Title:

Forename:

Surname:

Representing:

Organisation

Organisation (if applicable):

LOCOG

Email:

What do you want Ofcom to keep confidential?:

Keep name confidential

If you want part of your response kept confidential, which parts?:

Ofcom may publish a response summary:

Yes

I confirm that I have read the declaration:

Yes

Of com should only publish this response after the consultation has ended:

You may publish my response on receipt

Question 1: Do you have any comments on our approach?:

LOCOG support Ofcom?s approach, particularly its future involvement with the Beijing and Vancouver Games which will provide invaluable feedback on current user requirements and their impact on spectrum issues and an up-to-date view of the increasing use of wireless communications in the Games. However exact user requirements will not be known at the time of the response to this discussion document and Ofcom must be prepared for substantial change in this area over a significant period of time. Fundamentally any approach taken must deliver the guaranteed frequencies required for the organisation of the Games and must be allocated to the Olympic family on a no-cost basis.

Question 2: Do you have any comments on our assumptions?:

3.1.2 - Should not be at the exclusion of any reasonable request.

3.15.1 - Other RHBs will also capture live feeds (e.g. following their own athletes) and deliver this to their facilities in the IBC. (unilateral feeds)

3.15.3 - Not all feeds will be HD. OBS and many others will be but if a RHB?s home country is still SD then they will capture, edit and transmit their unilateral content in SD.

3.15.4 - Wireless HD cameras currently use 10MHz channels, but with HD there is a move towards a 20MHz bandwidth. Most cameras will be cabled.

3.15.5 ? It is our understanding that OBS will transport even unilateral broadcast feeds from venues back to the IBC, although OBS will confirm this in their response.

3.15.9 ? Spectrum will be required for partners and possibly broadcasters for test event set up from the summer of 2011 and possibly sailing events in 2010. Temporary licences may also be required by OBS for short term testing prior to the games

3.15.10 - Legacy PMR systems may be required beyond Sept 2012, particularly for decommissioning work.

3.15.18 - Test event spectrum usage will be lower than for Games time ? test events are more spread out and relatively few are broadcast. Spectrum will be required for test events in 2011 and also for sailing test events in 2010. Some of these events may be broadcast but all will require PMR. PMR may also be needed for venue set up and operation after test events up to Games Time.

3.15.20 - Many cultural events will require PMR and potentially some TV spectrum before the Games, e.g. the Torch relay(which could last for up to 100 days) and live sites (i.e. big screens in as many as 60 city centres in the UK) will attract TV coverage.

There is a possibility that a Mobile Content Sponsor will be signed up and this may potentially have an impact on the spectrum usage for 2G and 3G.

Question 3a: What is your assessment of the requirements for handheld radio systems?:

LOCOG concur with Ofcom?s assessment of requirements in para 4.3 to 4.8

Question 3b:How can they be met most efficiently?:

LOCOG?s primary aim is to run an effective operation through balancing operational need with minimising unnecessary cost (e.g. building new infrastructure and gaining new planning permission). We will also try to improve efficiency by providing a shared digital trunk system.

LOCOG will work with Ofcom to take spectrum issues into account in selecting and developing a solution.

Question 4: Would you want to use capacity on LOCOG?s trunk network through a rate card?:

N/A

Question 5a: What is your assessment of the requirements for land mobile radio systems?:

From a broadcast perspective land mobile radio covers talkback which is covered in question 11a. Apart from this there will be little demand.

Question 5b:How can they be met most efficiently?:

Question 6a: What is your assessment of the requirements for maritime radio?:

We currently have limited visibility on Maritime radio requirements, however in previous games sailing events have been covered using standard PMR and therefore special maritime frequencies may not be required for the operation of the games. In addition this there will be a need for data transfer from buoys at 2.4Ghz.

Question 6b: How can they be met most efficiently?:

Reviewing other major sailing events around Weymouth including the 2010 and 2011 test events will help us understand this further, as well as reviewing previous games volumes.

Question 7: Do you think that digital wireless microphones will be widely used by the time of the London Games?:

LOCOG have no strong opinion on this. OBS will clarify in their response as it largely depends on reliability, technical performance (including any digital lag) and price.

Question 8a: What is your assessment of the requirements for wireless microphones?:

Wireless microphone usage will fall into 3 categories

1. Show production for the Opening and Closing ceremonies and at Live Sites by LOCOG. Previous games have required a large number of these which we are anticipating may grow slightly.

2. Host broadcaster where wired microphones cannot be installed.

3. RHBs for wireless microphones for interviewing. Again the demand for these will grow due to increasing complexity of production techniques.

