Annex 21: Data Strategy

Maximising the value of our data to better serve our communities

December 2021

Contents

1. Executive summary

Using data to support customers is a critical enabler for Electricity North West's future aspirations and business plan. It drives the transition to a more sustainable future by providing more flexible, efficient, responsive and customer centric services that directly support our transition to Net Zero.

Within this Data Strategy we have identified deliverables to build on the work undertaken in RIIO-ED1 to support our customers' expectations and future demands on the electricity network. It will be an enabler in the move to Net Zero and low carbon technology by using data and services to aid decision making. Supporting the transformational change to Distributed Service Operator (DSO) and future markets in being able to exchange in a time manner will be critical in responding to demand.

The Strategy has been developed in accordance to engagement with Electricity North West stakeholders and Ofgem's Energy Data Taskforce (EDTF) recommendations that will modernise the UK energy system through an integrated Data and Digitalisation Strategy throughout the sector. We are aligned to Ofgem's Data Best Practice guidelines and delivering a presumed open data approach along with improving the data culture within Electricity North West.

Collaborating with other organisations and stakeholders is a key deliverable of the Strategy to exchange data sets more openly and providing easier access to our services, helping us all to power the North West and deliver on the Net Zero ambitions across the region. Using our data more collaboratively will ensure all our customers benefit, and no-one is left behind, including those in vulnerable situations.

Using common language aligned to industry standards will make it easier for organisations to communicate with each other and work together with the same understandings of data items. The creation of a data triage system for data requests that balances access and transparency with privacy and security will be established as part of the Data Strategy and in accordance to work being undertaken by the Energy Network Association where Electricity North West is contributing.

To maximise the value of our data, we will need to enhance the skills and capabilities of our people and our systems to support improvement in our data maturity as an organisation. Automating existing manual data processes where we can, will give people more time to understand and use the data to improve services for customers, rather than the time spent manually handling data. By having better capabilities and capacity for analysing, storing and sharing our data, we'll be able to anticipate future needs and fix current issues quicker and more efficiently, for all our customers, from single households to major local businesses and organisations. With the demand on the network forecast to double by 2038, starting this transformation now means we will be ready to realise even greater benefits for our customers and communities and ensure that we are able to support future services and markets expected from stakeholders.

The Data Strategy has been developed in accordance Electricity North West stakeholder priorities, alignment to our 10 business plan benefits (as detailed in our Business Plan) and the proposed Ofgem Data Best Practice Guidance[1] to ensure that our approach meets stakeholder and Ofgem expectations and that there is an emphasis and focus on data activities within our RIIO-ED2 initiatives which is summarised in Appendix A in terms of support for the EDTF recommendations, Ofgem's Data Best

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[1] Data Best Practice Guidance (ofgem.gov.uk)
https://www.ofgem.gov.uk/sites/default/files/docs/2021/05/data_best_practice_guidance_v0.3_0.pdf

Practice and Digitalisation principles as well as describing the data and digitalisation outputs and deliverables.

This proposal aligns with our journey to deliver Digital Twin capabilities. We already have the essential foundations for an operational digital twin – providing a current or historic view, but we do not have any significant basis for an analytical digital twin – regarding future scenarios. However, if we mature faster than anticipated and we feel we can deliver value in RIIO-ED2 we will use an uncertainty mechanism, as described in our Data, Analytics and Integration Investment Proposal (IP).

This document is complemented by the following strategy documents

- Annex 10 - Cyber Resilience Plan which outlines at a high-level our Operational Technology (OT) and Corporate IT Cyber Investment Plans
- Annex 23 - Digitalisation Strategy which provides our digital vision for RIIO-ED2 and how we will deliver the vision in support of our business plan.
- Annex 25 - Digitalisation Strategy Action Plan (DSAP) that we will publish every six-months to show both progress and our detailed plans for the next six-month period. It sets out how we intend to transform and automate business processes and create additional value for customers and stakeholders.

2. Our data journey so far

We have already made a significant amount of progress towards ensuring that we improve our data quality in specific areas of the organisation to aid decision making and to manage impacts to our customers. We continue to be active participants in the industry-wide Energy Network Association Data and Digitalisation Steering Group and in the subsequent subgroups set up to aid collaboration across the industry and collaboration in delivering joint projects. We have started to recruit data specialists as part of our focus on meeting future needs. This has included:

- Cleansing our network connectivity and asset data to support the benefits of the smart meter information flows into our new Network Management System.
- Improving our customer communications when network event impacts customers by integration of our control room system with our customer management system.
- Throughout RIIO-ED1 our customers and stakeholders have had access to our GIS system which shows the location and size of network assets on a map background. Examples of GIS use include:

  o Asset location for safe digging practices by other utilities and public entities.

  o Facilitating competition in connections by Independent Connection Providers (ICPs), independent DNOs (iDNOs) and engineering consultancies.

  o Research projects managed by consultancies or universities.

- We supported the development of the Flexr data-sharing service proposal, led by ElectraLink. Through the Open Networks Project, we have raised and supported the raising of modification proposals in Grid Code, Distribution Code and Distribution Connection and Use of System Agreement (DCUSA) for data-sharing between multiple licensees or between licensees and stakeholders
- Building relationships with external stakeholders in the North West and peers in the Energy National Association to understand what data will be required by stakeholders and to collaborate on joint projects e.g. National Energy System Map.

- Starting to recruit new capabilities into Electricity North West that are data specific and aligned to meeting future needs.

There is now a need for a much stronger focus on how we collect, store, analyse, share and take the right actions based on what our data can tell us.
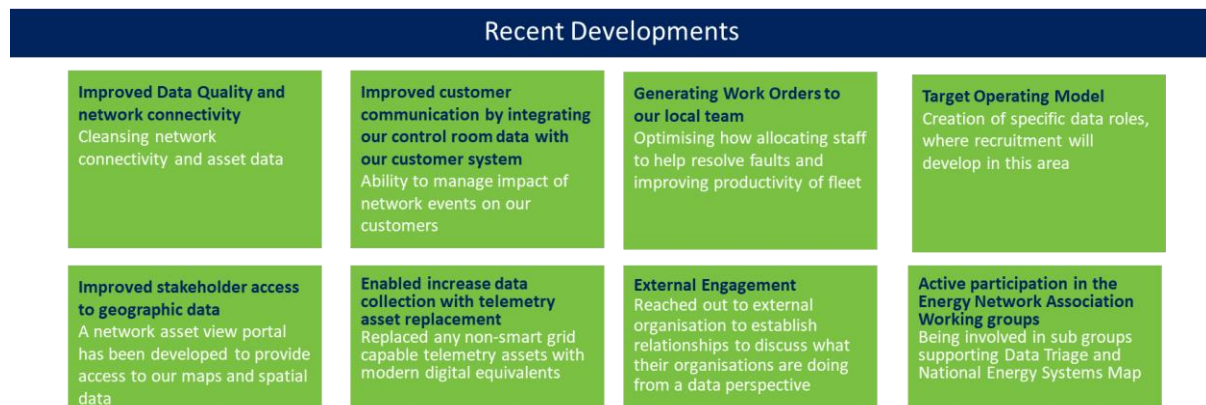
This document will detail:

- How our Data Strategy was created
  - This includes an explanation of how the document itself was created, the stakeholder groups engaged to review the various iterations and the deliverables within the document.
  - How it aligns with the Energy Data Taskforce recommendations and the Data Best Practice guidance supplied by Ofgem. The recommendations and principles are detailed in this section
- Data and Digitalisation Strategy alignment
  - Illustrating the themes within the Data Strategy that are aligned to enabling the delivery of our Digitalisation Strategy

The next six sections in the document describe the main areas of the Data Strategy for Electricity North West, which cover:

- Improving the quality of our data
- Data governance across the organisation
- Making more of our data open to share
- Maximising the value, we get from our data
- Talking a common language
- Modernising the data architecture

The final two sections describe:

- Benefits of our Data Strategy
- Our data timelines

Since the draft submission in July 2021, based on feedback from stakeholders, we have further improved the document by making the data deliverables and outputs more explicit, the link with the

DSO Strategy clearer and have included data case studies from RIIO-ED1 to demonstrate our capability in this area.

3. How our Data Strategy was Created

Our Data Strategy was first created after engaging with internal stakeholders across the organisation to determine what their data needs were and how these can be addressed holistically with a Strategy focused on data. External stakeholders were then engaged to learn they required from our data and how they needed to access our data, both now and in the future. The Strategy has been developed with Ofgem's Data Best Practices at its heart and it has been aligned to the Energy Data Taskforce recommendations. This is evident in the approach around the people, processes and technology strands of the Data Strategy that will enable the organisation to deliver benefits back to our customers and stakeholders whilst also being a key enabler to support the transition to Net Zero and to operation as a Distribution System Operation (DSO) in the future.

The reviews and assurances that have taken place to develop this Data Strategy have been:

Body	Comments
Internal Electricity North West IT Function	Initial review of the brain storming activity for content of the Data Strategy.
	Reviews of the Strategy in its various versions
Electricity North West Strategy Steering Group	Cross Functional group which reviewed the Data Strategy and fed back comments to ensure the document covered the points raised in Ofgem's Business Plan Guidance.
Electricity North West Internal Stakeholders	Engaged with various internal stakeholders to share the Data Strategy and to get their feedback and amend accordingly. This also ensured they were aware of the purpose of the Strategy and the benefits it will bring.
Research Analyst Body Independent expert review	Gartner, an independent external word leading research and advisory company, has reviewed various iterations of the Data Strategy to introduce expert independent opinion, identify potential gaps, and challenge our thinking, making recommendations where appropriate. Gartner Strategy papers have also been used as a point of reference as to how to structure the content of the Data Strategy.
External Stakeholders	Engaged with various external stakeholders to get their feedback on the Data Strategy document including Open Data Institutes (for example OD Manchester and ODI Leeds) and Strategic Partners e.g. Microsoft, Nimble
	Worked with internal points of contact to liaise with identified stakeholders to ascertain what data they expect now, in the future and how to support this.
ENA Data and Digitalisation Working Group	We used our involvement in the national working group to help shape techniques and structure of the Strategy, based on various working group sessions and conversations with members.
Customer Engagement Group (CEG)	We shared an iteration of the Data Strategy with our CEG who fed back recommendations to evidence that our Strategy is built around customer engagement and how to ensure we are structured with specific data roles in the future. We also shared points of contact across the industry to engage with on sharing learnings when implementing a Data Strategy

Engaging with a broad range of stakeholders to provide feedback on our Data Strategy has enabled us to structure our approach based on what is needed to support future data demands of our customers and to align to Ofgem's data best practices and recommendations. This Data Strategy is a critical enabler for delivery of our Digitalisation Strategy and our various RIIO-ED2 Investment Proposals which provide benefits to our customers and stakeholders.

Our Strategy is focused on collaborating and engaging with a wide range of internal and external stakeholders who use data to support the transition to Net Zero for the North West. Processes and solutions will play an active role in taking on system operator capabilities and enabling us to make more data available where we can, to support local authorities and businesses. Our Strategy will also enable support initiatives for customers in vulnerable situations to ensure nobody is left behind and that appropriate data can be shared to make life easier.

Our Data Strategy is aligned to the industry-wide Energy Data Taskforce recommendations:

EDTF Recommendation	Data Strategy
Recommendation 1: Digitalisation of the Energy System	This drives through all the deliverables of the Data Strategy. This is a key enabler for delivering our Digitalisation Strategy and for allowing open access to applicable data to support future digital services.
Recommendation 2: Maximising the Value of Data	This Data Strategy details how we govern our data processes, making our data open where applicable, maximising the value, and talking a common language, all supported by a modern data architecture.
Recommendation 3: Visibility of Data	A key deliverable is reflected by the emphasis on how to make our data open where applicable and how we put in the necessary processes to triage data requests and to determine where data can be accessed
Recommendation 4: Coordination of Asset Registration	The Data Strategy is further establishing the components to build upon the ongoing National Energy System Map and the work we have undertaken in ED1 around management of asset data.
Recommendation 5: Visibility of Infrastructure and Assets	As with the above recommendation the Data Strategy establishes the components in a modern data architecture to enable us to respond better to increasing visibility of assets and supporting new flexibility markets.

