



DEFRAGMENTING THE 3.4 – 3.8GHZ SPECTRUM BAND – CONSULTATION PAPER – CASE T-085

SURE (JERSEY) LIMITED –RESPONSE – 31 MARCH 2023

Executive Summary

1. Sure (Jersey) Limited (“Sure”) welcomes the opportunity to comment on and inform the Jersey Competition and Regulatory Authority’s (“the Authority’s”) defragmentation provisional proposals for the 3.4 to 3.8 GHz band spectrum (“the 3.6 GHz band”).
2. We support the Authority’s conclusion that licence holders should be provided with 100MHz contiguous blocks of 3.6GHz spectrum (often known as mid-band spectrum), and we welcome the Authority’s desire to agree a clear and comprehensive roadmap to defragmentation of the band. We welcome the Authority’s proposal to revoke licences or move historic licensees so that new licence holders can best utilise the full 100MHz contiguous allocation to provide beneficial products and services to users in Jersey. However, we believe that the Authority’s proposed timeline for full defragmentation of the band could and should be faster in certain ranges. Furthermore, we are concerned that the Authority’s proposed approach risks allocating valuable 5G spectrum to operators that, based on historic and current evidence, will not use that spectrum to benefit Jersey consumers or the economy.
3. To address our concerns, which are set out in response to the Authority’s questions, we propose that the Authority reduce the notice period for revocation of historic licences from 3 years down to 1 year (the minimum required under historic Ofcom licences) for Sure and ClearMobitel. We also propose that the Authority only allocate new ‘Limited Service’ spectrum packages to historic licence holders where they can credibly and convincingly demonstrate that it will use its new spectrum holding within a specified period for the benefit of Jersey residents and the economy. Historic licensees that are unable to demonstrate this should simply have their historic licences revoked and not be allocated new ‘Limited Service’ spectrum packages.
4. As requested by the Authority, we have provided direct answers to the questions set out in the consultation document. These can be found in the Annex below. As always, we remain ready to

engage with the Authority on these issues and can provide further information as and where required.

Question 1: Do you support our provisional view that 5G spectrum is ideally provided in large contiguous spectrum blocks? If not, please explain why.

Yes, we agree with and support the Authority's conclusion that 3.6GHz band spectrum should be made available in large contiguous blocks of at least 100MHz. Allocation of larger contiguous blocks of mid-band spectrum per operator will enable licence holders to deliver higher speeds and larger amounts of traffic without needing to significantly densify their access networks. This will reduce implementation costs, an important factor given the challenging 5G business case in the Channel Islands and beyond¹, and better align with the Authority's expectation that licence holders will minimise and mitigate the environmental impact and proliferation of new network infrastructure when deploying 5G networks². Additionally, the Authority is correct in its conclusion that contiguous spectrum blocks are required. If licence holders are unable to access contiguous spectrum blocks, for example because an operator engaged in spectrum hoarding refuses to move from their historic allocation, this will require the licensee to utilise carrier aggregation within the mid-band³ or rely on smaller spectrum blocks to deliver 5G services. Both of these outcomes are sub-optimal; smaller spectrum blocks would force licence holders to deploy slower and more constrained networks or be obliged to significantly densify their networks to meet customer demand. Reliance on carrier aggregation would increase the cost of deploying and maintaining 5G mobile networks due to the need for additional licences from vendors and additional sectors per site due to reduced power output. This increased cost, much of which would be written down once the 3.6GHz had been fully defragmented, is likely to result in higher mobile prices for residential and business mobile customers.

As a result, we fully support the Authority's proposal to provide licensed operators with large contiguous spectrum blocks of at least 100MHz. In our view, the Authority should now develop a roadmap that clearly and quickly allows licence holders to obtain additional spectrum assignments so that 5G services can be suitably scaled following launch.

Question 2: Do you support our provisional view that the best method for defragmenting 5G spectrum is to potentially move existing historic licensees within the 3.4-3.8 GHz band or remove them? If not, please explain why.

We broadly support the Authority's proposal to move or remove existing licensees in the 3.6GHz band. However, in our view, the Authority should take a more tailored approach to defragmenting the 3.6GHz band rather than simply revoking all licences or moving all existing licensees within the band.

As explained by the Authority, there are currently three licensees in the 3.6GHz band (Sure, ClearMobitel (Jersey) Limited, and Newtel Limited), with only one of those licensees using their spectrum allocation for commercial services (Newtel Limited). In our view, the Authority should only move existing licence holders within the band where they have demonstrated, or can credibly demonstrate, that they will use the new spectrum allocation for the benefit of consumers and/or

¹ 5G Spectrum Award Process – Consultation to Reassess Interest and Demand – T1480GJ – Sure (Jersey) Limited response – 5th May 2022 – paragraphs 10 - 40.

² Case t-064 – 5G Spectrum Award – ITT Application Document – Supplemental 3

³ Carrier aggregation enables mobile operators to boost performance for mobile users by combining distinct frequency allocations via software functionality in the radio access network.

businesses in Jersey⁴. If the existing licensee is unwilling or unable to do so, then their existing 3.6GHz band licence should be revoked rather than migrated.

Sure is happy for the Authority to simply revoke its existing 3.6GHz band licence⁵, and to do so in 12 months of being notified (the minimum specified in the licence). It is important to note that, whilst Sure does not currently offer commercial 5G services using its spectrum allocation, we have been using our 3.6GHz band frequency blocks to facilitate [3]. Notwithstanding this, we no longer require access to our current 3.6GHz band holdings due to our recent success in the Authority's 5G spectrum award process. [3]. As a result, we are happy for the Authority to revoke our 5G trial licence rather than have our existing frequency blocks migrated to another part of the band.

We also believe that the Authority should revoke ClearMobitel's existing 3.6GHz band licences with 12 months' notice. It is our experience that ClearMobitel has been hoarding valuable spectrum in both Guernsey and Jersey for many years without making any attempt to use it⁶. They have, in our opinion, been enjoying close to a 'free lunch' for many years and we believe that ClearMobitel should be subject to the same 'use it or lose it' conditions that feature in the new 5G spectrum licences. To move ClearMobitel within the 3.6GHz band, as proposed by the Authority, would simply prolong its indolence, and tie up finite and valuable 5G spectrum that could be better used by another licensee to provide important and innovative new services. It is our position that, unless ClearMobitel can credibly and convincingly demonstrate that it will use its new spectrum holding for the benefit of Jersey residents and the economy – and to do so within a specified timeline - its current holdings should be revoked rather than moved. In our view, such demonstration should go beyond simply stating it would use 3.6GHz spectrum for "mission critical applications" and "health"⁷. Furthermore, we would request that appropriate "use it or lose it" conditions be attached to any future spectrum allocations for 'Limited Service' packages in order to prevent similar instances of spectrum hoarding in the future.

In conclusion, we believe that a large proportion of the 3.6GHz band could be defragmented within 12 months of the Authority's revocation notice. This is because, in our view, Sure and ClearMobitel (which together occupies all of the currently allocated 3600 – 3700MHz and 3700 – 3800MHz ranges) can feasibly withdraw within that period. We have already confirmed that Sure can and will withdraw from using its existing 3.6GHz band holdings within 12 months of being notified to do so. Given that ClearMobitel do not appear to be using their 3.6GHz band holdings, there does not appear to be a reason why ClearMobitel cannot also vacate the band within a 12 month period. We therefore request that the Authority reduce the notice period for revocation to be reduced from 3 years to 12 months for operators that currently do not provide commercial services using the 3.6GHz band spectrum. For those licence holders that are using 3.6GHz band spectrum to provide commercial services (i.e. Newtel), we are happy for the Authority to migrate them within the band on 3 years' notice.

⁴ As is the case for Newtel Limited.

⁵ Licence Number 0282651, providing Sure with access to Lower Frequency Block 3600 – 3630 MHz and Upper Frequency Block 3700 – 3730 MHz for the purposes of a 5G trial.

⁶ According to ClearMobitel's website – [Clear Mobitel. The Clear Choice](#) – a network rollout was planned for Q2 2022, with commercial services launched by the end of 2022. Neither of these stated objectives appear to have been achieved.

⁷ ClearMobitel (Jersey) Limited - Case T-064 5G spectrum award process Consultation to reassess interest and demand – response to Question 6, page 4.