Wireless microphones may also be used for information announcements outside the venue

Question 8b: How can they be met most efficiently?:

1. Through understanding the full cultural ceremonies requirements which will become clearer over the next 12 months.

- 2. Through liaison with OBS for the Host Broadcaster and RHBs requirements.
- 3. Through designing cable lay outs early in the process.

Generally wired microphones are more cost effective and provide better quality therefore the demand for wireless microphones will be tempered by this.

Question 9: How do you think developments in audio technology will affect spectrum requirements?:

Digital technologies may make more effective use of spectrum. Analogue technologies however are likely to dominate in terms of reliability and cost.

Question 10a: What is your assessment of the requirements for in-ear monitors?:

OBS will be able to give a better view on this, but LOCOG believe there will be substantial use of in-ear monitors for PMR (security and workforce) and there may also be a requirement for broadcast for in-vision presenters.

Question 10b: How can they be met most efficiently?:

Through careful engagement with RHBs for Broadcast requirements and through LOCOG for workforce.

Question 11a: What is your assessment of the requirements for talkback?:

LOCOG considers talkback to be a purely broadcast operation and therefore we expect that all RHBs will make extensive use of wired and wireless talkback.

Question 11b: How can they be met most efficiently?:

Through careful engagement with the RHBs and OBS.

Question 12a: What is your assessment of the requirements for ADS?:

Audio Distribution Services will mostly be used during ceremonies. These will mostly be wired, but there may be a requirement for wireless ADS.

Question 12b: How can they be met most efficiently?:

Question 13a: What is your assessment of the requirements for S-RSLs?:

Short term restricted services licences, may be required for cultural events prior to the games from 2011 particularly for in-ear speakers. There may also be a need for an S-RSL for an Olympic Village radio station (however currently there is no plan for this) and for low power FM transmitters for communicating 1-way with large numbers of volunteers.

Question 13b:How can they be met most efficiently?:

Question 14a:What is your assessment of the requirements for wireless cameras?:

LOCOG anticipate that wireless camera use will be at least the same level as Beijing. This is an area that OBS will be able to clarify in their response.

There will also be requirements for non-RHBs for their wireless camera requirements typically for newsgathering around Olympic venues. For non-RHBs OBS will not represent them and therefore Ofcom will need to contact them directly.

Question 14b:How can they be met most efficiently?:

Learnings from the 2008 Olympics will help understand the efficiencies that could be made around wireless camera spectrum, however it needs to be recognised that broadcasters? detailed plans and requirements only firm up in the 12 month period prior to the games.

Question 15: How do you think the use of HD will affect spectrum requirements? If yes, please provide details.:

It is likely the bandwidth needs will increase with the growth of HD to 20MHz, however this may be offset by improvements in coding techniques although it is debateable whether these will evolve within the available timeframe.

Question 16a: What is your assessment of the requirements for point-to-point links?:

Point to point radio will only be required in small amounts in the Olympic Park for mobile and PMR transmission as the basestation sites are likely to be linked into the fibre route in the park. However point to point will be required for temporary sites (mobicells) at non Olympic Park and temporary venues. The Host Broadcaster would only use point to point links on rare occasions where fibre connectivity is not available.

Question 16b: How can they be met most efficiently?:

Once the temporary venues are confirmed provisional transmission planning can start in advance of the games. This should help find suitable links and available frequencies.

Question 17:How do you think spectrum could be used more efficiently?:

The life cycle of technical innovation itself is such that it is unlikely it will deliver significant spectrum efficiency in time for the Games and therefore focus should be on reducing demand where possible through the use of wired technologies.

Also by centrally controlling spectrum allocation there are potential efficiencies in cutting down duplication of requirements and dynamically allocating spectrum only when it is required.

Question 18a:Do you think that wireless-camera technology operating between 3 and 7.5 GHz will be more widely available by the time of the London Games ?:

Wireless camera technology operating between 3 and 7.5Ghz will be more widely available, but the majority of other countries will most likely be using 2-3Ghz therefore volume and availability of higher frequency equipment is likely to be lower and more expensive, although this will be clarified in OBS?s response.

Question 18b:Do you think that wireless-camera technology operating at up to 60 GHz will be available by the time of the London Games ?:

LOCOG do not believe that operating wireless camera technology at 60GHz is a feasible, practical or cost effective solution for broadcast use, although this will be clarified in OBS?s response.

Question 18c:Could existing wireless cameras be adapted to work at higher frequencies?:

It is doubtful that existing wireless cameras could be adapted to a higher frequency. This may not be economically or technically feasible as cameras would require new a RF transmitter unit at higher power and therefore larger battery packs as well. This would have to be confirmed by camera manufacturers.

