

Analysis of DSO functions

February 2021



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1 Executive summary

Welcome to our 'Analysis of DSO functions' document which reviews our distribution system operation (DSO) activities in conjunction with the 19 high level DSO functions defined by Ofgem in 2019. We have also reviewed how our activities and the 19 functions align with the new roles and activities, defined by Ofgem in its Sector Specific Methodology Decision document (SSMD) in December 2020.

In June 2019 the UK became the first major economy to legally commit to the target of net zero greenhouse gas emissions by 2050. The following February, our regulator Ofgem published its decarbonisation action plan which sets out the central role of network operators like Electricity North West in enabling the UK's carbon transition.

As the UK transitions to a net zero carbon future, the way customers connect to distribution networks will change dramatically. Demand for electricity is expected to double as our customers rely on the network more than ever before to heat their homes and charge their electric vehicles, while others will choose to generate their own electricity using wind or solar power. While all this is necessary to enable the UK's transition to net zero, our customers will be connected to networks which were not originally designed to accommodate these technologies. Significant investment in our network would be required to enable the region's transition to net zero and the costs associated with this would ultimately be passed down to customers through their electricity bills.

The challenge for distribution network operators (DNOs) as key players in the UK's transition to net zero carbon is to continue to provide and plan for a reliable and efficient network while also encouraging and accommodating increases in low carbon technologies (LCTs), keeping costs low for our customers and enabling them to participate in new revenue streams. As a result, new and emerging functions are being identified, as well as a need for DNOs to evolve by undertaking DSO activities.

In December 2019 Ofgem published a consultation on the key enablers for the DSO programme of work and a long-term development statement, in which they identified a set of DSO functions and activities that will make up the role of DSO. We have laid out our plan for fulfilling this role in our 'DSO strategy' document.

This document has been published alongside our DSO strategy and seeks to lay out more explicitly the detail involved in fulfilling the role. Here we present the results from the analysis that informed our plan. We have detailed our current position in relation to each DSO function, our view of what the future of the function will look like, any requirements we believe are necessary to fulfil it and how these align with Ofgem's new DSO roles and activities.

This document is part of a suite of current documents which explain how we are preparing our network for the net zero carbon future and how we will support the government's commitment to achieve net zero emissions by 2050.

- [Leading the North West to zero carbon](#) – outlines our ambition to meet the region's carbon emissions target and sets out the range of initiatives and investments which will ensure we take a significant step on the road to achieving rapid decarbonisation
- [DSO strategy](#) – sets out the next steps on our DSO and net zero carbon journey
- [Grid digitalisation & data strategy](#) – our plans to install additional monitoring and control equipment across our network to facilitate the DSO transition
- [Distribution future electricity scenarios](#) (DFES) – used to create our forecasts for future capacity requirements
- [Decarbonisation pathways](#) – energy blueprints developed with Cadent, the region's main gas network operator for Greater Manchester, Lancashire and Cumbria.

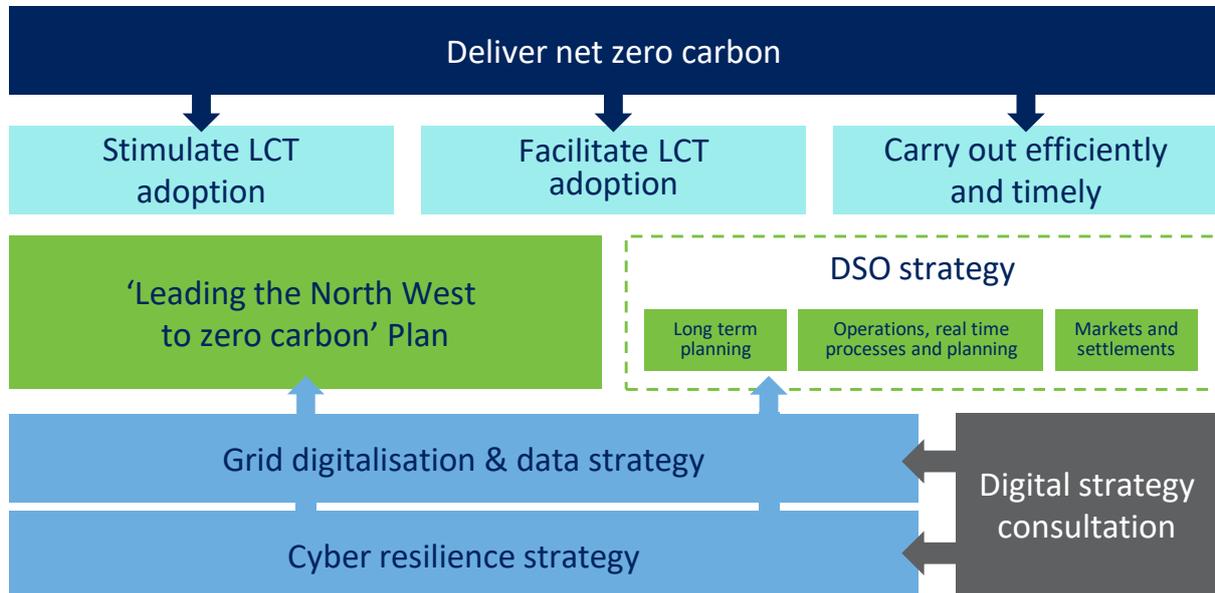
In July 2020 we consulted on our DSO strategy, Analysis of DSO functions document and our Grid digitalisation & data strategy; this document has been updated following the feedback we received during the consultation and in light of the publication of Ofgem's SSMD.

We hope you enjoy delving into the detail of our DSO strategy and associated analysis.

2 Introduction

This document is one of a suite of documents that support our business objectives to help deliver net zero and enable the transition to a DSO. It supports and should be read in conjunction with our 'DSO strategy' and 'Grid digitalisation & data strategy'.

How decarbonisation and DSO transition fit together



In December 2019 Ofgem published a consultation on the key enablers for the DSO programme of work and long-term development statement in which they identified a set of DSO functions and activities commonly referenced in operation and/or academia.

In December 2020 Ofgem published the Sector Specific Methodology Decision document (SSMD) which supersedes the 2019 consultation on the key enablers for the DSO programme of work. The 19 functions have been replaced by three DSO roles and five activities.

Below we have identified how we believe our DSO activities and the original 19 functions relate to the new SSMD roles and activities, mapping each function against the appropriate activity., however some of these functions are likely to cross over into multiple activities.

In the development of our RIIO-ED2 business plans we will translate our DSO roadmap from the 19 functions, to the new roles and activities.

