

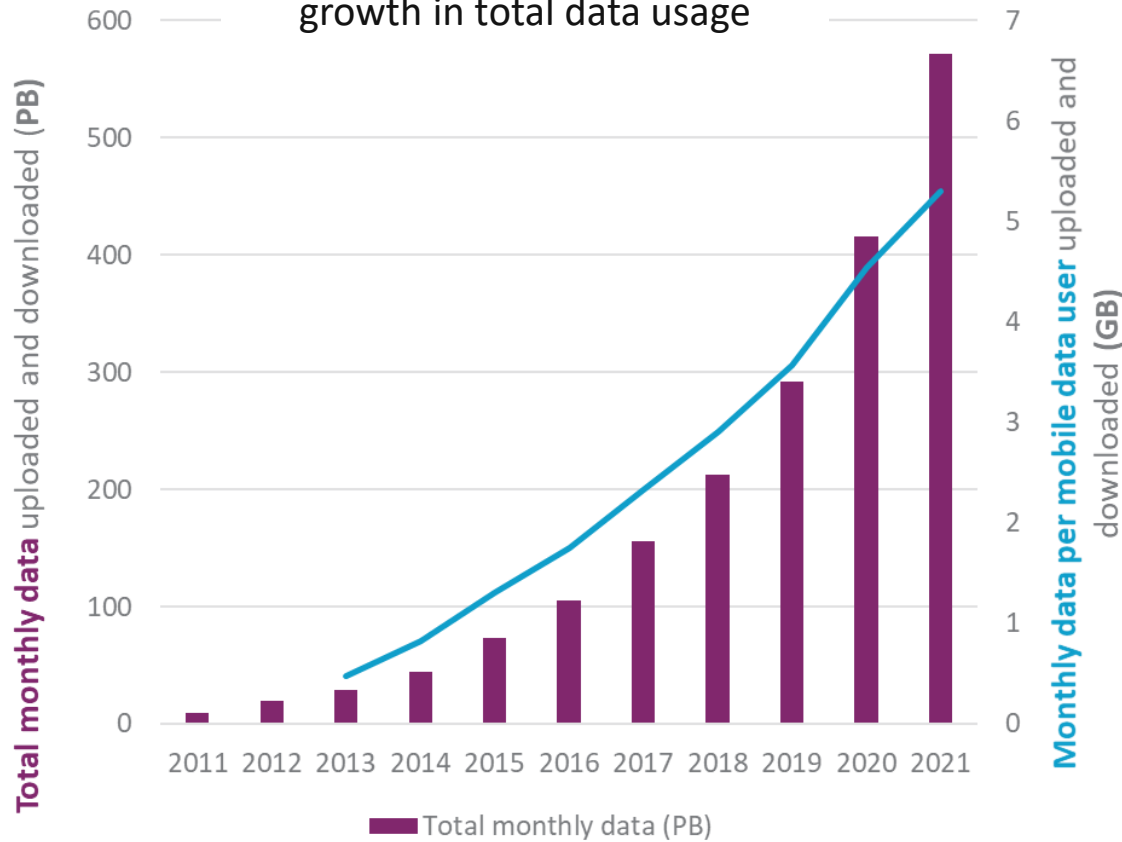
Setting the stage for mobile broadband growth with mmwave

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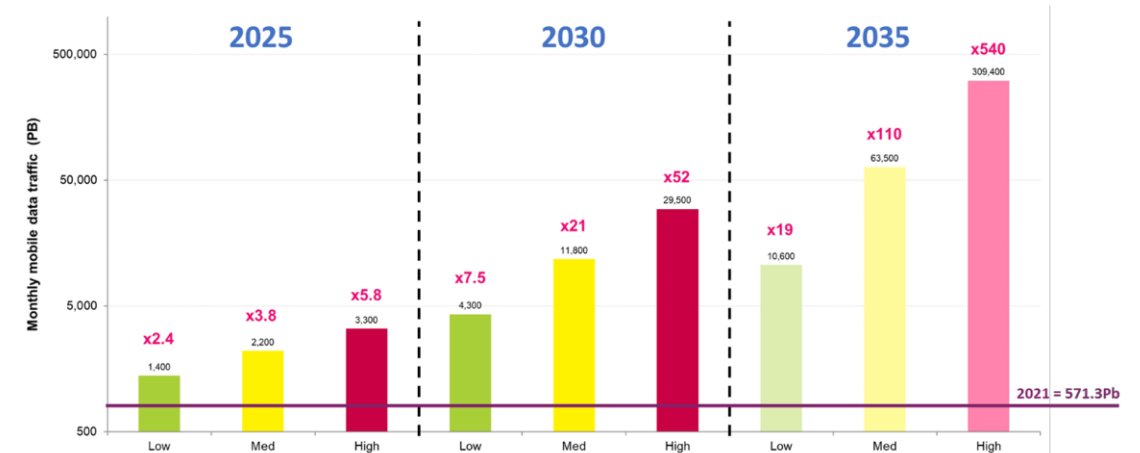
Consumers and business increasingly rely on mobile services driving mobile data traffic

Over recent years, we have seen an average of 40% year-on-year growth in total data usage



We expect **data traffic to continue to grow**, but the exact rate is uncertain.

