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25 May 2023

By letter and email

cc: [☒ CONFIDENTIAL]

Dear Sir or Madam,

Final decision to vary the ‘Spectrum Access 10, 32, 40 GHz’ licence held by Mobile Broadband Network Limited (“MBNL”) ([licence no. 0311547](#))

This notification contains important information about your licence. Please read it carefully.

Purposes of this notification

1. In accordance with [paragraph 7\(10\)](#) of Schedule 1 to the Wireless Telegraphy Act 2006 (the “Act”), we are writing to notify you that we have decided to vary the ‘Spectrum Access 10, 32, 40 GHz Licence’ held by MBNL (the “[MBNL 10, 32, 40 GHz Licence](#)”)¹ so that MBNL would no longer be authorised to use the 40.50–40.75 GHz and 42.00–42.25 GHz frequency blocks. Specifically, we have decided to omit Schedule 3 to the MBNL 10, 32, 40 GHz Licence in its entirety. As minor consequential amendments, we have also decided to (i) renumber Schedule 4 the MBNL 10, 32, 40 GHz Licence (the “EMF Licence Condition”) as “Schedule 3” and (ii) replace the reference to “schedule 4” in paragraph 12 of the MBNL 10, 32, 40 GHz Licence with a reference to “schedule 3”. As set out in more detail below, we consider that these variations (which effectively amount to a revocation in respect of the use of the 40 GHz frequency blocks specified above) are justified on spectrum management grounds. The variations will take effect from **1 June 2028**.

¹ [Licence no. 0311547](#)

2. In accordance with the statutory process for varying or revoking wireless telegraphy licences, Ofcom has decided to vary the MBNL 10, 32, 40 GHz Licence. We took this decision on 24 May 2023, having carefully considered all the representations made by MBNL. **We are now giving MBNL notice of Ofcom’s final decision, and our reasons for it.** Please note that, in line with [paragraph 7\(11\)\(a\)](#) of Schedule 1 to the Act, we are sending you this notice within one week of making Ofcom’s decision.
3. We have also decided to offer the following mitigation to MBNL: subject to the conditions specified below (see paragraph 19 and [Annex 2](#)), we will offer to grant individual temporary fixed link licences starting on 1 June 2028 and expiring on **1 January 2030**, in respect of up to 500 fixed links.

Background

4. In 2008, T-Mobile (UK) Limited participated in an auction² of wireless telegraphy licences and was awarded a 40 GHz licence which is currently held by MBNL (the [MBNL 10, 32, 40 GHz Licence](#)).
5. Ofcom has a statutory power to vary or revoke wireless telegraphy licences, where this is objectively justifiable ([paragraph 6A](#) of Schedule 1 to the Act). We also have a general duty not to discriminate unduly between operators, and to ensure that our interventions are proportionate, consistent and targeted only at cases in which action is needed.³
6. Under the terms of the MBNL 10, 32, 40 GHz Licence, and in accordance with [paragraph 8](#) of Schedule 1 to the Act, Ofcom may revoke the MBNL 10, 32, 40 GHz Licence “*for reasons related to the management of the radio spectrum, provided that in such a case this power to revoke may only be exercised after at least five (5) year’s notice is given in writing to the Licensee*”.⁴
7. Under condition 3(h) of the MBNL 10, 32, 40 GHz licence,⁵ as initially awarded in 2008, the 5-year notice period for revoking the licence for spectrum management reasons could not expire before February 2023. This condition was subsequently removed because the 15-year initial term had already expired.
8. In accordance with [paragraph 7](#) of Schedule 1 to the Act, if Ofcom proposes to vary or revoke a wireless telegraphy licence, it must:
 - a) notify the licensee of the reasons for the proposed variation or revocation;
 - b) specify a period (of at least 30 days) in which the licensee may make representations;and

² The [10 GHz, 28 GHz, 32 GHz and 40 GHz award](#).

³ Section [3\(3\)](#) of the Communications Act 2003.

⁴ Condition 3(f) of the [MBNL 10, 32, 40 GHz Licence](#)

⁵ A draft licence was annexed to the [Information Memorandum](#), published 3 December 2007.

- c) decide whether or not to vary or revoke the licence and notify the licensee of our decision within one month of the end of that period.
9. On Monday 20 March 2023, we gave MBNL a notification of proposed variations (the “**March 2023 Notification**”). In that notification we stated the reasons for the proposed variations, referring to section 7 (“*Approach to existing licensees in the 40 GHz band*”) of Ofcom’s Statement and Consultation of 13 March 2023 entitled “[Enabling mmWave spectrum for new uses](#)” (the “**March 2023 Statement and Consultation**”). We also specified that MBNL had until Friday 28 April 2023 to make representations about the proposed variations.
10. On 28 April 2023, we received written representations from MBNL. On 5 May 2023, in a call with Ofcom, MBNL provided some oral clarifications which it subsequently confirmed in writing.⁶ On 12 May 2023, Ofcom emailed MBNL with a number of additional clarification questions⁷, and MBNL responded to these questions on 19 May 2023.⁸ On 22 May 2023, Ofcom and MBNL had a further call to clarify some final outstanding points, and we confirmed our understanding of this call by email.⁹

Our consideration of the representations made by MBNL

11. In brief, MBNL argued that we should not vary its licence because MBNL believes that that:
- the revocation is not objectively justified, proportionate or targeted only where action is needed. MBNL said that if Ofcom does revoke its licence, it should extend the timeline for MBNL to leave the band, and/or compensate MBNL for the cost being imposed on it;
 - a replan of topology and a move to fibre solutions, instead of like-for-like link swaps, is the only viable option to vacate the 40 GHz band;
 - it is not possible for MBNL to replan its network within 5 years; and
 - revoking MBNL’s 40 GHz licence with a 5-year notice period would have a negative impact on MBNL and consumers.
12. We address these comments in **Annex 1** to this notification.

