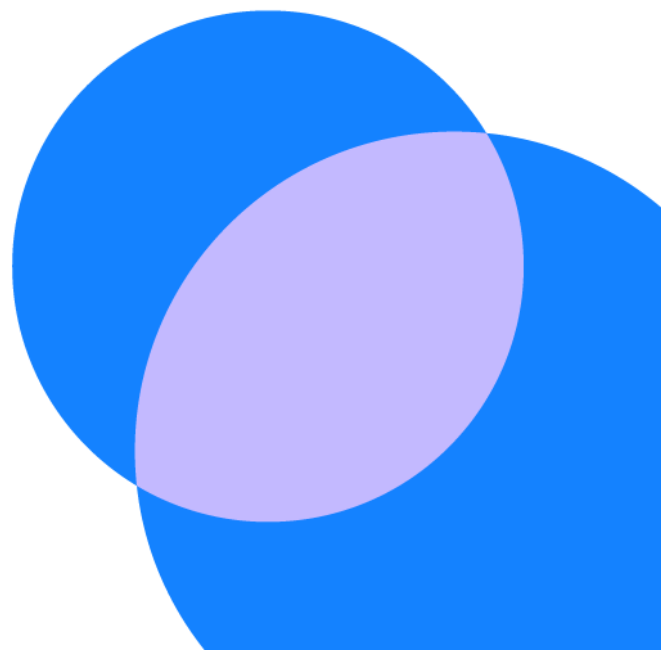


CONSULTATION ON NETWORK AND SERVICE DRAFT RESILIENCE GUIDANCE: RESPONSE FROM CITYFIBRE



Purpose of Ofcom's consultation

1. CityFibre welcomes the opportunity to respond to this consultation.
2. Our understanding is that Ofcom is describing its view of potential best practice, drawing in part on the previous EC-RRG Resilience Guidance for providers of critical national infrastructure published in June 2021.
3. We do not understand the consultation to be purporting to look at specific scenarios/examples specifying what is appropriate and proportionate for individual operators to do to meet their duties under section 105(C) of the Communications Act 2003 as amended by the Telecommunications Security Act 2022, whereby operators must (amongst other duties):

“take such measures as are appropriate and proportionate for the purpose of preventing adverse effects (on the network or service or otherwise) arising from the security compromise.” And:

“If the security compromise has an adverse effect on the network or service, the provider of the network or service must take such measures as are appropriate and proportionate for the purpose of remedying or mitigating that adverse effect.”

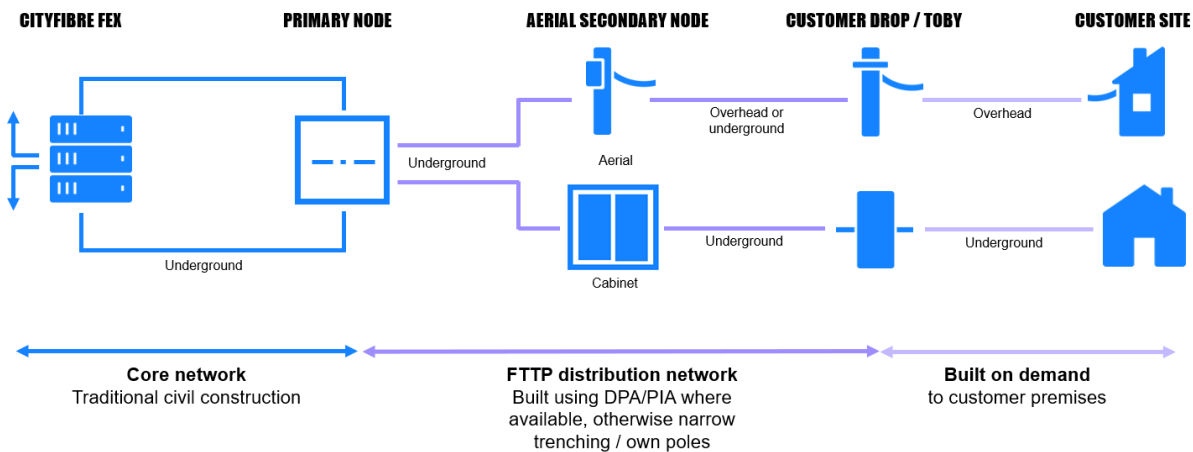
4. CityFibre has an existing programme of controls in place to secure our network against security compromises and mitigate the effects of security compromises when and if they arise. We keep these controls under continuous review. We already comply with relevant industry best practice standards referred to by Ofcom in the draft guidance such as ISO 27001 (information and cybersecurity) and ISO 27033 (network security).
5. Moreover, as discussed further below, we have constructed our network on ‘resilient ring’ principles which eliminates some of the risks Ofcom identifies through ‘resilience by design’.

