Expression of Interest in 2600MHz Spectrum

By

Clear Mobitel (Jersey) Ltd

To the

Jersey Competition Regulatory Authority (JCRA).

In the matter of potential award of a licensed bandwidth in the 2600MHz spectrum as detailed in the JCRA Consultation Paper:

"Distribution of Spectrum in 2600MHz Band."

JCRA Document Reference: 2009-T01, dated June 3rd 2009.

Prepared on behalf of Clear Mobitel (Jersey) Ltd by

Andrew J. Elston, Consulting Engineer (AETCS).

Contents.

1. Introduction.

The purpose of this document is to detail a formal expression of interest (EOI) by Clear Mobitel (Jersey) Ltd (CMJ) to the Jersey Competition Regulatory Authority (JCRA) in the matter of securing a license grant in the 2600MHz spectrum in Jersey to design, build and operate an up to a superfast broadband fixed wireless access (FWA) network. The terms of reference for this response are taken from the JCRA-published Consultation Paper entitled *"Distribution of Spectrum in 2600MHz Band"* and from UK Ofcom general guidance for the licensing of the 2600MHz spectrum as detailed in relevant areas of its website. The JCRA document reference for this subject is noted as 2009-T01, dated June 3rd 2009.

CMJ will clearly detail in its EOI to the JCRA reasons why it is expressing interest in securing a license in the 2600MHz band and a justification for the bandwidth allocation is seeking. Further we will iterate how we believe the introduction of up to superfast broadband FWA; deploying state-of-the-art 4th generation Long Term Evolution (4G LTE) radio technology to deliver an all-IP network can benefit the entire community of Jersey. We will also emphasise and demonstrate how we can provide enhanced competition in the broadband access environs in Jersey, whilst at the same time introducing new and innovative services currently not deliverable via standard fixed wire line means, due to bandwidth constraints.

It is central to CMJ's approach in this matter that policies to protect the Jersey environment are at the heart of its consideration to approach the JCRA with a view to building any network based on a 2.6GHz license. Jersey inhabitants are rightly proud of their island environment and CMJ would wish to respect it also. To that extent, CMJ will look to achieve 3 aims in respect of implementing a potential FWA network in the island:

- Reuse of existing sites and masts wherever possible to build a network.

- Disguise antennae and new masts wherever possible.
- Keep to an absolute minimum the number of new masts /antennae sites that may be needed in order not clutter the Jersey landscape.

CMJ is unequivocal in its commitment to respecting and protecting the environment in Jersey.

2. Clear Mobitel (Jersey) Ltd – Company Details.

Company Name: **CLEAR MOBITEL (JERSEY) LTD**

Registration Number: **103577**

Registered Business Office: Date Registered: **09 JULY 2009**

For further information on this company registration please visit:

https://www.jerseyfsc.org/registry/documentsearch/NameDetail.aspx?id=131482

3. Licensing in 2600MHz – the best interests of the Jersey (business & residential) consumer.

CMJ is very clear in its intent in this response to JCRA's consultation on 2600MHz licensing. It intends, if successfully licensed, to offer customised, quality of service-guaranteed services to both Jersey business, particularly the finance sector and residential consumers that represent a clear enhancement over what is currently available. Further, CMJ wishes to play its part in ensuring that Jersey enters the next generation era of broadband connection and services and is recognized as being with the top 20 countries in the world in regard of broadband penetration by population (please see current status of rankings in Table 1).