Question 3: Do you agree with our approach to the legal framework relating to spectrum defragmentation and timetable for completion? If not, please explain why.
Yes, we broadly agree with the Authority’s approach to the legal framework for spectrum defragmentation and proposed timetable.
Question 4: Do you have any comments on our initial assessment of the need to defragment Jersey’s 3.4-3.8 GHz spectrum band?
<p>We support the Authority’s conclusion that defragmentation is needed to provide 100MHz contiguous allocations and facilitate future 5G services in Jersey.</p> <p>Below we have commented on the Authority’s assessment and provided our own assessment of why, in our view, timely defragmentation is needed to support the deployment of 5G networks and development of associated 5G services. In summary, we agree with the Authority that defragmentation will not be required to meet short-term mobile data demands (although it will be necessary in the longer-run). However, we believe that swift defragmentation and/or concrete spectrum sharing obligations are needed to avoid the need for carrier aggregation functionality and licence holders having to regularly move their centre frequency; both of which are expensive and complex.</p> <p><i>Demand for mobile data</i></p> <p>We agree that mobile data usage is likely to grow over the next five years, albeit not at the same rate as is expected in the UK. In our experience, year-on-year data usage has increased, but at a slower rate than the 40% average seen in the UK in recent years. For example, over the last four years, we have seen an [X]. We expect mobile data usage in Jersey over the next four years to increase in line with or below the prevailing trend, primarily due to Jersey’s ubiquitous fibre network (thus little demand for mobile broadband services), its unique size, and lack of reliance on public transport for commuting purposes (meaning that consumers are not streaming or playing online games while commuting)⁸. As a result, we believe that forecast mobile data usage is unlikely to be a key driver for defragmentation in Jersey in the short run.</p> <p>Figure 1: [X] [X]</p> <p><i>The risks of not defragmenting the 3.6GHz band</i></p> <p>We agree with the Authority’s assessment that there are implications for not defragmenting the band. We also agree with the Authority that failing to adequately defragment the band could result</p>

⁸ 5G Spectrum Award Process – Consultation to Reassess Interest and Demand – T1480GJ – Sure (Jersey) Limited response – 5th May 2022 – paragraphs 27 – 28 (including Figure 1)

in Jersey customers receiving a slow, more congested 5G services in the long run, and prevent cross-island operators from achieving optimal spectral efficiency. However, our view is that the primary risk of failing to adequately defragment the band in a timely manner would be increased cost and complexity of spectrum deployment for licence holders, driven by the need to invest in carrier aggregation functionality to provide 5G services in the short run and/or need to continuously move their centre frequency when deploying additional spectrum.

Carrier aggregation

Carrier aggregation is a software functionality that enables mobile network operators to combine the capabilities of radio cells at distinct frequency allocations to enhance the end-user experience⁹. Absent defragmentation in the 3.6GHz band in Jersey, Full-Service licence holders would be unable to utilise the recommended 80 – 100MHz of *contiguous* upper mid-band 5G spectrum¹⁰ needed to deliver high speed, high-capacity services with good coverage. To address this, and assuming the Authority's sharing arrangement proposal does not take effect¹¹, licence holders would need to consider ways to efficiently combine distant ranges in order to provide the higher speed, lower latency service expected from 5G. The most established way to achieve this combination of distant frequencies is carrier aggregation.

By way of illustration, the Authority has proposed to allocate spectrum to Sure within the 3.7GHz to 3.8GHz range following its success in spectrum award process. Under the licence conditions of the Full-Service spectrum packages, Sure will initially be allocated 40MHz which will incrementally increase to 100MHz as Sure has achieves the minimum criteria set out in its licence. This initial 40MHz is likely to sit in the 3760 – 3800MHz range as the only 40MHz contiguous block currently available in the range. Should Sure wish to increase its 3.6GHz band spectrum allocation to 60MHz and then 80MHz ([><]), absent defragmentation it would be unable to move into the 3730 – 3760MHz range as ClearMobitel would continue to hold that spectrum. Instead, Sure would need to utilise spectrum in the 3700 – 3730MHz range and find an effective way to use two distinct ranges within the 3.6GHz band to provide a single 5G service. [><].

It is important to note that carrier aggregation results in a reduced power output per cell, which negatively impacts the coverage that mobile operators can provide using the 3.6GHz band and could necessitate network densification in order to offset its less powerful existing sites. This densification will significantly increase the cost of mobile network deployment in Jersey and runs counter to the Authority's desire for 5G licence holders to minimise and mitigate the environmental impact of a potential proliferation of new network infrastructure.

