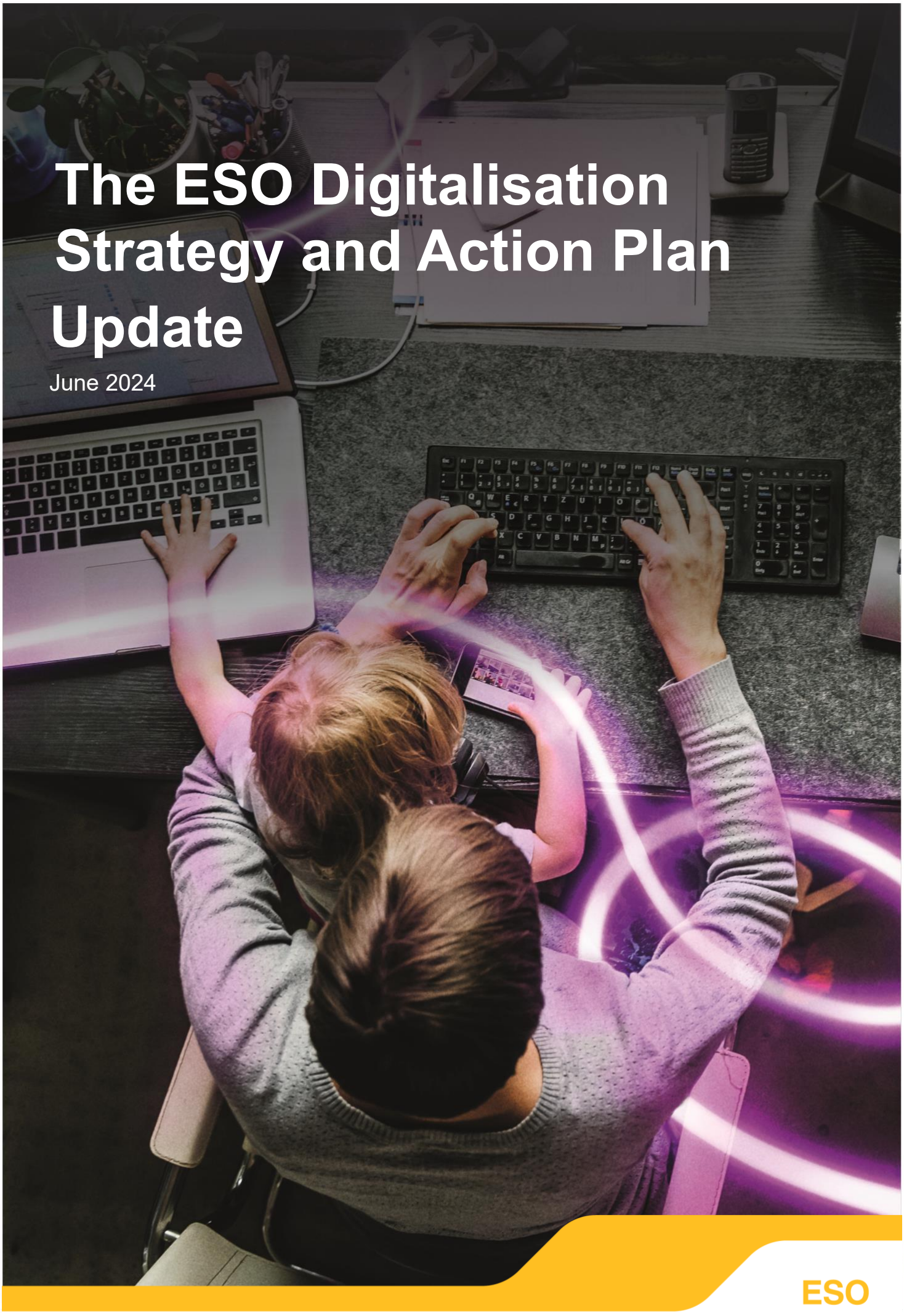

The ESO Digitalisation Strategy and Action Plan Update

June 2024

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Contents

Foreword

Our mission as the Electricity System Operator (ESO) is to drive the transformation to a fully decarbonised electricity system by 2035 which is reliable, affordable, and fair for all.

The new Energy Act 2023 will transform the UK's energy system by strengthening energy security and supporting the safe and sustainable delivery of net zero. Our evolution to the Future System Operator (FSO) now confirmed as the National Energy System Operator (NESO) in 2024 will position us at the heart of the energy transition, catalysing broader industry innovation and collaboration as our role expands beyond electricity. This, combined with the increased volume of data and information in the industry, the increasing pace of digital innovation around the world, the growing complexity of the energy ecosystem, and the mounting expectations from our customers, requires strategic reinvention from us.

As we continue to deliver our Business Plan (BP) 2 commitments, we have had an opportunity to reflect on our priorities and assess how we can maximise outcomes and value, whilst setting the foundation for pathways towards future growth. Our 2023 Digitalisation Strategy and Action Plan (DSAP) introduced new efforts to leverage emerging technology, harmonise data standards to drive interoperability, maximise the value of data, and facilitate innovation and collaboration across the whole energy system.

It sets a Digital Leader ambition for the NESO to utilise the power of data and innovation to drive collaborative digitalisation of the whole energy system. This ambition puts customers first in everything we do, ensuring we collaborate with them closely as we drive the industry's digitalisation journey, acknowledging that achieving the decarbonisation goals will require a collective effort from all.

In January 2024, we were excited to share news we have started to develop, in collaboration with the National Digital Twin Programme, an energy system data sharing infrastructure pilot. It is the first concrete step in accelerating the journey to digitalisation of the energy system in line with the finding of the digitalisation task force and digital spine study.

We look forward with enthusiasm to our FSO evolution to NESO and appreciate the profound responsibility to help digitalise and decarbonise a sustainable whole energy system, as we strive for the net zero 2050 target.

Shubhi Rajnish
ESO Chief Information Officer

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Submission Overview

In December 2023, we published our Digitalisation Strategy and Action Plan. Our strategy addressed the need for the ESO to meet future industry growth demands while continuing to deliver our Business Plan (BP2) commitments in preparation for our Future System Operator (FSO) transition to the National Energy System Operator (NESO). Considering this evolving journey, we developed our Digitalisation Strategy with a principles-based approach for Digital, Data, AI and Innovation that can continuously evolve to stay relevant and adapt to changing industry needs. To address this, we created specific actions associated with crosscutting efforts to deliver a set of accelerators which aim to close the gap between where we were and where we need to be in addition to those specifically targeted for BP2.

In this document, we are excited to share our updates and deliverables completed against our crosscutting actions as well as those identified during the BP2 period.

As we move forward and closer to becoming NESO, we are balancing the transition of inflight delivery and business services, establishing a set of new foundational services and technology platforms as well as taking on new roles and responsibilities within the energy sector.

The complexity and opportunities presented by the unique opportunity NESO has, re-enforces the need to continue to review and update our approaches while keeping to the core principles defined in the Digitalisation Strategy.

Our Digitalisation Strategy

Our role in industry is evolving and our approach to digitalisation needed to evolve with it.

To encapsulate our ESO responsibilities and advisory position, we created a new Digitalisation Strategy vision:

Utilising the power of data and innovation, we will become a **Digital Leader** and drive collaborative digitalisation of the whole energy system.

Through our Digitalisation Strategy, we will look to expand the bounds of what is possible across four themes:

1. We will facilitate industry technological expertise by staying abreast of emerging technologies, industry trends, and sharing digital best practices.

2. We will maximise the value of data by leveraging it to inform decisions and enhance operational efficiencies.

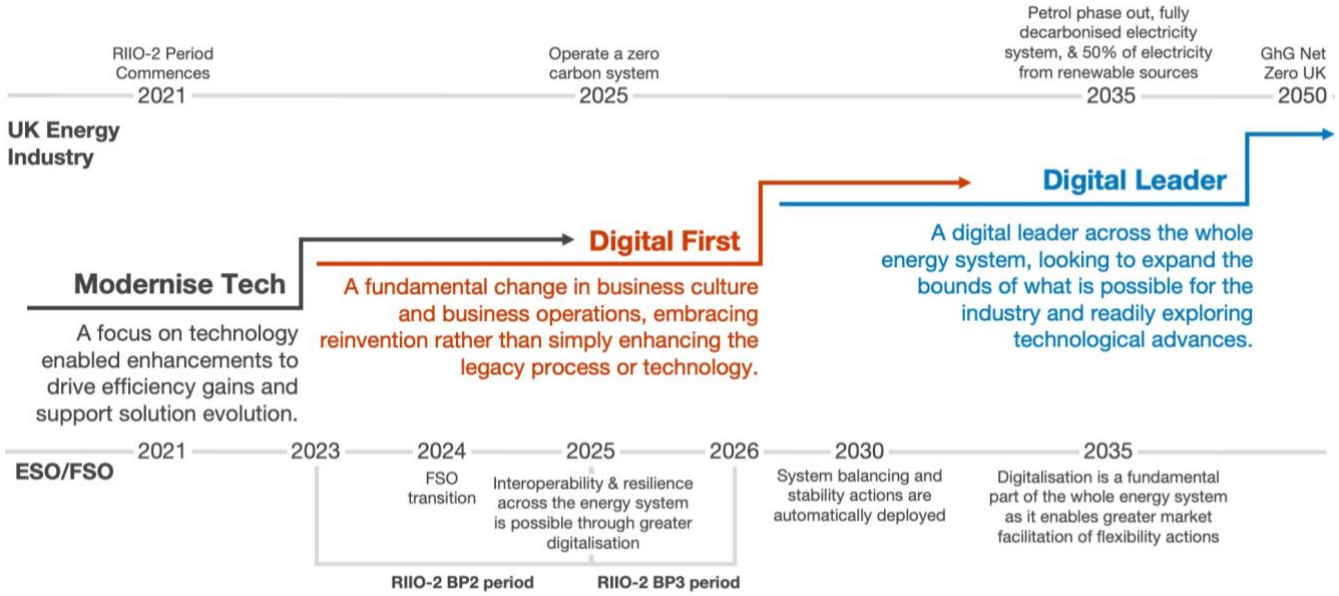
3. We will help to set the industry's digital direction through collaborating on the development of data standards and accessible, reliable, and explainable data.

4. We will explore innovation opportunities by collaborating and partnering with all our existing and emerging partners.

Digital Leader:
Embeds digital in every aspect of the business and operates with continuous digital reinvention, facilitating digital collaboration within and beyond the industry.

Digital First:
Integrates digital into every aspect of the business, thinks digital beyond the ESO and for the industry, thinks digital beyond existing technology.

We have evolved from modernising technology elements into the next phase of our Digital Leader journey – transforming our people, processes, data, and technology as **Digital First**. The steps to achieve Digital First have already begun, but consistency will be essential to further integrate digital into every aspect of our business. The timeline below gives an indication of our expected digitalisation transitions.



Given the evolving nature of our ESO scope and ongoing market developments, we needed a Digitalisation Strategy that is flexible and adaptable. We have therefore developed a set of Digitalisation Strategy Principles to guide our investment and prioritisation for technology decisions. These Principles start with a Digital Culture at their centre, which is surrounded by Accelerators that facilitate how we deliver our strategy and Enablers that support our strategy and make its delivery possible.

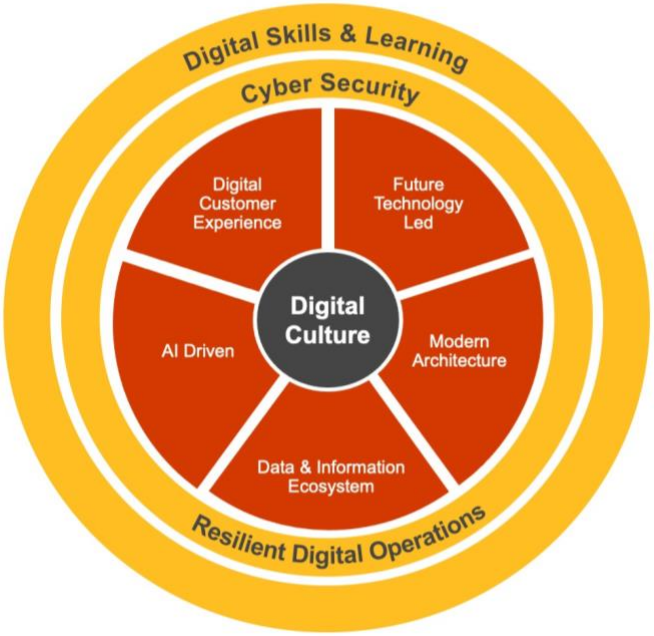
In developing these Principles, we engaged with a wide variety of customers to understand their needs and the value the ESO and NESO need to provide. We will remain regularly engaged with our customers going forward, making these living principles that can be continuously iterated to best address industry needs and to ensure we unlock innovation by enabling customer digital journeys. This will ensure they remain relevant, ambitious, aligned, and value-driven in this constantly evolving digital world.

In response to Ofgem's seven Digitalisation Strategy and Action Plan Guidance Principles, the Energy Digitalisation Taskforce (EDiT) recommendations, and the Government's Digital Services (GDS) standards, we developed a series of strategic pillars that aligned to the core delivery roles that have been used since 2019. A detailed analysis of these pillars and our ESO endeavours concluded that their broadness was outdated and needed to be refined to more accurately reflect our changing role in the energy sector.

The Strategic Centre: Digital Culture is at the core of our Digital Leader ambition. To effectively operationalise our strategy, we need to align our culture on reinvention through digitalisation and digital and data tools, rather than digitisation.

The Accelerators: Branching off the strategic centre are our Accelerators which facilitate how we deliver the strategy.

The Enablers: Surrounding our Accelerators, these elements must be considered in all decisions regarding digital, data, and technology processes.



All Principles work together to create a Digital First ESO, bringing improvements and efficiency to digital interactions for the industry and for internal customers. These components aim to increase automation and digital assistance so that our employees can focus on high value, complex, and strategic tasks. They also aim to increase industry transparency and availability of data at a crucial time of transition.

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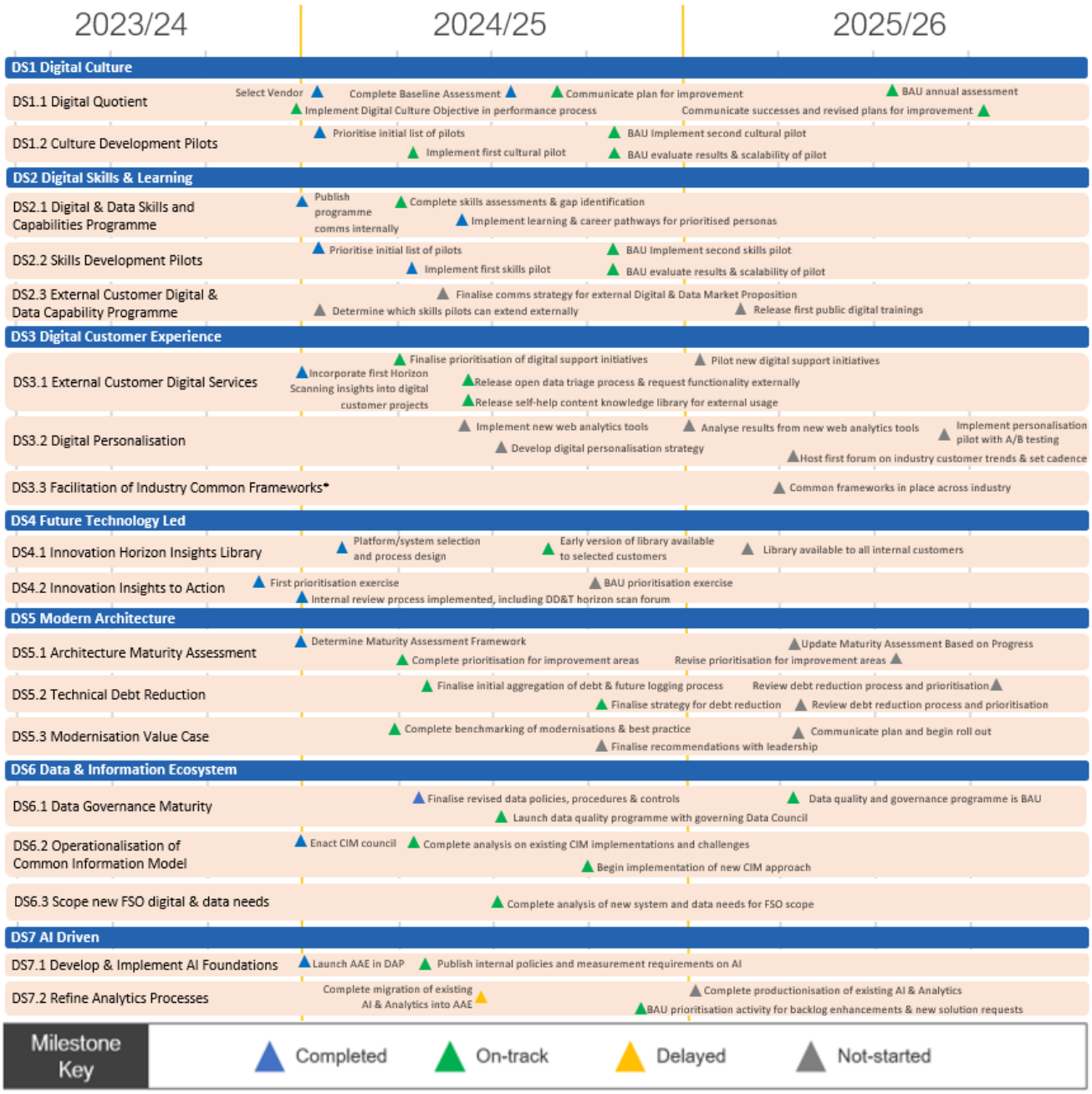
Digitalisation Action Plan

Digitalisation Strategy Crosscutting Efforts



Digital Culture Crosscutting Efforts

In addition to the formal programmes identified below, many informal activities are required to shift to our Digital Culture. As we grow into our NESO responsibilities, we will ensure our leaders are displaying Digital Culture behaviours and perpetuating the messages from our Digitalisation Strategy. Communications will revolve around having the digital tools and safeguards in place to "fail safe" without impacting the live system to ensure innovations and emerging technologies are welcomed.