Comments on the draft guidance

6. What additional resilience measures are appropriate and proportionate is in our view therefore likely to be specific to the circumstances of an individual operator. We have picked out a few examples of areas where we consider the draft guidance does not take account of particular features of our network architecture and operating model.

Network domains overview

7. Ofcom's overview of physical infrastructure in the Network Domains Overview does not map closely onto modern all-fibre networks of the kind that CityFibre is constructing. In particular, the architectural models proposed do not reflect the ring-based architecture that we have adopted, whereby all principal aggregation points will be part of a ring configuration, providing innate resilience against network strikes. Only at the edge of the network is CityFibre likely to adopt ‘there and back’ or ‘tree and branch’ architecture.
8. Our high-level architectural model is illustrated below.



In meeting our duty to take appropriate and proportionate resilience measures we will do so by taking account of this specific architecture.

Interruptions to energy supply

9. We recognise the importance of networks being resilient to interruptions in energy supply, and our network assets are implemented with battery backup for Fibre Active Cabinets (FACs) and emergency generators on site at Fibre Exchanges (FEXs).
10. In light of our particular network assets as set out above, in deciding what is appropriate and proportionate, we would not expect to implement dual DNO routes into exchange sites, for the following reasons: first, the cost of doing so is likely to be prohibitive and in some cases, there will be physical limitations on providing two separate power supply routes into FEXs. Moreover, it is not clear what supply interruption scenario this mitigates beyond those which are already provided for by the provision of emergency generators: dual routing will not protect against accidental or planned power outages affecting the DNO itself. In the case of a network strike, DNOs' SLAs for restoring service should lead to repair of the affected route and service restoration within the window of operation of the emergency generators, particularly as we have made provision for additional fuel supplies to be secured to top up generators as required.
11. In the case of Fibre Active Cabinets, the guidance states that: *'As the number of customers served by a site increases, we would expect that site to be able to survive power losses for longer, potentially with permanent back-up electricity generators on site which can be re-fuelled while in operation.'* Our architectural model works on the planning assumption that beyond a certain number of served customers in a location a Fibre Exchange would be provided. For FACs themselves, solutions adopted would need to meet the test of proportionality and practicality. Battery life is determined by the available battery technology and its cost – at present, most of the batteries commercially available at realistic price points will satisfy the four-hour charge expectation mentioned in the draft guidance, but will not sustain longer operation.
12. It is also highly unlikely that it will be practical to implement on-site emergency generating capability at most FAC sites because of space limitations and/or planning requirements. Emergency generators and more expensive batteries are in any case a likely target for vandalism and theft, potentially having the perverse effect of increasing rather than reducing service interruption risks.

13. In addition we note whilst we will take reasonable steps to make their networks resilient to short-term interruptions to the power supply, a more robust approach to addressing network resilience in the event of prolonged unplanned power interruptions is to look at ways that power restoration to telecommunications networks can be prioritised by the DNOs themselves, building on the work undertaken by the EC-RRG in late 2022 to plan for power supply interruption scenarios.

Resilient Network Architecture

14. CityFibre builds its city and long-distance networks in resilient ring configurations. This means that all our Fibre Exchanges have redundant connectivity by design.

15. It is not clear to us whether our FEXs would fall into what is described in the draft guidance as the 'core/metro' domain. If this is intended, we do not believe that the recommendation contained in section 4.2.3 that such sites should form part of a 'meshed' architecture with up to four connections to other 'core' sites is appropriate or proportionate. A cost benefit analysis would show that overlaying such an approach onto a ring architecture configuration would add little if any additional resilience whilst substantially increasing our network deployment costs.

Extreme Weather Events

16. We ensure our networks are resilient to most reasonably foreseeable weather events, for instance by avoiding siting FEXs on known flood plains and using overhead cabling that is resilient to wind and ice loading.

17. We bear a recognised risk in that we are, in accordance with Ofcom's policy, re-using existing Openreach civil infrastructure via the PIA remedy. This exposes us, in particular, to the risk to Openreach's overhead architecture from extreme weather, as demonstrated on several occasions recently where poles have fallen and overhead wires have been damaged in high winds. It is an ongoing concern for CityFibre that a significant proportion of Openreach's pole inventory is in a poor state of repair, making it more susceptible to extreme weather damage, and we would encourage Ofcom to consider what initiatives it can take to require Openreach to rectify this.

18. In relation to resilience to weather events, it will be important for Ofcom to work with Government and the EC-RRG to develop planning scenarios for weather events against which it seeks to measure operators' resilience plans.

Network and service resilience implementation guidance

19. We note that there appears to be some overlap in scope in the measures outlined in this section with specific measures set out in the Telecommunications Security Act Code of Practice, where CityFibre is already undertaking a compliance programme and reporting separately to Ofcom. We would appreciate clarification of whether Ofcom intends to separately monitor the provisions outlined here as part of the resilience programme or whether these matters will be monitored under the TSA CoP programme.