

States of Jersey
States Assembly



États de Jersey
Assemblée des États

Health, Social Security and Housing Scrutiny Panel

Review into the Perceived Health Effects of Mobile Phone Masts

Presented to the States on 20th April 2007

S.R.8/2007

CONTENTS

- 1 FOREWORD – CHAIRMAN
- 2 TERMS OF REFERENCE AND MEMBERSHIP
- 3 EXECUTIVE SUMMARY
- 4 FINDINGS
- RECOMMENDATIONS
- 5 TIMETABLE
 - 5.1 Public Hearings Witness Schedule
- 6 BACKGROUND AND PROCESS
 - 6.1 Deputy P.J.D. Ryan – Committee of Inquiry: Mobile Telephones P.144/2006 (withdrawn)
 - 6.2 Council of Ministers
 - 6.3 Development of mobile telephony in Jersey
 - 6.3.1 Network coverage
 - 6.3.2 Jersey Competition Regulatory Authority
 - 6.3.3 OFCOM Spectrum licences
 - 6.3.4 Operator Licences
 - 6.3.5 Licence Conditions
 - 6.3.6 Number of masts
 - 6.3.7 Planning Process and applications
 - 6.3.8 Moratorium
 - 6.3.9 Planning Application Process
 - 6.4 Health and Social Services advice (Health Protection)
 - 6.4.1 Health Protection Report
 - 6.4.2 Research
 - 6.5 Health and Safety Inspectorate
 - 6.5.1 Health and Safety Legislation
 - 6.5.2 Work of the Inspectorate
 - 6.6 Department of Electronics
 - 6.7 Economic Development Department and the role of the Minister
 - 6.7.1 Sharing infrastructure
 - 6.8 Education, Sport and Culture Minister’s view
 - 6.8.1 WiFi
 - 6.9 Home Affairs Department – TETRA Masts
 - 6.9.1 What is TETRA?
 - 6.9.2 Location of TETRA Masts
 - 6.10 Department of Property Holdings
 - 6.10.1 Licence agreements for States Departments and Properties
 - 6.11 Jersey Electricity Company
 - 6.12 Public Meetings and submissions of evidence received orally or in writing.
 - 6.12.1 Public engagement
 - 6.12.2 Interpretation of the perception of risk

- 6.12.3 Concerns over locations and site notices
- 6.13 Petition presented by Jersey Mast Concern Group
 - 6.13.1 “Why are we against mobile phone technology?”
 - 6.13.2 Why does Jersey need 200+ masts in an area of 45 square miles?
 - 6.13.3 Why do we want to make ‘health’ the issue?
 - 6.13.4 Symptoms and perceived effects
 - 6.13.5 Electro-magnetic sensitivity
 - 6.13.6 Dr James Rubin, Kings College
 - 6.13.7 Testing of technology
 - 6.13.8 Emission testing
 - 6.13.9 Mobile Masts in the proximity of schools
 - 6.13.10 Public liability insurance and litigation
 - 6.13.11 Property values and depreciation
 - 6.13.12 Banks’ requirement for Surveyors to include the location of masts
 - 6.13.13 Thermal heating of human tissue
 - 6.13.14 Press coverage
 - 6.13.15 Independent emission testing
 - 6.13.16 Dr. Repacholi formerly of WHO
 - 6.13.17 WHO Factsheet 193
 - 6.13.18 Health Protection Agency
 - 6.13.19 Professor Lawrie Challis research
 - 6.13.20 Essex University research
 - 6.13.21 Global Systems for Mobile Communications – telephone conference hearing
 - 6.13.22 Danish Cohort
 - 6.13.23 Dr. George Carlo
 - 6.13.24 Weight of science
 - 6.13.25 Jersey Mast Concern expert
 - 6.13.26 Athens ruling
 - 6.13.27 Salzburg
 - 6.13.28 Electro sensitivity and other jurisdictions approach
 - 6.13.29 Dr Gerd Oberfeld
 - 6.13.30 Salzburg Conference 2000 information provided by Deputy J. Le Fondre
- 6.14 UK Government approach – Stewart Report and ICNIRP
 - 6.14.1 Independent Expert Group on Mobile Phones Report - The ‘Stewart Report’
- 6.15 States of Jersey approach to the Stewart Report recommendations
- 6.16 The technology and siting of masts
 - 6.16.1 Public Cellular Telephony
 - 6.16.2 Electro-magnetic radio/frequency
 - 6.16.3 What are EMFs?
 - 6.16.4 Are EMFs all around us?
 - 6.16.5 How do I know where EMFs are?
 - 6.16.6 What is EMI (Electromagnetic Interference)?
 - 6.16.7 Radiation patterns
 - 6.16.8 Macro, micro and picocells
 - 6.16.9 Cumulative Effects and Excursions
 - 6.16.10 What is ICNIRP, what are its aims and who are its members?
 - 6.16.11 ICNIRP tables and levels to be explained or graphs included
 - 6.16.12 Fibre Optics
 - 6.16.13 Jersey Telecom