Our final decision and the reasons for it

13. As specified in our March 2023 Notification, the reasons for the variation that we have decided to make, which effectively amounts to a revocation in respect of the use of the 40.50–40.75 GHz and 42.00–42.25 GHz frequency blocks, are set out in full in our [March 2023 Statement and Consultation](#) (in particular, section 7). We published the March 2023 Statement and Consultation following a previous consultation that we published on 9 May

⁶ See MBNL’s email to Ofcom of 19 May 2023, confirming Ofcom’s note of the 5 May 2023 was accurate, subject to one correction.

⁷ See email from Ofcom to MBNL, dated 12 May 2023.

⁸ See email from MBNL of 19 May 2023.

⁹ See email from Ofcom to MBNL of 22 May 2023.

2022 (the “[May 2022 Consultation](#)”),¹⁰ in which we set out proposals for making the 26 GHz and 40 GHz available for new uses, including 5G.

14. In essence, having considered all responses to the May 2022 Consultation and the further representations made by MBNL, we consider that the best way to achieve our objectives for making mmWave spectrum available for new uses, which are derived from our statutory duties, is to make the entire 40 GHz band available alongside and at the same time as the 26 GHz band by revoking existing licences and allocating new licences for high density areas.¹¹ We consider that this option is more likely than alternative options we have considered¹² to ensure an efficient allocation of this spectrum, and will maximise this spectrum’s potential to deliver benefits for people and businesses in the UK. We expect an efficient allocation is likely to mean creating the opportunity for operators to acquire large, contiguous spectrum blocks. We consider that we cannot rely on trading to achieve an efficient allocation in this band, and that liberalising the incumbents’ licences would be less likely to secure an efficient allocation than an award. A single auction making the large amounts of spectrum in the 26 GHz and 40 GHz bands available at the same time will, in our view, be the most effective way of securing efficient allocation of this spectrum and maximising its value for society in the coming years. Awarding the full band will also ‘reset’ the band for new uses going forwards, removing constraints from coexistence with fixed links that would severely limit the extent of deployment of mobile services, as well as allowing us to authorise the band differently in high and low density areas.¹³
15. In the [March 2023 Statement and Consultation](#) (section 7), we have also explained why we consider that the revocation of the 40 GHz licences (which in MBNL’s case is implemented through the variations specified above) meets the relevant legal tests set out above.
16. In addition to the reasons set out in the March 2023 Statement and Consultation, we specify in Annex 1 how we have addressed the representations made by MBNL in response to our March 2023 Notification.
17. In conclusion, for the reasons set out in the March 2023 Statement and Consultation (section 7) and those set out in Annex 1 in response to the representations made by MBNL, we have decided to vary the [MBNL 10, 32, 40 GHz Licence](#) so that MBNL will no longer be authorised to use the 40.50–40.75 GHz and 42.00–42.25 GHz frequency blocks. Accordingly, the MBNL 10, 32, 40 GHz Licence **is varied as specified above with effect from 1 June 2028.**

¹⁰ Ofcom’s consultation entitled “*Enabling mmWave spectrum for new uses*”, published on 9 May 2022.

¹¹ As set out in the [March 2023 Statement and Consultation](#) (paragraphs 3.59 and 3.69), we have decided to make available licences for (i) the top 2.4 GHz of the 26 GHz band (25.1–27.5 GHz) and (ii) the 3 GHz comprised in the 40 GHz band (40.5–43.5 GHz). The wider 26 GHz band includes the frequencies between 24.25 and 27.5 GHz.

¹² The options that we have considered include varying the 40 GHz licences to enable existing licensees to deploy new uses in the band, including mobile. For a more detailed description of these options, see section 7 of the [March 2023 Statement and Consultation](#) (in particular, paragraph 7.25).

¹³ See the [March 2023 Statement and Consultation](#), paragraphs 7.3 and 7.6.

18. We have considered MBNL’s preference to replace its fixed links with fibre, which we think is likely to benefit consumers, and its representations that doing so could give rise to a residual risk that replacement of a small proportion of MBNL’s existing fixed links is not complete within five years. In light of these representations, we have decided to put in place the mitigation described below, which we consider will reduce this risk without undermining our policy objectives set out in the March 2023 Statement and Consultation.

The Mitigation

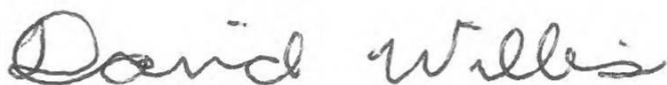
19. We will offer to grant MBNL individual temporary fixed link licences starting on 1 June 2028 and expiring on **1 January 2030**, in respect of up to 500 fixed links which are outside the top 10 high density areas,¹⁴ Dover, Folkestone & Hythe and Stansted Airport, and in relation to which MBNL provides suitable evidence to Ofcom that despite MBNL's reasonable efforts, the installation of the replacement link/fibre connection has been delayed for reasons outside of MBNL’s reasonable control (see also [Annex 2](#)).

Next steps

20. As set out in the [March 2023 Statement and Consultation](#) (paragraph 7.8), we will also offer to grant individual fixed link licences for links already in place at the time of publishing the March 2023 Statement and Consultation, where these are not likely to receive harmful interference from new uses in high density areas. A more detailed description of this approach is set out in the March 2023 Statement and Consultation (paragraphs 7.170-7.176).

21. Should you have any questions on the matters set out in this notification, please contact Lara.Singer@ofcom.org.uk or Kirsty.Logan@ofcom.org.uk, copying mmWave.allocation@ofcom.org.uk.

Yours faithfully,



David Willis

¹⁴ These high density areas are: Greater London, Greater Manchester, Greater Glasgow, Greater Birmingham, Cardiff & Newport, Tyne & Wear, Bristol & Bath, Liverpool, Edinburgh, and the Leeds & Bradford Area. The geographical boundaries of these areas are set out in the “Final high density areas shapefiles” [here](#) (under the heading “Supporting Documents”).

Annex 1

Our consideration of the representations made by Mobile Broadband Network Limited

Unless otherwise stated, all the references contained in this annex (e.g. “§2.1”) are references to specific sections from MBNL’s response to the March 2023 Notification.

We have marked as confidential below all text which MBNL highlighted in yellow in its representations.

