Your response

Question	Your response
Question 1: Please provide a description of your current use of fixed links (or indicate which of the use types in Table 3.1 best describe your use type)	Confidential? – N NI Water has 95 fixed link licenses ranging from lower / upper 6GHz to 38GHz.
Question 2: What are the factors driving your choice of fixed links over alternative connectivity solutions, and which factors have the biggest impact on your decisions? Is this likely to change in the next 5 years? If so, what do you expect will change?	Confidential? – N The majority of fixed links are located at hill top sites adjacent to reservoir locations. Others are located at main office. This enables NI Water to have an integrated Telecoms Network providing communications for its business requirements. This is unlikely to change in the next 5 years.
Question 3: Is the current spectrum available for fixed links in the UK suitable and sufficient for your needs? If not, what would you change and why? If you believe changes are required, please give specific examples and reasons along with supporting evidence if available.	Confidential? – N Yes
Question 4: Is there anything about Ofcom's current framework for authorising fixed links which you consider could be improved?	Confidential? – N It would be helpful to be advised of the progress of a License application.
Question 5: How has your use of fixed links changed between 2016 and now? Please provide information on: - Reasons for increase or decrease in the number of your links since 2016; - Changes in the capacity of your links since 2016, including how you have; delivered this capacity change, e.g., different channel bandwidths, different link technology (please specify), etc.	Confidential? – N - NI Water has continued to refine the transmission network design to provide greater resilience and provide connectivity to new water and waste water treatment plants. - Increase in Capacity has resulted in increases to and adjustments of link bandwidths. IP Enabled SDH & Hybrid 08 -16Mbps to Hybrid 150 – 230Mbps links have been upgraded to MEF9 /14 Adaptive Modulation Systems.

Question 6: How do you expect your usage to change over the next 5-10 years? Please provide information on: - any increase/decrease in the number of links (by band) and bandwidth expected; - likely changes in geographic distribution of links; - likely changes in distribution of links by frequency band; - likely changes in capacity of links and how you expect to deliver this capacity; - other changes not covered above	Confidential? – N NI Water will continue to provide coverage across NI and will provide increase in bandwidth as necessary. There may be increases in the number of 38GHz links. Overall distribution of links by frequency band in unlikely.
Question 7: Which of the developments listed above are expected to have the biggest impact on your use of fixed links? Are there other developments to be aware of that have not been listed? Please explain the reasons for your answer.	Confidential? – N Depending on the deployment of LTE and success of planned trials it will probably become necessary to increase the number of fixed links and/or increase the bandwidth / capacity of existing fixed links.
Question 7a: Are you considering using NGSO satellites to provide backhaul for your network? If so, please provides details of the capacity requirements/expectations and the locations where delivery of this type of backhaul would be likely.	Confidential? – N NI Water are not considering using NGSO satellites.
Question 8: If you already use alternative transport options for delivering your services, please: - Provide an indication of the proportion of your services delivered over fixed links vs each alternative that you currently use. Is this proportion likely to change over the next 5-10 years? Is so please provide details; - Explain how your business rationale for use of fixed links vs alternative connectivity solutions is changing over time;	Confidential? – N NI Water over the past 5 years has upgraded IP Enabled SDH & Hybrid 08 -16Mbps to Hybrid 150 – 230Mbps To MEF9 /14 Adaptive Modulation Systems. NI Water is further considering the use of Co-Channel Dual Polar (CCDP) technology & Dual-band operation (band and carrier aggregation or BCA)

- If possible, provide examples of your decision-making process for recently deployed connections	
Question 9: Which of the listed technologies are you already using or do you plan to use in the future? For each that you are using/plan to use, please explain: - the current extent of your use, whether you expect to expand or shrink your use over the next 5-10 years, and how availability of these capabilities might impact your choice to deploy fixed links vs an alternative. Estimates of numbers or percentage of links deployed with each capability now and in the future would be valuable. We are particularly interested in feedback on future use of BCA.	Confidential? – N NI Water is presently using a range of MEF9 /14 Adaptive Modulation fixed links from 100Mbps to 500+ Mbps plus IP Enabled 32Mbps links.
Question 9a: If you plan to use BCA would you plan to use this primarily for new links, upgrades to existing links or a mix? What factors affect your decision to deploy (or not deploy) BCA today? Please provide whatever detail you can	Confidential? – N NI Water is further considering the use of Co-Channel Dual Polar (CCDP) technology & Dual-band operation (band and carrier aggregation or BCA) This will probably be a mix of new links and existing links.
Question 10: Do you have a need for W and D bands for fixed links use (or alternative uses)? If so, in what timescale? Please provide further details, including any evidence you have to support your response.	Confidential? – N NI Water at present has no need for W and D bands for fixed links use.
Question 11: Do you expect to apply for new fixed links in the upper 6 GHz band in the future, and if so, in which geographical areas? What are the reasons for choosing this band over other available bands or alternative technologies? Is there a technical reason why you would choose the upper 6 GHz band?	Confidential? – N NI Water in general use upper 6GHz for its longer links but has no technical reason for choosing upper 6GHz. The use for 6GHz band could be anywhere in Northern Ireland.

Question 12: Are there other international developments that you are aware of that could affect availability and utility of fixed links in the next 5-10 years?	Confidential? – N NI Water is not aware of any international developments that could affect availability and utility of fixed links in the next 5-10 years. NI Water will continue to use frequency bands, including between approximately 7 GHz and 20 to 24 GHz.

Please complete this form in full and return to fixedlinks.review@ofcom.org.uk.