Translation table: Ofgem’s DSO functions vs roles and activities

Role	Function	Status
Planning and network development <i>(Long term planning)</i>	<i>Activity: Plan efficiently in the context of uncertainty, taking account of the whole electricity system and promote planning data availability</i>	
	Network planning	Existing
	Forecasting demand and generation and DER	Extended
	Connection studies and operation procedures	Extended
	Integrated T-D planning	Extended
	DER hosting capacity analysis	Extended
	Emergency response planning	Extended
	Delivery of new investment	Extended
	DER net local value analysis	New
Network operations <i>(Operations, real-time processes and planning)</i>	<i>Activity: Promote operational network visibility and data availability</i>	
	Monitor parts of the Dx system under active network management	Existing
	Identify DERs, ancillary service reqts. and operation restrictions	New
	Data management and sharing	New
	<i>Activity: Facilitate efficient dispatch of distribution flexibility services</i>	
	Switching, outage restoration and distribution maintenance	Existing
	Supply of grid-operational services using DER assets	Extended
	Supply of grid-operational services using DNO assets	Extended
	Co-ordination between T-D interfaces	New
	Co-ordination of DER schedules	New
Market development <i>(Markets and settlement)</i>	<i>Activity: Provide accurate, user-friendly and comprehensive market information</i>	
	Operation of flexibility trading platforms and associated tasks	New
	<i>Activity: Simple, fair and transparent rules and processes for procuring DSO ancillary services, aligned with ESO markets where appropriate.</i>	
	Aggregation of DERs	Extended
	Design of principles of system access and trading arrangements	New

We have reviewed the scope of the 19 DSO functions and activities and set out our current high-level view on the requirements to fulfil the function, including IT systems and processes. In addition, we discuss whether the DNO or a third party is best placed to fulfil the requirements and consider the contestability of the described function.

We have linked each function to our RIIO-ED2 output areas below, to illustrate the associated benefits:

-  Enabling competition and innovation
-  Protecting customers
-  Decarbonising at lowest cost

Our views on each function are grouped by the three themes in the order shown in the figure above, utilising one page per function/activity.

At the bottom of each page we have cross-referenced each of the 19 functions with the eight ENA Open Networks DSO functions and identified the relevant products to enable research into what the Open Networks project is doing in this area.

High level views from our consultation

Stakeholders who responded to our consultation in July 2020 were generally very supportive of our proposed strategies. Many were supportive of our views on which functions should initially be led by the DNO, and which should be open to more market competition.

A number of respondents suggested that the DNO should initially look to develop market principles and establish best practice in relation to the DSO functions. When the time is right we should open up these functions to further competition, when it can be proven that there is a suitable market ready to operate these functions independently.

Stakeholders also suggested that we need to demonstrate greater transparency in decision-making as well as demonstrating that there is sufficient business ringfencing of contestable functions to allow for true neutral market facilitation. We have addressed all of these points in our updated DSO strategy documents.

Long-term planning: Network planning		
Function description	Carrying out well planned, co-ordinated and suitable network planning is a core DNO function to deliver network capacity to fulfil customers' needs in a safe, secure, reliable and efficient manner. This function includes activities relating to: identifying and resolving network constraints, improving the quality of supply to customers, improving network efficiency, reducing environmental impacts, improving network safety and ensuring that the network is designed to the required industry standards. This function also includes working with other network owners and developers (TOs, DNOs, ICPs, and IDNOs) to maintain and develop network infrastructure and co-ordinating with them to ensure that network planning standards are maintained across the region.	
Current activities	<p>We have been working to develop solutions to new challenges in the way networks are planned, relating to the move towards increasing levels of distributed generation, increasing energy efficiency and a growth in low carbon technologies connecting to the network e.g. electric vehicles and heat pumps. We have addressed these by developing improved modelling tools, policies, procedures and working practices. We work alongside other key stakeholder groups to develop and enhance industry standards, allowing these changes to occur in a safe and co-ordinated manner.</p> <p>A range of connections options have been developed to allow customers more flexibility in the way they connect to the network. In offering these connections we have reviewed the way that security of supply is treated, as well as developing more options for network rearrangement to drive efficiency and network reliability.</p> <p>We produce a series of heat mapping tools which provide information relating to the level of available capacity for future connections to the network.</p> <p>We have been testing the market to compare reinforcement and flexible services solutions for all new projects of significant value.</p>	
Future position	<ul style="list-style-type: none"> Applying the principles of flexibility first i.e. all new network planning should consider if there is a flexible solution to resolve a network issue which otherwise would have resulted in the requirement for a physical change to the network; this includes removing capacity thresholds in ED2. Modelling to produce a more granular demand profile forecast e.g. utilising time series modelling Enhanced network planning tools, including the capability for open data sharing of network planning activities 	
Digitalisation required/IT systems and support	<ul style="list-style-type: none"> Digitisation of new and existing connection agreements in a format which can be easily filtered Automated production of network models from GIS data Develop planning tools to model flexible services options 	
New or enhanced data required	<ul style="list-style-type: none"> Enhanced asset health information Increased granularity of asset technical details Improved accuracy of geospatial data 	<ul style="list-style-type: none"> Smart meter data New and enhanced distributed energy resource data Forecasting of how demand and generation profiles will change over time
Business process change required	<ul style="list-style-type: none"> Develop the capability to carry out enhanced data exchanges with stakeholders Upgrade network modelling tools to provide enhanced functionality for new planning activities Employ the flexibility first methodology when carrying out solution optioneering 	
RIIO-ED2 output areas		
		

Open Networks Project related DSO functions: Investment Planning, System Co-ordination

Related to ON products: 2018 WS1 P1 – Investment Planning, 2019 WS1B P1 – Investment Planning, 2020 WS1B P1 – Investment Planning

Long-term planning: Forecasting demand and generation and DER

Function description	The forecasting of all demand, generation in and out of the network. This information is used to inform business plans, stakeholders, investment decisions, connections activities and system operations.	
Current activities	Since 2018 we have published an annual Distribution Future Electricity Scenarios (DFES) document. This provides regional insights into the potential changes in demand and generation across the distribution network based on stakeholder engagement. We have implemented advanced forecasting tools developed through our innovation work on the ATLAS project, to produce highly accurate forecasts.	
Future position	<ul style="list-style-type: none"> Utilising enhanced planning capabilities to improve modelling and forecasting capabilities. These enhanced capabilities will take into account: flexible connections, increasing variability in demand and generation profiles, utilisation of flexible services to provide network services and increasingly variable weather patterns Systems we are developing will be capable of providing short-term (<48hr) demand forecasts which will anticipate network constraints. This knowledge can then be used to procure flexible services, manage network flows and prevent network overloads Improvements in the ATLAS forecasting methodology to include reactive power forecasting and increased automation of long- and short-term forecasting processes. The forecasting system will also be fed with greater quantities of quality data to improve forecasts 	
Digitalisation required/IT systems and support	<ul style="list-style-type: none"> Enhanced network monitoring to provide greater data quality for analysis Integration of smart meter data into corporate systems Implementation of common data exchange protocols to share forecast data openly with stakeholders 	
New or enhanced data required	<ul style="list-style-type: none"> Smart meter data Weather data 	<ul style="list-style-type: none"> Forecasts of changes in: uptake of LCT connections activities, regional development plans, policy changes (regional, national and international) and long-term weather patterns
Business process change required	<ul style="list-style-type: none"> Carry out improvements in ATLAS forecasting methodology to include reactive power (Q) forecasting Publish more detailed forecasts of power requirements for anticipated future flexible services requirements Implement a common platform to allow customers to access forecast data in industry-agreed standard formats Automated integration of business and third-party data sets into forecasting algorithms 	

