

GLASGOW 2014 LIMITED
RESPONSE TO OFCOM CONSULTATION DOCUMENT
Submitted 15 November 2012

Question 1. Do you agree that the most relevant comparator for a top-down approach is likely to be the London 2012 Games?

Glasgow 2014 concurs with Ofcom's proposed planning approach for the Games. We believe the overall Ofcom approach to be generally appropriate and are pleased with progress of preparations to date.

We would suggest that the data from London 2012 needs to be used with some caution given there are significant differences between the events (particularly in the area relating to spectrum requirements). We know that data from the Melbourne 2006 Commonwealth Games has been referenced and we would continue to recommend that this is referenced in conjunction with London 2012 data to assist in adjusting scope and scale.

Question 2. Do you agree that comparing data for the number of radio channels used for specific services at different events is an appropriate approach to estimating spectrum demand? If you disagree, please explain your reasoning.

Glasgow 2014 concurs with Ofcom's proposed approach, although the comments provided against Question 1 also apply.

Question 3. To what extent do you think we should place more emphasis on estimating demand from information provided by stakeholders rather than on the limited data available from past events of a similar scale?

Glasgow 2014 concurs with Ofcom's proposed approach and consulting with known stakeholders on their potential demands. It is acknowledged that in the case of the Commonwealth Games, only Melbourne 2006 has known information that is useful for these purposes.

Question 4. Is there any other relevant technical guidance that we should be taking into account in order to validate our assumptions and our estimate of spectrum demand?

With the London 2012 Olympic and Paralympics now complete, there may be some benefit in undertaking a desktop exercise in conjunction with Glasgow 2014 (and relevant stakeholders) to review actual London 2012 data and determine what may be relevant in the case of Glasgow 2014. In many instances, with the experience available between all parties and more detailed planning being undertaken in relation to Glasgow 2014, it should be relatively easy to identify a number of key differences which would assist in spectrum demand planning.

Question 5. Do you have any comments on how relying on wired communications could be used to reduce spectrum demand at Glasgow 2014?

It is understood that the reduction of wireless technology is focused on broadcasting purposes. Whilst wired communications will often be the preferred method in order to manage risk, wireless technologies will be used for a variety of applications, including some Games activities crucial to the staging of the sporting events.

Question 6. Do you have any comments on the scope for maximising supply by reusing spectrum efficiently?

We do not necessarily have any specific comments, recognising that in order to meet some requirements for the Games, there is a need to maximise spectrum use and efficiency.

Question 7. Do you have any comments on the scope for maximising supply by using higher-frequency spectrum?

With pressure around the world on wireless cameras moving out of the 2/3GHz band, we anticipate that there may be an increase in users migrating up the frequency range.

We do however anticipate a high demand for wireless cameras in the 2/3GHz band for the Glasgow 2014 Games, as we understand was evidenced for London 2012 – although the total demand will not be anywhere near as high.

We do not currently expect that RHBs will require higher frequencies compared to what may have been requested by some RHBs for London 2012, and that RHB's will still have equipment operating in the 2/3GHz band.

Question 8. Would you consider using free-space optics technologies?

At this stage we have not yet identified an application to use this technology. This may be an option for point to point applications, such as the beauty cameras, but not for mobile applications. Therefore, our preference would be to use solutions typically used for these events.

Question 9. Do you have any comments on our planning assumptions?

- A. *It is estimated that over 4000 accredited media staff will cover Glasgow 2014.*
Agreed – this is consistent with our planning assumption covering all media groups, including Host Broadcast operations.
- B. *Wired rather than wireless technology will be used where practicable.*
This is expected to be the case for broadcasting purposes, although there will still be a reliance on wireless technology for many elements.

Wireless technology will also be used for elements of the timing, scoring and results solution that will need to be provided for the Games.

However, in the delivery of services for some client groups, particularly for Internet access, Wi-Fi is likely to be favoured over cabled connectivity for flexibility and cost reasons. It is therefore expected Glasgow 2014 will take a different approach to its LAN network and Internet access services when compared to London 2012.

- C. *Spectrum will be required for partners and the venue setup from May 2014, for broadcasters from June 2014 and for teams from July 2014*
Depending on the venue, setup may commence prior to May 2014 (such as the Commonwealth Games Village, which will commence in early 2014). However, the spectrum demand for the majority of venue setup arrangements will be low.

Spectrum may also be required for test events, but the demands are not expected to be large. Specific users, depending on their scope for any test events, may make some applications to have access to the same channels during the Games as for the test events, others will be able to retune within a band.

Spectrum demand will increase as we get closer to the Games with the peak expected only to be reached once the Games are underway.

- D. *All spectrum requirements covered by the UK Government's spectrum guarantees will*

cease by the end of August 2014. The Commonwealth Games Village will close in early August 2014.