Ofgem's Data Best Practice guidance has also been used in creation of the deliverables of our Data Strategy:

Data Best Practice	Data Strategy
1. Identify the roles of stakeholders of Data Assets	The re-establishing of our Data Governance will assist in identifying stakeholders and their role and responsibilities in our continuous improvement and development through RIIO-ED2.
2. Use common terms within Data Assets, Metadata and supporting information	Establishing a data catalogue as part of "Talking a common Language" will put in place best practice in achieving this objective. Participation

Data Best Practice	Data Strategy
	in collaborative forums will also help influence this.
3. Describe data accurately using industry standard Metadata	As per 2 above, this requirement will be part of the processes in building out our data catalogue in-line with industry standards e.g. Dublin Core standard
4. Enable potential Data Users to understand Data Assets by providing supporting information	When making our data open, we will be following best practices in articulating how to interact with the service and details of our services to ensure users are aware of the data available.
5. Make Data Assets discoverable for potential Data Users	The proposed data catalogue will also allow data users to discover what data is stored and the definition of this
6. Learn and deliver to the needs of current and prospective Data Users	Data triage processes established as part of our Data Strategy will assist with dealing with data requests. Collaboration with identified stakeholders is key and this will be supported by the approaches being outlined in this Data Strategy with the ability to share applicable data.
7. Ensure data quality maintenance and improvement is prioritised by Data User needs	A fundamental theme in our Data Strategy is around improving data quality and the continual 'remove and enhance' processes.
8. Ensure Data Assets are interoperable with Data Assets from other data and digital services	Interoperability is a key principle of the proposed modern data architecture, which will be achieved by Application Protocol Interfaces (API) but also take into consideration Critical National Infrastructure with which our systems communicate.
9. Protect Data Assets and systems in accordance with Security, Privacy and Resilience best practice	Running throughout our Data Strategy is the principle that we will only share applicable data to ensure we adhere to General Data Protection Regulations (GDPR) and our security principles. This will be demonstrated in the proposed modern data architecture to secure sensitive and commercial data.
10. Store, archive and provide access to Data Assets in ways that ensure sustained benefits	Adopting our Cloud first principle, with the proposed modern data architecture, will enable Electricity North West to take advantage of various cost solutions in storage of data in line with data retention policies. Accessibility to retrieve the data will be in line with policies and procedures that the Data Governance group will develop and continually update
11. Treat all Data Assets, their associated Metadata and software scripts used to process Data Assets as Presumed Open	This process will be delivered by the deliverables within our Data Strategy in exposing applicable data in a portal that can be used by stakeholders

4. Data and our Digitalisation Strategy

Data is central to our overall Digitalisation Strategy, which enables innovation to achieve our business goals as well as improving the customer experience. The digital transformation supports the operation of the distribution system, the transition to Net Zero and supports our customers in vulnerable situations to ensure nobody is left behind.

By improving all elements of data in the organisation, we'll optimise our processes, enable future innovation and make better decisions based on better quality data.

As this illustration shows, data plays a critical role in supporting the three key pillars of our Digitalisation Strategy.

Enablement	Innovation	Insight
Establish Data Governance and Data Triage processes in incremental deliverables	Published Data Services that enable innovation to support EV and LCT collaboration	Tools and skills to skills insights
Baseline Data Maturity established	Support Flexible services based on network capacity and usage	Access to consolidated data sets
Creation of a Data Catalogue	Creation of Artificial Intelligence (AI) and Machine Learning (ML) expertise	Improved Customer service by using predicative fault analysis and better outage information
Creation of a centralised Strategic Data and Integration Platform	Additional value driven from the network	Future Capacity Planning to determine network reinforcements and commercial alternatives
Data Portal established to publish initial data services using Application Programming Interfaces (APIs)	Enabling Digital Twin to be established	Better analytics using historic data that will drive efficiencies
Services produce to enable customer self service	Integration of Core systems and external data sources	Enable integration with partners with ingesting and sharing data to help identify PSR Customers

Best practices established i.e. Data Quality, Data Models, Data Exchange (e.g. Common Information Model)

Data culture embedded and collaboratively working across the Organisation, Industry and External Stakeholders

5. Improving the quality of our data

The decisions we make from our data can only be as good as the quality of the. To meet future needs and deliver better services and experiences for all our customers, we have to ensure the information we hold, and use is of the highest quality.

As the quality of our data improves, it gives everyone more confidence; from our colleagues to our customers, stakeholders and the external organisations with which we collaborate. We will achieve this by:

1. Reviewing and establishing Data Owners and associated System Owners. We will empower them with the right tools to collect, manage and analyse the data in their area to maximise the value that can be driven from it.
2. Providing easy to use tools to build data cleansing rules.
3. Reducing the duplication of data across Electricity North West as an entire organisation.
4. Making data cleansing a more automated process, reducing the incidence of errors.

We will start to measure data quality as part of our business Key Performance Indicators (KPI's). Improved data quality scores give people more trust in our information. We will start by performing a data maturity assessment to benchmark current maturity and to set a target to achieve within RIIO-ED2.

When will we deliver this by?

We will achieve this by developing an initial set of KPIs by July 2022, but with a focus on continuous improvement beyond that. Data needs and processing will continue to evolve, and we want to ensure we are on the front foot for those developments.

6. Data governance across the organisation

To maximise the value, we drive from understanding our data, we will prioritise the activities that deliver the most benefit to our customers, the network and the environment as part of supporting Net Zero targets.

To do this, we're going to:

1. Create data groups across the organisation to maximise the use of our data to deliver business goals.
2. Re-establish a Steering committee that meets regularly to make decisions on governance and stewardship as new situations arise.
3. Establish an improved mechanism to respond to data requests from external organisations and metrics on handling those requests.
4. Create a prioritisation process to deliver business outcomes driven by a data-focused culture in Electricity North West.

How will we measure progress?

We are building company-wide governance policies and will be presenting these for approval to the Data Steering Committee which will be established with a new remit to oversee them

When will we deliver this by?

The Data Steering Committee with its new remit will be running in 2021 Q4. We will review its structure, remit and frequency of meeting depending on how our data structure and demands evolve.

7. Making our data open to share

We share data with stakeholders and other organisations to allow us to work together to make and implement better plans and services for the people and communities of the North West. Our customers need data from us to know everything from what their bills are, what drives the costs that feed into that bill, to how we're going to fix something that's gone wrong.

Building on the quality of our data and having the right governance processes to balance ease of sharing with privacy and security, we'll be able to use the data to the benefit of the wider North West

community and its environment. It will enable the ability to participate in national collaborative initiatives, like the work we've started in RIIO-ED1 around sharing data sets to support the National Energy System Map. It will also enable work for the future Flexr service initiative that will introduce significant savings in the form of released capacity from accelerated flexibility markets, improved DSO operations and planning and customer benefits through improved, more efficient DNO services. The Flexr initiative is a distributed network operator (DNO) data provision and standardisation service that will connect to the data held by DNO's and their distributed energy resources (DER) customers.

To do this, we're going to:

1. Provide Open Data services internally and externally through the creation of a secure Data Sharing Portal. Ensuring supporting information is provided on the services to ensure it is clear on what the service is providing and how to interact with it.
2. Ensure we've established robust Data triage processes, that are in-line with our collaborative work with the Energy Network Association working groups. Using the data classifications of "fully open", "shared" and "closed" as determined by our data governance processes.
3. Establish relationships to share data with local authorities, communities and partners, and work together to understand what data needs to be shared.
4. Establish Service Level Agreements so partners, communities and local authorities know how quickly they can expect a response from Electricity North West to any request.
5. Ensure privacy and security policies are understood and adhered to throughout the organisation.

How will we measure progress?

We will review performance against the Service Level Agreements put in place for our Data Triage process. If we're not meeting any part of those, we'll put in any necessary remedial action. The benefits in introducing a robust data triage process will ensure there is consistency in responses given to data requestors and to be able to sign-post to data sets that answer similar questions received.

When will we deliver this by?

Our Data Triage process will be established by the end of 2023. The Data Sharing Portal will be ready for use by 2024. We will continue to hold conversations with all partners, internal and external, before opening the portal to ensure it will meet requirements. The portal will support Electricity North West initiatives for Flexible Services and the innovation project BiTrader if successful.

8. Maximising the value, we get from our data

Data per se has no value to Electricity North West, either as an organisation or to the communities that we serve. Only when we understand what the data is telling us, and make appropriate plans from that understanding, does the data have any value. To maximise that value, we're focused on analysing data from different parts of the organisation, and from our partners, to identify and solve challenges.

With better data, and a better understanding of its meaning, we'll be able to build a more resilient network, better able to meet our customers' needs, and support those of them in vulnerable circumstances. Our decisions will have a bearing on our impact on the environment, and our contribution to helping the North West become carbon neutral.

Investing in our people will need to have the skills and tools to analyse the data and trust its sources. This will be critical to making this ambition a reality and improving our data culture.

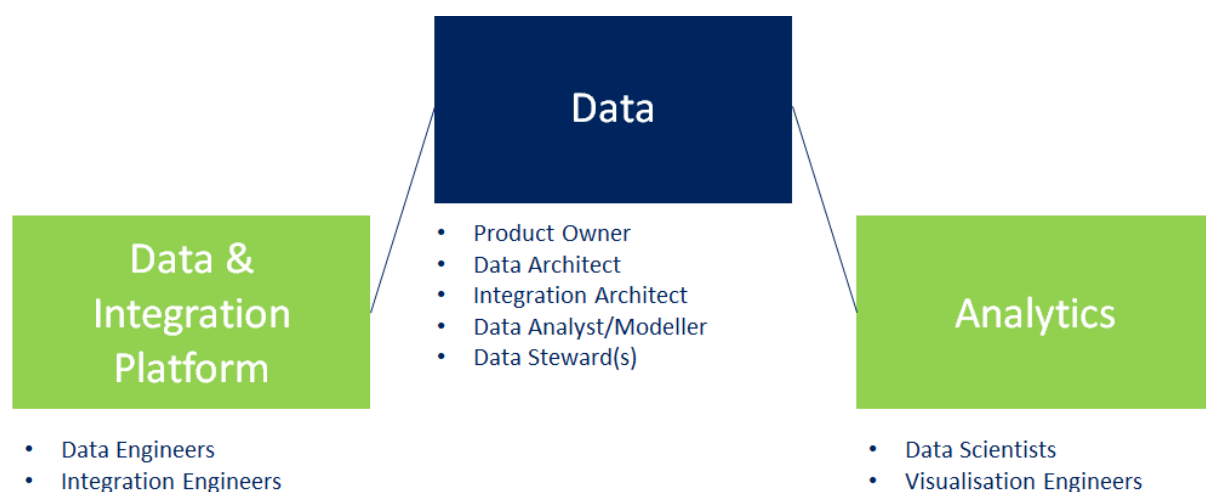To deliver all of this, we're going to:

1. Provide real-time business performance metrics and data to our colleagues to allow them to form evidence from augmented data sets to back up hypotheses and providing the confidence into new areas and processes for the organisation to deliver against.
2. Enable data services to be discovered easily through use of the data catalogue that we are introducing and ensure that data is interoperable across applications e.g. through the creation of an API ecosystem
3. Create both a new centralised team and invest in capabilities across the organisation. This includes developing and growing our business analysis and consultancy capabilities.
4. Establish value outcomes for Customers, Stakeholders and the environment and deliver against them. We will also establish Social Return on Investment Outcomes.
5. Establish (and manage against) Service Level Agreements so partners, communities and local authorities know how quickly they can expect a response from Electricity North West to any request.
6. Ensure privacy and security policies are understood and adhered to throughout the organisation.
7. Provide training to colleagues to ensure they have the skills to be able to use the capabilities being delivered and improve data literacy across the organisation, which in turn will improve our data culture and maturity.

How will we measure progress?

The value outcomes and Social Return on Investment Outcomes we will establish will be our progress markers, along with performance against the agreed SLAs. Internal groups will regularly review them, along with our external partners and external stakeholders.

When will we deliver this by?

There are several new roles required to deliver this Strategy. Along with ensuring people have the right capabilities and tools, these new roles will be in place by 2024.

Data
- Product Owner
- Data Architect
- Integration Architect
- Data Analyst/Modeller
- Data Steward(s)

Data & Integration Platform
- Data Engineers
- Integration Engineers

Analytics
- Data Scientists
- Visualisation Engineers

9. Talking a common language

Every business and industry have its own jargon and language. Sometimes that gets in the way of easily sharing and understanding information, particularly when two organisations call the same thing by two different names or worse use the same name for subtly different data sets.

Establishing a common language and naming convention helps to engage as many people as possible with our data. Making the language surrounding it more accessible and easier to understand means everyone has the same understanding of the information we can all work with.

Working across the industry, we're creating a common vocabulary. Our data will be easier to interpret, particularly when we work on collaborative projects, to have a more significant positive impact on our communities.

To achieve this, we will:

1. Collaborate on a common vocabulary across the energy industry, using industry-standard data models where appropriate. This will be imperative when we deliver the Grid Code change "GC0139 – Implementation of the Common Information Model" to share network data with the National Grid. We will be collaborating in the ENA Data and Digitalisation working group that is looking at IEC CIM (Common Information Model) across all networks.
2. Create common definitions to help with data exchange and helping our external partners understand the data. We'll be building on the work already done in our asset space.
3. Create and adopt a full data catalogue covering all information in the organisation.
4. Create common data models and processes that takes into account Data Protection and GDPR processes. This is an enabler to the common vocabulary and terminology being adopted.
5. Ensure that we capture metadata in a recognised format e.g. Dublin Core Metadata to be able to describe our data in a standardised format to summarise information about our data and aid in the searching and finding data easier.

How will we measure progress?

The changes to our vocabulary must be fit for purpose particularly to implement the Regulatory Grid Code Change GC0139 Common Information Model that is part of the Open Networks project. We will have an established Data Catalogue, which will show all the definitions we use, along with the related metadata and the data itself that can also be used for collaborative work on the ENA Data Catalogue. This will support the data Best Practices around the use of common terms within our data, helping us to discover what data we hold across our business and the data lifecycle of all identified data items.

When will we deliver this by?

In line with the Regulatory Grid Code Change GC0139 IEC Common Information Model, we'll deliver this by 2026 at the latest. The Data Catalogue solution will be implemented by 2023 and kept updated throughout the RIIO-ED2 period and as part of any future improvements.

10. Modernising the data architecture

The way our data is organised and stored is an enabler to helping us successfully land several of these initiatives. It will combine data from the core Electricity North West systems as well as identified external sources.

Taking a "Cloud-first" approach will support the need to process large amounts of data. This work links in with the creation of common data models and language development.

The diagram below sets out our proposed approach:
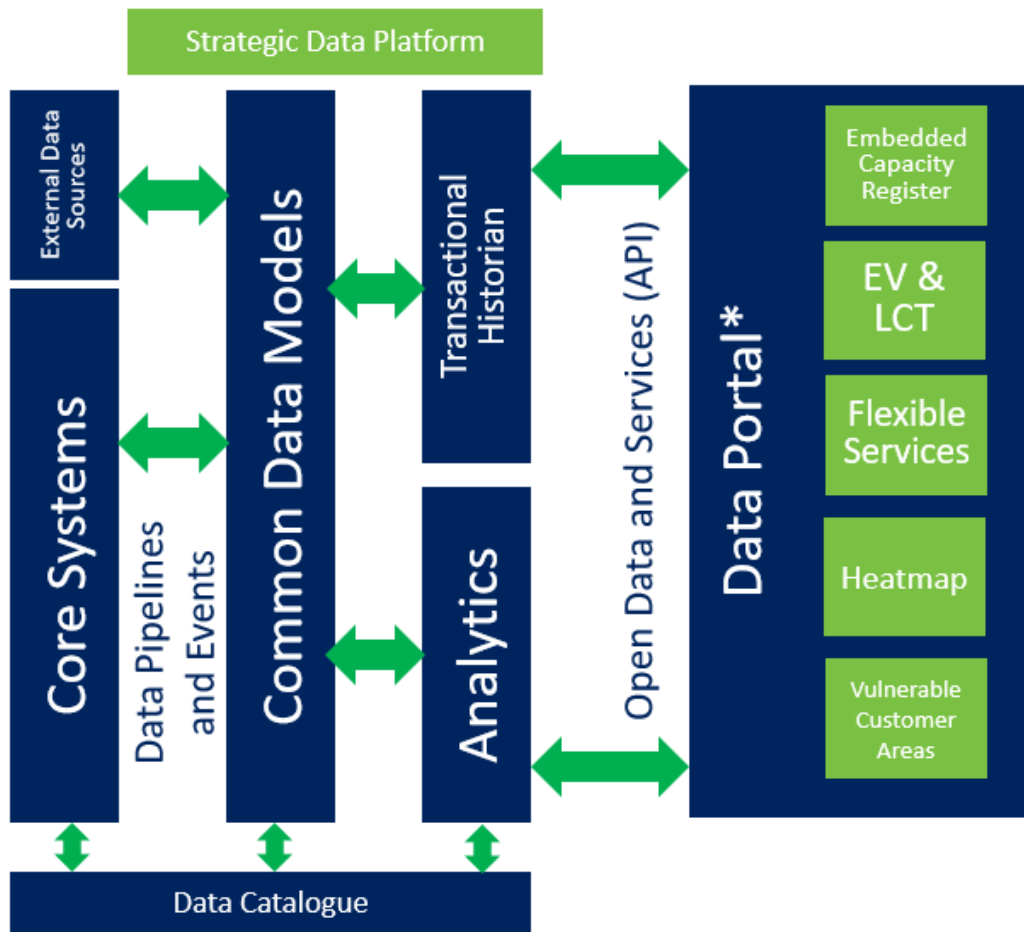
* Portal Services mentioned are for illustration purposes only

<u>How will we measure progress?</u>

The transition to this architecture enables other initiatives we're making to deliver results we're committing to without impacting our day to day operational activities, as well as maximising the value of our data. Our external partners will have access to the data they need from us ready to be used from the Data Portal when it launches.

<u>When will we deliver this by?</u>

We will evolve from the current architecture to this by 2028. This will be achieved by implementing initial technical components by the end of 2022 that deliver business outcomes and benefits. Data will be catalogued to ensure visibility and awareness of what data is available. Strategic analytical

reporting solutions will be implemented by March 2022 that improves data visibility internally and aids business decisions within our customer services function and use of Smart Meter data. Migration of legacy system data will be an ongoing activity up to 2028.

11. Benefits of our Data Strategy

These activities will translate into tangible benefits for our customers and stakeholders. Below are some examples of the benefits to some of our stakeholders:

Our domestic customers

- Improved customer services by having access to data about our customers that has come from collaborative initiatives, where data has been shared, this ensures we are able to support our vulnerable customers better.
- Reduced power outages affecting our customers as we'll use our data to identify where maintenance is required. By being able to use data to assist in being more proactive with maintenance there is less likelihood of unexpected power outages.

Independent Connection Providers (ICPs) and Business stakeholders

- Requests for data to support ICP initiatives will be handled more efficiently thanks to the governance processes we'll put in place.
- ICPs will be able to get access more quickly to the data that we've agreed to share in order to support collaboration in the north west, at the same time respecting the privacy and required security around all data.
- Ability to share more data openly to support local authorities to enable better and more aligned local planning, for example Electric Vehicle charging infrastructure, more accurate and better-informed local energy forecasts and whole system thinking.
- Collaborating with gas and transmission networks by exchanging data to support Whole Systems thinking and helping solve challenges collectively across the whole energy system.

Electricity North West Colleagues

- Our colleagues will know what data we have and where to find it.
- We'll all use the same terminology to describe data.
- Our colleagues will be better supported to do their roles as we can use data in a more efficient, optimised way.

Data is nothing if we cannot access it, understand it and share it with others where appropriate. The areas in this Strategy focus us on an improved way of working with data at Electricity North West and give us the opportunity to deliver real benefits for people and communities across the North West and the UK.

Engagement with our stakeholders and customers will continue on a regular basis to understand what and how data and services requirements are evolving to ensure their on-going requirements are captured.

12. Data Set Deliverables and Outputs

In delivering a modern data architecture and data portal Electricity North West will be able to share the following data sets to enable collaboration, optimisation and innovation in accordance to our Data Triage processes:

- Geospatial visibility of our infrastructure assets and heatmaps for all voltage levels.

- Historic operational data.

- Near and longer-term forecasts (from our active network management system (ANM) and DFES respectively).

- Network planning data, including network connectivity models, electrical characteristics and loading data, to perform power system analysis.

Initially this will only be available for EHV (i.e. 132kV and 33kV) and HV networks, but by the end of RIIO-ED2 it will be provided for all network levels with additional data granularity available on request. Data will be provided in standard workbook formats, allowing users to manipulate the data to their requirements. Network models will be in a standard interoperable format that will allow users to overlay our system data onto their data and facilitate network analysis.

LV heatmap case study
In RIIO-ED2 our standard LV heatmaps will show the current utilisation of the network, using maximum/minimum demand values and known (or assumed) asset ratings. They will be updated monthly, with the maximum/minimum demand date stamped to indicate whether there is seasonal fluctuation. We will provide greater granularity of utilisation to third parties on request, from half-hourly data, where available. We will generate equivalent HV heatmaps by aggregating the data sourced from the LV network, allowing full coverage of the entire secondary network.
These heatmaps are an important means to obtain early sight of potential network constraints. If visualised for our distribution services area they provide a regional view of our needs. We will use heatmaps to identify and signal a potential intervention need; for example, an early indicator of our requirements for energy efficiency and flexibility.

Ability to Share network data: As part of the Open Networks project in RIIO-ED1, modification GC00139 was raised to facilitate the exchange of enhanced planning data for whole system outcomes between DNOs and the ESO. This enables the sharing of network topology, configuration information, and loading information in a standard interoperable format based on the IEC Common Information Model (CIM). We will develop our capability in RIIO-ED1 to extract network data from our core IT systems and convert it to CIM format for use internally and sharing externally. In RIIO-ED2 we intend to develop the CIM standard, in conjunction with the other DNOs, into a standard suitable for the description of distribution networks down to the low voltage level and make these datasets available.

Sharing this network and heatmap information via the data repository will allow:

- Network users to make better decisions about how to use the network

- Flexibility providers to understand potential opportunities for this flexibility services, and

- Indicate where we have capacity available on our existing network.

We expect to share the operational data shown below:

Operational Data to be shared with ESO and other licensees	
Boundary data	Data from monitoring points where the two networks meet. ICCP is used to share this data so that both parties can utilise it in their own control decisions, as recorded historic feeder MW/MVA utilisation and calculated headroom and footroom.
ANM data	Data relating to the real-time operation of the ANM system e.g. which areas of networks are defined as an ANM zone, data on the levels of constraints being applied to network connections, underlying demand etc. Utilisation and curtailment of areas under the control of capacity management systems such as ANM systems.
Losses data	Data relating to network losses which will be calculated utilising multiple measuring points at the different voltage levels. This data will rely on establishing sufficient granularity of network monitoring at all voltage levels, and the results will be subject to the combined accuracy of the measurement points. Initially this data will be calculated retrospectively.
Distributed energy resources data	Data related to the mix and levels of distributed generation that will allow the ESO to carry out risk analysis for changes in generation outputs relating to varying weather patterns, estimations of the carbon dioxide emissions content of the energy mix, and any potential risks relating to the operation of protection devices associated with transmission level changes to network frequency and voltage.
Planned and unplanned outage data	• Data relating to planned network outages • Data relating to un-planned network events affecting both parties. ICCP link can also be used for national transmission-related un-planned events e.g. low frequency demand disconnection, or black start events to allow our control room to get updates on restoration plans.
Systems failure data	Data relating to issues associated with the ANM system and communications failures.
Intertripping data	Data on operational intertripping, an ICCP link to provide this capability depending upon the speed and reliability of communications and the nature of the intertripping service required.

13. Our Data Timelines

The below illustration are the time lines for delivering the elements of the Data Strategy, which will also be continuously reviewed and optimised.
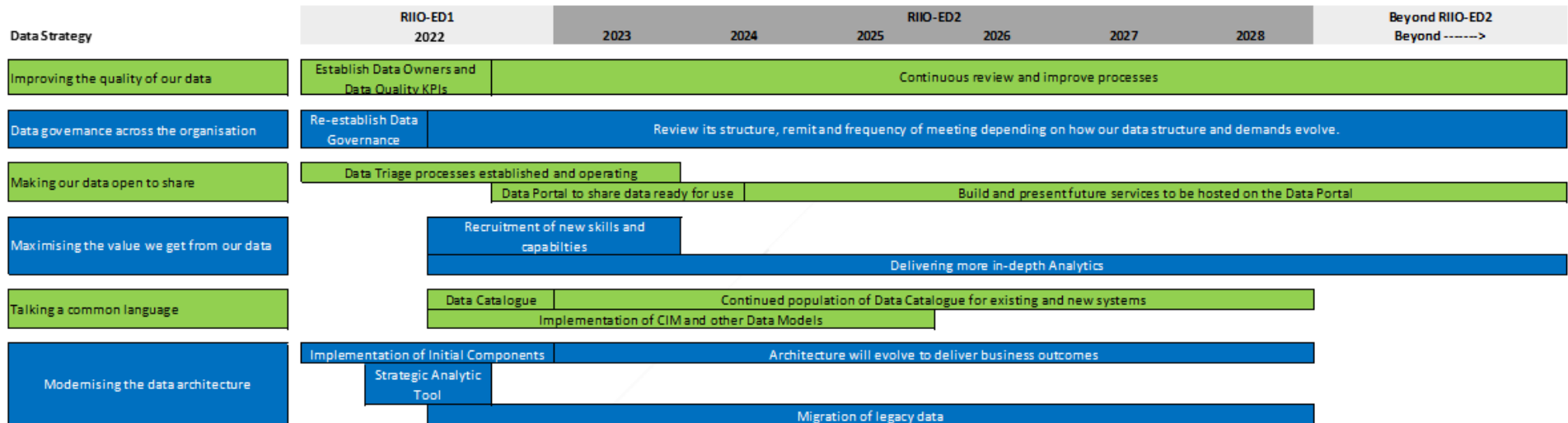
Data Strategy	RIIO-ED1 2022	RIIO-ED2						Beyond RIIO-ED2 Beyond ------>
		2023	2024	2025	2026	2027	2028	

Improving the quality of our data
Establish Data Owners and Data Quality KPIs — Continuous review and improve processes

Data governance across the organisation
Re-establish Data Governance — Review its structure, remit and frequency of meeting depending on how our data structure and demands evolve.

Making our data open to share
Data Triage processes established and operating
Data Portal to share data ready for use — Build and present future services to be hosted on the Data Portal

Maximising the value we get from our data
Recruitment of new skills and capabilties
Delivering more in-depth Analytics

Talking a common language
Data Catalogue — Continued population of Data Catalogue for existing and new systems
Implementation of CIM and other Data Models

Modernising the data architecture
Implementation of Initial Components — Architecture will evolve to deliver business outcomes
Strategic Analytic Tool
Migration of legacy data

Appendix A – Data and Digitalisation

This section describes how our investment in IT supports the EDTF recommendations, Ofgem's Data Best Practice and Digitalisation principles as well as outlining the data and digitalisation outputs and deliverables.

We have divided these investments into three groups:

Non-Op IT Business Systems

• Enterprise Resource Management (ERP)

• Customer

• Geographical Information Systems (GIS)

• Market Operations

• Work and Asset Management (WAM)

• Complementary and Specialised Systems (CSS)

Real Time Systems

• Smart Meters

• Operational Telecommunications

• Smart Grid Systems

• Sub-Station Monitoring and Control

Foundational IT– In-Direct IT

• Data, Analytics and Integration

• Cloud and Infrastructure

• Digital Workplace

Enterprise Resource Planning

Support for Energy Data Task Force Recommendations and Modernising Energy Data initiative

Does this investment support the EDTF recommendations?
1. Digitalisation of the Energy System
This initiative indirectly supports digitalisation of the energy system. By ensuring our internal and specifically back-office operations are optimised and integrated, we can spend more time and effort on ensuring we are delivering value to our customers.   During RIIO-ED2, we expect to see an increasing requirement to de-loop parts of our network to support EV growth. Delivering this in both an efficient and customer responsive manner is key and is a significant driver behind the prioritisation of moving our connections processes onto a more flexible and tailored platform.
2. Maximising the Value of Data

Does this investment support the EDTF recommendations?
Data captured in our existing and new systems of record for connections, HR and Finances will become internally more accessible and trustworthy, which means we will more confidently be able to provide external access when required.

3. Visibility of Data

The visibility of data is likely to improve as it will no longer be dependent on the challenges around the data retrieval from the legacy processes especially in respect of connections activities. This is seen as a necessary requirement in view of adoption of DSO, wherein the pace of our business will become more 'real-time 'with financial reports, forecasts, decisions, and control measures to match.

4. Coordination of Asset Registration

By moving away from looking at ERP as a single system – and instead seeing it as an integrated and open suite of services (technical, data and process) that form a fundamental component of our business – we will have a dedicated system which will focus on the coordination of asset registration (through developing Clear Horizon's solution for work and asset management). This is important because in RIIO-ED2 new connections will form an important part of asset addition and demand for Net Zero alterations, such as de-looping to support EVs, will become significant.

5. Visibility of Infrastructure and Assets

We will focus on a renewed system for management of new connections, utilising Clear Horizon's solution for work and asset management holding the master asset register. This will give us better visibility of infrastructure and assets

Support for OFGEM Data Best Practice Guidelines

How does this investment support the Data Best Practice Guidance?
Identify the roles of stakeholders of Data Assets Connections processes will manage data for two vital 'data assets': our understanding of business and consumer customers, and our network end-points (i.e. cut-outs and service points). It is imperative that all such processes are tightly integrated with the systems that manage the full life-cycle of those data assets, which is what this investment ensures. By doing so, the roles of relevant stakeholders of the customer and network data assets will be fully integrated in a way that is consistent with other aspects relevant for those data assets.
Use common terms within Data Assets, Metadata and supporting information As well as moving our data models towards the industry standards, we will be able to incorporate additional terms and semantics in our tools, for those systems which cannot yet be updated with the standards, allowing a cross-reference to those common terms.
Describe data accurately using industry standard Metadata The tools being implemented will provide the facility to capture standard Metadata descriptions. Our plans to train the teams involved will ensure that this information continues to be maintained as part of their day-to-day processes.
Enable potential Data Users to understand the Data Assets by providing supporting information The new systems will be implemented with reference to detailed Data Governance guidance, ensuring that all necessary supporting information and metadata is captured and maintained as part of any future changes. This will include understanding and maintaining the ownership of all Data Assets, so that Data Users are able to query information, where they may have additional enquiries
Make Data Assets discoverable to potential Data Users We intend to implement clear rules as part of our Open Data Triage implementation, ensuring that the correct level of information and data is made available to the relevant Data Users. This will be subject to ongoing review to ensure that any updates to the rules or data are acted upon accordingly.
Learn and deliver to the needs of current and prospective Data Users

How does this investment support the Data Best Practice Guidance?
We are looking to implement solutions that meet the needs of our current users. The platforms we are looking to implement will also provide us with the ability to adapt to future requirements and the needs of Data Users with whom we have not previously engaged.
Ensure data quality maintenance and improvement is prioritised by Data User needs
Data Governance and Data Quality provide the foundation for the proposed changes. These are designed to make it easier to process, consume and share data with a wider range of Data Users and will be focused on delivering defined benefits. Processes will be established to ensure prompt resolution of any issues identified with the data being provided.
Ensure Data Assets are interoperable with Data Assets from other data and digital services
As well as implementing common industry standard data models, our plans to improve the integration capability within our own landscape will also provide the capability for easier consumption of additional data sources. In addition, this will facilitate easier alignment of our own Data Assets with both internal and external requirements.
Protect Data Assets and systems in accordance with Security, Privacy and Resilience best practice
Through our robust Data Governance policies, Open Data Triage approach and close alignment to the industry standard cyber security standards, all implementations and changes will have to establish and maintain the same high standards throughout the lifecycle of all Data Assets.
Store, archive and provide access to Data Assets in ways that ensures sustained benefits
Data Retention Policies will be established as part of the Data Governance Framework, and these will be based on business requirements established from both internal and external priorities. As those requirements change or evolve, the policies can also be updated, and the relevant data maintenance processes adjusted accordingly. This will ensure that we only continue to invest in those Data Assets that provide benefits.
Treat all Data Assets, their associated Metadata and software scripts used to process Data Assets as Presumed Open
Usage of SAP ERP and the adoption of Cloud-based products with CIM-compliant APIs will help us to open the Data Assets and related access.

Alignment to OFGEM Digitalisation Principles

Digitalisation principles supported by the ERP initiative are specified below

Digitalisation Principles	Support
1. We will prioritise providing benefits to the stakeholders who pay for the Products and Services as well as benefits that are in the Public Interest	✓
2. We will ensure Products and Services work towards a defined vision	✓
3. We will take full advantage of opportunities to deliver benefits early and to iterate improvements to Products and Services	✓
4. We will make it easy for stakeholders to understand the Products and Services, the status of their delivery and how to access them	✓
5. We will ensure visibility about the nature and status of actions in the Digitalisation Action Plan	✓
6. We will ensure there is shared understanding of success and performance is measured	✓
7. We will coordinate with the wider ecosystem of Products and Services	✓

Digitalisation principles:

This ERP Investment Proposal prioritises delivering benefits to the stakeholder over support functions (e.g., HR), by delivering Connections and Disconnections in the new Cloud work and asset management system to support the DSO transition and EV growth during the RIIO-ED2 period.

The new Connections capability contributes to Electricity North West vision through delivery of a Cloud based solution.

Adoption of Clear Horizon's system for management of connections will support Electricity North West streamlining work management processes and become efficient. It will provide flexibility to manage future changes and deliver an improved user experience to Electricity North West employees and partners.

Clear Horizon's ChiME Capital projects solution, planned for delivery in FY23, will be reused to deliver commercial connections and disconnections. This will deliver benefits early and provide a platform for iterative improvements.

Clear Horizon's ChiME work and asset management system will enable all the concerned stakeholders to understand the connection and disconnections job details and status easily. Service staff will have access to a contractor portal to access work and exchange outcomes seamlessly, which enables Electricity North West to provide up to date information to the customer. That customer information will be available through a choice of channels, increasing convenience and satisfaction with self-service capabilities.

We will work closely with stakeholders and customers, to drive continuous improvement of the connections services and make our plans visible in the Digitalisation Action Plan.

The usage of this new work and asset management system, by all the concerned stakeholders e.g., Electricity North West and its contractors, will provide a shared understanding of the success and performance (GSOPs and TTC) of delivering connections and disconnections work.

The new Cloud based system will provide a perfect platform for Electricity North West to co-ordinate all types of work across the business, with its internal and external field engineers, optimise work delivery, share asset details, and enable Electricity North West to support open data initiatives with relevant stakeholders.

Data and Digitalisation Deliverables and Outputs

This ERP Investment Proposal will deliver the following Data and Digitalisation outputs

- The new connections system will be hosted on Cloud, provide a modern web-based user interface to Electricity North West employees and contractors, for managing connections and disconnections work, and provide a seamless data exchange with its service providers, for delivering work and driving continuous process and data quality improvements.
- Improve integration with SAP ERP and supply chain, using APIs, to reduce manual processing, and data duplication in fulfilling purchase requests, stock replenishment and vendor payments.
- Improve integration with SAP ERP and Clear Horizon's work and asset management, using APIs, to streamline purchasing, supply chain, accounts receivables, asset accounting, and period end closure activities.

- Improve integration with customer systems leveraging our investment in our strategic data platform.
- Improve data quality and process efficiency by removing the need for off-system data repositories and workflow steps.

Customer

Support for Energy Data Task Force Recommendations and Modernising Energy Data initiative

The table below shows how the investment will support the Energy Data Task Force Recommendations and Modernising Energy Data initiative:

Does this investment support the EDTF recommendations?
1. Digitalisation of the Energy System
This investment is strongly aligned to this EDTF recommendation. Improving and expanding our digital self-service capabilities is a direct benefit of the energy industry digitalisation. Moreover, Electricity North West will capture and apply data about customers more accurately – accurate data being the 'life-blood' of digitalisation; for example, enabling more insights for continuous improvement.
2. Maximising the Value of Data
Electricity North West will share customer data in-line with data policies and GDPR. Electricity North West envisage this having value for customers, in several contexts, such as geographical or priority customers.
3. Visibility of Data
Customer data being processed will be captured in the Data Catalogue being proposed in the SDP proposal using industry standard data models to ensure consistent terms across the industry. Data itself will also be more visible to stakeholders internally using the tools implemented in the Data and Integration proposal to enable optimisation of processes to benefit the customer. Where appropriate, data will be exposed externally to share market operations data to enable innovation and customer data (in accordance with GDPR) to enhance their overall experience in using various data sets.
4. Coordination of Asset Registration
Not applicable.
5. Visibility of Infrastructure and Assets
Not applicable.

Support for OFGEM Data Best Practice Guidelines

Electricity North West will comply with the industry standards around PSR data assets to enable greater customer convenience by co-operation with all types of utilities, as well as complying with privacy controls such as GDPR.

Alignment to OFGEM Digitalisation Principles

The following principles have particular application to this proposal:

Digitalisation Principles	Support
1. We will prioritise providing benefits to the stakeholders who pay for the Products and Services as well as benefits that are in the Public Interest	✓
2. We will ensure Products and Services work towards a defined vision	✓

Digitalisation Principles	Support
3. We will take full advantage of opportunities to deliver benefits early and to iterate improvements to Products and Services	✓
4. We will make it easy for stakeholders to understand the Products and Services, the status of their delivery and how to access them	✓
5. We will ensure visibility about the nature and status of actions in the Digitalisation Action Plan	✓
6. We will ensure there is shared understanding of success and performance is measured	✓
7. We will coordinate with the wider ecosystem of Products and Services	✓

Digitalisation principles:

The digitalisation principles are particularly pertinent to this Investment Proposal as it will impact so many stakeholder groups; from PSR customers to those customers impacted by a power outage.

We will prioritise providing benefits to our most vulnerable electricity users, as well those applicable to the general public.

We will ensure that the investment works towards a vision of the future where priorities of electricity users – both businesses and consumers – are understood with regard to welfare and vulnerable circumstances.

We will take full advantage of our current "As a Service" contracting model where opportunities to deliver benefits early and to iterate improvements quickly have proven to be successful.

Users will easily understand the systems they use by virtue of a consistent platform; building out broader relevance and benefits, for example to contractors. Having a hybrid model where agents can work in the office or at home makes both staff engagement easier and is more likely to gain user acceptance and adoption.

The deliverables and outputs will be tracked as part of the six-monthly rolling Digitalisation Strategy Action Plan and Electricity North West will continuously improve our customer services and create new services in close collaboration with our stakeholder groups.

Additionally, Electricity North West will collaborate with the wider eco-system: for example, around shared PSR information across the energy sector and emergency services.

Data and Digitalisation Deliverables and Outputs

- Electricity North West will make anonymised PSR data visible via our data portal, so it can be utilised by 3rd parties to support societal innovation.

- Increasing availability of information to all customer facing colleagues to ensure they are empowered to support customers with their individual needs and situations in planning works and responding to supply to loss.

- Electricity North West will improve the quality of our customer data by leveraging our investment in data and analytics tools and ensuring data is right when it is captured.

- Electricity North West will remove customer data siloes and create a single view of customer data.

- Electricity North West will migrate all these services to the Cloud, aligned to our Cloud first Strategy.

- Electricity North West will continually improve services based on customer and stakeholder input.

Geographic Information Systems

Support for Energy Data Task Force Recommendations and Modernising Energy Data initiative

Does this investment support the EDTF recommendations?
1. Digitalisation of the Energy System
This initiative directly and significantly supports digitalisation of the energy system. By storing and surfacing spatial data effectively, we will be able to enable new business and technical processes that were hitherto difficult or impossible.
2. Maximising the Value of Data
By ensuring data quality and access, value of data can be exploited not just internally, but with relationships with third parties.
3. Visibility of Data
This investment directly supports the implementation of the EDTF and the modernising energy data initiative through further investment in our ability to manage locational data, and to enable collaboration and foster new relationships with third parties and communities throughout our footprint and beyond.
4. Coordination of Asset Registration
This investment supports asset registration by providing the definitive record of assets, and in particular their location and connectivity within the broader asset base.
5. Visibility of Infrastructure and Assets
This initiative makes infrastructure and assets highly visible – not just in visualisation but by providing the capability to embed spatial information deep into other systems and applications.

Support for OFGEM Data Best Practice Guidelines

How does this investment support the Data Best Practice Guidelines?
Identify the roles of stakeholders of Data Assets A platform that will enable control of role-based access rights to appropriate parties, with use of common terms within Data Assets, Metadata and supporting information. This will allow us to provide access to our GIS data tailored to our identified external and internal stakeholder needs.
Use common terms within Data Assets, Metadata and supporting information A common information model with terminology will be applied, for Electricity North West and relevant parties across the industry including metadata and common exchange methods.
Describe data accurately using industry standard Metadata This platform will enable potential Data Users to understand the Data Assets by providing supporting information. Providing complete metadata will lead to better understanding of the inter-relationships between assets and asset types.

How does this investment support the Data Best Practice Guidelines?
Enable potential Data Users to understand the Data Assets by providing supporting information This platform will provide sufficient information to lead to better understanding between assets and asset types such as documentation, help guides and detailed descriptions.
Make Data Assets discoverable to potential Data Users New platforms make accessibility to data far easier by way of exposure via services – managed and secured appropriately. By making data models extendable, future data needs can be accommodated by current data models which evolve for changes.
Learn and deliver to the needs of current and prospective Data Users By making data models extendable, future data needs can be accommodated by current data, models but nuanced for changes.
Ensure data quality maintenance and improvement is prioritised by Data User needs Applying allocated access rights to appropriate data users on a granular level and with clear and intuitive user interfaces to aide data input interface as well as validation of field input as appropriate. Ensure Data Assets are interoperable with Data Assets from other data and digital services New platforms expose maps via services, which can be interlinked with digital and data services from other departments and organisations outside of Electricity North West.
Ensure Data Assets are interoperable with Data Assets from other data and digital services New platforms expose maps via services, which can be interlinked with digital and data services from other departments and organisations outside of Electricity North West via our strategic data platform.
Protect Data Assets and systems in accordance with Security, Privacy and Resilience best practice Granular role-based-access-control means that data sets can be exposed, accessed and modified only by selected users.
Store, archive and provide access to Data Assets in ways that ensures sustained benefits The new data models and associated software provisioned for data quality means that their quality is improved and maintained. This means that benefits remain sustainable and do not subside over time.
Treat all Data Assets, their associated Metadata and software scripts used to process Data Assets as Presumed Open This new platform will provide key aspects for GIS data to be presumed open including appropriate metadata.

Alignment to OFGEM Digitalisation Principles

The following principles have particular application to this project

Digitalisation Principles	Support
1. We will prioritise providing benefits to the stakeholders who pay for the Products and Services as well as benefits that are in the Public Interest	✓
2. We will ensure Products and Services work towards a defined vision	✓
3. We will take full advantage of opportunities to deliver benefits early and to iterate improvements to Products and Services	✓

Digitalisation Principles	Support
4. We will make it easy for stakeholders to understand the Products and Services, the status of their delivery and how to access them	✓
5. We will ensure visibility about the nature and status of actions in the Digitalisation Action Plan	
6. We will ensure there is shared understanding of success and performance is measured	
7. We will coordinate with the wider ecosystem of Products and Services	✓

We will put in place a modern GIS platform to drive continuous improvement of processes in the field as well as in the office. We will raise the level of data quality to provide even more, and more accurate, information for decision makers. Through the strategic data platform, we will provide enhanced access to spatial information.

The GIS project will provide a major contribution to our DSO vision of 100% visibility of the Electricity North West LV network.

We have considered a number of different approaches to the migration of data from the existing GIS system to the replacement GIS system, and adoption of the new system by our field workforce. Each one has been assessed according to risk, cost and benefit delivery.

Through strict control of data ownership, cataloguing and governance we will make it easy for internal and external stakeholders to understand the business context of GIS data services, the status of their delivery and how to access them.

A key element of the GIS project is to provide visibility of the Electricity North West LV network and we will coordinate with the wider ecosystem resulting in improved accessibility for external parties by opening data mastered in GIS for other businesses to utilise.

Data and Digitalisation Deliverables and Outputs

All of the investment in this area directly supports data and digitalisation deliverables and outputs and the associated benefits outlined in the next section and customer benefits.

- New GIS System

- Expanded scope of GIS dataset which will include advanced telecommunications data and additional LV datasets, for example

- Improved GIS data quality through automation, validation at point of collection and enhanced processes

- Open GIS data when appropriate.

Market Operations

Support for Energy Data Task Force Recommendations and Modernising Energy Data initiative

Does this investment support the EDTF recommendations?
1. Digitalisation of the Energy System Continuously improving how to process customer and market operations data and how this is presented back to the customer in conjunction with the Data Analytics and Integration platform proposal to support our Digitalisation Strategy
2.   **Maximising the Value of Data** These systems are fundamental for us to maximise the value of data • ADQM ensures quality address data relating to the electricity supply points of our network, ensuring that our engineers have the correct address to visit for any issues and that industry parties such as suppliers and meter operators know the MPAN location for purposes of customer switching, meter maintenance reading and inspection. • Calitor manages unmetered supplies inventories. Accurate inventories ensure correct and timely cost recovery from suppliers for DUoS charges in relation to unmetered connections such as streetlights, bus shelters, advertising hoarding etc. • Durabill is core to billing electricity suppliers DUoS charges for the distribution of electricity across our network to end consumers • The Metering Point Registration System (MPRS) was originally developed as the core solution to manage MPAN registration and change-of-supplier in the deregulated electricity market in Great Britain. MPRS will continue as a key component of the soon to be introduced Central Switching Service as the Electricity Retail Data Service (ERDS) and allow Distribution businesses to deliver their licence obligations under the new Retail Energy code (REC). • The CDCA Loading and Validation (CLAVA) system manages Central Data Collection Agent (CDCA) data flows associated to the grid take of electricity into our distribution network and allows reconciliation, identification of losses and associated regulatory reporting to Ofgem. • The Supply Point Data System (SPuDS) will replace our legacy (2003) DUoS and Associated Distribution Systems (DADS), implementation is planned for Q4 2021-22. SPuDS maintains our MPAN inventory holding detailed attribute data associated to the Supply Point and ensuring that all associated industry processes including those mandated by the Balancing and Settlements Code (BSc) and other industry agreements are fulfilled in a controlled and auditable manner. • The Data Flow management system is a core component operating in tandem with the ElectraLink DTN responsible for the secure delivery of tens of thousands of market interactions between our systems and other industry participants each day. The system validates market messages, routes and transforms data between internal system and external market participants. Data captured from Smart Meters will be managed by the Strategic Data Platform which can enable analytics can take place and be visually represented back to stakeholders (covered by separate RIIO-ED2 Investment Proposal).
3. Visibility of Data As summarised above, multiple systems share data which is a pre-requisite of us making it visible. Data being processed will be captured in the Data Catalogue being proposed in the Strategic Data Platform proposal using industry standard data models to ensure consistent terms across the industry. Data itself will also be more visible to stakeholders internally using the tools implemented in the Strategic Data Platform proposal to enable optimisation of processes to benefit the customer.

Does this investment support the EDTF recommendations?
Market Operations data sets (in accordance to GDPR and our privacy policies) will be exposed to enable collaboration and innovation projects with partners, via the integration methods proposed within the Strategic Data Platform, to support enhancing the customer experience.
4. Coordination of Asset Registration These systems are a core part of coordination of asset registration – for example unmetered inventory managed by Calitor, and integration with MPRS. Data captured within our Market Operations systems will be fed into processes for managing asset data and then presenting this on the proposed data platform. Ensuring it adheres to the rules and regulations around the data sets i.e. Smart Meter data.
5. Visibility of Infrastructure and Assets Asset data processed will be used to populate agreed data services to support collaboration projects, e.g. the National Energy System Map visualisation, and adopting industry standard formats to ensure commonality in definitions of data items presented.

Support for OFGEM Data Best Practice Guidelines

The degree to which best practices are available are aligned to the REC Technical Specifications and the RECCo industry data flow catalogue (formerly administered by MRASCo as the MRA Data Transfer Catalogue)

Alignment to OFGEM Digitalisation Principles

The following principles have particular application to this project.

Digitalisation Principles	Support
1. We will prioritise providing benefits to the stakeholders who pay for the Products and Services as well as benefits that are in the Public Interest	
2. We will ensure Products and Services work towards a defined vision	
3. We will take full advantage of opportunities to deliver benefits early and to iterate improvements to Products and Services	
4. We will make it easy for stakeholders to understand the Products and Services, the status of their delivery and how to access them	
5. We will ensure visibility about the nature and status of actions in the Digitalisation Action Plan	
6. We will ensure there is shared understanding of success and performance is measured	
7. We will coordinate with the wider ecosystem of Products and Services	✓

These systems allow Electricity North West and the organisations in and around the energy market to adapt to future requirements: extending customer scenarios and choice of retailers or brokers to buy

as well as sell energy; adopting new capabilities such as smart meters and half-hour settlement and network access which are very significant in themselves.

Data and Digitalisation Deliverables and Outputs

The maintenance and ongoing continuous development of these key information systems is a core output of this investment:

- ADQM ensures quality address data relating to the electricity supply points of our network

- Calitor manages unmetered supplies inventories.

- Durabill is core to billing electricity suppliers DUoS charges for the distribution of electricity across our network to end consumers

- The Metering Point Registration System (MPRS)

- The CDCA Loading and Validation (CLAVA) system

- The Supply Point Data System (SPuDS) The Data Flow management system

Work and Asset Management

Support for Energy Data Task Force Recommendations and Modernising Energy Data initiative

Does this investment support the EDTF recommendations?
1. Digitalisation of the Energy System
Strongly aligned. Improving and expanding digital self-service capabilities will directly show that Electricity North West are digitalising the industry. Moreover, Electricity North West will capture and apply data about assets more accurately – accurate data being the 'life-blood' of digitalisation; for example, enabling more insights for continuous improvement.
2. Maximising the Value of Data
This initiative will allow data to be shared openly. Through marginal improvement in record quality it will facilitate the greater use of data.
3. Visibility of Data
This initiative directly supports digitalisation of the energy system. By being able to build, operate, maintain, report on and openly share data about assets effectively and, as their condition changes, and to digitalise the scheduling of work, Electricity North West will ensure that the network and its assets remain fit for purpose now and in the years to come, embracing and anticipating change as it happens.
4. Coordination of Asset Registration
Not applicable to this project.
5. Visibility of Infrastructure and Assets
This initiative will improve upon the visibility of Infrastructure and Assets and will allow data to be shared

Support for OFGEM Data Best Practice Guidelines

How does this investment support the Data Best Practice Guidelines?
Identify the roles of stakeholders of Data Assets A platform that can control role-based access rights to appropriate parties, with use of common terms within Data Assets, Metadata and supporting information.
Use common terms within Data Assets, Metadata and supporting information A common information model with terminology will be applied, for Electricity North West and relevant parties across the industry including metadata and common exchange methods.
Describe data accurately using industry standard Metadata Enable potential Data Users to understand the Data Assets by providing supporting information Core capability and value of the platform, leading to better understanding of the interrelationships between assets and asset types
Enable potential Data Users to understand the Data Assets by providing supporting information Core capability and value of the platform, leading to better understanding of the interrelationships between assets and asset types.
Make Data Assets discoverable to potential Data Users New platforms make accessibility to data far easier by way of exposure via services – managed and secured appropriately. By making data models extendable, future data needs can be accommodated by current data models which evolve for changes
Learn and deliver to the needs of current and prospective Data Users By making data models extendable, future data needs can be accommodated by current data, models but nuanced for changes
Ensure data quality maintenance and improvement is prioritised by Data User needs Applying allocated access rights to appropriate data users on a granular level and with clear and intuitive user interfaces to aide data input interface as well as validation of field input as appropriate. Ensure Data Assets are interoperable with Data Assets from other data and digital services New platforms expose maps via services, which can be interlinked with digital and data services from other departments and organisations outside of Electricity North West.
Ensure Data Assets are interoperable with Data Assets from other data and digital services New platforms expose maps via services, which can be interlinked with digital and data services from other departments and organisations outside of Electricity North West via the strategic data platform.
Protect Data Assets and systems in accordance with Security, Privacy and Resilience best practice Granular role-based-access-control means that data sets can be exposed, accessed and modified only by selected users.
Store, archive and provide access to Data Assets in ways that ensures sustained benefits The new data models and associated software provisioned for data quality means that their quality is improved and maintained. This means that benefits remain sustainable and do not subside over time.
Treat all Data Assets, their associated Metadata and software scripts used to process Data Assets as Presumed Open Any dataset being considered for open data must be evaluated in terms of the attribution data it carries, suitable governance should be in place to ensure a consistent approach to attributional content is applied over all data being shared in this manner – the role of services and metadata services means that descriptive information can be provided to third parties appropriately controlled.

The following principles have particular application to this project

Digitalisation Principles		Support
1.	We will prioritise providing benefits to the stakeholders who pay for the Products and Services as well as benefits that are in the Public Interest	✓
2.	We will ensure Products and Services work towards a defined vision	✓
3.	We will take full advantage of opportunities to deliver benefits early and to iterate improvements to Products and Services	✓
4.	We will make it easy for stakeholders to understand the Products and Services, the status of their delivery and how to access them	✓
5.	We will ensure visibility about the nature and status of actions in the Digitalisation Action Plan	
6.	We will ensure there is shared understanding of success and performance is measured	✓
7.	We will coordinate with the wider ecosystem of Products and Services	✓

Digitalisation principles:

The Work and Asset Management capabilities prioritises benefits to stakeholders who pay for products and services – for example undertaking work to avoid service issues by managing vegetation or optimising the replacement of overhead lines; or remediating issues by efficient management of fault work or Streetworks.

Electricity North West believe this Investment Proposal appropriately balances specific outcomes with an overall vision of "Friendly for the Field) and integrated platform to build long-term productivity.

Electricity North West have considered at length how best to deliver benefits early and how to iterate and are satisfied that the proposal for multiple focused projects will achieve this. Electricity North West have explicitly included capacity to improve capabilities based on field or other user feedback.

Stakeholders will easily understand products and services by virtue of a consistent platform; building out broader relevance and benefits, for example to contractors. Having the "Friendly for the Field" design principles makes both field staff training easier and is more likely to gain user acceptance/ use.

Regarding internal and external ecosystems: as shown in the capability model as well as specific statements, the Work and Asset Management platform will be integrated appropriately with other key Electricity North West systems. Moreover, external integration or data sharing will be enabled – for example the contractor portal - by this proposal and more general public data sharing by the Data, Analytics and Integration proposal, for which Electricity North West will integrate WAM with the Strategic Data Platform.

Data and Digitalisation Deliverables and Outputs

- Electricity North West will collect and utilise new data about vehicles and their movements.
- The WAM platform, CHiME, has a mobile interface which is designed to be Friendly for the Field and as such can facilitate better data quality from the outset whenever data is captured.
- Electricity North West will have improved visibility of employee location and expected workload.
- Electricity North West will add Telecommunications data to the WAM platform, bringing better end-to-end data lifecycle management than presently.
- The WAM platform will increase the control and integration of related data in a consistent operational platform, as well as enable easier integration to the Strategic Data Platform for analysis and decision insights. This degree of integration in a consistent platform is transformational versus current capabilities.

Complementary and Specialised Systems

Support for Energy Data Task Force Recommendations and Modernising Energy Data initiative

The Complementary and Specialised Systems Investment Proposal only makes a small contribution to the EDTF recommendations and modernising energy initiatives due to the scale of the investment and datasets involved.

Support for OFGEM Data Best Practice Guidelines

Electricity North West will align ourselves to Ofgem data best practices guidelines for the diverse range of datasets covered by this Investment Proposal ranging from crime to payment and training to wayleaves data.

Alignment to OFGEM Digitalisation Principles

The following principles have particular application to this project

Digitalisation Principles	Support
1. We will prioritise providing benefits to the stakeholders who pay for the Products and Services as well as benefits that are in the Public Interest	
2. We will ensure Products and Services work towards a defined vision	✓
3. We will take full advantage of opportunities to deliver benefits early and to iterate improvements to Products and Services	✓

Digitalisation Principles	Support
4. We will make it easy for stakeholders to understand the Products and Services, the status of their delivery and how to access them	✓
5. We will ensure visibility about the nature and status of actions in the Digitalisation Action Plan	
6. We will ensure there is shared understanding of success and performance is measured	
7. We will coordinate with the wider ecosystem of Products and Services	✓

Digitalisation Principles:

Electricity North West will adopt a modern and agile delivery approach which will enable us to deliver benefits early and in collaboration with our internal and external stakeholders where appropriate.

Data and Digitalisation Deliverables and Outputs

Electricity North West will endeavor to move our data to the Cloud where appropriate in support of our Cloud-first Strategy and vision, enabling early delivery of benefits.

Smart Meters

Support for Energy Data Task Force Recommendations and Modernising Energy Data initiative

The transition to Net Zero will require a national transition from fossil fuels to electricity. The ability of the network to support the associated step change in electricity consumption, particularly at the LV level, will be dependent on Smart Meter data to drive our predictive modelling and forecasting that will be used to avoid constraints either through flexibility services procurement or selective re-enforcement.

Does this investment support the EDTF recommendations?
1.   Digitalisation of the Energy System By updating and rolling out more smart meters, Electricity North West will expand the digitalisation of the end points in the energy network.
2.   Maximising the Value of Data By expanding the rollout of smart meters and new technology quality and quantity of data will enable it to be exploited not just internally, but externally when deemed applicable. Obtaining more data from smart meters take up will become an enabler to deliver better service and aid in proactive network management.
3.   Visibility of Data The smart meter uptake will allow for greater visibility of data as well as the advancement in technology will offer more reliable and accurate data. By connecting the data into the common information model (CIM) there will be the ability to see a more complete picture of data and its interaction across the network.
4.   Coordination of Asset Registration

Does this investment support the EDTF recommendations?
By having more intelligent upgraded smart meter and gateway the co-ordination of those assets will continually feedback their status and position on the network.
5. Visibility of Infrastructure and Assets
The smart meter initiative will aid in the visualisation processes to help display a Digital System Map, and support working group initiatives in being able to share data in a common understood format.

Support for OFGEM Data Best Practice Guidelines

How does this investment support the Data Best Practice Guidelines?
Identify the roles of stakeholders of Data Assets By connecting into the Electricity North West common information model, the roles of the stakeholders are identified across all the data assets on the network. As the roadmap is to upgrade the technology the roles and stakeholders are already established.
Use common terms within Data Assets, Metadata and supporting information The terms are readily established on the current network and these will continue. By upgrading the gateway and smart meters with a recognised provider the standards on common terms will be implemented along with the supporting information.
Describe data accurately using industry standard Metadata By implementing a common information model (CIM), the metadata will follow governed data principles, that are built aligned to industry standard. As new metadata is added for smart meters, these will be reviewed and aligned to standards. Changes and new metadata will be open for review by stakeholders as and when they require.
Enable potential Data Users to understand the Data Assets by providing supporting information The specifications of the smart meters and the gateway will be available for interested parties, withholding only information that could compromise security or the integrity of Electricity North West's network
Make Data Assets discoverable to potential Data Users The data asset for smart meters will be discoverable for verified users and parties. Due to the potential for this to be sensitive data, this will be subject to triage and diligence.
Learn and deliver to the needs of current and prospective Data Users Electricity North West are committed to deliver information on enhancing the end user experience with smart meters, where data can enrich experience, and information will be made readily available through the different communication channels. Information will be included in the DSAP where appropriate.
Ensure data quality maintenance and improvement is prioritised by Data User needs Smart meters will deliver information for the end user, which data need is already defined. As the technology develops there is a possibility that improvements will enrich the end user experience. This will be communicated to ensure a better experience. Where data can aid in the support of PSR customers this will be prioritised.
Ensure Data Assets are interoperable with Data Assets from other data and digital services The UK energy sector is continuing to develop a common information model, that is and will be used across the data estate. The CIM objective is to deliver interoperability throughout the technology landscape so common data is consistent and understandable.
Protect Data Assets and systems in accordance with Security, Privacy and Resilience (SPaR) best practice Electricity North West are continually developing and implementing SPaR policies. Throughout RIIO-ED2 cybersecurity, data protection requirements such as GDPR needs are a priority and have a dedicated approach to ensure that a robust and secure Data Strategy is in place.
Store, archive and provide access to Data Assets in ways that ensures sustained benefits Electricity North West will manage any aged data or scripts and retire them safely. Any data assets that are no longer deemed valid will be retired and archived for historical purpose. By using the CIM, the utilisation of data assets will be continually under review and therefore aged data assets will be quite easy to identify.

How does this investment support the Data Best Practice Guidelines?
Treat all Data Assets, their associated Metadata and software scripts used to process Data Assets as Presumed Open Electricity North West will manage the versions, change and related metadata to ensure it offers clear information to both stakeholders and the public. The smart meter roll-out follows national standards which prescribe data requirements.
Any dataset being considered for open data must be evaluated in terms of the attribution data it carries, suitable governance for both spatial and non-spatial data should be in place to ensure a consistent approach to attributional content is applied over all data being shared in this manner. We are currently aggregating consumption data from smart meters that allows us to anonymise individual consumption patterns and if this is made available to external parties this will ensure that it cannot be misused.

Alignment to OFGEM Digitalisation Principles

The following principles have particular application to this project

Digitalisation Principles	Support
1. We will prioritise providing benefits to the stakeholders who pay for the Products and Services as well as benefits that are in the Public Interest	✓
2. We will ensure Products and Services work towards a defined vision	✓
3. We will take full advantage of opportunities to deliver benefits early and to iterate improvements to Products and Services	✓
4. We will make it easy for stakeholders to understand the Products and Services, the status of their delivery and how to access them	✓
5. We will ensure visibility about the nature and status of actions in the Digitalisation Action Plan	✓
6. We will ensure there is shared understanding of success and performance is measured	✓
7. We will coordinate with the wider ecosystem of Products and Services	✓

The smart meter data will be made available to functions in the Electricity North West business through the Strategic Data Platform. As the investment is funded directly through consumer bills, the consumer benefits will be prioritised through improved supply availability and improved customer service.

The smart meter data will make a significant contribution to our DSO vision of 100% LV visibility, through the provision of dynamic LV data to external stakeholders.

The benefits of the smart meter investment will be delivered iteratively through incremental releases of services to internal and external consumers of the smart meter data. This will ensure that we deliver benefits early and regularly.

The smart meter data services are well documented across the industry and as such are readily available to both internal and external stakeholders. The important status of the smart meter data services will mainly be associated with publishing the progress of the national smart meter rollout as the benefits increase as penetration increases.

The progress achieved in exploiting data from the smart meters will be updated in the Digitalisation Action Plan

Successful realisation of benefits will be measured in terms of impact on relevant KPIs such as CSAT, ASID, CMLs

By its very nature, the smart meter data will be exploited by a substantial ecosystem and will be co-ordinated via the Strategic Data Platform.

Data and Digitalisation Deliverables and Outputs

Outputs from the Smart Meter system that will contribute to the realisation of our Data and Digitalisation Strategy include:

- Aggregated meter consumption history that will be used, in conjunction with other LV data, to deliver heat maps for Network Planning purposes and made available externally to drive innovation in the marketplace.
- Individual meter voltage threshold events and voltage history that will be used to identify worst served customers and help reduce outages
- Self-service Smart Meter ping services that will be used to allow customers to check the status of their supply whilst away from their homes

Operational Telecommunications

Support for Energy Data Task Force Recommendations and Modernising Energy Data initiative

This initiative provides enabling technology for the digitalisation of the energy system. By collecting real time data about the state of our network and developing links to third party systems and our data portal this initiative directly contributes to our ability to collect, transform and publish data about our network in real time.

Utilising the data from our real time operational Smart Grid systems into the common information model will deliver a universal understanding of real time live network data. This will allow organisations and resources, both internally and externally to address any needs without having multi data models.

This investment underpins other proposals which directly support EDTF Recommendations and the Modernising Energy Data initiative.

Support for OFGEM Data Best Practice Guidelines

This investment provides enabling technology which does not directly support Ofgem Data Best Practice guidelines

Alignment to OFGEM Digitalisation Principles

The following principles have particular application to this project

Digitalisation Principles	Support
1. We will prioritise providing benefits to the stakeholders who pay for the Products and Services as well as benefits that are in the Public Interest	
2. We will ensure Products and Services work towards a defined vision	
3. We will take full advantage of opportunities to deliver benefits early and to iterate improvements to Products and Services	
4. We will make it easy for stakeholders to understand the Products and Services, the status of their delivery and how to access them	
5. We will ensure visibility about the nature and status of actions in the Digitalisation Strategy Action Plan	
6. We will ensure there is shared understanding of success and performance is measured	
7. We will coordinate with the wider ecosystem of Products and Services	✓

As this is primarily a technical refresh of existing Operational Telecommunications components there is limited alignment with the Digitalisation Principles other than coordinating with the new capabilities delivered in the Smartgrid Systems and Substation Monitoring and Control Investment Proposals.

Data and Digitalisation Deliverables and Outputs

This Investment Proposal enables visibility of the Electricity North West network to internal and external stakeholders, if required.

Smart Grid Systems

Support for Energy Data Task Force Recommendations and Modernising Energy Data initiative

This initiative directly supports digitalisation of the energy system. By collecting real time data about the state of our network and developing links to third party systems and our data portal this initiative directly contributes to our ability to collect, transform and publish data about our network in real time.

Utilising the data from our real time operational Smart Grid systems into the Common Information Model (CIM) will deliver a universal understanding of real time live network data. This will allow organisations and resources, both internally and externally to address any needs without having multiple data models.

Does this investment support the EDTF recommendations?
Digitalisation of the Energy System
By installing monitoring and control capabilities on more of our distribution network, Electricity North West will expand the digitalisation of more of the assets within the energy network.
Maximising the Value of Data
By expanding the rollout of additional monitoring and control capability across the LV network the quality and quantity of additional asset data available in real time will enable it to be exploited not just internally, but externally when deemed applicable. Obtaining more data from LV monitoring and control sensors will become an enabler to deliver better service and aid in proactive network management.
Visibility of Data
The increase in deployment of additional measurement points will allow for greater visibility of data as well as the advancement in technology will offer more reliable and accurate data. By connecting the data into the common information model (CIM) there will be the ability to see a more complete picture of data and its interaction across the network.
Coordination of Asset Registration
By having more intelligent monitoring and measurement points on the network the co-ordination of those assets will improve capacity management as those sensors will continually feedback their status and position on the network.
Visibility of Infrastructure and Assets
The implementation of additional sensors as part of our connect and manage initiative will aid in the network visualisation processes to help display a Digital System Map, and support working group initiatives in being able to share data in a commonly understood format.

Support for OFGEM Data Best Practice Guidelines

How does this investment support the Data Best Practice Guidelines?
Identify the roles of stakeholders of Data Assets
By connecting into the Electricity North West Common Information Model, the roles of the stakeholders are identified across all the data assets on the network. As the roadmap is to upgrade the technology the roles and stakeholders are already established.
Use common terms within Data Assets, Metadata and supporting information
The terms are readily established on the current network and these will continue. By implementing additional measurement and monitoring from providers using current data standards the common terms will be implemented along with the supporting information.

How does this investment support the Data Best Practice Guidelines?
Describe data accurately using industry standard Metadata By implementing a common information model, the metadata will follow data governance principles, that are built and aligned to industry standards. As new metadata is added for additional monitoring and measurement sensors this will be reviewed and aligned to standards. Changes and new metadata will be open for review by stakeholders as and when needed.
Enable potential Data Users to understand the Data Assets by providing supporting information The format and specification of any new measurement data will follow common data standards and will be made available for interested parties, withholding only information that could compromise security or integrity of **b** network.
Make Data Assets discoverable to potential Data Users The data from real time systems will be discoverable for verified users and parties. Due to the sensitive nature of some of this data this will be subject to triage and diligence.
Learn and deliver to the needs of current and prospective Data Users **Electricity North West** are committed to delivering as much information as possible about our network asset base and its configuration and real time characteristics. Such information will be made readily available through the different and appropriate communication channels.
Ensure data quality maintenance and improvement is prioritised by Data User needs Additional monitoring and measurement on our core network will provide information both internally and externally and will be driven through our connect and manage policy facilitating the connection of renewable and low carbon technologies. As we improve the management of the network through the collection of additional data this need will be prioritised based on low carbon take up in any given area of the network.
Ensure Data Assets are interoperable with Data Assets from other data and digital services Electricity North West are continuing to develop a common information model, that is and will be used across the data estate. The CIM objective is to deliver interoperability throughout the technology landscape so common data is consistent and understandable.
Protect Data Assets and systems in accordance with Security, Privacy and Resilience best practice **Electricity North West** are continually developing and implementing SPaR policies. Throughout RIIO-ED2 cybersecurity, data protection requirements such as GDPR needs are a priority and have a dedicated approach to ensure that a robust and secure Data Strategy is in place.
Store, archive and provide access to Data Assets in ways that ensures sustained benefits **b** will manage any aged data or scripts and retire them safely. Any data assets that are no longer deemed valid will be retired and archived for historical purpose. By using the CIM the utilisation of data assets will be continually under review and therefore aged data assets will be quite easy to identify.
Treat all Data Assets, their associated Metadata and software scripts used to process Data Assets as Presumed Open Electricity North West will manage the versions, change and related metadata to ensure it offers clear information to both stakeholders and the public. All new monitoring equipment will conform to open standards which prescribe data requirements and formats.
Any dataset being considered for open data must be evaluated in terms of the attribution data it carries, suitable governance for both spatial and non-spatial data should be in place to ensure a consistent approach to attributional content is applied over all data being shared in this manner. Electricity North West implement a data governance framework including steering and working groups and appropriate data governance processes. The Electricity North West data governance framework will ensure that any such data sets will be considered appropriately.

The following principles have particular application to this project
This Investment Proposal is aligned to the Digitalisation principles as the systems in scope will provide visibility of, and access to, a range of existing and new information about the EHV, HV and LV network assets and real time data.

Digitalisation Principles	Support
1. We will prioritise providing benefits to the stakeholders who pay for the Products and Services as well as benefits that are in the Public Interest	✓
2. We will ensure Products and Services work towards a defined vision	✓
3. We will take full advantage of opportunities to deliver benefits early and to iterate improvements to Products and Services	✓
4. We will make it easy for stakeholders to understand the Products and Services, the status of their delivery and how to access them	✓
5. We will ensure visibility about the nature and status of actions in the Digitalisation Strategy Action Plan	✓
6. We will ensure there is shared understanding of success and performance is measured	✓
7. We will coordinate with the wider ecosystem of Products and Services	✓

The focus of the Smartgrid Systems Investment Proposal is the enablement of new DSO functions. These functions are designed to provide benefits to a wide range of stakeholders. Stakeholders include our existing customers who want to connect Low Carbon Technologies to our network and new market participants such as Flexibility Services Providers who will deliver services to help manage our constraints. These functions are critical to achieving our Net Zero targets in the Greater Manchester Combined Authority (2038) and across the North West of England (2050).

This Investment Proposal will be the single most important contributor to achieving our Net Zero vision for Manchester and for the North West of England

Many of the projects within this Investment Proposal were initiated through our Innovation Programme and as such there is a good body of knowledge already that will allow us to take full advantage of opportunities to deliver benefits early.

The Network Management System (NMS) Programme has been delivering the core ADMS platform components for 5 years now and there are comprehensive systems in place to make it easy for stakeholders to understand the Products and Services, the status of their delivery and how to access them.

The SmartGrid Systems Investment Proposal will primarily leverage capabilities and systems that will subject to the Digitalisation Strategy Action Plan (DSAP). Where the Investment Proposal contributes to the DSAP the appropriate updates will be provided.

As this Investment Proposal will be impacting a range of business Key Performance Indicators (KPIs), these are reported on monthly during company-wide Team Brief sessions, so by default, success and performance is measured

The fundamental role of the new DSO functions enabled by this Investment Proposal will, by their very nature, coordinate with the wider ecosystem of Products and Services internally, but more importantly, externally with our customers and Flexibility Services Providers.

Data and Digitalisation Deliverables and Outputs

The Smart Grid Systems deliverables are primarily aligned to the new and enhanced capabilities described in our DSO Strategy where 100% network visibility will be enabled through digitalisation. This includes the provision of data integration services with systems operated by organisations such as:

- Electricity System Operator (ESO)
- Other DNOs
- iDNOs
- Flexibility Service Providers (FSPs)
- Flexibility Market operators

These organisations will be provided with access to a range of information such as:

Heatmaps for all voltage levels, including LV, that will indicate the hosting capacity and available headroom by network asset

A range of forecasts, by scenario, for all voltage levels by network substations and circuits

Near real-time constraint and merit order information that will enable flexible resources to participate in managing the network and enter into bilateral arrangements to trade curtailment risk.

The master source of the data will be defined and required data stored in the proposed Data platform (delivered by the Data and Integration Investment Proposal) to enable integration and analytics can take place in the strategic visualisation and reporting tools being implemented. Transfer of the data will adopt the proposed integration strategic patterns that are defined in the Data and Integration architecture to ensure consistency and re-use of services where applicable and taking advantage on proposed API ecosystem where applicable. The frequency of the data transfer will be determined by the business requirement for having access to the data and will be used to build out data models to ensure common language and definitions. Required storage of data from this proposal will need to feed into the overall data architecture to ensure sufficient space is allocated and necessary costing models adapted. Data classification and obfuscation will need to be adopted by this proposal to ensure sensitive and private data is protected. Archiving of data within the proposal will adhere to the company definitions depending on the nature of the data being captured and processed.

Substation Monitoring and Control

Support for Energy Data Task Force Recommendations and Modernising Energy Data initiative

This initiative directly supports digitalisation of the energy system. By collecting real time data about the state of our network and developing links to third party systems and our data portal this initiative directly contributes to our ability to collect, transform and publish data about our network in real time.

Utilising the data from our real time operational Smart Grid systems into the common information model will deliver a universal understanding of real time live network data. This will allow organisations and resources, both internally and externally to address any needs without having multiple data models.

Does this investment support the EDTF recommendations?
1. Digitalisation of the Energy System
By installing monitoring and control capabilities on more of our distribution network, Electricity North West will expand the digitalisation of more of the assets within the energy network. This will provide 100% visibility of our LV network.
2. Maximising the Value of Data
By expanding the rollout of additional monitoring and control capability across the LV network the quality and quantity of additional asset data available in real time will enable it to be exploited not just internally, but externally when deemed applicable. Obtaining more data from LV monitoring and control sensors will become an enabler to deliver better service and aid in proactive network management.
3. Visibility of Data
The increase in deployment of additional measurement points will allow for greater visibility of data as well as the advancement in technology will offer more reliable and accurate data. By connecting the data into the common information model (CIM) there will be the ability to see a more complete picture of data and its interaction across the network.
4. Coordination of Asset Registration
Not applicable to this Investment Proposal
5. Visibility of Infrastructure and Assets
The implementation of additional sensors as part of our connect and manage initiative will aid in the network visualisation processes to help display a Digital System Map, and support working group initiatives in being able to share data in a commonly understood format.

Support for OFGEM Data Best Practice Guidelines

How does this investment support the Data Best Practice Guidelines?
Identify the roles of stakeholders of Data Assets By connecting into the Electricity North West common information model, the roles of the stakeholders are identified across all the data assets on the network. As the roadmap is to upgrade the technology the roles and stakeholders are already established.
Use common terms within Data Assets, Metadata and supporting information The terms are readily established on the current network and these will continue. By implementing additional measurement and monitoring from providers using current data standards the common terms will be implemented along with the supporting information.

How does this investment support the Data Best Practice Guidelines?
Describe data accurately using industry standard Metadata By implementing a common information model, the metadata will follow data governance principles, that are built and aligned to industry standards. As new metadata is added for additional monitoring and measurement sensors this will be reviewed and aligned to standards. Changes and new metadata will be open for review by stakeholders as and when needed.
Enable potential Data Users to understand the Data Assets by providing supporting information The format and specification of any new measurement data will follow common data standards and will be made available for interested parties, withholding only information that could compromise security or integrity of Electricity North West's network.
Make Data Assets discoverable to potential Data Users The data from real time systems will be discoverable for verified users and parties. Due to the sensitive nature of some of this data this will be subject to triage and diligence.
Learn and deliver to the needs of current and prospective Data Users Electricity North West are committed to delivering as much information as possible about our network asset base and its configuration and real time characteristics. Such information will be made readily available through the different and appropriate communication channels.
Ensure data quality maintenance and improvement is prioritised by Data User needs Additional monitoring and measurement on our core network will provide information both internally and externally and will be driven through our connect and manage policy facilitating the connection of renewable and low carbon technologies. As we improve the management of the network through the collection of additional data this need will be prioritised based on low carbon take up in any given area of the network.
Ensure Data Assets are interoperable with Data Assets from other data and digital services Electricity North West are continuing to develop a common information model, that is and will be used across the data estate. The CIM objective is to deliver interoperability throughout the technology landscape so common data is consistent and understandable.
Protect Data Assets and systems in accordance with Security, Privacy and Resilience best practice Electricity North West are continually developing and implementing SPaR policies. Throughout RIIO-ED2 cybersecurity, data protection requirements such as GDPR needs are a priority and have a dedicated approach to ensure that a robust and secure Data Strategy is in place.
Store, archive and provide access to Data Assets in ways that ensures sustained benefits Electricity North West will manage any aged data or scripts and retire them safely. Any data assets that are no longer deemed valid will be retired and archived for historical purpose. By using the CIM the utilisation of data assets will be continually under review and therefore aged data assets will be quite easy to identify.
Treat all Data Assets, their associated Metadata and software scripts used to process Data Assets as Presumed Open Electricity North West will manage the versions, change and related metadata to ensure it offers clear information to both stakeholders and the public. All new monitoring equipment will conform to open standards which prescribe data requirements and formats.
Any dataset being considered for open data must be evaluated in terms of the attribution data it carries, suitable governance for both spatial and non-spatial data should be in place to ensure a consistent approach to attributional content is applied over all data being shared in this manner. Electricity North West implement a data governance framework including steering and working groups and appropriate data governance processes. The Electricity North West data governance framework will ensure that any such data sets will be considered appropriately.

Alignment to OFGEM Digitalisation Principles

The following principles have particular application to this project

Digitalisation Principles	Support
1. We will prioritise providing benefits to the stakeholders who pay for the Products and Services as well as benefits that are in the Public Interest	
2. We will ensure Products and Services work towards a defined vision	✓
3. We will take full advantage of opportunities to deliver benefits early and to iterate improvements to Products and Services	
4. We will make it easy for stakeholders to understand the Products and Services, the status of their delivery and how to access them	
5. We will ensure visibility about the nature and status of actions in the Digitalisation Action Plan	
6. We will ensure there is shared understanding of success and performance is measured	
7. We will coordinate with the wider ecosystem of Products and Services	✓

Rolling out additional monitoring capability we will be able to share richer data the wider ecosystem and this investment supports delivery of our digital vision, specifically 100% visibility of the LV network.

Data and Digitalisation Deliverables and Outputs

The following deliverables and outputs from this Investment Proposal are relevant to Data and Digitalisation principles and guidelines:

- Additional measurement and control capability will be deployed on an additional 2000 HV and LV circuits to support connect and manage

Data, Analytics and Integration Platform

Support for Energy Data Task Force Recommendations andand Modernising Energy Data initiative

Does this investment support the EDTF recommendations?
1. Digitalisation of the Energy System Provision of new capabilities to visualise, analyse and understand data sets, supported by modern capabilities to store, govern, and share data, for Electricity North West, other energy market organisations, and customers. This will enable improvement or inform automation of business processes including processes which are extremely difficult to undertake today.
2. Maximising the Value of Data Building on existing data governance and data quality initiatives and enhancing the foundation of secure access to the data available, the real value of this data can be exploited not just internally, but externally when deemed applicable. Adoption of common industry data models will provide a consistent language and easier consumption and adoption. These models, amongst other benefits, will ultimately allow a data lineage to be established, providing clear links between critically important information and the underlying data, thereby allowing real value to the organisation to be established.
3. Visibility of Data The creation of a data catalogue in conjunction with the ENA data catalogue work and implementation of the industry wide Common Information Model will ensure common terms are adopted and ensure visibility of data and its use internally, along with associated metadata and business semantics. Access for internal users to a wider range of data sets will also be achieved via industry standard approaches e.g. APIs, and in collaboration with centralised industry programmes, the same technology can be used to make Electricity North West's data more visible to external third parties.
4. **Coordination of Asset Registration** Provision of a portal where services will be exposed to enable industry partners or consumers to access asset data in accordance with the Asset Registration Strategy. Our improved data quality and governance will enable better coordination of asset registration.
5. Visibility of Infrastructure and Assets Data services will be provided that will be used by visualisation processes to help display a Digital System Map, and support working group initiatives by being able to share data in a common and understood format.

Support for OFGEM Data Best Practice Guidelines

How does this investment support the Data Best Practice Guidelines?

1. Identify the roles of stakeholders of data assets
Continued investment for data catalogue capability including relevant stakeholders and processes will ensure that clear understanding of roles across the organisation.
Visibility of data ownership will also ensure that information about data assets continues to be relevant and current and for users to be able to identify owners for further assistance if required.

2.Use common terms within data assets, metadata and supporting information
Adoption of industry data standards where appropriate and new ability to incorporate additional terms and semantics can be applied even for systems which cannot yet be based upon all standards, allowing a cross-reference to those common terms. Collaborative forums will continue to be supported across the business to help influence the adoption of these standards.

3.Describe data accurately using industry standard metadata
New tools will provide the facility to capture standard metadata descriptions. Plans to train the teams involved will ensure that this information continues to be maintained as part of their day-to-day processes. Use of industry standards (e.g. Dublin Core) will also promote this approach when sharing data.

4.Enable potential data users to understand the data assets by providing supporting information
The new systems will be implemented with reference to detailed data governance guidance, ensuring that all necessary supporting information and metadata is captured and maintained as part of any future changes. This will include understanding and maintaining the ownership of all data assets, so that data users are able to query information.

5.Make data assets discoverable to potential data users
Implementing clear rules as part of open data triage implementation will ensure that the correct level of information and data is made available to the relevant data users. This will be subject to ongoing review to ensure that any updates to the rules or data are acted upon accordingly.

6.Learn and deliver to the needs of current and prospective data users
The solutions described will meet the needs of our current users. The platforms will also provide flexibility and capabilities to adapt for future requirements and the needs of users not yet engaged.

7.Ensure data quality maintenance and improvement is prioritised by data user needs
Data governance and data quality provide the foundation for the proposed changes, which are designed to make it easier to process, consume and share data with a wider range of data users and will be focused on delivering defined benefits. Processes are to be established to ensure prompt resolution of any issues identified with the data being provided.

8.Ensure data assets are interoperable with data assets from other data and digital services
Common industry standard models will also facilitate easier alignment of Electricity North West's data assets with internal and external requirements.
Improved integration capabilities within Electricity North West's IT landscape will also provide the capability for easier consumption of additional data sources.
Cleansing and migration of our GIS data, along with our strategic data platform will provide a foundation interoperability and enabling digital services.

How does this investment support the Data Best Practice Guidelines?

9.Protect data assets and systems in accordance with security, privacy and resilience best practice
Through robust data governance policies, open data triage approach, close alignment to the industry standard cyber security standards and GDPR, all implementation and changes will have to establish and maintain the same high standards throughout the lifecycle of all data assets.

10.Store, archive and provide access to data assets in ways that ensures sustained benefits
Data retention policies will be established as part of the data governance framework and these will be based on business requirements established from both internal and external priorities, aligned to our Cloud first principle. As those requirements change or evolve, the policies can also be updated, and the relevant data maintenance processes adjusted accordingly. This will inform investment to focus on those data assets that provide benefits.

11.Treat all data assets, their associated metadata and software scripts used to process data assets as presumed open
The proposed implementation of a new strategic data platform will enable a triage process for open data governance and to establish this presumed open approach as part of the migration from existing systems and storage.

Alignment to OFGEM Digitalisation Principles

Ofgem's digitalisation principles have been considered across all of the components of this proposal and are supported completely.

Digitalisation Principles	Support
1. We will prioritise providing benefits to the stakeholders who pay for the Products and Services as well as benefits that are in the Public Interest	✓
2. We will ensure Products and Services work towards a defined vision	✓
3. We will take full advantage of opportunities to deliver benefits early and to iterate improvements to Products and Services	✓
4. We will make it easy for stakeholders to understand the Products and Services, the status of their delivery and how to access them	✓
5. We will ensure visibility about the nature and status of actions in the Digitalisation Action Plan	✓
6. We will ensure there is shared understanding of success and performance is measured	✓
7. We will coordinate with the wider ecosystem of Products and Services	✓

This investment is central to implementing the digitalisation principles at Electricity North West and underpins all 7.

The Strategic Data platform can be deployed and exploited by projects applying an 'agile-first' approach with full participation of the stakeholders who will fund the products and services. Such agile delivery will be benefits driven. Elements of the investment will deliver an Open data portal that will allow market participants to target their own investment on the road to meeting Net Zero objectives of the North West of England.

This investment is a key enabler to achieving the Electricity North West vision of enabling Net Zero for the City of Manchester (2038) and the North West of England (2050)

As this investment will realise benefits through an Agile delivery programme, by its very nature it will deliver benefits early and incrementally.

As stakeholders will be full participants in the Agile delivery they will understand the products and services, the status of their delivery and how to access them

This investment will be central to the delivery of the Digitalisation Strategy and as such will contribute significantly to the Digitalisation Strategy Action Plan.

As this is an agile delivery programme there will be a shared understanding of success and performance will be measured throughout.

This investment is at the heart of building out the integration between internal and external systems in the growing ecosystem associated with the new DSO capabilities.

Data and Digitalisation Deliverables and Outputs

This digital transformation supports the operation of the network, the transition to Net Zero and supports our customers in vulnerable situations to ensure no one is left behind

As well as delivering a modern data architecture and data portal Electricity North West will be able to share the following data sets to enable collaboration, optimisation and innovation in accordance to our Data Triage processes:

- Geospatial visibility of our infrastructure assets and heatmaps for all voltage levels
- Historic operational data
- Near and longer-term forecasts (from our active network management system (ANM) and DFES respectively)
- Network planning data, including network connectivity models, electrical characteristics and loading data, to perform power system analysis.

Cloud and Infrastructure

Support for Energy Data Task Force Recommendations and Modernising Energy Data initiative

The Cloud and Infrastructure Investment Proposal is an enabling proposal which supports the EDTF recommendations and modernising energy initiatives. By proving secure and reliable environments to host our platforms and services, we will support our other Investment Proposals within the RIIO-ED2 submission.

Support for OFGEM Data Best Practice Guidelines

The Cloud and infrastructure investment will provide a reliable, highly available and secure platform for digitising business workloads and underlying data structures. Investment in Cloud and infrastructure directly supports the following:

- Protecting data assets and systems in accordance with security, privacy, and resilience best practice
- Storing, archiving, and providing access to data assets in ways that ensures sustained benefits.

Alignment to OFGEM Digitalisation Principles

The following principles have particular application to this project

Digitalisation Principles	Support
1. We will prioritise providing benefits to the stakeholders who pay for the Products and Services as well as benefits that are in the Public Interest	
2. We will ensure Products and Services work towards a defined vision	✓
3. We will take full advantage of opportunities to deliver benefits early and to iterate improvements to Products and Services	✓
4. We will make it easy for stakeholders to understand the Products and Services, the status of their delivery and how to access them	
5. We will ensure visibility about the nature and status of actions in the Digitalisation Action Plan	
6. We will ensure there is shared understanding of success and performance is measured	
7. We will coordinate with the wider ecosystem of Products and Services	✓

We will adopt a modern digital delivery approach where applicable in the Cloud and infrastructure space to maximise opportunities to deliver benefits iteratively throughout the RIIO-ED2 period.

- Cloud provides highly elastic platforms ideally suited to hosting dynamic volumes of data and burst levels of computing. This optimises data analytics capabilities and ensures it remains sustainable as business and customer demand for data grows.

- Cloud's ubiquitous accessibility model supports improvements to data quality and informational awareness by removing the barriers to data for our field workforce.

- Cloud's enhanced data integration and security will support the open data initiatives and support the secure exchange of data between Electricity North West, its partners, and its customers.

Digital Workplace

Support for Energy Data Task Force Recommendations andand Modernising Energy Data initiative

Does this investment support the EDTF recommendations?
1. Digitalisation of the Energy System
Not directly applicable, although appropriate field devices encourage data cleanse, improve the quality of data and therefore enable more reliance to be placed on it.
2. Maximising the Value of Data
By investing in a future-ready digital workplace, we are enhancing the foundation of secure access to the data available to us, enabling the real value of this data to be exploited not just internally, but externally when deemed applicable.
3. Visibility of Data
Enhanced digital workplace tools offer an integrated environment to seamlessly connect to devices, system and applications, providing visibility of core asset and work data and related performance indicators. The new WAM system, implemented in RIIO-ED1, significantly increases the network asset data to the workforce, even in an offline environment. Improved workplace tools will make this, and other relevant data e.g. GIS, more usable and therefore more valuable to the field. It will also enable data errors to be identified and more easily corrected.
4. Coordination of Asset Registration
This proposal indirectly supports the co-ordinated Asset Registration efforts. It enables the effective use of mobile devices for capturing as-built asset data on site and the effective use of collaboration tools to share the data. Replacing manual processes with low-code and mobile based applications with built-in validation checking will increase the frequency and accuracy in which data can be captured.
5. Visibility of Infrastructure and Assets
Digital workplace tools will indirectly enable access to a broad range of systems and solutions, including map visualisation of existing network assets with the ability to share this data among impacted stakeholders as appropriate.

Support for OFGEM Data Best Practice Guidelines

How does this investment support the Data Best Practice Guidance?
Make data assets discoverable to potential data users
Multi-channel capabilities included in this proposal will enable Electricity North West data users to easily access the information they require. This will include the provision of accurate and up-to-date information to mobile users.
Learn and deliver to the needs of current and prospective data users
All tools, solutions and services covered by this proposal will be tailored to meet the needs of Electricity North West data users. As described in the delivery approach, user feedback will be incorporated into the design, configuration and deployment of all applicable tools and solutions.
Ensure data quality maintenance and improvement is prioritised by data user needs
This proposal indirectly supports data quality maintenance and improvement initiatives, by enabling the effective use of mobile devices for capturing as-built asset data. By replacing manual processes with low-code and mobile based applications with built-in validation checking, Electricity North West will increase the frequency and accuracy in which data can be captured.
Protect data assets and systems in accordance with security, privacy and resilience best practice
Secure endpoint management solutions and use of next generation cyber security tooling will ensure data assets are protected and remain compliant.

Alignment to OFGEM Digitalisation Principles

The following principles have particular application to this project

Digitalisation Principles	Support
1. We will prioritise providing benefits to the stakeholders who pay for the products and services as well as benefits that are in the public interest.	
2. We will ensure products and services work towards a defined vision.	✓
3. We will take full advantage of opportunities to deliver benefits early and to iterate improvements to products and services.	✓
4. We will make it easy for stakeholders to understand the products and services, the status of their delivery and how to access them.	
5. We will ensure visibility about the nature and status of actions in the digitalisation action plan.	✓
6. We will ensure there is shared understanding of success and performance is measured.	
7. We will coordinate with the wider ecosystem of products and services.	✓

Digitalisation Principles:

Electricity North West believe the initiatives within this Investment Proposal will contribute to the vision of self-service, zero touch deployment and management of IT services.

Benefits will be delivered early, by utilising pre-provisioned Cloud based services combined with Lo-Code application development capabilities utilising an iterative development model

As many of the components in this Investment Proposal will significantly improve the way IT services are built and consumed, we will ensure visibility about the nature and status of actions in the digitalisation action plan.

We will coordinate with the wider ecosystem of products and services, through improved system management and configuration management capabilities.

Data and Digitalisation Deliverables and Outputs

- Electricity North West will provide a capability to digitise many manual processes through the Digital Team and low code application platform
- Electricity North West will improve data quality through improved digital communication channels and collaboration tooling for field-based and hybrid office workers