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Manchester Development Plan

December 2022

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WELCOME

Welcome to our 2022 Manchester development plan in which we share our planned actions to release network capacity to facilitate our stakeholders' major planned developments in the Manchester area.

Manchester has seen an increase of over 40% in population since 2000, combined with its [employment growth](#) being much higher than national levels during the last decade. In October 2022 at their Green Summit, the Greater Manchester Combined Authority (GMCA) highlighted its commitment to support the acceleration of the region's decarbonisation to meet its 2038 target.

As highlighted in our 2022 [Distribution Future Electricity Scenarios \(DFES\)](#), there are significant uncertainties around how the cost of living crisis will affect our customers in the ways they use electricity for heating and other needs. However, we expect that the electrification of transport and heating will continue across our region. This is based not only on the increased attractiveness of these technologies but also on feedback from our stakeholders including GMCA and its Local Area Energy Planning (LAEP) studies. Through stakeholder engagement, we have also identified high certainty around a number of major planned developments in and around the Manchester council area. These developments have strong UK and local government support and secure funding so are highly likely to proceed.

Following the methodology in our [Network Development Plan \(NDP\)](#), we have used our DFES forecasts to identify capacity shortfalls at one of the eight bulk supply point (BSP) substations (typ. 132/33kV) and at five of the over 25 primary substations (typ. 33/11 or 6.6kV) around Manchester. Following our 'flexibility first' approach we share our flexibility requirements with stakeholders in tenders.

We have only proceeded with the network reinforcement interventions described in this report where we could not identify a more cost-efficient flexibility service provision. Through strategic interventions of conventional network reinforcement, we have followed a more holistic approach that considers the wider area demand growth, asset replacement based on asset condition and we have avoided expensive piecemeal network expansion.

Our Manchester development plan includes:

- Two new primary substations in the south of Manchester, i.e. in the Mayfield regeneration area and at the Southern Gateway.
- The installation of a third transformer at two primary substations in the eastern part of the region, i.e. at Eastlands and Queen's Park primary substations.
- The replacement of all transformers at Frederick Road BSP in Salford and the installation of three new transformers and new 132kV circuits, and the replacement of the 33kV switchboard panels at West Didsbury BSP.

Through the above interventions, we will release 190 MVA of network capacity across our 33, 11 and 6.6kV networks in the Manchester area. The majority of the network reinforcement work described in this report is part of our R10-ED2 business plan for the 2023-2028 period. The business plan was submitted in December 2021 and proposes the lowest cost impact on energy bills per customer compared to all other distribution network operators (DNOs) across GB.

We hope you find this document useful and informative. If you have any comments or feedback, please contact us at development.plans@enwl.co.uk.