We have considered **three different scenarios for growth*** in mobile traffic up to 2035



* We have published today our conclusion paper "Ofcom future approach to mobile markets and spectrum)

Networks will need to respond to increasing demand, changing business models and advancing technology



Denser networks, including small cells using mmwave spectrum



An increasing range of players, including a greater role for **neutral hosts** or **smaller network providers**, and greater **vendor diversification**



Greater deployment of **private mobile networks**



More **spectrum sharing**, including **between technologies**

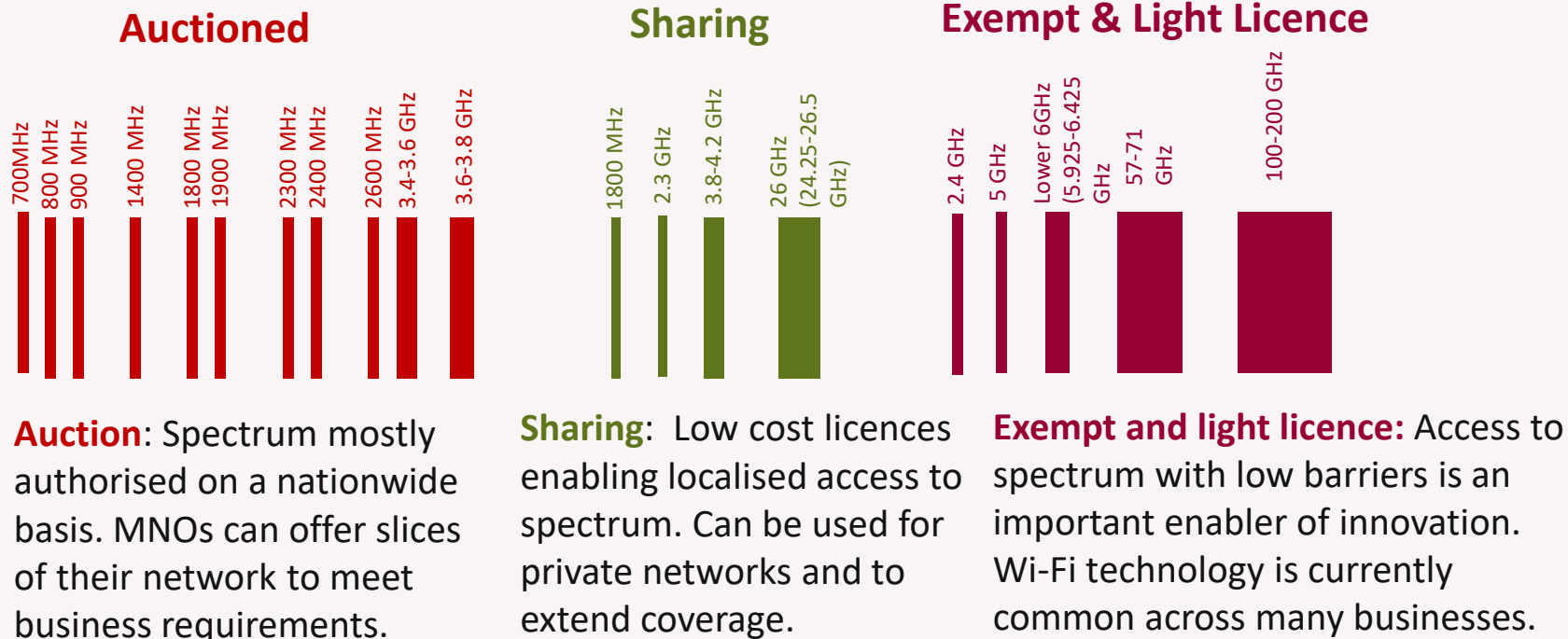


Integration with other networks, including fixed (**full-fibre**) and non-terrestrial (**satellites**)