Digital Culture Efforts	Status	Actions
DS1.1 Digital Quotient (DQ) ***Deliverable Description:*** *Implementing a measurement and assessment tool that quantifies the ESO's digital readiness and capabilities.* ***Deliverable Value Add:*** *Provide clarity on action areas in organisational digital capabilities and inform strategic decisions on digital transformation.*	Milestone 1: On Track Milestone 2: Complete Milestone 3: Complete Milestone 4: On Track Milestone 5: On Track Milestone 6: On Track	• Milestone 1: Implement Digital Culture objectives in performance process - Work to complete this action is in progress and baseline assessment concluded during Q1 24/25 can be used as a measure to improve against. On track against re-baselined target date Q1 25/26. • Milestone 2: Select vendor - Highly experienced vendor with digital experience and experience in running digital maturity assessments was selected. • Milestone 3: Complete baseline assessment - Baseline assessment completed May 24 ahead of schedule and shared with DD&T LT. • Milestone 4: Communicate plan for improvement - Baseline assessment outputs are being reviewed and communication plan formulated. • Milestone 5: BAU annual assessment - On track for a regular DQ assessment. • Milestone 6: Communicate successes and revised plans for improvement - Improvement initiatives will be communicated on an ongoing basis through ESO communication channels.
DS1.2 Culture Development Pilots ***Deliverable Description:*** *Exploring and testing new practices that foster innovation, improve adaptability to digital and data, and mature the Digital Culture within the organisation.* ***Deliverable Value Add:*** *Enable digital innovation ideation and increase the pace of adoption of new digital and data tools to realise value quicker.*	Milestone 1: Complete Milestone 2: On Track Milestone 3: On Track Milestone 4:On Track	• Milestone 1: Prioritise initial list of pilots - Champions network established for priority professions and is key to facilitating distribution of key messages to organisation. • Milestone 2: Implement first cultural pilot - Champions network established and plans underway for Tech Days and Hackathons. • Milestone 3: BAU evaluate results & scalability of pilot. • Milestone 4: BAU Implement second cultural pilot.

Digital Skills and Learning Crosscutting Efforts

With the increasing importance of data in decision-making, it is critical that internal and external customers can understand, analyse, and use digital tools and data effectively. Our focus will be to increase the digital and data capabilities of our organisation to a foundational level across the board, while also further developing new capabilities that are needed to harness emerging technologies in our business. Additionally, we plan to support the digital and data enablement of our external customers to ensure they can make use of the tools the ESO is providing to the public.

Digital Skills and Learning Efforts	Status	Actions
DS2.1 Digital and Data Skills and Capabilities Programme ***Deliverable Description**: Establishing basic capability personas and implementing learning initiatives to develop the skills necessary to navigate and leverage digital and data; this initiative is aligned with the ongoing enterprise-wide programme.* ***Deliverable Value Add**: Structure and align organisational efforts on digital and data recruitment, development, and retention efforts to ensure the correct skills and capabilities are embedded throughout the business in to harness digital tools and data to improve innovation, efficiency, and decision-making.*	Milestone 1: Complete Milestone 2: On Track Milestone 3: Complete	• Milestone 1: Publish programme communications internally - A blended learning model has been implemented. Core and Power skills have been established and learning paths made available and communicated to prepare for Day 1. • Milestone 2: Complete skills assessment & gap identification – Re-baselined to Q3 24/25. • Milestone 3: Implement learning & career pathways for prioritised personas - Skills matrices and learning paths agreed for priority professions Product & Design and Data & Analysis.
DS2.2 Skills Development Pilots ***Deliverable Description:** Exploring and testing new practices that reinforce the development of new skills needed for the future of the business.* ***Deliverable Value Add:** Further digital capabilities and adaptability through a variety of approaches that cater to all internal customer personas to progress the organisation's technological abilities.*	Milestone 1: Complete Milestone 2: Complete Milestone 3: On Track Milestone 4: On Track	• Milestone 1: Prioritise initial list of pilots - Professions have been identified and agreed and learner journeys are completed for priority profession Product & Design. • Milestone 2: Implement first skills pilots - Online content has been launched for prioritised profession Product & Design. • Milestone 3: BAU evaluate results & scalability of pilot. • Milestone 4: BAU implement second skills pilot.
DS2.3 External Customer Digital and Data Capability Programme ***Deliverable Description**: Developing materials that enable greater public usage of open data and our services and keep them informed of digital developments.* ***Deliverable Value Add**: Enable innovation and collaboration across and beyond the industry by distributing access to data and valuable expertise.*	Milestone 1: Not Started Milestone 2: Not Started Milestone 3: Not Started	• Milestone 1: Determine which skills pilots can extend externally - Deprioritised, new baseline to be confirmed. • Milestone 2: Finalise communications strategy for external Digital & Data Market Proposition - Deprioritised, new baseline to be confirmed. • Milestone 3: Release first public digital trainings.

Resilient Digital Operations Crosscutting Efforts

Please note that due to the sensitive nature of our operational information and the need to safeguard against possible security threats, additional information has been excluded from this DSAP.

Cyber Security activities, deliverables, and investments

Please note that due to the sensitive nature of our security information and the need to safeguard against possible security threats, additional information has been excluded from this DSAP.

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Digital Customer Experience Crosscutting Efforts

The formal programmes below are further enhanced by a change in the ways we work with our customers. In D19.1.1 Data and Analytics Operating Model, we have developed a new way of working with our internal customers on digital and data efforts that will increase the pace of change within our organisation. Additionally, our new Customer Service Operating Model will deepen our relationships with external customers to co-create solutions that meet their needs. Our workforce will be well- trained in customer personas and will design solutions with these personas front of mind.

Digital Customer Experience Efforts	Status	Actions
DS3.1 Enhance Customer Digital Services ***Deliverable Description**: Implementing advanced support tools and services to offer a better user experience for customers.* ***Deliverable Value Add**: Automation and self-service options designed based on customer needs reduces time to value and increases customer satisfaction.*	Milestone 1: Complete Milestone 2: On Track Milestone 3: On Track Milestone 4: On Track Milestone 5: Not Started	• Milestone 1: Incorporate first Horizon Scanning insights into digital customer projects - Delivered, we are now aligning Innovation Horizon Scanning into all delivery projects and vice versa Delivery interact with new innovation projects. • Milestone 2: Finalise prioritisation of digital support initiatives - This is part of the new Customer Charter which will inform all of the following milestones across DS3.1, 2 and 3. • Milestone 3: Release open data triage process & request functionality externally. • Milestone 4: Release self-help content knowledge library for external usage. • Milestone 5: Pilot new digital support initiatives.
DS3.2 Digital Personalisation ***Deliverable Description**: Refining our capabilities and processes for understanding our growing list of internal and external customers and tailoring the user experiences for all ESO digital experiences (e.g., websites, portals) to individual visitor or segment preferences and needs.* ***Deliverable Value Add**: Consistently refreshing our understanding of customer needs and reducing the time to value for customers, improving customer satisfaction in their ability to resolve their needs through self-service digital experiences.*	Milestone 1: Not Started Milestone 2: Not Started Milestone 3: Not Started Milestone 4: Not Started Milestone 5: Not Started	• Milestone 1: Implement new web analytics tool. • Milestone 2: Develop digital personalisation strategy. • Milestone 3: Analyse results from new web analytics tool. • Milestone 4: Host first forum on industry trends and set cadence. • Milestone 5: Implement personalisation pilot with A/B testing.
DS3.3 Facilitation of Industry Common Frameworks ***Deliverable Description**: Facilitating industry agreement on a common socio-technical frameworks for digital and data.* ***Deliverable Value Add**: Drive commonality, standardisation, and interoperability across industry data, enabling a faster pace for innovation.*	Milestone 1: Not Started	• Milestone 1: Common frameworks in place across industry.

Future Technology Led Crosscutting Efforts

Our actions for the Future Technology Led Accelerator work in tandem with the Open Calls for Innovation, as described in our Innovation Strategy,[20] and our organisational horizon scanning for Political, Economic, Sociological, Technological, Legal and Environmental factors that may impact our business. Both stem novel ideas and technologies that the ESO needs to consider for its business operations as well as opportunities for innovation pilots for the industry. In addition to regularly socialising insights internally and externally, the deliverables below aim to establish better processes for actioning them.

Future Technology Led Efforts	Status	Actions
DS4.1 Innovation Horizon Insights Library ***Deliverable Description:*** *Developing an internal platform that enhances the way the ESO ideates and collaborates on horizon scanning insights and ideas.* ***Deliverable Value Add:*** *Provide open access to historical ideas and insights to stimulate new ideas and expand the understanding of what is possible.*	Milestone 1: Complete Milestone 2: On Track Milestone 3: On Track	• Milestone 1: Platform/system selection and process design - Using pre-existing Microsoft architecture enables rapid, low-cost build and ability to prove value to the business. • Milestone 2: Early version of library available to selected customers - Testing and MVP build currently underway prior to early customer version launch in Q2 24/25. • Milestone 3: Library available to all internal customers - Anticipated for Q4 24/25.
DS4.2 Innovation Insights to Action ***Deliverable Description:*** *Creating avenues to explore and pilot digital innovation ideas with rapid prototyping and innovation challenges throughout the business.* ***Deliverable Value Add****: Proactively adapt to emerging technology and trends to seize new opportunities in the industry and mitigate risks.*	Milestone 1: Completed Milestone 2: On Track Milestone 3: On Track	• Milestone 1: First prioritisation exercise - Internal and external advisors used to set technology Horizon Scanning priorities for the year. • Milestone 2: Internal review process implemented including DD&T horizon scan forum - Attend DD&T LT meeting quarterly to give technology horizon scan updates. • Milestone 3: BAU prioritisation exercise - Annual Technology Prioritisation process is established, works well, and will reoccur in Q4 24/25.

Modern Architecture Crosscutting Efforts

The implementation of our Modern Architecture Blueprint, as well as our enhancements to our Resilient Digital Operations, include taking a cloud native design and working in tandem with other Accelerators. The actions below address our delivery infrastructure, API and integration, and telemetry and networks improvements while our Digital Customer Experience Accelerator addresses our customer touchpoints, and our platforms and ecosystems are addressed in our Data and Information Ecosystem Accelerator.

Modern Architecture Efforts	Status	Actions
DS5.1 Blueprint and Roadmap ***Deliverable Description****: Completing a maturity assessment to track and measure the transformation of the legacy system estate to the Modern Architecture Blueprint.* ***Deliverable Value Add****: Provide a clear picture of remaining work to be done and a path for prioritisation to a flexible loosely coupled architecture which will support growth and agility.*	Milestone 1; Complete Milestone 2: On Track Milestone 3: On Track Milestone 4: Not Started	• Milestone 1: Determine maturity assessment framework - Utilising a Gartner Digital Maturity framework for enterprise architecture which is part of our existing service agreement. • Milestone 2: Complete prioritisation for improvement areas - Following the completed assessment we have identified key critical areas alongside a refreshed operating model covering platform architecture. • Milestone 3: Update maturity assessment based on progress. • Milestone 4: Revise prioritisation for improvement areas.
DS5.2 Reducing and Preventing the Impact of Technical Debt ***Deliverable Description:*** *Developing a technical debt burn-down analysis and plan, implementing technical reference models to achieve faster deployment.* ***Deliverable Value Add:*** *Provide a clear picture of remaining work to be done and a*	Milestone 1: On Track Milestone 2: On Track Milestone 3: Not Started Milestone 4: Not Started	• Milestone 1: Finalise initial aggregation of debt & future logging process - We have conducted a review of technical debt associated with BP2 delivery which will be combined with our NESO application to form a single register. • Milestone 2: Finalise strategy for debt reduction - Once we have fully transitioned to NESO and have an enterprise architecture tool populated a strategic remediation approach and strategy will be agreed. • Milestone 3: Review debt reduction process and prioritisation.

[20] nationalgrideso.com/future-energy/innovation/innovation-strategy

Modern Architecture Efforts	Status	Actions
path for prioritisation, removing redundancy, risk and cost.		• Milestone 4: Review debt reduction process and prioritisation.
DS5.3 Proof of Value ***Deliverable Description:*** *Creating a value case to show the benefits that will be achieved from modernising architecture and Agile DevSecOps ways of working.* ***Deliverable Value Add****: Prove the value of efficiencies, scalability, and innovation enablement that comes with modernisation and aligning to industry standards and technologies.*	Milestone 1: On Track Milestone 2: Not Started Milestone 3: Not Started	• Milestone 1: Complete benchmarking of modernisation & best practice - A review of the architectural modernisation of our OBP and NCMS platform modernisation has taken place which has been externally reviewed against industry benchmarks. • Milestone 2: Finalise recommendations with leadership. • Milestone 3: Communicate plan and begin roll out.

Data and Information Ecosystem Crosscutting Efforts

The Data and Information Ecosystem Accelerator refines the ESO's management of data in preparation for more advanced analytics and open data by default for the industry. It creates processes aimed at improving the integrity of data as well as improving the discoverability of that data.

Data and Information Ecosystem Efforts	Status	Actions
DS6.1 Data Governance Maturity ***Deliverable Description****: Maturing data management and governance processes, refining internal data policies and procedures, integrating these with DAP, and establishing a Data Council for ESO and key open data participants and recipients.* ***Deliverable Value Add****: Drive quality and trust in our data assets internally and externally.*	Milestone 1: Complete Milestone 2: On Track Milestone 2: On Track	• Milestone 1: Finalise revised data policies & controls - All policies and procedures are documented. They will be piloted and implemented by Day 1. • Milestone 2: Launch data quality programme with governing Data Council - Data Quality team in process of being stood up and procedures documented. Piloting activity with Finance data. • Milestone 3: Data quality and governance programme BAU - Data Maturity is progressing according to plan.
DS6.2 Operationalisation of Common Information Model ***Deliverable Description:*** *Operationalising a standardised and comprehensive Common Information Model (CIM) to improve information management and exchange within the ESO organisation.* ***Deliverable Value Add:*** *Provides regulatory certainty. Drives commonality, standardisation, and interoperability across network planning data. Further applications of the CIM beyond the standard will become easier, (based on known CIM), profiles for different instances of data exchange can be built upon the core model.*	Milestone 1: Complete Milestone 2: On Track Milestone 3: On Track	• Milestone 1: Enact CIM Council - ToR created, council stood up on a monthly basis. • Milestone 2: Complete analysis on existing CIM implementation and challenges - Progressing well. Report will be available in July 2024. • Milestone 3: Begin implementation of new CIM approach - On track for post report kick-off.
DS6.3 Scope new NESO digital and data needs ***Deliverable Description:*** *Work with newly identified NESO business leads to identify upcoming digital and data tools, capabilities, and needs to deliver new obligations.* ***Deliverable Value Add:*** *Ensure the ability to deliver on new NESO roles.*	Milestone1: Not Started	• Analyse customer digital needs for the new NESO roles. • Develop Digital Charters to provide a vision for each new business area, embracing the 'art of the possible' in those visions. • Determine which technologies and capabilities exist in-house already or will be developed in-house. • Scope potential external solutions that will close the gap between in-house technologies and capabilities and those needed to achieve customer digital needs for the new NESO roles. • Milestone 1: Complete analysis of new system and data needs for FSO scope.