Summary

1. In summary, Mobile Broadband Network Limited (“**MBNL**”) said that Ofcom should not revoke its 40 GHz licence, as Ofcom’s approach is not objectively justified, proportionate and targeted only where action is needed, nor consistent with Ofcom’s previous policy statements (§1). MBNL proposed that instead:
 - a) Ofcom should reconsider the option of: (i) not revoking MBNL’s 40 GHz spectrum licence, “in exchange for an annual licence fee”, while demand for 5G mmWave spectrum remains unclear, and (ii) reconsider this decision again if, “during the early years of deployment of future technologies, an increased demand became apparent” (§1).
 - b) If Ofcom revokes the 40 GHz licence, Ofcom should “compensate MBNL for the excessive cost being imposed upon it” and “extend the timeline for MBNL to leave the band” (§1). MBNL added that a replan of topology and a move to fibre solutions, instead of like-for-like link swaps to alternative fixed link bands, is the only viable option to vacate the 40 GHz band. However, MNBL expressed concerns about its ability to replan its network within 5 years, including concerns about the impact of doing so on the customer experience. MBNL noted in this regard that it had budgeted £1.1m to enable continued use of its 40 GHz spectrum.

Ofcom’s response

2. We disagree with MBNL’s view that the revocation of its 40 GHz licence “is not objectively justified (Wireless Telegraphy Act requirement), proportionate, targeted only where action is needed (Communications Act requirements) nor consistent with Ofcom’s previous policy statements on the matter” (§1). In the [March 2023 Statement and Consultation](#) (Section 7), we explained why we consider that revoking the 40 GHz licences meets the relevant legal tests¹⁵ and is consistent with Ofcom’s previous policy statements.¹⁶
3. In response to MBNL’s suggestion that we should reconsider the option of not revoking MBNL’s 40 GHz spectrum licence “in exchange for an annual licence fee”, we note that:

¹⁵ We referred to such legal tests in paragraphs 7.33 of the [March 2023 Statement and Consultation](#) and paragraphs A5.19-A5.22 of [Annex 5](#).

¹⁶ See, in particular, paragraphs 7.94-7.102 of the [March 2023 Statement and Consultation](#).

- a) We set out in Section 7 of the March 2023 Statement and Consultation why we consider that the best way to achieve our objectives for this award, which are derived from our statutory duties, is to award the entire 40 GHz band alongside 26 GHz. We consider that this option is more likely than alternative options we have considered to ensure an efficient allocation of this spectrum, which will maximise this spectrum’s potential to deliver benefits for people and businesses in the UK.¹⁷
- b) In Section 2 of the [March 2023 Statement and Consultation](#), we explained why we consider making the 26 GHz and 40 GHz bands available for mobile at the same time will best ensure spectrum availability is not a barrier to innovation and investment in new uses of mmWave spectrum, by maximising opportunities for operators to obtain large contiguous blocks of spectrum (paragraphs 2.68-2.76). We also explained why we consider that delaying making a decision about the 40 GHz band would be less likely to result in optimal use of spectrum than authorising both bands together for new uses on the same or similar timeframe (see paragraph 2.74(c)).
4. We do not agree with MBNL’s proposal that we should **compensate MBNL**. As noted in the March 2023 Statement and Consultation (paragraph 7.151), as we are giving licensees reasonable periods of notice in accordance with the terms and conditions of their licences, providing licensees with compensation would be inappropriate. We do not consider that the fact that MBNL had budgeted £1.1m for continued use of the 40 GHz band is relevant to our decision.
5. In relation to MBNL’s proposal that we should **extend the timeline** for MBNL to leave the band (§1), we consider that MBNL’s approach to estimating its costs of clearing the 40 GHz band is not an appropriate measure for comparing regulatory options since it does not account for depreciation and discounting (see paragraphs 15-17 below). We also do not agree with MBNL’s view that “a replan of topology and a move to fibre solutions where possible is the only viable option to vacate the 40GHz band” (§2.1) (see paragraphs 20-21 below). However, having considered MBNL’s preference to replace its fixed links with fibre, and its representations that doing so could give rise to a residual risk that replacement of a small proportion of MBNL’s existing fixed links is not complete on time, we have decided to put in place the mitigation to MBNL described below (the “**Mitigation**”).
6. We will grant individual temporary fixed link licences which will expire on **1 January 2030** in respect of up to 500 fixed links which are outside the top 10 high density areas,¹⁸ Dover, Folkestone & Hythe and Stansted Airport, and in relation to which MBNL provides suitable evidence to Ofcom that despite MBNL’s reasonable efforts, the installation of the replacement

¹⁷ See paragraph 7.6 of the [March 2023 Statement and Consultation](#)

¹⁸ These high density areas are: Greater London, Greater Manchester, Greater Glasgow, Greater Birmingham, Cardiff & Newport, Tyne & Wear, Bristol & Bath, Liverpool, Edinburgh, Leeds & Bradford Area. The geographical boundaries of these areas are set out in the “Final high density areas shapefiles” [here](#) (under the heading “Supporting Documents”).

link/fibre connection has been delayed for reasons outside of MBNL's reasonable control.¹⁹ We provide more detail on the Mitigation in Annex 2 of this Notice.

7. In the rest of this annex, we summarise and address the specific representations made by MBNL in support of its proposals.

MBNL's representations about its current 40 GHz links and its current approach to replacing or upgrading such links

8. MBNL made the following representations about its current "network refresh activities":
 - a) Almost 45% of MBNL's entire Microwave link estate exists within the 40 GHz band (§2.1) and almost 50% of all MBNL owned radiating cell sites could be impacted by the revocation of MBNL's 40 GHz licence (§1).
 - b) MBNL performs "targeted network refresh activities based on business needs", which are typically driven by "capacity requirements to relieve congestion events, requirements for new capabilities, to address performance issues, security vulnerabilities or to replace end of life or end of support equipment in the network" (§1).
 - c) "Of MBNL's 4325 40GHz link estate, from MBNL's perspective only 301 are currently flagged as requiring a capacity update, 30 have a performance issue that requires MBNL intervention and 10 links need to be swapped for security compliance, end of life or spares recovery issues. This leaves a total 40GHz estate of 3984 links with no current driver to upgrade, re-route or otherwise adjust the link" (§1).

Ofcom's response

9. We accept MBNL's submissions about the extent of its use of the 40 GHz band, and we acknowledge that our decision to revoke MBNL's 40 GHz licence will require it to incur cost to replace its existing 40 GHz fixed links which it would not have otherwise incurred at this time. However, we took MBNL's use of the 40 GHz band into account when we decided to begin the statutory process for revoking all of the existing 40 GHz licences, including MBNL's. The fact that almost 45% of MBNL's entire Microwave link estate exists within the 40 GHz band, and that

¹⁹ Ofcom may charge fees for wireless telegraphy licences, where we consider it appropriate. We currently set fees either to recover the cost of administering and managing licences or to provide incentives to licensees to use their spectrum efficiently (Administered Incentive Pricing, AIP). We do not expect to charge either AIP or cost-based fees for these mitigation licences. As the role of AIP in securing optimal use of the spectrum is in providing long-term signals of the opportunity-cost of the spectrum, we do not think it would be appropriate to charge fees based on AIP for these temporary fixed link licences. This is in line with our March 2023 Statement and Consultation, see paragraph 7.179. We note that there should already be a strong incentive for MBNL to vacate the spectrum as soon as possible because of the short duration of the licences. Additionally, we will only grant a temporary fixed link licence if MBNL provides suitable evidence to Ofcom that despite MBNL's reasonable efforts, the installation of the relevant replacement link/fibre connection has been delayed for reasons outside of MBNL's reasonable control (see Annex 2 paragraph 9). We also do not think it would be proportionate to determine an appropriate cost based fee for these licences, which are intended to constitute a one-off extension to MBNL's notice period in relation to a limited number of individual links, given the combination of their small number (maximum 500) and time limited nature.

almost 50% of all MBNL owned radiating cell sites could be impacted by this decision, does not change the reasoning set out in the [March 2023 Statement and Consultation](#).²⁰

MBNL’s arguments for considering that a replan of topology and a move to fibre solutions, instead of like-for-like link swaps, is the only viable option to vacate the 40 GHz band

Alternative bands for like-for-like link swaps

10. In MBNL’s view, for many links the 38 GHz band is the only option for like-for-like swaps using the same topology because:
 - a) further use of its block-assigned spectrum in the 32 GHz band is difficult in many areas because channels are not available where they are most needed; and
 - b) moving its 40 GHz links to the “80 GHz eBand Spectrum” would require significant dish acquisition or tower strengthening works since [§< CONFIDENTIAL] of its 40 GHz links (which “utilise ≤0.3 dishes at one or both ends of the link”) would “require the additional dBi gain of a 0.6m antenna in order to meet MBNL’s target availability criteria of 99.99%” (§2.1).
11. However, MBNL also said that it sees “greater opportunities to move from 40GHz towards 80GHz link installations” and “there will be occasions where the only possible replacement is a fibre, which is more expensive in OPEX terms” (§2.2).

Ofcom’s response

12. We remain of the view that there is sufficient spectrum availability in alternative spectrum bands to accommodate the fixed links which we are requiring MBNL to clear from the 40 GHz band.²¹ To the extent that MBNL wants to replace any fixed links with equivalent fixed links, there are other bands available which MBNL can access. In the Ofcom-managed fixed link bands, such as the 38 GHz band, Ofcom assigns licences for each fixed link on a first come, first served basis. Ofcom’s publicly available [spectrum information portal](#) contains information about the current use of all those fixed link bands.
13. We also note that MBNL’s concerns about the availability of spectrum in other bands appear to be predicated on the assumption it would need to replace all of its 4,325 40 GHz links with fixed links using other spectrum bands. In fact, MBNL will only need to replace those fixed links which are not likely to receive harmful interference from new uses in high density areas (we estimated 3,262 links in the March 2023 Statement and Consultation²²), and MBNL has told us in its representations that if it implements its preferred “fibre first” strategy it expects to be able to replace around 75% of its 40 GHz fixed links with a fibre connection, leaving only approximately 800 links to be “replanned to other B ends or other bands” (§2.3 of MBNL’s representations).

²⁰ See, for example, paragraph 7.78-7.89 and 7.146 of the [March 2023 Statement and Consultation](#).

²¹ We note that in the [March 2023 Statement and Consultation](#) (paragraph A7.92 of [annex 7](#)) we identified several potential Ofcom managed bands into which fixed links could be moved.

²² See paragraph 7.171

MBNL's estimated costs of performing like-for-like link swaps

14. MBNL said that, based on “real” numbers for the past 12 months, it calculated that the blended cost of a Microwave link installation where one or more factors have changed (e.g. azimuth, elevation and dish size) would be [REDACTED] per each link, excluding “resource costs for replanning” and “ongoing OPEX charges for OFCOM nationally acquired licences” (§2.2). According to MBNL, performing a like-for-like link swap to move all its 40 GHz links would cost MBNL more than [REDACTED] in hardware and installation services, in addition to “resource costs for link planning activities or Operating Expenditure for spectrum licence costs” (§1).

Ofcom's response

15. As we set out in the [March 2023 Statement and Consultation](#) (paragraph A7.35 of [annex 7](#)), a replacement link will not be a like-for-like swap for the equipment it replaces. This is because the new link is likely to last longer before needing to be replaced and because it is likely to have higher bandwidth capacity or in other ways be superior to the replaced equipment. It would not be appropriate in our view to consider the cost to stakeholders of replacing a nearly-obsolete or nearly-at-capacity link to be the same as the cost of replacing a relatively new link that has significant remaining capacity. It would also not be appropriate to treat the costs of replacing a link in the immediate future as the same as the costs of replacing a link in five years' time. Therefore, we do not consider that MBNL's approach to estimating its costs of clearing the 40 GHz band is an appropriate measure for comparing regulatory options since it does not account for depreciation and discounting.
16. We also note that MBNL's revised estimate of the cost of a like-for-like link swap [REDACTED] CONFIDENTIAL]²³ is materially consistent with the cost estimate (£18,000) that we used within our cost modelling (see [annex 7](#), paragraph A7.51) and that, in any case, the additional amount estimated by MBNL [REDACTED] would fit within the £6,000 uplift (from £18,000 to £24,000) that we assumed in our sensitivity analysis (see [annex 7](#), paragraph A7.113).
17. In relation to MBNL's comment that its cost estimate does not include “ongoing OPEX charges for OFCOM nationally acquired licences” (§2.2), we note that for the purpose of our cost modelling we assumed that the annual licence fees that may be set after 21 February 2023 in the 40 GHz band would not be materially different from the fees that would be incurred in another Ofcom-managed band and so there would not be any additional incremental cost. This was a simplifying assumption because we could not say “whether there is likely to be a material difference between the fees that would apply in an Ofcom-managed band and the annual licence fees in 40 GHz that may be set after 21 February 2023” as set out in [annex 7](#), footnote 130.

²³ MBNL's representations, §2.2.

MBNL's preference for a fibre first strategy

18. On the basis of MBNL's estimates of the costs of performing a like-for-like link swap (more than [§< CONFIDENTIAL]), MBNL said that "a replan of topology and a move to fibre solutions where possible is the only viable option to vacate the 40GHz band" (§2.1). MBNL specified that a "fibre first" strategy is its shareholders' preferred option (§2.3) and that MBNL "feels it would have to take the band revocation as a driver to replan their network making heavier use of fibre, where possible" (§1).
19. MBNL said that "in many cases the prevalence of Excess Civil Charges and wayleaves (...) mean that fibre circuits cannot progress" (§2.3). Specifically, MBNL assumed that approximately 75% of sites would become "fibre feasible" following its fibre first strategy, "which would leave circa 800 FWA links that need to be replanned to other B ends or other bands" (§2.3).

Ofcom's response

20. As explained above, we do not consider that MBNL's approach to estimating its costs of clearing the 40 GHz band is an appropriate measure for comparing regulatory options since it does not account for depreciation and discounting. On the basis of the analysis set out in the March 2023 Statement and Consultation ([annex 7](#)), we remain of the view that it is appropriate to consider MBNL's incremental costs to maintain its current service through other means (accounting for depreciation and discounting) and that our estimate of £35.90m is a reasonable estimate.
21. We also believe that, as set out in the March 2023 Statement and Consultation,²⁴ there are alternative options for the migration of individual links to other spectrum bands. In addition, in the March 2023 Statement and Consultation ([annex 7](#), paragraph A7.14b) we identified fibre as a potential path for migration for many links. We did not model the cost of this option in detail, but considered that it was likely that for many of MBNL's links it would be a lower-cost option than a migration to a different spectrum band, and so focused on this latter migration option as a conservative approach to estimating the cost of migration ([annex 7](#), paragraphs A7.21-A7.24).
22. While we do not agree that moving as many links as possible to fibre is the *only* option available to MBNL, we accept that a "fibre first" strategy may be the most cost-effective option in these circumstances. We also note that, in our judgment, MBNL's preferred "fibre first" strategy is likely to result in good outcomes for consumers, for example through increased capacity in MBNL's network.

MBNL's concerns about its ability to replan its network within 5 years

23. In summary, MBNL "does not believe it is possible to perform such a large-scale network re-plan and deployment of alternative solutions within the 5-year notice period" (§1). According to MBNL, a replan of topology and a move to fibre solutions is "subject to delivery delays due to lack of fibre availability, excess civil construction charges and wayleaves" (§2.1) and it is

²⁴ Paragraph 7.132(a) the [March 2023 Statement and Consultation](#) and paragraph A7.14 (including footnote 49) of [annex 7](#).

“concerned that delivery of approximately 4500-5000 fibre circuits within the 5-year licence vacation time frame will be extremely difficult” (§2.3). MBNL said that if Ofcom were to extend the timescales for revocation, it would commit to deploying no new links in its 40 GHz spectrum. Below, we summarise the specific representations that MBNL made in relation to implementing a fibre first strategy.

(1) Dual running costs

24. MBNL said that “for a period of time between install of the replacement link and migration from the current 40GHz link to the new solution, MBNL would incur dual running costs”, including “additional site space and power expansion costs” (§2.5).

Ofcom’s response

25. As explained below, we took into account the fact that MBNL may need to incur dual running costs in the costs modelling we carried out for the [March 2023 Statement and Consultation](#).

26. In its response of 13 December 2022 to a statutory information request sent on 23 November 2022, MBNL provided a breakdown of the one-off transition costs it would expect to incur were a full link deployment required. This breakdown included [REDACTED] of costs relating to ‘Acquisition’ costs and ‘Line of sight’ costs. We asked MBNL whether such costs would be needed for replacing equipment at existing sites or only when a new hop is required. MBNL responded that it had included such costs on the basis that it would be moving from the 40 GHz spectrum to an alternative band and that this “would normally require a parallel build to ensure minimal down time of the cell site”.²⁵ MBNL added that it considered it was “highly likely that a dish size or dish position would also be required for the alternative band”.²⁶

27. As set out in the [March 2023 Statement and Consultation](#) (paragraph 7.141), in light of stakeholders’ responses to the May 2022 Consultation and information sought from MBNL using our statutory information gathering powers, we revised our estimates of the costs of revoking 40 GHz licences. The changes that we decided to make included, in particular, “increasing the overall equipment, planning, deployment and installation cost of a link from £10.5k to £18k to reflect stakeholders’ responses on costs being underestimated or missing” ([March 2023 Statement and Consultation](#), paragraph 7.142(a)). In particular, “we included an additional £3,500 and £1,000 for planning and administrative costs and deployment costs respectively” ([annex 7](#) to the [March 2023 Statement and Consultation](#), paragraph A7.51). This inclusion was intended to also reflect the costs for a parallel build based on MBNL’s submission regarding its cost estimates.²⁷

²⁵ MBNL’s email of 19 January 2023.

²⁶ MBNL’s email of 19 January 2023.

²⁷ See paragraph 26 above, and MBNL’s email of 19 January 2023.

(2) Fibre feasibility studies and desktop work

28. MBNL said that it estimated “that between 1000-1100 topologies would need to be re-planned” and in most cases this replanning process will require “a new fibre feasibility study at a cost of £240 per study²⁸, as well as several desktop line-of-site checks to understand the re-connectivity options for each site in the cluster” (§2.3).
29. In relation to the feasibility studies, MBNL added that:
- a) MBNL estimated that each feasibility study submission will take “60 minutes per site in the topology cluster” (§2.3).
 - b) MBNL’s contractual service level agreement for feasibility studies is 30 days, but “real world data based on the last 12 months shows that fibre feasibility studies take on average 41 days and some outlying cases have taken over 100 days due to the complexities of fibre routing in dense urban areas” (§2.5).
30. In relation to the desktop survey work, MBNL estimated that such work and the “optimised topology plan” will take “30 minutes per topology cluster” and that in total this will equate to “approximately 114-man weeks effort, or roughly 2 resources working full time on this topology replan, for 1 year” (§2.3).

Ofcom’s response

31. As stated above (paragraph 21), we have not modelled the option of migrating to fibre in detail, but expected that in many cases it would be more cost-effective than the migration path that we did model. We therefore consider the approach we modelled to be conservative.
32. We also note that, as acknowledged by MBNL (§2.3), the cost of a fibre feasibility study, which according to MBNL would be, on average, “£240 per survey”, “is discounted from the order price if these circuits are fibre feasible”. Therefore, on the basis of MBNL’s estimates, MBNL would have to pay for a fibre feasibility study for approximately 800 links.

(3) Average timeline for network replanning

33. MBNL said that, in light of “collected data based on real world fibre delivery profiles over the past 18 months” (§2.5), [REDACTED CONFIDENTIAL]. However, MBNL specified that where wayleaves are required, the timelines for fibre installation are “significantly higher” and that such unknown impact “would mean that MBNL would need to front-end-load all fibre feasibility studies and place all orders within the first 24 months of the indicated vacation period” (§2.5).
34. According to MBNL, the blended total time for performing a like for like “MW install” for any remaining links which won’t be “fibre feasible” would be 164-194 days (§2.4).

²⁸ MBNL said that this cost is discounted from the order price if these circuits are fibre feasible.

35. In a call between Ofcom and MBNL on 5 May 2023,²⁹ MBNL indicated that its preference would be for Ofcom to extend the notice period for varying its 40 GHz licence by three years (so that MBNL would have eight years to clear the band) and that it has concerns about replacing between 500-1,000 links within 5 years.

Ofcom's response

36. Following two clarificatory calls with MBNL on 5 May and 22 May 2023, and email correspondence between MBNL and Ofcom on 12 May, 19 May and 22 May 2023, we understand that:

- a) MBNL needs **6 months** for initial planning (including topology planning and budget alignment between its shareholders) before it can start placing any new fibre orders to replace its fixed links.³⁰
- b) After this 6 month planning period, MBNL would start placing orders for fibre replacements for its links. MBNL expects to be able to place orders for approximately **65%** of the links which require replacement in **one year** (i.e. 1.5 years after the date of Ofcom's decision to revoke MBNL's 40 GHz licence, to account for 6 months of planning), and expects to be able to place orders for **all** links which require replacement in **two** years (i.e. 2.5 years after the date of Ofcom's decision).³¹
- c) In MBNL's experience, the majority of new fibre orders [§< CONFIDENTIAL] are completed within a year, however [§< CONFIDENTIAL] of orders can take over a year to be completed (§2.5 of MBNL's written representations).
- d) If an order for fibre is not completed within **a year**, MBNL will start working on an alternative solution for replacing the relevant fixed link (i.e. a replacement fixed link using alternative spectrum). If necessary, MBNL could start looking for an alternative sooner than this, but it would prefer to wait a year.³²
- e) In the worst case scenarios, where acquisition of a new site is required, it can take up to 2.5 years to replace a fixed link with a fixed link using an alternative band.³³

37. On the basis of the above, we have calculated that the links which are the most difficult to replace could take up to **3.5 years** to replace, after the initial fibre order has been placed.³⁴

38. As a result, we understand that in order to be certain that all links to be replaced would be replaced within 5 years, MBNL would need to place orders for replacement fibre for each link

²⁹ This was a call with [§< CONFIDENTIAL] (MBNL's Head of Transmission) and [§< CONFIDENTIAL] (MBNL's Head of Transmission Planning). MBNL agreed Ofcom's note of this call by email on 19 May 2023.

³⁰ See email note of Ofcom's 22 May 2023 call with MBNL.

³¹ See note of Ofcom's 22 May 2023 call with MBNL.

³² See note of Ofcom's 5 May 2023 and 22 May 2023 call with MBNL.

³³ See note of Ofcom's 22 May 2023 call with MBNL.

³⁴ This includes **one year** to wait and see if the fibre order can be fulfilled, plus an additional **two and a half** years to plan and complete the installation of a replacement fixed link using an alternative spectrum band, where a fibre replacement proves to be unavailable or impractical.

within the first 1.5 years of a 5 year notice period. We acknowledge MBNL's submission that doing so could give rise to a residual risk that replacement of a small proportion of MBNL's existing fixed links is not complete on time. We also note that: (i) until we publish our final statement on our plans for making mmWave spectrum available for mobile, MBNL will not have certainty about which of its existing fixed links we will be able to re-license 'around' high density areas, and (ii) we expect roll out of new mobile services using the 40 GHz band to begin in the most densely populated of the areas we have designated as high density areas.

39. In light of the above, although we have decided to vary MBNL's 40 GHz licence with a 5-year notice as we proposed, we have decided to offer to grant individual temporary fixed link licences starting on 1 June 2028 and expiring on **1 January 2030**, in respect of up to **500 fixed links** which: (i) are **outside the top 10 high density areas**,³⁵ **Dover, Folkestone & Hythe and Stansted Airport**, and (ii) in relation to which MBNL provides suitable evidence to Ofcom that despite MBNL's reasonable efforts, the installation of the replacement link/fibre connection has been delayed for reasons outside of MBNL's reasonable control (see also [Annex 2](#)).

MBNL's view about the potential impact on MBNL and consumers

40. In brief, MBNL said that "MBNL are disproportionately affected by the revocation of the 40 GHz band", being the operator that has "made the most use of the 40GHz block allocation awarded in 2008" (§1) and that "this raise competition concerns as well as concerns for the customer experience over the next 5 years" (§1). In addition, MBNL mentioned also potential environmental concerns (§1).

(1) MBNL's competition concerns

41. In relation to its competition concerns, MBNL said that "a like-for-like swap would leave MBNL and their shareholders at a significant competitive disadvantage due to the Capital Expenditure required for this work as well as the time constraints and intensive resource profile of a 5-year like for like swap programme" (§2.2).
42. MBNL has not provided evidence that the capital cost of this work would put it or its shareholders at a significant competitive disadvantage. In the absence of such evidence, we do not consider this claim to be credible. We note that the Mitigation we are offering MBNL should enable it to spread some of its capital costs over time.

(2) MBNL's concerns relating to the customer experience

43. In relation to the negative impact on UK consumers, MBNL specified that it expected the following negative impact during the 5-year revocation period:

³⁵ These high density areas are: Greater London, Greater Manchester, Greater Glasgow, Greater Birmingham, Cardiff & Newport, Tyne & Wear, Bristol & Bath, Liverpool, Edinburgh, Leeds & Bradford Area. The geographical boundaries of these areas are set out in the "Final high density areas shapefiles" [here](#) (under the heading "Supporting Documents").

- a) a reduction in both (i) MBNL’s ability to respond to consumer demands for capacity increases and (ii) the number of performance issues that MBNL can resolve quickly (§1).
- b) “an increase in packet drops for consumers during times of MW link congestion, lower QAM [Quadrature amplitude modulation] rates as Adaptive Code Modulation downshifts to QAM rates lower than the reference due to tree growth or other obstructions on the path” (§1). MBNL added that “this will lead to lower bandwidth throughput for the UK consumers where it is most needed” (§1).
- c) “significant interruption to network services caused by outages” while links are de-installed and replaced or topologies changed. MBNL said that each outage will be “between 4-8 hours at a time” (§1).
- d) reduced mobile coverage, as a result of switching off any link which MBNL could not replace during the 5-year notice period (§§1 and 2.3). In particular, MBNL said that “sites with failed fibre deliveries at the end of the 5-year vacation period, would need to have their current connectivity removed and this could potentially lead to a significant number of “Dead Cells” if no agreement could be reached with the subsequent licence holder” (§2.3.). According to MBNL, this would “negatively impact coverage for UK consumers, potentially including emergency services sites within the 25km guard area proposed by Ofcom as well as in the auction licence areas themselves (§1).
- e) front-end-loading “the resource and CAPEX commitment profile in the early part of the 5-year vacation period ... would negatively impact other initiatives designed to improve customer experience, deliver energy saving and OPEX saving initiatives for reinvestment into new technologies” (§2.5).

Ofcom’s response

- 44. We acknowledge that our decision to revoke MBNL’s 40 GHz licence has the potential to have a short term impact on consumers. Nevertheless, we consider that it is within MBNL’s control to reduce any potential negative impact on consumers, and we expect MBNL to adopt appropriate and proportionate measures to avoid any such impact. For example, by the “parallel build to ensure minimal down time of the cell site” mentioned by MBNL, which we factored into our cost modelling (see paragraphs 25-27 above).
- 45. We have also considered MBNL’s submissions about the potential risks of not completing the migration of all its relevant links within the 5 year notice period, and the resource and capex this would require in the early part of the notice period. As explained above (paragraphs 36-39), the Mitigation which we have decided to offer to MBNL is intended to address MBNL’s concern that a small proportion of its existing fixed links might not be replaced on time. We note that the Mitigation should also alleviate some of MBNL’s resource and capex concerns.

(3) MBNL’s concerns relating to disposing of its equipment

- 46. MBNL said that it also has concerns about “the impact of such a large-scale network change on their environmental policies, procedures and targets” (§1). MBNL added that it is “concerned

that public perception of MBNL and associated shareholders could be negatively impacted by this enforced change”, and noted that disposal of such a volume of electronic hardware has significant cost (\$1).

Ofcom’s response

47. We acknowledge that this decision could have an environmental impact, and we would encourage MBNL to work to minimise this impact as far as possible. However, we have taken this decision in accordance with our statutory duties, in particular our duty to ensure optimal use of the spectrum.

48. We also acknowledge that MBNL is likely to face costs of disposing of equipment that it cannot reuse or sell. However, we consider that in many cases, despite these costs, the move to fibre would still be more cost-effective than the cost MBNL has modelled of a new Microwave link. As a result, we do not consider these equipment disposal costs would affect our decision.

Annex 2 – The Mitigation

1. In this annex we provide further detail about the conditions we will apply to the Mitigation.

Excluded areas

2. We will not grant any temporary fixed link licences to enable MBNL to continue to operate fixed links which operate in or around the top 10 high density areas (as identified in the March 2023 Statement and Consultation)³⁶ or the transport hubs of Dover, Folkestone & Hythe and Stansted Airport (the “**Excluded Areas**”). This is because we consider that these are the areas where any new mobile licensee is most likely to want to begin using the spectrum as early as possible after the auction.
3. Of the 3,263³⁷ fixed links which we set out in the March 2023 Statement and Consultation that MBNL would be likely to need to replace, approximately **2,243**³⁸ are in or around these Excluded Areas. Therefore, the Mitigation will apply to the approximately **1,020** links which we expect that MBNL would be likely to need to replace and which are outside these Excluded Areas. This is about a third of the links which MBNL is required to replace. We also note that, as explained at paragraphs 36-38 of Annex 1 to this Notice:
 - a) in order to guarantee replacement of all the links it is required to replace within 5 years, MBNL would need to place an order for a fibre replacement for each of these links within 1.5 years of this Notice, thereby allowing 3.5 years to complete the replacement with a spectrum link, where a fibre replacement proves to be unavailable and/or impractical; and
 - b) MBNL has told us that it expects to be able to replace approximately **65%** of the links it is required to replace (i.e. approx. 65% of 3,263 links, which is approx. 2,120 links) within the first 1.5 years of receiving Ofcom’s decision. We therefore expect MBNL to be able to place an order for a fibre replacement for all links which are in or around the Excluded Areas within 1.5 years. This is because the number of MBNL’s fixed links in or around the Excluded Areas (2,243) is materially consistent with the number of links which MBNL expects to be able to replace within the first 1.5 years of receiving Ofcom’s decision (2,120 links).
4. Therefore, we consider that making the Mitigation available only outside the Excluded Areas strikes an appropriate balance between providing MBNL with flexibility as to how it approaches replanning its network and ensuring the areas which are likely to be the highest priority for new uses are cleared as soon as possible.