Spectrum requirements will reduce greatly after the Games, especially for the broadcasting requirements. However there is expected to be a requirement (albeit a much lesser demand) for spectrum during the venue decommissioning phase, which for some venues may extend beyond the end of August 2014.

- E. *Wireless equipment is likely to be imported from participating nations*
Agreed, however we would propose that this equipment may need to be approved for use by Ofcom as part of a "test and tagging" regime, however, the scope of this would need to be subject to further discussion between the OC and Ofcom. Learning's from London 2012 would also be useful in determining the appropriate approach to be adopted.
- F. *Wireless equipment will be re-tuneable to some extent*
Agreed, however, older equipment or specialised applications may not be able to be re-tuned.
- G. *Radiated power for all wireless equipment will be limited to the minimum necessary to obtain required coverage*
Agreed, although some guidelines to that effect would be useful as part of the communication materials.
- H. *The bandwidth for wireless equipment will not increase*
There is a possibility that some HD wireless camera will need more bandwidth.
- I. *All wireless equipment will comply with the relevant ETSI standards defined in UK Interface Requirements (IRs) even when using spectrum not normally available in the UK.*
For spectrum/channel planning purposes this assumption is acceptable. However not all wireless equipment will comply with the ETSI standards as some devices will be brought in from other countries which have other standards such as IEEE. Not all devices will be CE marked either.
- J. *The HB will provide live and recorded video feeds of all sporting events and make them available at the IBC to RHBs.*
Agreed.
- K. *Those feeds will be mainly in HD*
Agreed.
- L. *Wireless cameras used by the HB will not move between venues (with the exception of those used for wide-area sports)*
This will not necessarily be the case and will depend on the individual sport and venue. We expect that whilst wireless cameras will be mostly allocated to a venue there will be some instances where some equipment, and therefore wireless cameras, may be relocated between venues.
- M. *Lower-frequency spectrum is preferable for wireless cameras*
Agreed. It is understood that the 2/3GHz band is the current preference due to availability of rental equipment in this band. 7 to 13 GHz may be an alternative option, but rental equipment is still not as readily available.
- N. *Adjacent-channel use by wireless cameras is possible*
It is understood that this might be possible, but would be channel spacing dependant. Further detailed planning would be required to understand the full potential of this.

- O. *The HB will coordinate all spectrum requirements for broadcasting within venues*
Agreed, the HB will represent all RHBs, and whilst individual rights holders will apply directly for their own spectrum needs this will be coordinated by the HB.
- P. *Wireless-camera links can be engineered so that more than one receive point is deployed*
It is understood that diversity techniques can be used to improve the performance of low power wireless camera systems and increase the coverage area, however, this approach would need to be subject to further detailed planning.
- Q. *RHBs will transport their own feeds back to the IBC in some cases*
Agreed, which will be coordinated by the Host Broadcaster. RHBs may also setup temporary studios outside the IBC and would therefore also need to carry their feeds to other non-competition venues.
- R. *Optical fibre may be used at and link some competition venues*
Agreed.
- S. *All PMR will use CTCSS tones/DCS codes to set the squelch automatically*
The actual PMR requirements for Glasgow 2014 are subject to further planning and therefore we can't confirm the assumption at this stage.
- T. *RHBs will deploy a satellite-dish farm at a fixed location adjacent to the BC*
Agreed, which will be coordinated by the Host Broadcaster.
- U. *RHBs might also use satellites to link competition venues back to their facilities in the BC or at other locations*
Agreed, which will be coordinated by the Host Broadcaster.
- V. *ENG organisations will also use satellites*
We anticipate that outside broadcast and news gathering trucks could be at a number of venues. We therefore highly recommend that areas where satellite uplink could fail the coordination process be identified as early as possible. News gathering organisations will be deploying at short notice anywhere in the country – which needs to be kept in mind with regards to the coordination process.
- W. *Test events will have a much smaller spectrum requirement than Glasgow 2014*
Agreed, noting that the scope and nature of the Glasgow 2014 test event programme will be significantly different than the approach adopted for London 2012.
- X. *Spectrum use can be licensed for periods as short as – or even shorter than – one day, maximising the opportunities for frequency reuse*
It is suggested that further detailed planning would be appropriate to determine whether this is an operationally workable solution, whilst acknowledging that this approach supports efficient spectrum use. Understanding the potential demand for such short term spectrum use would also be useful. Lessons learned from London 2012 may also be useful in determining an approach that would be appropriate for Glasgow 2014.
- Y. *The spectrum plan will be subject to change in the run-up to Glasgow 2014*
We support the approach to refine the spectrum plan as requirements become better known through detailed planning, as well as reflecting key learnings from other events, any relevant test events and new technologies.

Question 10. How would you prefer to receive PMR/PBR services?

Until our PMR supplier is appointed, it is difficult to provide any clear indication of what form

of PMR technology will be used at the Games.