- [6.16.14](#) [Cable and Wireless](#)
- [6.16.15](#) [Noise Field Diffusing Technology](#)
- [6.16.16](#) [The Molecular Resonance Effect Technology](#)
- [6.16.17](#) [Bioguard and Biophone](#)
- [6.16.18](#) [Jersey Telecom response to noise diffusion technology](#)
- [6.16.19](#) [Cosmetic Solutions](#)

[6.17 Scientific Evidence Evaluation](#)

- [6.17.1](#) [Different types of studies are required](#)
- [6.17.2](#) [Telephone Operators and GSM](#)

[APPENDIX 1](#)

[Committee of Inquiry: mobile telecommunications](#)

[APPENDIX 2](#)

[**Mobile Phone Mast Review - Selected Bibliography with Links to Major Reports**](#)

[**Further useful Links:**](#)

[APPENDIX 3](#)

[Excerpt from Report on Mobile Phones and Health Mobile Phone Base Stations](#)

[GLOSSARY](#)

[Index of Submissions](#)

[Index of Background Information](#)

[Telephone Masts Questionnaire Results](#)

[List of Recipients of Draft Report](#)

1 FOREWORD – CHAIRMAN

Having been elected Chairman of the Health, Social Security and Housing Scrutiny Panel it was rather a surprise to be agreeing within hours to undertake a Scrutiny Review of Mobile Telephone Masts, subject to a number of provisos.

Initially there were no other Panel Members, no Officers, no budget, so I believe it is timely to thank all those most sincerely who have helped to make it all happen and for the Review to proceed with a thorough investigation taking place and a detailed and comprehensive report produced in an efficient and timely manner.

Panel and Scrutiny

Thanks to all concerned: fellow Panel members – Deputy Collin Egré, Constable Mike Jackson and Senator Ben Shenton; Scrutiny Officers – Mike Haden for doing detailed background research in December/January, Malcolm Orbell, whose introduction was a baptism of fire to the Scrutiny process, Carol Le Quesne for her due diligence, care and attention to detail, who made it all happen and steered this Review to its final conclusions, and to all other Scrutiny staff who contributed.

Submissions and Evidence

To the public and professional witnesses, to the public for their submissions (from 2 line e-mails to 100+ pages – all are valued and all appreciated.) Also to the many references to United Kingdom Local Authorities, Government Agencies, Independent organisations as well as reports and authorities from all over the world. Submissions were not limited to paper and e-mail; references were made to television programmes, newspaper articles, dvds produced by others, video recordings and website examples – responses were truly international.

Applying Minds

Set against this background the Panel had to apply its individual and collective minds to draw logical conclusions from the mass of technical, and on occasions, emotive material and apply this to seek an interpretation of how best this could be utilised for Jersey's situation.

Billions of Mobiles

Mobile phone technology moves at a pace – it was said to us in the evidence that it took 20 years to sell the first billion mobile phones and it then took 18 months to sell the second billion world-wide – this demonstrates the rapid consumer-led growth.

Tensions were found

It is against this background of relatively new and advanced technology that some tension was found to exist between engineering standards and benchmarks and medical opinion, some of which is emerging with the passage of time.

Words often found are “**a precautionary approach**”, the debate continues as to what exactly this should be. Different authorities and organisations are continually reviewing and debating the issues surrounding emerging international learned views and opinions. Suspicions abound when industry sponsorship emerges to be balanced with the industry wishing to actively participate in informed debate and discussion.

Young People and Mobile Phones

Our investigations have raised questions about considering possible harm reduction to younger children from the use of mobile phones – while not under our Terms of Reference it would be remiss not to mention this – parents should seek more information from reliable sources and “a precautionary approach” should be adopted. This should also apply to adults as without exception informed evidence says that mobile phone use has greater possible health related problems than mobile telephone masts.

Wi-Fi in schools

Questions were raised about the installation of systems in schools and whether this was monitored and how health effects (if any) could be monitored – again “a precautionary approach” is required.

Siting of Masts

The Panel viewed the general Planning process; however, what did emerge was that significant sums of money are changing hands for leasing of land and vantage points for masts. Other issues flowed from this about public liability insurance and in future what the rateable value should be - matters that need to be addressed by others.

Conclusion

This Scrutiny Review started on the back-foot: as I have described earlier and some tension existed between politicians and the public about whether there was anyone listening – whether some public concern was shared politically. I hope this Review will allay those fears – calm the tension that existed and convince all concerned that this issue was well worth the time and effort and that the public voice – collectively and individually – was heard and politically the recommendations will be positively acted upon in future for public information, benefit and confidence.

The Sub-Panel would like to take the opportunity to extend special thanks to the Jersey Mast Concern Group for its efforts.

