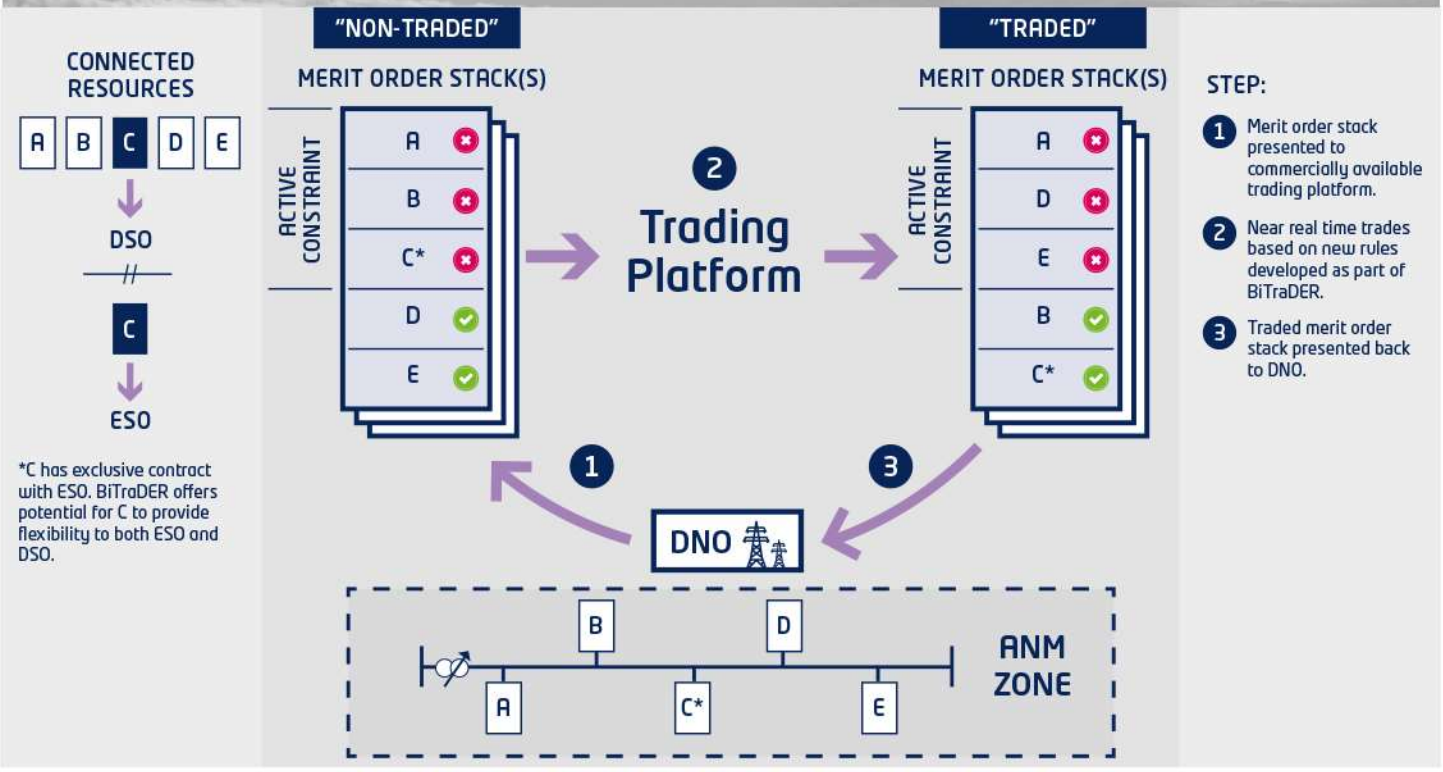
BiTraDER

electricity north west
Bringing energy to your door

Project Progress Report 3

05 March 2025



Project Partners

AFRY ÅF PÖYRY
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Version

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V0.1	09 December 2024	Christopher Greenfield	First Draft	For review
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Approval

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Glossary

ANM	Active Network Management - The use of distributed control systems to continually monitor network limits and provide signals to curtailable connections or flexible services to modify outputs in line with these limits.
API	Application Programming Interface
BAU	Business As Usual
Connectee	Any individual or company connected to the electricity distribution network
Constraint	A demand greater than network ratings or voltage outside statutory limits. In this definition demand is used in the context of the load on the network (including generation).
Curtailable connection	Connection arrangements which allow Electricity North West to signal, in real time, a curtailment of demand or generation when there are network overloads or restrictions affecting the network local to the connectee whilst the network is operating in an intact, system normal state. Connectees will generally be given a curtailable connection where offering a non-curtailable connection would require network reinforcement which has cost and time implications on them being connected
Curtailment	The turning off, or down, of a connectee's import or export to alleviate a constraint based upon contracted and agreed principles of available capacity
Curtailment obligation	The requirement for a connectee to provide curtailment. The specific details of this requirement will be stated in their connection agreement
DNO	Distribution Network Operator – An organisation that owns, operates and manages the electricity infrastructure that distributes electricity from the transmission network operated by NESO, to end users (commercial and domestic properties)
DSO	Distribution System Operation – The systems and processes needed to operate energy networks in the net zero carbon future
Demand connection	An asset that is connected to the distribution network and requires import supply
Demand increase (flexible service)	A connectee providing a flexible service where the outcome is an increase in demand (this could be provided by either generator reducing export, or a demand connectee increasing import within their maximum import capacity limits)
Demand reduction (flexible service)	A connectee providing a flexible service where the outcome is a reduction in demand (this could be provided by either generator increasing export within their maximum export capacity limits, or a demand connectee reducing import)
ENWL	Electricity North West Limited

Flexibility	The modification of generation injection and/or consumption patterns, on an individual or aggregated level, often in reaction to an external signal, to provide a service within the energy system
FMAR	Flexibility Market Asset Register – A proposal by Ofgem to standardise flexibility market participant asset registration
Merit order list	A list of connectees in a specific order for the ANM system to action
NESO	National Energy System Operator – An organisation that monitors, controls and actively manages the power flows on the electricity transmission network to maintain a safe, secure and reliable electricity supply. NESO is a natural monopoly in the flexibility market, acting as a neutral facilitator
NIC	Network Innovation Competition
Non-curtailable	Under system normal conditions, a connection which is planned and operated such that it should not be curtailed; however, it may be curtailed in the event of the loss of any one or more elements (e.g. an overhead line route, a transformer, an underground cable)

1 Executive Summary

1.1 The Project

The BiTraDER project officially started on 15th December 2021 upon issue of the Project Direction by Ofgem and is due to be completed in July 2026. It will investigate and trial a new innovative method introducing a transparent trading market for connected resources to trade curtailment obligations bilaterally, within regionally aggregated stacks. The project will include the development of a market platform for peer-to-peer trading, integration with our Active Network Management (ANM) system, and development of functionality to send dispatch instructions to connected customers, with either curtailable or non-curtailable connections.

The project aims to:

- Boost acceptance of curtailable connections through reducing risk associated with curtailments,
- Reduce barriers to uptake of renewable energy sources,
- Address current operational and contractual conflicts between Distribution Network Operator (DNO) and the National Energy System Operator (NESO),
- Boost liquidity of the flexibility market through encouraging more customers to trade flexibly,
- Produce outputs that enable adoption across Great Britain (GB): functional specification, detailed requirements, market model and interfaces.

The project aims to improve constraint resolution through optimisation of the merit order stack, based on customer trades. This will enable effective risk mitigation of constraints, wider participation in flexible services and therefore wider availability of flexibility for the DNO and NESO.

1.2 Project Progress

This is the third Project Progress Report (PPR) for BiTraDER and covers the period from 15 December 2023 to 15 December 2024.

The project is currently on track to deliver the overall aims and deliverables. This period has seen the completion of two deliverables. The third deliverable, 'Trading platform design' and fourth deliverable 'Architecture build lessons learned report' have both been completed, uploaded to the Electricity North West Limited (ENWL) website, and submitted to Ofgem on 27 February 2024 and 29 November 2024 respectively.

The third deliverable report outlines the key aspects and design of the entities responsible for enabling the system's operation and explains how they integrate to ensure its functionality. This includes the trading platform, the ANM upgrades, and the Application Programming Interface (API). An updated overview of the trials is also shown with a particular focus on the mini trials workshop held in January 2024 and the feedback that was received. The completion of this deliverable positioned the project team to move effectively from the design phase into the build phase of the project.

The fourth deliverable report focuses on the methods to implement, build and test the designed solution along with the associated lessons learned throughout the process. The tasks completed during this deliverable have enabled a functional prototype of the BiTraDER system to be developed

in time to commence the simulation trials. A more detailed description of the simulation trials is provided in the report along with further anticipated system developments needed to transition to live network trials due to commence in Summer next year.

The next deliverable due in May 2025 is deliverable 5 'Simulation trials report'. The simulation trials have now started and will be running from October 2024 to May 2025. As a result of ongoing successful customer engagement, a group of key stakeholders including asset owners, operators and aggregators have agreed to participate in the trials and will be liaising closely with the project team to undertake simulated trading opportunities, whilst providing useful learnings to feed into development of the project.

The key project milestones delivered during this reporting period are outlined below:

Figure 1: key project milestones

Date	Milestone
January 2024	Project workshop and build phase planning session
January 2024	Mini trials workshop
February 2024	Completion of the third deliverable 'Trading platform design'.
March 2024	Project workshop and build phase planning session 2
May 2024	Dissemination of BiTraDER at Utility Week Live
August 2024	Presentation on BiTraDER to the ANM curtailment working group
September 2024	Session with NESO on DNO/NESO conflict coordination
October 2024	Simulation trials initial workshop and kick-off
November 2024	Dissemination of BiTraDER at annual Energy Innovation Summit
December 2024	Completion of the fourth deliverable 'Architecture build lessons learned report'.

The project actual costs to date (09 December 2024) are £3,116,291. The estimated cost at completion is £7,698,447 which is in line with the project budget (including contingency).

1.3 Risks

BiTraDER adopts the established ENWL risk management systems and processes which is audited and integrated in all aspects of day-today operations. Taking learning from delivery of other Network Innovation Competition (NIC) projects, such as QUEST, the risk management approach has been

applied at a more granular level. The practice of reviewing highest scoring risks has been embedded into monthly steering group meetings. In addition, the project has implemented a quarterly deep dive into risks and issues including both those identified at bid stage, and newly identified risks since mobilisation.

In this reporting period we have identified seven new risks and closed three existing risks.

The complete risk register can be found in Appendix 1.

The two main open risks for the project are:

1. ANM system capabilities – Although ENWL has started offering flexible ANM connections, it should be noted that the full capabilities of the ANM system are not yet mature. Whilst the system is scheduled to become operational in January 2025, there is a concern that there may be a delay in starting the live network trials should any functionality issues occur. The same concerns held true for the simulation trials; however, the project team developed a bespoke ANM test environment known as the orchestrator tool to simulate the actions of the live system. For the purposes of the live trials, the live NMS production system containing the dynamically changing network will need to be used alongside a fully functional ANM system. Although this poses no issue at this moment, this is a concern that will need to be monitored throughout the next reporting period.

   As mentioned above, the system is now configured to enable the simulation trials with the functionality of the ANM system performed by the orchestrator tool. The orchestrator contains a set of pre-planned trading scenarios that are sent via API to the trading platform where they are presented to trial participants as trading opportunities. As the orchestrator is completely independent of the ANM system, this leaves outstanding development work to enable the system to be ready for the live network trials. The project team are closely monitoring the progress of the simulation trials and are anticipating when the live network trials are likely to start to leave enough headroom to develop the necessary upgrades required to ensure that the system is ready.

2. Engagement of live network trial participants – In preparation for the live network trials, the project team have been working to engage customers to participate in BiTraDER. To enable the live network trials, it is necessary to recruit a handful of customers that are connected onto the same area of the ENWL network, which under a constraint could provide a trading opportunity. The project team have had several rounds of customer engagement including customer workshops which, despite generating interest, fell short of recruiting connected customers within proximity of one another. To enhance the existing customer engagement strategy, there have been ongoing conversations with the ENWL Distribution System Operation (DSO) team. The DSO team are involved in regional stakeholder events and tendering for the flexible services market and could potentially identify the relevant customers who may want to get involved.

   Another related issue which could exacerbate this challenge is the low number of flexible connections. The level of constraints on the ENWL network is at present relatively small, although predicted to grow in time may not offer the liquidity available to perform a live network trial. To overcome this, any recruited assets that have a non-curtailable connection could temporarily be placed on a theoretical flexible connection to boost available trades. Similarly, to increase the number of constraints on the network, the ANM system could be simulated to trigger a constraint and start curtailing assets; albeit, ensuring the network is safe and curtailing only those assets involved in the trial.

1.4 Learning and dissemination

ENWL attended and presented on BiTraDER at the 2024 Energy Innovation Summit (EIS). BiTraDER was presented as part of the 'Growing flexibility and services to make it more accessible, fair and beneficial session'. This provided an overview of the project, its objectives and the benefits BiTraDER will bring to the industry along with an update on progress and wider project timescales. A video update from the project manager on how BiTraDER is progressing was also played on loop at the ENWL stand. This has now been uploaded to the ENWL website.

ENWL also presented on BiTraDER at Utility Week Live. This is a large exhibition event bringing together utilities and professionals to disseminate learnings to help solve industry challenges. BiTraDER was presented on the energy flexibility stage under 'Developing new flexibility products & innovations' and provided an overview of the project and benefits it will bring to the industry.

Throughout the year the project partners have been updating their respective LinkedIn pages with key project updates, specifically relating to the success of the mini trials and progress around the simulation trials. There have also been informative articles about the project published online, this includes Modern Power Systems magazine who posted an article titled 'Flexibility markets: a way of managing increasing complexity'. Internal updates on the project have also been shared with ENWL colleagues via the internal regular newsletter 'Newswire'.

As part of the agreed plan to share learnings, an update on the project was given by ENWL to the ENA ANM Curtailment Working Group. This group is part of Open Networks, and its membership comprises all DNOs and NESO. This provided a follow on to the previous presentation with the learnings shared from the mini trials and an overview of the plans for the simulation trials along with a technical discussion about the project and opportunity for the group to challenge decisions made by the project team.

The BiTraDER communications register details and evidences all communications to date and is summarised in Appendix 6.

2 Project Managers Report

2.1 Project Background

As part of the UK's journey toward net zero, DNOs are experiencing an increase in requests by customers to connect low carbon, renewable energy sources to the network. To avoid the need for expensive, time-consuming, and disruptive network reinforcement, DNOs have introduced curtailable connection arrangements for customers.

Curtailable connections for customers offer access to the network subject to certain conditions. These conditions allow the DNO to curtail the connected customers' export (if a generation customer) or import (if a demand customer) to manage the operation of the network. This is known as a "curtailment obligation", which rests with the connected customer. The conditions on which the connection is offered, including curtailment obligations, are captured in the connection contract and are therefore a contractual obligation on the customer. By agreeing to a flexible connection contract, the customer is agreeing to operate flexibly within the real-time network capacity limit.

As these types of connections allow customers to connect without network reinforcement, they can connect faster and at lower cost when compared to a 'non-curtailable' (non-flexible) connection. However, in accepting a curtailable connection, they risk being interrupted and unable to operate normally which can carry commercial risk to the asset owner/operator. For some technologies, such as solar, customers need a high in-service utilisation factor to offset high upfront costs and are therefore sensitive to curtailment risks. As a result, many customers are hesitant to accept a curtailable connection, instead preferring to pay more, and wait longer, for a non-curtailable connection.

BiTraDER aims to allow new and existing connected customers to mitigate the risks associated with curtailment obligations. The project will investigate, design, build and trial a new market for connected resources to trade their curtailment obligations with other connected customers. The Project Team will explore customers' appetite for bilateral trading, data requirements, interfaces with DNO systems and the appropriate cyber security considerations.

BiTraDER will develop the bilateral market trading rules, determining what is and is not a valid trade, explore the market's ability to operate in near real-time, and determine the functionality required to return the output of the market to the DNO and NESO systems for execution in real time.

The market is intended to be completely independent of the DNO. Therefore, ENWL will provide the necessary information to the market and platform to facilitate trading and receive the outputs following close of trading. As such, BiTraDER will also examine the role of the market administrator and propose who might be best placed to operate the market and why, and whether more than one market can exist.

Further details on BiTraDER can be found on the ENWL website including the Project overview and the Customer journey.

2.2 Project Partners

There are three project partners working collaboratively on the BiTraDER project AFRY, Electron and LCP Delta. The partners each contribute a unique skill set and experience to the project.

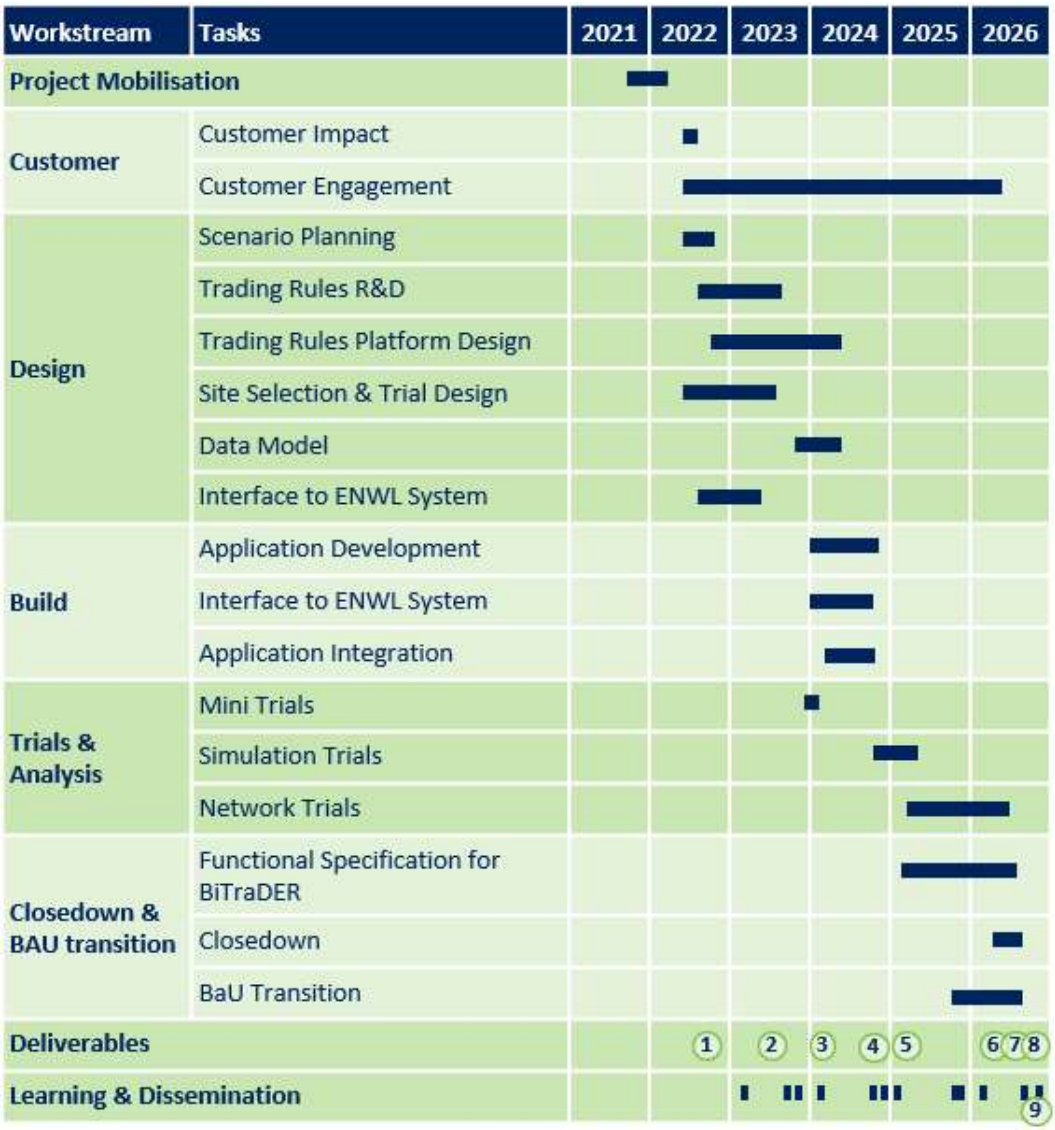
Figure 2: Project Partner role and responsibilities within the project

Project Partner	Experience	Role on Project
AFRY	Expertise in engineering, design and consultancy. Provided support to Ofgem through the development of the RIIO-2 determinations.	• Development and design of market trading rules for the platform. • Ongoing monitoring, analysis and evaluation of trades and outcomes. • Interface with NESO and regulatory/policy changes. • Cost Benefit Analysis (CBA) of wider rollout based on observed outcomes.
Electron	Developed ElectronConnect platform which supports marketplaces for SSE, NESO and London Hydro, and will be used in BiTraDER. Specialists in digitally optimised marketplaces.	• Develop and provide market trading platform to enable DER to trade their curtailment obligations via a neutral secondary market. • Develop a simulated version of the trading platform using modelled live systems to simulate real operations. • Transition the trading platform to enable a live network trial
LCP Delta	Have experience in projects involving DSO demand side flexibility, and expertise in research and consultancy specific to energy markets.	• Design of customer engagement process. • Conduct customer engagement on Project. • Support in design of Project trials. • Support in design of market trading rules. • Ongoing engagement and responding to customer queries

2.3 General

Following award of funding for BiTraDER, the project has been mobilised to establish contracts and structures within the wider team. Workstreams have been used to group and streamline the tasks required within the Project. Figure 3 shows a high-level snapshot of the project workstreams. There is a stage gate following the simulation trials providing the opportunity to ensure that the plan for implementation of the live trial is both reasonable and deliverable within the constraints of the approved project. Should the project pass the stage gate we will move to the live trial phase, otherwise we will progress immediately to project closedown and Business as Usual (BAU) transition.

Figure 3: BiTraDER project workstreams



The project partners and ENWL project team have continued to meet regularly in relation to activities within the workstreams and associated deliverables.

The key project management activities undertaken during this reporting period are summarised below:

- Project monitoring and control: the project has adapted processes developed and established as best practice during earlier NIC funded projects. These processes monitor and control the delivery, ensuring that BiTraDER progresses in line with the project plan, budget and that outputs are high quality.

- Regular engagement with project partners: there has been regular bi-weekly project management meetings along with separate workshops specific to 'in-flight' activities with relevant partners and suppliers.

- Management of wider project resources: management of demands on project partner resources to ensure efficient use of the wider team, and timely production of deliverables.

Following best practice identified in other projects, we have continued using Huddle as an online collaboration tool to share information on the workstreams between project partners. The portal supports our collaborative work on project deliverables, risk, and issue management. The portal also holds the meeting minutes and action logs which are regularly reviewed with project partners, ensuring actions are clearly described, allocated responsibility, provided deadlines, and then followed up.

2.4 Project Deliverables and Workstreams

Following on from the completion of the second project deliverable, 'Trials plan, trading rules and initial specification report', the team's key activities during this reporting period were the completion of the third project deliverable 'Trading platform design', in February 2024 and the fourth project deliverable 'Architecture build lessons learned report', in November 2024. The simulation trials are now underway and will complete in May 2025. At this time the fifth deliverable 'Simulation trials report' will be due.

A summary of the activities completed within the individual project workstreams during this reporting period, is provided below.

2.4.1 Customer workstream

The key activities undertaken in the customer workstream are summarised below:

- The mini trials workshop was held in January 2024 and was attended by seven key businesses, to de risk the market rules developed during the design phase.
- Sent out a post workshop survey to gather thoughts and feedback from the mini trials.
- Reached out to the existing customer base from previous engagement activities and workshops to introduce the simulation trials, and gauge interest for attendance.
- Created a LinkedIn post about BiTraDER highlighting the benefits to customers and sharing an update on progress, including the plans for the upcoming simulation trials. This also provided customers with the opportunity for reach out to the project team if interested in participating.
- Maintained customer engagement throughout the reporting period through emails and where necessary, 121 meetings. There was lots of interest in the project and trials so there were several ongoing conversations simultaneously.
- Invites sent out for the simulation trials first initial workshop along with a high-level agenda. The initial workshop was attended by seven key businesses and provided the opportunity for the project team to introduce the trials and emphasise the mutual benefits to be gained for both the team and businesses, along with setting the expectations throughout the trial period.
- Invites sent out for the first three trade scenarios. The businesses were consulted on when and how to submit trades, and the team set up trade outcome meetings afterwards. There were some customers who didn't trade and engagement to understand requirements and appetite for trading is ongoing.

The Customer engagement plan outlines the broad range of research questions we aim to answer within the project, covering customers' understanding, requirements, and appetite for trading.

2.4.2 Design workstream

The tasks under the design workstream have now largely completed and both the second deliverable 'BiTraDER Trials Plan, Trading Rules and Initial Specification Report' and third deliverable 'Trading platform design', have been submitted.

The key activities undertaken in the design workstream are summarised below:

- The end-to-end process was illustrated through different user journeys comprising of the market operator, market participants and the DNO. Each journey and interface with the trading platform was shown for simulation trials, live trials and BAU.
- The trading platform design was finalised with the additional requirements provided for the trade verification, performance verification and settlement process. This functionality is additional to what is required for the simulation trials and will be further updated before implementation for the live network trials.
- The technical component design covering the ANM upgrades and API specification was finalised to enable integration with the trading platform.
- A thorough Cyber Security risk assessment was carried out to determine the threat landscape surrounding the BiTraDER system.
- The third deliverable 'Trading platform design' was submitted in February 2024 and details the work completed for the design workstream in the previous and current reporting period.

2.4.3 Build workstream

The build workstream has comprised the bulk of the work completed during this reporting period which has fed into completing the fourth deliverable 'Architecture build lessons learned report', and making progress with the simulation trials having already carried out a set of successful simulated trades during this reporting period.

