



JT (Jersey) Limited and JT (Guernsey) Limited

Application for the award of 2100MHz, and
2.6GHz spectrum in the Channel Islands
(Redacted Version)

24th January 2018

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1.1 Overview

Background

JT is already a leading, established player providing mobile and complementary fixed telecoms services. JT offers individuals, companies and other network operators high-quality services based upon over 120 years' experience in the Channel Islands. JT supports the Channel Islands' largest mobile community on its network.

Since the award of new spectrum in the 800MHz, 1800MHz and 2.6GHz bands JT has built and operated an advanced multi-technology mobile network to bring 4G and significantly enhanced 3G services to its mobile customers.

JT has rolled out its 4G network across the bailiwicks of Jersey and Guernsey, and has used its extensive local market and world-leading technology experience to offer world-class 4G services. JT's 4G network complies with the latest Third Generation Partnership Project (3GPP) standards for LTE-A technology. Use of LTE-A from the outset allowed JT to offer the highest mobile broadband bandwidths currently available. It also provided the opportunity for Channel Islands residents and businesses to benefit from the availability of the most advanced mobile data services currently available in the marketplace.

JT has installed a completely new 2G-3G-4G network using a state-of-the-art single radio access network (single RAN) solution. Single RAN technology exploits the latest radio base station technical designs, efficiencies and levels of performance, and offers many deployment benefits, including better spectrum efficiency, improved service performance, greater scalability, higher energy efficiency and less environmental impact. These network improvements are enabled through JT's strong (and stable) business plan based on 4G spectrum. Access to sufficient 4G spectrum is vital given the increasing importance of data revenue to JT (replacing more traditional voice/SMS revenue), and hence the need for the mobile network to carry data traffic in the most efficient and cost-effective manner possible.

Since the launch of JT's 4G network 3 years ago we have seen considerable data volume growth. [✂ redacted]

Spectrum in the 2100MHz and 2.6GHz bands is readily available and currently not being utilised and there is enough to share between the existing mobile operators. Quote from the Oxera report "A Telecoms Strategy for Jersey" January 2018:

"spectrum is an essential input for providing mobile services and should be managed efficiently such that it is used optimally to continue to provide the greatest benefits to Jersey residents and citizens".

JT is in a position to quickly deploy this additional dormant 2100MHz and 2.6GHz spectrum in Jersey and Guernsey thereby providing enhanced services to the largest mobile customer base in the Channel Islands.

2 Network Loading

2.1 Actual data usage against predicted

Mobile network volumes have been considerably higher than we had predicted when we designed our new 4G network and applied for the original 4G spectrum.

Our original growth prediction for all data usage (3G + 4G) and taken from the 4G licence application and in TB per month is below

Figure 2.1: JT's mobile data growth (across both Channel Islands), including business plan forecasts [Source: JT, 2014]

[✂ redacted]

The actual volumes are shown below.

[✂ redacted]

As you can see, actual volumes are much higher than predicted. We had expected to reach [✂ redacted]. This is borne out by the usage per customer metrics: In 2013 the average usage was [✂ redacted], in comparison to the predictions we had at the time of the original 4G spectrum application of a forecast 2018 subscriber usage of [✂ redacted] per month by Analysys Mason (a global telecoms consultancy and research house).

2.2 Predictions for volume growth

Industry predictions are that mobile data volumes in Europe will continue to grow at 100% per year for at least the next 7 years (Source- Cisco and Ericsson predictions for mobile data growth in Europe).

Oxera quote from “A Telecoms Strategy for Jersey” January 2018:

“mobile data usage patterns in Jersey suggest that the demand for mobile data is relatively high and is likely to rise as smartphone adoption grows and subscribers increase their use of data-intensive services such as video calling and streaming video on mobile phones.”

All of the growth we have seen with mobile data has been on the 4G network, as expected, with 3G volumes static. Our congestion issue therefore is only on the 4G network.

The graph below plots the actual 4G (only) usage against that predicted in the original 4G licence application together with industry forecasts for expected growth.

[✂ redacted]

2.3 4G Volumes and congestion

We have carried out some analysis work on our 4G traffic levels and this shows that some of our 4G network cells are now reaching capacity and about to run into congestion. The 4G network model we have built in conjunction with our vendors ZTE also allows us to model the impact of future traffic growth to determine the impact.

The table below shows on a per-cell level the existing resource utilisation and then a prediction for a doubling of traffic. As you can see we have [✂ redacted]

[✂ redacted]

3 Options for managing this data traffic growth

3.1 Site build

Building of additional macro sites in high traffic areas: This is a good technical solution but comes at a high financial and environmental cost. This is always seen as a last resort by mobile operators.