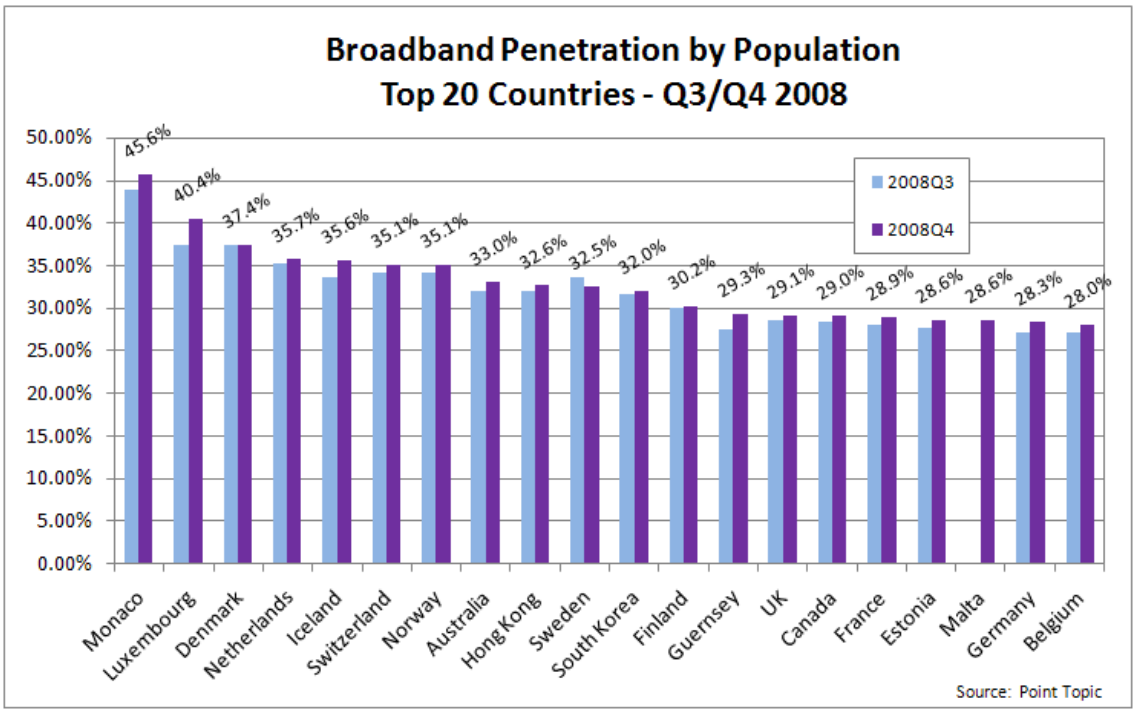

Table 1. Top 20 Countries, Broadband penetration by population (Q3/Q4 2008.

(Source: website optimization.com)

At present, all fixed line broadband access services in Jersey, irrespective of other licensed operator (OLO) service provider are delivered via standard ADSL/SDSL-based technologies which are wholesale-provided by Jersey Telecom (JT), via the copper local loop access

network. CMJ believes that there are unambiguous constraints on both fair broadband competition and the consequent delivery of services by OLOs imposed via this mechanism not least:

- Lack of control over wholesale access charges for broadband ADSL/SDSL connections. OLOs are bound to pay JT's fixed wholesale network access charge per connection over which there is little control and which heavily loads the OLO's overall retail charge to the consumer.

- Pre-existent bandwidth constraints that will not be completely answered by the upgrading by JT of the existing copper local loop access network to ADSL2 (+)-based technologies. This is due to physical nature and quality of the metallic local loop, particularly the twin deleterious effects on the capacity to deliver high bandwidth to the consumer caused mainly by premise distance from serving MSAN/DSLAM and age and quality of the copper local loop.

- Ongoing lack of true service delivery differentiation between JT and competitor OLOs due to constraints deliberately introduced by JT (RADIUS authentication control) in its broadband access architecture. *CMJ believes that this single issue seriously undermines a competitor's ability to innovate new services and control their delivery.*

- Lack of ability to provide sophisticated quality of service (QoS) management parameters due to lack of bandwidth and other access network constraints in JT's wholesale ADSL and SDSL services.

CMJ asserts that removing these barriers by implementing a completely independent up to superfast broadband FWA access structure will strongly drive fair competition forward by providing the option of real high quality network access and service choice to the both the short and long term benefit of Jersey broadband consumers.

True differentiation in services provision is only achieved by having complete control over the service creation and delivery mechanisms. CMJ would argue that this is not possible when the competitive Internet service provider is constrained by limitations that are deliberately imposed by the incumbent network operator and asset owner, in this instance JT, and which we (and other ISPs) do not have any control over unless the option is clearly present to build an independent, alternative network, such as the fixed wireless infrastructure we are proposing to operate in the 2600MHz band. A good example of this is to be found in JT's wholesale SDSL service. As an end consumer, one is not permitted to make any changes to the configuration of the router in the way for example it shapes the traffic being sent to it from the customer local network. Indeed, only JT can provide the router as a termination device. This leads to a "vanillarisation" of service options, from which the retail consumer has little hope of escaping.

