ANNEX B

INDEPENDENT REVIEW OF SPECTRUM MANAGEMENT – CAA RESPONSES TO ISSUES FOR DISCUSSION

ISSUE FOR DISCUSSION	RESPONSE
i. How best can Government assess the economic gains from enabling more efficient use to be made of the spectrum?	Such an assessment can only be made if a full CBA and impact assessment is made in relation to the use of spectrum. This should not be based on a short-term perspective that only considers the cash benefits accrued from trading or auctions. It should take into account the impact on the relevant commercial sectors (winners and losers) over a realistic timeframe e.g. 7 years or longer for those sectors where impact can only be assessed over a longer term.
ii. How could information from market transactions and economic impact studies best help inform the design of spectrum management policies?	It is important that when decisions are taken at the strategic level by bodies such as the UKSSC, they have access to information which will enable them to assess the full implications of the impact on a given sector/user group. Without this full information being presented as part of the policy making process, there is a risk of reacting solely to short term benefits. In addition, in discussing spectrum, many claims are made as to value, criticality and benefits. By taking the line of compiling full assessments, detailed evidence in support of these claims can be presented.

iii. How far can the over-arching principle that spectrum users should bear the opportunity cost of their usage, be applied in practice?	There is no stock answer to this, as each case would have to be taken on its merits. Consideration would have to be given to the use, class of users, social factors, Government policy and potential value of the spectrum concerned.
iv. How can trade-offs between competing economic and social uses of spectrum be more clearly articulated in the principles governing spectrum management?	Given that this has to be a case-by-case assessment, the principles will be relatively simple in that all aspects will need to be considered to take into account the factors included at (iii) above. Through the evidence presented in the CBA and impact assessments, the facts supporting these trade-offs will be clearly presented and can be incorporated in supporting document as required.
v. To what extent would a separate spectrum management duty for Ofcom be helpful, and how could this best be articulated in a new statutory framework for communications regulation?	As the new combined regulator, it is logical that Ofcom becomes as involved in spectrum management as the RA was before it, hopefully utilising the appropriate levels of expertise. However, from an aviation perspective it is vital that this is conducted within the oversight of a group such as the UK Spectrum Strategy Committee. This is essential to ensure that the interests of the disparate sectors of UK plc are co-ordinated and harmonised at an appropriate level, particularly in view of the relationship with Government policy.

vi. What additional alternatives to apparatus licensing would assist Ofcom in meeting its spectrum management objectives?	Because of the need to ensure compliance with internationally agreed equipment standards to maintain safety and interoperability, apparatus licensing is the favoured option from an aeronautical perspective. However, where non aviation spectrum use is concerned, whilst other options may be appropriate, the CAA concern is that it must be assured of sufficiently high standards being maintained by other users to prevent out-of-band interference from degrading aeronautical safety standards.
vii. How far can new modes of licensing, based upon access to defined spectrum rather than defined wireless apparatus, assist in enabling more efficient use to be made of spectrum?	For aviation, our comments from vi above apply.
viii. How can the UK's stance towards international spectrum management policy best reflect the opportunity costs of different spectrum uses?	For aviation, co-ordinated and harmonised approaches to spectrum management are essential in order to maintain global standards of safety and interoperability. Furthermore, given that RF properties do not recognise international borders, it is essential that the UK position does not jeopardise our ability to form a viable element of an international transport infrastructure. That said, national administrative pricing through licence fees must offer an effective mechanism by which users are encouraged to adopt spectrally efficient technologies and equipment. Such an approach would enable aviation to more efficiently administer the allocated spectrum.

ix. What scope is there for greater autonomy in domestic spectrum policy within the constraints imposed by the UK's international commitments?	As detailed in paras 85-89, very little in respect of aviation.
x. How should the UK Government judge the trade-off between a more liberal approach to spectrum management and one in which technology standards and spectrum access are mandated as part of a strategic industrial and trade policy?	It has to be a case by case decision under political guidance, taking into account the impact on national policy and aims. For aviation, the latter choice is the only way forward.
xi. If there were greater latitude in international allocations and/or the UK's implementation of such decisions, to what extent would market mechanisms result in harmonisation of equipment and transmission standards?	For aviation, such an approach would cause difficulties in that technical standards and systems have to support an infrastructure that can accommodate disparate and conflicting users such as military, commercial and general aviation. It is because of the global nature of Air Traffic Management (ATM) that organisations such as ICAO, and on a regional basis, Eurocontrol, are necessary to co-ordinate these standards and programmes to achieve interoperability and safety. Whilst market forces may well result in harmonisation for some of the "bigger value" sectors, it could result in restrictions having to be applied due to a failure to achieve interoperability. This could result in inefficient use of airspace with its associated economic penalty. Greater latitude would not help aviation in this respect as tighter regulation than reliance on market forces is necessary.

xii. Within the current and proposed statutory framework, what improvements (if any) could be made to institutional arrangements for spectrum management in the UK?	Given that the consultation process in relation to Ofcom has yet to begin, it is difficult to comment on the proposed framework. However, the significant area is to ensure that the working procedures and practises are in place to deliver an efficient method of working. It is vital that the UKSSC type function is retained and strengthened in order to provide the strategic oversight and advice to Government on spectrum issues. Given that greater efficiency can probably be best delivered by changes within an industry, sector regulators should be made more accountable in this respect.
xiii. To what extent would greater transparency of specific data on current and prospective spectrum uses support efficient spectrum use? What are the key issues and trade-offs pertinent to the provision, by RA, of an on-line database containing spectrum –utilisation details? How far is transparency compatible with commercial confidentiality and public safety and security considerations?	There is no doubt that transparency encourages efficiency. For aviation, the majority of information is already published in the public domain and with the exception of radar frequencies and locations of certain transmitters, there is not seen to be a problem. The level of detail required needs to be carefully considered but this is unlikely to present a problem. However, careful consideration needs to be given to how the information should be used as exploitation by third parties could cause difficulties. In addition, there is a risk that such information may be used by individuals for illegal self-assignment of frequencies and the regulatory authorities will need to guard against this.

xiv. To what extent could intermediaries play a valuable role in buying rights to manage a particular frequency band and then selling access to parts of this spectrum to users on a commercial basis?	In aviation this would not be acceptable. Whilst it may be for other bands/services, we would be concerned as to how this would be regulated to ensure that standards were maintained to prevent interference to safety of life services. Furthermore, it would impact on the international aspect.
xv. To what extent is the review's distinction between radio spectrum used for marketed and non-marketed goods a helpful one?	Given that aviation combines both, the distinction is useful.
xvi. How far can public policy objectives for the delivery of non-marketed goods be separated from the regulation of access to the spectrum necessary to deliver such services?	In the case of aviation, which combines both, they cannot.
xvii. Is this a valid description of the factors affecting defence use of radio spectrum?	It should be noted that defence shares spectrum with civil aviation and makes use of civil aeronautical spectrum for aviation related defence activities where civil military interoperability is required.

xviii. What opportunities exist for commercial and other civil users to share spectrum with the defence establishment in the UK?	See xvii above.
xix. What further incentives could be introduced to encourage more intensive and efficient use of spectrum allocated to defence?	Not appropriate for CAA to comment.
xx, xxi, xxii, xxiii – Not applicable to CAA	
xxiv. Is this a valid description of the factors affecting use of radio spectrum by aeronautical and maritime services?	Apart from the corrections already identified in respect of TFTS and the role of ICAO, it is valid.

xxv. Given the international harmonisation constraints, where could new economic incentives most encourage more efficient use of spectrum in the UK?	Although aeronautical spectrum is constrained by safety of life as well as international issues, which negate the applicability of trading, spectrum efficiency can be actively encouraged through administrative pricing. Currently, many of the WTA licence fees applied to aviation do not appear to be realistic. Whilst there must not be a rise in fees merely to generate increased licensing revenue, and nor should fees be set at a level that could undermine compliance with minimum safety standards, there is an opportunity to discourage inefficient use of spectrum. In particular, higher fees for those who continue to use equipment that does not employ the most efficient channel spacing thereby inhibiting aviation from maximising use of a particular band. In addition, where spectrally efficient alternatives are available, approved to international standards, licence fees should be set at an appropriate level to encourage use. Naturally, such an approach may require a co-operative R&D programme to establish the feasibility of alternate approaches, and may only be practical for those applications that are not governed by international obligations. However, given the value of the aviation industry and its contribution to UK GDP, the current licence fees appear to barely recover the administrative cost of issue. Given that some aeronautical spectrum use requires considerable effort to maintain the necessary protection, licence fees could also be set at a more appropriate level (e.g. is a £20 fee realistic for a major ground based radar with an initial installation cost of several £million).

xxvi. How far could changes in spectrum use charges be reflected in air traffic control fees which are passed on to users of UK airspace and landing fees?	Due to the "monopoly" nature of the en-route portion of ATS provision in the UK, increased costs by users will either be incorporated in the RPI-X price cap/periodic review or, in the case of airports, be reflected in bids to win contracts for services. The bottom line is that the increased costs will be absorbed or passed on but the extent to which spectrum charges could be taken down this route is debatable. Given that UK registered aircraft operators already contribute through the WTA licence fee, this could become a "double whammy". However, if administrative pricing provided an incentive based scheme as detailed above to penalise operators that continued to use spectrally inefficient equipment, and service providers were affected the same way, operators would put pressure on the service providers to become more efficient and not merely pass on the spectrum charges. This may actually assist in the delivering of efficiencies in the longer term without undermining the safety principles.
Xxvii, xxviii and xxix – no comments	
xxx. How far have economic incentives from spectrum prices helped to encourage efficient spectrum use?	As this has not yet been applied within aviation, this cannot be assessed.

xxxi. Where should the balance lie between administratively set incentive prices and competitive auction of spectrum licences?	The reality is that it has to be a compromise between those parts of the spectrum which are required to support public service infrastructures and those for which there is no potential State requirement other than to encourage commercial and industrial growth. In the former, where managed bands are essential to control the critical elements such as availability, standards and international obligations, administrative pricing has to have primacy as the means of encouraging efficient spectrum use. However, where free market forces can be applied, spectrum trading may be the most suitable means.
xxxii. What factors should determine the choice of frequencies subject to auction of licences?	Case by case assessment taking into account services affected, State issues including political and social economic factors, potential impact and implications of loss of ability to manage spectrum, potential impact from a standards perspective on other out of band users, Cost Benefit Analysis etc.
xxxiii. Which areas of spectrum use are most amenable to, and which areas offer the greatest potential efficiency gains from, the introduction of spectrum trading?	Those which can be assessed as having no potential adverse impact on managed bands which require added protection. Bands which would benefit from commercial freedom with the assurance that only minimal standards are required to protect others and where a high degree of confidence exists that they will be applied.
xxxiv. To what extent would a move to licensing of spectrum access, as opposed to wireless apparatus licensing as now, facilitate spectrum trading?	Not directly applicable to aviation

xxxv. What changes to the terms and conditions of licences for the operation of wireless equipment and/or access to spectrum would facilitate spectrum trading?	Not directly applicable to aviation
xxxvi. If new modes of licensing spectrum access (rather than equipment operation) were introduced, how could rights to spectrum usage, such as interference standards and length of licences, best be defined to facilitate spectrum trading?	An enforceable code of practise would be required to ensure that the same degree of protection from interference could be afforded to adjacent band users. It would be necessary to put in place a type approval process outside of licensing to support this.
xxxvii. What market infrastructure, such as spectrum registers and dispute resolution procedures, could facilitate spectrum trading?	Not applicable to aviation
xxxviii. What lessons can be learnt from the experiences of other countries (such as Australia, New Zealand and the United States) in introducing different modes of spectrum trading?	The main issues are: - to recognise the significant differences caused by the geographical location of the compared countries relative to the European/UK scenario, and -to realise that it is essential that if license exempt spectrum access is to be introduced, the controls have got to be right first time as it would be extremely difficult, if not impossible, to resume effective controls following adverse effects on other band users.

xxxix. What factors should guide regulators in setting the boundaries of licence-exempt spectrum use?	The need to protect other users and the implications of not being able to compliance monitor and enforce standards.
xl. What remit should regulators hold over licence-exempt spectrum use, other than ensuring that it does not interfere unduly with licensed spectrum use?	The ability to recover the spectrum if the process/industry fails to protect safety of life users and a clear unambiguous definition of “interfere unduly” which stands legal scrutiny.
xli. How far can developments in radio technology provide an alternative to regulation in licence exempt spectrum bands, particularly where the potential for interference with other users is very low given the propagation and power characteristics of the signals concerned?	An ability to monitor, particularly in respect of cumulative effects, could help to ensure that thresholds that could effect other users are not exceeded. However, never underestimate the potential for interference notwithstanding propagation and power characteristics.