Response to Ofcom Consultation:
Digital Divided: band manager award
Second consultation on detailed award design

The band manager award provides an exciting but challenging opportunity. In developing the award we believe it is vital to ensure the regulation of the band manager is proportionate so that the outcome is equally attractive to prospective band managers and the PMSE community.

JFMG as the existing service provider, and perhaps the only one of its kind in the world, is ideally placed to provide expert comment on these proposals. To this end we have endeavoured to provide detailed proposals to support Ofcom's initiative whilst at the same time sustaining the interests of PMSE users over the long term.

PMSE users will be affected by a number of significant changes in the next 3 years. They will see not only the amount and type of spectrum they access change, but also the way they gain access to that spectrum, who they obtain it from and at what prices. We welcome the opportunity to work with key stakeholders to ensure an effective and efficient outcome for this initiative.

JFMG's response is aimed at helping Ofcom develop a band manager award that will result in the creation of a successful and vibrant band manager, with the technical skills and PMSE awareness to serve the PMSE community in a fair and reasonable way and support them through this period of dramatic change.

1. Executive Summary

The main themes within our response are as follows:

Disproportionate regulation
We recognise the need for Ofcom to allay PMSE users' fears regarding the potential for a commercial band manager to charge prohibitive prices for access and to deny it at will; but we believe the level of regulation proposed within the consultation is disproportionate to the task at hand. The level of complexity required to ensure compliance to FRND terms could prove prohibitive not just to the band manager's ability to make efficiency gains but also to PMSE users who will bear the costs involved. We therefore make some suggestions to simplify the process.

Uncertainty
There are uncertainties around the level of demand and subsequently volume forecasts for the band manager arising from the migration out of Ch 31 – 37 and 61 – 69 and the reconfiguration of the remaining interleaved spectrum through DSO. This is set to cause considerable disruption and unease for the PMSE industry and at the same time they will be required to adapt to a new commercial band manager.

Dealing with congestion
We also highlight that we believe how the band manager deals with congestion will play a large part in its success and that of the PMSE users' in the future. Legacy assignments currently add to congestion and in the future, as the amount of spectrum reduces it will exacerbate the problem further. However the requirement to keep consistency in spectrum access during the transition may continue this legacy and raise discrimination claims by those who are denied access as a result. Congestion at events will also require careful handling if price controls are not permitted to manage demand. The band manager will need to implement unquestionable reasoning to how it distributes spectrum in these situations to avoid claims of discrimination or have a predefined and agreed hierarchy of outcomes approved by PMSE users.

Company benchmarking
We believe the companies used in the benchmarking exercise undertaken by Analysys Mason do not bear any resemblance to the band manager and significantly underestimate and undervalue the level of technical expertise and bespoke products that the PMSE community require from the band manager. This information could result in potential bidders undervaluing the costs of providing such a service and subsequently overpromising in their final bid. If this bidder were to win it may not survive and the PMSE industry would suffer as a result.

Pricing and cost allocation
We are also concerned that the allocation of AIP, specifically for UHF 1 and UHF 2 bands has not taken into account the technical configuration of the bands leading to a problem for PMSE users when phasing in the fee. We have therefore suggested an alternative approach to phasing for these bands.

We have also suggest that it would be preferable for the band manager to have some flexibility to create baskets of authorisation types that promote spectrum efficiency whilst accountably recovering its costs across the related set of products within each basket.

2. Consultation Questions

Protecting PMSE users:

***Question 1)**: Do you agree with our proposal that we should review our approach to FRND obligations at the same time that we initiate our first review of AIP levels, three years after the band manager starts operating?*

We believe that there should be flexibility to amend FRND arrangements to reflect market change the frequency of which to be determined but consistent with existing proposals would seem sensible in the outset. Although there is some concern that a 3 year cycle for review may be too often to support the commercial viability of the Band Manager

We are not yet clear how Ofcom's proposed review of its approach to the FRND commitments made by the band manager will work in practice. During the award, candidate band managers will have designed their commitments to align with Ofcom's current objectives for PMSE access as guided by the benchmark approach. The successful candidate will then have these terms enshrined in their licence and will have dimensioned their business to deliver against these requirements.

After the initial period, if Ofcom concludes that these commitments are no longer the best fit with its updated thinking on objectives for future PMSE spectrum access, we understand that FRND guidance may be amended. But as Ofcom notes in para. 3.11, the precise nature of FRND conditions will ultimately depend on the commitments made by applicants so the proposal to "amend the FRND guidance" and to "permit a greater degree of flexibility in how FRND is interpreted" do not seem consistent with this approach.

The band manager is to be selected based on its commitments matched against Ofcom's selection criteria. At each subsequent review it appears that the band manager may be expected to make new commitments or to rescind existing commitments. If so, this could have a significant impact on the business and undermine its longer term viability. New or rescinded commitments could also cause confusion amongst PMSE users regarding what was expected of the band manager.

***Question 2)**: Do you agree with the objectives that we are seeking to achieve through our application of FRND to the band manager?*

Terms and Conditions
We fully support the aim to achieve an outcome that is representative of a competitive market but we believe that there is a fundamental tension between this objective and Ofcom's principal concern to

moderate the impact of costs to end users. The result is that some elements of the PMSE sector including wireless camera users will not be able to make progress to a viable and sustainable position in the market. This is likely to perpetuate the current position facing PMSE where its traditionally low opportunity cost spectrum allocations come under market pressure and are ultimately lost. Unless the price paid for spectrum access is closer to the market price for alternative spectrum bands or there is a managed migration to lower cost spectrum, the PMSE sector will not be able to make the transition to alternative spectrum.

Incentives on the Band Manager

We agree that the band manager should have incentives to develop its business but we believe that Ofcom's proposals will severely restrict the potential for the band manager to achieve this. Indeed, the current proposals could act as a disincentive to innovation.

A review of the band manager's fee on a 3 year cycle we believe is too short to enable the band manager to plan, implement and achieve a worthwhile return on the investment needed to realise efficiency gains.

No discrimination

We believe that in principle there should not be any undue discrimination towards specific users but we note that Ofcom has left this complex topic open to wide interpretation. Certainly we strongly believe that there must not be any discrimination against a specific user on the grounds of promoting the self-interest of the band manager or any of their affiliates.

We also believe that there is potential for discrimination issues to arise out of Ofcom's preference for the band manager to use non-pricing mechanisms rather than pricing to deal with spectrum congestion. It is likely that this will leave the band manager open to challenge on the basis of discrimination since the successful execution of an event where spectrum is in short supply cannot simply be handled through a first come first served approach or allocation in proportion to requests. In our experience, some users will seek to gain control over spectrum access by early booking. Also, it is frequently the case at major events that users request excess capacity compared to the actual operational requirement. This can cause apparent congestion and in the worst case, needlessly deny other users access. Whilst the band manager can moderate requests on the basis of its knowledge and previous experience, we believe that the potential implications under FRND are likely to be a deterrent to effective moderation.

It should also be noted that the band manager will inherit legacy assignment arrangements to users such as news broadcasters that date back to before the establishment of the current outsourced licensing arrangements. These are considered as discriminatory by others who have since been denied access to similar arrangements on spectrum management grounds.

We would urge Ofcom to consider, before the award proceeds, as to whether these arrangements if left in place could be judged to be non-FRND. If they are incompatible with FRND then they should be resolved before the award takes place.

***Question 3)**: Do you agree with our proposal that under the benchmark approach excess PMSE demand for spectrum should be dealt with by the band manager using non-pricing methods?*

We do not agree that using non-pricing methods should be the only approach that the band manager is permitted to use in handling excess demand, In a competitive market, it would be expected that a pricing mechanism would be applied to help resolve excess demand. Therefore to deny pricing as a tool would appear to be counter to Ofcom's objectives in achieving an outcome which is representative of a competitive market.

JFMG has been successful in managing congestion in the past and works to ensure that all genuine operational requirements can be met. But current trends suggest an increasing demand for spectrum, particularly for wireless cameras coupled with reducing availability of preferred spectrum. The band

manager will be facing an ever-increasing challenge and the likely outcome is that it will be unable to meet the total demand by negotiation alone. It is inevitable that any disappointed applicants will feel that they have been discriminated against.

With the closure of 2.6GHz band and the likely withdrawal of 3.5GHz band, it is expected that wireless camera users will face considerable congestion in the remaining 2GHz bands. To resolve this congestion, users have the opportunity to move some operational requirements to spectrum at 7GHz that, although less congested, has a higher AIP charge to the band manager and so potentially higher fees for the user. It may be that users facing regular congestion are sufficiently incentivised by the experience to invest in equipment that operates in less congested bands, but the denial of access to the cheaper 2GHz spectrum could also lead to allegations of discrimination.

The proposed approach appears to limit the ability of the band manager to acquire additional spectrum to help resolve congestion as it is likely that it would be more expensive for users to access. This applies not only to any permanent acquisition of additional spectrum but also to temporary loans from other spectrum owners. Both would create cliff-edges between the price charged to users for top-up spectrum compared with core PMSE spectrum. Averaging prices across categories could help to smooth out pricing differentials between bands that are directly substitutable. Not only would this reduce risk of disputes from users who have no option but to take-up higher priced channels but ultimately it could help the sector to move towards the market.

***Question 4)**: Do you have any views on how best to deal with excess PMSE demand using non-pricing methods?*

JFMG has considerable experience in dealing with the congestion that commonly occurs at major events. We have found that the most effective method in these instances is to suspend the first come first served approach and to allocate a specialist with knowledge and experience of the event or similar events to develop an overall plan.

But in meeting excess demand and supporting programme makers' operational needs, one of our essential activities is to facilitate access to additional spectrum to temporarily supplement PMSE allocations. Currently, Ofcom is the intermediary for all spectrum loans since the spectrum typically sought by programme makers at special events remains under Ofcom's control. Also, even where spectrum is under 3rd party ownership as a result of an auction there is currently no suitable mechanism for securing a temporary loan from a 3rd party without Ofcom authorising the transfer.

Currently, the charges made to users for loan spectrum are identical to those charged for use of similar PMSE bands even though both Ofcom and JFMG face considerable transaction costs in facilitating the loan. We understand from Ofcom's proposals that the band manager will be able to recover the costs it incurs in facilitating loans and can include these in setting prices for access to loan spectrum.

In the medium term Ofcom is likely to remain in control of those spectrum bands most commonly requested by programme makers and so it is essential that Ofcom clarifies how continuity in the supply and pricing of loan spectrum will operate so that the band manager can forecast volume of transactions and revenues.

***Question 5)**: Do you agree with our benchmark approach to assessing whether the band manager is pricing in a discriminatory way?*

We agree that a variation from the band manager's pricing methodology as defined in its application that can be supported by an objective justification should not be considered as a breach of FRND obligations in the event of a dispute. But to simplify the dispute process we would suggest that it would be preferable for the band manager to commit to work fully within the methodology put forward in its application and at each subsequent FRND review.

We believe that pricing should not be discriminatory against any user or particular group of users. But it is not clear that the purely cost oriented model for setting prices is ideal. For example, the current flat-rate fee for certain types of licences is seen as discriminatory. It is often said that a small business with a small equipment holding pays the same for its UK Wireless Microphone licence as a large hire company or broadcaster that holds a large volume of equipment. The cost to the band manager in issuing a licence is the same in either case but the small business feels discriminated against.

We would urge Ofcom to give prospective band managers and users guidance on whether a fixed price for all users is FRND or discriminatory.

***Question 6)**: Do you agree with our benchmark approach to ensuring that service levels are met in an FRND way?*

We agree with the proposed benchmark approach which aims to ensure that service levels are met in an FRND way.

***Question 7)**: Do you agree with our proposed approach that any proposal by the band manager to allow non-PMSE use of the spectrum in this award should be first approved by us?*

We do not agree that this approach should be applied to all PMSE bands and suggest that Ofcom reconsider the proposal so that at the outset, only those bands that are actually loaded sufficiently by PMSE should be subject to the requirement for approval before allowing any non-PMSE use.

We support the aim of avoiding disruption but the requirement to seek Ofcom's approval before any non-PMSE use can be agreed is inconsistent with wider aims of incentivising the band manager to seek commercial opportunities.

We recognise that PMSE users require comfort around certainty of access to key bands. However, we would suggest that this requirement be limited to those bands where there is current heavy use by PMSE and where there is no alternative spectrum available. These could include key bands such as interleaved spectrum and Ch38 for wireless microphones and 2GHz bands for wireless cameras.

But there are many bands with little or no use by PMSE and these could readily accommodate other applications without disrupting PMSE activities. In the first consultation on the PMSE Band Manager award, Ofcom identified various VHF bands and SHF bands such as 10GHz, 24GHz and 48GHz where there was no demand for PMSE.

As a prerequisite for this approach there will need to be much greater clarity about what constitutes PMSE and what doesn't. There will be considerable incentive on users to present their requirements as being PMSE so as to benefit from the protection provisions on price and access. Without an unambiguous definition of which applications, which users or which equipment must be afforded protected access, the band manager is likely to face considerable difficulty in resolving requests according to FRND and licence obligations. For example:

- Established users may challenge the band manager that another use or user, (for example, the emergency services and other government departments who frequently call upon PMSE spectrum), is not PMSE or is perhaps 'less PMSE' than their own requirement and so is potentially denying them FRND access.

- Applicants may claim that they are being discriminated against by the band manager by not being granted access.

Ultimately these challenges are likely to end-up as disputes and Ofcom will then be called upon to decide if a request is genuine PMSE and so subject to FRND pricing and access or not. As much PMSE type use is characterised by short-notice and short-term use then a lengthy dispute process appears to be unworkable in resolving these issues in a satisfactory timescale. We believe it is essential that Ofcom resolves this before the award proceeds.

***Question 8)**: Do you have any comments on how efficient sharing and coordination between Games and non-Games use of spectrum to be awarded to the band manager can best be achieved?*

Efficient sharing and coordination

Ofcom's 2012 draft spectrum plan identifies 3 possible options that could be used in isolation or in combination to ensure efficient sharing and coordination between Games and non-Games use of spectrum. They are as follows:

- identifying particular channels that are set aside for Games use and not otherwise available for their duration
- establishing geographic coordination zones where Ofcom will perform the necessary technical checks to ensure proper coordination between Games and non-Games use; and
- establishing geographic exclusion zones around Games venues where any spectrum use will require specific additional authorisation from Ofcom

Whilst the options identified for efficient sharing and coordination between Games and non-Games spectrum use may be necessary in some instances, we would suggest that they be employed only as a last resort. Setting aside particular channels for Games use only and introducing geographic exclusion zones in particular could place unnecessary restrictions on non-Games use if employed and would be counter to Ofcom's primary duty of ensuring efficient use of spectrum.

We believe that careful planning and cooperation with the PMSE band manager could better facilitate efficient sharing and coordination than these measures.

However, to achieve this there needs to be a joined up approach between the existing authorisation process and the process for the Games. This would ensure that Games use was taken into account when making day-to-day assignments, without unduly restricting their use. In order to facilitate this, the PMSE band manager would need sufficient information regarding spectrum use in Games locations, including: frequencies, powers, duration and location. Using this information they would be able to determine what could be used for day-to-day PMSE activity near Games locations without causing any undue interference on a case-by-case basis. This would remove the need to set aside channels for Games use only and facilitate more efficient use of the spectrum. It would also remove the need to implement geographic exclusion zones as any use would be allocated with protection of the Games in mind, reducing the risk of interference. The establishment of coordination zones would further minimise any risk and negate the need for exclusion zones completely.

JFMG manage large events on a regular basis and ensure attendees' needs are met without denying access to other users in and around the vicinity. An experienced band manager develops good relationships with customers and is able to negotiate usage in a way that produces a satisfactory outcome for all. We believe that varying or revoking licences for the Games could be avoided completely as it is possible to contact users and negotiate access to spectrum that they are licensed for without these measures. We frequently contact licensees to borrow spectrum for large events, and find that customers are usually extremely amenable. Working closely with the band manager may therefore facilitate the organisation of such arrangements without the need for regulatory action.

We further believe that a cooperative approach is necessary to ensure that day-to-day users are not disadvantaged as a result of the focus on the Games. Restricting access to frequencies and/or

locations could have an impact on businesses' ability to provide services to customers and could therefore affect their financial well-being beyond the Games.

We believe it will not be necessary to place restrictions on PMSE use at specific times and locations if information is shared dynamically and efficient cooperation established between the Games licensing team and the PMSE band manager.

However, the creation of a process whereby 2 separate entities are managing the same spectrum and are required to share information brings with it a certain level of risk. Information sharing and handover leaves room for mistakes and it would not be clear who would be left responsible for these errors. In addition there would be unnecessary duplication of effort as both parties would be coordinating usage around the same assignments. The process could therefore prove to be less efficient in respect of resources and overall spectrum efficiency. Indeed it could create rather than reduce congestion. It would therefore appear logical that the best way forward would be for the band manager to take on the responsibility of licensing both Games and non-Games use on Ofcom's behalf. This would remove the need to employ exclusion zones and ring-fence spectrum. This would ensure the management of the 2012 Games was dealt with in the most efficient and accountable way possible for UK plc supporting the Games and the long established PMSE industry.

Implications for the band manager

There are a number of issues that the use of the band managers' spectrum for the Games raises. As stated above there are general coordination concerns, but in addition its' use may also have financial repercussions for the band manager.
Under the current proposals the band manager would have to effectively hand back some of its spectrum for use specifically for the Games. This would prevent the band manager from generating any revenue from this spectrum during this time. Even if bands were not reserved for the Games the use of exclusion zones would also restrict the band manager's ability to make the most efficient use of their spectrum and generate revenue from its sale. Therefore we would assume that the band manager will be able to charge the Government for access to the relevant spectrum based on the opportunity cost of the assignments prevented.

In addition it is likely that the level of detailed information and coordination required between the band manager and Ofcom's 2012 licensing team will produce an administrative burden for the band manager that needs to be borne in mind.

Finally, the in-house licensing of spectrum for users who come under the Government guarantees for the Games implies that there is a level of uncertainty regarding the band manager's ability to deal with high profile international events of this type. The band manager will be responsible for dealing with all other major sporting events during this period but we are concerned that these may slowly be removed from the band manager's role as high profile international events demand guarantees regarding spectrum availability. The Glasgow Commonwealth Games is one example, whereby in the past the Manchester Games was dealt with by JFMG. The use of the band manager's spectrum for the Games and the possibility that Ofcom could decide to manage other high profile events in-house will necessarily generate some uncertainty surrounding what spectrum will be available for the band manager. In addition this will affect its ability to forecast cost allocations and assignment volumes during the bid process and we would welcome Ofcom's perspective on this issue.

Benchmark approach to FRND terms and conditions:

Question 9)*: Does our FRND benchmark approach provide sufficient information for applicant band managers to make commitments to PMSE users based on our FRND principles and objectives?*

We believe that the benchmark approach provides enough information for applicants to make meaningful commitments based on Ofcom's FRND principles and objectives.

Question 10)*: Does our FRND benchmark approach strike an appropriate balance between giving applicant band managers sufficient certainty to plan their business and giving sufficient flexibility to determine whether FRND obligations have been breached?*

We do not believe that the proposed approach gives sufficient flexibility to the band manager to operate an efficient and viable business. There is considerable uncertainty facing the band manager as a result of several factors that are likely to impact demand:

1) The transition from the current arrangement is a significant change for the industry and whilst Ofcom has attempted to minimise the cost impact to PMSE users, there is very limited information available on the sensitivity of demand to pricing.

2) At the same time, there is considerable disruption for users as PMSE spectrum is reconfigured. For example, the clearance of 800MHz band requiring the migration of wireless microphone users (and others) from Ch69 to Ch38, as well as the clearance of Ch61-68. In this sector, industry groups estimate that much wireless microphone equipment may be operated illegally. It is unclear how the disruption and cost to users of replacing their equipment will affect the demand for authorised spectrum use. For example, without the threat of enforcement, some licensed users may choose to remain in Ch69 and operate illegally because this is a lower cost option than accepting a partial contribution towards replacement of their equipment.

3) Currently, there is a lack of clarity as to who should hold a licence. This provides perfect conditions for those who are aware of requirements but choose to avoid complying with them. Further, this does not help the band manager to focus its efforts on reducing the significant level of illegal use through a programme of information and education towards those who are unaware of the requirements. Similarly, it would appear to hinder any enforcement action by Ofcom since if it is not clear who should hold a licence then it cannot possibly be clear as to who has committed an offence: Is it the artist as actual 'user' of the equipment, or is it the freelance operator who is controlling the desk, or is it the sound company who hired the equipment, or is it the production manager for the event, or is it the venue owner? Current guidance is that whoever is deriving value from use of the equipment is responsible for licensing the spectrum. But it is arguable that many if not all of the above are deriving value so this is not that helpful.

This uncertainty of demand represents a huge risk for the band manager in that its revenue is not protected against a downturn in authorised use which may be a consequence of the significant changes proposed.

Without the risk of sanctions being applied it is clear "the few" will continue to subsidise "the many" and the reaction to increased costs will inevitably lead to "the few" becoming fewer and "the many" becoming "the most". To avoid this Ofcom and the band manager will need to have a coordinated approach to enforcement. Ofcom must make meaningful commitments as part of the award to provide enforcement support to the band manager so that there is a very real risk for users that sanctions will result if spectrum is used without authorisation.

***Question 11)**: Do you agree it may be appropriate for us to review the FRND benchmark approach?*

We agree that there is considerable uncertainty in the transition period for PMSE users and for the band manager. A review of the FRND benchmark may give Ofcom additional comfort that it can adjust the balance between its objectives or indeed, vary those objectives. But it should be noted that this does increase the uncertainty for PMSE users and for the band manager, particularly if the review and resulting changes are too frequent.

***Question 12)**: Do you agree with our proposal to hold an initial review of the FRND benchmark approach in parallel with the initial AIP review, three years after the band manager starts operating?*

We believe that a 3 yearly review of the FRND benchmark gives weak incentives for the band manager to make efficiency gains during this period. In practice, the band manager will only be able to benefit from up to around 18months of efficiency gains because at the 3 year review, Ofcom can normalise the rate of return. In other regulated industries, a full 5 year period is provided to give the organisation a stronger incentive to implement efficiency gains.

***Question 13)**: Do you have any suggestions as to how the band manager can transparently and proportionately allocate its fixed costs across bands and authorisations?*

We are confident that the band manager will be able to transparently and proportionately allocate its fixed costs on a band by band basis. However we believe the allocation becomes more challenging at the authorisation level.

Based on our current understanding of Ofcom's proposals, an initial finding is that cost allocation to authorisation level will not promote the desired behaviour towards more efficient use of spectrum. We have determined that the duration of an authorisation is not a principal cost driver. So, for those bands which it is proposed will have no AIP, the allocation of cost will result in a similar charge for say a long term authorisation and for a short duration authorisation. This is likely to encourage the demand for long term authorisations in preference to the short duration authorisations which better reflect the actual profile of use of much of the spectrum in the PMSE sector. The consequence is that spectrum appears to be more congested than it really is which denies the opportunity for sharing and reuse.

We would suggest that it would be preferable for the band manager to have some flexibility to create baskets of authorisation types that promote spectrum efficiency whilst accountably recovering its costs across the related set of products within each basket.

We believe this would ensure that prices remain cost orientated whilst also being proportionate to the scale of the band manager's activities. We believe there will be additional costs of implementing a cost allocation methodology down to the authorisation level and these would necessarily be passed onto the user. Removing this level of complexity would reduce this burden.

***Question 14)**: Do you agree that ROS is most appropriate measure of profitability? Do you agree the indicative ROS figures set out are reasonable? Are there any more appropriate benchmarks?*

We do not agree that return on sales is an appropriate measure of profitability for the band manager. Ofcom's advisors have not taken account of the significant fixed asset employed by JFMG in carrying out its function of coordinating and licensing spectrum use. Our completely bespoke business system integrates all of the key functions required to enable us to successfully and efficiently deliver a high quality, high volume service to PMSE users. Our unique system has been continuously developed

since 2001 and the system, algorithms, knowledge, techniques and expertise built up, represent a substantial investment over that period compared to the turnover. This investment would be ignored using the return on sales approach and so return on sales alone (particularly at the level suggested as a benchmark) does not allow any consideration for return on this investment.

We do not agree that the chosen benchmarks are representative of JFMG or the future band manager either by nature or by scale. The selected companies include component distributors which we do not recognise as being similar in nature to the band manager's responsibilities. JFMG adds technical design, market knowledge and consultancy to the majority of our sales. Perhaps fewer than 10% of sales could be regarded as manufacturer's 'standard products' and even then JFMG provides technical support and assistance to users.

Whilst none of the chosen benchmarks are directly comparable in either nature or scale it could be argued that BT Retail is the closest of the selection as it is the only company operating in a regulated sector. Therefore a 10 – 12% return would appear to be a more appropriate benchmark if ROS remains the measure of profitability. We believe that this kind of figure would appear to better reflect the level of risk the band manager will be exposed to. We also believe that the permissible rate of return should be the average over all bands rather than at individual band level.

Question 15)*: Does securing continuity with existing arrangements for spectrum access but adjusting in response to changing conditions and PMSE needs provide the best trade-off between avoiding disruption to PMSE users and promoting efficient use of spectrum?*

Our view is that the most practical approach is one that ensures continuity of access in key areas to avoid disruption for users, adjusts in response to changing conditions and PMSE needs but also supports initial changes that are necessary to enable the band manager to comply with Ofcom's requirements. Examples of changes that may be required include:

Wide area exclusive use assignments

The band manager may inherit legacy assignment arrangements to certain users that date back to before the establishment of the current outsourced licensing arrangements. These assignments provide very convenient access for the licensee but deny other users the opportunity to timeshare spectrum. The overall result is: a very low transaction cost for the user who has no administrative burden in booking each use; a minimal transaction cost for the band manager; increased congestion within that part of the band that remains available for temporary use; potentially poor overall spectrum efficiency.

Ofcom's preference for securing continuity with existing arrangements ensures that these arrangements will likely be perpetuated and we believe inhibits the PMSE community from developing.

Multi-Use Assignments

The current multi-use assignments (or carnets) help to minimise transaction costs for users and the band manager but would not be a good fit with Ofcom's preference for setting prices according to band-by-band allocation of costs across an increased number of bands. Furthermore, these fixed value assignments may be an obstacle in moving towards a more flexible pricing regime that is able to respond to geographic, temporal or other cost factors.

We note that Ofcom would support the introduction of new types and classes of access and also recognises that some existing categories may need to be withdrawn. But Ofcom appears to be suggesting in para. 4.117 that any changes would have to be by negotiation with PMSE users. We do not believe that this is workable as some changes will likely need to be made at the start of operations to adapt the current arrangements to comply with Ofcom's requirements.

However, given that Ofcom proposes to consult users over aspects of each prospective band manager's proposals this provides an opportunity for a dialogue with users over any proposed changes from start-up and for this issue to be resolved.

***Question 16)**: What are the key types and categories of PMSE spectrum access that should be kept to secure continuity? What types and categories would you be interested in seeing emerging?*

We would suggest that the key types and categories of spectrum access that should be kept to secure continuity include:

- Short term coordinated access for wireless microphones, personal monitors, wireless cameras, talkback, audio links, video links and camera control
- Long term coordinated access for wireless microphones, personal monitors and talkback
- Short term and long term coordinated access for Audio Distribution Systems
- Long term uncoordinated access for wireless microphones and personal monitors

Additionally, there is merit in introducing a medium term option for coordinated access by wireless microphones and monitors to better fit the needs of entertainment tours.

***Question 17)**: Does our interpretation of how the band manager should meet PMSE demand on FRND conditions provide adequate protection for PMSE users?*

We are not clear on Ofcom's interpretation of how the band manager should prioritise PMSE users over non-PMSE users, or on the exact definition of PMSE as discussed above (see Question 7).

This provision would appear to be relevant to the position originally proposed by Ofcom in the July 2008 consultation where access for non-PMSE use was permissible subject to meeting the Technical Licensing Conditions. Ofcom now proposes to go beyond the original provisions in order to afford greater protection to PMSE use and consequently requires the band manager to seek approval for all non-PMSE use before it can be authorised.

It seems wholly unreasonable that, having successfully obtained approval from Ofcom to authorise non-PMSE use through the proposed consultative process, there is still a requirement on the band manager to prioritise on demand, any PMSE use that emerges subsequently.

We do not believe that this is Ofcom's intention and conclude that this provision has been overtaken by the additional protection now proposed for non-PMSE users in that all non-PMSE use has to be approved by Ofcom before it can be authorised. If this interpretation is correct then we believe that the approach proposed affords PMSE users adequate protection.

***Question 18)**: Do you agree that service levels are an inherent part of the terms and conditions for PMSE spectrum access and should be subject to FRND obligations?*

We agree that service levels provided to all users of PMSE spectrum should be fair, reasonable and non-discriminatory.

***Question 19)**: Do you agree with our overarching approach to enforcing FRND obligations?*

It is proposed that the FRND obligations on the band manager will include:

- Pricing
- Service level
- Spectrum access
  (including the range of products made available and the quantity of spectrum supplied)

Under Ofcom's proposals, a user can enter into a dispute with the band manager at any time if dissatisfied with any of these aspects of the service. Looking at each of these in turn:

Pricing

Given that the band manager's methodology for pricing will have been declared as part of its application, subjected to public consultation and then ultimately selected by Ofcom it is unlikely that this will result in genuine individual claims arising from day-to-day operations. Provided the band manager continues to operate pricing as declared in its bid, we suggest that this aspect does not need to be part of the FRND obligations, but rather a licence compliance issue.

Service level

Similarly, for service level it is unlikely to result in individual disputes given that the band manager will have made commitments as part of its application and it will be clear if these have not been met. The band manager will be required to report against its commitments and with the proposed annual review the band manager risks its licence being revoked in the case of persistent failure. So the issue here is what consequences there are, if any, for a single transactional failure that causes inconvenience or cost to a user. This would appear to be best tackled by the band manager making clear as part of its application how it would respond to users in cases where it has fallen short of its commitments. For example, by not handling a particular application within the timescale promised.

Spectrum access

It seems that this is the area that has the greatest potential for disputes to arise with users. The range of products available will again be subject to the initial competitive selection process and unlikely to be problematic. Subsequently, the band manager will be expected to consult with users regarding the introduction of new products or the withdrawal of existing ones and whilst this could give rise to a dispute, these changes are likely to be relatively infrequent. It is the quantity of spectrum supplied that is likely to be of greatest concern especially in those bands facing increasing congestion.

From this we conclude that undue weight may be being given to pricing and service level issues when the primary day-to-day challenge is likely to be around spectrum access. We believe that there will be sufficient protection in place for pricing and service levels without also needing to include these in the scope of the full (and potentially costly) dispute resolution procedure as proposed.

But there is significant potential for claims to arise when a user's preferred spectrum access has been denied. This may occur for various reasons including:

- Restrictions on band manager's licence
  To protect other spectrum users such as broadcast TV or military.

- Coordination
  To protect other PMSE users using the same spectrum at a nearby location.

- Technical compatibility
  To protect other PMSE users using adjacent spectrum at the same location.

- Rationing
  To resolve congestion; typically at a major event.

Whilst these reasons (except for rationing) are equally applicable to short term and longer term requirements, it is clear that a dispute arising from the handling of a request for short term access at a major event is unlikely to be resolved under the proposed dispute resolution procedure before the event takes place. This leads to the question that, in the event that a claim is subsequently found to be in the user's favour, what are the consequences for the band manager? If the band manager is to be exposed to the possibility of claims for damages this represents a significant and costly business risk.

We believe that the proposed overarching approach to enforcing FRND obligations is not ideally suited to the satisfactory resolution of the type of disputes that are likely to arise. We believe that it is disproportionate and unnecessary to include pricing and service level within the scope of the day-to-day dispute resolution process. With regards to denial of spectrum access, we would suggest that a potentially lengthy and costly dispute resolution process may not be the best approach for handling any dissatisfaction from a PMSE user. Instead, we would suggest that this might be better handled by the band manager being fully open about the reasons (technical or otherwise) that access has been denied. This openness might perhaps extend to full publication of technical assignment rules and the geographic boundaries designed to protect spectrum users. And in the case of a denial of access to spectrum, the band manager could clearly indicate the reason for the decision if requested by the user.

***Question 20)**: Do you agree that a minimum set of information needs to be published by the band manager in order to ensure that PMSE users can seek spectrum access in a manner that meets their needs and the reassurance that their request will be dealt with on FRND terms and conditions?*

We agree that open access to information is essential in supporting a diverse range of users to access spectrum. This is consistent with the approach currently employed by JFMG and represents good business practice developed with the industry over the last 12 years.

***Question 21)**: What minimum set of information should the band manager publish? What additional information would PMSE users benefit from seeing it publish?*

It is vitally important that potential users are aware of: what spectrum is available; what it can be used for; how much it will cost; how to apply for access; how quickly it can be made available; cancellation options; what level of guarantee; how to complain if unsatisfied.

Additionally, we publish information on spectrum availability at specific events and details of any special spectrum management arrangements that will apply

***Question 22)**: Do you think that it is reasonable to expect the band manager to provide this information at the time of a dispute?*

We agree that it is reasonable to expect the band manager to provide this information in response to a serious and genuine dispute.

***Question 23)**: Do you agree that the provision of information by the band manager as proposed is an integral part of assessing the extent to which the terms and conditions it offers to PMSE users are FRND?*

We agree that the provision of information by the band manager as proposed is an integral part of assessing the extent to which the terms and conditions it offers to PMSE users are FRND.

Applicants will be asked to provide information regarding service levels and charges during the award. The winner's commitments will then be transferred into licence terms and conditions. At this point one could assume that the service levels and proposed charges to PMSE users have been deemed to be in line with Ofcom's FRND principles, and should therefore remain fixed for the first three years.

The award process will provide users the opportunity to comment on prospective band managers' bids so any concerns should have already been addressed. This would therefore appear to make regulatory intervention prior to the 3 year review redundant other than in exceptional circumstances.

Referring directly to the commitments made by the band manager in the first instance should also remove the need to determine whether costs and returns have been reasonably incurred both at the annual and 3 year review stages.

We believe Ofcom should continue to collect annual information on the band manager's costs, charges and service levels as part of monitoring compliance with the licence commitments at the annual review, but should not reopen the initial licence commitments unless there are exceptional circumstances...

We also believe that ensuring the correct level of information is provided at the competition stage should remove the option for users to dispute charges and service levels prior to the 3 year review. The option would be redundant if charges and service levels have already been accepted by Ofcom and PMSE users. This would minimise the need for alternative dispute resolution and simplify the overarching approach to FRND in the long run. Simplification in this area would also help to reduce the cost burden to PMSE users.

Our objectives and approach in applying AIP:

***Question 24)**: Do you agree with our objectives and approach in applying AIP principles to the licence fee payable by the band manager?*

We do agree with the vision for future PMSE access to spectrum that Ofcom set out in the December 2007 statement and in the July 2008 consultation. Ofcom considered that PMSE users needed to move away from the current situation where the fees paid for access reflect only the administrative cost of providing access. As Ofcom notes, the purpose of applying AIP based licence fees is to promote efficiency in the use of spectrum.

But in the latest proposals, there appears to be greater attention paid to adapting principles to ensure affordable fees for users rather than applying true AIP. As a result, 12 of the 20 frequency ranges have been valued at nil opportunity cost. Included within the 12 bands where users will continue to pay only the administrative cost of access, are key bands for wireless microphone and wireless camera operations. Together, these account for a substantial part of the PMSE sector and hence we believe provide no incentive for more efficient use of the spectrum. At the same time there is evidence of congestion, particularly within the key wireless camera bands around 2GHz and yet the incentive to move to the less congested alternative spectrum may be removed because it has an AIP value greater than zero. One could assume that with the allocation of administrative costs on top this band would prove more expensive for users to access.

Whilst we understand Ofcom's motives for adjusting their AIP calculations in a way that does not disrupt or preclude PMSE users' access, we are concerned that this method will not necessarily achieve Ofcom's long-term objectives and could harm the PMSE industry's ability to adjust to the market in the long run.

Our pricing proposals for the band manager:

***Question 25)**: Do you agree with our proposal to assess viability of alternative use of spectrum based on the secondary nature of PMSE access where applicable?*

We agree that technical, regulatory and any other constraints on the spectrum available for PMSE should be taken fully into account when assessing the viability of alternative uses. Otherwise, the AIP costs borne by the band manager and PMSE users will not be realistic.

***Question 26)**: Do you agree with our approach to assessing whether there is an opportunity cost of spectrum based on competing PMSE use?*

We agree that it is appropriate to consider the opportunity cost resulting from excess demand within the PMSE sector. But we do not agree that the marginal decrement approach as applied by Analysys Mason is a good fit for assessing the costs of congestion. This is primarily because of the nature of PMSE demand where congestion is typically sporadic and experienced at locations of major sport or cultural events rather than in particular geographic areas or at particular times of day. Another factor is the nature of the supply chain for PMSE equipment where many users do not own their own equipment but hire it in as required.

Whilst it may be true that excess demand is currently experienced on only a limited number of occasions it occurs at high profile events. With increasing demand it can be expected that programme makers will experience competing PMSE demand at a wider range of events. Ofcom recognises that this temporal and geographical congestion can and does occur but this is dismissed as having no impact on opportunity cost. This suggests that the spectrum has no value to a user who is denied access. But denial of access to the spectrum will mean that the user will either

- Have to reduce output (or quality)
- Incur additional costs in order to maintain output
- Lose flexibility in its spectrum use.

In all cases there is a loss of value implying a positive opportunity cost for the spectrum. It is important to emphasise that just because excess demand occurs for relatively short time intervals and in specific locations the opportunity cost is not necessarily low. For the use that is denied may be of very high value. Peak load pricing of access to many resources (e.g. electricity, airport slots) reflects this fact.

To estimate the own use opportunity cost the nature of the loss needs to be assessed and its cost estimated. We would suggest that a better methodology for deriving the opportunity cost for competing PMSE demand would be to adapt the marginal decrement approach to specifically target PMSE use at events. The technique could be used to determine the value users place on use of a particular type of PMSE equipment such as wireless cameras at these key events. It would then be possible to derive the opportunity cost of congestion on a per event basis. Further, by examining the forecast PMSE demand from previous studies for Ofcom, it would be possible to identify the quantity and nature of events where congestion is likely to occur. The overall annual opportunity cost can then be determined from the product of the value per event and the number of events where congestion is experienced.

But if it is not feasible to determine the value placed on use of a particular type of PMSE equipment such as wireless cameras at these key events then an alternative approach would be to derive the opportunity cost from the impact on the supply chain. This approach is explored further in our response to Q 30.

***Question 27)**: Do you agree with our estimate, based on Analysys Mason's report, of the opportunity costs of UHF 1 and UHF 2?*

Difference between Smith Nera and Analysys Mason

We note that the calculation of AIP according to the Analysys Mason methodology results in a different result compared to Smith Nera. This could be critical if it resulted in cliff-edges between the levels of AIP charged to different user groups such as business radio and PMSE within the same band. Within UHF 2 the difference between the proposed AIP value for PMSE and the existing AIP for business radio is not significant enough to be of concern. However, within UHF 1 there is a significant difference but this reasonably reflects the secondary nature of PMSE use in this band.

UHF 2 - Non-interference basis to terrestrial TV

As recognised in the proposed Technical Licensing Conditions for the band manager, the PMSE bands at 467-470MHz are only available "On a non-interference basis to terrestrial television in channel 21". In effect, this means that only low power operations can be authorised within the transmission area of a TV transmitter using Ch21 (470 – 478MHz). This limits the appeal of the spectrum for business radio and so it would reasonably be expected that these bands would attract a discount.

It is not clear if the Analysys Mason methodology has taken account of the technical constraints of some of the current PMSE allocations within UHF 2 in deriving the AIP value.

UHF 1

As noted in the Analysys Mason report, the excess demand is likely to be for duplex business radio. But the configuration of allocations to PMSE in UHF 1 is generally not suitable for duplex use. The bands at 427 and 442MHz are paired and suitable for duplex but 425MHz and the most significant allocation at 446/447MHz are not paired bands. This limits the appeal of the spectrum for business radio and so it would reasonably be expected that these bands would attract a discount.

It appears that the Analysys Mason approach has not taken account of the configuration of the current PMSE allocations within UHF 1 in deriving the AIP value.

***Question 28)**: Do you agree with our estimate, based on Analysys Mason's report, of the opportunity cost of interleaved spectrum?*

We accept Ofcom's estimate of the opportunity cost of interleaved spectrum.

***Question 29)**: Do you agree with our estimate, based on Analysys Mason's report, of the opportunity costs of channel 69 and channel 38?*

We accept Ofcom's estimate of the current opportunity cost of Ch38.

***Question 30)**: Do you agree with our estimate, based on Analysys Mason's report, of the opportunity cost of spectrum at 2-3 GHz?*

Ofcom concludes that the opportunity cost for the 2GHz low and high bands is zero, and that for the mid-band is £216k based on the potential alternative use of the band by IMT2000 services.
By contrast we note that in its July 2008 consultation (para 8.42) Ofcom found that 70% of the 2GHz band was congested and this was likely to mean that some users would either have to use 7GHz spectrum or satellite to meet their needs for wireless cameras. Of these, 7GHz spectrum is the lower cost and practical option and its use implies a lower bound estimate of opportunity cost of £725/MHz per year.

One surprising conclusion reported by Ofcom (para 6.46), is that of no congestion for PMSE use at 2GHz low band[1]. Firstly, Analysys Mason (Fig 6.1) gave this band their highest excess demand rating. Secondly, considerable additional demand for these frequencies seems likely to come from the known future closure of 2.6 GHz and 3.5 GHz for PMSE use. Quotient Associates (2006)[2] found by contrast that "There will be substantial shortages of spectrum in the range 2-10 GHz arising from increased use of video links and digital transmission".

[1] Para 6.46 – Ofcom also suggest that at 2 GHz no equipment rendered unusable, because of the wide tuning range of the equipment means other frequencies could be used. This is not the conclusion reached by Analysys Mason .

[2] 'Supply and demand of spectrum for Programme Making and Special Events in the UK'

As above (Q 26), we would suggest that a better methodology for deriving the opportunity cost for competing PMSE demand would be to adapt the marginal decrement approach to specifically target events. But if it is not feasible to determine the value placed on use of a particular type of PMSE equipment such as wireless cameras at these key events then an alternative approach would be to derive the opportunity cost from the impact on the supply chain.

Although we appreciate that the Analysys Mason approach is necessarily simplified, it is not representative of the realities of the PMSE supply chain. Whilst a number of PMSE users own their own equipment, many users hire-in their PMSE equipment as required. In the case of hired-in resourcing, the hire companies are expected to provide solutions to their customers which includes matching spectrum availability through the band manager with the equipment they have available in stock. If they are unable to meet the client's requirements then business will either have to be sub-hired at reduced profit margin to another hirer who can match spectrum and equipment or risk the business being lost to another hirer, perhaps permanently.

The likely impact of increasing congestion is that hire companies will face more frequent difficulties in meeting their client's demands. In response, they can increase their inventory to cover alternative bands in the event that the preferred band is not available. However, it may not be practicable to resource only the excess demand with alternative equipment. This is because the operational deployment often requires common equipment such as antennas and down converters that will not cover both bands. Consequently, it is likely that the entire programme makers' requirements may have to move to the alternative band. In effect, this means that hirers may have to double their inventory of PMSE equipment. To remain competitive, all hirers would have to respond similarly so that potentially the cost of congestion is that the entire hire inventory for the congested band is replicated. We have no information on the quantity of wireless camera equipment available for hire in the '2GHz low' frequency range, but using Analysys Mason's overall estimate of 292 camera links we suggest that perhaps 150-200 of these are held by hirers. If say 150 additional links were purchased at say £30,000 each then the resulting cost of congestion is £4.5m or £24,000 per MHz This figure would then need to be discounted to reflect the usable life of the equipment and then further to take account of the current policy of setting AIP conservatively at half the opportunity cost. For a 10 year life span the AIP by this method is around £1200/MHz.

***Question 31)**: Do you agree with our estimate, based on Analysys Mason's report, of the opportunity cost of spectrum at 7 GHz?*

We accept Ofcom's estimate of the current opportunity cost of spectrum at 7GHz.

***Question 32)**: Do you agree with our proposal to phase in AIP on a band by band basis?*

We agree in principle with the proposal to phase in AIP in any band where the impact on users would be significant and potentially disruptive. But we have some comments on Ofcom's proposals for individual bands:

<u>1.5GHz Bands</u>
We do not agree with the proposal for phasing in AIP in the 1.5GHz bands as this seems superfluous.

The whole 1517-1525MHz band was originally awarded to PMSE as replacement for the 1490MHz band which was to be reallocated. Assignments were initially made throughout the band without constraint.

More recently, it has become clear that the "1.5GHz high" band (1518-1525MHz) is proposed to be reallocated to the mobile satellite service. As a result, no further allocations have been made in this band and subsequently Ofcom have confirmed that this approach should be maintained. Clearly, there is no requirement for a pricing signal in this band since it has in effect been reallocated. Indeed, the current proposal creates an incentive for users to migrate towards a band that is 'under notice' of

closure. This is not a desirable result.

When the band is finally reallocated, PMSE users will either migrate to the remaining small part, the "1.5GHz low" band at 1517-1518MHz or have to find an alternative solution. In light of this, it would make sense that the income for the whole band is considered as aggregated into "1.5GHz low". In this case, the licensing receipts broadly match the proposed AIP charge and there is no requirement for a lengthy phasing-in of AIP.

UHF 1 and UHF 2 bands

We have reservations about the current proposals for phasing in AIP in UHF 1 and UHF 2. We propose an alternative arrangement that builds on Ofcom's foundations to resolve these concerns.

We agree that in the steady state it is right that there should be an incentive to move from the higher value spectrum (UHF 2) to lower value spectrum (UHF 1). But simplistically, under the current proposals and assuming that current overall PMSE demand is sustained, the cost per assignment in UHF1 is likely to be significantly higher (1.5x) than the equivalent assignment in UHF 2. This is a result of the historic lower density of use of UHF 1 which arises because, until recently, the geographic restrictions to protect the primary user significantly limited its usability for many applications.

Although UHF 1 and UHF 2 are separately valued, these bands are currently used as a direct substitute for each other for certain applications. So in order to minimise disruption to PMSE users it is important to consider the impact of any differential pricing resulting from phasing in of the AIP charge to the band manager.

Of all the PMSE bands, the UHF 1 band has the most significant gap between current revenue receipts and opportunity cost. The shortfall is a factor of 4:1. So under Ofcom's proposals for this band, the burden on the band manager will be phased-in over a period of 8 years to minimise the disruption to PMSE users as this cost is reflected in band manager's pricing.

The UHF 1 band needs to be considered most carefully since, under the current proposals, PMSE users will likely be exposed to the most significant price increases as the full impact of AIP takes effect and the band manager will likely face the greatest risk if increased charges cannot be collected. The current baseline is that identical assignments in UHF 1 and UHF 2 are charged the same. This is not an unreasonable situation because historically the choice of band for a particular assignment was largely determined by geographic constraints imposed by the primary user.

Under Ofcom's proposed approach, both UHF 1 and UHF 2 bands would be subject to significant adjustments but with annual increases limited to a fixed amount not exceeding 40% of current revenue in each case. This will result in the costs for identical assignments diverging over time.

We would suggest that the pattern of increase in AIP should be similar in both bands so that consistency of pricing is maintained over an initial adjustment period. We propose a fixed year-on-year increase of 35% until the ceiling AIP is reached:

	Current	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
UHF 1	£88k	£119k	£160k	£217k	£292k	£359k	£359k
UHF 2	£466k	£629k	£849k	£1.15m	£1.21m	£1.21m	£1.21m

This approach minimises disruption for PMSE users in accordance with Ofcom's objectives and provides a period of 4 years where the risk of disparity between identical assignments is reduced. This adjustment period provides continuity for PMSE users and provides a realistic opportunity for the band manager to react to reduced revenues if PMSE users shed demand.

Channel 38

We agree that on the basis of the information currently available to Ofcom, there would appear to be no requirement to phase in the AIP charge in this band.

In the event that the successful band manager's fully allocated costs for Ch38 are not significantly greater than the proposed opportunity cost, then PMSE users should not be faced with an increase of more than 40%.

***Question 33)**: Do you agree with our proposal to phase in the band manager's AIP based licence fee such that no band increases by more than 40% in the first year that it is operating compared to 2008/09 licensing receipts?*

The requirement for the band manager to allocate costs on a band-by-band basis may introduce significant increases in costs to users even where the proposed AIP charge is nil. We believe Ofcom needs to consider if these are to be phased-in too and if so, how the band manager can recover its costs if prices are capped.

***Question 34)**: Do you have any comments on any other aspects of our proposals to introduce AIP for the spectrum to be awarded to the band manager?*

Ofcom recognises that there is an issue arising from the application of a significant AIP cost to the band 2390-2400MHz whereas neighbouring bands which are used for identical PMSE applications have a nil opportunity cost. It is suggested in para. 6.98 that users may consider that continued access to every available channel is sufficiently important that the cost could be spread across all of those users.

We would agree that every available wireless camera channel within the 2GHz bands is likely to be vitally important due to increasing congestion and the fact that these bands are typically supported in most equipment. Furthermore, we anticipate difficult operational issues arising from cliff-edge pricing changes between bands that are perceived by users to be interchangeable.

But we are not clear how this concept of aggregating across bands is consistent with Ofcom's objectives or with Ofcom's requirements under FRND for the band manager to allocate costs and set prices on a band-by-band basis. Whilst we believe that the aggregation of the 2GHz bands would still allow sufficient transparency in the allocation of costs to meet FRND requirements, we can see that it does severely blunt pricing signals to users which is not Ofcom's favoured approach. Ofcom has indicated that this would likely score less well against selection criteria for the band manager.

A more complex issue arises from the proposed disaggregation of UHF1 and UHF2 bands. For many users who have suitably flexible equipment, these bands are directly substitutable. Currently, the fees paid are the same in both bands and the spectrum allocated is solely determined by matching available spectrum to the user's operational requirements and capability.

A popular temporary use requirement for duplex talkback is actually split across UHF1 and UHF2 with the base transmit leg in UHF1 and the portable transmit leg in UHF2. This is necessary because the spectrum available in UHF1 is not configured (nor able to be reconfigured) to support duplex operations. The differential pricing between the two bands for this type of user is therefore incidental and will not strongly influence their behaviour since the savings are restricted to one half of the duplex pair. Clearly, it would be more sensible if the band manager were to take an aggregated approach across all available allocations of this type, particularly in respect of shorter-term access since the pricing signal is immaterial.

It is vital that there is greater clarity over this issue of aggregating between bands or across different types of assignment so that the band manager can balance Ofcom's objectives against the practical and operational constraints of the PMSE sector.

***Question 35)**: Do you agree with our estimates of the opportunity cost of temporary PMSE access to cleared spectrum?*

We agree that only 2 or 3 years' access does not give an opportunity to recoup up front investments. This is consistent with our view that 3 years is too short a period of time for the band manager to recoup any efficiency gains in operating its business.

***Question 36)**: Do you have any views as to whether the aggregated or disaggregated approach to setting the band manager's licence fee is the best one?*

Although Ofcom's two options appear to be differentiated from each other purely by the aggregation or disaggregation of each fee band, in fact another key difference between them is the use of either historical or forecast data to drive the calculation. In the case of the proposed aggregated approach, historical licensing volumes are used to apportion costs. In the case of the proposed disaggregated approach, forecast costs are used to determine the applicable discount.

As is noted in Table 6, Assessment of the options, the aggregated approach assumes a uniform administrative cost per authorisation. We do not believe that this is realistic and could result in inappropriate discounts being applied. Also, this seems at variance with Ofcom's thinking in terms of FRND provisions where the band manager is expected to make a detailed cost allocation to bands and then further to authorisation level.

Similarly, it is suggested in Table 6 that the disadvantages of the aggregated approach include that it averages the impact on PMSE users and blunts the pricing signals to users. We do not understand this as Ofcom proposes that the actual fees to users should be determined by the band manager based on detailed cost allocation. Either of the options presented here should not influence the costs to users.

From a practical point of view, under the initial proposals for AIP we note that very few bands are likely to have an AIP charge which is greater than the allocated administrative costs. Consequently there is considerable scope for the aggregated approach to result in a disproportionate influence on those bands where this issue arises. Whilst this may change in subsequent AIP reviews if additional bands are adjusted to have a significant AIP charge, the methodology will then be established and can be extended to additional bands if appropriate.

In the disaggregated approach the discount is based on forecast volume of activity and hence expected costs. This appears consistent with the approach for charging users for access and so has transparency in the upstream spectrum supply market as well as in the downstream market for access.

We currently believe that we would be able to work with either the aggregated or disaggregated approach.

***Question 37)**: In light of our further proposals, do you agree that we should first review the AIP charged to the band manager after three years?*

A review after 3 years does not provide sufficient stability or certainty for the band manager or for PMSE users. Indeed, Ofcom's current Strategic Review of Spectrum Pricing is looking at how the landscape has developed in the 5 years since the last review in 2004. In addition, we note that spectrum assets released by Ofcom generally have an initial period of 5 years.

We believe that it is essential that AIP should be consistently applied across other equivalent users and cannot see any merit in setting prices in one sector that are not consistent with other users in the same or similar bands. The risk is that cliff-edges in pricing are created which become barriers to the successful trading of spectrum between different users.

Future reviews of AIP in PMSE should not be undertaken in isolation but should be linked to wider strategic reviews across all relevant sectors. But if the current strategic review is not completed in time for the band manager award, the proposed first review after 3 years is a reasonable compromise between sufficient stability for PMSE during this major transition and minimising the duration of any cliff-edge discontinuities to users of neighbouring spectrum.

We encourage Ofcom to ensure that subsequent reviews are timed to coordinate with wider strategic reviews.

Technical Licence conditions:

Question 38)*: Do you agree with our proposed TLCs?*

We have noted a few anomalies in the tables of technical licensing conditions (TLC) and block edge masks (BEM):

1) We note that BEM 15, 16, 17 and 18 in Table 8 are incorrectly specified. We believe that they were intended to be specified in terms of MHz from band edge and that the corresponding PSD for out of band emissions were intended to be specified in units of dBW/MHz.

2) BEM 15, 16, 17 and 18, as proposed for wireless cameras and video links, do not reflect the ETSI standard EN302064 upon which they are based. Equipment complying with the out of band emissions limit in the standard may not also meet the block edge mask where the energy is not evenly distributed across the full adjacent channel. The block edge mask should therefore be defined for 10MHz, rather than 1MHz as proposed to avoid this scenario. For BEM 15, 16, 17 and 18 the maximum PSD for out of band emission values should therefore be -41.23dBW/10MHz and -47.23dBW/10MHz instead of -51.23dBW/MHz and -57.23dBW/MHz respectively.

3) We believe that BEM 21 is incorrectly specified and should be:
   0-100 kHz -40 – (0.2 x Fdelta)
   100-900 kHz -58.75 – (0.0125 x Fdelta)

4) Airborne use of 7302.5 – 7322.5MHz appears to be missing from the table of TLCs.

5) The TLC for Band 67 appears not to be compatible with the analogue links in this band.

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Next steps:

Question 39)*: Based on the information contained in this and our July 2008 consultation document, are you interested in applying to become the band manager with obligations to PMSE users?*

JFMG is interested in becoming the band manager with obligations to PMSE users. We believe that we have the knowledge, expertise and track record to support the PMSE community through the significant transition proposed.

***Question 40)**: Is there any further information that you would need to assist you in making a decision as to whether to apply to become the band manager?*

We believe there are a number of issues that still remain unaddressed and that need to be resolved before the Information Memorandum is published.

In the first instance there needs to be greater clarity about the options available to the band manager to mitigate losses in the event that PMSE demand is significantly reduced. Given the shift towards greater protection for PMSE users and the consequent increased risk for the band manager; the options for the band manager to reduce losses is of greater importance and so needs clarification.

At the time of writing, there is no information on how the authorisation process will work. This could have a significant bearing on the band manager's cost allocations.

From a spectrum management perspective the band manager will need to be clear on exactly what protection for primary use within the interleaved spectrum will be required. This is additional to the Technical Licence Conditions. Ofcom has considered a range of options but it is not yet clear how the requirement for PMSE to operate on a non interference basis is to be implemented. There is also uncertainty around the developments associated with cognitive radio. In particular, under current thinking, the band manager may be required to support the development of a database that cognitive devices can access to ensure protection for PMSE use.

Further information on the process and related timescales for obtaining authorisation for non-PMSE use of PMSE spectrum is also required.

In addition, it will be important for Ofcom to provide further information on how Ofcom's approach to the London 2012 games may impact on the band manager, and what, if any recompense will be provided for use of its spectrum.

Finally the band manager will need further information on how the transition from the current arrangements will work. Specifically, will existing licences issued by JFMG on behalf of Ofcom still be valid or will they be revoked? Decisions surrounding the transition could impact on the band manager's ability to make a start on recovering its costs through spectrum authorisations from day one.