Real choice for the Jersey broadband service consumer is a vitally important factor and one which we would assert is currently, and will in future be, undermined by a continuing reliance on gaining access to retail consumers through the incumbent's wholesale broadband and local loop access infrastructure. The JCRA's own Statistical Review Report (2008) shows that JT still enjoys the largesse of the standard broadband market, enjoying a 66.4% share as it does, despite competition from other operators, notably Newtel Solutions. This coupled with the unavoidable monthly wholesale access rental charge results in a retail price differential of just £1.03 (inc. GST) between JT and Newtel Solutions for the same

service. We believe this clearly demonstrates the need for further fair competition in the Jersey broadband access market from an independent network provider.

CMJ therefore strongly asserts that it is in the unequivocal interest both in the short and long term of the Jersey consumer that the JCRA and Ofcom considers an allocation of this additional spectrum in 2600Mhz band to CMJ in order to ensure that there is a truly network-independent alternative to JT's wholesale access network for broadband services. CMJ proposes that this network will be a place where new and competitive services will be developed and offered to the Jersey consumer.

4. CMJ request for spectrum allocation in the 2600MHz band (3GPP FDD Band VII "IMT Extension Band").

As part of this EOI submission to the JCRA, CMJ would wish to state its preferred bandwidth allocation in the 3GPP FDD IMT Extension Band. As stated in the introduction to this EOI, CMJ is ready, if licensed, to invest in a new 4G LTE fixed wireless access structure in Jersey. The JCRA will be aware, the 3GPP frequencies allocated in the 2600MHz band for frequency division duplex (FDD) operation lie in Band VII (2500-2570, uplink block & 2620-2690MHz, downlink block), providing for 140Mhz FDD channel carrier radio frequency bandwidth. In order to maximise the effectiveness of such a network in delivering very bandwidth-intensive services in a sustained manner en masse (see Table 2 below), CMJ is stating a requirement for a minimum 20 + 20Mhz (UL/DL block) (40 MHz FDD carrier channel) bandwidth allocation as a result of attaining a license award in this band. This would facilitate the network being operated at its current maximum throughput capability. Further, CMJ would respectfully indicate to the JCRA that it would look to secure a second 40MHz

FDD channel block in this band if the opportunity arose as a result of indicated under-subscription in the response to this consultation. This would not only to maintain a very high IP bandwidth throughput, but also to cater for a high density of simultaneous broadband customer connections, whilst maintaining IP packet latency (round trip time) well below 10 milliseconds required by video and bandwidth-intensive services. If this were to be the case, CMJ believes it could compete effectively with both JT and ISPs who would look to continue to provide their customer services via ADSL2 (+) technology.

Residential	Newtel Solutions	Jersey Telecom	Clear Mobitel (Jersey)
Up to 2Mbit/s	uncapped	20Gb capped	
Up to 2Mbit/s	uncapped	40Gb capped	
Up to 2Mbit/s	uncapped	60Gb capped	
Business			
Up to 2Mbit/s (512K UL)	uncapped	40Gb capped	
Up to 2Mbit/s (512K UL)	uncapped	60Gb capped	
Up to 2Mbit/s (512K UL)	uncapped	uncapped	
2Mbit/s/2Mbit/s SDSL 10:1	uncapped	uncapped	

Table 2. Broadband service comparison.

5. CMJ's proposed utilisation of a bandwidth allocation in the 2600MHz band.

CMJ is prepared to invest in a separate, competitive network in Jersey by providing its own 4G LTE superfast broadband FWA network in the 2600MHz band. It would roll this network out within a mutually agreed (with the JCRA), reasonable timescale to the benefit of the community of Jersey. CMJ's chosen platform to achieve this is based on 4G LTE technology

provided by its partner, who have a well proven global track record in delivering both fixed and mobile wireless networks. This technology will facilitate the simple provision of all services CMJ would wish to offer Jersey via an all IP access network.

The introduction of high speed and superfast fixed/nomadic broadband services by CMJ in Jersey (if licensed) will mark a significant change in the current broadband paradigm. CMJ's chosen bedrock technology for the proposed network, 4G LTE radio, has 2 important advantages over the current broadband access digital subscriber line (DSL) mechanism for delivery to the consumer. Firstly the very fact that it is a wireless technology means that a consumer has the freedom to nomadically move around the network and yet still gain high speed access to the Internet and other services in the normal, expected manner. This capability is unlike ADSL or SDSL which is fixed to a single prescribed location. New advantage can be opened up, particularly to individuals in small and medium businesses in Jersey that may change their location within a normal day. The second key advantage of a 4G LTE radio network is that due to the late generation of design of its air interface, it is capable of delivering extremely high bandwidth in a very efficient manner (when measured in terms of utilisation of raw radio frequency bandwidth). 4G LTE technology also offers the real benefit of also supporting an unparalled degree of control over the delivery of services to the doorstep. Given the available bandwidth in the FDD blocks in 2600MHz band, we believe 4G LTE provides an ideal platform for very efficient use of available additional spectrum and consequent radio frequency (RF) bandwidth award to deliver new services currently not available in Jersey.