Deputy Alan Breckon
Chairman

2 TERMS OF REFERENCE AND MEMBERSHIP

Terms of Reference

The Sub-Panel will consider the concerns of the public relating to perceived health implications, as a result of the increase in applications for mobile phone mast installations, following the recent expansion of the mobile telephony market.

In undertaking this review the Sub-Panel will have regard to –

The advice provided by the Health Protection Department;

International standards (ICNIRP & NRPB standards) and best practice in respect of health precautions;

Health concerns raised by the Public; and

Reporting its findings and recommendations to the States.

Membership

Deputy A. Breckon, Chairman
Deputy C. Egré, Vice-Chairman
Senator B.E. Shenton
Connétable M. Jackson

Scrutiny Officers: Carol Le Quesne
Malcolm Orbell
Mike Haden

3 EXECUTIVE SUMMARY

Having considered the evidence submitted, the Panel regards the recommendations of the Independent Expert Group On Mobile Phones Report of Mobile Phones and Health (the 'Stewart' Report (published in May 2000)) and the subsequent recommendations outlined in the April 2006 Health Protection Agency Report to the Council of Ministers, as providing an adequate initial precautionary basis on which to proceed with the establishment of additional mobile telephone masts to develop the local telephony industry. The Sub-Panel regards the general demand for the infrastructure provided by the telephone operators and the services provided both to Island residents and to other economic sectors as necessary.

The Sub-Panel notes the demand for improved services and increased infrastructure. It accepts that the result of that increase in infrastructure would not comfort residents who have concerns and perceive a health risk associated with the proliferation of mobile telephone masts. It recognises that individuals can suffer illness as a result of the stress and worry induced by those concerns. The Sub-Panel is mindful that the resulting illnesses are very real and would not wish to detract from the impact that they would have on an individual.

The Sub-Panel is aware that part of the role and function of the Jersey Competition Regulatory Authority (JCRA) is to ensure a degree of transparency and the availability of competition. It is the role of the Economic Development Minister to provide the JCRA, as is necessary or appropriate, guidance on social and environmental matters. In fact the Sub-Panel has been advised that no contact has been made by the Minister with the JCRA on social or environmental matters relating to the proliferation of mobile masts that has arisen from the issue of licences to new telephony operators.

The Sub-Panel has received evidence from the Ministers with responsibility for health, social, environment and economic matters that clarified the monitoring and oversight process applied within Government. The Sub-Panel has outlined its recommendations for the way forward based on the evidence that has been scientifically validated by recognised authorities and that has been subject to peer review. The Sub-Panel, whilst aware of ongoing research particularly on mobile phones and their use, has reached its conclusions on the evidence it has received and other research that has already been completed.

The Sub-Panel recognises that the issue of public health concerns is an area which requires ongoing and long-term scientific research. However, it accepts that decisions must be taken on the present situation and through the evaluation of current evidence and previous recommendations.

The Sub-Panel has looked at a broad range of evidence and has considered research relating to the possible biological impact of Electro Magnetic Field (EMF) on the health of human cells in addition to the scientific evidence which has focused on the thermal impact of EMF. Extensive ongoing research is currently reaching completion and the UK is commissioning further research projects into the safety of mobile technology. The Sub-Panel considers that such research must be analysed and considered by the Medical Officer of Health or other Jersey Health professionals.

The Sub-Panel will question whether the conclusion to adopt the Stewart Report recommendations reflects and adequately addressed the significant number of genuine and detailed concerns expressed by employees working in the industry, by the public as a result of

the increase in the number of mobile telephone masts required to support competition in the market.

The Sub-Panel considers that this review is in keeping with the Strategic Plan 2006-2011 adopted by the States on 27th June 2006.

It reflects the aims of Commitment one to maintain and enhance a strong, successful and environmentally sustainable economy. The Sub-Panel will consider whether Electro Magnetic pollution should be included as part of the annual report to the States by the Director of the Environment (P&E).

The review reflects the aims and indications outlined in Commitment 4 namely 4.4 Clean air, clean water and uncontaminated land, the action described to meet that aim is outlined at 4.4.5: Debate and implement in 2007 an Air Quality Strategy for Jersey, including proposals for monitoring and publishing levels of local air pollution, and targets, policies and timescales for reductions in air pollution levels that reflect best practice globally (P&E).

The Sub-Panel will seek to gain support from the relevant Ministers to achieve an enhanced precautionary approach in respect of EMF emissions and considers that whilst this proposed action may be more stringent than the course adopted by the UK government it is the appropriate and cautionary way forward when so little research information is available in areas other than on the potential thermal effects on human tissue. The Sub-Panel does not feel that the evidence conclusively suggests that EMFs can be linked to specific diseases but it is of the opinion that it is essential that the States of Jersey as a whole considers new research which is undertaken and which has been through a robust process of peer review.

