non-manual) and auditable data handling process.
- Meet DBP "presumed-open" data standards: Establish governed open-data products with standardised metadata, interoperable data, Role Based Access Control (RBAC) and redaction approach that evidence compliance with DBP for RIIO-ED2 licensees.

[25] National Grid – Digital action plan roadmap

- Support Connections Reform transparency: Provide constraint and headroom evidence (via published datasets/ Application Programming Interfaces (APIs)) to enable faster, evidence-based publications according to the Connections Action Plan.

Enabling capability objectives:

- Achieve unified CIM capability: Provide a reconciled network model that is CIM/ CGMES aligned and can be exported for publication and planning-data exchange.
- Evidence SLC10A data protection: Operate RBAC, anonymisation, and structured redaction for consumption derived datasets consistent with SLC 10A and NGED's Data Privacy Plan
- Interoperate with the sector "digital spine": Provide interfaces that can interoperate with the DSI.

Strategic Planning Objectives:

- Enable LAEP+ implementation: Supply curated, DBP aligned planning datasets and APIs for local authorities and partners to use in LAEP+.

8.4 Options Appraisal and Selection

Our approach to optioneering is to consider all viable solutions for our need and then proceed with further analysis of the shortlisted options identified. We have sought to consider the following array of options for all projects in this re-opener:

- A do-nothing approach: This means there is no specific intervention in the foreseeable future (including ED3) and business continues as usual.
- Delay to ED3: In this case no further investment would be made until ED3.
- Adapt / Upgrade Existing Systems: This would involve working with existing systems to meet the need, with some further investment as needed.
- Build a New System In-house: A new system would be developed by the internal NGED team to meet the need.
- Enhanced Functionality: The option either delivers the work sooner than is needed or it provide functionality that is greater than the basic need identified.
- External purchase: Whereby a suitable system is procured from an external third-party.

The governance of our decision-making processes is outlined in Appendix B.

8.4.1. Optioneering

To identify the most effective delivery approach for SOOLO, NGED considered six options against a set of key criteria. The table below summarises the evaluation:

Criteria]	Option 1: Do Nothing	Option 2: Delay to ED3	Option 3: Adapt/ Upgrade Existing Systems	Option 4: Build New System In-House	Option 4a: Enhanced Functionality	Option 5: Purchase SaaS system
Regulatory Compliance	✗	✗	✗	✓	✓	✓
Strategic & Customer Needs	✗	✗	✗	✓	✓	✓

Future-Proofing Capability	✗	✗	✗	✓	✓	✓
Cost Efficiency	✗	✗	✗	✓	✗	✗
Technical Feasibility	✓	✓	✓	✓	✗	✗
Delivery timeliness	✗	✗	✗	✓	✓	✓
Shortlisted Option	No	No	No	Yes	No	Yes
Preferred Option	No	No	No	Yes	No	No

- **Option 1 - Do Nothing**

This option presents a higher risk to the timely and effective delivery of regulatory obligations under SOOLO. It does not address current system inefficiencies or customer needs and would leave NGED exposed to future compliance risk and reputational risk.

Pros: No immediate capital expenditure; no short-term organisational disruption.

Cons: Does not perform sufficiently against SOOLO obligations (publication, collaboration plan, SVI) and SLC10A expectations. Leaves NGED exposed to a lack of resilience and future licence non-compliance, reporting risk and inefficient manual reporting.

Progress to Shortlisted options: No. Not viable given regulatory and operational risk.

- **Option 2 - Delay to ED3**

This option is to defer significant SOOLO and digital platform investment until the ED3 delays NGED's ability to establish a scalable digital twin, which can enable efficient MHHS and Connections Reform workflows.

Pros: Reduces immediate delivery scope, allowing regulatory requirements and data standards to further mature before implementation.

Cons: Breaches time-bound RIIO-ED2 obligations, compresses delivery into a shorter ED3 window, raises costs and execution risk, undermines MHHS and Connection Reform readiness and defers consumer/network benefits.

Progress to Shortlisted options: No. Unacceptable regulatory/execution risk for this option.

- **Option 3 – Adapt/ Upgrade Existing Systems**

This option is to retrofit and upgrade NGED's existing platforms to add improved user interfaces, evidence capture and reporting functionality, rather than building a new end-to-end digital platform.

Pros: Leverages existing investments; lower initial capex; may deliver incremental improvements.

Cons: constrained by legacy architecture (limited APIs, fragmented integrations); long retrofit cycles and hidden remediation costs; limited future-proofing/scalability for ED3.

Progress to Shortlisted options: No. Does not meet future-proofing scalability options.

Option 4a – Build New System In-House (Preferred)

Design and develop a modern, modular SOOLO suite on NGED's cloud data platform/ medallion architecture: Digital Twin connected/ open data portal, reporting platform with automated publications/ redactions; embed RBAC, metadata/ lineage and product lifecycle controls.

Pros: Full control and ownership of data model, publication cadence and audit trail; alignment to SOOLO/ DBP/ SLC10A; enables CIM outputs; strong Connections Reform and MHHS interlock via governed datasets; lower long-term Total Cost of Ownership (TCO) and reduced third-party platform dependency; scalable into ED3.

Cons: Higher upfront capex; requires disciplined delivery governance and sustained product/ DevOps capacity.

Progress to Shortlisted options: Yes, Preferred option.

- **Option 4b - Enhanced Functionality**

Execute an in-house build with a compressed timeline and larger early scope (broader data domains/ visuals upfront)

Pros: Fastest route to visible improvements and early compliance benefits, reducing regulatory and competitive exposure sooner.

Cons: Higher short-term capex and execution intensity; parallel workstreams increase quality/ integration risk.

Progress to Shortlisted options: No. Not shortlisted – higher short-term risk and cost outweigh limited incremental value of earlier ED3 readiness.

- **Option 5 - Purchase SaaS system**

Procure a vendor managed open data/ visualisation platform and integrate it with NGED systems.

Pros: Lower initial build effort with potential for quicker outward publication of limited dataset.

Cons: Third party led platform and reduced strategic control; significant customisation/ integration still required for Digital Twin and MHHS and Connections Reform alignment.

Progress to Shortlisted options: Yes. Considered only if scalable with operational and strategic alignment.

8.4.2. Shortlisted options

We considered two delivery routes for the SOOLO suite:

- **Option 4a**, a full in-house build delivering a modern, fully integrated and ED3 aligned system; and
- **Option 5**, a third-party SaaS open data/ visualisation platform integrated with NGED systems.

Both options support progress during RIIO-ED2, but only Option 4a offers a strategic, enduring solution aligned to regulatory and long-term operational needs. See the table below for the comparison of option 4a and 5.

Criteria	Option 4a: Build New System In-House	Option 5: Purchase SaaS system
Description	Build a governed, modular SOOLO suite on NGED's cloud data platform (medallion): Digital Twin, connected/ open data portal, reporting platform with system visualisation	Procure a vendor managed open data/ visualisation platform and integrate with NGED systems for dataset publication and dashboards. Additional custom

	interface and embedded redaction/ privacy controls.	work required for Digital Twin data integration.
Regulatory Compliance	Strong alignment; internal support for SOOLO platform components and DBP/ SLC10A compliant enables continued adaptability into ED3.	Can publish datasets, but DBP/ SLC10A controls and publication cadence depend on vendor features/ customisation; audit trail may be constrained by vendor capabilities.
Customer Experience (CX)	Fully tailored, consistent self-service experience with scalable improvements across stakeholders.	Partial improvements and require bespoke extensions to align with NGED strategic need.
Architecture / Future-Proofing	High future-proofing; scalable modular design; enables innovation and reuse via governed data products.	Uncertain; generic APIs; higher risk of re-platforming to meet CIM or ED3 analytics.
Cost Profile	Higher upfront capex; lower long term TCO.	Higher recurring opex costs, plus some bespoke integration costs.
Delivery timeliness	Delivered in phased releases; delivered in an agile manner.	Potentially fast initial publishing of a limited dataset but deeper integration/ Digital Twin alignment extends timelines.
Operational Efficiency	Automated workflow, cost capture, and data management reduce long-term workload.	Manual processes to integrate systems will likely increase run-cost and operational risk.
Risk Profile	Managed through structured governance and internal capability; stable long-term solution.	[redacted]
Longevity	Long-term adaptable strategic platform, aligned to NGED's technology roadmap.	Short to medium term fit; long term viability tied to vendor capability.
Progression	Progressed — Preferred strategic route.	Not Progressed.

8.4.3. Cost-Benefit analysis (CBA)

[redacted]

Options considered	Decision	NPVs based on payback periods				
		10 years	20 years	30 years	45 years	Whole-Life NPV

8.4.4. Preferred option

NGED would develop and deliver in-house an integrated cloud-based suite: System Visualisation Interface with Connected Data Portal, Digital Twin platform and an automated reporting process on its existing medallion architecture. This directly operationalises the SOOLO and embeds DSAP and DBP standards (discoverability, metadata and redaction).

The option is designed around Ofgem DBP standards and interoperability. The portal will publish CIM format data, which will provide an auditable trail to support MHHS reporting and DSAP updates. While the preferred option will require higher upfront investment, it avoids the need for future platform replacement and reduces dependency on third-party product roadmaps. Retaining in-house control provides NGED with flexibility to adapt data models, governance and functionality as regulatory requirements evolve. This approach reduces the whole-life cost and regulatory risk as MHHS and Connections Reform mature.

This option directly addresses the constraints of the current configuration and meets the SOOLO licence obligations, additional governance, and digitalisation drivers.

The preferred option enables integration of the Digital Twin into NGED's enhanced MHHS and Connections Reform technology stack, creating a virtual representation of network assets to support:

- Scenario modelling for constraint evolution and outage restoration
- Predictive maintenance to reduce faults and improve reliability
- Capacity planning to accelerate low carbon connections

This capability cannot be delivered reliably through incremental upgrades alone. Learning from the SMITN innovation project highlighted that producing repeatable Smart Optimisation Outputs requires integrated data ingestion, network-level analytics, and end-to-end governance, which are difficult to sustain through fragmented or externally constrained solutions. A cloud-based architecture with an integrated Digital Twin is therefore required to provide the scalability, control, and regulatory assurance needed to meet SOOLO obligations consistently.

See section 8.7 for further detail and breakdown of the costs to be incurred for SOOLO implementation relating to the preferred option.

8.5 Output and Scope of Work

This section describes what will be delivered to achieve the objectives: a coherent SOOLO digital infrastructure (governed publication, redaction/ metadata) that integrates into NGED's strategic needs. SOOLO will also be a LAEP+ enabler that allows local authorities to reuse governed datasets for planning. Deliverables are organised into core platform components, supporting tools and governance, operated by dedicated scrum teams to ensure publication cadence, auditability and model integrity that will continue to meet licence requirements (SLC10A, SpC9.13).

System	Description	How it operates	What the solution delivers/ outputs
Connected Data Portal	Governs, versions and controls access to SOOLO datasets and supporting metadata. Acts as the data management for SOOLO outputs.	Receives approved SOOLO datasets, applies governance, access and privacy controls, manages metadata and create publication ready datasets.	• Curated version controlled SOOLO datasets with clear data lineage. • Governance controls supporting SLC10A (data aggregation. anonymisation, redaction). • LAEP+ tool allows partners to access NGED data to support their planning.
Regulatory and Reporting Platforms (SVI)	Public facing interface required under SPC9.13, providing visibility of Smart Optimisation Outputs.	Presents approved datasets from the Connected Data Portal through consistent visualisations and reporting views.	• SOOLO compliant system SVI. • Regulatory views of network headroom and constraints. • Consistent, repeatable outputs across reporting cycles.
Digital Twin Decision Engine	Creates network states, feasibility assessments and optimisation analysis using asset aware simulation.	Fuses topology, asset condition, historical and live telemetry with rules to run automated checks. Stores model versions and rationales as immutable evidence.	• Automated feasibility with live network asset health and load information • Automated scenario optioneering (reinforcement vs flexibility). • Explainable decisions with rules/ models, and outputs stored as evidence. • Immutable decision packs supporting ED3 audit and assurance.

SOOLO is being delivered using a platform led, agile build-and-run model (Connected Data Portal, Regulatory Platform, Reporting Platform and Digital Twin), rather than a buy-and-deploy model. The in-house approach establishes a set of core digital capabilities that can evolve over time, ensuring SOOLO remains fit for purpose as regulatory expectations, data volumes and publication requirements increase. By avoiding the implementation of a static solution, NGED reduces the risk of repeated capital intervention to upgrade or re-platforming the database. The in-house approach ensures NGED retains strategic control over core data assets and models, [redacted]

Delivery is structured around [redacted], each responsible for a distinct aspect of the SOOLO capability, but collectively delivering a single, coherent platform that meets requirements of SPC9.13 and SLC10A.

Digital Twin Scrum Team

Reporting Platform Team

The Reporting Platform team is responsible for producing regulatory and management reporting outputs, including dashboards, performance views and analytical products for internal and external stakeholders. This team translates SOOLO outputs into consistent, decision-ready views that support executive oversight, regulatory submission and operational decision-making.

By standardising how SOOLO insights are presented, this capability ensures the programme delivers actionable analysis rather than unmanaged data, supporting better-informed decisions on network performance and regulatory outcomes.

Regulatory Platform Team

The Regulatory Platform team delivers the regulatory assurance layer that transforms Digital Twin outputs and enterprise data into regulatory-grade artefacts. This includes controlled methodologies, audit trails and compliance artefacts aligned to Ofgem and RIIO-ED2 obligations.

This layer ensures that SOOLO outputs are repeatable, governed and auditable, providing clear evidence for regulatory scrutiny and formal assurance. It is this capability that makes SOOLO suitable for ongoing licence compliance, rather than a simple analytical tool.

Connected Data Platform Team

The Connected Data Platform team delivers the data foundation underpinning SOOLO. This includes data ingestion, data interoperability capabilities, and the Connected Data Portal, which provides secure, governed access to curated datasets for approved internal and external users.

The platform integrates Digital Twin outputs, regulatory datasets, and enterprise data into a single, controlled architecture, enabling extensibility and future integration without re-architecting the solution.

Integrated Operation

Together these capabilities operate as a layered, end-to-end SOOLO platform. The Connected Data Platform provides the governed data foundation. The Digital Twin creates the network states and the scenario simulations. The Regulatory Platform applies control, governance, and assurance. The Reporting Platform presents consistent output for regulatory and stakeholder use. This integrated approach delivers the resilience, scalability and future-proofing capabilities required to sustain SOOLO delivery into ED3 and beyond.

LAEP+ tool

LAEP+ has become the common industry interoperability tool used by multiple Distribution Network Operators (DNOs) and is widely adopted by local authorities for Local Area Energy Planning (LAEP). This programme will deliver a LAEP+ reuse enabler, allowing local authorities and partners to directly consume NGED datasets for planning and decision-making. Deliverables are organised into core platform components, supporting tools, and governance frameworks to ensure:

- Publication cadence and data freshness.
- Auditability of datasets and planning outputs.
- Model integrity and traceability.
- Compliance with SLC10A and SpC9.13 licence and data governance requirements.

8.6 Project delivery and monitoring plan

8.6.1. Delivery Programme

The proposed delivery model for the SOOLO programme is an agile development approach (see chapter 4 for an overview). There will be

The scrum teams will each average nine people per platform as based on industry best practice. This is considered the optimal size to maximise development productivity and efficient pace of delivery. It ensures sufficient critical scale to effectively deliver while minimising coordination activities. (and the scrum teams for Connections Reform) will be overseen by lead roles for each of the scrum disciplines (Product Owner, Scrum Master, Systems Engineer, QA Engineer, Software Engineer and UI Engineer). In addition, a Programme Manager will ensure effective coordination, such as facilitating steering groups, and integration of the specific platforms, both within SOOLO and with the parallel Connections Reform programme, along with programme governance and reporting.

Each team will operate in a series of delivery sprints for their specific platform, starting with the minimum viable product (MVP) core use cases, prioritising the key scope requirements first. This approach will enable the core platform and system functionalities to go live as rapidly as possible. The key milestone dates over 2026 to 2028 for each platform are shown in the diagram below.

Some initial consultancy activities have already been conducted by using the product in 2025/26 to support the development of the digital twin platform to set up the initial platform architecture. The internal scrum team will continue to populate the platform architecture to ensure a high-quality and integrated data foundation from multiple NGED systems, including providing the data dictionary, meta-data, lineage frequency, integrity, and quality assurance functions. However, the pace and scale of delivery required for the Digital Twin platform will need to be significantly

accelerated to meet the requirements and timelines for SOOLO and Connections Reform implementation in 2027. We outline our approach to this below:

[redacted]

We have selected a contractor based resourcing model for the delivery of both the SOOLO and Connections Reform programmes. [redacted]

[redacted]

In addition to the resourcing costs outlined above for the [redacted] main scrum platform delivery teams, there will also be some targeted external costs to specific organisations. These include:

[redacted]

- [redacted] Whereas the internal scrum team will focus on the integration of legacy data and systems to the platform, the external provider will continue to develop the platform architecture.

A key part of our delivery approach is to ensure that the solutions provided are not single use for a limited number of use cases but are future-proofed, adaptable, scalable and self-serviced capabilities to ensure alignment to our DSAP and to DSI and DBP requirements.

8.6.2. Risk Management

The management of risks forms a key element of the project's delivery strategy. A robust risk management process has been adopted to set out a framework for identifying and managing reasonably foreseeable risks in a timely, proactive, effective, and appropriate manner.

We have summarised the top six risks attributed realising the delivery and outcomes of the SOOLO programme in the table below. Some of these relate to the internal delivery of the programme, whereas others are associated with the realisation of the benefits or external factors that may affect the delivery the programme or the specific definition of the outputs required.

Risk	Description	Mitigation
Risk 1	Late decision from Ofgem will impact the delivery timelines and impacts and contingency	The programme will use modular delivery and early regulatory engagement to prioritise completion of the MVP scope and enable rapid adjustment following regulatory decisions.
Risk 2	The accelerated of delivery of the programme of 18 months will require significant levels of resourcing to meet the key platform milestones.	[redacted]
Risk 3	There is a risk that operational teams supporting the delivery may be redeployed to higher-priority operational activities (e.g., severe weather response), which could delay alignment of rolling out training on the use of new processes, interfaces etc	Operating model risks will be managed by phasing adoption and using flexible digital training and delivering iteratively to allow teams to consume change as it is delivered rather than one large training programme so teams can transition even when operational pressures, such as severe weather events, divert resources.
Risk 4	Measurable regulatory or operational benefits may not be fully realised within RIIO-ED2 timescales.	We will mitigate delayed benefit realisation by delivering early high-value capabilities and tracking interim performance metrics that demonstrate measurable progress within RIIO-ED2.
Risk 5	High-priority operational activities (e.g. severe weather response) require redeployment of IT&D delivery team resources, potentially delaying operating model alignment and delivery milestones.	Separate operational response teams are in place to manage business-as-usual and emergency activities in IT&D, enabling the SOOLO delivery teams to remain focused on programme delivery.
Risk 6	Regulatory decisions may result in scope changes that affect delivery timelines.	The agile delivery model allows flexible reprioritisation and incremental delivery to adapt to changes in regulatory scope.

8.7 Cost information

8.7.1. Breakdown and justification of costs

The full cost breakdown is provided in 'Annex 1 - NGED RIIO-ED2 Digitalisation Reopener - Project Costing Template Jan26'.

The costs have been allocated across the four licence areas of NGED according to the following percentages: WMID 30%, EMID 30%, SWALES 15%, SWEST 25%. This is consistent with other regulatory reporting and submissions where costs are incurred on a shared basis. The overall requirements and impact are consistent across the NGED licence areas.

[redacted]

The breakdown by type of costs is summarised in the table below. These costs comprise contractor resource, professional services for platform architecture, and licences/ongoing operational costs needed to deliver and run the SOOLO platform.

Summary	23/24 (£'m)	24/25 (£'m)	25/26 (£'m)	26/27 (£'m)	27/28 (£'m)	Total (£'m)
[redacted]						
[redacted]						
[redacted]						
[redacted]						
[redacted]						

8.7.2. Efficiency of costs

NGED's procurement strategy provides a general framework to ensure the cost of delivery of proposed solutions is effective and then delivered effectively. For an outline of this strategy please see Appendix A.

[redacted]

[redacted]

[redacted]

9 Project 3: Connections Reform

9.1 Project Summary

Purpose of Submission	NGED seeks approval through this re-opener to invest in an **enduring, digitised connections platform** required to meet statutory obligations introduced under **CMP434** and **CMP435**. This investment is essential to comply with new licence obligations that support Clean Power 2030 and ensure the reformed connections process operates transparently, efficiently and cost-effectively for consumers, so they have the clear, accurate information they need to make better investment decisions.
Regulatory and Policy Context	Connections Reform represents a fundamental change to the electricity connections framework, replacing the historic "first-come, first-served" model with a **readiness- and system-need-based approach,** which is anticipated to unlock up to £40bn annual national investment[26]. CMP434 and CMP435 introduce new, mandatory obligations on DNOs, including: • Mandatory assessment of Gate 2 readiness evidence • Inclusion of qualifying distribution projects within NESO Gate 2 submissions • Fixed timescales for the submission of complete and accurate data to NESO • Increased transparency, auditability and reporting requirements • These obligations were **not known at the time of the RIIO-ED2 business plan** and require new digital capabilities that go beyond incremental changes to existing systems. NGED has delivered CMP435 using tactical, short-term solutions to meet industry timelines. While these have enabled compliance to date, they rely heavily on manual processes, fragmented systems and [redacted] and are **not suitable for the enduring implementation of Connections Reform**.
Need for Investment	To comply with **CMP434** on an enduring basis and prevent further queue growth, NGED must implement systems and processes that can: • Capture and validate complex Gate 2 evidence digitally • Assess readiness and strategic alignment consistently and transparently • Support structured NESO data exchange • Automate milestone tracking and queue management • Provide accurate, auditable reporting to Ofgem and stakeholders Current systems rely on short-term tactical solutions with partially **manual handling and fragmented tools that cannot support the enduring CMP434 requirements**. Continuing with this approach provides material **risks of non-compliance**, inconsistent decisions, higher operating costs and reduced customer confidence, thereby undermining the objectives of Connections Reform.
Options Appraisal	NGED assessed a full range of options consistent with Ofgem guidance: • **Do nothing/ Delay to ED3** - rejected due to unacceptable regulatory and delivery risk. • **Adapt/ upgrade existing systems** - rejected due to legacy constraints, fragmentation and limited scalability.

[26] NESO implements electricity grid connection reforms to unlock investment in Great Britain | National Energy System Operator

	• **Build in-house system** - shortlisted as option is capable of delivering the required functionality, compliance, auditability and long-term value. • **Accelerated roll out/ Enhanced Functionality** - rejected as disproportionate, high risk and not aligned with immediate regulatory needs. • **Phased hybrid (low capex)** - shortlisted, able to provide short-term bridge, but with higher ongoing costs and compliance risk. • **Third-party SaaS** - rejected due to market immaturity, integration complexity and uncertain ED3 alignment.
Preferred Option - Build In-House (Option 4a)	**Option 4a was selected as the preferred option** provides the most robust, future-proof and cost-effective means of delivering the reformed process in line with regulatory expectations. It achieves **full compliance with CMP434/ 435** and gives NGED complete control of architecture. Cost-benefit analysis shows that, despite higher upfront cost, Option 4a offers **stronger long-term value**, lower operating cost, reduced rework and fewer customer complaints than the alternative.
Proposed Solution	The preferred option establishes a **single, NGED-owned digital platform** covering the entire end-to-end connections lifecycle. It integrates: • **Connections Web** – customer/ staff interface for applications, Gate 2 evidence submission, milestone management and communications • **Connections Platform** – core workflow and data orchestration engine enabling automated decision-making, auditability and structured **NESO data exchange** • [redacted] Runtime – secure ingestion of asset and site telemetry to support **consistent, evidence-based assessments** **Together, these components create a single, scalable, governed platform solution aligned to ED3**, enabling NGED to adapt efficiently to future regulatory or policy changes without repeated reinvestment.
Delivery Approach	NGED will adopt a **phased, agile delivery model**, prioritising functionality required to meet **CMP434/ 435** obligations and stabilise the **reformed queue during RIIO-ED2**. This approach: • Limits delivery and compliance risk • Enables early value realisation • Ensures investment is proportionate to need • Maintains flexibility to respond to evolving industry requirements **Ownership of the core architecture, data model and regulatory logic** will remain with NGED, ensuring transparency and auditability and long-term value for consumers.
Cost	[redacted]
Conclusion	Connections Reform is a **mandatory**, **time-critical programme** central to delivering **Clean Power 2030**. The proposed investment is necessary to comply with new licence obligations, reduce long-term costs and risks, and that the **reformed connections process operates efficiently and fairly**. The preferred option provides the m**ost appropriate, proportionate and value-for-money solution**. **NGED therefore seeks Ofgem's approval through this Digitalisation Re-opener.**

9.2 Project Introduction

Connections Reform seeks to make wholesale changes to the Connections process for generation connections >1MW. The existing process is no longer fit for purpose and focuses entirely on a first come first basis and is totally market driven. In recent years this has led to a huge increase in the connections queue across transmission and distribution causing congestion in the contracted background and resulting in long lead times for connection and unviable projects retaining a queue position and holding back more progressed projects.

Government has signalled that Connections Reform will deliver clear nationwide economic benefits. It will enable the bringing forward of low-cost renewable generation, the reduction of long-term consumer bills, and the avoidance of inefficient network spending. It will unlock up to £40bn in annual investment[27]. By clearing stalled projects and prioritising ready-to-build schemes, Ofgem's reforms improve system efficiency, strengthen energy security, and stimulate economic growth.

While the £40bn applies nationally, NGED's significant share (~18.9 GW of Gate 2 capacity) represents a significant enabler of regional investment in construction, supply chains and local services. By enabling connection of these strategically aligned, ready-to-build projects through the reformed queue, material regional benefits can be delivered, including:

- Faster delivery of renewable and storage capacity across the Midlands, South West and South Wales
- Freeing up 20 GW of capacity previously blocked by stalled projects
- Boosting regional jobs, supply chains and investment certainty
- Improving local energy security and system efficiency
- Providing more predictable, transparent pipeline visibility for regional stakeholders

The greater transparency enabled under Connections Reform will give customers greater confidence and the clear, accurate information they need to make better investment decisions. Ofgem's End-to-End Review emphasises improved visibility and accuracy of connections data, enabling customers to understand likely timelines, queue positions and system constraints earlier in the process.

As well as supporting Government ambition and policy, as a DNO we have a licence obligation[28] to respond to the changes driven by Connections Reform as set out in CMP434[29] and CMP435[30]. The reformed process focuses on project readiness and alignment to Clean Power 2030 and other government targets. The growing demand for clean energy solutions requires a modernised, transparent, and scalable connections process that reduces delays, improves predictability, and supports the UK's transition to net zero.

The key modifications for Connections Reform are as follows:

- CMP434: Requires DNOs to submit full technical details to NESO within 15 business days of Gate 2 window closure. Previously this was on a 'reasonable endeavours' basis;
- CMP435: Requires DNOs to assess Gate 2 evidence for small/medium embedded projects on NESO's behalf, this was not a requirement previously;
- CMP435: Also requires qualifying distribution projects to be part of the NESO gate 2 submission, while DNOs previously issued their own distribution offers independent of the NESO gated process.

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[27] NESO implements electricity grid connection reforms to unlock investment in Great Britain | National Energy System Operator

[28] Standard Licence Condition 12 Requirement to offer terms for Use of System and connection; and 12A Requirement to progress applications

[29] https://www.ofgem.gov.uk/sites/default/files/2025-04/CMP434-Final-Decision.pdf

[30] https://www.ofgem.gov.uk/sites/default/files/2025-04/CMP435-Final-Decision.pdf

A significant amount of effort has and continues to be put into delivering the first part of Connections Reform (the obligations set out in CMP435). To date this has involved:

- Increased levels of engagement with our currently contracted customers to ensure awareness and understanding of the process ahead of the evidence submission window opening.
- The gathering of Gate 2 evidence, which involved the rapid development and deployment of tactical digital solutions and processes to effectively capture, store and assess customer submissions for almost 800 individual connections projects.
- Development of a digitised Gate 2 evidence submission form for customers.
- The onboarding of significant resource to assist with the capture of customer data and the assessment of customer evidence submissions.
- Dealing with an extremely high level of queries from customers associated both to the Gate 2 evidence process, the gathering and assessment of evidence and the next steps following window closure.
- The extraction, manipulation and quality assurance of large volumes of data required for exchange with NESO.
- The implementation of additional tactical solutions in preparation for the issuing of Gate 1 and Gate 2 customer offers following receipt of the reformed queue from NESO.

Both the requirements for CMP435 and the enduring requirements under CMP434 were not known to be able inform the RIIO-ED2 Business Plans, Final Determinations and allowances.

Due the timescales associated with implementing CMP435, significant movement in the Connections Reform timeline and ongoing industry conversations in relation to exactly how DNOs should implement CMP435, the majority of the systems and processes put in place by NGED to date are tactical by nature. These changes have been a mixture of updates to legacy systems and offline processes, utilising existing resource and organisational capability supplemented by additional contractor resource. Although these processes have enabled NGED to deliver on CMP435, more enduring and permanent digital solutions are required moving forwards.

In order to assess project readiness, Connections Reform introduces a requirement on customers to submit evidence in support of their connection application that includes but is not limited to information relating to land rights, detailed site data, planning and consents and strategic alignment to CP2030.

It is necessary for NGED and other network companies to put in place systems and processes to capture and assess this additional information from customers. Connections Reform also introduces a gated / window approach for the Transmission Impact Assessment (TIA) process, whereby only those customers who have passed the threshold for readiness and strategic alignment will be put forward to NESO for assessment of their impact on the transmission system.

As part of the TIA process, NGED will be required to submit additional data to NESO relating to customer evidence submissions, project readiness and strategic alignment. These changes mean that there is a need for updated systems and processes to facilitate this activity on an enduring basis.

The deployment of digital self-service tools for customers to apply for connections, submit project evidence, and manage contracted milestones is fundamental to the effective implementation of Connections Reform and management of the queue overall. These digital tools will improve the accuracy and efficiency of planning, streamline workflows, and increase automation, which will reduce internal processing times allowing us to operate efficiently. Collectively, these developments will redefine customer experience, providing faster, clearer, and more consistent outcomes for all connection requests and help to mitigate the risk of the connections queue growing beyond what is required to meet key government targets.

The options set out in Section 9.4 look to ensure that our Connections process aligns to the requirements of Connections Reform without the need for tactical workarounds and manual processes. The proposed solution will also be flexible in terms of future enhancements making sure

that NGED are not able to execute on the requirements of Reform but also future-proofing against additional changes to the Connections process moving forwards.

NGED are seeking to implement a platform that will allow for full visibility of the full end-to-end reformed process, introducing automated workflows to replace manual and fragmented processes put in place as tactical solutions for CMP435. The solution will be a “one stop shop” for projects in scope for the reformed and enduring process and will include functionality to ingest digital submissions from customers, automated milestone management, additional data exchange requirements, enhanced process reporting and two-way communication with customers.

Connections customers will see direct improvements through a customer portal, allowing them to apply for connections, submit Gate 2 evidence, track applications and submissions, interface directly with relevant project contacts, manage milestones and other contractual obligations such as securities and other payments.

NGED view this work as a strategic enabler for ED3, aligned with its key priorities of better quality data capture, integrity, and transparency. The work will also deliver process resilience, ensure NGED’s ability to manage the connections queue, and enable an increased level of connections in line with CP2030 targets.

Connections Reform obligations are industry wide and time sensitive. Therefore, the work cannot be delayed because Government and Ofgem have made clear that urgent action is essential to resolve long-standing systemic delays in the Great Britain connections process. Ofgem state that reform is pivotal to delivering Clean Power 2030.Network operators are required to take into account new obligations under CMP435 and CMP434, and to implement readiness-based queue management and issue timely, high-quality offers.

These reforms need to be implemented immediately to:

- Effectively manage the connections queue and mitigate the risk of the queue growing post CMP435 over and above the levels required to meet the Clean Power 2030 targets.
- Support the delivery of renewable connections and ensure security of supply risks are being managed.
- Speed up delivery of projects that are ready to connect and pass the Gate 2 evidence threshold and strategic alignment criteria.
- Support the government’s short term implementation in line with the Connections Reform programme.

Continuing with the existing approach risks continued queue growth through speculative applications, long lead times for connections projects, and misalignment with system needs and the delivery of CP2030. Immediate implementation of fully digitised solutions that underpin the reformed process is essential to support national decarbonisation, restore investor confidence, and system-wide acceleration efforts[31][32]. Advancing the Connections Reform Digital Programme now delivers immediate improvements to customer experience and operational performance. It also future-proofs the network for the challenges and opportunities ahead.

9.3 Needs case

Connections Reform refers to a major overhaul of the electricity grid customer connection process for large scale generation, first initiated in November 2023[33] by the National Energy System Operator (NESO) and approved by [34]. The reform is designed to accelerate the delivery for the connection of high priority clean energy projects to the grid and support the Clean Power 2030 initiative.

[31] https://www.nationalgrid.com/queue-management-next-step-accelerating-grid-connections
[32] https://www.neso.energy/industry-information/connections-reform/about-connections-reform
[33] NESO Connections Action Plan published November 2023: https://www.gov.uk/government/publications/electricity-networks-connections-action-plan
[34] https://www.ofgem.gov.uk/sites/default/files/2025-04/Summary-Decision-Document-TMO4-package.pdf

9.3.1. Regulatory Triggers

Connection Reform is a mandatory requirement introduced by Ofgem to ensure DNOs are able to implement reformed processes in which DNOs can provide enhanced digital capabilities and accessible, high-quality data to consumers and stakeholders. Recent legislative and regulatory developments, including Ofgem's Connections End-to-End Review[35] and the joint DESNZ-Ofgem Clean Power 2030 Connections Reform initiative, have continued to introduce further significant changes to the obligations placed on electricity distribution licencees[3637].

These reforms mandate a fundamental shift in how network operators manage connections, requiring enhanced transparency, more two-way communication with customers regarding, an increased need for data exchange and evidence provision, and closer monitoring overall of customer milestones. These changes introduce changes to licence conditions, and industry code modifications (CMP434/435) for digital enablement, data transparency, and accelerated delivery. NGED aims to implement a fully digitised, integrated platform to manage the reformed connections process efficiently, gather customer Gate 2 evidence, support additional data exchange requirements with NESO, and deliver measurable improvements in customer experience.

CMP434: Implementing Connections Reform
CMP434 introduces the new, reformed grid connections process for new applicants, replacing the traditional "first-come, first--served" model with a "first--ready, first--needed, first--connect" approach. It establishes the new Gate 2 criteria, updated process definitions and a structured, readiness--based assessment to ensure that projects able to progress receive earlier connection dates. CMP434 forms a central part of Ofgem's -wider Target Model Option 4+ (TMO4+) reform package. The National Energy System Operator (NESO) describes CMP434 as enabling timely-based prioritisation of new -applicants.[38]

CMP435: Application of Gate 2 Criteria to Existing Contracted Background
CMP435 applies the new Gate 2 readiness criteria and queue reform framework to existing contracted projects already in the grid connection pipeline[39]. This ensures consistent treatment between new and existing applicants under the new "first-ready, first--needed" model. CMP435 restructures the legacy queue, requiring existing projects to demonstrate evidence of progress at Gate 2 to retain- or improve queue position. CMP435 has been approved as part of the TMO4+ package alongside CMP434, with industry commentary highlighting its role in reshaping the existing queue and addressing longstanding delays in -transmission dependent- connections.

Together, CMP434 and CMP435 represent significant reform to the grid connections process, driving a whole system shift to a readiness-based model. They trigger new requirements along the connections process for NGED and other network companies to manage and deliver. These requirements are set out in detail below.

9.3.2. Connections Reform Requirements and Current Limitations

The requirements listed below are specifically and directly related to the additional functionality NGED will need to put in place in terms of systems and processes to ensure the effective implementation of Connections Reform on an enduring basis, and compliance with CMP434. Each

[35] https://www.ofgem.gov.uk/consultation/connections-end-end-review-updated-proposals-and-next-steps (November - December 2025)
[36] Ofgem – Connections End-to-End Review of the Regulatory Framework 2025
[37] DESNZ & Ofgem – Open Letter: Expectations and Ambition for Connections Reform to Deliver Clean Power 2030, November 2025
[38] https://www.ofgem.gov.uk/sites/default/files/2025-04/CMP434-Final-Decision.pdf
[39] https://www.ofgem.gov.uk/sites/default/files/2025-04/CMP435-Final-Decision.pdf

requirement has a description, a view of the requirements and the limitations of the current tactical solutions NGED have implemented through the CMP435 process up to this point.

Requirement 1: Gathering of Gate 2 Evidence

As a requirement of the reformed process NGED will need to implement new processes and systems to gather Gate 2 evidence from customers on an enduring basis. Gate 2 evidence requirements are complex and involve project developers providing multiple data points, narrative and file attachments.

Enduring Process Requirements: It is essential that a fully digitised and self-serve solution is developed for the gathering Gate 2 evidence from developers. Automating this process will greatly enhance the customer journey and experience by providing developers an intuitive and easy to use interface for evidence submission. It will also allow NGED to put in place data validations, rules and functionality to ensure that submissions are complete and right first time without the need for long offline exchanges with developers to request further information or clarity relating to their submission.

Current Limitations: NGED have implemented a tactical solution for evidence gathering through CMP435. This solution focussed on the customer journey and making it as easy as possible for developers by designing and implementing a digital form which aligned to the industry agreed template. Although positive feedback was received from developers, the business processes associated to recording and capturing the data from developer evidence submissions was largely manual. The enduring process requires significant effort in automation to mitigate the risk of the manual handling of data and to ensure maximum process efficiency. The tactical solution put in place also involved NGED triggering the requirement for existing contracted customers to submit evidence. It's crucial moving forwards that customers have a way of self-serving the submission of this information either alongside their connection application or at some point ahead of the NESO application window opening.

Requirement 2: Document / Data Storage

The reformed process requires developers to submit significantly more data and supporting documentation than currently required under the existing process.

Enduring Process Requirements: in order to facilitate the effective capture and storage of the required information and documents, NGED will need to make significant upgrades to current data architecture and infrastructure capabilities. Developers are required to submit multiple large attachments and a large number of additional data points in addition to their connection application. It's important that customers are able to submit this information through one seamless and intuitive digitised process and that NGED have the necessary digital infrastructure to support ingesting and storing full customer submissions.

Current Limitations: through the tactical solutions put in place for CMP435 NGED experienced significant issues regarding the overall size of customer evidence submissions. This often resulted in the customer having to follow up with large attachments via email, which negatively impacted the customer experience as well as creating additional manual workarounds for business processes.

Requirement 3: Evidence Assessment

Connections Reform introduces the requirement for network companies to validate and assess customer Gate 2 evidence submissions.

Enduring Process Requirements: the assessment of Gate 2 customer evidence submissions is an integral part of Connections Reform, and it is critical that NGED have the processes, systems and capability to introduce automation to this part of the process. Only those projects that pass the evidence threshold and strategic alignment criteria will progress through to NESO for Transmission Impact Assessment (TIA). An automated and digitised process for this activity is required to ensure not only accuracy but consistency of treatment for all project developers.

Current Limitations: evidence assessment and review has been undertaken manually through CMP435. The continuation of this tactical solution has the potential to introduce risks in terms of consistency and accuracy when reviewing customer submissions. [redacted]

Requirement 4: NESO Data Exchange
The reformed process brings in additional requirements on network companies to provide supplementary information to NESO in support of developer connections applications having passed the Gate 2 evidence threshold and strategic alignment to CP2030 ahead of being submitted for TIA.

Enduring Process Requirements: to execute effectively on this requirement NGED will be required to either implement significant changes to existing systems in terms of data capture and document storage or implement new systems that underpin the reformed process. As well as being able to store this data, it will be necessary to put in place processes to validate, extract and exchange the required data with NESO on an enduring basis.

Current Limitations: owing to the tactical solutions put in place for CMP435 the collation and exchange of data with NESO was largely manual, and although a significant amount of data quality checks were put in place these were outside of core systems and labour intensive.

Requirement 5: Queue Management:
Although queue management was introduced some years ago for DNO companies, it is now prudent to consider enhanced queue management systems and processes as part of Connections Reform to mitigate the risk of the connections queue growing again post the implementation of CMP435. Certain new elements of Connections Reform such as the Project Commitment Fees and requirement for TIA are dependent on these milestones.

Enduring Process Requirements: it's critical that NGED and other network companies have automated systems and processes in place in order to manage developers through the pre-commissioning period and ensure contracted milestones are being achieved. NGED see the amalgamation of distribution queue management and the changes to the connections process through reform as key to ensuring the connections queue is suitable for future requirements. Automated tracking of project milestones, the ability for customers to easily provide evidence in support of meeting milestone through a portal, automatic and systemised notifications for customers of upcoming or overdue milestones is essential for the enduring process.

Current Limitations: queue management milestones are managed through existing core systems, however it's essential that the tactical solutions put in place for CMP435 are integrated with these systems on an enduring basis.

Requirement 6: Customer Portal
As referenced in Requirement 1, the enduring process places additional and onerous obligations on developers to provide network companies with a significant amount of additional information in support of their connections project.

Enduring Process Requirements: In order to do this effectively NGED plan to implement a customer portal, where developers can access all the relevant information and guidance associated to Gate 2 evidence submissions and navigate their way through a clear and digitised process. This will involve functionality for customers to be able to register an account, complete a digitised evidence submission, re-submit or add additional information post submission, the ability to save submission progress, track their submission through the process and two-way communication functionality. This will give customers full visibility of the status of their submission as it goes through the process. The portal will be linked directly to an underlying system capturing all data and documentation in an automated way, with the ability to introduce automated workflows for customer notifications and communications.

Current Limitations: tactical solutions up to this point have not involved the use of a customer portal and therefore no ability for the customer to save progress or re-submit additional information following the initial submission. Through CMP435 this resulted in customers having to follow up by email with any clarifications or additional information and attachments separate to their submission. This resulted in manual workarounds and the need to upload email chains and additional file attachments into systems complicating the process, audit trail and reporting capability.

Requirement 7: System & Processes

NGED is required to put in place additional systems and processes that take into account the delivery of the new end-to-end reformed process.

Enduring Process Requirements: a seamless system that is capable of processing customer connection applications along with the data capture and storage capability necessary for Gate 2 evidence submissions. Automated workflows and the integration of AI capability to underpin the new process and assess customer evidence in a consistent and automated way will increase overall business efficiency, data visibility and integrity, customer experience and mitigate process risk. It will also be necessary to put in place new processes, data fields and communication with the customer regarding the outcome of their evidence submission. Process and system upgrades will also be required to facilitate the exchange of additional data fields with NESO for customers who pass the Gate 2 evidence and strategic alignment threshold.

Current Limitations: due to the nature of the tactical solutions put in place up to this point, the process is fragmented across different core systems and offline data sources. While these solutions have served NGED well in meeting the CMP435 obligations the continuation of these processes into the enduring model is not feasible. Not having a single system that underpins the new end-to-end process in its entirety is inefficient and also introduces risks associated to consistency of process, data integrity, reporting capability and customer experience.

Requirement 8: Reporting

New and updated reporting capability will be required to underpin the reformed process and ensure the performance of it on an enduring basis. There are already requirements for network companies to regularly report on the size of the connections queue and track the ongoing benefits of the Reform programme overall. It is also anticipated that there will be additional regulatory reporting requirements associated to the projects impacted by Connections Reform moving forwards into ED3.

Enduring Process Requirements: it is critical that NGED are able to implement new systems and processes that underpin the full reformed process and captures all data necessary for reporting purposes, to ensure the effective management of the queue moving forwards and to be able to accurately track progress against the CP2030 targets. Better data capture and integrity will also enable NGED to surface more key project data and information to customers through the customer portal, greatly increasing transparency of the process and the customer journey overall.

Current Limitations: existing reporting associated to Connections Reform and the Connections queue is largely manual. Connections Reform and the timescales associated to the implementation of CMP435 have compounded this issue with the implementation of tactical solutions across multiple different systems and offline data sources. Significant effort has been put into ensuring data accuracy and integrity for reporting purposes and data exchange through CMP435, however the current approach is not sustainable and data is too fragmented.

Summary

It is critical to the long-term success of the reformed process that these requirements are built into a single and future-proofed platform capable of scalability and flexibility for future requirements and innovation. Current systems and tactical solutions are not capable of being developed quickly

enough to cope with the changing demands of the connections industry. There are still many ongoing conversations across industry on exactly how to implement key parts of CMP434 and other associated code modifications that will impact the connections process, so flexible and modern systems will be key to success. Seamless systems will also enable NGED to greatly improve the service we provide to large scale generation customers impacted by Connections Reform, fully digitising and automating the customer journey via the customer portal. Updated functionality for data capture and storage will enable NGED to surface more information to customers increasing transparency and keeping them informed along the end-to-end process.

9.4 Options Appraisal and Selection

Our approach to optioneering has been to consider all viable solutions to meet our need and then proceed with further analysis of the shortlisted options identified. We have sought to consider the following array of options for all projects in this re-opener:

- A do-nothing approach: This means there is no specific intervention in the foreseeable future (including ED3) and business continues as usual
- Delay to ED3: In this case no further investment would be made until ED3
- Adapt / Upgrade Existing Systems: This would involve working with existing systems to meet the need, with some further investment as needed
- Build a New System In-house: A new system would be developed by the internal NGED team to meet the need
- Accelerated Rollout / Enhanced Functionality: The option either delivers the work sooner than is needed or it provide functionality that is greater than the basic need identified
- External purchase: Whereby a suitable system is procured from an external third-party.

The governance of our decision-making processes is outlined in Appendix B.

9.4.1. Optioneering

This section presents a comprehensive appraisal of the long-list of strategic options considered for Connections Reform. It summarises each option's intent, expected outcomes, principal benefits and material risks, and provides a high-level assessment against the programme's critical success factors.

Optioneering Table: Connections Reform

Criteria	Option 1: Do Nothing	Option 2: Delay to ED3	Option 3: Adapt/ Upgrade Existing Systems	Option 4a: Build New System In-House	Option 4b: Accelerated Roll Out/ Enhanced Functionality	Option 4c: Phased Hybrid (Low CapEx)	Option 5: Purchase SaaS system
Regulatory Compliance	✗	✗	✗	✓	✓	✓	✓
Strategic & Customer Needs	✗	✗	✗	✓	✓	✓	✗
Future-Proofing Capability	✗	✗	✗	✓	✓	✗	✗
Cost Efficiency	✗	✗	✗	✓	✗	✓	✗
Technical Feasibility	✓	✓	✗	✓	✓	✓	✗
Delivery timeliness	✗	✗	✗	✓	✗	✓	✗
Shortlisted Option	No	No	No	Yes	No	Yes	No
Preferred Option	No	No	No	Yes	No	No	No

Options Considered:

- **Option 1: Do Nothing**

This option is to maintain the current process, which will involve the continued use of tactical solutions and manual workarounds to underpin the enduring process.

Pros: No immediate capital expenditure

Cons: Risks the ineffective implementation of the reformed process on an ensuring basis, compounds the potential data issues associated with tactical solutions and manual workarounds, continued additional expense to maintain an inefficient process.

Progress to Shortlisted options: No. Not viable given regulatory, commercial and operational risk.

- **Option 2: Delay to ED3**

This option is to defer significant Connections Reform and digital platform investment until the ED3 regulatory period while implementing only limited incremental fixes in the interim.

Pros: Preserves near-term cashflow and allows time to observe market and vendor developments.

Cons: Compresses delivery risk into a shorter window; increases probability of non-compliance at ED3 go-live; risks further customer migration, raises cumulative cost and reputational exposure.
Progress to Shortlisted options: No. Unacceptable regulatory/execution risk for this option.

- **Option 3: Adapt / Upgrade Existing Systems**

This option is to retrofit and extend NGED's existing platforms to add improved user interfaces, evidence capture and reporting functionality, rather than building a new end-to-end digital platform. In practice this would involve:

- Updating of legacy systems, which is currently the backbone of our connections process
- Updating, creating and managing other offline tools and tactical solutions put in place to date to support Connections Reform

Pros: Leverages existing investments; lower initial capex; may deliver incremental improvements.

Cons: Constrained by legacy architecture (limited APIs, brittle integrations); long refactor cycles and hidden remediation costs; limited future-proofing/scalability for ED3.

Progress to Shortlisted options: No. Does not future-proof for expected ED3 regulatory developments.

- **Option 4a: Build New System In-House (Preferred)**

This option is to design, develop and implement modern, modular, API-first connections platform using NGED's internal product, contracted scrum and DevOps capability. This platform will bring together the relevant parts of the existing Connections process, as well as delivering the additional requirements of Connections Reform (set out in section 9.3), in one single and seamless platform. Highlights will include; delivering a customer evidence portal, an internal staff interface, workflow orchestration and automation, enhanced cost capture capability and ED3-aligned reporting.

Pros: Full control of data model and audit trail; strong alignment to **regulatory** compliance; tailored customer experience; high future-proofing and lower long-term Total Cost of Ownership; ability to embed NGED domain knowledge. In practice, this involves the build/utilisation of a connections Web, Platform and [redacted] devices.

Cons: Requires more significant upfront capex, disciplined delivery governance and sustained resource commitment; full scale requires phased delivery.

Progress to detailed assessment: Yes. Preferred strategic route.

- **Option 4b: Accelerated Roll-Out / Enhanced Functionality**

This option is to execute the in-house build, described in option 4a, with an accelerated delivery profile that prioritises a tightly scoped MVP and rapid subsequent sprints to achieve ED3 readiness early.

Pros: Fastest route to compliance and early commercial benefit; reduces regulatory and competitive risk by delivering visible improvements more quickly.

Cons: Higher short-term capex/execution intensity; requires strong governance to manage risks.

Progress to Shortlisted options: No. Not shortlisted because its higher short-term costs and delivery risk outweigh the limited incremental value of achieving ED3 readiness earlier.

- **Option 4c: Phased Hybrid Delivery (Low Capex Bridge)**

This option is to deploy a smaller digital core platform offering rapidly, but while continuing to rely on tactical solutions put in place to date which include significant manual processes and controlled workarounds for complex flows, minimising initial IT capex and delivering immediate, but more limited customer improvements.

Pros: Low upfront capex; quick to implement; gives short-term relief for some customer pain points

Cons: Fragile audit trails for ED3 without heavy manual QA; higher ongoing Opex; and migration cost to the final platform; only partial customer experience improvement.

Progress to Shortlisted options: Yes, but with strict conditions. Assessed only as a time-boxed bridge to ED3 but provides limited future-proofing and does not meet full regulatory requirements.

- **Option 5: Purchase SaaS System**

This option is to procure a third-party SaaS solution and integrate it with NGED systems to provide digital customer connections portals, workflow automation and reporting to underpin the reformed process.

Progress to Shortlisted options: No. Not cost efficient, risky and potential long delivery time.

9.4.2. Shortlisted options

Based on the above optioneering considerations, we shortlisted two delivery routes for a new connections platform:

- **Option 4a**, a full in-house build that delivers a modern, fully integrated and ED3 aligned system; and
- **Option 4c**, a low capex hybrid bridge that provides short-term relief by combining a small digital core with manual processes.

Both options support progress during RIIO-ED2, but only Option 4a offers a strategic, enduring solution aligned to regulatory and long-term operational needs. See the table below for the comparison of option 4a and 4c.

Criteria	Option 4a: Build New System In-House	Option 4c: Phased Hybrid (Low CapEx)
Description	Build a modern, modular, API-first platform leveraging NGED's internal product, contracted scrum, and DevOps capability.	Deploy a small digital core quickly, supported by manual processes and controlled workarounds for complex flows.
Regulatory Compliance	Strong alignment; full audit trail and transparent reporting built into the architecture.	Fragile audit trail; heavy manual QA required to meet anticipated ED3 expectations; not sustainable long-term.
Customer Experience (CX)	Fully tailored, consistent customer journey with scalable improvements.	Only partial CX improvements; core processes still manual or workaround-driven.
Architecture / Future-Proofing	High future-proofing; scalable modular design; enables innovation and reuse.	Creates technical debt; future migration required to reach full platform capability.
Cost Profile	Higher upfront capex; lower long term Total Cost of Ownership (TCO).	Low upfront capex; higher ongoing opex and future migration costs for longer-term solution.
Delivery timeliness	Delivered in phased releases; achieves a stable, strategic platform within RIIO-ED2.	Rapid implementation but limited functionality; intended only as a short-term bridge.
Operational Efficiency	Automated workflow, cost capture, and data management reduce long-term workload.	Manual processes increase operational burden and risk of errors.
Risk Profile	Managed through structured governance and internal capability; stable long-term solution.	Higher operational and compliance risk due to manual steps and incomplete functionality.
Longevity	Long-term strategic platform, aligned to NGED's technology roadmap.	Time-boxed interim solution; must be replaced by a full system later.
Progression	Progressed - Preferred strategic route.	Not Progressed as assessed as a temporary bridge only.

9.4.3. Cost-Benefit analysis (CBA)

[redacted]

[redacted]

Options considered	Decision	NPVs based on payback periods				
		10 years	20 years	30 years	45 years	Whole-Life NPV
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

[redacted]

9.4.4. Preferred option

Option 4a, establishes a single, NGED owned digital platform that unifies the full connections lifecycle, bringing together the existing process along with the additional requirements under Reform with features including continuous asset-health telemetry, improving decision quality and ED3 readiness. [redacted]

To ensure full control of the data model, audit trail and regulatory alignment, the core telemetry ingestion services, data normalisation pipelines, machine-learning integration points, rule engines and ED3 evidence generation logic are developed and governed by NGED's internal engineering capability. External suppliers act as delivery accelerators within NGED led scrum teams, contributing specialist skills around [redacted]Internet of Things (IoT), [redacted] and digital interface development while NGED retains responsibility for backlog prioritisation, architectural decisions, integration standards, and production operations. This ensures the platform remains a strategic NGED asset while benefiting from additional capacity and niche expertise.

All external contributions are made within NGED's engineering frameworks, with code review, DevOps pipelines and environment management owned by internal teams to ensure maintainability, security and long-term resilience. This hybrid delivery approach enables rapid progress within RIIO-ED2 while safeguarding quality, consistency and future-proofing ahead of ED3.

The solution integrates three core systems into one coherent ecosystem:

- Connections Web: This is the customer-facing and staff-facing front-end interface used to access, track and manage connection applications and projects throughout the pre-commissioning period. It provides a decoupled, user-friendly digital experience that sits above the core connection management systems. This significantly improves the existing fragmented process through better and more aligned data capture and automated workflows. Connections Web supports applications, evidence submissions, milestone

tracking, payments, contract management, project status tracking, two-way communication and query management, giving customers greater visibility of the whole process with clear guidance, digitised submissions and surfaced key data.

- The Connections Platform: This is the operational and data layer that underpins all connection workflows across the reformed process. It manages the processing, storage, orchestration and governance of connection applications, customer information and network data. As the back-end interface, it standardises and coordinates all stages of the journey, ensuring consistent execution of the reformed methodology.

Alignment to SOOLO (Interaction with Digital Twin)

The Connections Reform programme is designed to integrate cleanly with SOOLO's digital twin by using a shared data pipeline built within the [redacted] environment. [redacted] This enables the connections workflow to provide real-time updates on asset behaviour, network loading and local conditions, which strengthens the accuracy and forecasting capability of the digital twin.

A key benefit is that [redacted] is a mature, well-established edge processing platform that keeps all data securely inside the [redacted] security perimeter. This reduces cybersecurity risk, ensures consistent governance, and avoids unnecessary data movement across external networks. Because all processing and device communications remain inside [redacted], NGED also benefits from reduced ingress and egress costs, which becomes increasingly important as monitoring volumes increase across ED3.

By adopting this cloud-native and edge-enabled architecture, NGED establishes a future-proof foundation where telemetry, asset visibility and decision-support tools are connected end-to-end. The result is a stronger digital twin, improved predictive capability, improved scenario planning, risk reduction, improved AI/ML potential and more accurate, timely, consistent and transparent connection decisions.

See section 9.7 for further detail and breakdown of the costs to be incurred on the Connections Reform digital programme relating to the preferred option.

9.5 Output and Scope of Work

The connection reform digital programme. will standardise end-to-end processes to eliminate variability and rework, and fully digitise customer journeys so that contracting, payments, evidence submission and status tracking are seamless and transparent. To achieve this, the programme will embed robust cost capture processes and pricing governance, and establish ED3 readiness with clear performance metrics, accountable owners and regular reporting.

System	Description	How it operates	What the solution delivers/ outputs
Connections Web (Customer & Evidence Portal)	Single digital front end for applications, evidence submissions, milestone tracking, payments, contract management, project status tracking, two-way communication, query management.	Structures/validates inputs; captures provenance (who/what/when/where); integrates via APIs to internal design/delivery systems and the evidence store; exposes SLAs/status.	• Structured, validated submissions (apps & evidence) • Provenance rich uploads for audit • Automated status & SLA visibility • Gate 2 evidence aligned to ED3 • Automated milestone and contract management.
Connections Platform	Back end central orchestration layer that processes connection applications, evidence, design data and commercial information, enabling automated workflows and end-to-end integration across the connections lifecycle.	Handles validated inputs from the Connections Web; applies business rules and workflow logic; synchronises data via APIs with design tools, pricing modules, work management systems and the Evidence Store; drives automated milestone progression and regulatory reporting.	• Automated case creation and workflow routing • Structured data flows to design, delivery, commercial and reporting systems • Centralised evidence storage with provenance, versioning and audit trails• Consistent, high-quality inputs for Digital Twin feasibility and optioneering • Automated milestone, SLA and dependency tracking• Reduced manual handling, fewer errors and faster end-to-end processing
[redacted]	[redacted]	[redacted]	[redacted]

NGED's accelerated Connections Reform programme replaces spreadsheet-based handoffs with a fully integrated, end-to-end platform that enables customers to submit applications, evidence and payments directly into NGED systems. This reduces manual re-entry, shortens lead times, lowers error rates and increases transparency. Earlier delivery also allows quicker iteration through phased releases, enabling faster realisation of benefits such as improved customer satisfaction, fewer complaints and greater operational efficiency.

Together, the systems within the programme create a unified, resilient and evidence-driven connections platform. Digitised applications, edge and satellite-backhauled telemetry and standardised feasibility assessments deliver faster, more consistent and more transparent outcomes while reducing delays and rework. Clearer requirements, structured evidence pathways and predictable decision times also improve the experience for Independent Connections Providers (ICPs) and Independent Distribution Network Operators (IDNOs), supporting a fairer and more efficient connections ecosystem.

[redacted] standardises and secures all network telemetry, ensuring feasibility assessments use transparent and repeatable inputs aligned with CMP434. It also fulfils CMP435 by guaranteeing consistent data quality for existing queue customers transitioning into the reformed process. Offline-first operation and tamper-evident, timestamped data provide high-integrity asset evidence to the Digital Twin, ensuring all applicants including ICPs and IDNOs are assessed consistently and fairly.

The digital architecture brings together Connections Web, Connection Platform and [redacted] into a single platform for consistent, transparent and evidence-backed decision-making. Connections Web manages all customer interactions and feeds structured data directly into NGED systems. [redacted]provides secure real-time asset telemetry, and the Digital Twin automates feasibility checks, produces reinforcement scenarios and generates explainable, auditable decisions. Automated methodologies and NESO data exchange ensure the reforms' obligations are met while providing faster and more predictable service.

The platform also creates a scalable foundation for future capabilities such as forecasting, ML-driven asset health insights and automated evidence validation. These enhancements will ensure NGED is ready for ED3 and future price controls while continuing to improve digital capability in RIIO-ED2 in line with system needs and customer expectations.

9.6 Project delivery and monitoring plan

10 Delivery Programme

The proposed delivery model for Connections Reform will be an agile development approach (see chapter 4 for an overview). There will be [redacted] for Connections Reform due to the accelerated pace of development and delivery required to achieve the programme milestones.

There will be [redacted]: Connections Web, Connections Platform [redacted]

The scrum teams will each average nine people per platform as based on agile best practice. This is considered to be optimal size to maximise development productivity and efficient pace of delivery (ensuring sufficient critical scale to effectively deliver while minimising coordination activities). These[redacted] for Connections Reform (and the [redacted] for SOOLO) will be overseen by lead roles for each of the scrum disciplines (Product Owner, Scrum Master, Systems Engineer, QA Engineer, Software Engineer and UI Engineer). In addition, a Programme Manager will ensure effective coordination (such as facilitating steering groups) and integration of the specific platforms, both within Connections Reform and with the parallel SOOLO programme, along with programme governance and reporting.

A Product Manager role is also required to support delivery – this role will be responsible for defining the vision, strategy and roadmap for the connections reform digital products, ensuring that they deliver value for users and the business. They will work closely with stakeholders, engineering, user experience designer (UX) and delivery teams to prioritise outcomes, translate business needs into clear product requirements, and manage trade-offs across scope, cost and timelines. Their role is to maximise product value by aligning customer needs, business objectives and technical delivery.

[redacted]

Each scrum team will operate in a series of delivery sprints for their specific platform, starting with the minimum viable product (MVP) core use cases, prioritising the key scope requirements first. This approach will enable the core platform and system functionalities to go live as rapidly as possible. The key milestone dates over 2027 for each platform are shown in the diagram below.
[redacted] Through agile delivery there will be incremental delivery of key features that will be useable throughout the delivery period.

[redacted]

[redacted] **Platform Delivery:**
[redacted] provides real-time field data ingestion and edge processing capability, underpinning data-driven, transparent connections assessments. Delivery is split across three parallel workstreams to prevent bottlenecks:

- [redacted]: Deploys and configures the core edge infrastructure, connects to field devices, establishes secure ingestion pipelines and enables edge compute.
- [redacted] Integrates [redacted] into NGED's digital architecture, building pipelines into the Connected Data Platform and [redacted], ensuring scalability and governance.
- Interpreter Scrum Team: Transforms raw and legacy device data into standardised, trusted, regulatory-grade information, including translation layers for proprietary and historic field protocols.

Together, these teams ensure field data becomes usable, interpreted and model-ready for downstream systems without requiring replacement of legacy assets. [redacted]

The [redacted]data will be ingested and interpreted by the Digital Twin platform (within Project SOOLO). The Digital Twin acts as the modelling and decision engine for Connections Reform, to

simulate capacity, identify constraints, and automate evidence-based connection decisions. This replaces manual engineering assessments with consistent, auditable, regulator-aligned analytics.

Connections Backend Platform Teams
[redacted] are building the core connections management platform using a microservices architecture. This platform manages applications, workflows, regulatory processes, evidence pipelines and system integrations required for end-to-end delivery.

Connections Web Teams:
[redacted] are delivering the user interfaces:

- Customer-facing portal providing a simplified, transparent digital journey for applicants.
- Internal staff interface offering richer workflow tools, data views and processing features.

Separating these interfaces accelerates delivery and ensures each user group receives a tailored experience aligned with licence expectations for improved transparency and efficiency.

[redacted]

10.1.1. Risk Management

The management of risks forms a key element of the project's delivery strategy. A robust risk management process has been adopted to set out a framework for identifying and managing reasonably foreseeable risks in a timely, proactive, effective, and appropriate manner.
We have summarised the top seven risks attributed realising the delivery and outcomes of the Connections Reform Digital programme in the table below. Some of these relate to the internal delivery of the programme, whereas others are associated with the realisation of the benefits or external factors that may affect the delivery the programme or the specific definition of the outputs required.

Risk	Description	Mitigation
Risk 1	Late decision from Ofgem will impact the delivery timelines and impacts and contingency	The programme will use modular delivery and early regulatory engagement to prioritise completion of the MVP scope and enable rapid adjustment following regulatory decisions.

Risk 2	The accelerated of delivery of the programme of 18 months will require significant levels of resourcing to meet the key platform milestones.	[redacted] Build activities can commence as engineers are onboarded and do not require all teams to be fully staffed before delivery begins. [redacted]
Risk 3	There is a risk that operational teams supporting the delivery may be redeployed to higher-priority operational activities (e.g. severe weather response), which could delay alignment of the operating model and associated delivery milestones, for example training on the use of new processes, interfaces etc.	Operating model risks will be managed by phasing adoption and using flexible digital training and delivering iteratively to allow teams to consume change as it is delivered rather than one large training programme so teams can transition even when operational pressures, such as severe weather events, divert resources.
Risk 4	Measurable regulatory or operational benefits may not be fully realised within RIIO-ED2 timescales	We will mitigate delayed benefit realisation by delivering early high-value capabilities and tracking interim performance metrics that demonstrate measurable progress within RIIO-ED2.
Risk 5	High-priority operational activities (e.g. severe weather response) require redeployment of delivery team resources, potentially delaying operating model alignment and delivery milestones.	Separate operational response teams are in place to manage business-as-usual and emergency activities, enabling the delivery teams to remain focused on programme delivery.
Risk 6	Regulatory decisions may result in scope changes that affect delivery timelines.	The agile delivery model allows flexible reprioritisation and incremental delivery to adapt to changes in regulatory scope.
Risk 7	Partner delivery capacity constraints could delay [redacted] implementation.	[redacted]

10.2 Cost information

10.2.1. Breakdown and justification of costs

The full cost breakdown is provided in 'Annex 1 - NGED RIIO-ED2 Digitalisation Reopener - Project Costing Template Jan26'.

The costs have been allocated across the four licence areas of NGED according to the following percentages: WMID 30%, EMID 30%, SWALES 15%, SWEST 25%. This is consistent with other regulatory reporting and submissions where costs are incurred on a shared basis. The overall requirements and impact are consistent across the NGED licence areas.

The breakdown by type of costs is summarised in the table below. These costs comprise contractor resource, professional services for platform architecture, and licences/ongoing operational costs needed to deliver and run the enduring platforms.

Summary	23/24 (m)	24/25 (m)	25/26 (m)	26/27 (m)	27/28 (m)	Total (m)
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

10.2.2. Efficiency of costs

NGED's procurement strategy provides a general framework to ensure the cost of delivery of proposed solutions is effective and then delivered effectively. For an outline of this strategy please see Appendix A.

[redacted]

Appendix A – Procurement Strategy

Company Standards

All sourcing, including procurement and tendering, is carried out in accordance with National Grid Procurement processes, which specifies company standards relating to the purchase of goods and services, including Responsibilities and Roles, Procedural Requirements, Documentation, Purchasing Processes, and Supplier Maintenance.

Procurement Team

The NGED Digitalisation Team is supported by the National Grid Procurement team when purchasing goods and services. In accordance with National Grid's Purchasing Goods and Services Policy any purchases expected to exceed £25,000 are controlled by the Procurement Team.

The Procurement Team works within the clear guidelines of the Utility Contract Regulations 2016 (UCR 2016) and the Procurement Act 2023 (PA23) to provide support to the business to deliver the most economically advantageous contracts for NGED. Regulatory compliance within the parameters of the UCR 2016 (PA23) is ensured through use of a competitive tendering process which is designed to provide transparency and fairness to suppliers in the cost-efficient purchase of goods and services on the vast majority of our commercially provisioned expenditure.

The Procurement Team is accredited to the Chartered Institute of Procurement and Supply (CIPS) and has clearly defined processes to assist in meeting Company Objectives. A failure of the Company to adhere to these processes exposes it to legal and financial risk and potential damage to our reputation and corporate integrity.

Suppliers and Competition

NGED believes in giving every potential supplier a fair chance to contribute to its projects. This is why its process is flexible and can be adapted based on the specific requirements of each contract category or type of framework. NGED prioritises getting the best value for investment, understanding that 'value' encompasses more than just cost. A balanced scorecard criteria is used to score the suppliers, which includes technical fit/compliance to scope, service levels and delivery, sustainability, financial and commercial considerations. This approach ensures NGED considers all aspects of the supplier's offer before making a purchasing decision.

NGED uses [redacted], to search for potential Suppliers/Contractors that are registered to supply the goods, services or works. An award of Contract without a call for competition can only be made in the circumstances defined in regulation 50 of the UCR 2016 and PA23.

Technical Assessment

Prior to the costing stage, the Project Manager has evaluated the technical options available for these re-opener projects. Cost estimates have then been informed by external parties with experience of implementing the digitalisation investments, and who in most cases we have experience of working on existing similar contracts. Tender process will be carried out to obtain the most beneficial costs. Alternatively benchmarking and costs have also been informed by individual vendors and resellers.

The required equipment or services will be purchased from vendors with whom we have existing commercial relations and who are reputable suppliers. We hold multiple framework agreements with a wide variety of suppliers.

We have regular reviews and meetings with our supply chain to discuss the supply of equipment and services and to compare pricing across competitors. During these meetings we also discuss delivery timescales to coordinate product availability. Accordingly, the prices used in our costings

are market tested and validated for future supply at the scale forecast in this re-opener submission.

Consistency

The approach undertaken to sourcing and costing is consistent with the development of the original NGED RIIO-ED2 IT business plan.

Appendix B – Decision-making process

Our decision-making and optioneering process is led through NGED IT&D and Product governance, with clear roles and accountability. Product Managers work closely with senior stakeholders to shape requirements, define outcomes, and prioritise demand. They partner with NGED's engineering and delivery teams to size effort, assess technical options, and understand delivery constraints. As part of this, they consider dependencies across the IT&D portfolio, regulatory and security requirements, and vendor and commercial implications to ensure proposals are viable.

The Head of Agile Delivery provides input on delivery approach, team capacity, sequencing, and delivery risk, ensuring proposals are realistic and aligned to agreed ways of working. The Head of PMO provides portfolio and governance oversight, including funding alignment, milestone planning, dependency management, and reporting, to ensure proposals can be governed and delivered within portfolio constraints.

The CIDO reviews these proposals, challenges assumptions, and ultimately makes decisions on the preferred solution. This includes balancing strategic alignment, delivery risk, cost, capacity, and long-term architectural implications, as well as alignment to target architecture and cloud strategy.

This approach ensures decisions are evidence based, aligned to strategic priorities, and deliverable within agreed capacity and risk tolerances, while maintaining architectural integrity and operational stability.

Appendix C – Supporting Papers

The following documents are required as part of a Digitalisation Re-opener submission and are referenced here as supporting annexes:

Annex 1 - NGED RIIO-ED2 Digitalisation Re-opener - Project Costing Template Jan26 [not published]

Annex 2 – NGED SOOLO - Investment appraisal model Jan26 [not published]

Annex 3 – NGED Connections Reform - Investment appraisal model Jan26 [not published]

Annex 4 - NGED RIIO-ED2 Digitalisation Re-opener - Application Alignment Jan26

Annex 5 - NGED RIIO-ED2 Digitalisation Re-opener - Licence Condition Mapping Jan26

Glossary

Agile Delivery: A delivery approach that prioritises incremental development, frequent review, and adaptability.

AI (Artificial Intelligence): Software systems that process inputs to produce predictions, recommendations, or decisions influencing real or virtual environments, using automated data-driven or rule-based methods.

API (Application Programming Interface): A standardised interface that allows different software systems to communicate and exchange data automatically and securely.

BAU (Business as Usual): Ongoing operational activities that support day-to-day functions, distinct from change programmes.

BSC (Balancing and Settlement Code): The industry code governing electricity balancing and settlement arrangements in Great Britain.

CAPEX: Capital expenditure.

CBA (Cost-Benefit Analysis): A structured appraisal comparing costs and benefits of an investment option over time.

CGMES (Common Grid Model Exchange Specification): A standard for exchanging power system network models between organisations.

CIDO (Chief Information and Digital Officer): Senior executive responsible for information, technology and digital strategy.

CIM (Common Information Model): An international standard for representing electricity network assets, topology and operational data.

CMP (Code Modification Proposal): A formal proposal to change an industry code.

CMP434: The code modification introducing the reformed grid connections process for new applicants.

CMP435: The code modification applying the reformed readiness criteria to existing contracted projects.

CP2030 (Clean Power 2030): Government objective to achieve a largely decarbonised electricity system by 2030.

CR (Change Request): A formal request to amend MHHS programme milestones or scope, approved by Ofgem.

CR022: Change Request 022 (MHHS timetable rebasing).

CR055: Change Request 055 (MHHS timetable revision).

CSS (Central Switching Service): Industry service supporting customer switching arrangements.

DBP (Data Best Practice): Ofgem guidance setting out principles for the management and sharing of energy system data.

DCUSA: Distribution Connection and Use of System Agreement.

DESNZ: Department for Energy Security and Net Zero.

DIP: Data Integration Platform operated by Elexon under MHHS.

DSAP: Digitalisation Strategy and Action Plan mandated by Ofgem.

DSI: Data Sharing Infrastructure / Digital Spine for energy data.

DNO (Distribution Network Operator): A licensed company responsible for operating and maintaining electricity distribution networks.

DTN: Data Transfer Network.

DTC: Data Transfer Catalogue.

DUoS: Distribution Use of System.

EAC: Estimated Annual Consumption

Elexon: Body that manages the Balancing and Settlement Code and MHHS delivery.

FMAR: Flexibility Market Asset Registration.

GC0139: Grid Code modification relating to enhanced planning-data exchange to facilitate whole system planning

GIS: Geographic Information System.

ICP: Independent Connection Provider.

IDNO: Independent Distribution Network Operator.

INM: Integrated Network Model.

LAEP+: Local Area Energy Planning Plus.

IPA: Independent Programme Assurance.

LAEP: Local Area Energy Planning.

LDSO: Licensed Distribution System Operator.

LSS: Load Shaping Service.

MHHS: Market-wide Half-Hourly Settlement reform.

ML (Machine Learning): The use of computer systems that can learn and adapt without following explicit instructions, by using algorithms and statistical models to analyse and draw inferences from patterns in data.

MPAN: Meter Point Administration Number.

MVP: Minimum Viable Product.

NEOP: National Energy Outage Programme

NESO: National Energy System Operator.

NPV (Net Present Value): value of benefits minus costs over time.

OPEX: Operating expenditure.

PI: Programme Increment (SAFe/Agile).

Profile Class: Legacy classification estimating customer consumption patterns.

PSR: Priority Service Register.

QA: Quality Assurance.

RAID: Risks, Assumptions, Issues and Dependencies.

RBAC: Role-based Access Control.

RDP: Retail Data Processing.

REC: Retail Energy Code.

REMA: Review of Electricity Market Arrangements.

RIIO: Ofgem regulatory framework: Revenue = Incentives + Innovation + Outputs.

RPE: Real Price Effects.

SaaS: Software as a Service.

SAfE: Scaled Agile for Enterprise.

SCADA: Supervisory Control and Data Acquisition.

SCR: Significant Code Review.

SIT: Systems Integration Testing.

SLA: Service Level Agreement.

SLC: Standard Licence Condition.

SLC10A: Licence condition governing use and publication of smart meter consumption data.

SMG: Service Management Group.

SOOLO: Smart Optimisation Output Licence Obligation.

SpC: Special Licence Condition.

SVI: System Visualisation Interface.

TCO: Total Cost of Ownership

TIA: Transmission Impact Assessment.

TMO4+: Target Model Option 4 Plus connections reform package.

TOM: Target Operating Model.

TPR: Time Pattern Regime.

Totex: Total Expenditure (Capex plus Opex).

UMS: Unmetered Supplies.

UMSO: Unmetered Supplies Operator.

UX: User Experience.

WACC: Weighted Average Cost of Capital.

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