A greater role for **Cloud and Edge Computing**

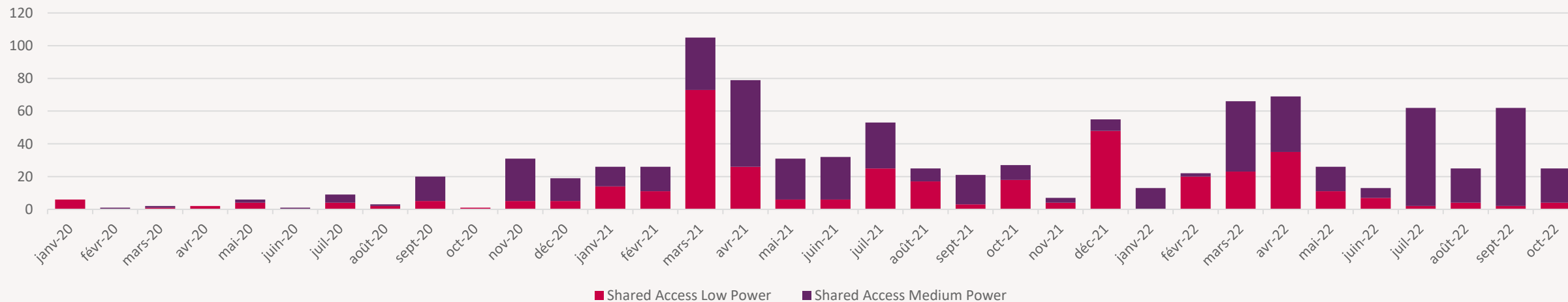
We have made spectrum available to meet increasing demand for wireless broadband



Shared Access to spectrum is enabling new use cases and business models

	1800 MHz	2.3 GHz	3.8-4.2 GHz	26 GHz	Total
Low Power	894	34	184	1	1113
Medium Power	89	-	408	-	497
Total	983	34	592	1	1610

Shared Access Licences issued by month



Developments

Use cases

Rural broadband – networks using Fixed Wireless Access to provide broadband in rural areas.

Smart Cities – Councils using the spectrum to develop smart cities.

Broadcasting - Private 5G networks using the 3.8-4.2 GHz band have been used to connect wireless cameras for broadcast TV.

International

ARCEP (France) has opened up 3.8-4.0 GHz for 3 year developmental trial licences.

NKOM (Norway) issued a number of free low power test licences in 3.8-4.2 GHz.

European Union has mandated CEPT to study technical feasibility of shared use of the 3.8-4.2 GHz band for local area networks.

Enabling future growth: mmWave spectrum

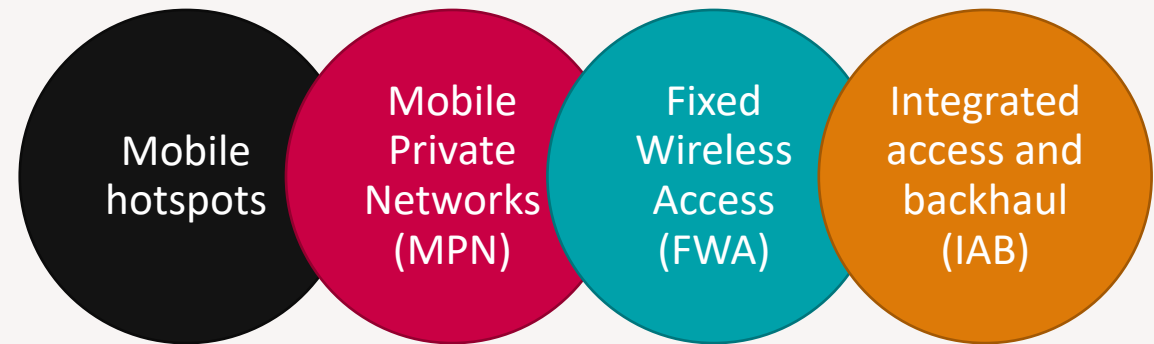
The bands:

26 GHz (24.25-27.5 GHz)

40 GHz (40.5 – 43.5 GHz)

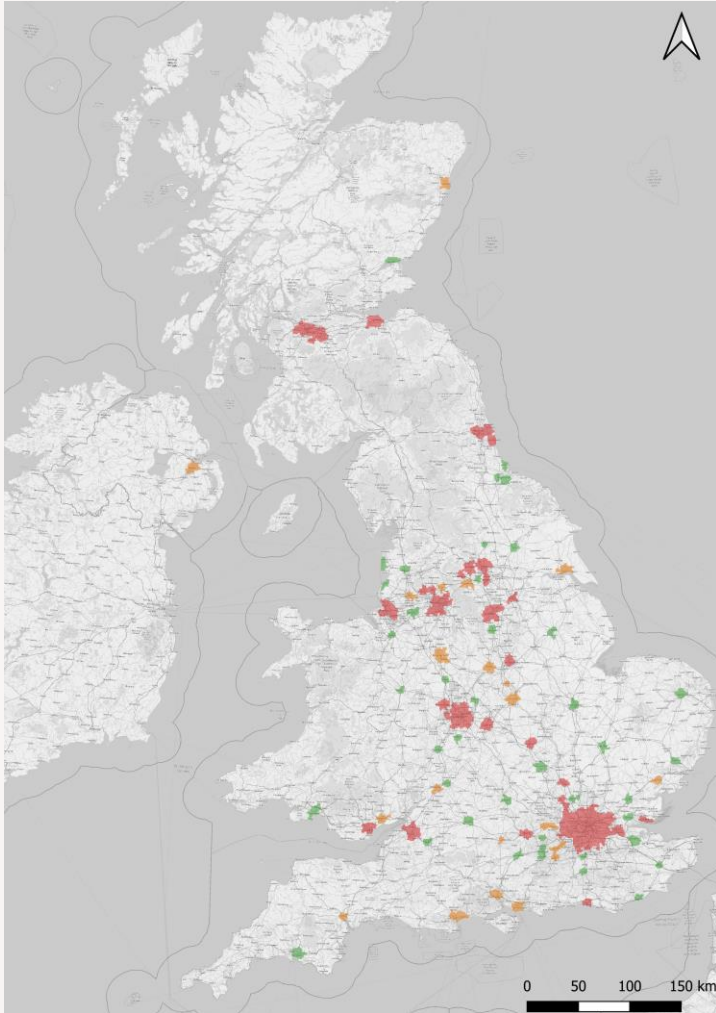
Both bands have been identified **globally** for mobile use.

Possible use cases:



By providing certainty of access to spectrum, we can enable investment, innovation and development of use cases

Our approach to authorising mmWave spectrum



Map of proposed top 20 (red), top 40 (red and amber) and top 80 (red, amber and green) high density areas

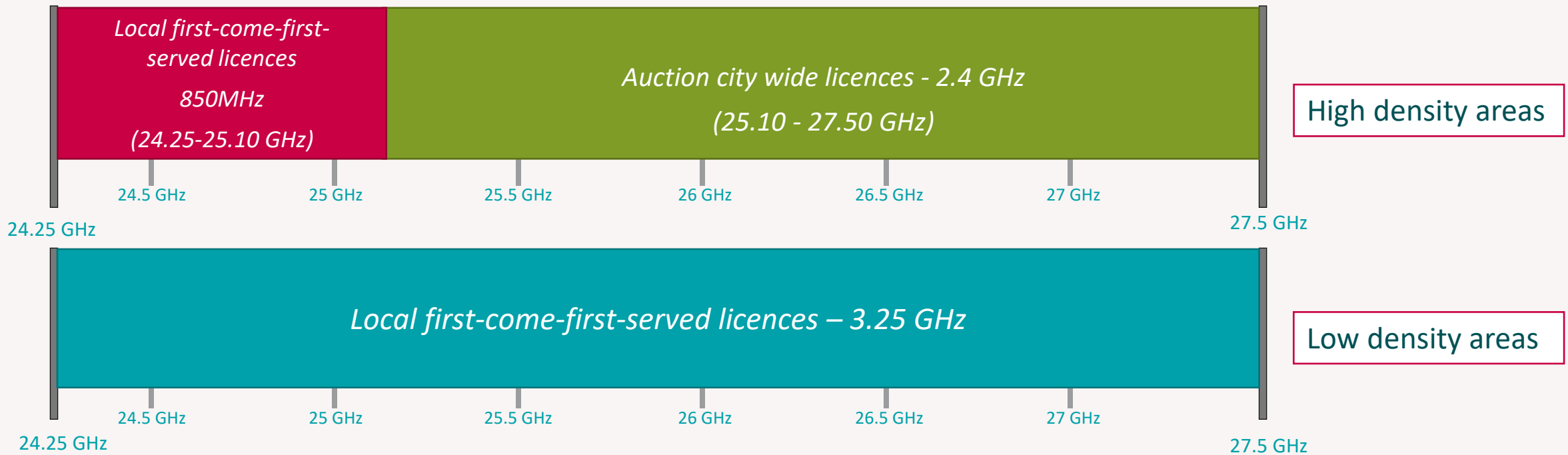
Deployment is likely to be **localised** in high traffic and densely built-up areas.

We've identified areas with:

- **Large populations;** and
- **high peak hour mobile traffic.**

Which areas?	Area (% of total)	Population (% of total)
Top 40	3	39
Top 80	4	47

The 26 GHz band – UK proposals



Proposed ‘hybrid’ authorisation approach

- In major towns and cities (“**high density areas**”), offer:
 - **local, low power** licences for spectrum in 850 MHz in the 26 GHz band, allocated on a first-come-first-served basis;
 - allocate **city wide, medium power** licences for the rest of the band by auction.
- Everywhere else (“**low density areas**”) – offer **local, medium power** licences for **all** the spectrum, on a first-come-first-served basis.

The 40 GHz band – UK proposals