Furthermore, carrier aggregation requires both terminals to receive and transmit on multiple component carriers. For example, multiplexers are needed at the transmit end to combine the component carriers and radio frequency filters are needed at the receive end to separate out component carriers. This means that both the licensed operator's cell sites and customers' mobile handsets will need to facilitate carrier aggregation. [><].

⁹ [5G Carrier Aggregation explained | Nokia](#)

¹⁰ The ITU minimum technical requirements to meet 5G performance requirements identify at least 100 MHz channel per operator in the 3.6GHz band, and the GSMA 5G spectrum position is that operators should receive 80 – 100MHz of contiguous 3.6GHz band spectrum.

¹¹ We comment on the Authority's proposals for sharing arrangements in response to Question 5.

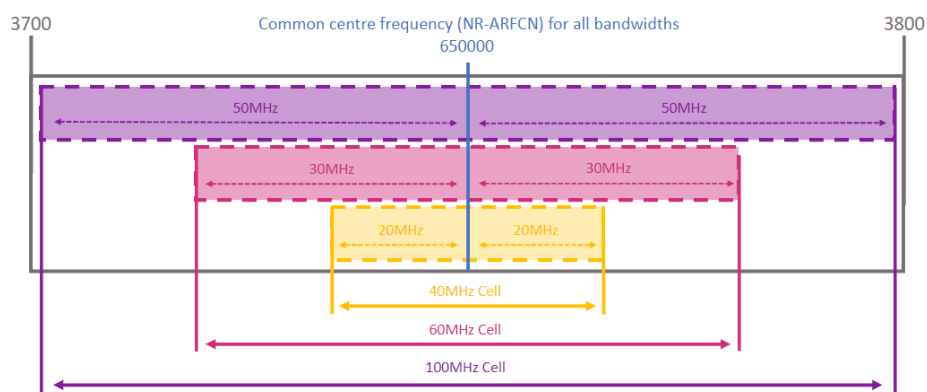
Moving centre frequency

Another risk of not defragmenting the 3.6GHz band is that licence holders will need to keep changing their centre frequency as they deploy additional spectrum.

When deploying a 5G NR network, a centre frequency must be defined in the access network configuration. This centre frequency plays an important role in the radio access network, including being referenced in the configuration of the 5G local cell, the neighbouring 5G cells, and 4G anchor cells. Each cell and base station must be configured to take account of this centre frequency and, whenever a change in the centre frequency is made, each cell and base station must have its configuration amended. Such an undertaking is both complex and time-consuming and, as a result, mobile network operators often prefer to be able to start using spectrum allocations in the middle of their range, rather than either the upper or lower end. [36]. The complexity of having to persistently move the centre frequency may also make licence holders reluctant to deploy new spectrum allocations as they become available.

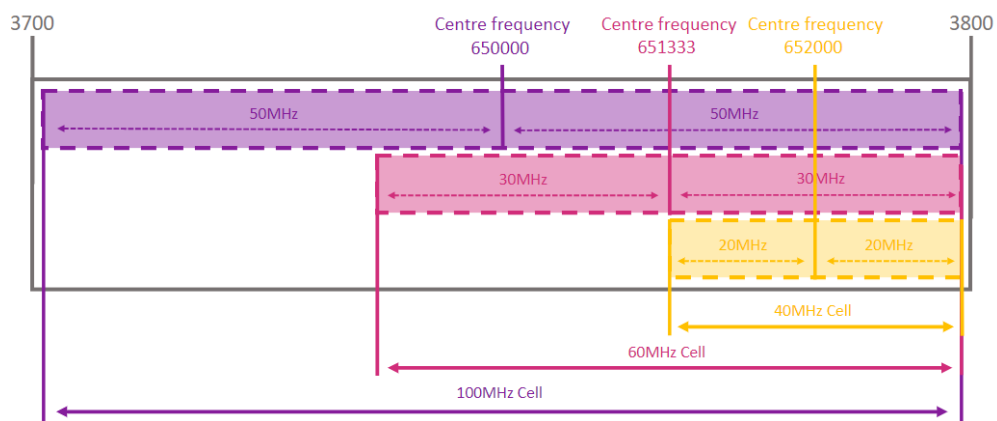
By way of illustration again, Sure has been allocated 3.6GHz spectrum in the 3700 – 3800MHz range, meaning that the centre frequency point for its range is ultimately 650000. As per the Authority’s proposed approach as set out in the Invitation to Tender, Sure must start by deploying and fully utilising 40MHz before being able to increase its bandwidth. If Sure was able to set its centre frequency as the middle of the 3700 – 3800MHz range (NR-ARFCN 650000) and adopt its initial 40MHz allocation around this NR-ARFCN, future deployments of newly allocated spectrum would be a relatively seamless task, [36]. This is because there is no need to repeatedly change the centre frequency (see Figure 2), and thus there is no need for large planned 5G network outages to deploy newly available spectrum.