Question 18d:Are there any other considerations that will affect the feasibility of using higher-frequency spectrum for wireless cameras?:

There are many other considerations that LOCOG believe make higher frequency spectrum usage unfeasible. These include:

- ? radiated power levels;
- ? battery size and weight;
- ? limited propagation / receive distances;
- ? line of site limitations;

? UK only specialist equipment may not be a sufficiently attractive market for manufacturers to produce suitable equipment in volume;

? cost of equipment;

? reliability of new & unproven technology in a frequency intensive environment;

? cost of hiring specialist UK kit especially if broadcasters already own wireless cameras for use elsewhere in Europe.

Question 19:Do you think that using optical-fibre cameras will reduce spectrum requirements?:

In some cases where the camera positions are relatively fixed and where it is practical to install, fixed cabling can be used to ease the burden on the spectrum. However some production techniques will require highly mobile cameras and these will need to be wireless.

This will be clarified in OBS?s response.

Question 20: Do you think that using short, wireless video links to fixed, cabled access points will reduce spectrum requirements?:

Possibly, however broadcasters will want to maximise flexibility and minimise additional equipment and time needed to rig. Short hop wireless and fixed cable access points may not always meet their needs.

This will be clarified in OBS?s response.

Question 21:Do you think that using optical fibre within and between competition venues will reduce the requirement for fixed point-to-point links?:

LOCOG believe there will only be a relatively small demand for point to point links in the Olympic Park, due to the amount of fibre that is being installed.

There will be more demand for point to point links at temporary venues outside of the park where mobicells are deployed to cover the event.

Question 22: Do any public support services have spectrum requirements that cannot be met through existing allocation and assignment processes?:

LOCOG assume that this refers to security and blue light services and therefore believes spectrum will be provided separately to those spectrum requirements required for the general operation of the Games and within a wider security context.

Question 23a: What is your assessment of the requirements for cultural events?:

Many cultural events will attract TV coverage therefore Ofcom should contact broadcasters directly to review if further capacity if required.

The events will also require PMR for organiser use and support from police and emergency services as per other similar public events. The Torch relay is potentially the most complex requirement because of its duration and the mobile nature of the event. The nationwide live sites will also require a small amount of spectrum as there will be PMR requirements.

There is an aspiration to have a wide ranging, nationwide cultural festival during the 4 year run up to the Games, this is known as the Cultural Olympiad, but the extent and timing of these events are still to be finalised. As details become clear LOCOG will help Ofcom factor these into their planning, but at this stage we believe they will covered by normal event provision.

Question 23b: How can they be met most efficiently?:

Where cultural events are being planned and run internally, LOCOG will act as an integrated planner for these events and work with Ofcom to manage the events? spectrum requirements from an overall point of view rather than letting individual parties make their own separate applications.

Question 24a: What is your assessment of other requirements?:

News gathering is likely to be significant as London and the UK become the focal point for the world?s broadcasters and press and there may be a non-accredited media centre. There will also be some non-LOCOG organised cultural events.

LOCOG would encourage Ofcom to define a framework against which these requirements can be assessed such that those services that support LOCOG?s operation can be covered under the governments spectrum guarantee.

Licences for fixed satellite services will also be required.

More specific spectrum requirements for timing and scoring will be provided by LOCOG separate to this document although most of these will not require a licence.

Requirements for WiMax need to be understood and taken into account; however there is no current plan to provide WiMax within the Olympic Park for the operation of the games.

We are also currently liaising with the International Paralympic Committee to discuss any other requirements specifically for this part of the Games.

Question 24b: How can they be met most efficiently?:

All of these requirements are different and unknown at this point and therefore it is difficult to plan how to use them efficiently.

Question 25a: Do you have you any views on previous or possible licensing systems?:

LOCOG will support Ofcom in managing the licence applications to ensure that those who are guaranteed licences are not charged for them. Process and responsibilities for this will be agreed at a later date, but may follow the BOCOG on-line application system depending on its success.

Question 25b: When should the licensing system start to accept applications?:

2 years prior to the Games.

Question 26: Do you have any views on enforcement?:

The main issues are likely to be around broadcasters and wireless cameras. Spectrum licensing needs to be heavily and visibly policed at each live venue to prevent rogue broadcasters from impacting properly licensed operators. Tour De France practice is generally considered to be good with visible coloured tags on cameras denoting properly licensed use of specific frequencies. This also encourages whistle blowing by properly licensed operators.

Ofcom have the accountability to enforce any misuse and LOCOG will work with Ofcom to work out the best way to execute this overall responsibility.

Additional comments: