

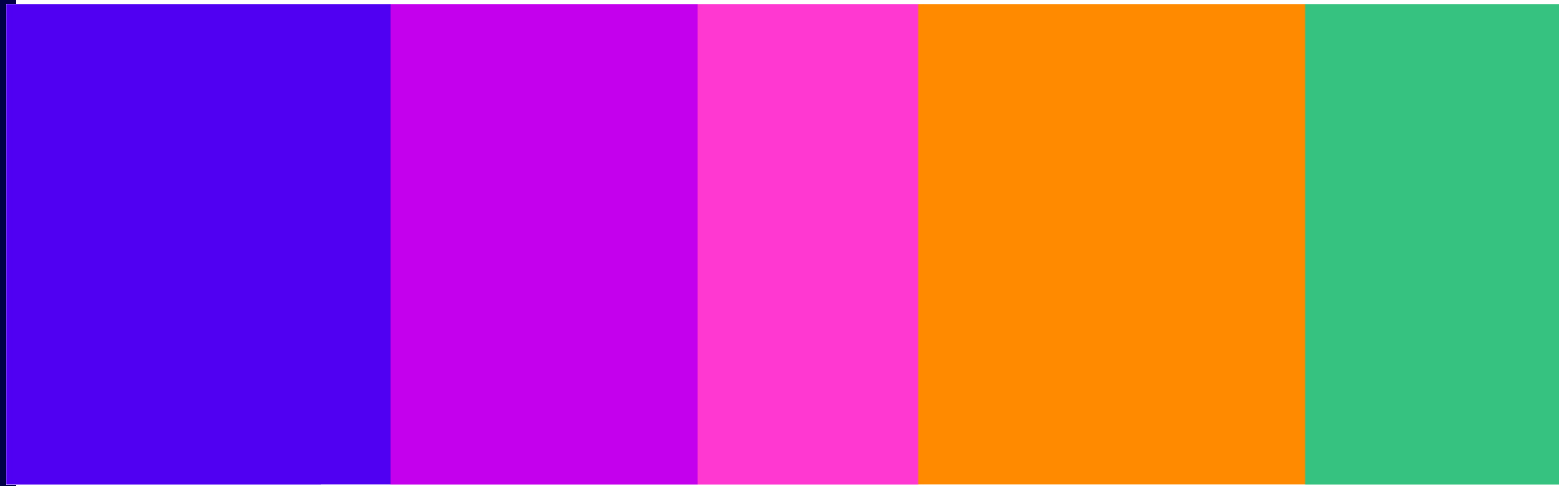
Expanding spectrum access for satellite gateways

Decision to make more Q/V band spectrum available for satellite gateways in 'high density' urban areas

Statement

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1. Overview

- 1.1 Satellite connectivity plays an increasingly important role in delivering a wide range of services for UK consumers and businesses. These services include consumer broadband for hard-to-reach premises, business connectivity and connectivity for Government services.
- 1.2 Satellite communications systems rely on gateway earth stations (“gateways”), a major ground component in satellite networks which enable large volumes of data to be relayed between Earth and space and onward connection to the internet. As demand grows for satellite services, so too does the demand for gateway access to backhaul spectrum to support higher-capacity satellite networks and new technologies.
- 1.3 In this context, our [March 2026 Statement and further Consultation](#):
 - a) authorised access to up to 10 GHz of spectrum in parts of the Q/V band¹ (within 37.5-52.4 GHz) for gateway use in rural (‘low density’) areas covering most of the country; and
 - b) consulted on proposals to also authorise Q/V band use by gateways in urban (‘high density’) areas, in light of stakeholder input.
- 1.4 This Statement sets out our decision to make available up to 8 GHz of Q/V spectrum for satellite gateways in urban (‘high density’) areas.² Satellite operators may separately request localised use of 40.5-42.5 GHz through our existing Local Access licence framework.³

What we have decided – in brief

Following our March 2026 decision to enable Q/V band gateways in rural areas we have decided to also enable gateway access to up to 8 GHz of Q/V band spectrum in the remaining urban high density areas, as follows:

- **Geostationary Orbit (‘GSO’) gateways:** uplink (earth to satellite) 47.2 – 50.2 GHz and 50.4 – 52.4 GHz; downlink 37.5 – 40.5 GHz
- **Non-geostationary Orbit (‘NGSO’) gateways:** uplink 47.2 – 50.2 GHz and 50.4 – 51.4 GHz; downlink 37.5 – 40.5 GHz

These frequencies can be authorised through our standard satellite gateway licences, with specific conditions applied to support coexistence with other spectrum users. These include:

- a maximum transmit power density at the antenna port (-7.4 dBW/1MHz for GSO and +6.5 dBW/1MHz for NGSO);
- antenna performance that is in conformance with at least minimum specification in relevant International Telecommunications Union (‘ITU’) recommendations;

¹ The Q/V band spans 37.5 – 52.4 GHz. For more information on incumbent and future users of Q/V band spectrum, please see Figure 3 in Section 2 of this document.

² These are the ‘high density’ areas defined as part of our mmWave Award. We provide more details on these locations in Section 2.

³ That is, as part of the framework applied to the 40.5 – 43.5 GHz range awarded to mobile operators in 2025.

- a minimum elevation angle ('MEA') of 20 degrees for NGSO gateways and 15 degrees for GSO gateways; and
- GSO and NGSO gateways must abide by existing ITU rules to protect other services.

We will assess applications on a first come, first served basis. Access to 39.5 – 40.5 GHz and 50.4 – 51.4 GHz will remain subject to coordination with the Ministry of Defence.

We are not including the 40.5 – 42.5 GHz downlink (satellite to earth) frequencies as part of this gateway authorisation in high density areas, given the potential complexities of sharing with other users (including mobile licensees). However, interested parties can apply to access these frequencies in specific locations using our existing [Local Access licensing](#) framework - which provides a route to share spectrum that has been nationally awarded. We anticipate access to 40.5 – 42.5 GHz will be simplest in areas where a satellite operator first agrees this approach with existing mobile licensees, and mobile licensees do not expect to rollout. We will monitor the effectiveness of this arrangement in the coming years.

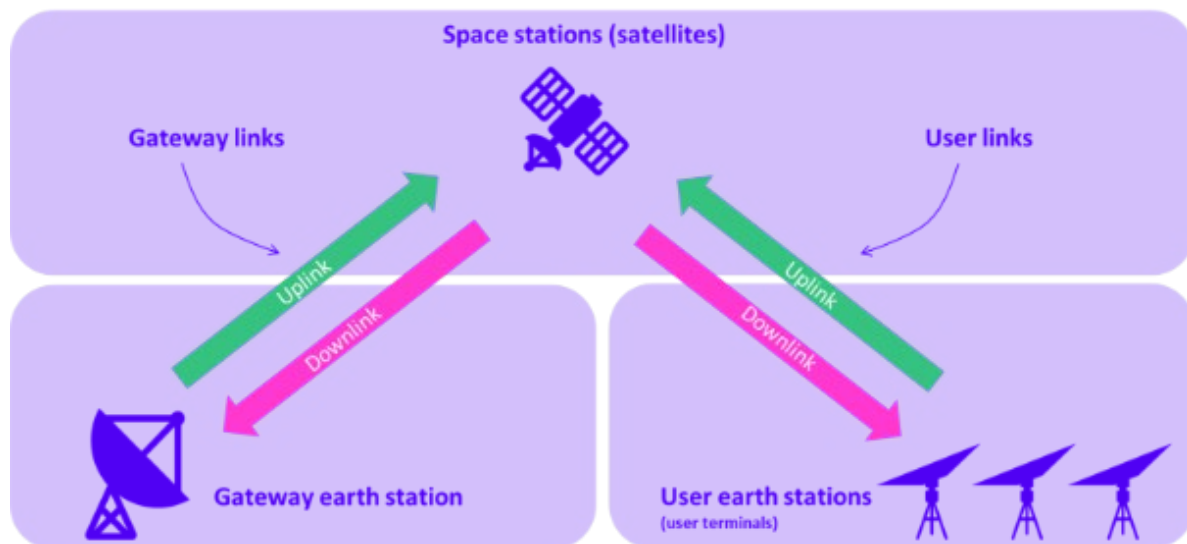
- 1.5 Our decision to enable additional access to the Q/V band spectrum aligns with our wider duties to secure optimal use of spectrum and support the availability of a wide range of communications services across the UK. It also aligns with our [Three Year Plan](#) commitment to enabling wireless in the UK economy.
- 1.6 We expect that this decision will support sharing and greater use of the spectrum, and will deliver improved connectivity for people and businesses in the UK and growth and investment in new services.
- 1.7 We will open the process for new Q/V gateway applications in high density areas immediately, with a template licence available for potential users in Annex 2. Operators seeking to use this spectrum at existing gateway sites can apply to vary their licence to incorporate the additional frequencies, terms and conditions.
- 1.8 Operators who are interested in accessing 40.5 – 42.5 GHz band via Local Access should refer to our [Local Access guidance](#) for more information on conditions of access and how to apply.

The overview section in this document is a simplified high-level summary only. The decisions we have taken, and our reasoning, are set out in the full document.

2. Background

- 2.1 Satellite gateways are hubs which typically have large antennas and connect a satellite network to the internet and/or to private networks and cloud services. They are integral to Fixed Satellite Services (FSS), which are provided by geostationary orbit (GSO) and non-geostationary orbit (NGSO) satellite systems.
- 2.2 In the UK, gateways are authorised to use spectrum under two types of licences:
- a) Satellite (Permanent Earth Station) (“GSO gateway”) licences authorise gateways operating from a permanent, specified location transmitting to GSO satellites.
 - b) Satellite (Non-geostationary Earth Station) (“NGSO gateway”) licences authorise gateways operating from a permanent, specified location transmitting to NGSO satellites.
- 2.3 The key elements of a satellite communications system are shown in Figure 1 below:

Figure 1: Key elements of a satellite communication system



- 2.4 Historically GSO and NGSO gateways have been authorised to transmit in Ku band (14.0 – 14.5 GHz), and parts of the Ka band (27.5 – 30 GHz) in the UK^{4,5}. GSO gateways are also authorised to transmit using certain lower frequency bands, including C band (5.725 – 7.075 GHz) and the lower Ku band (12.75 – 13.25 GHz). We have also recently authorised parts of Q/V band (37.5 – 42.5 GHz, 47.2 – 50.2 GHz and 50.4 – 52.4 GHz)⁶ in low density areas and temporarily authorised the use of E band (71 – 76 GHz and 81 – 86 GHz) at three locations, as set out in our [October 2025 Statement](#).
- 2.5 There is demand from satellite operators to access additional spectrum at higher frequencies to provide increased backhaul capacity and meet future demand for new and improved services.⁷ Our [March 2026 Statement](#) confirmed that we would address

⁴ In 2025 we published our [Statement](#) on Increasing use of the 27.5 – 30 GHz and 32 GHz band in response to demand for additional satellite spectrum at higher frequencies.

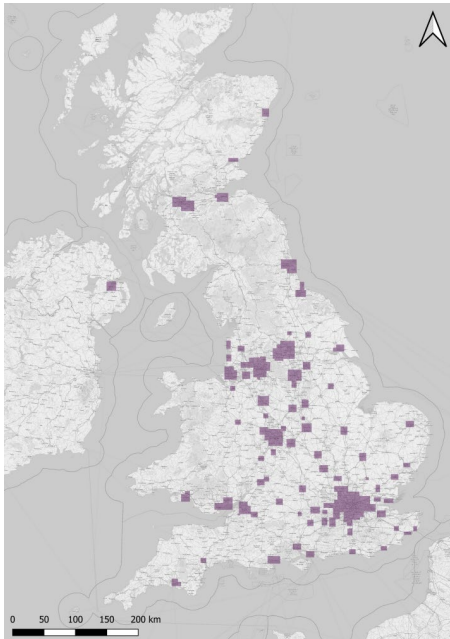
⁵ For more information on frequency bands we authorise for GSO and NGSO gateways, please refer to our [UK Frequency Allocations for Satellite Earth Stations document](#).

⁶ 50.4-51.4 GHz for NGSO gateways.

⁷ See responses to our March 2024 [CFI](#) (Call for Input) on Expanding spectrum access for satellite gateways.

this demand by making available up to 10 GHz of Q/V band spectrum for gateways on a shared, first come first served basis, in low density areas, which are depicted as the unshaded areas in Figure 2 below.⁸ These decisions reflected feedback we had gathered from stakeholders through our [March 2024 CFI](#) and [July 2025 Consultation](#).