The Sub-Panel has made a number of recommendations as a result of its investigation; it has decided that it will afford Ministers a period of six weeks to consider its findings and to comment upon them. Following that period the Sub-Panel will hold Public Hearings and invite the Ministers to attend to advise which of the recommendations they are able to undertake within the resources available.

The Sub-Panel will then consider the recommendations (if any) that cannot be implemented by the Ministers and prepare a proposition to be lodged 'au Greffe' for consideration by the States to seek support in progressing the remaining recommendations.

The Sub-Panel is aware of the budgetary constraints faced by Ministers and will accept that any cost-dependent recommendations will require inclusion into budget and business planning for 2008/2009. In accordance with Standing Orders of The States of Jersey R&O - 109/2005 Article 21(3) (How a proposition is lodged) the Sub-Panel will seek the input of Ministers and their officers to provide it with the necessary manpower and financial implication statements required for inclusion in its proposition.

4 FINDINGS

Finding 1

Initially the Sub-Panel had been encouraged by the Health Protection Section report; however, it was concerned at the lack of resources available to the section and the timescales in which it had been required to prepare the report. The Sub-Panel remains concerned that there was no action plan agreed by the Council of Ministers to ensure that all of the recommendations contained in the report were allocated, resourced and undertaken, which could have allayed some public concern.

Finding 2

The Sub-Panel concurred that a recurring theme throughout the review had been that communication with the public must be improved. It is also notable that the Medical Officer of Health has not participated in this discussion or offered any reassurances to the public despite the significant media attention given to this matter.

Finding 3

The Sub-Panel considered that an appropriate way forward would be to establish a web-site to provide the public with full access to information including specific details as to the location of all masts and to follow the example of the Guernsey Regulatory Authority by introducing regular random independent emission monitoring and reporting.

Finding 4

The Sub-Panel considers that this was an oversight at the point when competition was introduced and shows an element of disregard for the environmental and possible social (health) impact of the relevant legislation (Telecommunications (Jersey) Law 2002).

Finding 5

However, the Sub-Panel would recommend ongoing examination of any research into perceived health issues relating to emissions from mobile telephony systems by the Medical Officer of Health and Health Department.

Finding 6

The Sub-Panel was advised by visiting experts including the representative from the Health Protection Agency (HPA) that Terrestrial Trunked Radio (TETRA) stations are generally included in mast siting digi-maps available to the public in the United Kingdom.

Finding 7

The Sub-Panel found that the concern expressed by the individuals who made written or oral submissions at public meetings was that the issue may have some implications to their human rights on the basis that the European Convention on Human Rights, Convention Article 1 of the first protocol: Protection of property states that -

'Every natural or legal person is entitled to the peaceful enjoyment of his possession. No-one shall be deprived of his possessions except in the public interest and subject to the conditions provided to by Law and by the general principals of International Law.'

The Sub-Panel is aware that the Human Rights (Jersey) Law 2000 was registered in June 2000 and came into force on 10th December 2006.

Finding 8

The Sub-Panel considers that the level of public and professional participation reflects the serious concerns held by some of the general public and is of opinion that it is essential that these concerns are addressed from a fully informed perspective through the evaluation of the new research that is becoming available.

Finding 9

This lack of monitoring of the mobile telephony industry by an independent body allocated by an authority such as Ofcom or the JCRA is an area which the Sub-Panel agrees should be addressed.

Finding 10

The Sub-Panel suggests that ongoing investigation should be undertaken into the wider issue of 'Electro-smog' which is a growing area of concern in other jurisdictions. It is considered that the Planning and Environment Department set up and regularly monitor an Island assessment of the situation as part of its overall activity and that a periodic review of the findings should be publicly available and published.

The Sub-Panel accepts that there would be financial implications to the States for this assessment. It considers that the funds could be recoverable from the telecommunications operators.

Finding 11

The Sub-Panel has not focused within the terms of this review on the suggested impact on the value of property as a result of the siting of mobile telephone masts in the proximity of private residences.

The Sub-Panel has noted the content of the House Price Index for 2006

Finding 12

The Sub-Panel is aware of a growing number of research projects focused on the possible interruption of human cell activity as a result of Electro Magnetic Field (EMFs). It will request that the Minister for Health and Social Services would provide its Health Protection Department with the necessary resources to evaluate the findings of some of those projects and to report to the States.

Finding 13

The Sub-Panel finds that whilst some efforts to achieve improved communications have already been made, further dialogue between the operators, States Departments and with the public is essential to build confidence and increase transparency.

Finding 14

The Sub-Panel notes from the evidence received from the mobile telephone operators, that based on the scientific guidance that they have been provided through the WHO, the UK HPA and ICNIRP, that they do not believe that mobile telephone mast station EMF emissions pose a threat to health if those stations operate within ICNIRP guidelines and comply with best practice standards.