Steve Cox,
Distribution System Operation (DSO) Director
December 2022



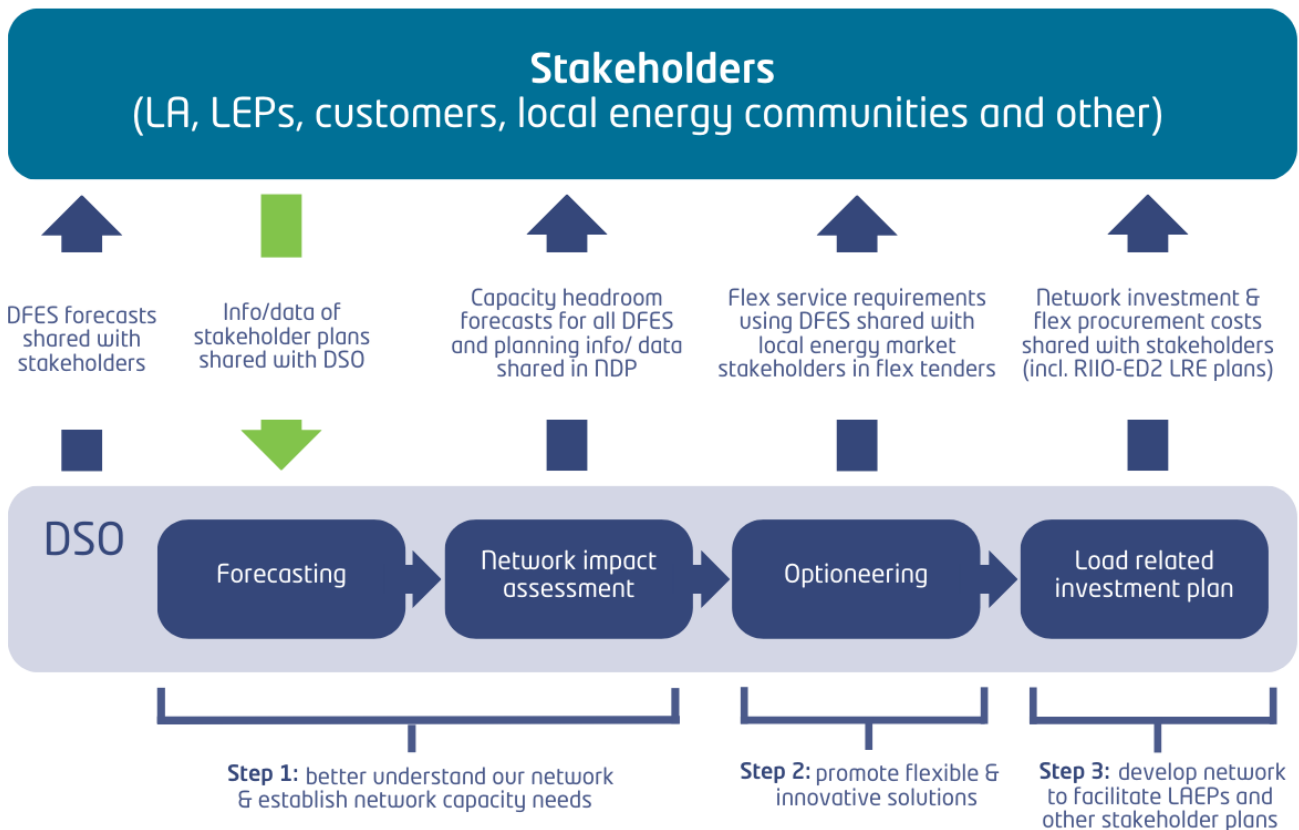
1 FACILITATING STAKEHOLDER PLANS INCLUDING LOCAL AREA ENERGY PLANS (LAEP)

1.1 Our role to facilitate stakeholder plans

As the North West’s electricity distributor, we need to provide the network capacity required to facilitate the decarbonisation needs and other plans of our stakeholders and customers. As part of our distribution system operation (DSO) load-related investment, we need to optimise this process in terms of reducing costs, mitigating risks and maximising benefits to our stakeholders and customers.

The DSO process we follow to release network capacity where and when needed is shown in the following flowchart. Information and data from stakeholders on their decarbonisation and other plans is a direct input to our [Distribution Future Electricity Scenarios \(DFES\)](#). Forecasts for electricity demand, distributed generation and battery storage from the DFES are then used in network impact assessments to establish network needs. Future capacity needs across the network are presented in our [NDP workbook](#), which shows that even with much higher volumes of electric vehicles (EVs) and heat pumps across our region, the majority of our networks have enough capacity to facilitate these.

Stakeholder engagement as part of Electricity North West’s DSO load-related investment cycle



For all parts of the network where a capacity need is identified, we apply our ‘flexibility first’ approach. This means that we aim to release capacity using flexible services in all cases where this is more efficient than conventional reinforcement. Our latest flexibility service requirements are published in our [autumn 2022 tender](#) and give our stakeholders the opportunity to enter the local energy market.

We proceed with conventional network reinforcement only in cases where flexible services are not available to release the required capacity, or they come at a higher cost. In our Manchester development plan, and more widely in our [network development plan](#) (NDP), we carry out strategic network interventions. This means that we focus on the electricity demand growth across wider areas,

focusing on avoiding expensive piecemeal network expansion while not foreclosing the region’s transition to net zero.

It should be noted that the sooner we can enter information and data from our stakeholders on their plans, the sooner we can embed this into our load-related investment process to release network capacity that facilitates their plans.

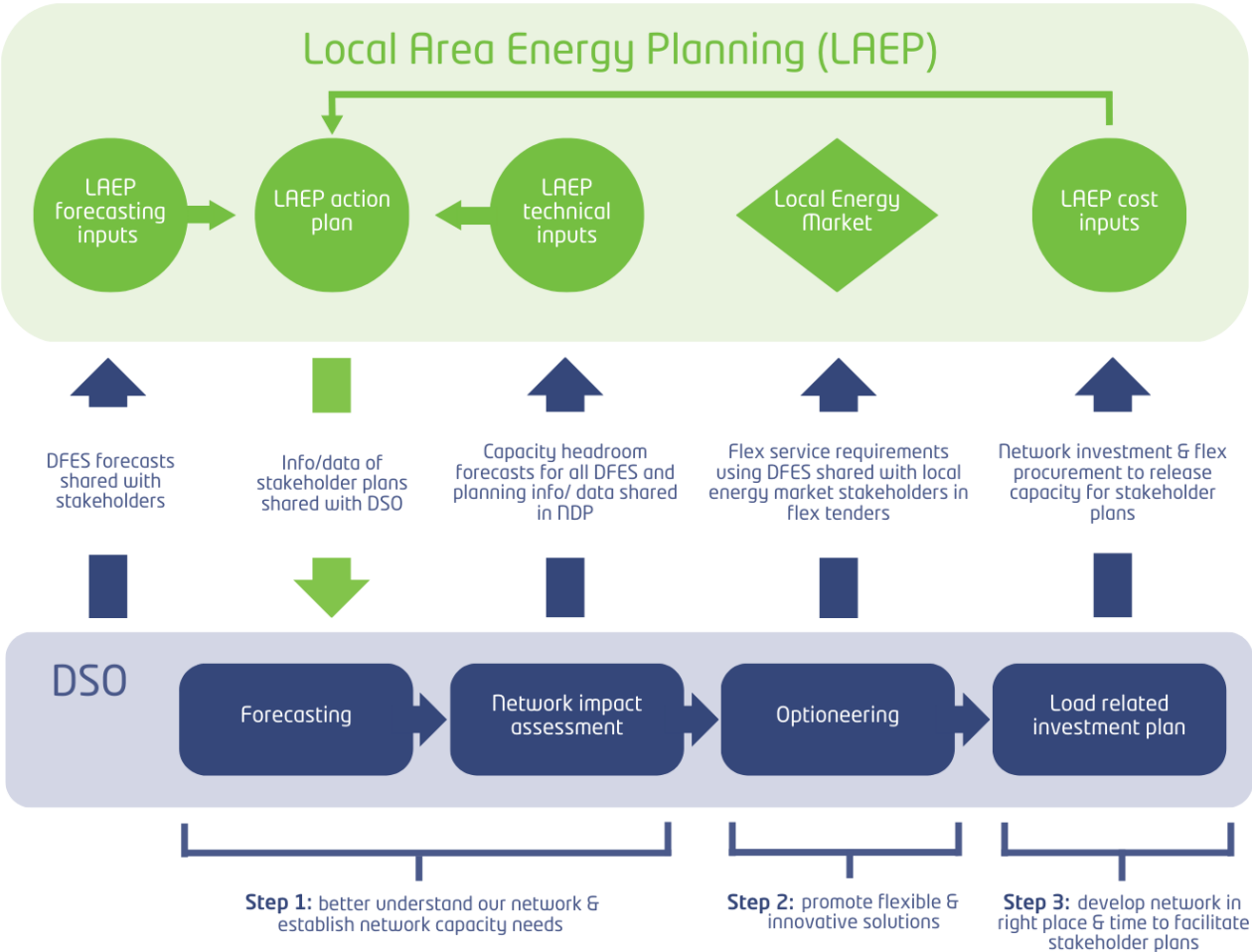
1.2 Our role to facilitate Local Area Energy Plans

GMCA is one of the first local authorities in the UK to carry out studies to inform its Local Area Energy Plans (LAEPs). The LAEPs are part of the region’s transition to meet net zero by 2038.

The way that our DSO load-related investment process interacts with LAEPs is shown in the following flowchart, which is a modification of the flowchart presented in the previous subsection but tailored to LAEPs. Action plans from GMCA LAEPs will be a direct input to our DFES and our annual load-related investment cycles. At the same time, information on network investment costs, insights on available network capacity and local energy market opportunities will be provided by our DSO team to support LAEPs.

More information on our role to facilitate LAEPs will be presented in our DFES 2022 which we expect to publish in December 2022.

Our DSO load-related investment process as part of facilitating Local Area Energy Plans (LAEPs)



1.3 Stakeholder engagement for the Manchester network development plan

In line with our load-related investment cycle, our Manchester development plan includes conventional reinforcement projects around the region for capacity requirements that cannot be met through cost-efficient flexible services.

Our development plan presents interventions required at higher voltage substations (132 to 33kV network) that are driven by major developments in and around the Manchester city area. The table below shows the major developments driving electricity demand growth and consequent reinforcement requirements.

Major planned developments in the Manchester area

Wider development area	Description of major developments
Manchester Eastern Gateway	Development and regeneration corridor spanning from NOMA district, Queen's Park, Ancoats, Central Retail Park, New Islington and Eastlands. 15,000 homes at Northern Gateway and 3,000 homes at Eastlands between 2022-2032. Development of over a million square feet of commercial space and Etihad campus (sports, retail and arena). Additional demand of around 45 MVA during RIIO ED2 (2023-2028).
Manchester Central and Southern Gateway	High growth area around the University of Manchester, Oxford Road corridor and science park. Additional demand of around 30 MVA during RIIO ED2 and five MVA post-RIIO ED2.
Mayfield regeneration	University of Manchester north campus redevelopment programme. Approved strategic regeneration framework for the Mayfield area. HS2 government backed national infrastructure scheme. Additional demand of around 25 MVA during RIIO ED2 and five MVA post-RIIO ED2.

However, it should be noted that capacity requirements are also driven by other factors modelled in our DFES including a large number of demand connection projects across our HV and LV networks, as well as the expected impact from the electrification of transport and heating. The following table shows our forecast.

Range of low carbon technology volumes in Greater Manchester from DFES 2022

Low carbon technology	Volumes in thousands		
	2022	2028	2033
EVs – all types of plug-ins for cars and vans	12	237 to 430 (best view: 380)	534 to 938 (best view: 880)
Heat pumps – domestic	13	61 to 113 (best view: 72)	109 to 411 (best view: 151)
Heat pumps – non-domestic	2	3 to 5 (best view: 3.7)	5 to 18 (best view: 5.5)

2 OUR 2022 MANCHESTER DEVELOPMENT PLAN

Our Manchester development plan is part of our wider network development plan, where, as part of our annual forecasting and planning cycle, we release network capacity where and when needed to facilitate the plans of our stakeholders including LAEPs, decarbonisation plans and any other developments.

The previous section described which major stakeholder plans around the Manchester area, and local trends of electrification of transport and heating, are facilitated through our network development plan. The following table shows the network reinforcement work that will release the capacity for these major development areas.

This capacity will also facilitate the first stages of LAEPs, given that the EV and heat pump volumes from our 'best view' scenario within the DFES 2022 have been considered in the network impact analysis. In other words, the volumes of EVs and heat pumps shown in the previous section are not expected to require additional reinforcement work across our 132 to 33kV network. Interventions on this part of our network have a two to three year lead time compared to a lead time of a few months for reinforcement work at lower voltages.

Sites requiring network reinforcement in the Manchester area

Site	Overview	Increase in firm network capacity (in MVA)	Date of capacity release
Southern Gateway	New primary substation (2 x 23 MVA transformers)	23	FY25
Mayfield regeneration	New primary substation (2 x 32 MVA transformers)	32	FY25
Queen's Park primary substation	Install third primary transformer	19	FY25
Eastlands primary substation	Install third primary transformer and extend switchboard	19	FY26
Frederick Road BSP substation	Replace three BSP transformers and install 132kV circuits	69	FY28
West Didsbury BSP substation	Replace ten panels of 33kV switchboard	22	FY28
Blackfriars	Overlay 1.3km of 33kV cable	5	FY28