The key activities undertaken in the build workstream are summarised below:

- Configuration of the BiTraDER trading algorithm into the ElectronConnect trading platform based on the design specification in the third deliverable.
- Build of the ANM orchestrator tool and configured with a set of trading scenarios to use and send to a group of participants for the simulation trials.
- Build the API and integrate the ENWL system, trading platform and market operator together in preparation for trading taking consideration of cyber security requirements. This was done through a series of three integration tests.
- Perform successful factory and site acceptance testing.
- The fourth deliverable 'Architecture build lessons learned report' was submitted in November 2024 and details the work completed for the build workstream in the current reporting period.

In the next reporting period, there will likely be some outstanding tasks to be completed to close out the build workstream. The following activities are anticipated to be completed:

- Upgrade the ElectronConnect trading platform to include trade verification, performance verification and settlement in preparation for the live network trials.

- Upgrade the live ANM system to include and configure the components necessary to enable the live network trials.

- Perform further systems integration tests with the updated system to enable live network trials.

2.4.4 Trials and analysis workstream

The key activities undertaken in the trials and analysis workstream are summarised below:

Mini Trials

When developing the trading rules during the last reporting period, value was recognised in testing some of the decisions made such as payment structure and price discovery. An additional cost neutral 'mini trials' phase was added to carry out this task and was ran as a one-day workshop in January 2024. These trials did not include the use of the trading platform and was more of an informal hands-on exercise with active participation to demonstrate the market process.

There were seven businesses who attended the event and provided the following key learnings:

- An availability payment was unanimously favoured to accompany the utilisation payment when submitting trades.

- Along with a self-declared option, additional methods to determine day ahead baselines were requested.

- The main concern that was highlighted to the project team was a concern on the number of assets that would be available to trade in the market.

Simulation Trials

The simulation trials saw an initial prototype of the trading platform built to enable a series of trading scenarios, using simulated constraints sent via API from an ENWL ANM test environment known as the orchestrator tool. The orchestrator has 10 in-built trade scenarios with fabricated assets and configurable time stamps ready to send out to a group of trial participants. The project team have successfully managed to recruit seven business to participate in the simulation trials. The recruitment for additional businesses to attend will be an ongoing task throughout the trial period.

The constraints in the trade scenarios are of varying magnitudes and include both import and export over hourly time periods. There are 10 assets per constraint, with each having an associated 'Contract Operation Type', to determine whether an asset is a buyer or a seller and what service that asset can provide.

For BiTraDER buyers, there are two contract types:

- Constrained Demand – a flexible ANM connection whose import can be curtailed.

- Constrained Generation – a flexible ANM connection whose export can be curtailed.

For BiTraDER sellers, there is one contract type:

- Flexible Output Change – a non-curtailable connection who can provide a service to mitigate the constraint such as demand turn down or generation turn up.

Using an API, the trading platform receives the trading scenario from the orchestrator and notifies the trial participants of opportunities to trade. Once trading has taken place, the orchestrator receives the new re-traded constraint list for each applicable half hourly trade period. In a live network environment, should the constraint occur, the live ANM system would curtail assets based on the new constraint list. Since this is a simulation environment, there won't be any live constraints taking place, the volume delivered, performance delivery and service fulfilment will be calculated manually using an excel based calculator tool.

The simulation trials will continue to run up to May 2025. A scenario is sent to the trial participants approximately twice a month. To ensure that the simulation trials reflect how the market will operate in BAU, the information sent to the platform is for constraints occurring the next day, in line with the day ahead market mechanism. Trial participants then have a two-hour window to trade before a conceptual gate closure limits further trades. The project team and trial participants have a meeting the next day to discuss the outcomes of the trade, including a visual presentation of the old and new constraint list, to gain an understanding of the implications and benefits of participating in BiTraDER.

Live Trials

The live network trials will provide the opportunity to test the BiTraDER market under real network conditions with real money changing hands. To enable this, further upgrades to both the trading platform and the live ANM system will be required. The trading platform will need to perform additional steps in the end-to-end process such as trade verification, dispatch and settlement.

During the next reporting period, the upgrades applied to the orchestrator tool will be transferred to the live ANM system and integrated with the trading platform. The integration process will need to take account of cyber security, and a robust testing regime will be required to ensure the new interface functions correctly and safely.

Due to the uncertain nature of demand and generation, it is impossible to guarantee constraints will manifest on the network and they may need to be simulated. It is important to note that even if the constraint is not real, the actions and consequences will be, allowing customers to understand how trading impacts them and whether this affects their appetite to trade. There also needs to be a high level of both existing demand and generation customers on the same part of the network and meeting this requirement has thus far proved challenging. The project team are currently looking at the constraint specific management zones on the live ANM system to attempt to locate and engage potential participants who could get involved in the live trials.

2.4.5 Closedown and BAU transition workstream

There is nothing to report for this workstream during this reporting period.

2.4.6 Learning and dissemination workstream

ENWL attended and presented on BiTraDER at the 2024 EIS. BiTraDER was presented as part of the 'Growing flexibility and services to make it more accessible, fair and beneficial session'. This provided an overview of the project, its objectives and the benefits BiTraDER will bring to the industry along with an update on progress and wider project timescales. A video update from the project manager on how BiTraDER is progressing was also played on loop at the ENWL stand. This has now been uploaded to the ENWL website.

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The BiTraDER communications register details and evidences all communications to date and is summarised in Appendix 6.

In the next reporting period, we anticipate the following dissemination activities to be completed:

- Publish press releases on the project, in association with completion of our fifth deliverable, completion of the build phase and completion of the simulation trials.
- Update the BiTraDER website with the Project Progress Report 3 in December 2025 and the fifth deliverable 'BiTraDER Simulation Trials Report' in May 2025.
- Host continuous knowledge sharing events that could be either a webinar / workshop / conference and upload materials to the project website.
- Attend further meetings of the ENA Open networks ANM Curtailment Information working group to present BiTraDER and gain feedback from the other networks.
- Attend the EIS 2025 and any other relevant conferences, which is currently scheduled for 5th November / 6th November 2025.

3 Business Case Update

Ofgem in collaboration with NESO are proposing to develop a standardised 'Flexible Market Asset Register' (FMAR) to enable market participants to register their assets once only and gain access to both local and national flexibility markets without the need to re-enter their details. It is therefore likely that the method of registering assets in BiTraDER will change in the future and may not be done on the ElectronConnect platform but rather through a national flexibility data sharing platform which would need to be integrated with the existing BiTraDER infrastructure.

Ofgem has appointed Elexon as the market facilitator for all local energy flexibility markets with the purpose of coordinating new and existing markets together to ensure that providers gain the most value and face no obstacles to participation. Once fully operational, BiTraDER could be scrutinised by the market operator and should any additional requirements be put forward, further developments or changes in the market rules may be necessary.

Whilst the above two points should be monitored closely, the likely timeline for these to be implemented will be after the project has finished so would only affect the BiTraDER market during the BAU stage.

4 Progress against Plan

The project plan is continually monitored, reviewed, and updated in line with the regular project progress meetings. These discussions also capture any changes to existing project risks, as documented in this report, as well as any newly identified risks and issues.

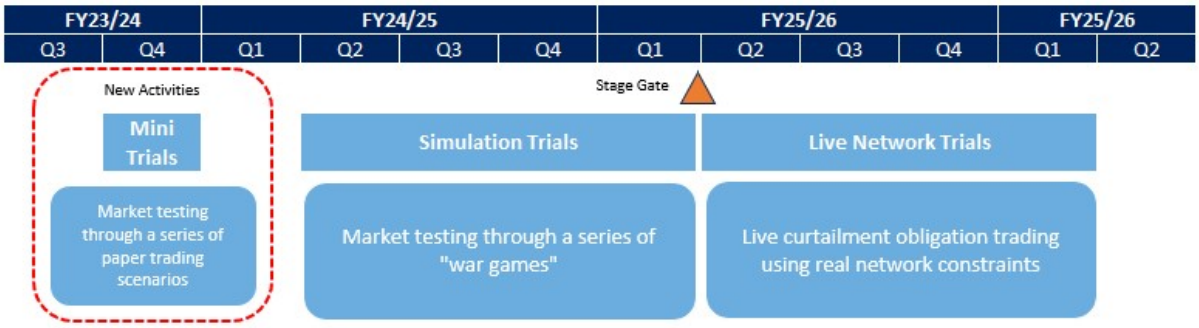
The progress against the plan in this reporting period has seen the third deliverable 'Trading platform design' and fourth deliverable 'Architecture build lessons learned report', submitted on time.

In this reporting period, the following points are worth noting:

- Following the mini trials workshop in January 2024 and prior to the start of the build phase, the project team agreed that for the simulation trials, an ANM orchestrator tool would be built as a test environment and used in place of the live ANM system. This alleviated the risk of the live ANM system not being ready in time for the simulation trials. Therefore, the tasks associated with the orchestrator tool were added into the plan whilst the tasks associated with the development of the live ANM system were pushed back to early 2025 which would allow the necessary time to prepare the BiTraDER system for the live network trials due to start from May 2025.