RIIO-ED2 output areas

		
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Open Networks Project related DSO functions: Network Operation, Investment Planning, Connections and Connection Rights
 Related to Open Networks Project products: 2018 WB1 P5 – Whole System FES, 2020 WS1B P5 – Whole Systems FES (Signposting of Potential Network Capacity Requirements), 2019 WS1B P2 – Whole Electricity System FES, 2020 WS1B P2 – Whole Systems FES (co-ordination of national and regional FES)

Long-term planning: Connection studies and operational procedures

Function description	Carrying out studies to establish both the non-contestable and contestable elements of connections requests to the network. Determining operating procedures for customers connected to the DNO network and defining these within connection agreements.	
Current activities	<p>We have introduced a range of flexible connections offers to our service offering. These allow customers to refine how they would like to utilise the network which can result in significant cost and time savings relating to delivery of connections; in addition, this allows us to operate the network more efficiently.</p> <p>Our teams have been engaging with customers where their existing connection agreements do not reflect their observed usage patterns. This process has been aimed around reducing charges these consumers pay for redundant capacity they are not utilising and returning this capacity to the network so that it can be offered to other customers who wish to connect to the network. The process also identifies customers who are exceeding their agreed supply capacity, offering advice about energy-saving measures and carrying out updates to their connection arrangements where required.</p>	
Future position	<ul style="list-style-type: none"> As we develop to be able to operate the network closer to maximum network efficiency the likelihood of periods of network constraint will increase. Connection studies will be required to determine likely periods of constraint and inform customers to allow them to incorporate this into their business planning We are implementing an active network management system which will optimise the availability of the network for all connected customers We will increase the range of flexible connections options available to customers which will allow them to further tailor connections to their individual needs 	
Digitalisation required/IT systems and support	<ul style="list-style-type: none"> Standardise internal network models and make those models available to third parties. We will allow customers to access data within our network management system (NMS) through a standard portal for use in their planning tools We will introduce online tools to allow customers to receive an immediate answer to their connection enquiry using automated planning tools 	
New or enhanced data required	<ul style="list-style-type: none"> GIS data Historical network demand data (FLA) 	<ul style="list-style-type: none"> Network model extracted from NMS to be shared via data portal in CIM format
Business process change required	<ul style="list-style-type: none"> Further development of flexible connections options and processes Upgrading of network modelling tools, including the ability to carry out time-series modelling The development of active network management (ANM) and the merit order management system Integration of flexible connections into ANM 	

Date(s)
ED2

ED1

RIIO-ED2 output areas



*Open Networks Project related DSO functions: Connections and Connection Rights
 Related to ON products: 2018 WS1 P10 &11 – Facilitating Connections, 2018 WS2 P2 – Management of Capacity, 2018 WS2 P7 – Provision of Constraint Information, 2018 WS2 P1 – Good Practice ahead of Connection Applications, 2018 WS2 P6 – Guidance on Post Connection Changes, 2020 WS2 P4 – Connection Agreements Review*

Long-term planning: Integrated T-D planning			
Function description	Carrying out joint planning activities with the transmission network operators in order to develop a co-ordinated and efficient electricity network.		
Current activities	<p>DNOs produce a week 24 data transfer which is sent to National Grid Electricity System Operator (ESO). In return the ESO sends a week 42 planning data submission which is then integrated into the DNO planning models. These data transfers allow both parties to share in-depth planning data required to carry out co-ordinated network management and investment. Regular face-to-face joint technical planning meetings are carried out with the ESO to discuss current and future activities which would impact the network including: reinforcement, data transfers, reporting, commercial connection agreements, new connection activities and demand pattern analysis.</p> <p>Through the work of the ENA Open Networks Project, the UK DNOs and ESO have developed modifications to the Statement of Works process – the method in which DNOs signal a potential requirement to modify the connection agreement, and arrangements at the boundary to the transmission network. This process has been updated to incorporate a new process called Appendix G. The Appendix G process requires more frequent data transfers between DNOs and the ESO but also provides DNOs with the knowledge of available headroom within the transmission network before an intervention is required e.g. reinforcement.</p> <p>We are leading proposals to modify the codes which regulate the data transfers between DNOs, IDNOs, TOs and ESO, including the usage of a common information model (CIM). This will allow for increased granularity of data shared between industry parties to allow for increased co-ordination of whole system planning.</p> <p>We have begun work on developing a regional development plan (RDP) with the ESO for one of the grid supply points currently experiencing high connections activity. The RDP process stimulates a closer working relationship between DNO and transmission planning teams for a dedicated geographic area to resolve specific localised issues. The RDP process has been widely adopted within other DNO licence areas where wide-scale constraints have occurred.</p>		
Future position	<ul style="list-style-type: none"> • Further development and implementation of RDPs with the ESO. These will become more important as boundary flows at grid supply points (GSPs) become more constrained or variable • Work with ESO to ensure that transmission problems are jointly examined to see if a distribution solution would be more efficient for customers • Enhancement of data sharing activities between Electricity North West, other network and system operators 		
Digitalisation required/IT systems and support	<ul style="list-style-type: none"> • Data exchange in open data formats, such as CIM • Enhanced week 24 and 42 data transfers facilitated by advancements in digitisation of data sharing 		
New or enhanced data required	<ul style="list-style-type: none"> • Standardisation in data exchange format e.g. CIM 	<ul style="list-style-type: none"> • ESO network models and historical demand data 	Date(s) ED2
Business process change required	<ul style="list-style-type: none"> • Joint planning with other network and system operators considering the best solutions from a whole system perspective • Development of processes for the integration of DNO solutions to resolve transmission level constraints • Development and integration of enhanced data sharing capabilities 		ED1 and ED2
RIIO-ED2 output areas			
			

Open Networks Project related DSO functions: System Co-ordination

Related to ON products: 2018 WS1 P1 – Investment Planning, 2019 WS1B P1 – Investment Planning, 2020 WS1B P1 – Investment Planning, 2019 WS1B P4 – Data Exchange in Planning Timescales, 2020 WS1B P4 – Data Exchange in Planning Timescales

Long-term planning: DER hosting capacity analysis

Function description	Carrying out analysis on the network to determine and inform stakeholders where distributed energy resource (DER) can and cannot be easily connected to the network. This information will help to focus customers to connect where capacity is available and inform our investment plans to reinforce the network where DER hosting is not easily available.		
Current activities	<p>We produce an annual Long-Term Development Statement (LTDS) which is made publicly available. The LTDS provides detailed network planning data to stakeholders, as well as valuable insights around future development plans.</p> <p>We offer network capacity availability visualisations in both a geospatial format and tabular form of heat mapping tools. Together with the annual DFES and LTDS documents, the heat maps provide stakeholders with data to help them make better informed investment decisions. We carry out connection studies for anybody requesting a connection to the network. We regularly update our load and generation-related forecasting, thus ensuring investment is based upon up-to-date, quality data.</p>		
Future position	<ul style="list-style-type: none"> Carry out updates to the LTDS template and content in line with Ofgem’s upcoming recommendations Refine and improve DFES assumptions, uncertainties and format to meet the requirements of our stakeholders Increase the granularity of heat mapping and functionality to meet the requirements of our stakeholders, covering all voltage levels Allow self-assessment of capacity by providing online tools, allowing customers to carry out their own network assessments Enhance the whole electricity system working with relation to FES production LTDS data to be shared in an open format to a wider stakeholder base, through a data sharing portal Develop and publish a network development plan (NDP). NDPs will define network plans over a five to ten-year window, including the use of flexibility services, as well as defining the expected uptake of LCTs 		
Digitalisation required/IT systems and support	<ul style="list-style-type: none"> Enhanced automation of network modelling and forecasting Adopt an interactive visualisation tool to illustrate DFES scenarios to stakeholders Publish network hosting capacity at each network node online Enhanced LTDS and NDP content to be shared via digital channels 		
New or enhanced data required	<ul style="list-style-type: none"> Local, national and international government policy insights Historical demand data (FLA) Weather data 	<ul style="list-style-type: none"> Business insights Planning data LCT uptake figures 	Date(s) ED1
Business process change required	<ul style="list-style-type: none"> Further development of flexible connections options and processes Development of capacity assessment processes to provide capacity hosting analysis at increased granularity Development of a network development plan 		ED1 and ED2

RIIO-ED2 output areas

		
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*Open Networks Project related DSO functions: System Co-ordination, Connections & Connection Rights, Service/Market Facilitation, Investment Planning
 Related to ON products: 2018 WB1 P5 – Whole System FES, 2018 WS2 P7 – Provision of Constraint Information, 2019 WS1B P2 – Whole Electricity System FES, 2020 WS1B P2 – Whole Systems FES Co-ordination of National & Regional FES, 2020 WS1B P5 – Whole Systems FES (Signposting of Potential Network Capacity Requirements)*

Long-term planning: Emergency response planning

Function description	This is a core DNO activity which requires the development of plans for unplanned network events. These events will range from day-to-day activities through to theoretically predicted emergency events. This function covers a wide range of activities both electrical and non-electrical including: storms, faults, weather-related events, terrorist attacks, fires, floods, loss of network supplies, load overloads, third party damage to assets etc.		
Current activities	<p>Activities include planning where resources are deployed and provision of welfare facilities for colleagues and customers. We carry out response planning for both the day-to-day emergencies, as well as the low probability high impact events. Preparation for these events includes: provision of backup generation, welfare provisions for colleagues and customers, the evacuation and relocation of the control room and co-ordination with: emergency services, government, TNOs, ESO, MOD, local authorities etc.</p> <p>We have installed and utilise more network tele-control and automation to speed up restoration times following network faults. Within targeted areas of the low voltage network we have partnered with an external consultant who carries out network monitoring and control. This company has sophisticated software which can help locate faulty sections of network, isolate the fault and restore supplies within very short timescales.</p> <p>Focus has been given to developing collaborative partnerships and closer working with key external parties who contribute to supporting our emergency response plans, and likewise we support theirs, e.g. other utilities, Environment Agency, mobile food vendors.</p>		
Future position	<ul style="list-style-type: none"> Increasing the use of flexible services to assist in maintaining and restoring supplies following unplanned network events Consideration of how advanced network automation will be utilised during emergency situations e.g. ANM 		
Digitalisation required/IT systems and support	<ul style="list-style-type: none"> Increasing the level of system automation and monitoring Manual and automated messaging systems to keep stakeholders informed utilising a range of digital communications channels Development of real-time digital data links with other network and system operators to facilitate whole system co-ordinated restoration and data sharing 		
New or enhanced data required	<ul style="list-style-type: none"> Network status updates from other network and system operators Smart meter data 	<ul style="list-style-type: none"> Data from third party sources e.g. regional disaster planning agencies, Environment Agency, weather data, emergency services, MOD etc 	Date(s) ED1 and ED2
Business process change required	<ul style="list-style-type: none"> Development of emergency plans incorporating a world with more LCT connections, e.g. providing backup generation for EV charging Develop processes to utilise network monitoring data more efficiently to inform restoration plans Utilise more automation to help with restoration Utilise predictive functionalities to anticipate network issues before they fully develop e.g. real-time partial discharge monitoring 		ED1 and ED2

RIIO-ED2 output areas

	
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*Open Networks Project related DSO functions: System Defence & Restoration
 Related to ON products: 2018 WS1 P4 Reliability Standards & Emergency Requirements, 2019 WS1A P5 DSO Services: Conflict Management & Co-optimisation, 2020 WS1B P3 – Real-Time Data Exchange & Forecasting*

Long-term planning: Delivery of new investment

Function description	This function covers delivery activities where the network needs to be developed through reinforcement, smart technology rollout or flexible services. This function also includes investment in new business capabilities e.g. new IT equipment, people, operational equipment etc.	
Current activities	<p>Where we have identified that reinforcement of the network is required (for load, generation growth) we carry out or subcontract the delivery of this work. We facilitate the delivery of new connections and upgrades to existing supplies.</p> <p>In place of conventional asset build solutions, we have looked to procure flexible services where this represents good value. These services defer or avoid the need for a build solution to resolve network constraints.</p> <p>Following the proof of concept of a new technology or working practice this is then rolled out into business as usual e.g. CLASS and Smart Street. Many of the activities associated with new investment are open for competitive tender in order to deliver the best value for money to the end customer.</p>	
Future position	<ul style="list-style-type: none"> We will continue to seek flexible services and novel solutions for new load and generation-related investment and consider flexible or managed contracts when planning new connections 	
Digitalisation required/IT systems and support	<ul style="list-style-type: none"> Improvements in digital planning tools which help to improve the efficiency of delivery capabilities Developments of automated procurement systems Combine ANM and procurement functionality to procure flexible services in near to real-time Integration of automated stock re-ordering systems Digitisation of delivery records via data links e.g. commissioning paperwork completed on computer devices in the field Data link between colleagues in the field and control room to facilitate digitised switching schedules and field control 	
New or enhanced data required	<ul style="list-style-type: none"> Accurate network records Monitoring data required to power the ANM system 	<ul style="list-style-type: none"> Accurate stock recording
Business process change required	<ul style="list-style-type: none"> Develop processes to allow for all design colleagues to consider flexible services first, ahead of conventional reinforcement options Building tools to allow designers to understand the current and future network limits in a greater granularity which will allow for faster, more efficient decision-making 	

RIIO-ED2 output areas

		
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Open Networks Project related DSO functions: Investment Planning, Connections & Connection Rights, Network Operation
Related to ON products: 2018 WS1 P1 – Investment Planning, 2019 WS1B P1 – Investment Planning, 2020 WS1B P1 – Investment Planning, 2019 & 2020 WS1A All products, 2020 WS4 P1 Whole systems CBA