³⁶ See [annex 6](#), paragraph A6.56 and Table A6.8.

³⁷ We note that in the March 2023 Statement and Consultation, we said we estimated there would be approximately 3,262 links which MBNL would need to replace. This was an error, and our correct estimate was 3,263.

³⁸ This number is derived from information provided by MBNL about its fixed links usage in the 40 GHz band as of 13 December 2022. We have analysed this data in light of the method we proposed for assessing coexistence in our March 2023 Statement and Consultation to reach an estimate of the number of fixed links in and around the Excluded Areas which MBNL is likely to need to replace.

5. Of the 1,020 fixed links which are outside the excluded areas, we would encourage MBNL to prioritise clearing the highest ranking high density areas the fastest.

Duration of the temporary fixed link licences

6. Any temporary fixed link licence granted to MBNL in accordance with the Mitigation will start on **1 June 2028** and expire on **1 January 2030**. Therefore, MBNL's continued use of the relevant link will be authorised for an additional 1 year and 7 months after the end of the 5 year period for revocation of MBNL's 40 GHz licence.
7. In reaching this view about the duration of the any temporary fixed link licence, we have taken into account that:
 - a) MBNL requires **6 months for planning** before it can begin to place orders for fibre replacements for its fixed links.
 - b) According to MBNL, MBNL will need to begin the process for replacing any particular fixed link **3.5 years** before the final deadline (to allow, in the most difficult cases, **one year** for new fibre provision, and in the worst cases up to **2.5 years** for a new fixed link to be installed, where fibre is unavailable and/or a fibre replacement is impracticable).
 - c) MBNL expects to be able to place orders for a fibre replacement for **all links it is required to replace by January 2026**, i.e. approximately 2.5 years after MBNL receives this notice of Ofcom's decision.
 - d) If MBNL places all orders by January 2026, even those links which prove the most difficult to replace should be replaced by **June 2029** (i.e. 3.5 years after the order is placed), at the very latest. However, to provide MBNL with additional flexibility in case any unforeseen issues arise, we have decided that any temporary fixed link licence granted to MBNL would expire on **1 January 2030**. For example, MBNL noted on the 22 May 2023 call with Ofcom that there is a risk that MBNL's shareholders are unable to agree a plan for fibre roll out, which MBNL considered manageable. This additional flexibility should also help MBNL deal with any potential delay in its planning activity due to the fact that it will not have certainty about which of its existing fixed links are 'around' high density areas we will be able to re-license until we publish our final statement on our plans for making mmWave spectrum available for mobile. We expect to publish this in Q3 of FY 2023/4.

Maximum number of temporary fixed link licences

8. Under the Mitigation, we will grant no more than **500** temporary fixed link licences to MBNL. In reaching this view, we have taken into account that:
 - a) MBNL told us that it has concerns about replacing between 500-1,000 links within 5 years.³⁹ However, since we are making the Mitigation available only outside the Excluded Areas, MBNL will have to replace all of the links in and around the Excluded Areas in 5 years (i.e. by

³⁹ See note of call between MBNL and Ofcom on 5 May 2023.

1 June 2028). Consequently, after 1 June 2028, there will not be more than **1,020** fixed links left to replace.

- b) MBNL have told us that in its experience approximately [REDACTED] of fibre installs take over a year to complete. This means that around **296** links (i.e. 29% of 1,020 links) could, on the basis of MBNL's past experience, take over a year to complete. As a result, provided that MBNL places a fibre order for a replacement for all of its fixed links by January 2026⁴⁰, we consider it unlikely that more than 500 links will not have been replaced by the end of the 5 year notice period.

Evidence to be provided by MBNL

9. Under the Mitigation, we will only grant a temporary fixed link licence if MBNL provides suitable evidence to Ofcom that despite MBNL's reasonable efforts, the installation of the relevant replacement link/fibre connection has been delayed for reasons outside of MBNL's reasonable control.
10. Specifically, for each temporary fixed link licence, we will normally expect MBNL to provide evidence that it has placed an order for a **fibre replacement** for the link on or before **1 June 2026**. This is because MBNL has told us that it expects to be able to place all orders for replacement fibre by January 2026. However, we consider it is appropriate to provide MBNL with some additional flexibility, in case any unforeseen issues arise (see paragraph 7 above).
11. In addition, we note that we are making this Mitigation available on the basis of MBNL's representations about the potential practical and delivery difficulties associated with replacing its existing links with *fibre* (and in light of the fact that we consider that replacing MBNL's 40 GHz links with fibre is likely to give rise to benefits for consumers). In light of MBNL's representations, we consider that where links are replaced with fixed links using alternative spectrum, without first attempting to replace the relevant link with fibre, it should be possible to complete the replacement within the 5-year revocation period.

Notification requirement

12. As set out at paragraph 6 above, any temporary fixed link licence which Ofcom grants MBNL in accordance with this Annex will expire on 1 January 2030. However, where MBNL replaces the relevant fixed link before 1 January 2030, MBNL must notify Ofcom that it is no longer operating the relevant fixed link.

Application deadline

13. MBNL will have until **3 January 2028** to apply for any temporary fixed link licence under the Mitigation, and provide suitable evidence that despite MBNL's reasonable efforts, the installation of the relevant replacement link/fibre connection has been delayed for reasons outside of MBNL's reasonable control.

⁴⁰ MBNL told us this is its intention by email on 19 May 2023, and confirmed this on a call on 22 May 2023.