- The simulation trials due to run from August 2024 to May 2025 have now started but with a slightly later start date of October 2024. It was required for the project team to perform the necessary testing prior to commencing the trials to ensure system operability. Testing was carried out in three phases with the intention that by the end of the third phase, the pre-planned simulated trading scenarios that would be sent to the trial participants had all been tested. The first initial workshop was held on 21 October and the first trading scenario was carried out on the 04 November. Each month up to May 2025, excluding holidays, two trading scenarios will be sent from the orchestrator to the trading platform which will present the trading opportunity to the trial participants. The participants will submit bids and offers on their fabricated assets as set by the project team and a meeting to discuss the trade outcomes will be held afterwards.

Figure 4: Trials Timeline and Activities

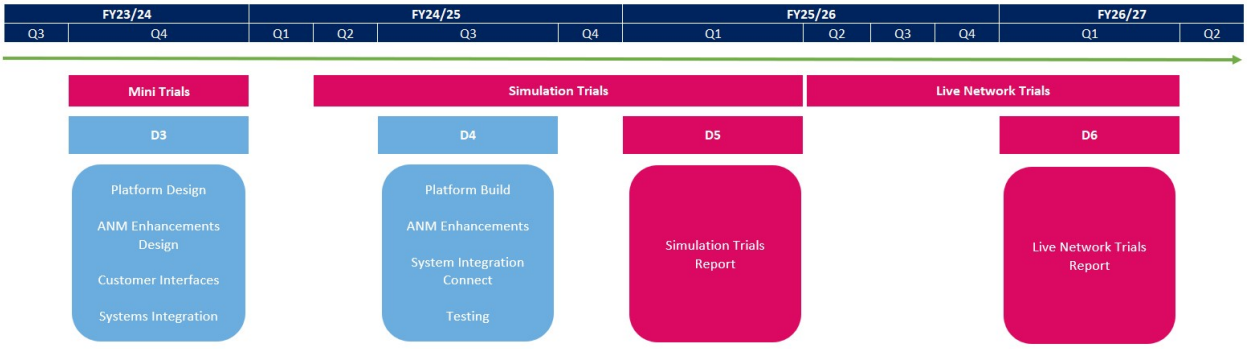


- Although ENWL has started offering flexible ANM connections, it should be noted that the full capabilities of the ANM system are not yet mature and there is a concern that there may be a delay in starting the live network trials whilst the system is established. The go live date for the ANM system is January 2025 and from this date it is anticipated that the tasks associated with the functionality upgrades to enable the live network trials will be carried out. Along with the ANM functionality, there is also a concern about live trial participation from connected customer assets. It is a requirement to recruit a group of assets within the ENWL network that could fall under a single constraint which could be traded upon. Despite positive customer engagement, there is a shortfall in the number of assets recruited which could affect the feasibility of running the live network trials as planned. The project team are monitoring progress towards live network trials and the potential requirement of using the stage gate to go straight to project closure if necessary.

- The third deliverable, 'Trading platform design' and fourth deliverable 'Architecture build lessons learned report' have both been completed, uploaded to the ENWL website, and submitted to Ofgem on 27 February 2024 and 29 November 2024 respectively. The BiTraDER test plan report which is an associated document to the fourth deliverable is being used to provide guidance and functions as a plan for the simulation trials. By the time the simulation trials end in May 2025, there should be enough useful feedback and learnings to feed into the next phase of the project.

In the next reporting period, the fifth deliverable 'BiTraDER Simulation trials report' will be submitted. Currently there is no major risk to the timely submission of this deliverable at the start of May 2025, pending the relevant points above do not create additional barriers. This is the only deliverable due in this reporting period. The Deliverable Timeline can be seen in figure 5. The phases shown in blue are the design phases and those shown in pink are the trial phases.

Figure 5: BiTraDER Deliverable Timeline



5 Progress against budget

The project budget is defined in the direction. The breakdown of planned costs per category is shown in Appendix 3.

A summary of the forecast and actual spend to date against the planned costs per category is shown in Figure 6. A more detailed breakdown of these costs is shown in Appendix 4. The costs include expenditure up to and including 09 December 2024.

Figure 6: Summary of spend to date per cost category

£'000s Excluding Partner Funding Ofgem Cost Category	Spend to date			Total Project			% Variance to Plan
	Actual	Plan	Variance	Forecast	Plan	Variance	
Labour	965,414	988,927	23,513	1,782,760	1,779,760	(3,000)	0%
Contractors	1,399,034	1,912,392	513,358	2,748,118	2,747,932	(186)	0%
IT	521,694	1,740,266	1,218,571	1,773,580	1,773,113	(467)	0%
Payments to Users	0	212,917	212,917	400,782	400,782	0	0%
Contingency	0	0	0	636,222	636,222	0	0%
Other	230,149	178,529	(51,620)	360,638	360,637	(0)	0%
Total	**3,116,291**	**5,033,031**	**1,916,739**	**7,702,100**	**7,698,447**	**(3,653)**	

Source: Ofgem Schedule to Project Direction - January 2021

The project spends to date show a fair level of underspend compared to the planned budget which needs to be explained in further detail. Project expenditure as of 09 December 2023 was £3,116,291 compared to cost baseline of £5,033,031.

The spend on internal labour for the project is relatively in line with the budget.

For the payments relating to the contractors, there is a delay to the customer engagement partner, LCP Delta that has resulted in an underspend on the Contractors-Customer Engagement category. The company changed its name in the previous reporting period and both the legal teams at ENWL and LCP Delta are working together to amend contracts and resolve the issue. There is another underspend on the Contractors-Trading Rules Research & Development category, this is due to the phasing of the payments from month to month that was agreed in the partner contracts. As the project progresses towards completion the payments are expected to become more in line with the budget.

The actual IT spend is significantly under budget compared to the plan. The main reason for this is that we are no longer integrating the Scheider NMS system into the design. The IT design and interface will cover ENWL's internal system only to the trading platform. Therefore, the overall figures are correct. Furthermore, the upgrades to the internal system that were expected to be in place for the

simulation trials have now been pushed back to instead enable the live network trials only, with the necessary IT infrastructure for the simulation trials being met by the orchestrator tool. The costs for the IT-Project Management are slightly higher than expected; however, some of the costs should have been allocated to the IT-Interface Build which should be slightly higher than stated. This has already been corrected but has not been updated to reflect the table in this PPR.

The payments to users category-Customer Engagement has resulted in an underspend due the same reason above on the Contractors-Customer Engagement category. When the live trials commence in the next reporting period, it is anticipated that a significant portion of the money in the payments to users category will be spent.

6 Bank account

The project bank statement is shown in Appendix 5 - Project bank account. The statement contains all receipts and payments associated with the project up to 31 December 2024.

7 Project Deliverables

In this reporting period there were two deliverables for submission, the third deliverable, 'Trading platform design' and fourth deliverable 'Architecture build lessons learned report' have both been completed, uploaded to the ENWL website, and submitted to Ofgem on 27 February 2024 and 29 November 2024 respectively.

The fifth project deliverable, 'BiTraDER Simulation trials report' is due in the next reporting period, by 30 May 2025. Appendix 2 shows the full list of deliverables to be completed and submitted throughout the project lifecycle along with the status of the evidence.

The simulation trials have now started and will run up to May 2025. Detailed feedback and learnings from trial participants will be shared and used as evidence to feed into the fifth deliverable. To enable active participation and discussion, there are ongoing Teams meetings and customer engagement with those involved in the trials to ensure that each party is getting value out of the project, and that it is fulfilling their expectations.

8 Data Access Details

There was no data gathered in this reporting period. It is anticipated that there will be data gathered on trading, constraint management and settlement as part of the trials which will be made available on the ENWL website as part of the trials deliverables.

Electricity North West's innovation data sharing policy can be found on our website.

9 Learning Outcomes

In this reporting period, there were tasks carried out to finish off the design workstream and make progress with the build workstream. The first few months focused on the finalised design of the end-to-end process showing the market operator, market participants and DNO customer journeys throughout each of the trial phases. The necessary upgrades to the design to enable the live network trials were also laid out in preparation for future stages of the project. Following these initial months, the build phase of the project started which resulted in the design being configured into the trading platform and the ANM orchestrator tool and integrated together to enable the BiTraDER system to operate for simulation trials.

This period has seen the completion of two deliverables. The third deliverable, 'Trading platform design' and fourth deliverable 'Architecture build lessons learned report' have both been completed, uploaded to the ENWL website, and submitted to Ofgem on 27 February 2024 and 29 November 2024 respectively. The third deliverable report outlines the key aspects and design of the entities responsible for enabling the system's operation and explains how they integrate to ensure its functionality. This includes the trading platform, the ANM upgrades, and the API. An updated overview of the trials is also shown with a particular focus on the mini trials workshop held in January 2024 and the feedback that was received. The completion of this deliverable positioned the project team to move effectively from the design phase into the build phase of the project. The fourth deliverable report focuses on the methods to implement, build and test the designed solution along with the associated lessons learned throughout the process. The tasks completed during this deliverable have enabled a functional prototype of the BiTraDER system to be developed in time to commence the simulation trials. A more detailed description of the simulation trials is provided in the report along with further anticipated system developments needed to transition to live network trials due to commence in Summer next year.

In the next reporting period, it is anticipated that further learning from the simulation trials will be generated and will feed into the fifth deliverable 'BiTraDER simulation trials report' due in May 2025.

The learnings outcomes during this reporting period are:

- The iterative development process was crucial in enabling the project team to work collaboratively to create a valuable product that implemented novel trading algorithm logic for a variety of realistic constraint scenarios that could be used for the simulation trials.

- Early integration testing between the orchestrator tool and the BiTraDER trading platform allowed potential issues to be quickly identified and addressed, reducing the risk of major setbacks later in the process.

- Splitting the simulation trial testing into two stages – simple and advanced – allowed the development of the BiTraDER trading platform to be successfully broken down into manageable sections.

- Product demonstrations at the end of each development stage validated that the agreed requirements had been met and provided evidence of progress, increasing confidence in solution feasibility.

- Regular meetings between the project team enhanced transparency and allowed for adjustments to the requirements when new requirements emerged.
- The development process during the build phase was supported by comprehensive documentation created in earlier project phases.

- Additional design documentation and decision logs proved to be invaluable reference sources for explaining the latest design rationale. This was particularly valuable as BiTraDER contains novel trading rules and complex, evolving domain knowledge.

- The underlying logic developed during the design phase played a pivotal role in shaping the integration process between each entity within the BiTraDER system.

- The ENWL ANM system is a highly complex system that contains logic specific to the associated DNO and network area. The above example outlines the importance of using high

quality test data in innovation projects such as BiTraDER, to ensure clarity among numerous stakeholders from different organisations working with multiple complex systems.

10 Intellectual property rights

ENWL is following the default IPR arrangements. No IPR has been generated or registered during the reporting period. The IPR implications of forthcoming project deliverables are currently being considered and will be reported in the next project progress report.

11 Risk management

BiTraDER adopts the established ENWL risk management systems and processes which is audited and integrated in all aspects of day-to-day operations. Taking learning from delivery of other NIC projects, such as QUEST, the risk management approach has been applied at a more granular level. The practice of reviewing highest scoring risks has been embedded into monthly steering group meetings. In addition, the project has implemented a quarterly deep dive into risks and issues including both those identified at bid stage, and newly identified risks since mobilisation.

There are currently no uncontrolled risks that could affect the delivery of planned project deliverables or cause the project to deviate from the original bid submission. Project risks outlined in this report have mitigations in place and are controlled to ensure no impact on planned deliverables and deadlines.

The risk register included with the bid submission has been transferred into the BiTraDER project risk register and continues to be reviewed on a regular basis. The risks associated with project delivery are described in detail in Appendix 1. The project team will update the risk register when necessary and review the risk at each project management meeting to check progress and assess mitigations. If it is clear that any risk is delaying the project, measures will be put in place to bring the project back on track.

The two main open risks for the project are:

1. ANM system capabilities – Although ENWL has started offering flexible ANM connections, it should be noted that the full capabilities of the ANM system are not yet mature. Whilst the system is scheduled to become operational in January 2025, there is a concern that there may be a delay in starting the live network trials should any functionality issues occur. The same concerns held true for the simulation trials; however, the project team developed a bespoke ANM test environment known as the orchestrator tool to simulate the actions of the live system. For the purposes of the live trials, the live NMS production system containing the dynamically changing network will need to be used alongside a fully functional ANM system. Although this poses no issue at this moment, this is a concern that will need to be monitored throughout the next reporting period.

   As mentioned above, the system is now configured to enable the simulation trials with the functionality of the ANM system performed by the orchestrator tool. The orchestrator contains a set of pre-planned trading scenarios that are sent via API to the trading platform where they are presented to trial participants as trading opportunities. As the orchestrator is completely independent of the ANM system, this leaves outstanding development work to carry out to enable the system to be ready for the live network trials. The project team are closely monitoring the progress of the simulation trials and are anticipating when the live network trials are likely to start to leave enough headroom to develop the necessary upgrades required to ensure that the system is ready.

2. Engagement of live network trial participants – In preparation for the live network trials, the project team have been working to engage customers to participate in BiTraDER. To enable the live network trials, it is necessary to recruit a handful of customers that are connected onto the same area of the ENWL network, which under a constraint could provide a trading opportunity. The project team have had several rounds of customer engagement including customer workshops which, despite generating interest, fell short of recruiting connected customers within proximity of one another. To enhance the existing customer engagement strategy, there have been ongoing conversations with the ENWL DSO team. The DSO team are involved in regional stakeholder events and tendering for the flexible services market and could potentially identify the relevant customers who may want to get involved.

   Another related issue which could exacerbate this challenge is the low number of flexible connections. The level of constraints on the ENWL network is at present relatively small, although predicted to grow in time may not offer the liquidity available to perform a live network trial. To overcome this, any recruited assets that have a non-curtailable connection could temporarily be placed on a theoretical flexible connection to boost available trades. Similarly, to increase the number of constraints on the network, the ANM system could be simulated to trigger a constraint and start curtailing assets; albeit, ensuring the network is safe and curtailing only those assets involved in the trial.

12 Accuracy Assurance statement

The financial information has been produced by the BiTraDER project manager and the project's finance representative, who review all financial postings to the project each month to ensure they are correctly allocated to the appropriate project activity.

This document and associated finances have been prepared, reviewed and approved in line with ENWL Data Assurance processes. These processes have been developed to comply with the Ofgem Data Assurance Guidelines and apply to all submissions / publications.

13 Consistency with full submission

There have been no material changes during this reporting period.

14 Other

There is nothing further to report in this period.

List of Appendices

Appendix 1 – Risk register

Appendix 2 – Project deliverables

Appendix 3 – Project direction budget

Appendix 4 – Detailed project expenditure

Appendix 5 - Project bank account

Appendix 6 - BiTraDER dissemination log

Appendix 1 – Risk register

Number	Project phase/ workstream	Risk summary	Probability	Impact	Mitigation	Revised probability	Revised impact	Last reviewed	Status	Update
0.1	Delivery	Covid-19	2	3	We will monitor government advice both in the UK and Europe to identify any risks as early as possible.	1	3	05/12/24	Closed	No further restrictions anticipated and updated assessment provided
0.2	Mobilisation	Mobilisation	2	4	Suitable partnership agreements that ensure collaborative working, value for customers' money and achievement of learning objectives in a timely manner have been identified for all Partners. A project initiation document will be issued to the Project Partners to ensure that all parties are ready.	1	4	07/12/22	Closed	Mobilisation complete
0.3	Customer engagement	Customer contracts and engagement	3	5	We will start the customer engagement early in the project and have ensured there is sufficient time in the project plan.	1	5	05/12/24	Open	We do not anticipate needing any specific contracts for the simulation trials, but we may need some agreement in writing for the live trials.
0.4	Customer engagement	Low recruitment	3	5	A patch of our network in Cumbria fed from Harker Grid intake has been chosen for the trials through preliminary site selection. This will provide a large pool of customers from which to sign up the trial participants.	2	5	05/12/24	Open	Customer engagement is ongoing in preparation for live network trials, however there are difficulties in recruiting customers located within the same area of network.
0.5	Build	Delayed integration with ENWL systems	2	5	We have selected competent partners who have advised on the Project plan which allows sufficient time.	1	5	05/12/24	Open	Systems have successfully been integrated to enable the simulation trials. Anticipated further development and testing will be required for live network trials.
0.6	Build	Delayed Platform configuration	2	5	We have selected competent Partners who have advised on the Project plan which allows sufficient time.	1	5	05/12/24	Open	The platform has now been configured to enable simulation trials, but further development will be required for live network trials.
0.7	Design	System undermined by Cyber security requirements	3	5	We have allowed time for appropriate cyber-security considerations and design in the Project plan.	1	5	05/12/24	Open	The initial Cyber review has been completed and the requirements could lead to more configuration

										delaying the build process - specific risks added to this log to cover this.
0.8	Simulation	Customer retention through trials	3	5	We will start the customer engagement early in the project and sign up more participants than needed. We will involve the participants in the design of the platform and simulation trials as meaningful collaborators. We have ensured there is sufficient time in the Project plan the simulation phase.	1	5	05/12/24	Open	Customer engagement is ongoing, 7 customers signed up to attend the simulation trials. The team are monitoring engagement during the trials and will change the format as necessary to maximise the retention of the customers.
0.9	Network Trials	Lack of network constraints	3	5	Our preliminary site selection, which included a review of constraints, has selected the network in Cumbria fed from the Harker Grid intake substation as the trial area. If required we will artificially create constraints to ensure scenarios are tested (reimbursing affected customers)	2	5	05/12/24	Open	
0.10	Network trials	Lack of participant understanding affecting testing	2	4	We have significant customer engagement planned throughout the project to educate participants in the benefits and risks associated with obligation trading.	1	4	05/12/24	Open	The team have so far run two scenarios as part of the simulation trials and those who have traded have understood the concept. However, there were several customers who did not trade, and we are investigating whether this is due to nonattendance due to other time commitments or lack of understanding.
0.11	Network trials	Limited support/involvement from NESO	2	4	We are currently seeking to secure a contract for consultancy services	1	4	05/12/24	Open	Conversations have been had between ENWL and NESO with a focus on how the system can be developed to accommodate appendix G customers. The primacy rules are presently being reviewed by NESO and further conversations will be had at the time of publication.
0.12	Learning & Dissemination	Dissemination affected by low attendance	2	3	ENWL will choose dissemination channels optimised to achieve maximum reach and coverage.	2	3	05/12/24	Closed	BiTraDER has been disseminated at the yearly EIS and Utility week live,

										all of which have had good attendance.
0.13	Closedown	Change in Ofgem governance	3	3	Communication channels from Ofgem will be monitored and any updates to such requirements identified as early as possible.	1	3	05/12/24	Open	No significant changes identified in publication of Final Determinations, but we will continue to monitor changes throughout the project
1.01	Mobilisation	Outstanding contracts	3	3	Started this work early in the mobilisation phase	2	3	07/12/22	Closed	All critical path contracts agreed
1.02	Design	Developing specifications and requirements	2	3	Internal technical peer review of requirements and specifications as they develop; potential external peer review via open networks WS1a P6.	1	3	05/12/24	Open	Open Networks is developing industry standards relating to API development; will require continued monitoring and anticipation of adjustments in transition to BaU
1.03	Customer engagement	Low incidence of flexible connection agreements in our area	4	5	Extending recruitment to other DNO areas initially for trading rules development and simulation trials. Long-term strategy to be developed for recruiting these customers in ENWL area (in time for live trials in 2025-26)	2	5	05/12/24	Open	There are 7 businesses signed up to attend the simulation trials, however most of these are not in the ENWL area. Whilst this is acceptable for simulation trials, this will be an issue for live network trials. Further customer recruitment is ongoing.
1.04	Design	Delay in development of market design rules	3	3	Activities without dependencies on trading rules have been brought forward and started early	2	3	31/07/23	Closed	Trading rules now agreed
1.05	Design	Delay in development of technical requirements	3	3	Project activities shifted to allow additional time to develop trading rules without affecting wider project timeline and deliverable deadlines	2	3	31/07/23	Closed	D2 deliverable published on time
2.01	Design	Delay in development of functional requirements	3	3	Project activities shifted to allow additional time to develop trading rules without affecting wider project timeline and deliverable deadlines	2	3	31/07/23	Closed	D2 deliverable published on time
2.02	Design	Delay in development of detailed technical requirements	3	5	Workshops held to discuss the detailed technical requirements and ensure that they meet the needs of all the systems	3	5	31/11/23	Closed	We have now implemented an agile design methodology to reduce the complexity needed for the simulation trials
2.03	Design	Delay in development of Customer Interface to ENWL	4	5	Continued engagement with customers to set up discussions with their IT teams and recruitment of additional customer underway. If required, we will install RTUs at	2	5	18/04/24	Closed	We now have a much better understanding of the ENA definition for the API and are more certain in terms of what needs to be produced. Proposed one way

					customer premises to enable the trials.					communication to inform customers of where the API definition is going
2.04	Build	Delay in configuration to meet Cyber Security requirements	4	5	We will hold workshops and meetings to ensure everyone understands the requirements and look to assign specific resource. Workshops also need to cover cyber security approval process (by ENWL) to speed up the trading platform's configuration process	1	5	05/12/24	Open	The system is now configured for simulation trials with no delays caused due to cyber security requirements. Further development needed for live network trials; however, risk is low.
2.05	Build	Delay in system integration testing	4	5	We will book access to the test system, and we will create a sandbox environment for the test data.	1	5	05/12/24	Open	Systems integration carried out successfully for simulation trials with no delays. Further integration needed for the live network trials.
2.06	Design	Delay in design of MoM system updates	4	5	We have started to engage with the new team responsible for the MoM system and will hold workshops / meetings to ensure that all the requirements are understood.	3	5	31/11/23	Closed	The new team have fully engaged, and the design process is on track
2.07	Trials and Analysis	Insufficient data from the trials	3	5	Early engagement with customers to ensure participations across the different network users.	2	5	05/12/2024	Open	Simulation trials ongoing and the project team are engaging with the businesses to obtain the relevant feedback and learnings.
2.08	Delivery	Limited/short term flexible connections	3	5	Although a date of connection is provided, the lead times for energising a connection can be significant due to requirements such as environmental impact assessments and land consents. Therefore, the benefits in accepting a flexible connection even short term will continue to be tangible under Access SCR.	2	5	05/12/24	Open	
3.01	Build	Delay in configuring the solution for the simulation trials	3	4	The project team has already agreed rough timelines. We will plan internal workshops to finalise the build phase timelines, with emphasis on the build timing of interfaces between MOMs and ElectronConnect	1	4	05/12/24	Open	The simulation trials have commenced with a significant portion of the platform configured. Further configurations are necessary for the final simulated constraints.

3.02	Build	Solution doesn't meet the simulation trials needs	3	4	We have engaged with market participants to understand their preferences for the simulation trials. Further to that, we will hold internal workshops with the project team to align on the needs and expectations	2	4	05/12/24	Open	The project team are requesting feedback to understand the needs of the businesses who are attending the trials. The solution/concept has so far been well received.
3.03	Simulation	Resource	3	4	Ensure project plan is communicated to resource teams, and a close watch is kept on availability - endeavour to keep resources engaged even if only in a limited capacity.	2	3	05/12/24	Open	
3.04	Simulation	External market forces	2	3	Ensure project team is aware that any changes to the energy market could impact our simulation trials.	1	3	05/12/24	Open	
3.05	Simulation	Windows 11 upgrade	2	2	Seek dispensation to remain on windows 10	1	2	05/12/24	Open	
3.06	Simulation	OpenShift upgrade	2	3	Communication with the OpenShift project PM ensuring we are kept informed of timelines and the move to the later version does not impact our schedule.	1	3	05/12/24	Closed	The upgrade to OpenShift 4 has completed and the transition did not cause any issues.
3.07	Simulation	SPOF - Key resource	3	3	Speak to the Line Manager for said employee and secure his time on the project for the next 6 months. Discuss if there are options, we could consider backfilling in other areas should the need arise.	2	3	05/12/24	Open	This relates to the single member of the project team who can operate the orchestrator tool.

Appendix 2 - Project deliverables

Reference	Project Deliverable	Deadline	Evidence	Status
1	BiTraDER Initial Report – Customer Engagement and Scenarios	30/11/22	Document introducing the Project and detailing the BiTraDER scenarios and initial findings from the customer engagement.	Completed and submitted 30/11/22
2	BiTraDER Trials Plan, Trading Rules and Initial Specification Report	30/06/23	Document explaining Project progress including the following outputs: • End to end trading rules • Cyber security report • Technical requirements for the trading platform • Simulation trial plan • Network trial plan	Completed and submitted 30/06/23

Reference	Project Deliverable	Deadline	Evidence	Status
3	BiTraDER Interim Report – Trading Platform Design	28/02/24	Document detailing Project progress to date including the requirements and design of the following: • Connected resource interfaces • Data formats • Data flows • Trading platform • ANM interface	Completed and submitted 27/02/24

Reference	Project Deliverable	Deadline	Evidence	Status
4	BiTraDER Architecture Build Lessons Learned Report	29/11/24	Document detailing the lessons learned from the build of the BiTraDER system including build and integration of the trading platform with ENWL's real-time systems.	Completed and submitted 29/11/24
5	BiTraDER Simulation Trials Report	30/06/25	Document detailing the results from the simulation trials including • recommendations for any amendments required for network trials. • assessment of project readiness to move to network trials	On track for deadline
6	BiTraDER Network Trials Report	30/05/26	Document detailing the final results from the network trials. **This deliverable will be produced if we pass the Stage Gate**	On track for deadline

Reference	Project Deliverable	Deadline	Evidence	Status
7	BiTraDER Functional Specification	30/06/26	Final functional specification for BiTraDER, including: • Trading rules • Interface requirements • Data requirements • Platform design	On track for deadline
8	BiTraDER Final Report	31/07/26	Report on the conclusion of the BiTraDER Project including all the lessons learned and detailing the next steps, including BaU transition.	On track for deadline
9	Comply with knowledge transfer requirements of the Governance Document.	End of Project	1. Annual Project Progress Reports which comply with the requirements of the Governance Document. 2. Completed Close Down Report which complies with the requirements of the Governance Document. 3. Evidence of attendance and participation in the Annual Conference as described in the Governance Document.	On track for deadline

Appendix 3 - Project direction budget

ANNEX 1: PROJECT BUDGET

Cost Category	Cost
Labour	
	1,779,760.19
Equipment	
	-
Contractors	
	2,747,932.14
IT	
	1,773,113.04
IPR Costs	
	-
Travel & Expenses	
	-
Payments to users	
	400,782.00
Contingency	
	636,221.64
Decommissioning	
	-
Other	
	360,637.50
Total	7,698,446.51

Appendix 4 – Detailed project expenditure

£'000s Excluding Partner Funding Ofgem Cost Category	Spend to date			Total Project			% Variance to Plan
	Actual	Plan	Variance	Forecast	Plan	Variance	
Labour	**965,414**	**988,927**	**23,513**	**1,782,760**	**1,779,760**	**(3,000)**	**0%**
Labour - Project Management	965,414	988,927	23,513	1,694,956	1,691,956	(3,000)	**0%**
Labour - Functional Specification for BiTraDER	-	-	-	87,804	87,804	-	**0%**
Contractors	**1,399,034**	**1,912,392**	**513,358**	**2,748,118**	**2,747,932**	**(186)**	**0%**
Contractors - Project Management	273,770	273,406	(364)	425,717	426,019	302	**0%**
Contractors - Customer Engagement	215,490	334,768	119,277	488,598	488,110	(488)	**0%**
Contractors - Trading Rules Research & Developmer	250,039	476,730	226,691	476,730	476,730	0	**0%**
Contractors - Trading Platform Design	170,000	170,000	-	170,000	170,000	-	**0%**
Contractors - Data Model	59,500	59,500	-	59,500	59,500	-	**0%**
Contractors - Application Development	399,500	399,500	-	399,500	399,500	-	**0%**
Contractors - Simulation Trials	-	161,500	161,500	331,500	331,500	-	**0%**
Contractors - Network Trials	-	-	-	93,500	93,500	-	**0%**
Contractors - Functional Specification for BiTraDER	-	-	-	51,000	51,000	-	**0%**
Contractors - Closedown	-	-	-	197,186	197,186	-	**0%**
Contractors - Learning & Dissemination	30,735	36,988	6,253	54,886	54,886	(0)	**0%**
IT	**521,694**	**1,740,266**	**1,218,571**	**1,773,580**	**1,773,113**	**(467)**	**0%**
IT - Project Management	65,122	46,485	(18,636)	79,801	79,333	(468)	**-1%**
IT - Trading Platform Design	230,100	300,000	69,900	300,000	300,000	-	**0%**
IT - Interface Design to ENWL Systems	194,358	548,039	353,681	548,039	548,039	0	**0%**
IT - Interface Build to ENWL Systems	32,114	735,991	703,876	735,991	735,991	0	**0%**
IT - Application Integration	-	109,750	109,750	109,750	109,750	-	**0%**
Payments to users	**-**	**212,917**	**212,917**	**400,782**	**400,782**	**-**	**0%**
Payments to Users - Customer Engagement	-	68,526	68,526	112,000	112,000	-	**0%**
Payments to users - Payments to users	-	144,391	144,391	288,782	288,782	-	**0%**
Contingency	**-**	**-**	**-**	**636,222**	**636,222**	**-**	**0%**
Other	**230,149**	**178,529**	**(51,620)**	**360,638**	**360,637**	**(0)**	**0%**
Other - Accommodation	54,851	69,695	14,844	109,983	109,983	(0)	**0%**
Other - Learning & Dissemination	175,298	108,834	(66,464)	250,654	250,655	0	**0%**
Total	**3,116,291**	**5,033,031**	**1,916,739**	**7,702,100**	**7,698,447**	**-3,653**	**0%**

Appendix 5 - Project bank account

LLOYDS BANK

Balance and Transaction Report

14-Jan-2025
12:00:40 PM
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Client ID:	14121616		
Reporting Period:	13-Dec-2023 to 31-Dec-2024		
Bank Name:	Lloyds		
Account Number / Name / Currency Code:	308012-23165960 / ELECTRICITY NORTH WEST LIMITED-BITR / GBP		
Closing Ledger Balance As At:	08-Jan-2024	**Closing Ledger:**	6,175,240.91

Posting Date	Type	Details	Debits	Credits	Ledger Balance
09-Jan-2024	Interest Payment	INTEREST (GROSS)		13,737.80	6,188,978.71
09-Feb-2024	Interest Payment	INTEREST (GROSS)		14,717.90	6,203,696.61
11-Mar-2024	Interest Payment	INTEREST (GROSS)		14,752.90	6,218,449.51
09-Apr-2024	Interest Payment	INTEREST (GROSS)		13,833.92	6,232,283.43
09-May-2024	Interest Payment	INTEREST (GROSS)		14,342.79	6,246,626.22
10-Jun-2024	Interest Payment	INTEREST (GROSS)		15,334.18	6,261,960.40
09-Jul-2024	Interest Payment	INTEREST (GROSS)		13,930.72	6,275,891.12
09-Aug-2024	Interest Payment	INTEREST (GROSS)		14,924.58	6,290,815.70
09-Sep-2024	Interest Payment	INTEREST (GROSS)		14,960.08	6,305,775.78
09-Oct-2024	Interest Payment	INTEREST (GROSS)		14,511.92	6,320,287.70
11-Nov-2024	Interest Payment	INTEREST (GROSS)		15,030.16	6,335,317.86
09-Dec-2024	Interest Payment	INTEREST (GROSS)		12,635.92	6,347,953.78
10-Dec-2024	Inter Account Transfer	P9-12, 24, P1-8 TO 02749020 300002	1,439,188.86		4,908,764.92
		Totals	1,439,188.86	172,712.87	
		End of Report Ledger Balance			4,908,764.92

Appendix 6 - BiTraDER Dissemination log

Date	Activity	Audience
10/12/21	Award of funding announcement in company newsletter	All ENWL employees
19/01/22	Award of funding announcement in stakeholder newsletter	All ENWL registered stakeholders
27/01/22	Project overview article in company magazine	All ENWL employees
24/06/22	Announcement of project start in stakeholder newsletter	All ENWL registered stakeholders
13/07/22	Power Responsive Seminar	All registered attendees (approx. 200)
21/09/22	EnergyXNorth	All registered attendees (approx. 75)
29/11/22	Energy Innovation Summit 2022	All registered attendees
14/12/22	ENWL DSO Functions: Data and Flexible Services webinar	All registered attendees
19/04/23	SmartEn – Distributed Flexibility: Maximising Local Optimisation	All registered attendees
19/06/23	Meeting with European Commission – DG Comp	Damien Columb Matt Wieckowski
20/06/23	Eurelectric – Eurelectric Power Summit: Private Roundtable	All registered attendees
18/07/23	Weather and Climate Research for highly renewable power systems – University of Bristol	All registered attendees
12/09/23	Newsletter update sent to all signed up customers	All BiTraDER participants / customers

Date	Activity	Audience
29/09/23	LCP Delta published blogpost and posted on LinkedIn. Blogpost included an update on the project progress and a call for new customers to sign up to be involved in the project	LinkedIn audience
01/11/23	Energy Innovation Summit 2023	All registered attendees
06/12/23	Project overview and progress video used at the ENWL stand at the Innovation Summit uploaded to the ENWL website and YouTube.	ENWL website / YouTube audience
07/12/23	Presentation to ENA ANM Curtailment Working Group	All WG members – DNOs and NESO
05/02/24	Project update LinkedIn post from Electron following the mini trials.	LinkedIn audience
09/02/24	Article in Connect – ENWL's weekly internal comms newsletter about mini trials workshop	All ENWL employees
12/02/24	LinkedIn post about the mini trials.	LinkedIn audience
19/04/24	121 BiTraDER project overview with NGED	NGED employee who attended the meeting
15/05/24	Article on flexibility markets in Modern Power Systems magazine	Modern Power Systems magazine readers
21/05/24	Presentation on BiTraDER at Utility Week Live	Attendees on the flexibility stage at UWL 2024
14/08/24	LinkedIn post on the simulation trials to update on the project and recruit new customers	LinkedIn audience
23/08/24	Presentation to ENA ANM Curtailment Working Group	All WG members – DNOs and NESO
29/10/24	Energy Innovation Summit 2024	All registered attendees

Date	Activity	Audience
12/11/24	LinkedIn post on simulation trials following first successful trade	LinkedIn audience