Finding 15

The Sub-Panel finds that if Professor Challis suggests that there is evidence to support the

introduction of a simple item such as a ferrite bead that is inexpensive to include can render emissions inert then that prevention should be included in the manufacture of the product as a matter of course.

Finding 16

The findings of the Essex University research projected managed by Professor E. Fox has the potential to answer many of the questions raised by concerned individuals during the course of the review. It is essential that such potentially significant pieces of research be properly publicised and considered by the Minister for Health and Social Services Department.

Finding 17

It was apparent from the written and oral evidence received by the Sub-Panel that it was essential that information relating to the science of mobile telephony should be delivered to the general public in a clear and consistent way to minimise any misconceptions that may occur. In addition the timing and the relevance of the research should be considered.

Finding 18

It is important to clarify and evidence statements to ensure that the public is provided with accurate information. The move by Salzburg, Austria to take a stand and set lower electro magnetic field emission standards should not be discounted due to the Austrian parliament's decision not to support the reduced limit. It is suggested by the Salzburg approach supporters that new research evidence should provide the basis for such a move. It is also interesting to note that the introduction of restrictive limits did not allay public concern but evidence appears to suggest that more regions in a number of jurisdictions are considering further more stringent precautions.

Finding 19

It is suggested that regular monitoring of new research should be undertaken by the Health Protection Department to ensure that its own Minister and the Minister for Planning and Environment are provided with the most up to date information and recommendations.

Finding 20

Both NRPB/HPA and ICNIRP recommendations are based on research data predating 1999. It would be appropriate for ongoing local monitoring to take into account new and current scientific research work being undertaken in fields other than the heating of tissues. It is noted that since that time ICNIRP has continued to monitor but has not seen the need to review its guidelines.

Finding 21

There remain concerns, nevertheless, about whether the emissions from all base stations are uniformly low, about whether the emissions could cause unknown health effects, and whether, with the increased use of mobile telecommunications, their output will have to rise.

Finding 22

It is understood that exposures above guidelines should not occur, provided the protective case surrounding the antenna is kept in place. However, as with some other items of electrical equipment there could be a possibility of overexposure if the case were to be removed.

Finding 23

The Sub-Panel is satisfied that the emissions should not exceed the ICNIRP guidelines; the

system of random audits proposed by the Sub-Panel to be undertaken by an independent company appointed under an authority such as OFCOM or the JCRA under advisement will provide an independent check on the output from all base station antennae.

Finding 24

The Sub-Panel is of opinion that it is not possible at present to say that exposure to EMFs, even at levels below national guidelines as set by ICNIRP, is totally without potential adverse health effects. It further suggests that the gaps in knowledge are sufficiently significant to justify an increased precautionary approach to that suggested by the 'Stewart' report. The Sub-Panel accepts that ICNIRP guidelines are based on a large database which formed the basis for its risk assessment. However, it considers that it is essential that careful consideration be given to large scientific research projects currently being undertaken and part funded by the UK government.

Finding 25

The Sub-Panel notes from the evidence received from the mobile telephone operators, that based on the scientific guidance that they have been provided with through the WHO, the HPA and ICNIRP, that they consider that they have no credible evidence to indicate that mobile telephone mast station EMF emissions pose a threat to health if those stations operate within ICNIRP guidelines and comply with best practice standards.

RECOMMENDATIONS

Health and Social Services Health Protection Department Report recommendations

The Sub-Panel considers that the following actions recommended within the Health and Social Services Health Protection Department Report together with its own additional recommendations are required to ensure that an adequate precautionary approach is adopted –

- 1. All base stations are to be subject to the scrutiny of the planning applications process to ensure compliance with internationally agreed standards.*
- 2. There should be improved consultation by the network operators with the community prior to the selection of a site for a base station.*
- 3. Emissions from base stations must as a minimum meet the ICNIRP guidelines for public exposure, as expressed in the EU Council Recommendation. However the States should seek to ensure that Network operators voluntarily agree to comply with levels lower than international guidelines (namely ICNIRP and NRPB).*
- 4. Measurement of the actual levels of radiation from base stations must be undertaken following commissioning to show compliance and be a condition of the planning permit.*
- 5. Mobile Phone network operators co-operate to deliver with the States of Jersey a database of information available to the public on radio base stations.*
- 6. There is cross industry agreement on the sharing of sites and masts for radio base stations wherever possible.*

The Sub-Panel considers that on the basis of the evidence it has received and scrutinized that the following additional actions recommended are necessary to ensure that an adequate precautionary approach is adopted –

- 1. The Sub-Panel recommends that the Minister for Health and Social Services be invited to undertake the following and report back to the States before the end of 2007 –**