Figure 2: Forecast deployment of 3.6GHz band spectrum by Sure with a 650000 NR-ARFCN



Conversely, if Sure was unable to start with a NR-ARFCN of 650000 and deploy its initial 40MHz at the centre of the range, it would be required to re-configure its radio access network to take account of a new centre frequency each time it wanted to deploy newly allocated spectrum. As seen in Figure 3 (below), and on an assumption that newly available spectrum will be allocated in 20MHz blocks, Sure would need to undertake significant reconfiguration work on a newly deployed network on four separate occasions (denoting four planned 5G network outages). This is in contrast to just one pre-launch centre frequency configuration required in the Figure 2 counterfactual.

Figure 3: Forecast deployment of 3.6GHz band spectrum by Sure with a moving NR-ARFCN



Factors against defragmentation

We note the Authority’s assessment that requiring historic licensees to move to alternative frequencies could entail substantial costs and/or complexity. We agree that would be the case for licensees that provide a commercial service. However, as explained in response to Question 2, the 3600 – 3700MHz and 3700 – 3800MHz ranges are currently occupied by two licensees, including Sure, that do not currently provide commercial services and should be able to vacate the band relatively quickly. Indeed, ClearMobitel does not appear to be providing any services at all. Given cost and complexity are not factors that hinder defragmentation in the aforementioned ranges, the potential impact on Sure and ClearMobitel is considerably less, and thus the suitable notice period for Sure and ClearMobitel should be considerably shorter. We propose that the notice period for operators in the 3600 – 3700MHz and 3700 – 3800MHz ranges should be 12 months, the minimum permitted under the prevailing Ofcom licences.

Question 5: Do you have any comments about our proposed draft approach to defragmenting Jersey’s 3.4-3.8 GHz spectrum band?

For the reasons that we have provided in response to Question 2 and Question 4, we request that the Authority:

1. reduce the notice period for revocation of existing 3.6GHz band licences to 12 months for historic licensees not using the spectrum for commercial services; and
2. Only provide historic licensees with ‘Limited Service’ spectrum packages where they are able to credibly and convincingly demonstrate that they will use its new spectrum holding for the benefit of Jersey residents and the economy, and within a specific timeframe. For the avoidance of doubt, Sure does not need to be provided with a new ‘Limited Service’ spectrum package and expects to vacate its existing spectrum holdings with 12 months’ notice.

We note that the Authority proposes to permit access to unused spectrum during the notice period¹². We welcome this proposal and agree that, even during our suggested 12-month notice period, licence holders should have access to unused spectrum. However, we also note that this

¹² Defragmenting the 3.4-3.8 GHz spectrum band - Case T-085 - Proposal for consultation, para 3.22.

access to unused spectrum is contingent on licence holders agreeing spectrum sharing arrangements with historic licensees in order to avoid interference between services. Whilst these spectrum sharing arrangements are important, there is a risk that historic licensees may not engage actively and/or in good faith in order to reach an agreement. This could delay access to much needed spectrum and result in licence holders having to address the carrier aggregation and centre frequency adjustment risks outlined in response to Question 4.

To combat this risk, we request that the Authority make it mandatory for historic licensees that are not using their spectrum allocations for commercial services to accept requests for access to their spectrum during the 12-month notice period, and to do so in a timely, fair, and reasonable manner. Failure to engage in a timely manner and in good faith should result in the historic licensee having their spectrum licence immediately revoked (or revoked with the shortest notice period permitted under the Telecommunications Law 2005 and Communications Act 2003).