In CMJ's view, there would be very little point in making representation to the JCRA regarding such licensable bandwidth if it were not be based on a requirement for significant radio frequency (RF) bandwidth allocation. If this was not to be the case, we believe it would

achieve nothing other than to bring partial relief to the constrained competitive environment in the broadband market that exists in Jersey by simply providing ADSL2(+)-like bandwidths (*typically 12–16Mbit/s*). Indeed, the advanced technology CMJ is looking to deploy in such a network is capable of delivering downstream bandwidths in excess of <> connections. Further account also needs to be taken of the number of simultaneous active (online IP connected) data clients and the potentially negative impact this has on increasing latency of IP packet throughput for services such as HDTV for example when the RF bandwidth allocation is smaller.

This is where we believe our key advantage proposal to the broadband consumers of Jersey exists. We would wish to draw a very clear distinction between JT's stated upgrade to high speed broadband access using ADSL2(+) technology that can deliver downstream speeds of up to 24Mbit/s and our proposal to build an up to superfast wireless broadband access structure capable of delivering high downstream speeds.. We do not believe that ADSL2(+) will be truly capable of delivering some future bandwidth-intensive services that may also have sophisticated QoS parameter requirements attached to their delivery to the premise. Studies conducted in the UK have indicated that this may be the case and this lack of ability to achieve high speed broadband connection is directly related to poor quality metallic wire pairs and high traffic loading in serving copper cables creating crosstalk problems. CMJ therefore states the need for a true superfast-capable wireless broadband network in Jersey to counter this deficiency.

CMJ understands and accepts the need for it to make efficient use of the bandwidth allocated under any potential license award. It believes that its radio access network (RAN) technology of choice will achieve that requirement. However our position still remains that if it were to be the case that a significantly large radio frequency bandwidth was not to be

considered in this 2600MHz licensing round by the JCRA and Ofcom, CMJ (or any other bidder for that matter) would be stymied in its aim to provide true, competitive very high bandwidth services to the island of Jersey.

CMJ is therefore requesting as part of this EOI that the JCRA and Ofcom gives serious consideration to allocating a large RF bandwidth license to answer the dual challenge of very high bandwidth per user and large scale simultaneous connectivity at acceptably low latency to support advanced services delivery.

6. Efficient use of allocated spectrum.

RF bandwidth is a scarce and valuable resource in assisting human communications. It is therefore obvious that it should be deployed very efficiently. CMJ has already stated that its intended use for an allocation in the 2600MHz band in Jersey is to deploy a 4G LTE fixed wireless network. 4G LTE is pre-eminently technically suited to making extremely efficient use of basic RF spectrum. However, in the instance of Jersey, we believe there are other pertinent arguments that need to be made regarding the issue of efficient use of the 2600MHz spectrum. As already stated in this EOI, CMJ believes this spectrum should be allocated to Interested Parties who are enabled to provide widespread coverage to the Jersey population. This requires a heavy capital investment profile to design, build and operate such a network. Further that available RF spectrum is allocated in sufficiently large blocks to ensure that the system can provide truly significant IP bandwidth services to Jersey consumers and therefore compete effectively with the existing incumbent and ISP broadband provider base. The CEPT band plan from ECC Decision (05) 05 makes it clear that the available FDD bandwidth is segmented into 14 off 5MHz traffic slots in the uplink

direction (blocks 1 -14) and 14 slots in the downlink direction (blocks 26 – 38).There would be very little point CM believes, in allocating on a small bandwidth basis to entities that could not reasonably afford to invest strongly in effective deployment strategies. Given the high penetration of broadband in Jersey and the population (circa 91,000, *source: SoJ 2008*), CMJ argues that it makes more sense to allocate on a large RF bandwidth basis to licensee(s) to create infrastructure that they can truly afford to invest in and build wireless networks that can effectively and proficiently compete with the current scenario. CMJ strongly asserts to the JCRA that it has that capability to make very efficient use of the RF spectrum it has requested if successful, both through its financial strength and its chosen technology to deliver competitive services that will benefit Jersey broadband consumers.