AI Driven Crosscutting Efforts

The AI Driven Accelerator is the heart of our efforts to upscale our analytical rigour across the organisation. The actions below will reach across the business to further enable our organisation in new analytical techniques as well as ensure a baseline minimum standard for maintaining and operationalising analytics.

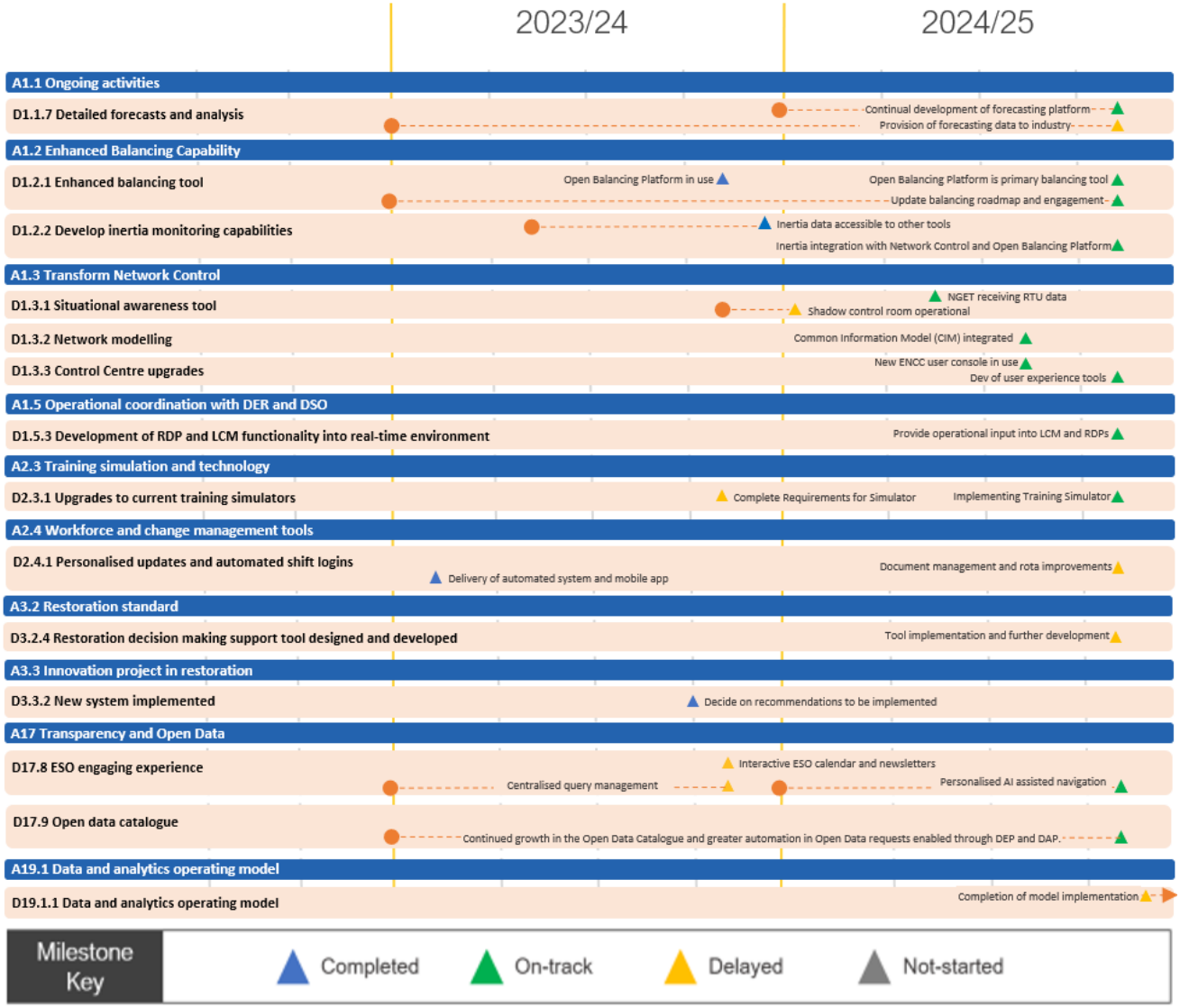
AI Driven Efforts	Status	Actions
DS7.1 AI Foundations ***Deliverable Description**: Migrating existing AI and analytics to an Advanced Analytics Environment (AAE) and creating policies to drive AI capabilities, streamline operationalisation, and create productivity dividends through automation and best practice.* ***Deliverable Value Add**: Allow the organisation to efficiently harness AI to improve automation and data insights and ensure models conform to a minimum standard that confirms consistency, quality, and reliability for data-driven decision making.*	Milestone 1: Complete Milestone 2: On Track	• Milestone 1: Launch AAE in DAP - DAP now enables AAEs as of Jan 2024. • Milestone 2: Publish internal policies and measurement requirements on AI - All policies and procedures are documented. They will be piloted and implemented by Day 1.
DS7.2 AI Delivery ***Deliverable Description**: Utilising productivity dividends to create and address a prioritised list of advanced analytics and AI use cases, incorporating cutting-edge analytical technologies.* ***Deliverable Value Add**: Drive business value from prioritised delivery and operationalisation of advanced analytics and AI into business processes.*	Milestone 1: Delayed Milestone 2: On Track Milestone 3: Delayed Milestone 4: Completed	• Milestone 1: Complete migration of existing AI & analytics into AAE - Due to realignment of DAP architecture, migration of data to enable existing AI and analytics is paused until base capabilities are completed. • Milestone 2: BAU prioritisation activity for backlog enhancements & new solution requests - Progressing on track. • Milestone 3: Complete productionisation of existing AI & analytics - productionisation is dependent on the data being in DAP, per above. • Milestone 4: Evaluate accelerated use of AI in the control room - Evaluation complete, planning underway towards implementation of Advanced Dispatch Optimiser.

Business Plan Activities, Deliverables, and Investments

We report against our BP2 activities, deliverables, milestones, and investments on a quarterly basis through the RIIO-2 deliverables tracker.[21] This tracker contains detail about each milestone, and these are linked back in our Business Plan to agreed performance measures that have been tested with stakeholders and regulatory bodies. A summary of the digitalisation relevant deliverables and their milestone updates is below. Any digitalisation relevant deliverables that do not have detailed updates included below are expected to continue as planned. For information on the ESO's previously completed activities and deliverables, please refer to our Completed DSAP Related Deliverables file here: nationalgrideso.com/document/299261/download.

[21] nationalgrideso.com/document/284596/download

Role 1 Activities, Deliverables, and Investments



Activity/Deliverables	Related Investment	Status	Update
A1.1 Ongoing activities D1.1.7 Produce and publish detailed forecasts and analysis, for both demand and generation, published at day ahead and other timescales. Forecasts will be enhanced using detailed statistical and machine learning approaches. ***Deliverable Description**:* *Provides the new forecasting platform that will automate forecasting processes and improve forecasting accuracy. The platform will also allow publication of forecasting data to industry. It will replace the existing demand predictor in the Control Centre and deliver greater benefits from our future balancing tools than would be*	260 Forecasting enhancements 670 Real-time predictions	Milestone 1 and 2 – Delayed, Internal reasons Milestone 3 – On track	• Milestone 1: Solar Power Product Implementation – The initial phase of the Solar Power product has been successfully developed in BP1, delivering value to consumers. In BP2, our objective is to transition the existing product from the current cloud solution to a strategic cloud solution and complete the remaining feature delivery. To ensure alignment with consumer value and business requirements, we have re-prioritised the forecasting roadmap/backlog through the cost monitoring framework (CMF). As a result, we have rescheduled this milestone to a later date (June 24) and shifted our focus to the delivery of Wind Power Generation Forecast product. • Milestone 2: Wind Power and National Demand Product Implementation – In order to enhance deliverability confidence for the milestones and address an error in the BP2 submission (two milestones as one), a reassessment has been

Activity/Deliverables	Related Investment	Status	Update
possible with the existing forecast provision. ***Deliverable Value Add:*** *Our forecasting enhancements will provide the Control Centre and market participants with better quality, more frequent forecasts, allowing them to make better operational decisions. This helps minimise balancing costs and reduce carbon emissions.*			conducted regarding the priority, size, and complexity of this milestone. • Milestone 3: Integration with OBP and DAP (as far as possible) – Work is in progress for Integration with Data analytics platform (DAP) and Open Balancing platform (OBP).
A1.2 Enhanced Balancing Capability D1.2.1 Future of Balancing ***Deliverable Description:*** *Deliver the Open Balancing Platform (OBP), our future balancing system. The OBP will replace the Balancing Mechanism (BM), the Electricity Balancing System (EBS) and the Ancillary Services Dispatch Platform (ASDP).* ***Deliverable Value Add:*** *Our existing balancing systems will become obsolete and need to be replaced within the RIIO-2 period or shortly afterwards. The transformation of our balancing systems is essential to meeting the requirements of zero carbon operation.*	180 Enhanced Balancing Capability	Milestone 1 – Complete Milestone 2,3, 4, 5 – Delayed, Internal reasons Milestone6 – On track	• Milestone 1: Increment 8. Issued an end of Increment report on Earned Value and Progress – Completed on 18 July as per original plan. • Milestone 2: In alignment with our current industry agreed plan, we are looking to deliver consumer benefits in a prioritised way. Following ongoing engagement through our balancing programme enduring engagement events for our balancing transformation roadmap plan we have completed the deliverables against our existing plan. We have gone live with the Open Balancing Platform (OBP), small BMU unit zone and additionally included delivery of the battery zone, which was accelerated based on feedback from our enduring Balancing Programme engagement events. In addition, this now enables multiple zones to be dispatched by different roles in the control room - this area of functionality has been released earlier than originally planned. In agreement with the industry, the first tranche of margin analysis in OBP will be delivered as per our updated roadmap during Q4 2025/26. First tranche of margin analysis in OBP will be delivered in our roadmap during Q4 FY26. • Milestone 3: In alignment with our current industry agreed plan, we are looking to deliver consumer benefits in a prioritised way. Following ongoing engagement through our balancing programme enduring engagement events for our balancing transformation roadmap plan we have completed the deliverables against our existing plan. We have moved to fortnightly updates aligned with our agile ways of working, this has included updates to resolve early life issues with High Cost BOAs, User Interface and performance improvements. We have also delivered functionality for enabling Balancing Reserve. We are strategically delaying the initial integration with OBP Data and Analytics Platform to allow time to fully understand the requirement scope and deliver effectively and efficiently. Planned delivery date is Q3 2024-25. Integration of unit contract data with OBP to ensure procured services are optimised and available for dispatch - which is effectively integrating SMP - will be delivered in Q1 2025/26. • Milestone 4: In alignment with our current industry agreed plan, we are looking to deliver consumer benefits in a prioritised way. Following ongoing engagement through our balancing programme enduring engagement events for our balancing transformation roadmap plan we have completed the deliverables against our existing plan. As part of enabling activities across the ESO our planned releases during Q1 2024-25 will include capabilities to fully enable the utilisation of both Fast Dispatch and Balancing Reserve, this will also include enabling functionality to deal with clock change and SCADA interfacing for metering feeds. Predicted Generation Forecasting Reprioritised to Q3 2025/26 to allow for

Activity/Deliverables	Related Investment	Status	Update
			the accelerated items for new reserve products, this is due to priorities to enable activities from role 2. We will now replace ASDP functionality with OBP rather than integrating with ASDP thus enabling decommissioning of ASDP. This replacement will be delivered in Q3 2025-26 as ASDP requires significant architectural and technology refresh. It is simpler and more cost effective to fully replace ASDP than to integrate it with OBP. • Milestone 5: In alignment with our current industry agreed plan, we are looking to deliver consumer benefits in a prioritised way. Following ongoing engagement through our balancing programme enduring engagement events for our balancing transformation roadmap plan we have completed the deliverables against our existing plan. As part of enabling activities across the ESO our planned releases during Q1 2024-25 will include capabilities to fully enable the utilisation of both Fast Dispatch and Balancing Reserve, this will also include enabling functionality to deal with clock change and SCADA interfacing for metering feeds. Predicted Generation Forecasting Reprioritised to Q3 2025/26 to allow for the accelerated items for new reserve products, this is due to priorities to enable activities from role 2. We will now replace ASDP functionality with OBP rather than integrating with ASDP thus enabling decommissioning of ASDP. This replacement will be delivered in Q3 2025-26 as ASDP requires significant architectural and technology refresh. It is simpler and more cost effective to fully replace ASDP than to integrate it with OBP. • Milestone 6: In alignment with our current industry agreed plan, looking to deliver consumer benefits in a prioritised way and following ongoing engagement through our balancing programme ensuring engagement events for our balancing transformation roadmap plan we are on track against our existing plan. OBP lite released in Q3 2023-24 has been integrated with the training simulator. Full integration of OBP strategic with the training simulator is on track for Q4 2024-25. In Q4 2024-25 additionally, we will delivery functionality to enable additional storage parameters to represent the energy available of these limited energy assets, build rule based Dispatch capability for Wind BM Units, Constraint Management and bulk-dispatch bid/offer instruction capability for Pumped Storage BM Units.
D1.2.2 Develop inertia monitoring capabilities and other tools to address emerging technology and system management issues (as required), as outlined in future Operability Requirements Reports ***Deliverable Description**: This will provide and enhance the tools required to enable control centre users to manage changes to the system in real-time, securely, and economically.* ***Deliverable Value Add:** This deliverable will provide Control Engineers with the tools to monitor and manage evolving operational challenges that are arising due to the changing system parameters. Consumers benefit as fully integrated tools enable cost optimal decisions to be made for new operational challenges. Industry*	130 Emergent technology and system management	Milestone 1 – Complete Milestone 2 – on track	• Milestone 1: Improvements to the DAP platform ingesting inertia data have been made enabling enhanced displays to be created as additional operational data is integrated into DAP. This milestone should have aligned with that shown in Annex 4 (DDT) of BP2 which is March 2024 and has delivered the improved integration ahead of this date. Continued enhancements will be made to dashboards to increase benefits to operational users. • Milestone 2: Integrate tools created with network control tool. Inertia monitoring tools integrated with DAP and enhanced balancing capability - These integrations are likely to be via DAP and final delivery will align with the end project (OBP and Network Control / User console) priorities and timelines.

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interest as this deliverable Enables increased options to manage new challenges.			
A1.3 Transform Network Control			
D1.3.1 Develop and deliver new real-time situational awareness tool, so Control Centre engineers can better understand changing network limitations, leading to a more efficient risk-based operation of the system. ***Deliverable Description:*** *This will provide and enhance the tools required to enable control centre engineers to manage changes to the system in real-time and in planning timescales, securely and economically.* ***Deliverable Value Add:*** *This deliverable will provide Control Engineers with the tools to manage real-time scenarios and plan operation of the electricity network more effectively. Lower cost to consumers through more efficient management of balancing costs without increasing system security risks. Providing greater situational awareness will ensure increased system security and potentially reduce balancing costs.*	110 Network Control	Milestones 1, 5, 6 – on track Milestones 2, 4, 7 – Delayed internal reasons Milestone 3: Complete	• Milestone 1: Look Ahead Iteration 1 / VSAT/OSA hosted in new DCs - Not yet started but remains aligned with these dates for delivery. • Milestone 2: Look Ahead functionality running in Development Environments - Dates to be revised to align with new Data Centre delivery dates. Not expected to knock-on to any other milestones. • Milestone 3: Awaiting Data Centre delivery. • Milestone 4: Shadow Control facilities to be developed as part of the training suite for new NCMS with the option to develop further into a proposed NESO Contingency Control Centre post-project completion. DAP integration PoC is currently running approx. 1 month behind. • Milestone 5: NGET receiving RTU Data. DAP and balancing integration - DAP integration target date remains March 2024. Balancing integration target date remains September 2024. • Milestone 6: Serial RTU connections removed - RTU PoC in progress with third parties, expected outcome Jan 24 - this milestone delivery will be dependent on both ESO and NGET progress with their respective SCADA replacement deliveries. • Milestone 7: Deliver integrated network control tool (inc VSAT and Look Ahead OSA), including its specific digital twin - Date to be changed to October 25 following a rebase line of plan that has taken place to understand the impact of GE product pivot to new GridOS technology.
D1.3.2 Enhanced network modelling capabilities with online analysis of voltage and power flow profiles closer to real time ***Deliverable Description:*** *This will provide and enhance the tools required to enable control centre engineers to manage changes to the system in real-time and in planning timescales, securely and economically.* ***Deliverable Value Add:*** *Accurate modelling of the electricity network in real-time and in planning timescales is critical to safe and efficient power system operation. Look-Ahead Analysis will allow lower costs to consumers through more efficient management of balancing costs without increasing system security risks. Accurate modelling will provide greater situational awareness will ensure increased system security and potentially reduce balancing costs.*	150 Operational awareness and decision support	Milestone 1 – Complete Milestone 3, 4 – on track Milestone 2 – Delayed internal reasons	• Milestone 1: CIM model integration requirements completed and aligned with NCMS product delivery plan. • Milestone 2: Integrate with enhanced balancing tool - Reviewed against latest NCMS and Balancing delivery plans and integration target date is now September 2024. No anticipated knock-on to other milestones. Delay is caused by a few internal factors: - NCMS Pivot to GridOS - the focus on the pivot to GridOS from an NCMS perspective has meant the integration work with OBP (enhanced balancing tool) has been re-prioritised. - Due to the complexity of both the NCMS and OBP toolsets, requirement development for the interfaces and functionality to be shared between the two tools has taken longer than expected and is still ongoing in a number of areas (for example Constraint Visualisation). A high-level plan for delivery of the integrations between NCMS and OBP are now in place. • Milestone 3: Common Information Model (CIM) Integration Complete - CIM model integration aligned with NCMS product delivery plan. • Milestone 4: Integrate with Network Control Management System (NCMS) - integration aligned with NCMS product delivery plan" Milestone 1: CIM model integration requirements aligned with NCMS product delivery plan.
D1.3.3 Upgraded Control Centre video walls and operator consoles, with a single interface giving an overall state of the power system ***Deliverable Description****:* *This will allow an overall view of the state of the power system in one*	110 Network Control 140 ENCC Operator Console 180 Enhanced balancing capability 220 Data and analytics platform	Milestone 1 – 4 – Complete Milestone 5-7 – On track	• Milestone 1: Complete UI/UX requirements for ENCC Operator Console - User requirements completed and design is now underway. • Milestone 2: Commence Design Phase - User requirements completed and conceptual solution architecture is complete and now informing the procurement of the solution.