Long-term planning: DER net value analysis		
Function description	Providing information to potential DER providers to show them potential value of providing DER services. This will include encouraging the uptake of LCTs.	
Current activities	<p>The work we have been doing in relation to our 'Leading the North West to zero carbon' plan is designed to encourage stakeholders to take up LCTs, as well as decarbonising their current usage of energy. This work involves working with individual customers, local businesses and authorities to provide advice on LCTs and utilising energy more efficiently. We work closely with community and local energy groups to help with projects to adopt LCTs and to provide DER services to their community.</p> <p>We regularly update the information which is made available to our entire stakeholder audience to highlight areas of the network where we are looking to procure flexible services from DER providers. Information is available via: our website, through stakeholder workshops, webinars, newsletters, mailing lists and 1-2-1 meetings. We have updated our flexible services agreements and standardised our product names in line with other UK DNOs. This provides consistency for service providers wherever they are within the UK distribution network.</p>	
Future position	<ul style="list-style-type: none"> • Help to mature the DER services market • Provide information to DER service providers highlighting the value of providing flexible services 	
Digitalisation required/IT systems and support	<ul style="list-style-type: none"> • Automation of network modelling to allow for near real-time updating of information made available to stakeholders relating to the availability of capacity and requirements for service provision • Integration of a flexible services platform to advertise service requirements and to facilitate peer-to-peer trading 	
New or enhanced data required	<ul style="list-style-type: none"> • Enhanced network modelling data • Details of flexible services requirements 	Date(s) ED1
Business process change required	<ul style="list-style-type: none"> • Development/procurement of a flexible services platform • Development of automated capacity modelling capabilities • Enhanced stakeholder engagement surrounding DER uptake 	ED1 and ED2
RIIO-ED2 output areas		
		

Open Networks Project related DSO functions: Connections & Connection Rights, Service/Market Facilitation

Related to ON products: 2018 WS2 P4 Good Practice for Information Provision on Flexibility Services, 2018 WS2 Provision of Constraint Information, 2020 WS1B P5 Whole System FES (Signposting of Potential Network Capacity Requirements)

4 Operations, real-time processes and planning

Operations, real-time processes and planning: Switching, outage restoration and distribution maintenance			
Function description	Carrying out management of the distribution networks day-to-day running arrangements, a core DNO function.		
Current activities	<p>On a day-to-day basis we carry out planned switching operations, restore supplies following faults, respond to network emergencies and carry out network maintenance. These are the core activities which keep the network operation within design limits and maintain security of supply for the North West.</p> <p>We have increased the level of tele-control and automation on the network. This helps reduce the time taken to carry out switching activities for both planned and unplanned network rearrangement and control. The increased levels of tele-control and automation mean that staffing resources can be more efficiently utilised driving financial savings, as well as improving network safety and reliability. The improved tele-control functionality includes tele-control to sites with flexible connections which allows control room colleagues to signal to sites to change their input/output during periods of abnormal network running arrangements. The inclusion of this capability allows the network to be operated closer to maximum efficiency as well as requiring lower levels of reinforcement to facilitate new DER connections.</p> <p>We have introduced a real-time view of network outages as well as a view which shows upcoming planned network outages on our website.</p>		
Future position	<ul style="list-style-type: none"> • The increasing numbers of flexible connections will lead to additional commercial implications when switching, restoring faults and carrying out network maintenance • Utilising flexible services to assist in fault restoration and maintenance activities to restore supplies earlier or to extend maintenance windows • Balancing the different parameters of multiple systems such as ANM and CLASS on: switching, outage restoration and maintenance activities 		
Digitalisation required/IT systems and support	<ul style="list-style-type: none"> • Digitised switching schedules and field control • Increased automation of switching and fault restoration devices • Increased tele-control of network assets • Improved data provision of outages for stakeholders 		
New or enhanced data required	<ul style="list-style-type: none"> • Enhanced network monitoring data • Greater granularity and clarity of planned outage data 	<ul style="list-style-type: none"> • Improved data provision of outages for stakeholders 	Date(s) ED1 and ED2
Business process change required	<ul style="list-style-type: none"> • Improved co-ordination of planned activities requiring outages to minimise disruption and resources requirements • Enhanced utilisation of flexible services and flexible connections to manage outages • Utilisation of low carbon sources of backup generation e.g. hydrogen, batteries • Improved data provision of outages for stakeholders 		ED1 and ED2
RIIO-ED2 output areas			
			

Open Networks Project related DSO functions: System Co-ordination, Network Operation, System Defence & Restoration

Related to ON products: 2018 WS1 P4 Reliability Standards & Emergency Requirements, 2019 WS1A Product 2 – DSO Services, Procurement Processes, 2020 WS1B P3 Real-Time Data Exchange & Priority of Actions

Operations, real-time processes and planning: Monitor parts of the distribution system under active network management

Function description	Monitoring any sections of network under the control of an ANM system to ensure that it is taking appropriate actions and taking control to override the system should it take inappropriate actions or cannot maintain network stability without human intervention e.g. storm conditions.	
Current activities	We do not currently have any areas of the network under ANM control. We have entered into contract with a vendor to produce an ANM system which will be integrated with our NMS. The process so far has been to identify the requirements for the ANM system, taking into account learning from other DNOs who have already integrated ANM into business as usual processes, working with our software developer to create a customised system that should future-proof its network capabilities well into RIIO-ED2.	
Future position	<ul style="list-style-type: none"> • Deploy ANM • Carry out regular monitoring of ANM system performance • Maintain ANM system including updating the details of: DER providers, flexible connections, flexible services and flexible assets • Maintain communication links for ANM functionality to be effective • Utilise application programming interfaces (APIs) to communicate with customers, without the need for remote terminal units to be installed. 	
Digitalisation required/IT systems and support	<ul style="list-style-type: none"> • New telemetry monitoring points will require fitting retrospectively at various points on the network, as the network becomes constrained. These points will require inclusion in the NMS data model and as such can form part of the network model extracted for planning purposes and wider sharing • ANM will require appropriate measurements in constrained network locations prior to implementation • Digitisation of connection agreement records required so that the ANM system has a full DER management system list and knows the merit order of flexible switching actions 	
New or enhanced data required	<ul style="list-style-type: none"> • ANM status • DER connection agreements 	Date(s) ED1
Business process change required	<ul style="list-style-type: none"> • Delivery of the ANM system and embedding into corporate systems • Developing and integrating new DSO control room functionality. This is likely to require new staffing and training to enable control engineers to monitor the ANM system’s actions and performance • Develop a hierarchy of switching actions which considers the actions of ANM • The future design of the network needs to be cognisant of potential ANM actions • Improvement in telemetry fault restoration capabilities (if the ANM system is fed bad information it will make bad decisions) • Watchdog of communications links within the network and to DER sites, where tele-control and/or monitoring is required • Integrate the usage of APIs to communicate with customers 	ED1 and ED2

RIIO-ED2 output areas

		
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*Open Networks Project related DSO functions: System Co-ordination, Network Operation, Service Optimisation
 Related to ON products: 2018 WS1 P7 ANM Information, 2019 WS1B P3 Real Time Data Exchange & Priority of Actions*

Operations, real-time processes and planning: Supply of grid-operational services using DER assets		
Function description	This function relates to DER owners providing services to support grid operations to the ESO. This activity is predominantly focused around DER providers, therefore DNOs have limited input into this function other than facilitating the distribution of electricity.	
Current activities	We facilitate providers of grid balancing services to get connected or modify their connection arrangements to the distribution network to allow them to offer services to the ESO e.g. Short term operating reserve (STOR), firm frequency response (FFR) and enhanced frequency response (EFR)	
Future position	<ul style="list-style-type: none"> Balancing grid operational DER services such as STOR, FFR and EFR with DNO flexible services and systems such as ANM This will require new algorithms and rules agreeing that maximum value can be delivered through DER connections on the distribution network without impacting network security Integrating the learning which is being developed and shared through the Open Networks Project in this area, through several ongoing RDPs involving other DNOs Sharing data with customers relating to their position within queues utilised by the ANM system so that they can determine whether they are able to stack network service delivery to multiple parties as well as calculating risk of being curtailed. It is proposed to share this data via a password-protected portal for each flexibly connected site on the network 	
Digitalisation required/IT systems and support	<ul style="list-style-type: none"> Real-time data exchanges via real-time digital links to other network and system operators. These data flows will be utilised for conflict resolution and co-optimisation and headroom and foot room management 	
New or enhanced data required	<ul style="list-style-type: none"> DER contractual data may be required where conflict management services are required Stack orders for all flexible connections to the network to be published to allow for trading of capacity and assessment of risk to being curtailed 	Date(s) ED1
Business process change required	<ul style="list-style-type: none"> The connections business will need to be cognisant of potential service contracts in which DER connectees may wish to participate to provide suitable connections Outage planning teams may need to consider if a connected customer has a contract to provide services especially where these are network critical (currently not applicable) 	ED1 and ED2
RIIO-ED2 output areas		
		

Open Networks Project related DSO functions: Network Operation, Service/Market Facilitation, Service Optimisation

Related to ON products: 2019 DSO Services – Conflict Management & Co-optimisation, 2020 WS1A P6 Markets Facilitation – Non-DSO Services

Operations, real-time processes and planning: Supply of grid-operational services using DNO assets		
Function description	Using DNO assets or assets under the DNO's control to provide services to the grid.	
Current activities	We have developed the CLASS functionality to provide frequency balancing services to the ESO. This functionality utilises the inherent flexibility within the distribution network to provide a market competitive alternative to balancing services. The revenue generated from these services is then utilised to further upgrade the network as well as providing savings to electricity customers. CLASS operation has already been ringfenced from the main DSO activities within Electricity North West to ensure we can act as a neutral market facilitator. Recognising that this activity and other similar activities could be viewed as a perceived conflict of interest, we will be appointing a DSO compliance officer to ensure that in all DSO activity areas there is the appropriate separation of responsibilities, that there are no actual or perceived conflicts of interest and that we are performing the role of a neutral market facilitator.	
Future position	<ul style="list-style-type: none"> Enhancing the benefits of the CLASS functionality to generate more efficiency savings and improve network performance If permitted, utilising controllable home appliances e.g. EV smart charging functionality to provide grid-operational services Utilising the ANM system to provide load control and network balancing actions Carrying out reinforcement to provide reactive power services e.g. those being trialled under the Pathfinder project 	
Digitalisation required/IT systems and support	<ul style="list-style-type: none"> Upgrading of tapchanger units to be able to provide CLASS functionality Installation of enhanced ANM functionality to carry out grid balancing services Integration with home energy management systems and EV smart charging interfaces 	
New or enhanced data required	<ul style="list-style-type: none"> CLASS monitoring data Comms links with EV smart charging and home energy management interfaces 	<ul style="list-style-type: none"> Comms links with ESO trading systems
Business process change required	<ul style="list-style-type: none"> Enhanced network modelling for reactive power service capabilities Integration of a DSO compliance officer, to ensure that in all DSO activity areas there is the appropriate separation of responsibilities, that there are no actual or perceived conflicts of interest and that we are performing the role of a neutral market facilitator 	ED1
RIIO-ED2 output areas		
		

Open Networks Project related DSO functions: Network Operation, Investment Planning, Service/Market Facilitation, Service Optimisation

Related to ON products: 2019 WS1A P5 DSO services – Conflict Management & Co-optimisation, 2019 WS1A P1 – Flexibility Market Principles, 2019 WS1B P1 – Investment Planning, 2020 WS1B P1 – Investment Planning

Operations, real-time processes and planning: Identify DERs, ancillary service requirements and operation restrictions			
Function description	Identify DER providers connected to the distribution network, when and where there may be a requirement for services to be provided to the distribution system and any operational restrictions to a service being provided.		
Current activities	<p>We have published a resource register (ECR), in line with other DNOs, which identifies where distributed energy resources are connected to the network. The ECR provides information to electricity network stakeholders on generation and storage resources ($\geq 1\text{MW}$) that are connected, or accepted to connect, to our distribution network and is updated on a monthly basis. The register also includes information about flexible services provided by connected resources, including flexible demand, and details about network reinforcements. Some of the data has been redacted to protect commercial sensitivities and to comply with GDPR and the Utilities Act.</p> <p>We regularly update the information which is made available to our entire stakeholder audience to highlight areas of the network where we are looking to procure flexible services from DER providers. Information is available via: our website, through stakeholder workshops, webinars, newsletters, mailing lists and 1-2-1 meetings. We have updated our flexible services agreements and product naming to standardise these with other DNOs. This provides consistency for service providers wherever they are within the UK distribution network.</p> <p>We have recently entered into contract to join the Flexible Power platform to allow us to facilitate automated advertisement, procurement, dispatch and settlement flexible services contracts. We will continue to review other platforms to assess if there is a more efficient solution or one which provides additional benefits.</p>		
Future position	<ul style="list-style-type: none"> Carrying out monthly refresh of ECR and inclusion of a planned expansion to include: 1) load related reinforcement plans, 2) ESO ancillary service requirements for distribution connected DER, 3) network restrictions placed on DER by distribution network Publish any operational restrictions to a service being provided by a connected DER Utilisation of market platforms to advertise, procure, dispatch and settle flexible services contracts 		
Digitalisation required/IT systems and support	<ul style="list-style-type: none"> Production of the ECR via an automated process Digitisation of connection agreements to provide a single filtered data source Develop data collection and publish processes for NMS and ANM systems on operational restrictions for service provision 		
New or enhanced data required	<ul style="list-style-type: none"> DER connection agreement data Data on network constraints 	<ul style="list-style-type: none"> Data on reinforcement/flexible service requirements Network topology data 	Date(s) ED1
Business process change required	<ul style="list-style-type: none"> Consider the use of flexibility in every action we take, removing minimum capacity thresholds for participation in flexible services Link multiple data sources together to form filterable digital records of DER connections Automated network studying and publication to identify network constraints and areas of opportunity for DER providers 		ED1 and ED2
RIIO-ED2 output areas			
			

Open Networks Project related DSO functions: System Co-ordination, Network Operation, Service/Market Facilitation

Related to ON products: 2018 WS2 P4 – Good Practice for Information Provision on Flexibility, 2018 WS2 – Provision of Constraint Information, 2019 WS1B P2 – Whole System FES, 2020 WS1B P2 – Whole System FES (Co-ordination of National & Regional FES), 2020 WS1B P5 – Whole System FES (Signposting of Potential Network Capacity Requirements)

Operations, real-time processes and planning: Data management and sharing		
Function description	To fulfil the recommendations of the Energy Data Task Force to make all data open unless triaged to a more restrictive category.	
Current activities	<p>We produce an annual LTDS which is made publicly available. The LTDS provides detailed network planning data to stakeholders, as well as valuable insights around future development plans. We also produce and publish heat maps, fault data, HSE reporting data, GIS data (line search before you dig), financial reporting data and other licence regulatory reporting data.</p> <p>We have published an ECR, in line with other DNOs, which identifies where distributed energy resources are connected to the network. The ECR provides information to electricity network stakeholders on generation and storage resources ($\geq 1\text{MW}$) that are connected, or accepted to connect, to our distribution network and is updated on a monthly basis. The register also includes information about flexible services provided by connected resources, including flexible demand, and details about network reinforcements. Some of the data has been redacted to protect commercial sensitivities and to comply with GDPR and the Utilities Act.</p> <p>We have dramatically improved the functionality and presentation of our heatmap tools. All information is downloadable including tabular data and associated geographical maps showing the locations of our substations. In addition, we offer a tool which enables customers to identify the closest primary or bulk supply point substation to the location of their site, along with the capacity there for their particular type of connection (demand/generation types and required security). Distances from the customer's site to each of the substations are provided along with a specific red/amber/green indication of the ability to connect.</p>	
Future position	<ul style="list-style-type: none"> • Open sharing of all data, unless it has been triaged as having a closed audience • Development of heat mapping to present data at all voltage levels 	
Digitalisation required/IT systems and support	<ul style="list-style-type: none"> • Consolidation and cleansing of all digital and non-digital company data sources • Triaging of data to assess data sharing categorisation • Publication of data in accessible formats: PDF, XML, CIM etc and utilising industry-standard data sharing platforms e.g. Flexr 	
New or enhanced data required	<ul style="list-style-type: none"> • All company data 	Date(s) ED1
Business process change required	<ul style="list-style-type: none"> • Triage to retain sensitivity level • Requirement to ensure all data entered into corporate systems is accurate, quality data • Requirement to maintain/enhance data protection governance • Requirement to ensure cyber security protocols are in place and kept up-to-date • Requirement to maintain records of the source of data so it can be cross-checked and, where this comes from a third party, source to ensure that data protection rules have not been breached by storing data, processing data and open data sharing 	ED1
RIIO-ED2 output areas		
		

Open Networks Project related DSO functions: System Co-ordination, System Defence and Restoration, Connections & Connection Rights, Network Operation, Investment Planning, Charging, Service/Market Facilitation, Service Optimisation
 Related to ON products: 2019 WS2 P1 – System Wide Resources Register

Operations, real-time processes and planning: Co-ordination between T & D interfaces

Function description	The co-ordination activity between licensees to ensure that 1) neither party has a negative impact on each other with their activities and 2) the most efficient solutions are being developed together to provide the best value and service to customers.	
Current activities	Licensees hold regular face-to-face joint technical planning meetings to discuss current and future activities which would impact at the network boundary points including: reinforcement, data transfers, reporting, commercial connection agreements, new connection activities and demand pattern analysis.	
Future position	<ul style="list-style-type: none"> As the flexible services market grows it is anticipated there will be a requirement for development of a conflict management process within the industry. Our approach to this will be to share sufficient data with the other licensees and flexibility service vendors to allow for adequate conflict management to prevent network inefficiencies or risks to network security, while not introducing discrimination or bias into market operation. Electronic data transfer providing real time data sharing of 1) network data, 2) ANM status and key data about boundary flows, 3) boundary headroom/foot room levels for more efficient network operation 	
Digitalisation required/IT systems and support	<ul style="list-style-type: none"> Development of ICCP links between licensees for data exchange from ESO/TO fed back into NMS and planning tools 	
New or enhanced data required	<ul style="list-style-type: none"> Network SCADA data ANM status data and key data Data from ESO/TO 	<ul style="list-style-type: none"> Real time boundary headroom/foot room levels
Business process change required	<ul style="list-style-type: none"> Develop conflict management protocols, where applicable Develop joint procurement and dispatch protocols, where applicable Deployment of ANM system Development of ICCP links between licensees' systems Establishment of real-time boundary headroom/foot room levels 	

Date(s)

ED1

ED1 and ED2

RIIO-ED2 output areas

		
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Open Networks Project related DSO functions: System Co-ordination, Network Operation, System Defence and Restoration, Investment Planning, Connections & Connection Rights, Service/Market Facilitation, Service Optimisation, Charging Related to ON products: 2018 WS1 P4 – Reliability Standards & Emergency Requirements, 2019 WS1A P5 – DSO Services (Conflict Management & Co-optimisation, 2019 WS1B P4 & 2020 WS1B P4 – Data Exchange in Planning Timescales, 2019 WS1B P3 – Real Time Data Exchange & Priority of Actions, 2019 WS1B P1 & 2020 WS1B P1 – Investment Planning, 2020 WS1B P2 & P5 – Whole System FES

Operations, real-time processes and planning: Co-ordination of DER schedules				
Function description	This is the review of DER schedules and determining the optimisation of the schedules. This would include carrying out conflict management within the distribution network where services will negatively overlap.			
Current activities	Currently we do not perform this activity.			
Future position	<ul style="list-style-type: none"> Deciding when services are triggered to make the optimal network choices; this involves looking at predicted and real-time network flows and choosing the optimal mix of flexible resources to maintain network stability This may entail matching flexible connections with flexible services to enable cheaper and faster connections activity We intend to facilitate trading activities where two parties wish to trade via the DNO network and need assistance to align operating schedules. It is intended that this process will become predominantly automated as market liquidity grows, to reduce the potential for perceived conflicts of interest in market trading 			
Digitalisation required/IT systems and support	<ul style="list-style-type: none"> Holding schedules of all flexible services capabilities in the ANM system, plus potential publication of anonymised schedules as part of open data sharing Advertising where a flexible service provider is able/prepared to provide services to another customer (i.e. P2P trading) Sharing of proposed individual dispatch schedules with service providers via password-protected platforms to allow them to stack services and to carry our assessment of risk of being required to operate for unplanned network events or being constrained 			
New or enhanced data required	<ul style="list-style-type: none"> DER technical parameters 	<ul style="list-style-type: none"> DER availability data 	<ul style="list-style-type: none"> List of connections which may be suitable for pairing 	Date(s) ED2
Business process change required	<ul style="list-style-type: none"> Open data sharing with electronic platforms for facilitating a neutral market for trading Undertaking technical check for matching of DER i.e. does power flow from one customer to another without causing network constraints Deployment of the ANM system 			ED2
RIIO-ED2 output areas				
				

Open Networks Project related DSO functions: Network Operation, Connections & Connection Rights and Service Optimisation

Related to ON products: 2018 WS1 P10 & 11 – Facilitating Connections, 2019 WS1A P5 – DSO Services (Conflict Management & Co-optimisation), 2020 WS1A P4 – Commercial Arrangements

Markets and settlements: Aggregation of DERs		
Function description	Where DERs are aggregated and traded as a block, as an individual DER may not be sufficient to trade in competitive markets or may not be interested/able to carry out market competition.	
Current activities	We do not currently perform this activity. In our flexibility tenders we have reduced the size of the portfolio of DER to 50kW as part of the standardisation work under the Open Networks project, to encourage aggregation of DER.	
Future position	<ul style="list-style-type: none"> • Implementing open data sharing recommendations to enable others to aggregate DER providers e.g. embedded capacity register • Removing minimum capacity thresholds for flexibility tender requirements and increasing the granularity of where we request services to be provided to cover all voltage levels • Introducing the usage of APIs to allow for dispatch of services without the requirement for our communications equipment to be installed • Integration of smart metering data to carry out settlement of flexible services • We have no plans to aggregate DER to produce a service response; however, if the flexibility market fails to develop then we may develop an aggregated response provision for our own purposes, under a flexibility first approach 	
Digitalisation required/IT systems and support	<ul style="list-style-type: none"> • Collecting and collating DER information into usable aggregated clusters • Develop data provision platform or procure data provision service 	
New or enhanced data required	<ul style="list-style-type: none"> • DER technical information • Network topology data • Power flow analysis 	<ul style="list-style-type: none"> • ANM constraint data • ANM zoning information • Purchased service provision • DER register
Business process change required	<ul style="list-style-type: none"> • Data sharing between industry participants to facilitate aggregation by others, to understand the impact of aggregated services on the planning and operation of the distribution network and to avoid conflicting actions 	Date(s) ED1 and ED2
Expected RIIO-ED2 output areas		
		

Open Networks Project related DSO functions: Service/Market Facilitation and Service Optimisation

Related to ON products: 2019 WS2 P1 – System Wide Resources Register, 2020 WS1A P6 – Market Facilitation (Non-DSO Services)

Markets and settlements: Design of principles of system access and trading arrangements		
Function description	Clearly defined principles of system access are required to ensure that network users know who is entitled to utilise the network and when. Trading rules need to be established to ensure that a fair and neutral marketplace can be operated.	
Current activities	<p>We are supporting the Ofgem-led Access & Forward-Looking Charges (A&FLC), Significant Code Review (SCR) and Targeted Charging Review (TCR) working groups to develop access and trading arrangements and the associated rules.</p> <p>We are supporting the work of ElectraLink to develop a common data sharing platform through the Flexr project.</p>	
Future position	<ul style="list-style-type: none"> • Implement the A&FLC, TCR and SCR proposals • Test and utilise the common data sharing platform, Flexr, for the sharing of energy data to fulfil ETDF recommendations • Understand how to facilitate non-DSO services to enable the market to develop 	
Digitalisation required/IT systems and support	<ul style="list-style-type: none"> • Adapt the NMS/ANM systems for new access and trading arrangements • Develop and collate data to fulfil obligations for neutral market facilitation 	
New or enhanced data required	<ul style="list-style-type: none"> • Asset data • Real time data • DER data 	Date(s) ED1
Business process change required	<ul style="list-style-type: none"> • Collection and publication of new data requirements for neutral market facilitation 	ED1
Expected RIIO-ED2 output areas		
		

Open Networks Project related DSO functions: Service/Market Facilitation and Charging

Related to ON products: 2018 WS4 – Charging, 2020 WS1A P6 – Market Facilitation (Non-DSO Services)

Markets and settlements: Operation of trading flexibility platforms and associated tasks

Function description	To facilitate the trading (ie buying and selling) of flexible services via an electronic marketplace.		
Current activities	<p>We do not own or operate a flexibility trading platform; we have uploaded flexible services requirements onto third party marketplace platforms as part tenders to procure flexible services. We have recently entered into contract to join the Flexible Power platform to allow us to facilitate automated advertisement, procurement, dispatch and settlement flexible services contracts. We will continue to review other platforms to assess if there is a more efficient solution or one which provides additional benefits.</p> <p>We are part of the Transition project, which will help DSO transition by developing and demonstrating a ‘neutral market facilitator’ (NMF) platform. We also participated in the Local Energy Oxfordshire (LEO) trials.</p>		
Future position	<ul style="list-style-type: none"> • Use of an electronic flexibility trading platform, operated by a third party, to procure flexibility from the marketplace • Evaluation, dispatch and settlement of procured flexible services through a third-party platform. We are supporting the development of the Flexr project for the publication of flexibility requirements • Retendering for flexibility platforms on a regular basis to ensure that we promote market completion and to ensure we are offering the best value for money product to our customers 		
Digitalisation required/IT systems and support	<ul style="list-style-type: none"> • Linking NMS and ANM systems for the procurement, dispatch and settlement of flexible services via a trading platform 		
Data required	<ul style="list-style-type: none"> • Procurement rules and price data 	<ul style="list-style-type: none"> • Flexible services requirements • Network topology data 	<ul style="list-style-type: none"> • DER technical data
Business process change required	<ul style="list-style-type: none"> • Undertaking technical checks on trades • Enforcing market trading rules • Preventing gaming practices/fraudulent activities • Maintaining data protection and commercial sensitivity data privacy 		Date(s) ED1 and ED2

Expected RIIO-ED2 output areas		
		

Open Networks Project related DSO functions: Service/Market Facilitation
Related to ON products: 2019 WS1A – All products, 2020 WS1A P2 – Procurement Processes, 2020 WS1A P4 – Commercial Arrangements, 2020 WS1A P6 – Market facilitation (Non-DSO Services)

6. Glossary

Term	Description
Active network management (AMN)	A smart system used by DNOs to manage generation and load on the network to facilitate the connection of low carbon technologies
Application programming interface (API)	A software intermediary that allows two applications to talk to each other
Architecture of Tools for Load Scenarios (ATLAS)	Project which developed methodologies, prototype tools and specifications to develop detailed loading scenarios
Distributed energy resource (DER)	
Distribution Future Electricity Scenarios (DFES)	Forecasting plans for a range of scenarios for how low carbon technologies will be taken up and how the network could respond. The scenarios inform our investment plans and provide visibility of flexibility opportunities
Distribution network operator (DNO)	Company licensed to distribute electricity in Great Britain by the Office of Gas and Electricity Markets (Ofgem)
Distribution system operation (DSO)	The systems and processes needed to operate energy networks in the net zero carbon future
Energy Networks Association (ENA)	Industry body which represents transmission and distribution network operators for gas and electricity in the UK and Ireland
Electric vehicle (EV)	Any vehicle that does not rely on a conventional petrol or diesel engine
Flexible services	The term used for paying a customer to reduce their electricity consumption or increase generation on request, due to a network constraint
Flexr project	A project led by ElectraLink and GB distribution network operators to provide and standardise data to enable a smarter, more flexible energy system
Low carbon technologies	Technologies which produce little or no CO ₂ emissions, such as electric vehicles, electric heat pumps, solar and wind generation
Net zero carbon	The achievement of balancing carbon dioxide emissions with carbon removal or eliminating carbon dioxide emissions altogether
Network management system (NMS)	Software used to monitor, maintain and optimise electricity networks
Ofgem	Office of Gas and Electricity Markets – the government regulator for gas and electricity markets in Great Britain
Ofgem DSO functions	A list of 19 key distribution system operation functions published by Ofgem designed to enable the delivery of net zero carbon

Term	Description
Open Networks Project	A key industry initiative to deliver government policy that will transform the way our energy networks work and help deliver the 'smart grid'
RIIO-ED1	Current electricity industry price control period, 2015-2023
RIIO- ED2	Next electricity industry price control period, 2023-2028