7. New Services.

Outside the private circuit services market space in Jersey, ADSL/SDSL broadband access as a "best effort" delivery mechanism is limited in most cases to providing:

- "plain-old" broadband connectivity to the internet (ADSL/SDSL).
- Low speed pseudo-private wire alternatives used by business to connect on-island locations together via SDSL.
- VoIP in some instances. Businesses use JT's wholesale SDSL service to subscribe to VoIP services through gateway equipment.

In most instances, due the lack of control over the delivery path, that is about it. CMJ believes its value-proposition to Jersey is not so much in the bandwidth it would be capable of delivering to individual users, but in the services it could introduce that are not currently available or supported and would argue are unlikely to be any time soon by JT's wholesale

broadband DSL access architecture. We believe there is clear pent-up demand now for new services from both business and residential consumers that can only be delivered via high quality broadband connections, such as those CMJ is looking to provides via a 4G LTE FWA. As indicated in the introduction to this document, CMJ intends offering a range of new, innovative services to the community of Jersey if it secures a license to operate in the 2600MHz band on the island. These include, but are no means limited to, the following types of service:

- IP voice (VoIP).
- Very high speed Internet access.
- High grade video conferencing for business.
- Virtualisation of online services (servers etc).
- Robust high grade real time gaming.
- High definition TV (HDTV) (DVB-S2 MPEG-4 / H.264 MPEG-4 AVC).
- Peer – peer (P2P) connection.
- Advanced visual networking.
- On Demand “anything”
- Nomadic networking.

Some of these services are aimed at the business community, such as high bit rate data and Internet connections whilst others will be more tailored to suit residential customers such as HDTV and ability to support next generation online (real time) gaming. However, in all instances, CMJ is looking to provide very high bandwidth, high quality connectivity to its customer base. CMJ would state to the JCRA that an allocation in the 2600MHz as identified previously would facilitate it providing such new services to the general population of Jersey.

8. Economic benefits to Jersey of CMJ's proposed 4G LTE network.

There have been many articles written in recent times citing the central importance of ubiquitous access to high speed broadband access and the economic benefit it can bring with it to the populous. The Bailiwick of Jersey is no different in this respect. Governments understand that economic performance and opportunity for all are inextricably linked to among other issues, the prevalence and availability of high speed broadband. Witness the newly published "Digital Britain" report published in the UK in June 2009. In the States of Jersey Economic Development Department 2009 Business Plan, the opening sentence states, "The aim of the Economic Development Department is to achieve sustainable economic growth and diversification in the economy, based on productivity improvements."
The foreword also states another very important set of objectives through the Jersey Enterprise and Business Development Strategy that it "will continue to be a key element in achieving our growth targets. The strategy has three aims:

- Increasing the rate of business start ups and growth;
- Developing international trade and inward investment;
- Encouraging commitment and investment into work related skills training."

In a modern economy, widespread true high speed broadband availability and new services are key aspects in aiding an economy to diversify and create new strands of employment and new wealth. CMJ would argue that its proposal could play a very important role in extending high speed broadband access and new services to the wider Jersey community, both of which are not present. We believe that the implementation of a competitive, highly capable access network based on 4G LTE has the power to assist in the creation of jobs in

the knowledge-based intellectual property rights economy (e.g. online CAD design) and encourage new industries to take root in Jersey such as in the creative economy (computer games design, online film editing etc.). We believe that the new, competitive services we are looking to offer the Jersey consumer will help to reduce the overall cost of setting up a new business, making it an even more attractive proposition for individuals and companies to invest in the island. As an example, it is possible with very high speed broadband to conduct real time collaborative computer aided design for companies in other countries such as China or the U.S. This could bring benefit to both self-employed individuals as well as entire companies looking to establish themselves in Jersey, as well as to diversify the economy away from a heavily reliance on the financial sector.

9. Additional infrastructure and environmental considerations.

This document has in its introduction already stated the importance CMJ attaches to respecting Jersey's environment in any potential FWA network deployment. CMJ understands the need to keep the number of mast and antenna array deployments to that which is required to provide correct pan-island coverage and no more. Indeed the issue of site and mast sharing wherever it is practical to do so is at the centre of our planning strategy for any network we build. We believe that this aim will be aided by the extensive deployment of femto cellular technology on a street/office level to achieve both reach and bandwidth requirements.