The further evaluation and scrutiny, as to whether or not the acceptable levels of EMF emissions recommended by ICNIRP (1999) remain appropriate and relevant, given the lapse of time since their introduction and the age of the database used for their development (pre 1998). *Especially in light of the reduced levels of EMF emission standards, adopted in some other jurisdictions. The reduction in those other jurisdictions appear to be on the basis of more recently published research (post-1999) into cell integrity and the occurrence of certain illnesses when individuals are subjected to EMFs.*

- 1.1 That the evidence from new research suggesting that biological functions, including functions of the brain, may be affected, by EMF levels must be evaluated by health professionals locally and the findings reported back to the States before the end of 2007. The Sub-Panel recognises that there is, as yet, no conclusive evidence that these biological effects constitute a health hazard, but at present, only limited data are available.*

1.2 That a report evaluating the following research be presented to the States prior to the end of 2007 –

University of Essex peer reviewed research to be available mid-year 2007;
Human cell EMFs research by Drs. G. Carlo and G. Oberfeld.

1.3 To investigate and report on the reduction in approved EMF emission levels in other Jurisdictions and to consider the basis upon which the decision to reduce levels was made.

2. The Sub-Panel recommends that the Ministers for Health and Social Services, Economic Development and Planning and Environment be invited to agree to the following –

2.1 In addition to the first recommendation from the April 2006 Health Protection Report, to ensure that all base stations are subject to a planning application. *(It is noted that the Minister for Planning and Environment has already complied with that recommendation).*

2.2 That the necessary measures should be identified to introduce the establishment of agreed emission levels with the operators on individual mobile masts of any description on a case by case basis. *(The Sub-Panel considers that the more stringent precautionary approach is justified on the basis of the growing level of expert opinion expressing concern over the effect of EMFs. A model for the site by site approach has been developed in South Tyrol and should be emulated in Jersey.)*

3. The Sub-Panel recommends that the Minister for Economic Development be requested to provide the JCRA with guidance on social grounds to ensure the following –

3.1 The Sub-Panel is of the opinion that the JCRA should be given guidance suggesting that it ensures that States-approved consultation time scales are adhered to during a consultation process. The terms of consultation on issues which could potentially impact on public health should be clearly outlined and agreed and follow best practice on consultation; and,

3.2 That guidance be issued to request the requirement to ensure that Network operators either voluntarily agree or comply through the introduction of an additional licensing clause relating to agreeing EMF emission levels on a site by site basis lower than international guidelines.

3.3 That guidance should be issued requiring emission monitoring compliance to be undertaken by an independent body, to be appointed by the JCRA and funded by the telephone operators. That the guidance should recommend that the appointee would be required to undertake periodic (quarterly) random emission testing of radiation from base stations without prior notice to the operator. The JCRA would monitor and ensure operators compliance with their issued licences and that the reports from those tests be made publicly available,

3.4 That the guidance would suggest that operators should as part of their licence be required to fund the development and management of a website using a mapping system which shows the island topography and location of all macro, micro and pico cells, lattice masts and TETRA installations.

3.4.1 That the website should identify overlapping (increased emission or cumulative emission areas) and show the acceptable EMF emission reading for the individual cell stations together with the EMF emission level from the independently taken readings.

3.4.2 The website should also provide the latest information on mobile technology. Any changes to or additions to the cells should be posted on the website.

3.4.3 That the guidance should recommend that the JCRA requires that operators should provide at no cost emission testing to individuals at their domicile if a complaint relating to the level of EMF emissions has been made. *(An agreed and reasonable process for individuals should be developed in this regard. Equipment used by the operator for this person should be calibrated annually by the external body retained for independent testing of EMF emissions.)*

3.4.4 That the Minister for Economic Development liaise with the JCRA to develop enabling legislation without the requirement for complaint from an operator, to require mast sharing and impose a licence requirement that the mobile telephony infrastructure be operated through a fibre optic network wherever possible. The erection of multiple mast clusters should also be discouraged.

3.4.5 That guidance should be issued to recommend that the JCRA take the necessary action to set a commercially acceptable rate at which all operators can access the Jersey Telecommunications existing fibre optic system in order to reduce the potential social and perceived environmental impact of the proliferation of masts and increased emissions.

4. The Sub-Panel recommends that the Minister for Treasury and Resources be requested to review the following issues on the basis of evidence received –

4.1 The possible impact on property values as a result of mobile telephone masts being located next to private properties and suggested depreciation on those values.

5. The Sub-Panel recommends that the Chief Minister be requested to consider the following and to report on –

5.1 The extent of public liability insurance held by the States in respect of TETRA mast operation; and,

5.2 Tasking the Computer Services Department with overseeing the selection of the appropriate company to undertake the development of the proposed mobile telephone/TETRA mast and associated information website. To establish an appropriate management process to operate the website on behalf of the relevant States Departments and the telephone operators.

6. The Sub-Panel recommends that the Minister for Home Affairs be requested to agree to ensuring that the following action is undertaken and to report to the States prior to the end of 2007 –

6.1 That a detailed list of the location and EMF emission levels of all TETRA sites will be released as a matter of public information and provided for inclusion onto a website, as is the practice in the United Kingdom, to be funded and established by the

telecommunications operators.