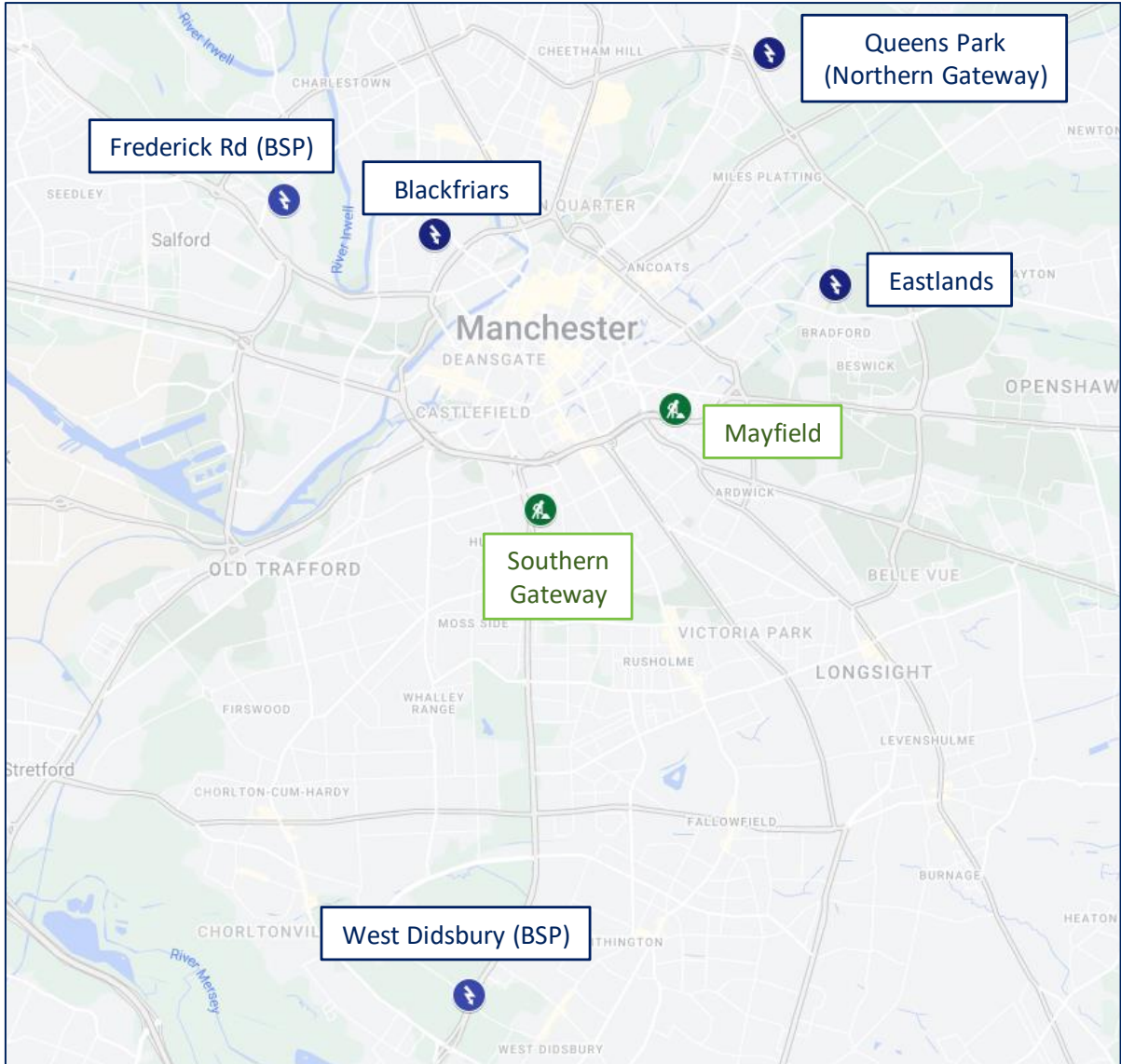
To facilitate the needs of the Manchester Eastern Gateway development area we will increase the firm capacity at Eastlands and Queen's Park primary substations. This will be achieved mainly by the addition of a third primary substation transformer at both sites. For the Mayfield development area, we will install a new primary substation. We will also take the same approach for Manchester's Central and Southern Gateway development areas, where the new Southern Gateway primary substation will be installed. For the housing and commercial developments around Salford we will increase the Blackfriars primary substation capacity through the overlaying of 33kV cable from Frederick Road BSP substation.

Beyond the additional capacity provided through interventions at primary substations, we will release additional capacity on our 33kV networks. For the Salford area this will be achieved through the replacement of existing transformers at our Frederick Road BSP substation, where three new transformers and new 132kV circuits will be installed. To support the Southern Gateway developments,

we will replace ten 33kV panels at the switchboard of West Didsbury BSP that supplies the new Southern Gateway primary substation.

As described in our latest network development plan, our DFES 2021 peak demand forecasts show that we will exceed capacity for all Manchester network reinforcement projects before FY28. Furthermore, we have not received any offers for flexibility through our latest tenders that could cover our requirements for these areas. Our latest DFES 2022 forecasts (to be published December 2022) show that only the Blackfriars site will not exceed capacity by FY28. However, given that based on historical FY22 demand we have a small capacity headroom at Blackfriars primary substation and the accepted demand connections in the substation’s feeding area have three times more capacity than this headroom, there is a real risk that demand could exceed capacity before FY28.

Locations of network reinforcement sites in our Manchester development plan



As with all our plans, we have submitted engineering justification papers (EJPs) for the projects in our Manchester development plan to our regulator Ofgem. These explain in detail through cost benefit analysis (CBA) that the interventions are the most cost-efficient options to facilitate the region’s transition to net zero and release capacity for our stakeholders’ plans. We have also published these EJPs as part of our RIIO-ED2 business plan for 2023-2028, which helps our stakeholders to better understand our assumptions and the details behind our proposed interventions.

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