

SKM has reviewed the documentation provided by UK Power Networks in relation to its capital investment strategy for the Central London load area. The UKPN strategy and our review has been split into two, related elements, firstly looking at limitations arising from the existing electrical distribution system architecture, operation and development and secondly considering the longer term EHV system capacity and development requirements. Our conclusions from this review are as follows:

Electrical Distribution System

- Review of the information provided by UKPN has demonstrated that there are a number of investment drivers underpinning future development of the Central London electrical distribution network, including system reliability, fault level constraints, restrictions in network capacity and requirement to connect new customers. These can be separated into short, medium and long term requirements, a range of solutions to which have been proposed by UKPN that are mutually beneficial.
- We consider that short term issues are reasonably clear and documented sufficiently to demonstrate the requirement for capital investment and that a range of potential solution options have been proposed by UKPN that can address the identified short term issues. There has been some quantification of the potential costs and benefits associated with the short term investment options by UKPN, which we agree supports the strategy, there is however a need to conduct a more substantial evaluation of the full benefits supporting the investment. We consider that the recommendations provided by UKPN for the short term investments are prudent and supported by the work completed to date and we consider that the short term investment strategy will progressively provide benefits and reduced costs as the medium and longer term solutions are implemented.
- With respect to the medium – long term options, the best technical solution would appear to be the implementation of a fully unit-protected HV distribution network across the Central London load area, which is expected to provide the greatest improvements across the considered investment drivers. However, there are a number of aspects which require further analysis and evaluation before a final decision can be made as to the long term development strategy, not least because of the potential extent of capital investment required. UKPN have already identified these dependencies – one is a technology issue related to the availability of new HV switchgear and the other is to fully understand and document the extent of potential benefits (both financial and technical) that could be achieved. Given the extent of these potential limitations UKPN has proposed a viable alternative option, essentially an extension of the short term option to apply remote control and radialise the HV network, though this is recognised as economic in the current regulatory regime it increases the number of short term interruptions which UK Power networks stakeholders have indicated does not fit with their business models therefore UK Power networks needs to continue with the development of a unit protected network.

We concur with this approach and consider that the proposed further option evaluation is essential to fully support the identification and development of the optimum long term investment solution.

EHV System Development

- Review of the current documentation available from UKPN with respect to the future EHV development of the Central London load area has identified a number of key challenges that require capital investment over the coming years. These include a lack of 132 kV substation capacity, inability to connect new large customers and implementation / delivery challenges associated with the development of further infrastructure.
- UKPN has identified a number of potential reinforcement projects that will target new substation facilities and network capacity developments in a number of strategic locations, including the Vauxhall-Nine Elms-Battersea (VNEB) and White City areas. However, it is clear that these plans are at an early stage of development and consequently there is considerably additional work required to fully explore and evaluate the potential long term strategy options for these areas of Central London.
- The development of new EHV electrical infrastructure across the Central London load area will require the acquisition of new substation sites and the development of new cable easements and corridors. UKPN have already initiated preliminary enquiries for substation site acquisition and we concur that this activity is fundamental to underpin the future detailed option evaluation and assessment given the practical and deliverability challenges likely to be faced.
- It is expected that the EHV network development required over the long term will also involve a range of external stakeholders (e.g. Greater London Authority, Transport for London, National Grid, as well as property developers) all of whom will have an involvement with, and interest in the long term strategy implementation. As a result, we consider that it is essential for UKPN to further develop their Central London EHV capital investment plans, to fully evaluate, document and assess the available project options and develop a robust long term EHV investment strategy to communicate key messages and outcomes.