Question 11. Would you be willing to use CTCSS tones/DCS codes to allow the same channel to be used for PMR/PBR?

We don't have any specific comments at this stage.

Question 12. Do you have any comments on our assessment and proposals for wireless microphones and IEMs?

We don't have any specific comments at this stage.

Question 13. Do you have any comments on our assessment and proposals for talkback?

Although it can be expected that talk back will mainly be used by broadcasters, other users of talk back may be the sports presentation function, the ceremonies production and elements of timing, scoring and results.

It is possible that equipment may move between venues, particularly for venues which are only operational for short durations and allow for equipment re-use between venues.

Question 14. Do you have any comments on ADS?

Requirements will need to be understood following more detailed planning which identifies potential dependency on the use of ADS.

Question 15. Which bands would you prefer to use for wireless cameras?

We anticipate that demand for the 2/3GHz band will be high in accordance with our response to question 7.

Question 16. Which bands would you be willing to use for wireless cameras if you cannot use your preferred bands?

We don't have any specific comments at this stage.

Question 17. Do you have any other comments on our assessment and proposals for wireless cameras?

We would welcome the opportunity for the broadcasting community to be able to start using the frequencies around 2.7 - 3.1GHz and 4/5GHz to validate their usability and build confidence. However, test events are unlikely to be useful for this purpose.

Question 18. Which bands would you prefer to use for point-to-point links?

We don't have any specific comments at this stage.

Question 19. Which bands would you be willing to use for point-to-point links if you cannot use your preferred bands?

We don't have any specific comments at this stage.

Question 20. Do you have any other comments on our assessment and proposals for point-to-point links?

We don't have any specific comments at this stage.

Question 21. Do you have any comments on our assessment and proposals for FSS?

We don't have any specific comments at this stage.

Question 22. Do you have any comments on our assessment for Mobile Satellite Services (MSS)?

The assessment notes that MSS terminals are unlikely to be used during Glasgow 2014. We would request that this be validated against the London 2012 Games.

Question 23. Do you have any comments on our assessment for Radio navigation Satellite Services (RNSS)?

We do anticipate use of GPS technologies for a range of different purposes for Glasgow 2014. We therefore support Ofcom's proposal to ask the UK Government to cease jamming trials during the period of the Glasgow 2014 Games in order to prevent potential interference with our systems.

Question 24. Do you have any comments on our assessment and proposals for telemetry and telecommand?

We don't have any specific comments at this stage.

Question 25. Do you have any comments on our assessment and proposals for WLANs?

WLANs will provide an important operational function in supporting various aspects of the Games. Their use will be considered taking into consideration a range of different factors, as well as the various spectrum dependencies that will exist.

Question 26. Do you agree that licensing arrangements for users covered by the spectrum guarantees should not be subject to a special regime as we have for the London 2012 Games?

Specific guarantees have been provided to the Commonwealth Games Federation in support of staging Glasgow 2014, with the guarantees broadly similar to those provided for the London 2012 Games. Accordingly, we would expect equivalent licensing arrangements will be provided for Glasgow 2014.

Question 27. How can efficient sharing and co-ordination between Games and non-Games spectrum use best be achieved?

We consider that Ofcom is in the best position to determine efficient use of spectrum for the Games.

The Games are not only within the defined competition and non-competitions venues but along competition courses and road networks interconnecting venues. For the Queen's Baton Relay we expect media to cover the event throughout Scotland.

However, to avoid any illegal or unintended spectrum use and reduce the risk of interference, we believe the licensing process must be simple and easily understood.

Question 28. Do you have any other comments on how best to license spectrum use for Glasgow 2014?

We don't have any specific comments at this stage.

Question 29. How can interference management be most effective in ensuring the successful running of Glasgow 2014? Are there other measures we should consider implementing? To what extent is your response based on previous experience of similar events?

Clearly the London 2012 Olympics and Paralympics will have provided invaluable lessons in interference management, and these should be taken into consideration when planning for Glasgow 2014 – recognising the differences in scope and scale.

We also recommend that an agreed process is implemented (during Games operations) to test radio devices prior to being used in a venue to validate that the correct frequencies have been implemented and remove all illegal/unlicensed users. A tag/label on approved radio devices will help identify tested equipment being used at venues.

Question 30. Do you have any comments on our approach to test events?

We generally agree that the scope of test events linked to Glasgow 2014 will not be relevant to the spectrum plan. However, there may be test events where Games-time operations could be performed (either on a real-time basis, or in parallel/simulation testing). These are mainly expected to be associated with timing, scoring and results operations and PMR/PBR services, and typically only in 2014.

Test events or readiness events/activities may also be an opportunity for the Host Broadcaster to undertake testing of specific elements of their production or technical planning, but not opportunities are yet identified.