Figure 2: Map showing the [68 HD areas](#) (shaded purple) and the remaining low density areas across the rest of the UK (unshaded)



- 2.6 While we consider that our original proposals should meet the majority of gateway demand in these frequencies, stakeholder feedback to our July 2025 consultation indicated that additional access to the remaining 6% of the UK landmass classified as high density areas could be useful. Stakeholders indicated that this additional access may provide further service diversity and improve access to fibre connections and urban data centres, which could improve latency for customers.
- 2.7 Consequently, our March Statement also set out further measures for consultation to enable access to a subset of Q/V band frequencies in high density areas, on the same first come first served basis, and with similar sharing conditions to those in place in rural areas.⁹

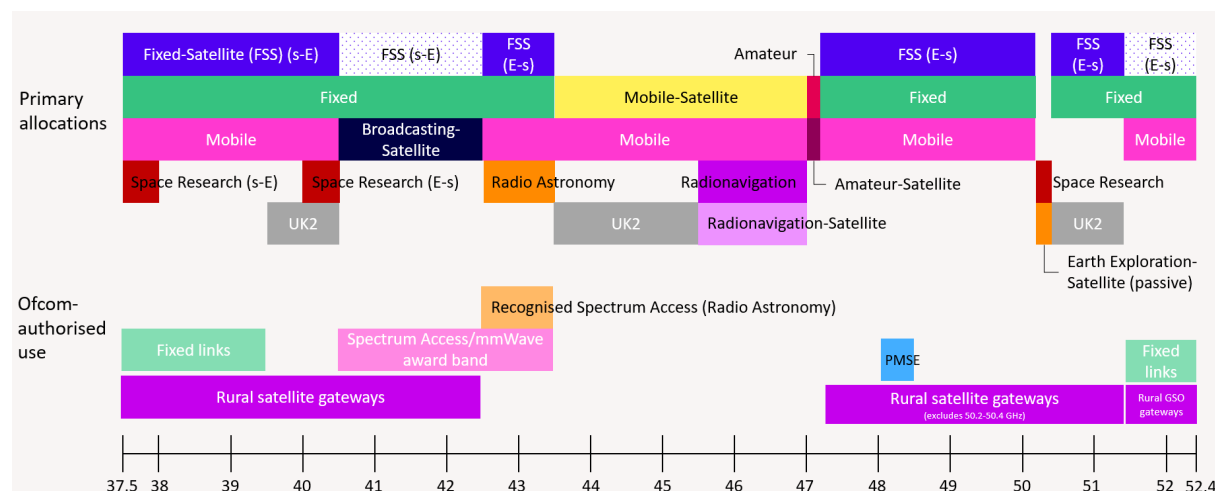
Existing users in the Q/V band

- 2.8 The Q/V band is shared by a mix of commercial and public sector users. Current spectrum allocations and authorisations across the Q/V band are indicated in Figure 3 below.

⁸ Low density areas cover 94% of the UK landmass and are based on the mmWave award definition of low density areas.

⁹ In making these proposals, we indicated that the frequencies we expected to make available in urban areas would exclude 40.5-42.5 GHz, which is part of the frequency range which we awarded for mmWave mobile services in 2025. However, we also sought feedback on the importance of such access for the future, and potential mechanisms that could be used to facilitate such sharing.

Figure 3: Allocations and use in Q/V frequencies 37.5 – 52.4 GHz (based on the UK Frequency Allocation Table) prior to the decisions set out in this document¹⁰



Satellite gateways in low density areas

2.9 In our March 2026 Statement, we made available Q/V band spectrum for gateways in low density areas in the frequencies shown in Table 1:

Table 1: The frequencies we made available for Low Density areas in our March 2026 Statement

	NGSO Gateway	GSO Gateway
Uplink frequencies (Earth-to-space)	47.2 – 50.2 GHz 50.4 – 51.4 GHz*	47.2 – 50.2 GHz 50.4 – 52.4 GHz*
Downlink frequencies (space-to-Earth)	37.5 – 42.5 GHz*	37.5 – 42.5 GHz*

**Use of 39.5 – 40.5 GHz and 50.4 – 51.4 GHz are subject to Ofcom managed coordination with the MoD.*

2.10 This decision meant that satellite operators could apply to use these frequencies within the [standard PES](#) and [NGSO gateway](#) licences. We have already authorised one Q/V band satellite gateway in a low density area at the time of publication.¹¹

Fixed links

2.11 We licence Ofcom-coordinated links in 37.0 – 39.5 GHz, where there are around 1250 assignments. We also authorise 51.4 – 52.6 GHz for fixed links connectivity but we do not currently have any links licensed in this band. Further, we have a closed fixed links band at 49.2 – 50.2 GHz, which holds six remaining links but is not available for new assignments.

¹⁰ The 51.4 – 52.4 GHz band is allocated to the Fixed Satellite Service in the Radio Regulations but currently limited to GSO networks.

¹¹ Note that for NGSO gateways we expect gateway operators to cooperate in order to be able to operate in close proximity to each other, and applicants are required to provide information on how they would coexist with other existing and prospective licensees at the application stage. We do not require the same information for Permanent Earth Stations, which are required to not cause interference to other services and must comply with ITU Radio Regulations.

40.5–43.5 GHz: Spectrum Access, mobile and Shared Access

Spectrum Access licences

- 2.12 There are three Spectrum Access licences in 40.5 – 43.5 GHz, allocated to UK Broadband Limited, Mobile Broadband Network Limited (MBNL) and MLL 40 GHz Limited.¹² These are block assigned national licences which we assigned by auction in 2008 on a service and technology neutral basis. These Spectrum Access licences are used for fixed links services.¹³
- 2.13 In September 2023, we decided to revoke these licences to make the 40 GHz band (40.5 – 43.5 GHz) available for mobile in high density areas of the UK (see Paras.2.14 – 2.16 below). The revocations will take effect on 1 June 2028.¹⁴ In addition, we are offering to grant individual fixed link licences to existing Spectrum Access licensees outside of high density areas for links that were in the 40 GHz band as of March 2023, as said in Para. 3.51 of our [March Statement](#).¹⁵

40 GHz award and Shared Access

- 2.14 We [recently auctioned](#) millimetre wave ('mmWave') spectrum in the 26 and 40 GHz bands for mobile technology, including 5G. Through our auction process, we awarded licences to mobile operators in the frequency range of 40.5 – 43.5 GHz.
- 2.15 Following the conclusion of the [mmWave auction period](#) in October 2025, we granted award licences to BT, Telefonica UK and VodafoneThree for mobile services deployments in high density areas. These [high density](#) areas include 68 major towns, cities and transport hubs where we expect the highest demand for mobile services, which are depicted in the map in Figure 2.
- 2.16 In the low density areas, we will make available local licences from June 2028, using our Shared Access licensing framework.
- 2.17 Figure 4 below depicts how the move from Spectrum Access to mmWave licences and Shared Access licences will be managed in the next few years.

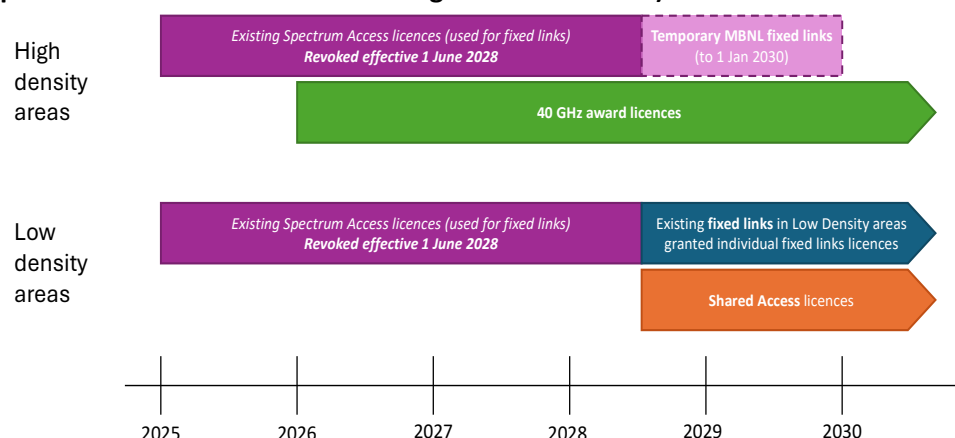
¹² The licences were originally awarded to UK Broadband (UKB), MBNL and MLL. H3G, one of the national MNOs, acquired UKB in 2017. MBNL is a network sharing joint venture and is owned by BT/EE and H3G. MLL is a provider of managed network services. These licences are published on Ofcom's [website](#).

¹³ MLL does not currently use this spectrum.

¹⁴ We have offered to grant MBNL individual temporary licences – starting 1 June 2028 and expiring 1 January 2030 – for up to 500 of its existing links if necessary. This applies to existing fixed links that: are outside the top 10 high density areas, Dover, Folkestone & Hythe and Stansted Airport; and where MBNL provides suitable evidence that despite MBNL's reasonable efforts, the installation of the replacement connections has been delayed for reasons outside of MBNL's reasonable control. See our [Update on revoking licences in the 40 GHz band](#).

¹⁵ See Section 3 of our [Statement on Enabling mmWave spectrum for new uses](#).

Figure 4: 40.5 – 43.5 GHz spectrum authorisations following the mmWave spectrum auction (and prior to the decisions we are making in this document)



Radioastronomy and Earth Exploration satellite service (passive)

- 2.18 42.5 – 43.5 GHz is allocated for Radio Astronomy. There is one grant of Recognised Spectrum Access ('RSA') for radioastronomy in this part of the band.¹⁶
- 2.19 The adjacent bands 50.2 – 50.4 GHz and 52.6 – 54.25 GHz are allocated to earth exploration satellite service (passive).

PMSE

- 2.20 There is a PMSE authorisation at 48 GHz (48 – 48.4 GHz). However, we have no current licences issued in this portion of the Q/V band.

Defence

- 2.21 Parts of the Q/V band frequencies we are authorising are allocated for military uses (39.5 – 40.5 GHz and 50.4 – 51.4 GHz).¹⁷ Any use of these frequencies must be coordinated with the Ministry of Defence ('MoD').

Overview of responses to our March Consultation

- 2.22 We received five responses to our March 2026 Consultation on gateways in high density areas, including three from satellite operators and two from mobile network operators ('MNOs'). The respondents were Amazon Leo ('Amazon'), BT Group ('BT'), SpaceX, Viasat Inc. ('Viasat') and VodafoneThree. The non-confidential portions of these responses have been published on our [website](#).
- 2.23 The majority of responses were in favour of our proposal to expand Q/V band gateway access to high density areas. However, some consultation respondents raised concerns with aspects of our proposals:

¹⁶ Issued to the Science and Technology Facilities Council (STFC). RSA is a means for Ofcom to take account of frequencies used for receive-only services that do not need to be licensed.

¹⁷ These allocations are shown in the [UK FAT](#).

- Some satellite operators expressed concern about our plan to impose a ‘non-interference’ downlink requirement with respect to fixed links and mobile services, stating that internationally agreed equivalent power flux density (‘epfd’) and power flux density (‘pfd’) limits should be sufficient to protect these services.
 - While MNOs did not raise any major coexistence concerns with our proposals, they considered that in general, access to low density areas should be suitable for most satellite gateways.
- 2.24 With regards to gateway access in 40.5-42.5 GHz (which we did not propose to include in this extended gateway authorisation, but sought further feedback on) satellite operators continued to express interest in accessing this additional spectrum. However, the two MNOs that responded raised some concerns about the practicality of this in areas where they had acquired spectrum at auction and would be rolling out services. MNOs noted the potential risk to satellite receivers if they were not protected, and the converse risk that if a subsequent decision were taken to protect these receivers at some point in future, that could place constraints on mobile use.
- 2.25 We provide more detail on the feedback we have received alongside our assessment of each of our proposals, our final decisions and further guidance in Sections 3 and 4.

Relevant legal framework

- 2.26 Ofcom’s statutory powers and duties in relation to spectrum management are set out primarily in the Communications Act 2003 (the “2003 Act”) and the Wireless Telegraphy Act 2006 (the “WT Act”).

Communications Act 2003

- 2.27 Our principal duties under the 2003 Act are to further the interests of citizens and consumers in respect to communications matters, where appropriate by promoting competition. In doing so, we are also required (among other things) to secure the optimal use of spectrum and the availability throughout the United Kingdom of a wide range of electronic communications services.
- 2.28 Our spectrum management duties require us to have regard to:
- a) the desirability of promoting competition in relevant markets;
 - b) the desirability of encouraging investment and innovation in relevant markets;
 - c) the different needs and interests, so far as the use of the electromagnetic spectrum for wireless telegraphy is concerned, of all persons who may wish to make use of it; and
 - d) the different interests of persons in the different parts of the United Kingdom, of the different ethnic communities within the United Kingdom and of persons living in rural and in urban areas.

Wireless Telegraphy Act 2006

- 2.29 We permit the use of the radio spectrum by granting wireless telegraphy licences under the WT Act. It is unlawful and an offence to install or use wireless telegraphy apparatus without holding a licence granted by Ofcom, unless the use of such equipment is exempted.

- 2.30 In carrying out our spectrum functions we have a duty under section 3 of the WT Act to have regard in particular to:
- a) the extent to which the spectrum is available for use, or further use, for wireless telegraphy;
 - b) the demand for use of that spectrum for wireless telegraphy; and
 - c) the demand that is likely to arise in future for such use.
- 2.31 We also have a duty to have regard to the desirability of promoting:
- a) the efficient management and use of the spectrum for wireless telegraphy;
 - b) the economic and other benefits that may arise from the use of wireless telegraphy;
 - c) the development of innovative services; and
 - d) competition in the provision of electronic communications services.
- 2.32 A wireless telegraphy licence may be granted subject to such terms, provisions and limitations as Ofcom thinks fit (WT Act, s. 9(1)). However, this power is subject to certain constraints. In particular:
- a) the terms, provisions and limitations of a spectrum licence must not duplicate the obligations already imposed on the licensee by the general conditions set by Ofcom under section 45 of the Communications Act 2003 (WT Act, s. 9(6)); and
- 2.33 Ofcom may only impose terms, provisions and limitations which are:
- a) objectively justified in relation to the network and services to which they relate;
 - b) not unduly discriminatory;
 - c) proportionate to what they are intended to achieve; and
 - d) transparent in relation to what they are intended to achieve (WT Act, s. 9(7)).
- 2.34 Section 9(4) of the WT Act sets out a non-exhaustive list of the terms, provisions and limitations that Ofcom may impose.
- 2.35 Examples of conditions that we may impose in spectrum licences under s.9 WT Act include:
- a) limitations as to the position and nature of a station (s.9(2)(a));
 - b) limitations as to the apparatus that may be installed or used (s.9(3)); and
 - c) terms, provisions and limitations as to strength or type of signal, as to times of use and as to the sharing of frequencies (s.9(4)(a)).

The desirability of promoting economic growth

- 2.36 In exercising our regulatory functions, we are also required to have regard to the desirability of promoting economic growth (the “growth duty”).¹⁸ In particular, we must consider the importance for the promotion of economic growth of exercising the regulatory function in a way which ensures that regulatory action is taken only when it is needed, and any action taken is proportionate. Section 110(3) of the Deregulation Act 2015 (the “2015 Act”) requires us to have regard to the “Growth Duty: Statutory Guidance” (revised by Government in May 2024).

¹⁸ Section 108 of the Deregulation Act 2015, which was extended to Ofcom’s regulatory functions by The Economic Growth (Regulatory Functions) (Amendment) Order 2024.

UK Government's Statement of Strategic Priorities

- 2.37 Under Section 2B(2) of the 2003 Act, when exercising our functions relating to the management of radio spectrum, we are required to have regard to the UK Government's Statement of Strategic Priorities (SSP) that has been designated by the Secretary of State under Section 2A(1) pursuant to the requirements set out in Section 2C of the 2003 Act. The current SSP was designated on 28th April 2026.¹⁹ Amongst other things, it highlights the value of the space sector to UK GDP, emphasises the important role that spectrum plays in supporting this sector and calls on Ofcom to apply a spectrum management approach which supports development in a number of areas, including satellite communications.

Structure of this document

- 2.38 The rest of this document is structured as follows:
- a) Section 3 sets out our analysis and decisions on authorising GSO and NGSO gateways to access Q/V band frequencies in high density areas, explaining how we will manage coexistence with incumbent services and the technical licence conditions we will use to facilitate ongoing shared use of these frequencies;
 - b) Section 4 sets out our analysis of stakeholder feedback on future access to 40.5 – 42.5 GHz and provides updated guidance on the potential use of Local Access licences in these frequencies;
 - c) Section 5 sets out our next steps following this Statement, including our implementation approach.
- 2.39 The Annexes to this publication include i) our impact assessments and ii) marked up copies of changes to our NGSO gateway and Permanent Earth Station licences following the decisions set out in this document.

¹⁹ [Statement of Strategic Priorities](#).

3. Our decision to authorise Q/V band gateways in high density areas

- 3.1 In this section, we confirm our decision to make available parts of the Q/V band for use by satellite gateways in high density areas, through our standard NGSO gateway and Permanent Earth Station licence products.
- 3.2 We set out our decisions, in light of careful consideration of stakeholder feedback, on the frequencies to be used for GSO and NGSO gateways operations, our coexistence approaches with incumbent services, and the licence conditions we are putting in place.

Summary of our overall decision to allow NGSO and GSO gateway use in parts of the Q/V band

- 3.3 Following careful consideration, we have decided to make available a subset of up to 8 GHz of Q/V band frequencies for use by satellite gateways in high density areas, as shown below in Table 2. Satellite gateway operators can now apply to access these frequencies within standard NGSO gateway or GSO PES licences. We will authorise access to these frequencies on the same first-come first-served basis we have already applied to low density locations.

Table 2: The frequencies we are making available for NGSO and GSO gateways in high density areas

	NGSO Gateway	GSO Gateway
Uplink frequencies (Earth-to-space)	47.2 – 50.2 GHz 50.4 – 51.4 GHz*	47.2 – 50.2 GHz 50.4 – 52.4 GHz*
Downlink frequencies (space-to-Earth)	37.5 – 40.5 GHz*	37.5 – 40.5 GHz*

**Use of 39.5 – 40.5 GHz and 50.4 – 51.4 GHz are subject to Ofcom managed coordination with the MoD.*

- 3.4 Responses to our March 2026 Further Consultation confirmed that there is demand for these frequencies for both NGSO and GSO gateway use in high density areas. We therefore consider that making this spectrum available in high density areas will enable new users, support the efficient use of the spectrum and so contribute to economic growth.
- 3.5 In reaching these decisions, we have carefully considered all feedback on our overall proposal to make these frequencies available. In particular, we note that satellite operators continue to affirm demand for such high density locations and highlight potential benefits for consumer services, including benefits flowing from greater

proximity to other communications infrastructure. We also note that while VodafoneThree and BT were not persuaded of the necessity to place gateways in high density areas, responses did not highlight any major barriers to our overall proposal to extend gateway access to high density areas in this subset of frequencies.²⁰

- 3.6 We consider that there could be incremental benefits in terms of improved quality of experience from locating a gateway in high density areas in certain scenarios. For example, where a deployment is close to Internet Exchange Points (IXPs) and data centres, which may not be fully replicable from gateways located a significant distance further away. We also expect that allowing some access to high density areas for gateway use will increase investment and innovation.
- 3.7 We consider that the coexistence approaches we will adopt and the technical conditions we are putting in place will secure a good sharing environment with other co-channel and adjacent band users of this spectrum. Therefore, the risks of unduly impacting or constraining existing services of the spectrum are low, compared with potential benefits of enabling more users and a greater intensity of spectrum sharing in these high density areas. We set out our coexistence approaches in more detail throughout this document

Our decision to not authorise gateway use in some frequencies within high density areas (through standard NGSO gateway and PES licences)

- 3.8 We have decided not to make 40.5-42.5 GHz available for gateway use through our standard gateway licences, but gateway operators can apply to use this spectrum at individual sites through the Local Access licence framework, as detailed in Section 4.
- 3.9 In line with our approach in low density areas, we will also not be providing access to 51.4 – 52.4 GHz for NGSO gateways at this time.²¹ Recognising the potential benefits access to further spectrum could bring to NGSO operators, we may revisit this in light of the outcome of [World Radiocommunication Conference 2027](#) ('WRC-27'), where the potential allocation of 51.4 – 52.4 GHz for NGSO services will be discussed.

Our decisions on managing coexistence in high density areas

Managing coexistence with adjacent-band mobile services

Overview of our March proposals

Gateway transmit operations

- 3.10 In our March Consultation, we explained that gateway transmissions to satellites will be separated from future mmWave award mobile deployments by several GHz, given that the uplink frequencies are at 47.2 GHz and above. Thus, we considered interference risks from gateway transmissions to future mobile services in 40.5 – 43.5 GHz to be sufficiently low that we would not need to implement specific protection mechanisms for this.

²⁰ We note that [8]. We discuss this further at Para. 3.72-3.75.

²¹ Please refer to Paras. 3.14 – 3.15 in our March 2026 Statement for more information.

Gateway receive operations

- 3.11 For gateway receive operations, we similarly did not propose co-channel sharing with mobile services. However, our proposal for gateways to deploy in 37.5-40.5 GHz could result in gateways using spectrum directly adjacent to future mobile services licensed in 40.5-43.5 GHz.²²
- 3.12 Our analysis suggested that the dominant interference risk in this scenario would be from mobile into gateway receivers. However, gateway operators interested in securing this access to high density areas had previously indicated this risk could be manageable and was something that they could decide upon in making their deployment decisions. In our March Consultation we said that we considered this risk should be manageable for adjacent frequency sharing. We also proposed to give effect to this approach by adding a ‘non protection’ clause for gateway operations with regards to adjacent band mobile services.
- 3.13 In addition, we explained that while the risk from NGSO satellite downlink to mobile services appeared relatively low, it was important that mobile services were protected. Consequently, we proposed to require adherence to the Article 21 pfd limits, and an additional ‘non interference’ clause on NGSO satellite operations, in the same way that we did in low density areas.^{23 24}

Summary of responses

Gateway transmit operations

- 3.14 We did not receive any specific feedback from respondents on our proposal regarding gateway transmit operations. BT and VodafoneThree broadly agreed with our proposed protection mechanisms for adjacent band mobile services, including our coexistence considerations for gateway transmit operations.

Gateway receive operations

- 3.15 BT and VodafoneThree agreed with our proposal to authorise gateway receive operations on a ‘non interference, non protection’ basis with respect to adjacent band mobile services. Satellite operators, however, raised some concerns:
- a) While Amazon agreed with our proposal to make 37.5 – 40.5 GHz available for gateway receive operations on a non-protected basis, they disagreed with our ‘non interference’ condition. Amazon said compliance with Article 21 pfd limits should minimise satellite downlink impacts, thus rendering the ‘non interference’ clause unnecessary. Instead, Amazon requested we require terrestrial service operators to provide evidence of harmful interference if this occurs.

²² For the purpose of this Statement, when we refer to ‘future mobile services,’ this is an umbrella term encompassing all of the terrestrial systems which may be deployed under the terms of the mmWave Award licences (the Spectrum Access High Density 40 GHz licences). Per Table 3.1 in the [UK Interface Requirement \(IR\) 2111](#), mmWave Award licensees are authorised to deploy “terrestrial systems capable of providing electronic communications services operating in the 40.5-43.5 GHz band,” which could consist of base and repeater stations, mobile/nomadic terminal stations, and fixed or installed terminal stations.

²³ We are introducing this additional protective measure because studies on the applicability of ITU RR Article 21 (‘Article 21’) pfd limits for NGSO satellites indicate that any constellations with more than 100 satellites have a potentially increased risk of causing interference. This remains a subject of further work at the international level.

²⁴ Note that this proposed non-interference clause applied to not only adjacent band mobile services but all terrestrial services across 37.5-42.5 GHz.

- b) SpaceX disagreed with both of our proposed 'non interference' and 'non protection' clauses and the restriction of gateway receive operations in high density areas to 37.5-40.5 GHz. SpaceX noted that the 37.5-42.5 GHz range is allocated to Fixed-Satellite Service ('FSS') on a co-primary basis in the ITU RR, and thus satellite gateways should be authorised with protection rights consistent with their regulatory status. SpaceX considered that standard coordination procedures should be sufficient to support coexistence with future mobile deployments and that gateway operators should be able to make full use of the 37.5-42.5 GHz band for receive operations.
- c) Viasat disagreed with the 'non interference, non protection' criteria being applied to GSO gateway receive operations, stating that the fixed positioning and high sensitivity of GSO gateway receivers make it challenging to mitigate interference. Viasat further requested GSO operators are granted guaranteed protection from interference and requested we adopt a first-come, first-serve coordination approach between gateways and future mobile services, thereby reducing commercial and operational uncertainty.

Our analysis in light of stakeholder feedback

- 3.16 We acknowledge Amazon's and SpaceX's concerns with our proposal to implement a 'non interference' clause in these licences. However, the technical analysis which we undertook for our [July 2025 Consultation](#) (Paras. 4.19 – 4.21) highlights a potential residual risk to terrestrial services in some circumstances. As the Article 21 pfd limits remain subject to further international discussion, we considered that, for rural areas, it would be prudent to apply an additional 'non-interference' requirement. This serves as a back stop to ensure that the Article 21 limits protect terrestrial services as intended.
- 3.17 We consider that such a backstop is likely to be as - or more - relevant for gateway deployments in urban areas, given the physical proximity to terrestrial services (compared to the risks in rural areas where this clause has already been applied). We would not expect this clause to require significant change in satellite operations and any claim of interference from a terrestrial user would need to be substantiated before action was taken against the gateway licensee.
- 3.18 Regarding Viasat's concern with the 'non interference' clause being applied to GSO downlink operations, we would like to clarify that our analysis on the risk of interference from satellite downlink underpinning this condition related specifically to the NGSO downlink pfd limits in Article 21 and not the pfd limits for GSO downlink. The additional 'non interference' clause was not intended to be applied to GSO downlink operations, and this was reflected in our draft licences in Annex A9 of the March 2026 Consultation.
- 3.19 With regards to SpaceX's concern about our 'non-protection' proposal, we recognise that this spectrum has a co-primary allocation for FSS services from the Radio Regulations perspective. However, this does not imply that a national authorisation is guaranteed or set the terms on which that authorisation is granted. We acknowledge Viasat's concerns that GSO gateway operators may have fewer practical options to mitigate interference from future mobile users due to the fixed geometry of operations, and we also recognise that a non-protection condition may result in greater uncertainty for gateway operators. However, we have already opened access to gateway operations in 94% of the UK landmass using coordinated access

arrangements, and we have explored this additional urban access partly because satellite operators have told us that they can manage the interference risk from mobile services. In this context we consider it reasonable to reflect this in our licensing approach.

Our decision

Gateway transmit operations

- 3.20 We confirm we will proceed with authorising gateway transmit operations without specific protections for adjacent channel mobile, given the significant frequency separation between the two services.

Gateway receive operations

- 3.21 To ensure potential risks are well managed, we confirm that we will proceed with implementing our proposed ‘non protection’ clause for GSO and NGSO gateways with regards to mobile services operating in 40.5-43.5 GHz.²⁵ We will also apply a ‘non interference’ condition to NGSO gateways with regards to adjacent band future mobile services (and other terrestrial services across 37.5-42.5 GHz).
- 3.22 It is possible that, in future, we may look to revisit our approach following further studies assessing Article 21 NGSO constellation pfd and epfd limits. We respond to SpaceX’s further request for us to expand gateway receive operations to include 40.5 – 42.5 GHz later in this document.

Managing coexistence with fixed links (Ofcom-coordinated links and Spectrum Access licensees)

Overview of our March coordination proposals

- 3.23 We authorise Ofcom coordinated fixed links in the 37 - 39.5 GHz band, which continues to be widely used by stakeholders, with more than a thousand active assignments. There are also six fixed links licensed in the closed 49.2 – 50.2 GHz band, and the 51.4 – 52.6 GHz band is available for Ofcom coordinated fixed links (although there are no fixed links using this spectrum today). In addition, we previously issued block-assigned Spectrum Access licences (typically used for fixed links) in frequencies between 40.5 – 43.5 GHz, which are subject to revocation in June 2028.²⁶

Gateway transmit operations

- 3.24 As noted in our March Consultation, Ofcom-coordinated fixed links licensed in the closed 49.2 – 50.2 GHz band would operate on a co-channel basis with gateway uplink operations in Q/V band. These links would need to be protected from interference from gateway transmissions, and we proposed that this can be done using the same first come, first served technical coordination measures we are using in low density areas.²⁷

²⁵ As set out above, our use of future mobile services here is an umbrella term for services supported by licences issued as part of the mmWave award.

²⁶ MBNL deploys fixed links under a licence covering 40.50-40.75 GHz and 42.00-42.25 GHz. Licences subject to revocation are also held by UK Broadband (41.00-42.00 GHz and 42.50-43.50 GHz) and MLL (40.75-41.00 GHz and 42.25-42.50 GHz).

²⁷ Please see Paras. 3.35 – 3.37 in our [March 2026 Statement & further Consultation](#) for more information.

Gateway receive operations

- 3.25 The Ofcom-coordinated fixed links operating in the lower portion (37 – 39.5 GHz) of the Q/V band would be co-channel with receiving gateways. Around half of these fixed links are in, or transect, high density areas. We recognised the potential benefits of coordination between these services, as well as potential challenges in densely used areas. We therefore set out three options for how coordination could work:
- a) **Option A - first-come, first served coordination:** this would follow our existing approach of fully coordinating between fixed links and gateway receivers in urban areas. We suggested this was our *preferred option*, given it would help protect gateway receivers from fixed link interference, and provided consistency with our approach in rural areas (and in other bands).
 - b) **Option B - future focussed coordination:** In this approach, we suggested we could instead license gateway receive operations irrespective of interference risks from existing fixed links. We would then undertake coordination between any future fixed links and the new gateway, to ensure gateway operators are not at risk of further interference.
 - c) **Option C - Non interference, non protection:** In this approach, we would not require gateway operators to coordinate with existing or future fixed links, but this means we also would not protect gateways from interference caused by fixed links. Thus, the onus would be on gateway operators to manage any interference from both incumbent and future fixed link deployments.
- 3.26 With regards to coordination with the Spectrum Access licences subject to revocation in the 40 GHz band, we considered that coordination is not necessary, given these licensees would not be co-channel with gateway receivers. However, we noted that this position might need to be revised if we were to open up access to 40.5-42.5 GHz in future.

Summary of responses

Gateway transmit operations

- 3.27 We did not receive any feedback on our proposed coordination approach between fixed links in the closed 49.2 – 50.2 GHz band (and any future fixed links in the 51.4 – 52.5 GHz band) and gateways in high density areas.

Gateway receive operations

- 3.28 We received a range of responses to our proposed coordination Options, with a majority of respondents favouring our preferred Option A (first-come first-serve coordination).
- 3.29 BT, Amazon and VodafoneThree agreed with our preferred Option A in its entirety, although ~~3~~. Amazon noted that first come, first served coordination is consistent with our coordination mechanism in low density areas, which provides operators with regulatory certainty and simplicity.
- 3.30 Viasat also supported Option A for similar reasons to Amazon. However, Viasat suggested we should consider a licensing model which allows operators to choose between coordinated spectrum access or deploying gateways unprotected (per Option C), and that this could best address diverse operational requirements.

- 3.31 SpaceX disagreed with Option A, saying that a first-come, first-served approach is not well suited to urban environments with many fixed link deployments and that this could unduly constrain opportunities for gateway siting. SpaceX recommended Option B for coordination, indicating this is a more ‘balanced and practical’ approach which provides gateway operators with flexibility in siting gateways while ensuring protection for future fixed links.

Our analysis in light of stakeholder feedback

- 3.32 We acknowledge both Viasat and SpaceX’s requests for increased flexibility in our coexistence approaches. We recognise that high density areas are likely to contain a higher volume of incumbent users, and so present a more challenging coordination landscape, which may in some cases make it harder for a gateway operator to secure access under Option A. This is why, as part of our consultation, we did consider alternative approaches. However, we continue to consider there are additional risks associated with both Options B and C.
- 3.33 We are concerned that Option B would be out of step with our general approach to support fair sharing between gateways and fixed links, reflected in the first come first served approach we use in other bands. This is because a minor update to an incumbent fixed link (e.g. reducing bandwidth or a slight change in antenna tilt) would be classified as a ‘new’ authorisation within our coordination systems, resulting in that link ceding coordination priority to a gateway that was supposed to have deployed ‘at risk’. Within our current systems and policies even a very small update to fixed link parameters could then see that link being blocked, even if that update did not materially alter the link’s own interference profile. Where the gateway had been deployed ‘at risk’ and the change to an existing fixed link is small, we consider this effect does not fit well with the intent of the first come, first served coordination process. In addition, allowing gateways to deploy ‘at risk’ in this way has the potential to erode opportunities for future fixed link users, which would need to protect these new deployments.
- 3.34 We consider that Option C - fully uncoordinated and unprotected deployments - could be fairer than Option B with regards to future fixed link access, given any new gateway would not constrain future fixed links. However, we consider that widespread use of uncoordinated deployments exposes gateways to potentially significant interference risks in the future. This could lead to negative impacts for gateway services and the consumers who rely on them.
- 3.35 On balance, we therefore consider that Option A still strikes an appropriate balance between opening new opportunities for gateways in high density areas and sufficiently protecting and coordinating with existing users. We note that Option A received the broadest stakeholder support and is consistent with our existing approach in low density areas.
- 3.36 While we recognise that there may be cases where the presence of multiple fixed links constrains gateway deployments under this approach, we anticipate that, in practice, many high density locations will remain available.²⁸ We also note that if

²⁸ In addition, even locations with high fixed link use may be viable because of significant urban clutter or additional site shielding. Where operators consider that these factors make a site viable, but this is not

access to a specific location is seen as vital a satellite operator could negotiate with fixed link operators to clear access to a specific site.

Our decision

Gateway transmit operations

- 3.37 In the absence of any feedback to our proposed coordination mechanism between fixed links in the closed 49.2 – 50.2 GHz band (and any future fixed links in the 51.4 – 52.5 GHz band) and gateways in high density areas, we confirm we will proceed with our initial proposal (standard first-come first-served coordination). We consider this approach will support efficient sharing and beneficially aligns with our approach in low density areas.

Gateway receive operations

- 3.38 Having carefully considered the feedback on our proposals, we have decided to proceed with implementing our preferred approach of issuing licences via technical coordination on a first-come, first-served basis (Option A). We continue to consider that this approach is the best way to protect gateways from undue interference risks and will help maintain a sustainable spectrum sharing environment with fixed links.
- 3.39 We recognise that there may be exceptional circumstances where a gateway cannot be coordinated through our licensing processes but could in practice operate on a receive basis with limited impact from nearby fixed links. This could be because of sophisticated interference cancellation strategies, or more granular shielding and clutter information. In circumstances where we cannot coordinate a gateway in any of an applicant's preferred locations, we would work with that applicant to understand why they believe coexistence to be possible and consider whether we could take this into account.²⁹
- 3.40 We also confirm that we will not be undertaking coordination with remaining Spectrum Access licensees in the adjacent frequencies under this process. Given the separation in frequencies and the absence of further stakeholder feedback, we consider any interference risk to be low.

Minimum elevation angle ('MEA') for gateways in high density areas

Overview of our March proposals

- 3.41 An MEA sets the threshold for the lowest elevation angle we would consider authorising on a gateway, subject to the usual coordination checks with other services.³⁰ Gateways operating at low elevation angles have the potential to cause larger sterilisation areas, or interference effects, for other services.

reflected in our coordination tools, we will work with operators to better understand the significance and viability of a location.

²⁹ For example by accounting for more granular details on our coordination assessment.

³⁰ Gateway operators could still request a higher minimum elevation angle where this suits their needs, and we note that in some cases this may be helpful to pass coordination with incumbent services.

- 3.42 In our [March Consultation](#),³¹ we therefore considered whether we should set such an MEA alongside other coordination measures to ensure that overall sharing opportunities remained balanced between different services. We noted that this impact was particularly important in the downlink given that the 38 GHz band is widely used by fixed links.

MEA for NGSO gateways

- 3.43 For NGSO gateways, we set out options for MEAs of 15, 20 and 25 degrees, with our preferred option being an MEA of 20 degrees.
- 3.44 We noted that the difference in sterilisation effects for gateways at 20 degrees and 25 degrees were quite limited, especially in the off-axis scenarios (which we considered most relevant). We therefore considered that small increases in sterilisation risks might be outweighed by the benefit of offering gateway operators some flexibility to operate at lower elevations (which can be important when operating in more northerly latitudes).
- 3.45 Conversely, we noted that sterilisation effects did start to increase more substantially at 15 degrees and below. We noted that, while the increased impact of an MEA of 15 degrees is modest in absolute terms,³² even small increases could significantly affect sharing opportunities in densely used urban areas. We consequently identified a 20 degrees MEA as our preferred option for NGSO gateways in high density areas, and suggested that significant new evidence would be needed to justify operations at an MEA of 15 degrees or lower.³³

MEA for GSO gateways

- 3.46 For GSO gateways, we proposed to permit an MEA of 15 degrees in high density areas, which is the same MEA we have applied for gateway operators in low density areas. We noted that, while our coexistence studies indicate the associated worst case (azimuth alignment) separation distances are potentially significant, we expected the impact of this to be confined to smaller areas. This is due to fixed pointing and highly directional antennas of GSO gateways and fixed links. Therefore, it should be easier for fixed links to plan around GSO gateways operating at this MEA (compared to the NGSO case).

Summary of responses

MEA for NGSO gateways

- 3.47 We received a range of responses to our proposed 20 degree MEA for NGSO gateways.
- 3.48 Both BT and VodafoneThree agreed with our proposals, with BT noting this should support coexistence and sharing with fixed links. Amazon also agreed that our proposed 20 degree MEA is a sensible starting point. However, they requested we consider reducing the NGSO MEA from 20 to 15 degrees in high density areas over

³¹ Please refer to Paras. 5.34 – 5.44 and Annex 1 in our March Consultation for more information.

³² Analysis showed that reducing the elevation angle from 20 degrees to 15 degrees increased separation distances by 6km for short term interference at 1 degree off axis, and c750m for long term interference at 5 degrees off axis.

³³ Our analyses indicated this impact on sharing opportunities increases further at 10 degrees.

time as we build experience to confirm their view that coexistence can be managed at lower elevations.

- 3.49 Space X disagreed with our proposed 20 degree NGSO MEA, suggesting a 15 degree MEA for both NGSO and GSO gateways would promote regulatory consistency and provide NGSO operators with more siting flexibility in high density areas. Further, SpaceX considered that our proposed 20 degree MEA for NGSO gateways is unnecessary, arguing that coordination procedures will safeguard other services in the band. They also said that a 20 degree MEA could constrain NGSO satellite capacity in certain circumstances.

MEA for GSO gateways

- 3.50 Responses to our proposed 15 degree MEA for GSO gateways were supportive. SpaceX, BT and VodafoneThree agreed with our proposed MEA, with BT noting our approach should promote efficient use of spectrum while being suitable for coexistence. SpaceX requested for us to provide regulatory consistency between GSO and NGSO gateways by setting a 15 degree MEA for both.

Our analysis in light of stakeholder feedback

- 3.51 We acknowledge SpaceX's request for lowering the NSGO MEA to 15 degrees. While we agree that existing links would be protected through coordination, we note that lower elevations can more materially impact future opportunities for fixed links. We therefore consider that lowering the MEA to 15 degrees in high density areas at this time could reduce sharing opportunities for fixed links in what remains a popular band. While we are taking steps to allow gateways to share this spectrum in recognition of the valuable services they provide, we also consider it important to maintain a balanced sharing arrangement that provides new opportunities for other services (i.e. fixed links).
- 3.52 We recognise that, as SpaceX notes, a reduction of the NSGO MEA to 15 degrees would provide regulatory consistency between GSO and NGSO gateways in high density areas. However, we have explained that we consider the sterilisation impact of GSO gateways to be different, because of the highly directional, fixed positioning of GSO gateway antenna(s). We consider that, based on our current modelling and coordination approach, it is easier for fixed link operators to plan for and pass coexistence with GSO gateways. Because of this, we consider that there are benefits in setting different limits at this time.³⁴

Our decision

MEA for NGSO gateways

- 3.53 Having carefully considered the feedback from stakeholders, we maintain our view that an MEA of 20 degrees strikes the right balance between operational flexibility for NGSO gateway operators and future sharing opportunities for fixed link operators.
- 3.54 Given the interest (from SpaceX and Amazon) in some further flexibility, we will continue to monitor stakeholder interest in lower elevation angles. We could consider taking steps to lower this MEA in future, if new evidence is provided which suggests

³⁴ We recognise that, over time, it may be possible for operators to demonstrate that the real-world impacts of a lower NGSO gateway MEA may be less than suggested in our current analysis.

that this would be beneficial, and that the risks to future fixed link opportunities is less than we currently expect it to be.³⁵

MEA for GSO gateways

- 3.55 We confirm that we will proceed with setting an MEA of 15 degrees for GSO gateways in high density areas. This aligns with our judgement that the sterilisation effects of such use would be more manageable for fixed links, which was supported by positive stakeholder feedback.

Ensuring coexistence with other Q/V users

Overview of our March proposals

- 3.56 As we set out in Section 2, this Q/V spectrum is being shared with a range of other spectrum users, including PMSE, Radio Astronomy, Earth exploration satellite services and the MoD.
- 3.57 We consider that, for these other users, the relevant coexistence scenarios remain unchanged for urban locations compared with the scenarios we considered in low density areas.³⁶ We therefore proposed in our March Consultation to apply the same coexistence approaches in high density areas as those adopted in low density areas, for both uplink and downlink frequencies. Specifically, we proposed:
- i) **PMSE use:** we would make a case by case assessment on any applications, noting that there have not been any recent PMSE applications in these frequencies
 - ii) **Radio Astronomy:** we proposed to incorporate ITU Radio Regulations Article No's 5.551I and 5.551H conditions as a licence requirement for coexistence with Radio astronomy sites operating in 42.5-43.5 GHz
 - iii) **Earth exploration satellite services** (passive services in the adjacent 50.2 – 50.4 GHz and 52.6 – 54.25 GHz bands): We proposed incorporating RR Resolution 750 (Rev. WRC-19) conditions as a licence requirement.³⁷
- 3.58 For users seeking access to the Q/V frequencies shared with MoD (39.5 – 40.5 GHz and 50.4 – 51.4 GHz) we proposed to liaise with MoD to establish if coordination is possible. Because MoD uses can change over time, we also proposed to include the same backstop licence requirement to protect MoD uses which we adopted for low density areas. This would require the licensee to cease or change the use of equipment where instructed by Ofcom, in the event that the MoD suffers or is likely to suffer harmful interference.
- 3.59 We additionally proposed that we would use the same approach to gateway to gateway coexistence as we took in rural areas, and apply across our gateway licensing products. That is, while we do not undertake direct coordination between neighbouring sites in our systems, we expect NGSO gateway operators to

³⁵ Following decisions at WRC 27, we may consider updating our framework for Q/V band in the coming years (e.g. if an additional allocation to NGSO at 51.4 – 52.4 GHz is made). We will consider any relevant learnings from coordination under this approach, and whether our approach could be updated, at that point.

³⁶ Please refer to Section 2, Paras. 2.8 – 2.21 for a summary of other incumbent users of Q/V band spectrum.

³⁷ More details on these measures can be found at Paras. 3.38 – 3.44 in our March 2026 Statement.

demonstrate how they will coexist with other gateways.³⁸ We invited stakeholders to highlight any concerns with this approach that might be specific to high density areas.

Summary of responses

- 3.60 We did not receive any feedback to our proposals to implement the same coexistence approaches in high density areas as in low density areas for PMSE use in 48 – 48.4 GHz and with the MoD. Further, we did not receive any feedback to our proposals to implement relevant ITU conditions in our licences to protect Radio Astronomy and EESS services.
- 3.61 Stakeholders also did not raise any concerns with our ongoing approach to gateway to gateway coordination being applied in these high density areas.

Our decision in light of stakeholder feedback

- 3.62 We confirm that, in absence of any feedback, we will implement the same coexistence approaches between gateways and PMSE, EESS and Radio Astronomy services in high density areas as in low density areas.
- 3.63 We will also continue to liaise with the MoD to confirm co-existence is possible in frequencies that they use, and adopt the same licence condition we have in place for low density areas to reflect the potential need to adapt to future MoD uses.
- 3.64 In addition, we will retain our existing approach to gateway to gateway coordination, for both NGSO gateway and PES licence products..
- 3.65 We consider these coexistence approaches protect incumbent services, especially receive-only EESS and Radio Astronomy services, without unduly constraining opportunities for new gateway users. Our approach will also provide regulatory consistency between our approaches in low and high density areas.

Associated licence conditions

Overview of our March proposals

- 3.66 In our March consultation, we indicated that we would, subject to stakeholder feedback, transfer relevant coordination requirements set out in this Section into licence conditions for GSO and NGSO gateways.

Summary of responses

- 3.67 While we received stakeholder feedback on the specific aspects of some of our proposals, we have considered this as part of our assessment above (e.g. on our proposed MEA and the proposed ‘non protection’ clause). We did not receive further feedback on our general proposal to transfer relevant coordination expectations into licence conditions, which is aligned with the approach we have already taken for low density areas.

Our decision in light of stakeholder feedback

- 3.68 On the basis of the analysis and decisions set out above, we are confirming that (with the exception of a different MEA for NGSOs) we will apply the same licence conditions

³⁸ Note that for PES licences, we consider that co-existence between PES gateways should be facilitated by the coordination checks undertaken as part of the ITU filings process and compliance with the Radio Regulations.

as we have established for low density areas. We will also include an additional ‘non protection’ clause in these high density area licences, as set out in Annex 9 of our March Consultation.

- 3.69 We summarise the high density area licence conditions for Q/V operations below in Table 3:

Table 3: Our licensing conditions for NGSO and GSO gateways using Q/V band in high density areas

Licensing condition	Service	Description
General conditions to help protect other services	GSO	The licensee shall comply with all the applicable international regulations and obligations, including but not limited to, ITU Radio Regulation Articles 5, 21, 22 and Resolution 750 (Rev. WRC-19).
	NGSO	The licensee shall comply with all the applicable international regulations and obligations, including but not limited to, ITU Radio Regulation Articles 5, 21, 22 and Resolution 750 (Rev. WRC-19).
Unwanted emissions limits	GSO	The licensee shall ensure that the earth stations meet unwanted emission power limits given in Resolution 750 (Rev. WRC-19) of the RR for the 49.7-50.2 GHz, 50.4-50.9 GHz and 51.4-52.4 GHz bands.
	NGSO	The licensee shall ensure that the earth stations meet unwanted emission power limits given in Resolution 750 (Rev. WRC-19) of the RR for the 49.7-50.2 GHz and 50.4-50.9 GHz bands.
Transmit power	GSO	Max transmitter power density at the antenna port of gateway earth station is limited to -7.4 dBW/1MHz.
	NGSO	Max. transmitter power density at the antenna port of gateway earth station shall be limited to +6.5 dBW/1MHz.
Antenna pattern	GSO	The Antenna Radiation Pattern Envelope shall meet the minimum performance specified by Recommendation ITU-R S.465 .
	NGSO	The Antenna Radiation Pattern Envelope shall meet the minimum performance specified by Recommendation ITU-R S.580 .
Antenna elevation angle	GSO	Min. elevation angle of 15° for GSO gateway with respect to the local horizontal plane applies for all gateway beams.
	NGSO	Min. elevation angle of 20° for NGSO gateway with respect to the local horizontal plane applies for all gateway beams.
Power flux density ('pfd') limits	GSO	Licensees shall ensure pfd limits at the Earth's surface produced by emissions from a space station in the band 37.5 – 42.5 GHz, meet the relevant limits given in No. 21.16 (Table 21-4) of Article 21 of the Radio Regulations; Licensees shall ensure that the power flux-density limits as given in Article 5 (No. 5.551I) of ITU Radio Regulations are met by any space station operating in the band 42 – 42.5 GHz.
	NGSO	Licensees shall ensure pfd limits at the Earth's surface produced by emissions from a space station in the band 37.5 – 42.5 GHz are met per Table 21-4 of Article 21 of Radio Regulations.

Equivalent Power flux density ('epfd') limits	NGSO	Licensee shall ensure that the equivalent power flux-density limits as given in Article 5 (No. 5.551H) of ITU Radio Regulations are met by all space stations operating in the band 42 – 42.5 GHz.
Non interference	NGSO	Licensees shall ensure that the emissions from space stations in the band 37.5 – 42.5 GHz, shall not cause harmful interference to fixed and mobile services and compliance with the relevant power flux-density limitations referred to in Article 21 of the ITU Radio Regulations does not release Licensees from this obligation.
Non protection	GSO and NGSO	Licensees accept that gateways receiving in the band 37.5 – 40.5 GHz operate on a non-protected basis with respect to Spectrum Access High Density 40 GHz licensees authorised in the 40.5 – 43.5 GHz band. ³⁹
MoD Coordination	GSO and NGSO	In the event that MoD suffers or is likely to suffer harmful interference in these frequencies due to the Licensee, Ofcom may by notice instruct the Licensee to cease or change the use of particular equipment or particular radio frequencies which are authorised under this Licence.

3.70 These technical conditions will be included in all licences granted for Q/V band gateways deployed in high density areas, as shown in the licence templates included in Annex 2.

3.71 We note that licenses for Q/V band will continue to include a range of other requirements (including non-technical requirements), in line with our wider Permanent Earth Station ('PES') and NGSO gateway licensing approach. This includes submission of the relevant satellite data to the ITU, and compliance with coordination notices issued by Ofcom. Please see our [NGSO Licensing Review Statement](#) for more information on specific NGSO requirements.

Implementation timelines

3.72 As part of our March consultation, we did not set out a specific timeline for operationalising this additional access for gateways in high density areas. We envisaged that it would make sense to open up for new applications (and the potential benefits associated with this extra spectrum access) as soon as practical after taking a decision.

3.73 We received a confidential response from one stakeholder which argued for a potential delay in opening applications. [8].

3.74 We have considered this input but on balance do not consider that it is necessary to delay the opening of this new opportunity for gateways to operate in high density

³⁹ We note that in our consultation, we proposed this non protection condition with regards to 'mobile services' (see Para 5.23). By this, we meant the services permitted under the mmWave award licences (called the Spectrum Access High Density 40 GHz licences). As explained above (see footnote 22) these services can cover a broader set of uses (e.g. fixed as well as mobile). For clarity, we have therefore decided to more precisely limit this requirement to services provided by the existing mmWave award licensees. We have also reflected this change in the licence templates at Annex 2.

areas in parts of the Q/V band, including across the 38 GHz band which is used for fixed links. Our assessment reflects engagement with relevant stakeholders and analysis of fixed link deployment data. This data indicates that while the volume of links in the 38 GHz band is still significant, total link volumes have declined in recent years, including in urban areas. This means that there should continue to be opportunities for additional fixed link deployments to share with new gateway users in future. Our decision to limit NGSO gateways to an MEA of 20 degrees and GSO gateways to an MEA of 15 degrees should further support this sharing approach.

- 3.75 On this basis we confirm that applications to use gateways in high density areas in parts of the Q/V band will be possible from the date of this Statement [23 October 2026]. We set out more detail on next steps and licensing arrangements in Section 5.

4. Guidance on Local Access licences for gateways in 40.5-42.5 GHz

Overview of our March request for stakeholder input

- 4.1 In our March 2026 Consultation, we invited stakeholders to comment on the potential for gateway receivers to operate in high density areas in the 40.5-42.5 GHz band. We did not set out a full proposal on this, primarily due to the interference risks from co-channel mobile services, which are larger than the risk from adjacent frequencies.
- 4.2 We instead sought further comments to better understand the level of demand from the satellite community, any potential concerns from mmWave licensees, and views on mitigation measures which could support further sharing in future.
- 4.3 In seeking these inputs, we highlighted that in the short term, access could be complicated by two main issues:
 - a) the rollout of 40 GHz mobile infrastructure is at an early stage, with significant uncertainty over which parts of the high density areas will be used for mobile services and deployment timelines;
 - b) the revocation process for incumbent Spectrum Access licensees in parts of the 40.5-42.5 GHz band will not complete until 1 June 2028.
- 4.4 We recognised that some satellite operators might be willing to deploy 'at risk' and then seek to mitigate any interference into gateway receivers. However, we also noted that, without clearer feedback on the nature and effectiveness of such mitigation strategies, such a scenario might result in Ofcom being requested to step in to resolve interference issues. Our initial view was that it would be preferable to understand if and how interference issues could be resolved in advance, rather than Ofcom having to manage problems later if customer services were degraded.

Summary of responses to our request for stakeholder input

- 4.5 Satellite operators expressed continued interest in accessing 40.5-42.5 GHz for downlink in high density areas, highlighting potential benefits in performance and efficiency. They also reiterated the potential for operators to take their own risk-based judgment on interference.
 - a) Amazon encouraged Ofcom to enable access to these frequencies in high density areas now, rather than deferring to a future date. They suggested that as the interference risk is to the gateways themselves, permitting co-channel use wouldn't place additional burdens on MNOs. They argued that satellite operators should have the opportunity to assess the interference scenario and take their own view on the risks and benefits.
 - b) SpaceX stated there are significant benefits in permitting co-channel access to 40.5-42.5 GHz, given its potential to substantially increase gateway capacity and

throughput. They indicated that risks to mobile services could be managed through technical and operational measures⁴⁰.

- c) Viasat suggested we consider using ECC recommendation 22(07) to achieve coexistence between gateways and mobile base stations, should we authorise use.

4.6 We also received responses from two mobile operators (VodafoneThree and BT), who expressed some concerns about how we might authorise these frequencies for satellite gateway downlink. However, these concerns were not focussed on interference risks to their own services:

- a) VodafoneThree expressed some concerns with additional gateway access in these frequencies. The detail of these concerns are confidential to VodafoneThree but include the potential for any Ofcom protection of gateways to impact mobile rollout. In particular they [§<].
- b) BT was sceptical about the prospect of siting a gateway in urban areas (given the need for low elevation angles, which could be challenging in these locations). They suggested that authorising general gateway use in these frequencies appeared inconsistent with our decision to remove fixed links in favour of mobile services as part of the mmWave award. BT did note that a limited number of gateways could plausibly be coordinated with future mobile deployments at 40 GHz. However, they were concerned that protection of gateway operations could impinge on mobile rollout, and said any regulatory provisions should be compatible with commercial arrangements which could compensate them for impacts on mobile deployments.

Our assessment in light of stakeholder feedback

4.7 Satellite sector respondents were clear that they see a potential benefit in placing gateways closer to urban infrastructure, and that opening extra access to this spectrum in high density areas could support lower latencies and provide additional capacity.

4.8 However, advocates for this approach provided limited evidence to show how necessary extra access was to 40.5-42.5 GHz in high density areas, given they can already access this spectrum in locations at the low/high density area boundary. Respondents did highlight the benefits of deploying in high density locations, and told us that access to 40.5-42.5 GHz would provide extra capacity in these valuable locations. Nevertheless, they did not explain why our proposal to make 37.5-40.5 GHz available in these locations was insufficient.

4.9 On the other hand, MNOs expressed some concerns with gateways moving into high density areas in general and these frequencies in particular. While MNOs did not raise concerns with interference into their own services, they were concerned about knock-on effects if Ofcom were to subsequently decide to protect gateways from mobile interference in future. Satellite sector responses did not clearly explain how they would mitigate this interference risk without protections from Ofcom. They also did not explain how they would achieve coexistence with Spectrum Access licensees until these uses stop in June 2028.

⁴⁰ SpaceX subsequently provided technical analysis to demonstrate co-channel urban coexistence in these frequencies. This analysis primarily related to interference to fixed links and PFD limits.

- 4.10 Given the uncertainty around how a widescale gateway authorisation would work in practice - and the proximity to the award of these frequencies for mobile use - we do not consider it appropriate to table new proposals for 40.5-42.5 GHz at this time.
- 4.11 However, we recognise that there could be circumstances where coexistence is possible, and that in these circumstances there could be value in facilitating additional gateway access. For example, there could be specific locations where a satellite operator sees significant benefits and where mobile rollout is expected to be limited. We consider that our existing 'Local Access' licence framework could support access in this kind of scenario, and we set out more detail on this below.

Our guidance on Local Access opportunities above 40.5 GHz

- 4.12 A [Local Access](#) licence enables the shared use of spectrum which is already licensed on a national basis (e.g. to the MNOs), especially in locations where spectrum is not being used. Local Access licences incur a one-off fee of £950, with two broad options available for securing access:
- a) a prospective user can approach Ofcom and ask for a short-term licence of up to 3 years, which is granted where mobile operators do not have plans to use the spectrum in that time period;
 - b) a prospective user can approach the existing mobile licensee and reach an agreement on terms for local access for a longer time period. Once this agreement is in place the new user approaches Ofcom for a licence to support the agreement.⁴¹
- 4.13 Our [2023 mmWave Statement](#) confirmed that we would allow access to the auctioned mmWave bands via Local Access licenses, although we noted that there might be challenges in approving applications immediately.⁴² We considered that the Local Access licence would allow the users of spectrum to come to an agreement on access in a given location, or for Ofcom to facilitate access where there were no near term deployment plans.⁴³
- 4.14 Given the potential interest from satellite operators, we consider that Local Access could support discussions between relevant parties and potentially enable further use of spectrum for satellite services. We acknowledge that mmWave rollout remains at an early stage, and that MNOs may still have some uncertainty about their plans, even in the near term. In such cases we expect that users wishing to secure access to these frequencies may find it simplest to do so by negotiating an agreement with the relevant MNO(s) before approaching Ofcom with a Local Access licence application.⁴⁴
- 4.15 We note that in the near term any new 'Local Access' licensee could also be sharing spectrum with one of the Spectrum Access licences in the 40 GHz band.⁴⁵ These licences - which are used predominantly for point-to-point links - have been revoked and expire in June 2028. We will use the deployment data provided to us by Spectrum

⁴¹ More information can be found in our [Local access Guidance Document](#).

⁴² We indicated in Para 5.25 of our mmWave statement that "we would not expect access to newly awarded bands to be possible straight away (and possibly not for some considerable time), as the licensees will need time to decide where they intend to use the frequencies themselves".

⁴³ See Para 5.26 a) of our 2023 mmWave Statement.

⁴⁴ Details of relevant mmWave licensees can be found [here](#). In brief, spectrum is held by VMO2 at 40.5-41.5 GHz, EE at 41.5-42.5 GHz and VodafoneThree at 42.5-43.5 GHz. Note that we would expect that any commercial sharing discussions are conducted on a reasonable basis.

⁴⁵ i.e. MBNL, MLL and UKB.

Access licensees to undertake a coordination check with any prospective new user at the licensing stage.⁴⁶

- 4.16 As with other Local Access licences, the final form for a new licence would be considered on a case-by-case basis, and subject to the terms of any agreement in place with other licensees.⁴⁷ We envisage that an applicant seeking to deploy a satellite gateway could expect the licence to incorporate similar conditions as those in place for gateway receivers in 37.5-40.5 GHz, with specific adjustments as needed.⁴⁸
- 4.17 We will keep this arrangement under review and monitor both satellite sector demand and any best practice coordination approaches adopted with mobile services. We anticipate that a review of progress could be undertaken in a few years, when Spectrum Access fixed links have vacated the band and mmWave rollout plans have become clearer.

Scope of Local Access opportunity and licensing approach

- 4.18 In the foregoing discussion, we have focussed on guidance to satellite operators in light of interest in downlink operations in 40.5-42.5 GHz.
- 4.19 We note that in an earlier phase of our work to develop access to the Q/V band for satellite gateways, we considered the prospects for gateway uplink use in 42.5-43.5 GHz. While there is an international allocation for gateway uplink in these frequencies, some stakeholders indicated that they would be unlikely to use the band because of potential risks of interference to the adjacent gateway receive frequencies (i.e. 37.5-42.5 GHz). Given the potential interference risks, and limited evidence of stakeholder demand, we decided we would not include 42.5-43.5 GHz in our standard gateway product.
- 4.20 Our expectation is therefore that there is unlikely to be requests to use 42.5-43.5 GHz for gateway uplink via Local Access, and that any such requests would be difficult to approve. The interference characteristics of these uplink transmissions are likely to be different from the envelope of MNO licence conditions and would require careful assessment of additional risks, including to MNOs, adjacent band satellite gateways and to Radio Astronomy.

⁴⁶ In some cases, we recognise that a gateway operator may wish to understand more about the risk of a Spectrum Access deployment constraining their use at an earlier stage (e.g. prior to engaging with an MNO about the prospects for Local Access). We are open to providing guidance on the proximity of a prospective Local Access application to Spectrum Access fixed link deployments earlier in the application process, where this would be useful.

⁴⁷ That is to say the relevant MNO(s) and any other Local Access Licences already authorised to share that spectrum.

⁴⁸ We continue to expect that Local Access could support a range of applications, and we will continue to consider wider requests across the full 40.5-43.5 GHz range of the mmWave award, with a case by case approach to any licence conditions that are needed.

5. Next Steps

Implementing our decisions

- 5.1 We are opening the Q/V band for gateway applications in high density areas immediately. This spectrum will be available under our GSO Permanent Earth Station (PES) and Non Geostationary Gateway licence products.⁴⁹ Application forms can be found [here](#) (for NGSOs) and [here](#) (for PES).
- 5.2 We will also update our guidance and licence templates to incorporate access to Q/V band in high density areas, along with the licence conditions we are putting in place. We have included marked up licences in Annex 2, highlighting the conditions we are adopting for high density areas, following the decisions set out in this document.

Licensee fees

- 5.3 Stakeholders should note that earlier in 2026 we indicated our [decision](#) to update our licence fees for gateway use in these frequencies, subject to further consultation on updated fee regulations. We expect to introduce an updated fee regime in early 2027. Applications made before this point will be charged on the basis of our extant fee regime, until the new approach goes live.⁵⁰ We will keep stakeholders informed of the go-live date for the new fee regime through updates on the Ofcom website.

Licence processing

- 5.4 As set out in Section 3, applicants should note that requests for frequencies which require coordination with the MoD - i.e. 39.5 – 40.5 GHz and 50.4 – 51.4 GHz - may take longer than normal to process. Our expectation is that these additional coordination checks could require up to an additional 6 weeks for a decision. Applicants interested in a licence using these frequencies should highlight this in their applications and engage with Ofcom to understand if coordination with MoD will be possible.

⁴⁹ For the avoidance of doubt, Q/V spectrum will not at this time be available for satellite terminal use, and will also not be open to Earth Stations in Motion (and as such will not be included in our ship and aero licences).

⁵⁰ i.e. NGSO Gateway licences will be charged a cost-based fee of £500 per annum initially, while GSO Gateways will be subject to the existing fee formula, with a Band Factor of 0.6 currently applying to all frequencies above 24 GHz (which will move to the new Band Factor of 0.4 for Q/V band in future).

A1. Impact assessments

- A1.1 Section 7 of the Communications Act requires us to carry out and publish an assessment of the likely impact of implementing a proposal which would be likely to have a significant impact on businesses or the general public, or when there is a major change in Ofcom's activities.
- A1.2 More generally, impact assessments form part of good policy making, and we therefore expect to carry them out in relation to a large majority of our proposals.
- A1.3 We use impact assessments to help us understand and assess the potential impact of our policy decisions before we make them. They also help us explain the policy decisions we have decided to take and why we consider those decisions best fulfil our applicable duties and objectives in the least intrusive way. Our impact assessment guidance sets out our general approach to how we assess and present the impact of our proposed decisions.⁵¹
- A1.4 The relevant duties in relation to the proposals we are making are set out in Section 2.
- A1.5 The remainder of this annex contains (i) our assessment of the impact of our decisions contained in the main body of this document, (ii) our assessment of the equality impact of these decisions and (iii) Welsh language considerations.

Impact assessment of our decisions

Summary of decisions

- A1.6 We have decided to authorise gateways to operate in high density areas, on the same uplink frequencies as those we are making available in low density areas, but on a subset of downlink frequencies:
- a) **GSO**: uplink 47.2 – 50.2 GHz and 50.4 – 52.4 GHz; downlink 37.5 – 40.5 GHz.
 - b) **NGSO**: uplink 47.2 – 50.2 GHz and 50.4 – 51.4 GHz; downlink 37.5 – 40.5 GHz.
- A1.7 Any gateways (earth stations) operating in high density areas would operate with a 'non-protection' clause for gateway receive operations with respect to adjacent-band future mobile services. In addition, NGSO space stations would also operate subject to a 'non interference' condition with regards to terrestrial services. We will manage coexistence between gateways and fixed links in high density areas using a first come, first served approach. There will be a minimum elevation angle of 20 degrees for NGSO gateways and 15 degrees for GSO gateways.
- A1.8 While we are not authorising 40.5 – 42.5 GHz for gateway receive operations in high density areas, we are providing guidance on how satellite operators might use the Local Access licence framework (which we confirmed would apply in these frequencies in our mmWave statement)⁵² to request localised access to spectrum where it is unused or lightly used by incumbent licensees.
- A1.9 Our decisions strike a balance between the interest shown by gateway operators in siting gateways in high density areas (and the benefits this could bring) and the interference risks

⁵¹ See Ofcom's [Impact Assessment Guidance](#).

⁵² See Ofcom. [Statement Enabling mmWave spectrum for new uses](#). Footnote 1, p.7 and Section 5.

for current and future spectrum users which need to be managed to ensure that those current and future services (which include future mobile services and fixed links) can deliver valuable services to citizens and consumers.

- A1.10 We consider that the benefits of our decision to authorise gateway transmissions, and to authorise receive operations in 37.5 – 40.5 GHz in high density areas are likely to outweigh the costs and risks of doing so, taking account of the licence conditions we will apply. This is because we are providing additional sharing opportunities for gateways to provide valuable services in locations where spectrum is available, while undertaking coordination to protect other users. We have also included licence conditions which support ongoing sharing opportunities for other users (e.g. fixed links).
- A1.11 Conversely, we consider that at this stage the potential benefits of developing new proposals for our standard gateway product to cover 40.5-42.5 GHz in high density areas would not outweigh the risks. This is because of the complexity of coordination required and the potential for interference risks to either degrade gateway services, or lead to restrictions on mobile licences which have only recently been awarded by auction.⁵³ However, satellite operators can seek access in the locations where they anticipate the greatest benefits through our ‘Local Access’ framework. The requirement for specific assessment and approval of each Local Access licence request provides a mechanism to enable sharing where this is feasible without raising harmful interference risks.
- A1.12 We expect that our approach will support improved connectivity for people and businesses in the UK and to support growth and investment in new services. Our decision to authorise gateways located in high density areas aims to further these objectives by providing additional spectrum access in new locations and promoting closer spectrum sharing arrangements with a range of existing authorised spectrum users.

Decision to authorise gateways in high density areas in certain frequencies

- A1.13 Authorising Q/V band for gateway use in high density areas in the specified frequencies (see A1.6) would:
- a) Support efficient use of spectrum, by enabling greater use of a scarce resource which has been internationally assigned for satellite services usage;
 - b) Encourage investment and innovation, by enabling greater usage of spectrum and supporting satellite infrastructure in the UK, in turn fostering economic growth; and
 - c) Promote the interests of UK citizens and consumers, who would benefit from improved satellite services, particularly in areas with constrained capacity, and in hard-to-reach areas.
- A1.14 We consider that the benefits of authorising the specified frequencies for gateway use in high density areas are likely to outweigh the costs and risks of doing so.

Impact on GSO/NGSO satellite service providers

- A1.15 The [further Consultation responses](#) confirm that there is demand for these frequencies for both NGSO and GSO gateway use in high density areas. Amazon stated that satellite

⁵³ As part of that award, we set out our assessment that the optimal use for parts of the 40 GHz band was for mobile. See paragraph 7.84 of our March 2023 [Statement and consultation: Enabling mmWave spectrum for new uses](#)

gateways require access to high-quality fibre infrastructure, internet exchange points (IXPs), data centres and skilled technical personnel, which it considers are typically concentrated in urban high density areas. SpaceX stated that locating gateways closer to areas of high traffic demand (which are typically high density areas) allows for reduced backhaul distances and better overall service quality. SpaceX also noted the additional flexibility this would give operators to deploy gateway infrastructure to deliver the greatest benefits to network performance and user experience. These stakeholders noted that enabling deployments in high density areas could reduce latency for end users and increase capacity of satellite systems to deliver broadband services to UK customers.

- A1.16 Our view is that there may in certain scenarios be incremental benefits in terms of improved quality of experience from locating a gateway in high density areas which are close to IXPs and data centres, which may not be fully replicable from gateways located a significant distance further away.⁵⁴
- A1.17 We do not expect that there will be significant risks or costs for gateway operators in uplink frequencies. This is because there are only six fixed links to coordinate within these frequencies (see Para. 3.23) and there is significant frequency separation between these frequencies and the mmWave award spectrum.
- A1.18 There may be a residual risk of interference into gateways from mobile base stations using the adjacent 40.5 – 43.5 GHz spectrum. However, as set out in Annex 1 of our July 2025 Consultation, our analysis suggested that these interference risks are smaller in the adjacent channel spectrum (37.5 – 40.5 GHz).⁵⁵ Satellite operators have also previously indicated a willingness to tolerate these risks. Given the potential benefits of access to high density areas, there is likely to be a net benefit in authorising gateway use.
- A1.19 We expect that allowing some access to high density areas for gateway use will increase investment and innovation and support more spectrum sharing. As set out in paragraph A3.19 of our March 2026 Consultation, allowing some access to high density areas for gateway use also guards against the risk raised by [X] that limiting authorisation of Q/V gateways to low density areas could lead to spectrum scarcity in urban locations and therefore relatively higher access prices being sought by terrestrial operators for any commercial sharing arrangement in high density areas.

Impacts from sharing with other gateways

- A1.20 There is a hypothetical risk that allowing gateway access in high density areas could materially impede access for future gateways in these areas, particularly if the benefits identified from more urban access are restricted to a limited subset of locations within high density areas, such that there is a scarcity of suitable gateway sites. Any such concern would need to be considered on a case-by-case basis, taking into account the specific facts of the gateway application. We note, however, NGSO gateway licence applicants are required to provide evidence of their ability to coexist with existing and planned gateway

⁵⁴ Closer proximity between a gateway and an IXP with which it peers can create consumer benefits: commercial and throughput advantages due to direct, as opposed to indirect, peering.

⁵⁵ Ofcom. [Statement and Further Consultation Expanding spectrum access for satellite gateways](#).

users, and to cooperate with other licensees. Our expectation therefore remains that we are likely to be able to licence gateways sited in quite close proximity to one another.⁵⁶

Impacts from sharing with the MoD

A1.21 As in low density areas, access to 39.5 – 40.5 GHz (for receive) and 50.4 – 51.4 GHz (for transmit) will be subject to coordination with MoD. This means that for these frequencies certain locations may not be available for gateway operators, and assignments may require future adjustments. However, we expect many locations will nonetheless be available in these frequencies, and where MoD uses in the band evolve there could be options open to support coexistence (e.g. by deploying more shielding or managing the power of emissions in a given direction). These coordination risks are known upfront to satellite operators, and the spectrum is available if they are prepared to take on the potential risk of changing requirements. We consider that authorising this use – subject to coordination – will bring greater benefits than not authorising use of this spectrum for gateways at all.

Impact on current and future spectrum users

A1.22 We have carefully considered the potential impacts of this decision on other spectrum users.

A1.23 We consider that gateways can co-exist with prospective PMSE licensees,⁵⁷ earth exploration satellite services (passive), and receive-only radioastronomy services in the adjacent bands.

A1.24 We consider any risk to mobile services from extending gateway authorisation into adjacent frequencies in high density areas is low. Gateway transmit operations in high density areas will be separated from future mmWave award mobile deployments by several GHz. In the gateway receive frequencies, satellite downlink operations in high density areas will be bounded by the power flux density limits specified in the Radio Regulations and (for NGSO operators) a licence condition requiring that harmful interference is not caused to fixed and mobile users.

A1.25 In relation to existing Ofcom-coordinated fixed links in, or transecting, high density areas:

- a) There are currently six fixed links licensed by Ofcom in the bands 49.2 – 50.2 GHz which will operate on a co-channel basis with gateway uplink operations. We consider that our approach to managing coexistence is sufficient to protect these incumbent links.
- b) There are a large number of Ofcom co-ordinated fixed links in the lower part of the Q/V band where gateways would be receiving (see Paragraph 3.23). We have decided to undertake coordination between gateways and fixed links on a first-come-first-served basis, as in low density areas. We consider that this approach to managing coexistence is sufficient to reduce the risk that these links experience harmful interference. There is no additional administrative burden on fixed links users as a result of our coexistence approach.

A1.26 We do not consider that there will be any impact on Spectrum Access licensees who can deploy fixed links in parts of 40.5-42.5 GHz until June 2028, as they operate in adjacent

⁵⁶ All existing NGSO gateway licensees are covered by an NGSO network licence (which includes a cooperation condition) and all new NGSO gateway licences issued after the publication of [Ofcom's NGSO Licensing Review](#) will include a new condition 5.3 which requires the licensee to cooperate with other NGSO licensees. PES gateway licensees are expected to adhere to general obligations to not cause interference and to adhere to ITU conditions, which together support co-existence between different users.

⁵⁷ There are no current licences issued for PMSE in 48 – 48.4 GHz.

frequencies to high density area gateways, and will only be adjacent to gateway receivers.⁵⁸

- A1.27 We have recognised that authorising gateways in high density areas could constrain future fixed link deployments, by blocking potential fixed link locations. However, there are competing uses for this spectrum, and we want to ensure the greatest possible use of this scarce resource. Enabling gateways to share this spectrum helps achieve this objective, and by extending our established first-come, first-served approach we are providing more options for spectrum to be used when firms have demand for it and so prevent under-utilisation.^{59 60} This should ensure that a scarce resource is used in a timely manner, with future fees set at opportunity cost to incentivise optimal use.
- A1.28 We therefore consider that our approach is proportionate. Our approach will not introduce an additional administrative burden upon current and future spectrum users. We will be taking steps to protect existing fixed links and expect in practice the impact on future sharing opportunities to be relatively small. We also note that as further mitigation, should issues arise in a given location, there are other bands available for future fixed link users.

Overall conclusion on decision to authorise gateways in high density areas in certain frequencies

- A1.29 We are therefore allowing some access to high density areas for gateway use, to unlock benefits from making this spectrum available. There are some potential benefits, both as set out by stakeholders and summarised in paragraph A1.15, and in our own view in paragraph A1.16, and we consider that the risks of such an approach are very low.

Decision on managing coexistence between gateways and mobile services

- A1.30 We have decided to proceed with our proposal to implement a ‘non interference’ clause and a ‘non protection’ clause for NGSO gateway receive operations with respect to adjacent-band future mobile services (and a ‘non protection’ requirement for GSO gateways).⁶¹
- A1.31 This spectrum was awarded to MNOs as part of the mmWave award. Therefore, we want to ensure that mobile users are sufficiently protected from the potential for interference from satellite gateway operations.
- A1.32 As set out in paragraphs 3.16 – 3.21, we consider that an additional ‘non-interference’ requirement for NGSO gateways is a proportionate and necessary backstop to ensure that the Article 21 limits protect terrestrial services as needed, given the physical proximity to terrestrial services in high density areas. In principle this could place additional costs on satellite operators. However, in practice we do not expect this clause to require significant change in satellite operations, since in most scenarios compliance with international

⁵⁸ We consider the potential impact on these users of our decision to introduce ‘Local Access’ to 40.5 – 43.5 GHz below.

⁵⁹ Note that our requirement for NGSO gateway applications to be brought into use within 12 months also contributes to the efficient use of this scarce resource.

⁶⁰ We are also managing this risk by applying limits on the Minimum Elevation Angle a gateway may use, as discussed in the next section.

⁶¹ We have also decided to proceed with not implementing any specific protection criteria for gateway transmissions, given our judgement that mobile services are sufficiently separated in frequency that the interference risk is low.

obligations should provide the intended level of protection. In addition, any claim of interference from a terrestrial user would need to be substantiated before action was taken against the gateway licensee. We consider that this clause helps to manage the risks to mobile use in the band.

- A1.33 We acknowledge that implementing a ‘non-protection’ clause for gateways means that gateways would be deploying with some level of risk. However, we are mitigating this risk by undertaking upfront coordination with the main co-channel service (fixed links) and we consider that the likelihood of interference from adjacent channel mobile services is low. Our approach reflects the feedback of some satellite operators that they are willing to take on a level of risk in exchange for this additional spectrum access. Given the risk in this case appears low, we consider that giving effect to this approach with a ‘non protection’ licence condition is a proportionate approach. We consider this approach will not detract from the potential net benefits of authorising gateway use of the 37.5 – 40.5 GHz frequencies in high density areas, compared to the alternative of not doing so. The potential benefits include improved quality of experience from locating a gateway close to IXPs and data centres in high density areas, which may not be fully replicable from gateways located a significant distance further away.
- A1.34 We therefore consider that implementing a ‘non interference, non protection’ clause for NGSO gateway receive operations with respect to adjacent-band mobile services, and a ‘non protection’ clause for GSO gateway operations with respect to adjacent-band mobile services, is proportionate.

Decision on managing coexistence between gateways and fixed links

- A1.35 We have decided to coordinate gateways with fixed links on a first come, first served basis. This matches our approach in low density areas. This means that existing fixed links will be protected from gateways, and new gateways whose applications are granted should also be protected from both existing and future fixed links.
- A1.36 We acknowledge that this approach could limit the number of locations available for gateways to deploy. However, we remain of the view that alternative options which might enable greater access for gateway operators would have too great a cost, and so would not be proportionate:
- a) Allowing gateway operators to access locations irrespective of the risk of interference from existing fixed links, but undertaking subsequent coordination checks between any gateways and future fixed links (option B discussed in Para. 3.33) could create a greater constraint on the opportunities for future fixed link locations than other potential coordination options and create too great a constraint on the ability of incumbent fixed links to undertake minor updates.
 - b) Authorising gateways without any protection from current or future fixed links (option C discussed in Para. 3.34) would potentially expose gateways to significant interference, which could be costly (or impossible) to fully mitigate. This could create disruptions to end users (including consumers, aircraft, business connectivity and Government services). Widescale uncoordinated deployments could also create challenges for future spectrum management decisions.
- A1.37 This approach strikes an appropriate balance between opening up new opportunities for gateways in high density areas and sufficiently protecting and coordinating with existing

users. While we recognise that there may be cases where the presence of multiple fixed links constrains gateway deployment options under this approach, we anticipate that, in practice, many urban locations will remain available. Should this approach mean that a gateway operator is unable to access its preferred location, we consider there are likely to be either alternative viable locations relatively nearby, or additional mitigations (such as antenna height and pointing) which could be used to secure coordination. We also note that if access to a specific location is considered vital, a satellite operator could negotiate directly with fixed link operators to have access to that specific site. We finally note that there is no additional administrative burden on potential gateway operators as a result of our coexistence approach, which is aligned to our approach in low density areas and other bands shared with fixed links.

Decision on a minimum elevation angle for gateways using Q/V frequencies in high density areas (20 degrees for NGSO gateways, and 15 degrees for GSO gateways)

- A1.38 We have decided on a minimum elevation angle (MEA) of 20 degrees for NGSO gateways in high density areas, and an MEA of 15 degrees for GSO gateways.
- A1.39 In setting an MEA, we have considered the potential benefit that flows to gateway operators from the extra operational flexibility provided by a lower MEA, against the potential this has to negatively impact other spectrum users (e.g. incumbent users and future sharing opportunities (including fixed links)).
- A1.40 We remain of the view that there is in general little difference in impact on opportunities for other users when moving between a 25 degree and 20 degree elevation in high density areas.⁶² We also remain of the view that the increase in potential impact when the MEA drops from 20 degrees to 15 degrees for NGSO gateways in high density areas could more significantly affect sharing opportunities in high density areas, given the high demand for fixed links in high density areas.
- A1.41 We have decided therefore that an elevation angle (MEA) of 20 degrees for NGSO gateways in high density areas would be appropriate. This strikes the appropriate balance between the potential benefits (in the form of increased operational flexibility) to NGSO gateway operators from having a lower MEA, and the potential impacts on other current and future spectrum users (in particular, fixed link operators) which need to be managed to ensure that these services can continue to deliver valuable services to citizens and consumers.⁶³ We also note that if a gateway operator requires a lower elevation angle, it remains possible to site gateways outside (but near to) the high density areas.⁶⁴
- A1.42 We have decided that a 15 degree minimum for GSO gateways is appropriate. The impact of GSO gateways on sharing opportunities for fixed links is currently considered lower than that of NGSO gateways. The coordination impacts of GSO gateways are more static, because of the highly directional, fixed positioning of GSO gateway antenna(s). This may

⁶² Note that our analysis is based on modelled separation distances in free space.

⁶³ We will not coordinate between gateways. We expect licensees to coordinate with each other and co-exist in close proximity. See Para. 3.59.

⁶⁴ In low density areas, the MEA for NGSO gateways is 15 degrees as standard. We have also said that, on an exceptional basis, we would consider requests to operate at elevation below 15 degrees – but no lower than 10 degrees – on a case-by-case basis, for a transitional and time limited period. See [Statement and Further Consultation Expanding spectrum access for satellite gateways](#), paragraphs 4.37 – 4.41.

make it easier for fixed link operators to plan for and pass coexistence with GSO gateways. Therefore, given the additional flexibility enabled to potential GSO gateway operators from a lower MEA, a 15 degree minimum for GSO gateways is appropriate.

Decision on our approach in 40.5 – 42.5 GHz in high density areas

- A1.43 We recognise that there could be some capacity and performance benefits to gateway operators (and other potential users) from accessing 40.5 – 42.5 GHz in high density areas.
- A1.44 However, co-channel coexistence between mobile use and gateways is likely to be challenging where both services are seeking to operate in the same area.⁶⁵ This is because the interference risk for gateways is more significant than in adjacent channel spectrum. Given the relatively recent award of mobile licences and the uncertainty over MNO rollout plans, this might mean that gateway mitigations to potential interference would need to be adjusted dynamically. This could have negative impacts for consumers if a gateway was exposed to extra interference at short notice. Alternatively, protecting gateways from a dynamically evolving mobile rollout could constrain MNOs' deployments and result in the expected benefits to mobile users being foregone.
- A1.45 Further, our existing 'Local Access' licences already provides opportunities to access this spectrum in areas where the potential benefits are greatest.^{66 67} This approach allows users of spectrum to come to an agreement on access in a given locale, or for Ofcom to facilitate short-term access where there are no near-term deployment plans for the existing licensee (and so the risks of granting such access are low). This can support further opportunities for the efficient use of spectrum where it is otherwise unused to deliver growing satellite services. We consider that at this stage, this represents a more targeted and proportionate way of making more efficient use of this spectrum.
- A1.46 We consider that it is appropriate to provide further guidance on this use of Local Access now because we are authorising this spectrum for gateways in other locations and satellite operators have expressed demand for this additional access. In addition, more than a year on from the mmWave award, we consider that MNOs will have had time to start developing their investment plans for mobile rollout, and that there should therefore be an increased prospect of being able to agree locations that take account of those plans.
- A1.47 Overall, the incremental benefits of a full authorisation product are unlikely to outweigh the costs at this stage, particularly given that i) a more targeted approach to enabling some access (via 'Local Access' licenses) already exists, and ii) we are already making 3 GHz of spectrum available for downlink in high density areas and 5 GHz of spectrum for downlink (including 40.5 – 42.5 GHz) in all other locations (including those just outside high density areas).

⁶⁵ Interference risks would also need to be managed from fixed links deployed under 40 GHz Spectrum Access licences until these are revoked in June 2028.

⁶⁶ We confirmed as part of our mmWave award decision in 2023 that the Local Access framework would apply in 40.5 – 43.5 GHz bands. See Ofcom. [Statement Enabling mmWave spectrum for new uses](#). 27 September 2023. Footnote 1, p.7 and Section 5.

⁶⁷ The risks of such access may be lower in some locations within high density areas. For example, mobile deployment may not be uniform across high density areas. There may be some locations where the interference environment is more benign.

Impact of our decisions in high density areas on citizens and consumers

- A1.48 We set out a summary of our decisions in high density areas in Paras. A1.6 – A.1.8. We have considered the impact of these decisions on citizens and consumers.
- A1.49 We have sought to ensure that our approach secures the optimal use of the spectrum. As such, we have carefully considered alternative demands for this spectrum, alternative approaches to meeting these demands, and the necessary and proportionate licence conditions for use of the spectrum to secure that optimal use of the spectrum.
- A1.50 We consider these decisions will positively impact citizens and consumers. This is because we are creating an additional opportunity to use a scarce resource. This is further enhanced by the guidance we are providing on the opportunity to request a Local Access licence to access additional bandwidth in specific locations. We are also putting in place conditions to ensure that existing and future users of the spectrum are sufficiently protected.
- A1.51 Services which rely on satellite connectivity are increasingly important for UK consumers and businesses and play a key role in providing a range of uses including consumer broadband to hard-to-reach premises in the UK, business connectivity and Government services. Additional spectrum access will support delivery of these services. Further, to the extent a high density area contains Internet Exchange Points and data centres, our decision to enable gateways in high density areas may support overall network performance - reducing latency for end users and increasing capacity of satellite systems to deliver broadband services to UK customers.
- A1.52 While gateways authorised by this decision would be located in high density areas, the benefits of those uses could accrue to consumers and citizens throughout the UK, including in both low density and high density areas.
- A1.53 Our decisions strike a balance between the interest shown by gateway operators in siting gateways in high density areas (and the potential benefits this could bring) and the interference risks for current and future spectrum users which need to be managed to ensure that these services (which include future mobile services and fixed links) can deliver valuable services to citizens and consumers.

Equality impact assessment of our decisions

- A1.54 We have given careful consideration to whether our decision will have a particular impact on persons sharing protected characteristics (broadly including race, age, disability, sex, sexual orientation, gender reassignment, pregnancy and maternity, marriage and civil partnership and religion or belief in the UK and also dependents and political opinion in Northern Ireland), and in particular whether they may discriminate against such persons or impact on equality of opportunity or good relations. This assessment helps us comply with our duties under the Equality Act 2010 and the Northern Ireland Act 1998.
- A1.55 When thinking about equality we think more broadly than persons that share protected characteristics identified in equalities legislation and think about potential impacts on various groups of persons (see paragraph 4.7 of our [impact assessment guidance](#)).

- A1.56 In particular, section 3(4) of the Communications Act also requires us to have regard to the needs and interests of specific groups of persons when performing our duties, as appear to us to be relevant in the circumstances. These include:
- a) the vulnerability of children and of others whose circumstances appear to us to put them in need of special protection;
 - b) the needs of persons with disabilities, older persons and persons on low incomes; and
 - c) the different interests of persons in the different parts of the UK, of the different ethnic communities within the UK and of persons living in rural and in urban areas.
- A1.57 We examine the potential impact our policy is likely to have on people, depending on their personal circumstances. This also assists us in making sure that we are meeting our principal duty of furthering the interests of citizens and consumers, regardless of their background and identity.
- A1.58 We consider that our decision to authorise Q/V band gateways in high density areas, by enabling gateways to access more spectrum, should enable better satellite connectivity services. Services which rely on satellite connectivity are increasingly important for UK consumers and businesses and play a key role in providing a range of uses including consumer broadband to hard-to-reach premises in the UK, business connectivity and Government services.
- A1.59 Further, to the extent a high density area contains Internet Exchange Points and data centres, our decision to enable gateways in high density areas may support overall network performance - reducing latency for end users and increasing capacity of satellite systems to deliver broadband services to UK customers. While the gateways enabled by these decisions will be located in HD Areas, the benefits of those gateways will accrue to consumers and citizens throughout the UK, including both rural and urban areas.
- A1.60 We have not identified any adverse impacts on specific groups of persons that are likely to be affected in a different way to the general population.

Welsh language

- A1.61 The Welsh Language (Wales) Measure 2011 made the Welsh language an officially recognised language in Wales. This legislation also led to the establishment of the office of the Welsh Language Commissioner who regulates and monitors our work. Ofcom is required to take Welsh language considerations into account when formulating, reviewing or revising policies which are relevant to Wales (including proposals which are not targeted at Wales specifically but are of interest across the UK).⁶⁸
- A1.62 Where the Welsh Language Standards are engaged, we consider the potential impact of a policy proposal on (i) opportunities for persons to use the Welsh language; and (ii) treating the Welsh language no less favourably than the English language. We also consider how a proposal could be formulated to have, or increase, a positive impact, or not to have adverse effects or to decrease any adverse effects.

⁶⁸ See Standards 84 – 89 of [Hysbysiad cydymffurfio](#) (in Welsh) and [compliance notice](#) (in English). Section 7 of the Welsh Language Commissioner's [Good Practice Advice Document](#) provides further advice and information on how bodies must comply with the Welsh Language Standards.

- A1.63 We do not consider our decisions have any impact on opportunities for persons to use the Welsh language or treating the Welsh language no less favourably than the English language. We also do not think there are ways in which our decisions could be formulated so as to have, or increase, a positive impact, or not have adverse effects or decrease any adverse effects. This is because our decisions relate to spectrum access across the UK (including in high density area locations in each of the UK nations).
- A1.64 We note that Ofcom's current practice is to offer to produce spectrum licences in Welsh, and when requested does provide licenses in Welsh, in accordance with its obligations set by the Welsh Language Commissioner.⁶⁹ Ofcom will continue to take this approach in relation to the Q/V band gateway licences.

⁶⁹ Compliance Notice – Section 44 Welsh Language (Wales) Measure 2011, The Office of Communications, 25 July 2016, Paragraph 38.

A2. Updated gateway licence templates (NGSO and PES)

- A2.1 Please see separate attachment for a marked up version of our revised Permanent Earth Station and NGSO Gateway licence conditions, which will apply for new applications (and variations) following the decisions we have confirmed today.