However there are other environmental issues which we will consider when deploying any such networks. These mainly pertain to the late generation and design of the chosen LTE radio technology. Moreover this equipment is designed to occupy a significantly smaller

footprint than competing 3G base station technologies due to its advanced design. Finally due to advanced control of the radio system as a whole, the power consumption of a base station has been radically reduced in order to meet stringent EU requirements. We believe that these credentials coupled together with a sympathetic approach to design and deployment clearly demonstrates that CMJ is taking environmental considerations to the centre of its proposal for rolling out such a network in Jersey.

10. FWA network rollout – timescale to build.

This EOI has provided detail on how CMJ envisages being enabled to provide innovative, competitive services to the residents and businesses in Jersey. In the event CMJ was to be awarded a license to operate in the 2600MHz band, we would be happy to provide undertakings on both willingness and ability to deploy in a reasonable timescale as required by both the JCRA and Ofcom. We believe that this approach is a necessary step to build confidence with both the JCRA and Ofcom regarding the timely utilisation of a spectrum award under license, as well as publicising its planned approach to a network rollout so that the community as a whole in Jersey can remain well informed from the outset.

We will look to produce a detailed rollout plan for our proposed network once topographical and radio frequency surveys have been completed. As part of this process, CMJ has mandated it supplier to identify any sites that coincide with existing mobile /radio sites in Jersey. Where there is space on masts, CMJ will look to negotiate with the site owner to gain access to the site in order to reduce the need for new masts to a minimum. We are also engaged in a process to minimise the visual impact of any new masts / antennae that may need to be provided. At present, CMJ envisages a realistic rollout timescale. This timescale

takes into consideration time necessary to apply for wayleaves/permissions to erect masts where necessary for MIMO antenna arrays. We do not underestimate the work involved in achieving this goal alone given our knowledge of recent previous experience in this area in Jersey. However we will undertake to work closely with the JCRA and the States of Jersey government, particularly the Planning & Environment and the Economic Development Departments as well as representatives of Parish Authorities and other organisations that are stakeholders or representatives of the wider community in Jersey to achieve this goal.

Our initial target deployment zone will provide service to areas that contain a high density of both business (finance and other) and residential occupants and is a good deployment scenario on Jersey. Thereafter, CMJ will look to extend its network to other areas on the island over the stated period to provide pan-island coverage to the population, although it is stressed that this is dependant on the necessary wayleaves and planning permissions required for masts and MIMO antenna arrays.

11. Clear Mobitel (Jersey) Ltd – Financial Resources.

CMJ enjoys strong financial backing from its investor.CMJ is proposing in this business plan to make a multi-million pound long term investment in Jersey This investment will herald a new dawn of competitive opportunity for the population of Jersey for broadband services. CMJ's aim is to become a long term partner to Jersey by extending the choice the market has in what types of service it avails itself of and from whom. It is expected that the major part of this investment cycle will take place in the first year of this business plan, upon successful licensing.

12. Summary.

Clear Mobitel (Jersey) Ltd has expressed an interest to the JCRA in this document in being awarded a license to operate a fixed wireless access network in Jersey in the 2600MHz band. We believe that this network will bring an unrivalled opportunity for the delivery of advanced high grade services now and in the future to the benefit of the population of Jersey. The current situation of dependency by OLOs on JT's local loop and broadband access network to deliver services provides an opportunity to bring a paradigm change to competition environment in the Jersey broadband market with the inception of a completely independent wireless access network such as we propose to the JCRA. The rollover to all-IP networks in the next couple of years will mean that Jersey has a chance to propel itself rapidly towards full next generation broadband access architecture. This will, if we obtain a license grant, present a clear choice to Jersey consumers between ADSL2(+) and wireless 4G LTE delivery mechanisms that are entirely separate from one another and the consequent services that flow from the introduction of such a network. More importantly, consumers will have real choice regarding who provides them with services and how those services differentiate from one and other. CMJ has provided clear indication to the JCRA of its willingness to make a significant investment in a state-of-the-art wireless access network as described that will be capable of delivering superfast broadband to Jersey. We believe that this EOI demonstrates our commitment to the island a whole. It is our hope that both the JCRA and Ofcom will give serious consideration to this EOI and our stated request for a license to operate in the 2600MHz band with a significantly large RF bandwidth allocation. We would welcome to opportunity to expand on the detailed arguments made in this EOI to the JCRA and to Ofcom if required.

The Board of Directors commends this response and Expression of Interest to the JCRA for its consideration and scrutiny.