Your response

Question	Your response
Question 1: Do you agree with our provisional view that the current non-use of the unpaired 2100 MHz spectrum for high power mobile services and potential future use of the 1900 - 1910 MHz spectrum for the ESN Gateway, may not be optimal given the possible alternative uses of the spectrum?	Confidential? –N Yes, we agree with Ofcom's assessment that such valuable and scarce spectrum as the unpaired 2100 MHz bands (1900-1920 MHz) should not be left unused and it would be important to unlock the strong potential of these bands for supporting the types of operational services described. This would also be well aligned with Ofcom's objectives and duties to ensure the most efficient and economical use of spectrum in the best interests of all in the UK. In addition, limiting the unpaired 2100 MHz spectrum to one single purpose or technology would undermine these objectives; Ofcom should maintain a technology neutral approach as to the type of networks and services and the different qualities they bring to delivering the sectoral applications identified. In this regard, we would encourage Ofcom to further define the references to high-power devices and ensure that low power devices, such as IoT, are not excluded from the possibilities.
Question 2: Do you agree with our provisional view that of the alternative high power uses of the unpaired 2100 MHz spectrum, national infrastructure uses such as rail and utilities are likely to be the most optimal?	Confidential? –N Yes, we agree with Ofcom's view that this spectrum could be used to support key national infrastructure services such as rail and utilities, and that these are important to almost all consumers and citizens in the UK and are therefore of high societal value. However, the role of IoT connectivity services within the utilities sector should not be underestimated. In particular, the advantages of satellite connectivity in ensuring continuous coverage in rural blackspots throughout the UK for enabling the types of operational connectivity which Ofcom describes, e.g. to help to identify faults on the electricity network and to restore supplies more quickly when there is a fault by

	avoiding delays associated with sending field staff to sites. As Ofcom has noted, sufficient spectrum may be needed to support *nationwide coverage:* this national coverage can be precisely delivered not only by terrestrial services with sufficiently 'high power' but also satellite IoT backhaul connectivity, which can be inherently low power services, where the qualities of the 2100 MHz bands are very complementary (low rain-fade, high resiliency, etc.). The unpaired 2100 MHz spectrum and more particularly the 1915-1920 MHz is ideally suited to the following key characteristics of satellite IoT applications and devices, among others: ● Low device cost ● Simple devices ● Low energy consumption ● Small data volumes ● Intermittent uses ● Can tolerate signal latency ● Massive number of devices ● Extended coverage
Question 3: Do you agree with our assessment that liberalising the spectrum and relying on trading is unlikely to be effective in securing optimal use of this spectrum?	Confidential? –N Yes
Question 4: Do you agree that revocation of the licences to enable reallocation may therefore be necessary to secure optimal use of the spectrum and that this is objectively justified and proportionate?	Confidential? –N Yes

Question 5: Do you have further views / comments that you wish to make in respect of this consultation?	Confidential? –N As stated in Answer to Question 2, it is important for Ofcom to recognise the role of satellite IoT for enabling nationwide coverage for the utilities sector, which Ofcom identifies as a potential beneficiary of services relying upon the valuable unpaired 2100 MHz bands. Satellite IoT connectivity services are operating elsewhere globally in the Energy sectors, for applications and use cases include pipeline monitoring, equipment telematics, predictive and preventative maintenance and beyond line-of-sight monitoring of pipelines and electricity distribution networks. This also applies to water networks, in terms of flow and pressure. IoT can also replace the need for on-site technicians for remote monitoring, advanced meter reading and asset tracking. In the current energy environment, satellite IoT networks could help support nationwide deployment of smart electricity and gas meters in UK to collect and transmit energy readings, but which also need frequent firmware updates to ensure the solution remains fully secure and private. Many thousands of homes and communities across the UK are still outside terrestrial coverage and consequently satellite can help fill these gaps to bridge the digital divide for utilities services, to enable the data to be repatriated. Satellite can also offer reliable and efficient redundancy in case of terrestrial network outages. At the European level, the importance of IoT via Satellite was endorsed by ECC Report 305. This was developed by PT FM44 and identifies the potential frameworks and emerging applications that will stand to benefit across Europe, including Energy and Monitoring of electricity distribution and production (including renewables), smart-meters. The Report recognises the value of the lower frequency bands and although the unpaired 2100 MHz is not included, it would extend the possibilities and capabilities in the UK to unlock the benefits of Satellite IoT in the S-band. The UK's current 2100 MHz initiative provides an excellent opportunity for Ofcom to become a potential leader and innovator in pioneering spectrum access for IoT services,

	including satellite, using these adjacent 2GHz spectrum bands.

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