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| Network Innovation Competition 2020 Supplementary Answer form | | |

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| Project Name | Constellation | | |
| Question number | #9 | Pro forma section | Section 10.4.10 |
| Question date | 27/08/20 | Answer date | 01/09/2020 |
| Question summary | DOC protection is generally used to protect the high voltage line on a transformer feeder.  From the diagrams it looks as though these sites are not transformer feeders – there is hv switchgear at the site, which implies that there is hv line protection at the site -which suggests that DOC is actually redundant.  Please explain why DOC is a necessary function at these two sites.  Please also state the standard approach to operational communications at UKPN’s 132kV sites and whether there are any strategic developments planned. | | |

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## Answer (please retain document formatting and do not exceed 2 pages unless otherwise agreed with Ofgem)

The 132kV switchgear on the transformer circuit in Figures 43 and 44 (in the FSP) is an isolator and not a circuit breaker. Both Maidstone and Lewes are connected in a mesh corner arrangement, which is typical of many of our 132kV sites. DOC protection is still very much needed as the backup mechanism to a failure of the intertripping on the 132kV feeders to clear feeder faults.

Our Operational Communications Hierarchy design standard (EDS 05-9111) describes the requirements for operational telecommunications at 132kV sites and is available on request mindful of the two page limit to this answer. This includes availability of the communications link to not be degraded below 99.98% and that any fault resulting in a loss of communications to be fixed within eight hours.

Our Operational Communications and Technology Strategy design standard (EDS 05-9110) describes the planned strategic developments for operational telecommunication and is available on request mindful of the two page limit to this answer:

* Enable the Transition to Distribution System Operator – development of: improved network automation and control, third-party connectivity, and increased network visibility;
* Enable Network Reliability and Safety – operational communications and technology systems must be maintained, replaced, and enhanced to support safe network operation; and
* Ensure Network Security – cyber security is at the forefront of all design activities and ongoing system management, as well as adoption of substation-level security management devices are required to proactively monitor the communication systems and respond to threats.

Within these goals, UK Power Networks has launched a number of initiatives such as LV visibility, Future Substation and Transition to IP. We have also initiated research into alternative low latency high reliability site-to-site communication mediums to 5G with our Radio Tele-protection NIA project.

Constellation has been closely aligned to internal strategic plans and it synergises with on-going external initiatives like RAAS, Open DSP and Holistic Intelligent Control System for flexible technologies.