3.2 Additional capacity on existing sites

Developments of 4G will improve peak speeds and capacities through technologies such as 4x4 MIMO and 256 QAM but these alone will not provide sufficient capacity to manage the expected growth in data usage. JT will be deploying these as part of our volume growth solution.

3.3 5G

5G radio offers around a 7% increase in spectrum efficiency when compared to 4G and will not be commercially available until around 2020 so this will not be sufficient and won't be available in the timescales required.

3.4 Additional Spectrum

JT has already deployed all available spectrum on our busy urban sites. The provision of additional spectrum on our existing sites will significantly improve their efficiencies in terms of capacity against cost of deployment, reduction of environmental impact and offer significant capacity gains.

4 Benefits of the additional spectrum

4.1 2100MHz

As the use of 3G decreases and 4G increases, we need to start using “3G” spectrum for 4G. This will be possible with the 2100MHz spectrum. The additional 2100MHz applied for will be used with our 4G service. Ideally we would like to receive an additional 2 x 10MHz but understand that this is not yet available so as an interim we would like to apply for the 2 x 5MHz that is available.

Starting from a base of 40MHz paired (10MHz of 800MHz, 20MHz of 1800MHz and 10MHz of 2.6GHz) we would ideally receive an additional 10MHz of 2100MHz which would give us a 17% increase in capacity, if 5MHz of 2100MHz is available then this would give us a capacity increase of 8.5%.

4.2 2.6GHz

We have already deployed 2.6GHz in the busy urban areas of Jersey and Guernsey. Our network equipment already supports additional 2.6GHz spectrum so we plan to introduce the additional 2.6GHz spectrum as soon as it is made available to us, on 12 of our key urban sites. Additional 2.6GHz is therefore an urgent requirement for us.

Starting from a base of 40MHz paired (10MHz of 800MHz, 20MHz of 1800MHz, 10MHz of 2.6GHz) an additional 10MHz of 2.6GHz would give us a 25% increase in capacity.

4.3 Handset capabilities

The ability of handsets to utilise multiple bands at the same time to improve peak speeds and volumes through Carrier Aggregation means that this additional spectrum can be fully utilised.

Category 16 handsets are now available. These handsets can support peak speeds up to 1GB/s. Additional spectrum at 2100MHz and 2.6GHz will allow us to raise our peak speeds, therefore providing an improved service for our customers.

4.4 JT's Brand position

JT's brand is built on having the best quality of networks (such as the results provided by Ookla). In order to maintain this position, it is vital that we have access to as much spectrum as possible in order to maximise our peak and average network speeds.

5 JT's experience

JT has long and broad experience of planning, rolling out, operating and maintaining mobile networks, gained through its existing 2G, 3G and 4G mobile businesses, and dating back to 2G launch in the mid-1990s.

As an integrated fixed and mobile communications solutions provider, JT already offers a complete and comprehensive range of services to both local and international markets, including mobile voice and data services, fixed broadband and global managed services. In accordance with the visions of the Jersey and Guernsey Governments, and CICRA, JT offers high-speed mobile data services through our 4G service, making our network accessible to as many businesses and residents as possible. Moreover, JT already operates a fibre-to-the-premises (FTTP) network spanning the whole of Jersey and parts of Guernsey, making it extremely well equipped to provide the necessary backhaul and core network connections required existing and future 4G / 5G networks

6 Information about the applicant

JT brings enormous experience relating to the design, construction and operation of high-quality telecoms networks, and has over 120 years' experience of serving residents and visitors in the Channel Islands.

As a company, JT has a deep understanding of local customer demands within the digital communications market, ensuring that JT's products and services will be designed specifically to meet the needs of the population in the Channel Islands, while also positioning the Channel Islands as a leading location for digital technology implementation.

JT has full access to the knowledge and expertise of JT Group's staff, as well as our global partner network, as needed, thus ensuring we have the necessary skills and resources to meet the demands of the 4G network development.

JT Group (JT) is a communications company that is wholly owned by the States of Jersey. It provides fixed-line, mobile and data services to consumers and enterprises in both Jersey and Guernsey.

This Application is submitted through JT (Jersey) Limited and JT (Guernsey) Limited, which are part of JT Group; JT (Jersey) Limited and JT (Guernsey) Limited (collectively referred to as JT in the remainder of this application) will hold the spectrum licences and operate this spectrum as part of the LTE network in the bailiwicks of Jersey and Guernsey.