7. **The Sub-Panel recommends that the Minister for Planning and Environment –**
 - 7.1 Confirms that the necessary power is available to him within the Planning and Building (Jersey) Law 2002 or subordinate legislation to insist that any existing mobile mast structures can be moved or removed if the perceived health risks associated with EMF emissions are proven and international guidelines change (or if masts are found not to be compliant with guidelines).
 - 7.2 To confirm that if that provision in statute is not currently available, that he will take the necessary action to ensure its addition to the existing legislation.

5 TIMETABLE

The issue of mobile telephone masts and the concerns raised by the Public was brought to the attention of the States Assembly by Deputy P. Ryan in his proposition to the States, dated 2nd November 2006, entitled 'Committee of Inquiry: Mobile Telecommunications' P.144/2006. The Council of Ministers presented its Comments on 21st November 2006 and the States considered the matter on 22nd November 2006.

Following States consideration of P.144/2006, Deputy A. Breckon, Chairman of the Health, Social Security and Housing Scrutiny Panel, agreed to consider the undertaking of a review by a Sub-Panel, to be established following the Panel's first meeting and agreement and also subsequent to discussions with the Chairmen's Committee.

The Chairman discussed proposals to undertake a focused review into the perceived health risks associated with mobile telephone masts, at the Chairmen's Committee meetings of the 15th and 20th December 2006. No definitive way forward was agreed on those occasions; as a result the issue was raised at the first meeting of the Health, Social Security and Housing Scrutiny Panel on 29th December 2006 when the Panel supported the principle of establishing a Sub-Panel to review the matter.

The preparation and establishment of a Sub-Panel to undertake a mobile telephone mast review was progressed by the Health, Social Services and Housing Scrutiny Panel in accordance with Standing Order 135. The Panel agreed that a review should be undertaken on its behalf into the perceived health implications from mobile telephone masts. The Sub-Panel was approved on that date (29th December 2006) and its membership was agreed on 2nd January 2007.

The Sub-Panel proceeded as follows –

Friday 5th January	First Sub-Panel Meeting
Wednesday 10th January	Informal Meeting selecting speakers
Monday 15th January	Sub-Panel Meeting
Thursday 18th January	Evening Public Meeting, Hautlieu School
Friday 19th January	Public Hearing
Friday 19th January	Evening Public Meeting, St. Brelade, Parish Hall
Monday 22nd January	Full day Public Hearing, States Chamber
Tuesday 23rd January	Full day Public Hearing, States Chamber
Wednesday 24th January	Full day Public Hearing, States Chamber
Thursday 1st February	Sub-Panel Meeting
Thursday 15th February	Public Hearing
Thursday 15th February	Public Meeting, Town Hall
Friday 16th February	Public Hearing
Monday 26th February	Public Hearing followed by Public Meeting.
Tuesday 6 th March	Sub-Panel Meeting
Tuesday 20 th March	Sub-Panel Meeting
Thursday 22nd March	Sub-Panel Meeting (Telephone meeting)
Tuesday 3rd April	Sub-Panel Meeting
Wednesday 4th April	Draft Report out for comment under embargo
Friday 13th April	Sub-Panel Meeting to finalise and sign of Report
Friday 20th April	Report presentation and public launch at the States

Bookshop, Morier House, 9.30 a.m. -	11.30a.m.
Wednesday 23rd and	
Friday 25th May	Public Hearing proposed dates
Tuesday 29th May	Sub-Panel Meeting
Tuesday 5th June	Proposition to the States

The Sub-Panel experienced no difficulties obtaining information which it had requested; it also appreciated the significant amount of time invested by the participants in this review to provide the answers to its questions.

5.1 Public Hearings Witness Schedule

Friday 19th January 2007

3.30 p.m. – 5.00 p.m. Mr Barry Trower

Monday 22nd January 2007

9.00 a.m. – 10.30 a.m. Mr Jerry Rabaste, Mr Daragh McDermott & Mr Tim Knights, Jersey Telecom

11.00 a.m. – 12.30 p.m. Mr Bill Brown & Mr Chuck Webb, JCRA

1.30 p.m. – 3.00 p.m. Dr G Langly-Smith & Mr M Hocquard, JMMCG, Connétable Dan Murphy of Grouville

3.30 p.m. – 4.30 p.m. Mr David Smith & Mr Russ Sharman, Cable & Wireless

Tuesday 23rd January 2007

9.30 a.m. – 10.30 a.m. Mr Mike Liston, JEC

11.00 a.m. – 12.30 p.m. Mr Michael Repacholi, World Health Organisation

1.30 p.m. – 3.00 p.m. Dr Jack Rowley, GSM Association

3.30 p.m. – 5.00 p.m. Senator Freddie Cohen, Planning Minister & Mr Richard Glover, Principal Planner