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place enabling Control Centre managers to make better and quicker informed decisions. In emergency cases, the silver command team will also be able to have faster reaction times and give the most up to date and relevant information to external stakeholders. *We are delivering a single capability to manage the user interface/experience for our control room systems. This includes core application components, visualisation tools, control centre dashboards, video wall and infrastructure/facilities enhancements to update our command and emergency management capability.* ***Deliverable Value Add:** This deliverable will provide Control Engineers with the enhanced situational awareness capabilities via a single interface to manage real-time scenarios and plan operation of the electricity network more effectively. Lower costs to consumers through more efficient management of balancing costs without increasing system security risks. Providing greater situational awareness will ensure increased system security and potentially reduce balancing costs.*			• Milestone 3: Awaiting outcome of procurement activities. • Milestone 4: User Requirements have been gathered and EPRI work has been completed. Solution procurement strategy now identified with design work underway. • Milestone 5: Commence Solution Testing - User requirements completed and now entering procurement phase for new hardware and software. • Milestone 6: ENCC Operator Console build complete. Move to implementation and enhanced testing - User requirements completed and now entering procurement phase for new hardware and software. • Milestone 7: Development and testing of user experience tools and video walls - User requirements completed and now entering procurement phase for new hardware and software.
A1.5 Operational coordination with DER and DSO			
D1.5.3 Development of RDP and LCM functionality into real-time environment ***Deliverable Description:*** *Platform commitments and gives our stakeholders the opportunity to derive insights from data. It enables the exchange of operational data and may facilitate new balancing opportunities through integration of DER real-time data.* ***Deliverable Value Add:** DER markets for flexibility are driving new forms of flexibility and will enable learning to be embedded into enduring future arrangements. Early engagement with DER via RDPs and LCMs will increase the experience and knowledge and enable to removal of market blockers across industry, enhancing participation in new markets and increasing competitivity.*	110 Network Control 180 Enhanced Balancing Capability	Milestone 1 – Complete Milestone 2 - On track	• LCM is still in early development stages but trials are proceeding. • We are now live and LCM is being embedded into ENCC process. LCM is still in early development stages, but trials are proceeding.
A2.3 Training simulation and technology			
D2.3.1 Upgrades to current simulators, including annual scenario snapshot refreshes, ahead of developing new training simulation capability, including end-to-end bespoke training scenarios, and simulated operational systems using live data.	200 Future simulation and tools	Milestone 1-2 – Delayed internal reasons Milestone 3-4 – On track	• Milestone 1: Initial NCMS Training Simulator Stood Up - NCMS initial onsite delivery is delayed this has impacted on our ability to stand up the initial Training Simulator. Data Centre is available from October assumed 6 months post this to have a training simulator. However, the Training Simulator is not required till October 24 to meet overall delivery

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Deliverable Description: *Allows Control Centre Engineers to train on end-to-end integrated environments giving a realistic Control Centre experience.* ***Deliverable Value Add:*** *Consumers are benefitted through Control Centre engineers making better operational decisions, ensuring that the system continues to run safely and reliably, while minimising bills.* *Providing realistic simulation and training capabilities will ensure control engineers are well placed to deliver increased system security and to potentially reduce balancing costs.*			timescales. As such a strategic decision has been made to move this delivery to June 24. • Milestone 2: ESO project mandate is now raised. Requirement gathering is now taking place along with Business and technology vision. • Milestone 3: Commence Dev/Test Phase and Milestone 4: Training Simulator Move to Implementation - Needs to be baselined against NCMS and OBP plans to align for delivery. Needs to be baselined against NCMS and OBP plans to align for delivery.
A2.4 Workforce and change management tools			
D2.4.1 Personalised updates and automated shift logins to be made available on different platforms and updated to a user's profile, giving better training and operational decision making. ***Deliverable Description:*** *This is an investment in greater automation to produce personalised training packages for career development and enhancement.* ***Deliverable Value Add****: Creating a repository for all our training, authorisation and development information pertaining to operational staff centralises governance and oversight to give assurance of operational staff capability and competence in role.*	190 Workforce and Change Management Tools	Milestone 1 – Complete Milestone 2- Delayed Milestone 3, 4 – On track	• Milestone 1: Delivery of Automated System and Mobile App - Phase 3 is currently being assessed by internal and external IT providers with a number of future developments in the pipeline. The new automated system has now replaced the old manual system and the mobile app is being used by all operational staff. • Milestone 2: All documentation and requirement specifications for Phase 3 have completed and workshops are now planned to create a solution to meet our requirements. This has been delayed due to slow engagement of our Supplier.
A3.2 Restoration standard			
D3.2.4 Restoration decision making support tool designed and developed to aid faster restoration times in line with stakeholder expectations and licence obligations. ***Deliverable Description:*** *This tool will support the informed decision making of the control centre engineers in a national power outage scenario on the best restoration route to implement based on a number of factors such as MW, MVAr, SCL etc of the network, availability and response time of the restoration providers.* ***Deliverable Value Add:*** *Reduce restoration timeframe, reduce diverging restoration timeframe across regions and reduce operational costs. (This is a licence obligation). Ensures prompt security of supply following a partial or total national power outage.*	510 Restoration Decision	Milestone 1 – Delayed internal reasons Milestone 2 – On track	• Milestone 1: Tool available for integration with Network Control programme - Resourcing issues - unavailability of specialist resource in ESO IT team has introduced delays to the delivery of the RDSTapp is being used by all operational staff.
A3.3 Innovation project in restoration			
D3.3.2 Subject to industry adoption, Distributed ReStart proof of concept	460 Restoration	Milestone 1 – Complete	• Milestone 1: We will fully understand Distributed ReStart's final recommendations and their

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findings implemented and new system and communication methods implemented. ***Deliverable Description:*** *implement findings of the Network Innovation Competition project Distributed ReStart, which is a collaborative solution developed by the ESO and DNOs to enable DER to participate in the restoration market.* ***Deliverable Value Add:*** *Significant financial benefits to consumers through increased competition, lower costs, reduction in CO2 emissions and quicker restoration.*		Milestone 2 – Complete	implications - Recommendations from Distributed ReStart are being implemented as part of ESRS. • Milestone 2: Selected recommendations from Distributed ReStart are being implemented as part of the tender process.
A17 Transparency and Open Data			
D17.8 Digital Engagement Platform (DEP) continued phased deployment ***Deliverable Description:*** *DEP will make the experience of engaging with the ESO more intuitive and user friendly by providing a single sign on for all ESO services and a personalised user experience with access to information, data and other services including markets, connections and codes.* ***Deliverable Value Add:*** *This deliverable will make it easier to engage and do business with the ESO, supporting our 2025 ambition to be a trusted partner. Enhanced access to information and data for existing and new market participants is expected to drive innovation and increased market participation. Improved access to content is also expected to benefit consumer engagement with net zero and energy more broadly.*	250 Digital Engagement Platform	Part Delayed	• Our approach has been to front-load work on our programme early on by increasing resources through standing up of an additional skilled team. This larger collaborative team created the ability to deliver foundational capabilities and features ahead of expected timelines but still in line with budget. Release 1: ESO website infrastructure (Acquia) made independent of National Grid website. Release 2: added user based authentication (CIAM single-sign-on) for ESO website (DXP). Plus, encouragement for user to sign on Release 3: Progressing vision of creating a more seamless customer experience across ESO digital properties. Data portal pages brought within DXP. Removal of front-end of data.nationalgrideso.com for CKAN data portal. CIAM integration with SMP for Markets registration and authentication. CIAM integration with Auctions users and APIs. CIAM integration with connections portal and added Multi Factor Authentication. CIAM integration with ENAMS and EGAMA. Improvements to Maps in terms of scope and functionality. Improvements to ESO back-end admin functionality. Search improvements for Data Portal and CMS. Release 4: personalisation of My ESO account and Data Portal Subscription enhancements. Personalisation of My News Carousel and My Events Carousel (select your topics of interest). Users able to filter My Events by type. In addition, we will shortly be upgrading our security around CIAM single sign-on. Also, working with Connections 360, DCM and Operational Forms to bring about a more seamless UX with an iterative project on shared global components / web wrapper. Release 5 will be primarily focused on re-branding the ESO website (design, content and URL changes) for the change to NESO. DEP was previously forecast to integrate with the Data and Analytics Portal. However DAP has been delayed until 2026. Therefore a change request has been raised to safeguard money intended for DEP/DAP integration this year. This work is now due to complete by Q1 FY26.
D17.9 Open Data Catalogue ***Deliverable Description:*** *Provides external users with a view of ESO Data and enables internal users to*	220 Data and Analytics Platform 250 Digital Engagement Platform	On track	• Initial integration of DAP with Purview 1.0 catalogue tool complete and new features will be available in the tool in Summer 2024. Internal catalogue user interface development underway with initial POC

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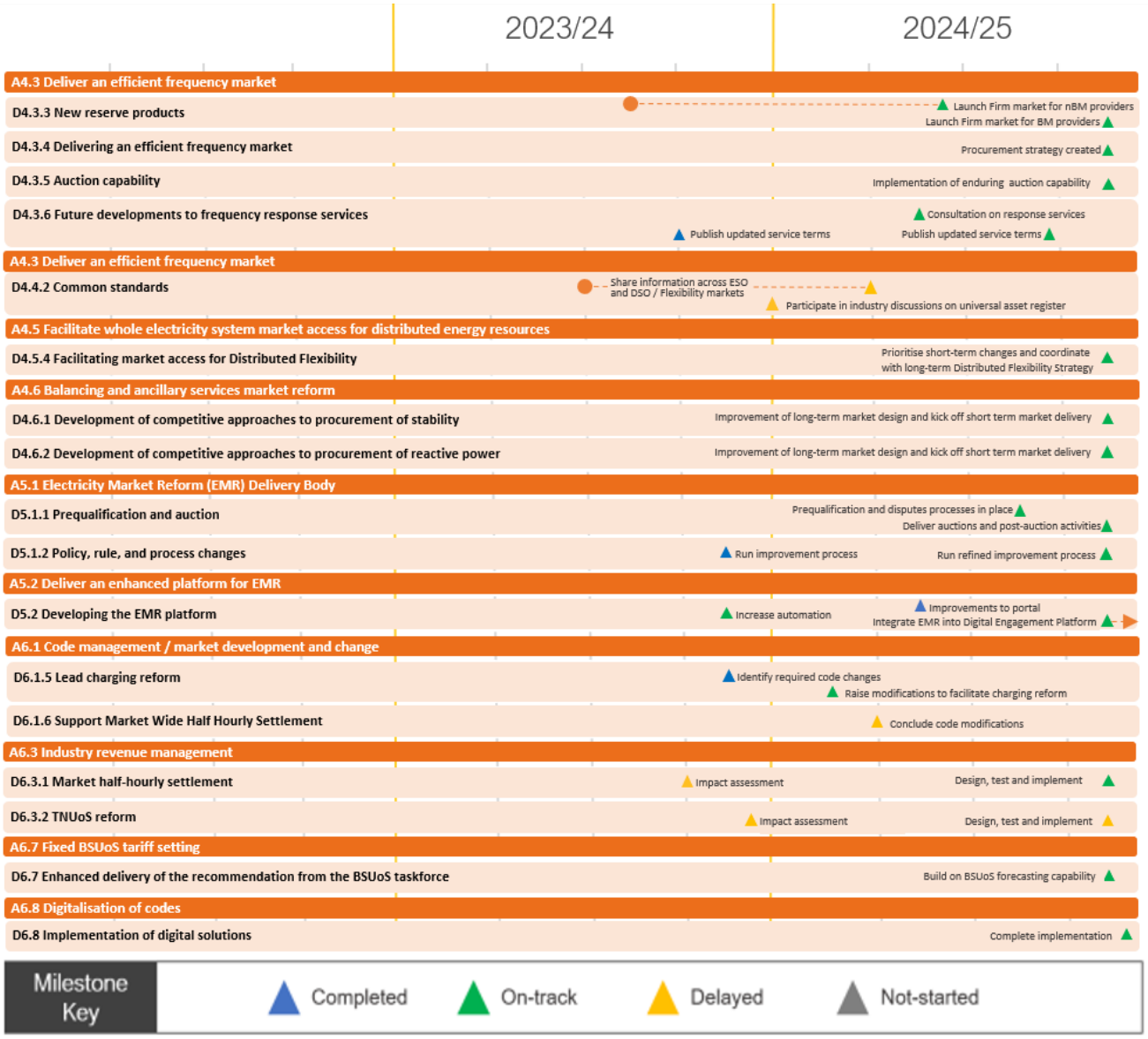
develop their own data products to benefit consumers. ***Deliverable Value Add:*** *The Open Data Catalogue will allow market participants to discover the data held by the ESO, published and unpublished, as a means to inform Open Data requests. In this way, we can make more data available without incurring costs associated of publishing data that is not in demand. Making our data accessible promotes innovation and the creation of new insights, supporting net-zero and market efficiency.*			release planned for May 2024. • Migration from Purview 1.0 to Purview 2.0 in the new NESO tenancy including the migration of all ESO data sources is expected by Jul-25. There would be additional effort to complete cataloguing and metadata gathering after the migration.
A19.1 Data and analytics operating model			
D19.1.1 Data and Analytics (D&A) Operating Model ***Deliverable Description****: This deliverable is the operating model (people and process) that allows us to fully exploit the technology delivered through the DAP investment.* ***Deliverable Value Add****: This deliverable will implementing robust and compliant data management practices coupled with an agile delivery model for data products, including Open Data. This benefits consumers by further enabling Open Data, and delivering the D&A tools required to operate a zero-carbon grid. The Operating Model will deliver the advanced D&A capability required to plan and operate a zero-carbon grid reliably; and further enables Open Data.*	220 Data and Analytics Platform	On track	• Our D&A operating model brings together people, process, and technology to enable the continuous development and enhancement of D&A tools across the ESO and ongoing publication of data to external stakeholders via our Open Data Portal. The Operating Model is comprised of i) a "Hub" team, setting the "rules and tools" for data product development and includes Data Governance, Data Operations and Data Stewardship, and ii) business "Spoke" teams, who work with the Hub team on our DAP platform to create new data products in a self-serve manner. • Continuous development is being undertaken to implement the operating model.

Role 2 Activities, Deliverables, and Investments



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A4.3 Deliver an efficient frequency market			
D4.3.3 New reserve products - development and introduction of a new suite of products to provide reserve to the Control Centre ***Deliverable Description**: Development and introduction of a new suite of products to enhance our procurement process for our reformed ancillary services markets, including our auction capability and maximising user participation.* ***Deliverable Value Add:** Engaging with stakeholders to give them the opportunity to comment on future changes will ensure we continue to*	400 Single Markets Platform 420 Auction Capability 610 Settlements, Charging and Billing	Milestone 1 – Delayed internal reasons Milestone 2 – On track	• Milestone1: A nBM market for Quick & Slow Reserve will be delivered after the OBP Strategic nBM functionality is released. This is planned to be Q2/Q3 25/26. Further engagement with industry is planned for Q2 2024 to seek stakeholder feedback on the proposed design of the services, including webinars and the offer of 1-2-1 sessions. • Milestone 2: BM Market for Quick Reserve will be delivered in Q2/3 24/25 once the functionality has gone live on the OBP with Slow Reserve planned for delivery in Q2/Q3 25/26. Engagement with industry is ongoing with webinars held in Q4 23/24 to seek stakeholder feedback on the Quick Reserve design along with a number of 1-2-1 sessions. Based on feedback received we have increased recovery time to 3 minutes to facilitate greater participation and further engagement on the service design and

improve these services for industry and the Control Centre.			implementation is planned for Q1 24/25 before we finalise requirements for formal consultation later in Q1 24/25. Engagement with industry on Slow Reserve is planned for Q2 2024.
D4.3.4 Delivering an efficient frequency market ***Deliverable Description:*** *This deliverable will improve usability and access, optimise procurement services, and ensures we have the capability to perform settlements for a higher number of market participants in the Single Markets Platform.* ***Deliverable Value Add:*** *Market participants able to participate in market auctions through interface of Single Markets Platform.*	400 Single Markets Platform 420 Auction Capability 610 Settlements, Charging and Billing	On track	• The go live of our response services has been positively received by industry allowing new functionality such as stacking and splitting as well as enhanced bidding options like negative pricing. • Balancing Reserve Service now being added to the Enduring Auction Platform. This service will go live on the EAC platform early March 2024. • Work also being done to support BM QR launch on the EAC platform. • Following challenges with the Response 2 submission we are incorporating learning from this into our refreshed project for A18 planning and submissions.
D4.3.5 Auction capability ***Deliverable Description****: Implementation of the enduring auction capability and transition of the newly introduced services of BP1 onto the platform.* ***Deliverable Value Add****: This will offer market participants increased tendering opportunities via co-optimised auctions, improved user experience, enhanced automation and system integration with Single Markets Platform.*	420 Auction Capability	On track	• Balancing Reserve Service now being added to the Enduring Auction Platform. This service will go live on the EAC platform early March 2024.
D4.3.6 Future developments to frequency response services ***Deliverable Description****: Supports the onboarding, procurement, settlement, and process for further developing new frequency response services.* ***Deliverable Value Add****: The design of the new frequency response services will be further developed, based on experience and learnings following their launch. These optimisations will 1) increase access to the response market and 2) improve the efficiency of the market and the ability of the ESO to source these services from the lowest-cost provider in all periods. These optimisations will lower overall procurement costs for the ESO.*	400 Single Markets Platform	Milestone 1, 2 – Complete Milestone 3, 4 – On track	• Milestone 1: Release 2 (2023-24) Electricity Balancing Regulation (EBR) consultation launched in Summer 2023 and was submitted to Ofgem end of September 23. Following challenges in the submission the ESO re-submitted and received approval in Mar-24. Key topics of focus for 2023-24 include removing barriers to Data-derived metering (baselining), clarity on topics such as State of Energy, updates to ramp rates, as well as a range of changes to tools and improvements to enable the Control Centre to operate the electricity transmission system securely. • Milestone 2: Service terms will be updated and published following Ofgem approval (expected in Q4). Delay due to amendments required in drafting of revised Release 2 - resubmitted and approved in Q4 23/24.
A4.4 Deliver a single, integrated platform for ESO Markets			
D4.4.2 Common standards, including interoperable systems, a common data model and shared minimum specifications between ESO and other flexibility platforms as well as at the distribution level. ***Deliverable Description:*** *Facilitation of optimised markets across distribution and transmission requirements and Industry platforms integrated more closely.* ***Deliverable Value Add:*** *This will optimise participation and facilitate real time transparency of what assets are participating in which markets at any time. Targeting greater levels of integration across ESO and DSO*	400 Single Markets Platform	Milestone 1, 2 Complete Milestone 3,-4 – Delayed – External Reasons	• Milestone 1: Supported the development of a proof of concept for industry asset register . • Milestone 2: Participation in proof of concept for industry asset register. • Milestone 3: The reason that these milestones are delayed is that delivery is dependent on multiple parties. Ofgem is having discussions with various parties to understand how Common Asset Register can be delivered industry-wide. These features are impacted by wider Ofgem work on an Industry Asset Register. SMP is actively involved in the discussions alongside DDT and Flexibility Market Development team, but we cannot deliver these milestones until Ofgem have determined the direction that will be taken on a Common Asset Register. The second milestone is also impacted by discrete DER Visibility project (to which SMP is central to a number of use cases). We are actively working with UKPN and

markets is expected to result in greater levels of liquidity for the benefit of the consumer.			Electralink to develop a proof of concept that will see both SMP and the DNO share high level information with Electralink and they will share "risk of conflict" information to the opposite party where any MPAN match is found. Any matched data will inform SMP / UKPN users about assets pre-qualified for balancing services that may be committed elsewhere for a DNO service / behind a flexible DNO connection. We believe that this is a step beyond focusing on asset registry and the approach has been accepted by the Open Networks Primacy Technical Working Group in November 2023. This PoC ran operationally in February and we will provide feedback and learnings in Q1 24/25. This work will feed into the wider "DER Visibility" project within the ESO. The SMP team is also actively engaging with Ofgem alongside the Markets Flexibility team and DDT on responding to "common asset registry" work. It is still to be determine how this would be achieved and what role SMP could have in it (if it is even proven through an impact assessment to be scalable). • Milestone 4: The reason that these milestones are delayed is that delivery is dependent on multiple parties. Ofgem is having discussions with various parties to understand how Common Asset Register can be delivered industry-wide. These features are impacted by wider Ofgem work on an Industry Asset Register. SMP is actively involved in the discussions alongside DDT and Flexibility Market Development team, but we cannot deliver these milestones until Ofgem have determined the direction that will be taken on a Common Asset Register. The second milestone is also impacted by discrete DER Visibility project (to which SMP is central to a number of use cases). We are actively working with UKPN and Electralink to develop a proof of concept that will see both SMP and the DNO share high level information with Electralink and they will share "risk of conflict" information to the opposite party where any MPAN match is found. Any matched data will inform SMP / UKPN users about assets pre-qualified for balancing services that may be committed elsewhere for a DNO service / behind a flexible DNO connection. We believe that this is a step beyond focusing on asset registry and the approach has been accepted by the Open Networks Primacy Technical Working Group in November 2023. This PoC ran operationally in February and we will provide feedback and learnings in Q1 24/25. This work will feed into the wider "DER Visibility" project within the ESO. The SMP team is also actively engaging with Ofgem alongside the Markets Flexibility team and DDT on responding to "common asset registry" work. It is still to be determine how this would be achieved and what role SMP could have in it (if it is even proven through an impact assessment to be scalable).
A4.5 Facilitate whole electricity system market access for distributed energy resources			
D4.5.4 Facilitating market access for Distributed Flexibility ***Deliverable Description:*** *Deliver additional SMP functionality and more balancing services through subsequent releases to enable whole electricity flexibility activities.* ***Deliverable Value Add:*** *To facilitate entry to ESO markets for distributed flexibility, we must remove key technical and commercial barriers and blockers, and introduce enabling systems and processes to make entry as seamless as possible.*	250 Digital Engagement Platform 400 Single Markets Platform	Milestone 1: Complete Milestone 2: On track	• Milestone 1: We continue to engage with the market and stakeholders and evolving our strategy around the development of flex markets including the delivery of SMP. The flexibility strategy will propose the direction we will be taking. Included in this is a review of stacking and key service requirements. We continue to progress this with industry stakeholders and have made some progress with the DNO's over a PoC for coordination/primacy rules. • Milestone 2: We continue to engage with the market to ensure that we can coordinate flexibility. this includes Open Networks, our own internal product development and moreover creating our plans for evolving market strategy Our Flexibility strategy includes a review of stacking and service requirements.

A4.6 Balancing and ancillary services market reform

D4.6.1 Development of competitive approaches to procurement of stability. ***Deliverable Description**: Deliver the ability to register, model, settle, instruct, and report new services arising from pathfinders.* ***Deliverable Value Add:** We need to continuously evolve our markets to facilitate new stability technologies and solutions to meet dramatically changing requirements. We must design these markets in a way that promotes efficient investment, efficient dispatch, and value for money.*	130 Emergent technology and system management	Milestone 1: Complete Milestone2: On track	• Milestone 1: On progressing the mid-term (Y-1) Stability Market, we have now opened an Invitation to Tender (ITT) for market participants who wish to bid for the first Mid-term (Y-1) Stability Market delivery year, commencing 1st October 2025. The EOI closed on 26th January 2024 where providers expressed an interest and received an invitation to tender. Feedback from the informal consultation on service design, contract terms and technical eligibility criteria which we ran alongside the EOI process has been taken on board for the final design of the Mid-term (Y-1) market. Market participants are now preparing technical and commercial submissions for the first delivery year. The deadline for submitting these is 26th April 2024, following which ESO will assess bids against both technical and commercial criteria. We held two further industry webinars on Monday 5th and Tuesday 6th February 2024 to walk through the most important information as part of the ITT stage and offer an opportunity for industry to ask questions. We have also held 121 calls with every provider who is participating in the ITT for the first time. In parallel, we are reviewing Y-4 and D-1 markets and engaging the relevant teams in ESO to understand what will be required to deliver these markets, and in what timescales this can be achieved. We are working closely with the Centralised Strategic Network Planning team to ensure that new system studies through CSNP are aligned and co-ordinated with the Long-term (Y-4) Stability Market, so this can be signalled accordingly when a requirement emerges. In our 2024 Markets Roadmap, we also shared plans to explore an optional Short-term (D-1) Stability Market in advance of the full delivery of an automated D-1 auction. We will be engaging with industry further on this. Our delivery plans will be updated through the recently introduced Markets Roadmap monthly delivery plan updates. • Milestone 2: On progressing the mid-term (Y-1) Stability Market, we have now opened an Invitation to Tender (ITT) for market participants who wish to bid for the first Mid-term (Y-1) Stability Market delivery year, commencing 1st October 2025. The EOI closed on 26th January 2024 where providers expressed an interest and received an invitation to tender. Feedback from the informal consultation on service design, contract terms and technical eligibility criteria which we ran alongside the EOI process has been taken on board for the final design of the Mid-term (Y-1) market. Market participants are now preparing technical and commercial submissions for the first delivery year. The deadline for submitting these is 26th April 2024, following which ESO will assess bids against both technical and commercial criteria. We held two further industry webinars on Monday 5th and Tuesday 6th February 2024 to walk through the most important information as part of the ITT stage and offer an opportunity for industry to ask questions. We have also held 121 calls with every provider who is participating in the ITT for the first time. In parallel, we are reviewing Y-4 and D-1 markets and engaging the relevant teams in ESO to understand what will be required to deliver these markets, and in what timescales this can be achieved. We are working closely with the Centralised Strategic Network Planning team to ensure that new system studies through CSNP are aligned and co-ordinated with the Long-term (Y-4) Stability Market, so this can be signalled accordingly when a requirement emerges. In our 2024 Markets Roadmap, we also shared plans to explore an optional Short-term (D-1) Stability

			Market in advance of the full delivery of an automated D-1 auction. We will be engaging with industry further on this. Our delivery plans will be updated through the recently introduced Markets Roadmap monthly delivery plan updates.
D4.6.2 Development of competitive approaches to procurement of reactive power. ***Deliverable Description:*** *Deliver the ability to register, model, settle, instruct and report new services arising from pathfinders.* ***Deliverable Value Add:*** *The fundamental balancing and operability requirements of the system are dramatically changing and we need to continuously evolve our markets to facilitate new technologies and solutions to meet reactive power requirements. We must design these markets in a way that promotes efficient investment, efficient dispatch, and value for money.*	130 Emergent technology and system management	Milestone 1: Complete Milestone 2: On track	• Milestone 1: Following the reprioritisation activity ahead of winter 22/23, work on a Reactive Power market was paused. This work is now being re-started with a new timeline and deliverables being planned. The next steps for developing reactive markets were identified through the work in 2023 which is to prioritise the implementation of long-term market and continue review the benefit and impact for mid and short term markets. • Milestone 2: Following the reprioritisation activity ahead of winter 22/23, work on a Reactive Power market was paused. This work is now being re-started with a new timeline and deliverables being planned. The next steps for developing reactive markets are identified through the work in 2023 which is to prioritise the implementation of long term market and continue review the benefit and impact for mid and short term markets.
A5.1 Electricity Market Reform (EMR) Delivery Body			
D5.1.1 Continuation of Electricity Market Reform (EMR) Delivery Body obligations: We will deliver the prequalification and auction processes for the Capacity Market and qualification and allocation processes for Contracts for Difference (CfD). We will also deliver our agreement management obligations for the CM. ***Deliverable Description:*** *The new EMR platform will enable us to be flexible, scalable, and adaptable to respond to customer and regulatory requirements faster and at a lower cost. It will offer a step change in user experience, supporting self-service and improved navigation. We will support our customers in using the new platform by updating our processes and guidance. The new platform will also enable us to automate manual processes and optimise any remaining manual processes and controls. This in turn will enable us to focus operational resource increasingly on higher value-adding activities.* ***Deliverable Value Add:*** *We are delivering the Capacity Market and CfDs on behalf of Government as key mechanisms to ensure security of electricity supply and to drive the transition to low carbon electricity generation. Consumers are benefitting from these important activities by continuing to have secure electricity supplies at an appropriate cost as we support the country through the transition to net zero. The Capacity Market and CfDs are key markets for industry as they provide opportunities for existing participants as well as new entrants.*	320 EMR Portal Improvements (Capacity Market and Contracts for Difference)	Milestone 1 - 4 – Complete Milestone 5-8 – On track	• Milestone 1: Publish co-created guidance covering any rule changes and system and operational improvements, in collaboration with Ofgem, BEIS and industry, within 4 weeks of rules being set - CM-Guidance is being updated with: 1. specific focus on areas of feedback. 2. a new section of “new for this year” to assist parties with understanding Rules changes. 3. slides requested by DESNZ to aid in policy conversations to ensure consistent messaging cross-party in response to emerging focus of questions. EMR DB have published the Operational Plan and circulated to over 3,000 parties on 12 June 2023. EMR customer events are scheduled to take place on 19 July (in-person) and 25 July (online) to launch this year’s CM process, with a focus on prequalification and rule changes. The EMR DB team have been working to update the process for query management to achieve quicker SLAs, and undertaken cross training of team to enable more rounded advice. CfD: The EMR DB published CfD guidance prior the application window opening for Allocation Round 5. The guidance included: • How customers should complete the application form if applying for a private network CfD agreement. • How Floating Offshore Wind applicants should provide the supply chain plan. • How Solar PV applicants should entered their Initial Installed Capacity Estimate. • Clear steps on how applicants could view their Allocation results (e.g., examples were added of how applicants can check for confirmation of an action in the system being completed). • Overall formatting of the guidance documents was updated to ensure there was a clear flow through of each section related to the CfD Allocation process. Guidance changes were refined in consultation with Delivery Partners, DESNZ and Ofgem and draft

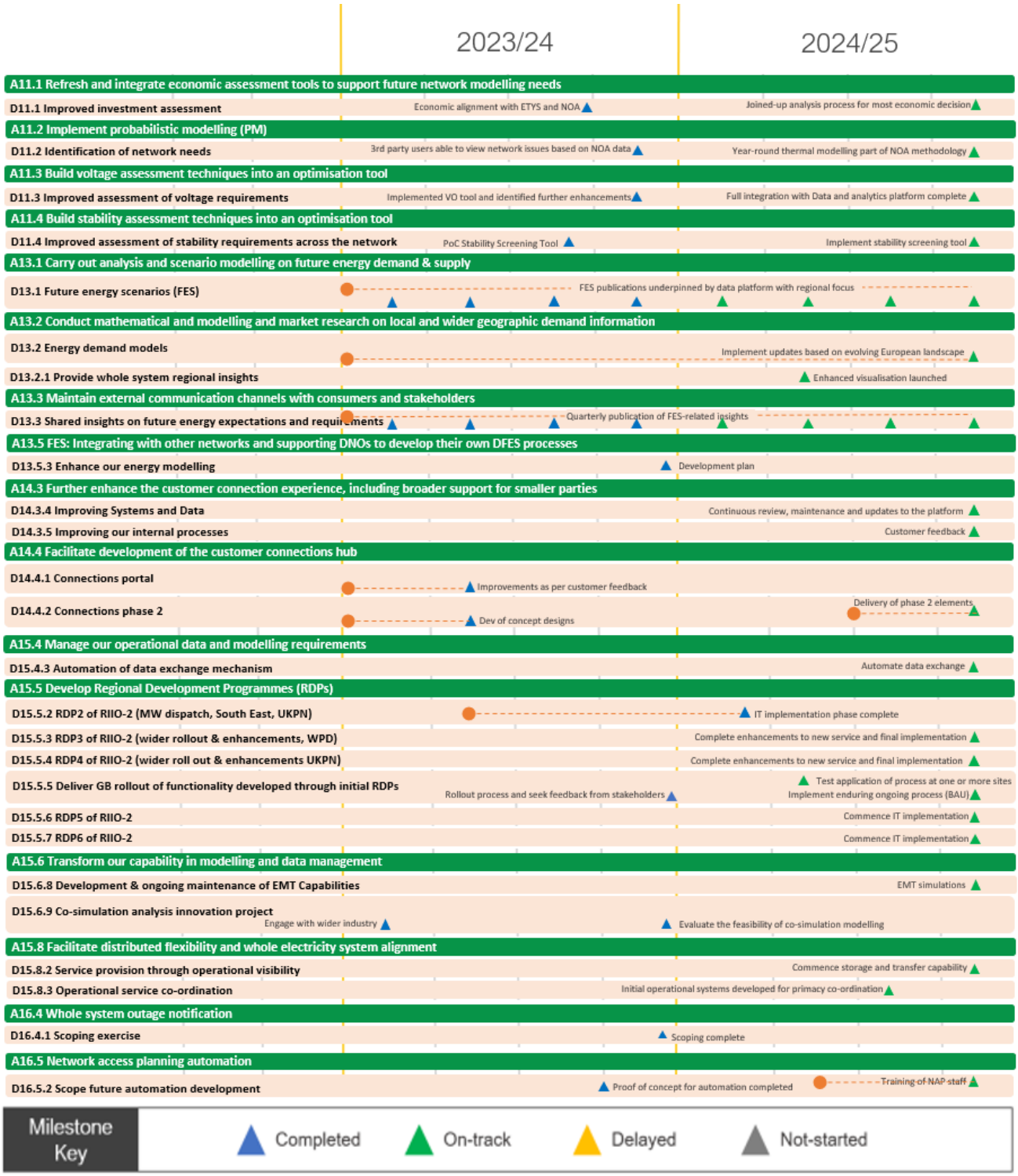
			guidance documents were reviewed by a select group of customers. The EMR DB also engaged through: -An auction scenarios video distributed to customers shortly after the budget notice being for Allocation Round being published -The CfD Launch Event and the EMR DB led applicant readiness webinar in early 2023. • Milestone 2: Commence the pre-qualification process, with customers benefitting from enhanced guidance - CM: Prequalification application window closes on 19 September. The team is busy providing support to Applicants, including responding to queries. During 7/8 September, the Portal was running very slowly - the DB identified the root cause, correct it, and issued comms to stakeholders on 8 September. • Milestone 3: CfD: Ofgem upheld the DB's decision on all of the disputes submitted to them. We recognise however that Ofgem did not uphold the DB's position on every matter included in the disputes. CM: The Tier 1 disputes process finished on 28 November 2023. The Tier 2 process is currently happening, with a small number of disputes raised to Ofgem for decision. • Milestone 4: CfD: The DB has successfully completed the Auction Round 5 auction process. AR5 results were released to industry on 8 September 2023. CM: On 20 February 2024, the EMR DB ran the T-1 Auction and on 27 February 2024, the EMR DB ran the T-4 Auction. The Auction Monitor Reports for both auctions have been published by DESNZ, confirming that the Auctions were run in accordance with the CM Rules and Regulations. Following the Auction processes, the EMR DB has had lessons learned sessions internally and with DESNZ. • Milestone 5: Publish co-created guidance covering any rule changes and system and operational improvements, in collaboration with Ofgem, BEIS and industry, within 4 weeks of rules being laid. - This milestone is dependent on decisions regarding Rule changes and learnings from the current Auction. Once these are known, guidance will be updated in preparation for the next Auction. CfD: following completion of the AR5 Auction, the team is carrying out a customer satisfaction survey. Feedback through survey responses and recommendations from the independent auditor will be reflected in updates to the Guidance in advance of Allocation Round 6 in 2024.
D5.1.2 Continuation of EMR Delivery Body obligations: We work with BEIS, Ofgem and industry to identify, assess and implement policy, rule and process changes to further develop the Capacity Market and CfD mechanisms. We will also actively contribute to BEIS's Ten Year Review of the Capacity Market and their strategic policy development for CfDs ***Deliverable Description:*** *We will ensure that changes to policy, rules and processes are supported through our EMR platform.* ***Deliverable Value Add:*** *This helps to ensure the Capacity Market and CfDs regimes continue to deliver the objectives of ensuring security of*	320 EMR Portal Improvements (Capacity Market and Contracts for Difference)	Milestone 1, 2– Complete Milestone 3, 4 – On track	• Milestone 1: Develop a clear process for capturing and assessing policy, rule and process improvements which draws on operational experience and industry feedback and feed this into CMAG and other relevant BEIS and Ofgem processes. - The EMR DB has developed and shared with Ofgem a process for how they will identify and undertake initial assessment of proposals and then progress them through CMAG. Further work is being undertaken internally to develop a standardised approach for impact assessments, based on experience with changes to date, which will then be discussed with delivery partners for their input. • Milestone 2: The DB has identified potential changes that could be made to the CM Rules to improve clarity, processes and operations. However, in many cases the changes require greater clarity around the original policy intent and whether that continues to be appropriate, and so the DB is now working closely with other delivery partners to review these areas in more detail, before they become detailed change proposals. Now that REMA consultation 2 proposes

electricity supply and driving the transition to low carbon electricity generation in an efficient and effective way. Ensuring policy, rules and processes are efficient and effective will help deliver security of supply at an appropriate cost and support the transition to net zero. Simplification and greater clarity of policy, rules and processes will reduce barriers to enter these markets.			to retain CM as an Optimised CM, the EMR DB are working with DESNZ and Ofgem to understand how this will influence potential operational and policy changes. • Milestone 3: Undertake informal review of the improvement process with industry, BEIS and Ofgem to identify ways to refine the approach. - Once the improvement process has been tested on several code change proposals, the EMR DB will review how well it has functioned to support delivery partners with identifying, assessing, and implementing changes. • Milestone 4: Q2 - Q4: Implement process refinements and run refined improvement process from Q2 onwards - This milestone is dependent on the outcomes of the one above relating to process improvements.
A5.2 Deliver an enhanced platform for EMR			
D5.2 Developing the EMR platform ***Deliverable Description:*** *We will deliver a 'new' EMR solution which will be flexible, scalable, and adaptable to respond to customer and regulatory requirements faster and at a lower cost than currently experienced. It will offer a step change in the current user experience, implementing self-service and improved navigation. Also process automation and optimise any remaining manual processes and controls.* *Our plan for BP2 is to integrate the EMR service into the DEP. DEP will replace the current nationalgrideso.com website and create a single point of access into the ESO systems and external facing processes, providing secure, open access to data, compliant with data classification policies and standards. Our intention is to align our front-end user interface for EMR to the design system delivered the DEP and integrate the EMR Single Sign-On (SSO) functionality using the new customer identity and access management (CIAM) solution, also delivered by DEP.* ***Deliverable Value Add:*** *Customer-focused improvements and faster development of regulatory change along with reduced complexity for applicants maximises the participation of eligible providers, thus ensuring liquidity and confidence from the consumer that participants will deliver on obligations at an appropriate cost.*	320 EMR Portal Improvements (Capacity Market and Contracts for Difference) 250 Digital Engagement Platform	Milestone 1- On Track Milestone 2: Complete Milestone 3, 4 – On track	• Milestone 1: All associated milestones are on track, with the CM Go-live planned for May 2024. The system was released for Company Registration and User Management on 22nd January 2024. We are working with customers to ensure setup is completed to enable data migration from the current portal. A user familiarisation phase will be run between mid March to mid April. Over 70 customers are registered to participate. An integrated guidance platform has been designed linked directly with Salesforce to enable guidance to be directly accessed from the new portal. Prioritised improvements have been designed in processes to enable increased automation and enhanced customer journeys. • Milestone 2: Changes from the DESNZ consultation were implemented in the portal prior to the Prequalification round opening in July 2023. • Milestone 3: We are working with the DESNZ team to assess and agree priority changes required on items of work included in the scope of their consultation. We have designed and developed functionality to implement change to metering processes in accordance with CP373 subject to Ofgem consultation decision expected in April/early May. • Milestone 4: Initial discussions commenced with the Digital Engagement Platform delivery team. The Delivery Body are designing a feedback methodology that can be used to take customer feedback in line with operational processes run on the New Portal. The Delivery Body continue to monitor REMA proposals to support decisions on future CfD system landscape.
A6.1 Code management / market development and change			
D6.1.5 Lead charging reform ***Deliverable Description:*** *Subject to the outcomes of the TNUoS Taskforces but we expect to be in a position to recommend code changes for progression with industry.* ***Deliverable Value Add:*** *Act on a recent Ofgem call for evidence regarding the potential need for*	610 Settlements, Charging and Billing	Milestone 1: On track Milestone 2: Complete	• TNUoS Taskforce is currently working through a number of sub groups regarding identified issues. The 'sub groups' are now in the process of clearly articulating the defects and creating solutions. To date 2 Modifications have been raised with a further one to be raised in Q1 2024. It is expected that a number of further Modifications will follow throughout 2024. Scaling Factors was presented at the Taskforce and has now been raised as a formal CUSC modification (CMP424) which started workgroup in January 2024. Generation reference nodes has also

TNUoS reform to spread costs more fairly between end users.			been raised as a formal modification following development by the Taskforce, raised by SSE (CMP423). In addition CMP413, raised by EDF is progressing through workgroups and ESO are fully engaged in this process. The TNUoS 10year projection has also been developed alongside this modification to aid industry in making investment decisions. This was an extra piece of work that the ESO have done on top of the obligations within the CUSC.Milestone 2: This action is complete but a resulting CUSC modification is still in flight. CMP408 (amending the notice period) is awaiting a decision from Ofgem alongside CMP415 which looks at the fixed period following the analysis carried out through the CMP408 workgroup and the Enduring Fixed BSUoS subgroup. This sub-group is now on pause as it was agreed to wait for a decision on the aforementioned modifications and collect further data before raising any more modifications. This sub-group has received really positive feedback for the discussion it provided across industry, and the analysis that was shared. CMP420 was raised by industry and we are working with the workgroup to support the proposer developing a solution.
D6.1.6 Support Market Wide Half Hourly Settlement ***Deliverable Description:*** *Identify the areas where code change is needed.* ***Deliverable Value Add:*** *This is a significant code review led by Ofgem and therefore it is essential that the ESO delivers the required outputs via code changes.*	610 Settlements, Charging and Billing	Milestone 1 – Delayed external reasons Milestone 2 – Delayed external reasons	Milestone 1: A revised MHHS Programme plan with associated milestones was approved by Ofgem following extensive industry consultation in 2023. This will implement MHHS Code change in March 2025. Ofgem have confirmed that CUSC Modifications should be managed outside the scope of the MHHS Programme and Settlement Reform SCR. CUSC Modifications (CMP430 and 431) have been raised in February and will be progressed to an urgent timeline to ensure Ofgem are able to make a decision by September 2024 for implementation in April 2025. Workgroup meetings are progressing well and in accordance with the timeline agreed as part of the urgency request. ESO has fed back on code drafting under the BSC that impacts on ESO processes as part of the MHHS code drafting consultation process. This will follow MHHS Programme timescales to be approved by the Cross Code Advisory Group in August 2024 and then the subsequent SCR process. • Milestone 2: A revised MHHS Programme plan with associated milestones was approved by Ofgem following extensive industry consultation in 2023. Ofgem have confirmed that CUSC Modifications should be managed outside the scope of the MHHS Programme and Settlement Reform SCR. CUSC Modifications (CMP430 and 431) have been raised in February and will be progressed to an urgent timeline (subject to Ofgem granting urgent status) to ensure Ofgem are able to make a decision by September 2024 for implementation in April 2025.
A6.3 Industry revenue management D6.3.1 Market half-hourly settlement ***Deliverable Description:*** *Update our billing system to charge BSUoS and TNUoS using half-hourly metered data only.* ***Deliverable Value Add:*** *This is part of Ofgem's Electricity Settlement Reform Significant Code Review and plays a significant role in the transition to net zero. There will be benefits relating to generation and network investment savings, load shifting reducing the need to operate generation assets at peak times and more accurate forecasting resulting in*	610 Settlements, Charging and Billing	Milestone 1 – Complete Milestone 2, - Delayed internal reasons Milestone 3, Delayed external reasons Milestone 4 - 7 – On track	• Milestone 1: High Level Discovery - 22/6 - high level I/A provided for MHHS P210 file change. • Milestone 2: Approach to receipt of data for TNUoS Charging agreed under the sign-off of MHHS Change Request 32. Approach and timing of testing for this to be agreed between MHHS Programme, Elexon and ESO. Approach to process for management of disputes relating to BOAs agreed and solution will be reflected in MHHS BSC Legal Text. Impact Assessment for direct impacts of MHHS has been baselined. A full impact assessment of consequential impacts of MHHS has not been completed yet. For example, changes to Supplier Time of Use Tariff offerings and therefore consumer behaviour and their associated impacts to system balancing have not been fully impact assessed. This will be developed and monitored across the months up to MHHS

a reduction in the residual imbalance that the ESO needs to resolve.			migration (Apr-25) and across the MHHS Migration period (Apr-25 to Oct-26). • Milestone 3: MHHS Programme milestones re-baselined. Progress is on track based on MHHS Programme plan - ESO discussing arrangements for System Integration Testing with the MHHS Programme and Elexon.
D6.3.2 TNUoS reform ***Deliverable Description:*** *Update our billing system to affect any TNUoS charging methodology changes recommended by the TNUoS taskforce and subsequently progressed via charging modification proposals.* ***Deliverable Value Add:*** *Ofgem is considering launching a wider review of the TNUoS methodology. This will support the government's ambitions for net zero, deliver benefits for consumers and lead to more efficient utilisation of and investment in the network.*	610 Settlements, Charging and Billing	Milestone 1-8 – Delayed external reasons	• Milestone 1: ESO Revenue team has shortlisted defects (considered by Task Force) for review, and have allocated these to categories (to progress as packages of work), we are aiming to create a workstream plan using the categories. The general delay against the business plan, is related to the complexity and volume of work contained within the Task Force, there is still on going analysis to determine if there are any further modifications that need to be raised to achieve the TNOUS Task Force objectives, until all modifications have been raised and significantly progressed through the code governance process, the ESO can not confidently conduct technical system discovery work to progress to plan. • Milestone 2 – 8: Delayed until completion of Milestone Impact Assessment & Agree Approach (which is an earlier milestone in the overall delivery of this objective).
A6.7 Fixed BSUoS tariff setting D6.7 Enhanced delivery of the recommendation from the BSUoS taskforce around reducing the volatility of BSUoS forecasting. ***Deliverable Description****: It is envisaged that the BSUoS taskforce decision will require significant system changes and hence would be implemented on a new Charging and Billing solution.* ***Deliverable Value Add:*** *It will provide certainty and visibility up front of the associated costs of balancing the system to our customers.*	610 Settlements, Charging and Billing	On track	• Continued investment in our forecasting capability and build on our existing capability for BSUoS forecasting. • 22/6 - Balancing cost model improvements: We are working with the Hartree Centre to investigate whether state-of-the-art machine learning techniques could be employed to improve our forecast of balancing costs. Wholesale electricity price is a key input to our model. We continue to investigate the best way to represent the forward curve of these prices in our model.
A6.8 Digitalisation of codes D6.8 Implementation of digital solutions ***Deliverable Description:*** *Investment to transform the stakeholder experience of the code management process through enhanced navigation, and document and workflow management tools.* ***Deliverable Value Add:*** *It allows users to navigate more efficiently whilst minimising risks of missing relevant information. It also supports a more efficient customer journey which encourages new entrants to the energy system.*	330 Digitalised Code Management	Complete	• Milestone 1: There are slight delays to the project due to the project experiencing several challenges with correctly provisioning suitable testing environments within our chosen technology stack, Azure 2.0. To ensure that this con be resolved effectively we are therefore moving our go-live date to no later than 15th May 2024. Whilst these issues are being resolved we continue to work on Phase 2 of the project, including GenAI and Workflow management which in turn should help with the time delays in completing this early. The Digital Code management (DCM) project delivers the ESO the technology capability to make industry codes accessible and consumable for customers. It will transform customer experience for the code management process through: - Digitalisation of codes - Contextual guidance and relevance for customers - Provision of enhanced navigation capabilities - Greater clarity on relevant sections using metadata tagging, document and workflow management tools Project Progress to date: - Project setup/stakeholder engagement - Scoping - Industry Engagement & User Research - Requirement definition - Conceptual Solution Design

Role 3 Activities, Deliverables, and Investments



Activity/Deliverables	Related Investment	Status	Update
A11.1 Refresh and integrate economic assessment tools to support future network modelling needs			
D11.1 Improved identification of when is the most economical time to invest and the most efficient solution ***Deliverable Description:*** *Develop a new EA tool, which reflects the latest modelling approach and technologies.* ***Deliverable Value Add:*** *As the transmission network evolves to facilitate the transition to a zero-carbon economy, having the tools to make timely and appropriate decisions about the investments on the transmission network ensures that these investments are in the best interests of consumers.*	220 Data and Analytics Platform 390 NOA Enhancements	Milestone 1: Complete Milestone 2: Delayed internal reasons	• Milestone 1: We have refreshed the economic assessment tools that we use to interact with our pan-European market dispatch model. This was done alongside the deployment of our new pan-European market dispatch model. The new model gave us new opportunities to enhance and integrate our tools, for example, by developing them in Python and integrating them with the pan-European dispatch tool via its API. • Milestone 2: We have started to update our economic assessment tool so that it can be used to undertake more types of analysis across the end-to-end strategic energy planning process. This includes data and model enhancements to allow the delivering of the Spatial Strategic Energy Plan the result of which will feed into the Central Strategic Energy Plan. By using a consistent economic assessment tool we will be able to use it for joined up analysis across different network needs and at multiple levels of granularity as appropriate for each ESO deliverable.
A11.2 Implement probabilistic modelling			
D11.2 Improved identification of network needs ***Deliverable Description:*** *Develop year-round thermal modelling tools and processes utilised within BAU activities and form part of the NOA methodology.* ***Deliverable Value Add:*** *As the transmission network evolves to facilitate the transition to a zero-carbon economy, having the tools to make timely and appropriate decisions about the investments on the transmission network ensures that these investments are in the best interests of consumers.*	220 Data and Analytics Platform 390 NOA Enhancements	Milestone 1: Complete Milestone 2: On track	• Milestone 1: We have transformed the way we publish our probabilistic results. This year we have published our results on the ETYS portal with interactive plots and maps. We are continuously working to improve the way we publish our results and findings to engage our stakeholders more effectively. • Milestone 2: Full integration with Data and analytics platform complete, enabling a joined-up analysis process that allows us to stack different network needs and adjust the level of detail in the analysis, to deliver the most economic decision. - Our in-house tool, POUYA, has gone live and we have started working closely with DAP for the full integration.
A11.3 Build voltage assessment techniques into an optimisation tool			
D11.3 Improved assessment of voltage requirements, and ability to look across a range of network needs at the same time. ***Deliverable Description:*** *Develop year-round voltage modelling and processes utilised as part of a stack of network assessment tools and are used within BAU activities and form part of the NOA methodology.* ***Deliverable Value Add:*** *As the transmission network evolves to facilitate the transition to a zero-carbon economy, having the tools to make timely and appropriate decisions about the investments on the transmission network ensures that these investments are in the best interests of consumers.*	220 Data and Analytics Platform 390 NOA Enhancements	Milestone 1: Complete Milestone 2: On track	• Milestone 1: We have successfully launched the first version of the tool on cloud meeting all BP2 requirements. We have collected improvement idea and new requirements and are planning to release incremental updates with additional capabilities. • Milestone 2: Full integration with Data and analytics platform complete, enabling a joined- up analysis process that allows us to stack different network needs and adjust the level of detail in the analysis, to deliver the most economic decision. - We have started working with the DAP team for the full integration.

A11.4 Build stability assessment techniques into an optimisation tool

D11.4 Improved assessment of stability requirements across the network. ***Deliverable Description:*** *Develop year-round screening of different network conditions for stability conditions is available and is used in ad-hoc studies working towards full use within the NOA methodology.* ***Deliverable Value Add:*** *As the transmission network evolves to facilitate the transition to a zero-carbon economy, having the tools to make timely and appropriate decisions about the investments on the transmission network ensures that these investments are in the best interests of consumers.*	220 Data and Analytics Platform 390 NOA Enhancements	Milestone 1: Complete Milestone 2: On track	• Milestone 1: We have completed the POC on the stability screening tool. • Milestone 2: We have started development of the solution.

A13.1 Carry out analysis and scenario modelling on future energy demand and supply

D13.1 Published Future Energy Scenarios (FES), Winter Outlook and Review, Summer Outlook, and other regular external commentary such as blogs from ESO employees on our website. ***Deliverable Description:*** *The Data and Analytics Platform will store the data and provide analytical capabilities to support the FES modelling. This includes use of tools like Power BI to allow greater "user interaction" with data (e.g., at greater regional granularity).* ***Deliverable Value Add:*** *FES benefits consumers by both providing a data-centric basis on which policies and investments can be designed and delivered at lowest cost to them. FES is an industry priority due to the high and increasing importance of decarbonisation. The Outlook Reports benefit consumers by mitigating the risk of security of supply issues by providing the market the information it needs to ensure delivery of electricity and gas to consumers. The Outlook documents are industry priorities as they provide trusted information on the level of risk expected in relation to operating the electricity and gas systems over the forthcoming winter or summer. This allows them to make operational decisions on asset availability or trading approaches.*	220 Data and Analytics Platform	Milestone 1-3 – Complete Milestone 4-6 – On track	• Milestone 1: Publication of Summer Outlook Report. Publication of Winter Review and Consultation - 2022 Summer Outlook Report published on 13 April. 2022/23 Winter Review and Consultation published 15 June alongside an early view of winter 2023/24 • Milestone 2: Publication of FES suite of documents (including data) - 2023 FES was published on the 10 July. • Milestone 3: 2023/24 Winter Outlook Report expected to be published on 28 September. • Milestone 4: Publication of Summer Outlook Report. Publication of Winter Review and Consultation - 2024 Summer Outlook and 2023/24 Winter Review and Consultation expected to be published in Q1 2024-25 in line with well-established annual processes. • Milestone 5: On track with proposed framework changes. Launch date 24th June 2024. • Milestone 6: Publication of Winter Outlook Report - 2024/25 Winter Outlook expected to be published in Q3 2024-25 in line with well-established annual processes.

A13.2 Conduct mathematical modelling and market research on local and wider geographic demand information

D13.2 Update pan-European and country level electricity and energy demand models ***Deliverable Description:*** *The Data and Analytics Platform will store the updates to our electricity supply and demand data for several European countries to reflect the changes within*	220 Data and Analytics Platform	On track	• Update electricity our supply and demand data for several European countries to reflect the changes within the EU as they continue to evolve their economies to meet net zero decarbonisation. The European countries to model include those that are interconnected to the GB market in addition to a number of additional countries which, whilst further away, still have an impact on the GB market.

the EU as they continue to evolve their economies to meet net zero decarbonisation. This will provide analytical capabilities to support the FES modelling. ***Deliverable Value Add**: As the GB power market is connected to other European countries via a series of interconnectors, it is important that we keep the data for Europe up to date. This ensures that the analysis we undertake continues to be of high quality and includes the latest market intelligence for Europe as the continent continues to evolve to meet net zero carbon emissions.*			Data to be benchmarked against the latest Ten Year Network Development Plan from ENTSO and incorporated within our pan-European dispatch model so that the FES, EMR and NOA analysis benefit from it. Due in 2025.
D13.2.1 Provide whole system regional insights ***Deliverable Description:** ESO to provide insights from FES and related publications in strategic conversations (government, regulator, industry) in relation to the energy system and decarbonisation.* ***Deliverable Value Add:** Enhancing the FES to provide whole system regional insights will improve the overall scenarios, as local factors will significantly impact GB scenarios. This will provide more insight and clarity on a regional level, supporting local policy makers and industry stakeholders in their decision making, as well as improving whole system planning processes and investment. By proactively bringing together industry parties, leading experts and under-represented voices, FES regionalisation will provide more robust analysis and consistent whole system scenarios.*	220 Data and Analytics Platform	Milestone 1-2 – Complete Milestone 3 – On track	• Milestone 1: Starting to work with Local Authorities to understand the feedback loop between FES / Distribution scenarios / Local Area Energy Plans. Starting to work with gas networks to agree the granular breakdown of FES scenarios (Natural Gas and Hydrogen) - Work has started to understand the Feedback loop between FES / DFES and Local Area Energy Plans and the granular breakdown of FES scenarios (Natural Gas and Hydrogen). Engagement with the network companies has commenced through the network forum and bilateral discussions. The Call for Evidence for FES 2023 requested stakeholder views on the feedback loop and the regional breakdown of our gas and hydrogen pathways which included engagement with both network companies and local authorities. A project has been kicked off to understand the potential role for the NESO as Regional System Planner. This has included direct engagement with Local Authorities. • Milestone 2: Whole system regional data and insights provided alongside FES in July. Enhanced visualisation launched. Regional data and visualisations added to our Website throughout the year as an appropriate and alongside the annual FES launch. User configurable FES view available for Electricity supply and Demand - FES 2023 was launched on July 10th which included regional data and insights. Our visualisation platform was updated alongside the FES and included a user configurable interface for Electricity supply and demand. • Milestone 3: Whole system regional data and insights provided alongside FES in July. Enhanced visualisation launched. Regional data and visualisations added to our Website throughout the year as an appropriate and alongside the annual FES launch. User configurable FES view available for Electricity / Gas / Hydrogen supply and Demand - Due in July 2024.
A13.3 Maintain external communication channels with consumers and stakeholders			
D13.3 Shared insights on future energy expectations and requirements ***Deliverable Description:** Improvements to the website will allow more insights from FES to be delivered directly to stakeholder (i.e., in addition to separate documents).* ***Deliverable Value Add:** The ability to generate insights from FES data allows "what if" questions to be answered ahead of policy or investment decisions. It also brings together whole energy system*	250 Digital Engagement Platform	Milestone 1-4 – Complete Milestone 5-8 – On track	• Milestone 1: Publication of FES-related insights via website and FES / ESO Newsletter - Launch date communicated early with Ofgem and in line with previous years. (At time of writing it is now complete, launched on 10 July as agreed). • Milestone 2: Complete - Launched 10th July 2023. • Milestone 3: On track and forms part of our ongoing engagement plan. Published additional changes document in September. • Milestone 4: Complete - Stakeholder Feedback Document submitted to Ofgem and formal acceptance received that it meets licence condition. Minor updates agreed following further feedback.

considerations and interactions between different fuels (e.g., hydrogen) and sectors (transport). *The benefits for consumers are that policies and decisions impacting costs and emissions are made on a solid understanding of the whole energy system and the insights provide information (directly and indirectly) to end consumers to improve their understanding of the energy market and how their actions are important.* *This is in line with industry priorities as future FES themes of "greater regionalisation", "increased consumer engagement" and "whole system thinking" are developed alongside stakeholder engagement to ensure cohesion.*			• Milestones 5 through 8: On track and feeding into engagement plans.
A13.5 FES: Integrating with other networks and supporting DNOs to develop their own DFES processes			
D13.5.3 Enhance our energy modelling to reflect stakeholder feedback and changes to the credible pathways to net zero. ***Deliverable Description:*** *Continue to evolve energy models to deliver additional accuracy and functionality reflecting the needs of the industry and other stakeholders.* ***Deliverable Value Add:*** *Ensuring that these models continue to provide meaningful and realistic views of future energy demand provides a foundation for ESO and EMR delivery body processes to procure efficient levels of network and generation capacity on behalf of consumers.*	220 Data and Analytics Platform	Complete	• Our energy modelling has been updated for FES24 to enhance our ability to reflect H2 supply locations. We are continuing to work through the modelling requirements to support CSNP with internal and external stakeholders.
A14.3 Further enhance the customer connection experience, including broader support for smaller parties			
D14.3.4 Improving Systems and Data ***Deliverable Description****: Enhance our connections systems to be more informative, user friendly and interactive to improve transparency and give stakeholders easy access to relevant data.* ***Deliverable Value Add:*** *Improved systems and data will set the ESO up to manage increasing volumes of increasingly complex connection applications. This will improve transparency and make it easier for new parties to connect, facilitating decarbonisation and competition.*	380 Connections Platform	Milestone 1-4 – Complete Milestone 5-8 – On track	• Milestone 1: Submit IT investment paper through internal governance process and obtain approval of scope and expenditure. Engage with customers on ways to improve connections journey and ways of enhancing the portal - Future releases of the Connections portal are planned and the functionality backlog has been agreed. Sessions with industry stakeholders are ongoing with some smaller targeted sessions with specific groups of stakeholders already held and larger stakeholder events planned for the end of July 2023. • Milestone 2: Further develop concept of new register, platform, and connection with other systems [salesforce and customer portal]; Liaise with relevant internal stakeholders to verify concept and requirements - The functionality for the Connections portal is constantly being developed, with more functionalities being added every 2-3 months throughout the BP2 period. The functionality being added is underpinned by stakeholder feedback. • Milestone 3: This is an ongoing activity. We are currently carrying out feature development sessions with industry parties such as; consultants, DNOs and TOs to enhance portal functionality. • Milestone 4: Complete as phase 1 is delivered.

			• Milestone 5: Obtain feedback on the new platform from internal and external stakeholders - Stakeholder feedback sessions planned for July 2023 and functionality being introduced directly into the portal to obtain customer feedback.
D14.3.5 Improving our internal processes ***Deliverable Description:*** *Update our connections processes to reflect code and policy changes, as well as developments in the customer portal.* ***Deliverable Value Add:*** *As connection applications increase in volume and complexity, processes need to be streamlined to ensure the best use of industry time and the reduction of potential barriers to decarbonisation.*	380 Connections Platform	On track	• Improved customer feedback indicating customers welcome changes to connections processes. • Ongoing activity.
A14.4 Facilitate development of the customer connections portal			
D14.4.1 Implement first phase of the ESO connections portal, including online account management and integration with other network organisation websites ***Deliverable Description:*** *This is the IT investment that will enable delivery of the connections portal and electronic management of the connections contracting process, providing an interface for customers, TOs and (ultimately) DNOs.* ***Deliverable Value Add:*** *Phase 1 of the portal will digitise the connection application process and introduce process efficiencies and automation. This will lead to more efficient use of industry resources, saving costs for consumers.*	380 Connections Platform	Complete	• Milestone 1: Deliver changes based on customer feedback - Two further releases have been implemented since the launch of MVP in March 2023 including new functionality for calculation of application fees as well as other front end and back-end enhancements. • Milestone 2: Deliver changes based on customer feedback – Complete.
D14.4.2 Phase 2 of the connections portal concluded ***Deliverable Description:*** *Further develop concept of phase 2 deliverables along with key stakeholders to work with to create concept designs.* ***Deliverable Value Add:*** *Phase 2 of the portal will bring increased automation and self-service functionality, as well as integrating with other industry platforms. This leads to more efficient use of industry resources, saving costs for consumers.*	380 Connections Platform	Milestone 1-4 – Complete Milestone 5-8 – On track	• Milestone 1: Submit revised IT investment paper through internal governance process and obtain approval of scope and expenditure - IT investment paper submitted. • Milestone 2: Further develop concept of phase 2 deliverables and identify different stages of deliverables along with key stakeholders to work with - Future releases of the Connections portal are planned and the functionality backlog has been agreed. Sessions with industry stakeholders are ongoing with some smaller targeted sessions with specific groups of stakeholders already held and larger stakeholder events planned for the end of July 2023. • Milestone 3, 4: Complete as phase 2 is delivered.
A15.4 Manage our operational data and modelling requirements			
D15.4.3 Automation of data exchange mechanism and preparation for CIM implementation ***Deliverable Description:*** *The investment will enable enhancement to the current data exchange mechanisms.* ***Deliverable Value Add:*** *This deliverable will improve the mechanism for data exchange*	350 Planning and Outage Data Exchange	Milestone 1: Complete Milestone 2: On track	• Milestone 1: Woking on developing a new exchange node interface platform to facilitate interface points between Transmission Owner and DNO network data exchange with the help of DD & T. The extraction mechanism needs to be automated such that any change can be captured using an automated importing link into the offline toolsets. • Milestone 2: Implementation of data exchange automation. Prepared for data exchange enhancements with network organisations - This is a Q4 2024-25 deliverable.

between industry participants. This will lead to more accurate data and a more efficient process. This will ensure that the correct planning and operational decisions are made, which promotes secure and efficient operation of the system.			
A15.5 Develop Regional Development Programmes (RDPs)			
D15.5.2 RDP2 of RIIO-2 (MW dispatch, South East, UKPN) ***Deliverable Description:*** *Provide greater visibility and control of parties connected to distribution networks. It will provide an integrated real-time data exchange, situational awareness and dispatch capability with DSOs thereby facilitating new system operation tools and markets.* ***Deliverable Value Add:*** *This deliverable enables distribution projects to connect earlier than they otherwise might have done while providing the tools for the ESO to manage operability issues in the region as a result of any earlier connection of projects. The RDP process looks to determine, of the potential options to connect more low carbon generation, the most economic outcome for consumers.*	340 RDP Implementation and Extension	Complete	• All MWD enabling IT implementation complete.
D15.5.3 RDP3 of RIIO-2 (wider rollout and enhancements, WPD) ***Deliverable Description:*** *Provide greater visibility and control of parties connected to distribution networks. It will provide an integrated real-time data exchange, situational awareness and dispatch capability with DSOs thereby facilitating new system operation tools and markets.* ***Deliverable Value Add:*** *This deliverable enables distribution projects to connect earlier than they otherwise might have done while providing the tools for the ESO to manage operability issues in the region as a result of any earlier connection of projects. The RDP process looks to determine, of the potential options to connect more low carbon generation, the most economic outcome for consumers.*	340 RDP Implementation and Extension	Milestones 1: Complete Milestone2: – Delayed, External reasons Milestones 3-5 – On track	• Milestone 1: Product Backlog prioritisation, requirements gathering and design commenced. • Milestone 2: RDP3 is the vehicle to deliver the post MVP requirements and enhancements to our RDP1 (MWD service in the NGED DNO area). RDP1 delivery timescales were significantly impacted by the need to deliver a bespoke private Web service link for data exchanges to meet the NGED security protocols, having a resultant knock on effect to the delivery timescales of this RDP. This milestone is expected to complete in Q1 2024-25 so is BP recoverable.
D15.5.4 RDP4 of RIIO-2 (wider roll out and enhancements UKPN) ***Deliverable Description:*** *Provide greater visibility and control of parties connected to distribution networks. It will provide an integrated real-time data exchange, situational awareness and dispatch capability with DSOs thereby facilitating new system operation tools and markets.* ***Deliverable Value Add:*** *This deliverable enables distribution projects to connect earlier than they otherwise might have done while*	340 RDP Implementation and Extension	Milestone 1: Complete Milestone2 – Delayed, External reasons Milestones 3-5 – On track	• Milestone 1: Product Backlog prioritisation, requirements gathering and design commenced. • Milestone 2: RDP2 (UKPN MWD MVP) has been delayed from BP1 due to delay in agreeing MVP scope with DNO and is now delivering in early 2024 - this project has been dependent on completion of that phase. Product Backlog prioritisation, requirements and design phases underway. This milestone is expected to be complete in Q1 2024-25 so is BP2 deliverable.

providing the tools for the ESO to manage operability issues in the region as a result of any earlier connection of projects. The RDP process looks to determine, of the potential options to connect more low carbon generation, the most economic outcome for consumers.			
D15.5.5 Deliver GB rollout of functionality developed through initial RDPs ***Deliverable Description**: Provide greater visibility and control of parties connected to distribution networks. It will provide an integrated real-time data exchange, situational awareness and dispatch capability with DSOs thereby facilitating new system operation tools and markets.* ***Deliverable Value Add:** Wider rollout of functionality delivered in initial RDPs will provide greater tools to manage regional thermal constraints across GB. Rollout of tools that have been developed and tested on a small scale, thereby learning from that development, results in greater consumer value. Lower balancing costs from more tools to manage constraints*	340 RDP Implementation and Extension	Milestone 1, 2 – Complete Milestones 3,4 – On track	• Milestone 1: Establish enduring process to determine needs at GSPs - Factoring in our ongoing work through the ESO's Five Point Plan to Accelerate Connections, we have now drafted a process to determine a needs case at each GSP. This is currently undergoing final internal approval prior to being shared with stakeholders for review and feedback. • Milestone 2: The RDP rollout process has been developed and feedback from stakeholders received and implemented. Process paper published in ESO external website. • Milestone 3: Test application of process at one or more sites - Once feedback has been incorporated and the process is finalised, a number of sites will be selected to test its application. • Milestone 4: Implement enduring ongoing process (BAU) - Following successful tests at the nominated sites, BAU processes will be updated to reflect the relevant changes.
D15.5.6 RDP5 of RIIO-2 ***Deliverable Description**: Provide greater visibility and control of parties connected to distribution networks. It will provide an integrated real-time data exchange, situational awareness and dispatch capability with DSOs thereby facilitating new system operation tools and markets.* ***Deliverable Value Add:** This deliverable enables distribution projects to connect earlier than they otherwise might have done while providing the tools for the ESO to manage operability issues in the region as a result of any earlier connection of projects. The RDP process looks to determine, of the potential options to connect more low carbon generation, the most economic outcome for consumers.*	340 RDP Implementation and Extension	Milestone 1 – Complete Milestone 3: Delayed Milestones 2, 4 – On track	• Milestone 1: We have identified a number of opportunities where RDP5 can support the roll-out of functionality necessary to support the ESO's Five Point Plan to accelerate connections. • Milestone 3: RDP 5 will be implementing GSP technical limits as agreed by ENA Strategic Connections Group work. The initial scoping has been started in discussion with all England and Wales DNOs. Draft Project initiation documents are shared with all E&W DNOs.
D15.5.7 RDP6 of RIIO-2 ***Deliverable Description:** Provide greater visibility and control of parties connected to distribution networks. It will provide an integrated real-time data exchange, situational awareness and dispatch capability with DSOs thereby facilitating new system operation tools and markets.* ***Deliverable Value Add:** This deliverable enables distribution projects to connect earlier than they otherwise might have done while providing the tools for the ESO to manage operability issues in the region as a result of any earlier connection of*	340 RDP Implementation and Extension	Milestone 1 – Complete Milestone: 3 – : Delayed Milestone 2,4 – On track	• Milestone 1: Go / No go decision to progress RDP implementation; If yes, commence detailed RDP development - We have identified a number of opportunities where RDP6 can support the roll-out of functionality necessary to support the ESO's Five Point Plan to accelerate connections. • Milestone 3: ESO and SPD agreed to deliver a transmission constraint management service for DERs via RDP6. Originally this was going to be taken via GEMS. However, after the agreement to discontinue with GEMS, a new service need to be designed and implemented to achieve the original intention of SPD ANM integration. Discussions are ongoing with SPD on service terms and technical design. We are trying to implement a service similar to MW dispatch. Potential advantages to be gained by using similar design principle and put lessons

projects. The RDP process looks to determine, of the potential options to connect more low carbon generation, the most economic outcome for consumers.			learned to a good use. This will be another example of scalability of RDPs.
A15.6 Transform our capability in modelling and data management			
D15.6.8 Development and ongoing maintenance of EMT Capabilities ***Deliverable Description:*** *Increase our capability to carry out system analysis using Electromagnetic Transient (EMT) tool, such as PSCAD software purchase and maintaining the licences.* ***Deliverable Value Add****: Currently in general, only RMS simulations are carried out and this new deliverable will enable more advanced EMT modelling capabilities in addition.* *Provides more confidence and forward planning to reduce system risks.* *As the system moves towards zero carbon, to analyse the system issues such as voltage oscillations, control interactions and power quality issues, more advanced EMT simulations are required.*	360 Offline Network Modelling	Milestones 1-4 – Complete Milestones 5,6 – On track	• Milestone 1: Learning from NIA projects (such as TOTEM) to define the requirements for EMT modelling work - NIA project TOTEM led by SSEN, provided base case EMT network component model based on ETYS 2021 Year 1. This will be used as base model for ESO to develop GB wide EMT model. The learnings such as dispatch tool requirement to analyse multiple scenarios, computational performance required will be taken forward to build future model building activities. DETECTS is another innovation project, where the SE Coast model with Users model integrated has been obtained. The main learning is on the integration of Users model to wider EMT model. More innovation projects, such as developing tools to analyse the system, are ongoing. Based on these learnings, ESO in discussion with wider industry, to build and maintain the GB wide EMT model for future. • Milestone 2: Engage with wider industry and produce a roadmap to develop and maintain EMT models - ESO engaged with all onshore TOs through innovation project such as TOTEM to develop the base case GB wide EMT model. ESO is currently working with SSEN-T on EMT analysis. ESO is working in partnership with NGET on development of co-simulation NIA project. The JPC approved to form JPCMG subgroup on EMT modelling. ESO also having continuous engagement with wider industry (AEMO, G_PST, NERC, ESIG group) on learning and developing GB wide EMT model. • Milestone 3: Learnings from all NIA innovation projects are being used by ESO to define these requirements. ESO also engaged with wider industry (AEMO, NERC EMTTF, ESIG) in the world and their learnings also being used to develop these requirements. In addition to the above, CIGRE report and research papers have been used to define the data requirements. Data requirements for different analysis are presented to EMT Modelling JPCMG subgroup and received feedback from TOs.Milestone 4: ESO have already started to carry out EMT simulations for single plants/ HVDC. ESO obtain the initial model from DETECTS innovation project and started the regional analysis on GB. • Milestone 5: To define the requirements for full GB system EMT simulation using learning from NIA projects (co-simulation analysis innovation project in D15.6.9) - After completing the feasibility of co-simulation analysis (between PowerFActory and PSCAD) through innovation projects, requirements will be defined. • Milestone 6: To carry out EMT simulations to analyse control interactions, system oscillations and power quality studies. Developed plan for ongoing maintenance of EMT model(s) - ESO started to carry out EMT simulations for single plants/ HVDC. ESO obtain the initial model from DETECTS innovation project and developing the analysis skills. Different system analysis with wider GB model, obtained from TOTEM project, will be carried out.
D15.6.9 Co-simulation analysis innovation project	360 Offline Network Modelling	Milestone 1 – Complete Milestone 2 – Complete	• Milestone 1: Engage with wider industry (different TOs) to start the potential innovation project for co-simulation works. - Engaged with NGET TO on requirements of co-simulation (between

Deliverable Description: *Engage with wider industry (all TOs) and develop capability to carry out co-simulation using RMS and EMT packages.* ***Deliverable Value Add:*** *This new deliverable will enable more advanced modelling capabilities to combine RMS and EMT simulation together.* *Ability to analyse the complex system efficiently with less time to simulate.* *As the system move towards zero carbon, co-simulation provides capability to carry out analysis with reduced networks but has the ability to carry out RMS and EMT studies.*			PowerFactory and PSCAD model). ESO is working with NGET to set up a new NIA project called Co-Simulation. Co-simulation NIA project is expected to start in 2 weeks. ESO also engaging with OPAL-RT and other academia on possible NIA projects as well. • Milestone 2: ESO is working with NGET on a NIA innovation project on co-simulation between PowerFactory and PSCAD. Through this innovation, at first the feasibility of co-simulation between PowerFactory and PSCAD has been evaluated. NIA project demonstrated the communication between two tools (PowerFactory and PSCAD) but due to communication delay, error introduced in the analysis. To investigate further on these issues, ESO is also currently exploring on the co-simulation feasibility analysis within PowerFactory (Both RMS and EMT within PowerFactory), through IT project. Engagement with DigSilent on co-simulation within PowerFactory tool is being explored through ONM investment.
A15.8 Facilitate distributed flexibility and whole electricity system alignment			
D15.8.2 Enabling whole electricity flexibility service provision through operational visibility ***Deliverable Description:*** *Facilitates the discovery and design phase to enable distributed flexibility visibility in ESO markets.* ***Deliverable Value Add:*** *We need to facilitate smaller assets into ESO markets and have the operational tools to allow us to understand their impact. CBA figure - £150m pa. DER want to provide services to ESO and we must remove blockers and demonstrate value.*	460 Restoration 650 Accelerating Whole Electricity Flexibility (formerly Facilitating Distributed Flexibility)	Milestones 1-3 – Complete Milestones 4, 5 – Delayed, internal reasons Milestone6 – On track	• Milestone 1: Initiate project scoping with external stakeholders to enable operational visibility of DER - We have initiated Project scoping with internal stakeholders to identify DER visibility use cases. Identified relevant external stakeholders. Next step to engage externally to produce a high-level view of External stakeholders' expectations. Milestone 2: We have completed work to produce a DER Visibility Roadmap strategy. We undertook a cross functional view to produce detailed user requirements across ESO & external stakeholders as well considering regulatory, data and technology architecture aspects needed to deliver DER visibility. This holistic approach is expected to reduce risk & maximise consumer benefit. • Milestone 3: Digital, Data & Technology (DD&T) Discovery kicked off on 25th March, having been delayed by 2.5 months due to internal scoping. Expected timescales have increased from 3 to 13 months, leading to delays to associated milestones and the wider programme. The programme has been replanned to be re-baselined, which will be approved at the DER Visibility Steering Committee on 5th April 2024 to return to green. • Milestone 4: Kick-off of Digital, Data & Technology (DD&T) Discovery has been delayed by 2 months and expected timescales have increased from 3 to 12 months, leading to delays to associated milestones and the wider programme. The programme plan will be re-baselined in March to account for these delays and return to green. • Milestone 5: The initial DD&T Discovery looking at DER assets will complete in July 2024, with delivery of captured changes being sanctioned in August 2024. Work on the detailed IT solution for DER assets will kick off in September 2024, meaning that this milestone will be delayed by c 2 months.
D15.8.3 Enabling whole electricity system operational service co-ordination ***Deliverable Description:*** *Facilitates the discovery and design phase to implement agreed systems and processes to co-ordinate flexibility services across whole electricity system.* ***Deliverable Value Add:*** *Action from BEIS SSFP. Required to manage*	650 Accelerating Whole Electricity Flexibility (formerly Facilitating Distributed Flexibility)	Milestones 1-3 – Delayed, internal reasons Milestone 4 – Delayed, external reasons Milestone5 – On track	• Milestone 1: Delayed due to lack of clarity around the future of Primacy workstream as we shifted to focus more on delivering the enabling work (such as data and process mapping) that will enable better coordination and the establishment of primacy rules as needed. • Milestone 2: Delayed as IT discovery phase for primacy implementation imitation has evolved to give priority to the enabling work (such as data and process mapping) that will enable better coordination and the establishment of primacy rules as needed

service conflict and optimisation efficiently and transparently. *The order of despatch of services to be influenced by whole system value and ensure that the division between market/price-driven actions and the electricity system hierarchy of operations/needs is clear and transparent.* *Flexibility providers want to be able to stack services across ESO/DSOs.*			and interactions with other projects prioritising DER visibility with other networks. • Milestone 3: Delayed as IT discovery phase for primacy implementation imitation has evolved to give priority to the enabling work (such as data and process mapping) that will enable better coordination and the establishment of primacy rules as needed and interactions with other projects prioritising DER visibility with other networks. • Milestone 4: We've stepped back from our 'co-lead' role until previous co-lead's replacement joins at the end of Mar 2024. We continue to attend as a representative and support the delivery of this TWG. • Milestone 5: Project remains on track and confident that it will deliver on time. (these are the solutions for the initial use cases which are being implemented in line with a new two track approach for Primacy)
A16.4 Whole system outage notification			
D16.4.1 Scoping exercise concluded for delivery of enhancements to outage notifications ***Deliverable Description:*** *Understand requirements for the delivery of enhanced outage notifications.* ***Deliverable Value Add:*** *Enhancements to outage notifications will support whole electricity system solutions and allow working across the transmission -distribution interfaces to unlock value for consumers.*	350 Planning and Outage Data Exchange	Milestone 1, 2: Complete Milestone 3: On track	• Milestone 1: Work supported by PODE workstream 1.API links between eNAMS outage management app and NGET's NCIS app commissioned both reading and writing data. Delivers resource planning and efficiency savings for the TO. Working with Scottish Power TO on API proof of concept. Exiting Proof of Concept for Conga, an enhanced reporting tool which may enable users to self-serve outage queries and analyse outage planning performance. TOs have been provided with access to an ESO outage tracker, the "ROB" (Regional Outage Board) enabling TOs to track the progress of their outage requests through the ESO outage planning process. Activity completed 16 June 2023.Scoping document completed. • Milestone 2: Duplicate Milestone • Milestone 3: Dependent on outcomes of A16.3 deliverables - Work supported by PODE workstream 1
A16.5 Network access planning automation			
D16.5.2 Scope future automation development ***Deliverable Description:*** *Develop sandbox environments (test systems) to test automation tools for NAP teams without interruption to live systems.* ***Deliverable Value Add:*** *As the network becomes more complex, with new asset and user types connecting to facilitate net zero, automation tools are a key enabler for optimising the network to deliver outages at the lowest possible cost to the consumer.*	360 Offline Network Modelling	Milestones 1-4 – Complete Milestones 5-8 – On track	• Milestone 1: We have collaborated with subject matter experts and documented user stories to capture the requirements. Additionally, we have developed a project plan to ensure the delivery of these requirements. • Milestone 2: Proof of concept for agreed automation commenced. • Milestone 3: Proof of concept for automation completed - Work has started and we are on track for delivery. • Milestone 4: Training has already started with multiple session organized across networks. This will be a continuous activity as planned. • Milestones 5-8: Training programme for teams in NAP developed and delivery schedule planned - Training has already started with multiple session organised across networks. This will be a continuous activity.