Wednesday 24th January 2007

9.30 a.m. – 10.30 a.m. Mr Steve Smith, Health Protection

11.00 a.m. – 12.30 p.m. Mr David Watson of Airtel, Mr Thomas Barmuller, Director for Europe & Africa, Mr Andrew Clark – Chairman, Mobile Manufacturers Forum

1.30 p.m. – 2.30 p.m. Mr Colin Myers, Health and Safety

3.00 p.m. – 4.00 p.m. Mr William Harris, General Manager, Department of Electronics, Jersey Airport

Thursday 15th February 2007

3.30 p.m. – 4.30 p.m. Senator P F C Ozouf, Economic Development Minister

Friday 16th February 2007

10.00 a.m.	11.00 a.m.	Senator S Syvret, Minister for Health and Social Services
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Monday 26th February 2007

7.30 p.m.	9.30 p.m.	Dr George Carlo, PhD, M.S., J.D
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Please note that all transcripts are available on the Scrutiny website.

6 BACKGROUND AND PROCESS

In this section the Sub-Panel will examine the development of the local mobile telephony industry. It will also examine the States Departmental responsibilities. This examination will include consideration of the following areas:

- The Planning process relating to mobile telephone masts
- The responsibility of the Health Protection Department with regard to advising the Minister for Health and Social Services, Senator S. Syvret and the Minister for Planning and Environment, Senator F. Cohen,
- The Health and Safety Inspectorate and the Department of Electronics, on the monitoring and maintenance of emergency services TETRA communications systems.

The Sub-Panel will examine the process by which the Council of Ministers and Ministers with specific responsibility approached the subject in light of the concerns expressed by the public.

It will also consider the role and activity of the Jersey Competition Regulatory Authority (JCRA) together with the responsibilities of the Minister for Economic Development with regard to providing the authority with guidance.

The Sub-Panel will also examine the submissions of evidence both empirical and anecdotal received from the general public, organisations and individual experts from the telephony industry or independent persons.

Strategic Plan

The Sub-Panel considers that this review is in keeping with the Strategic Plan 2006-2011 adopted by the States on 27th June 2006.

It reflects the aims of Commitment 1 to maintain and enhance a strong, successful and environmentally sustainable economy. The Sub-Panel will suggest that the possible impact of Electro Magnetic pollution should be included as part of the annual report to the States by the Director of the Environment (P&E). That requirement should result from the indication that the States will show the world that economic and environmental success can work together and that Jersey should seek to minimise adverse environmental impacts resulting from economic growth.

The review and some of the findings by the Sub-Panel also reflect the aims and indications outlined in Commitment 4 namely 4.4 Clean air, clean water and uncontaminated land, the action described to meet that aim is outlined at 4.4.5: Debate and implement in 2007 an Air Quality Strategy for Jersey, including proposals for monitoring and publishing levels of local air pollution, and targets, policies and timescales for reductions in air pollution levels that reflect best practice globally (P&E). The Sub-Panel strongly recommends that overall and specific electro magnetic pollution should be recognised and included within that aim.

The Sub-Panel will seek to gain support from the relevant Ministers to achieve an enhanced precautionary approach in respect of EMF emissions and considers that whilst this proposed action may be more stringent than the course adopted by the UK government it is the appropriate and cautionary way forward when so little research information is available in areas other than on the potential thermal effects on human tissue. The Sub-Panel does not

feel that the evidence conclusively suggests that EMFs can be linked to specific diseases but it is of the opinion that it is essential that the States of Jersey as a whole considers new research which is undertaken and which has been through a robust process of peer review.

The Sub-Panel has made a number of recommendations as a result of its investigation; it has decided that it will afford Ministers a period of six weeks to consider its findings and to comment upon them. Following that period the Sub-Panel will hold Public Hearings and invite the Ministers to attend to advise which of the recommendations they are able to undertake within the resources available.

The Sub-Panel will then consider the recommendations (if any) that cannot be implemented by the Ministers and prepare a proposition to be lodged 'au Greffe' for consideration by the States to seek support in progressing the remaining recommendations.

The Sub-Panel is aware of the budgetary constraints faced by Ministers and will accept that any cost dependent recommendations will require inclusion into budget and business planning for 2008/2009. In accordance with Standing Orders the Sub-Panel will seek the input of Ministers and their officers to provide it with the necessary manpower and financial implication statements required for inclusion in its proposition.

6.1 Deputy P.J.D. Ryan – Committee of Inquiry: Mobile Telephones P.144/2006 (withdrawn)

Following public concerns over perceived health issues related to electro-magnetic field emissions, a proposition was lodged 'au Greffe' on 2nd November 2006 by Deputy P.J.D. Ryan in an effort to gain support for a Committee of Inquiry into the proliferation of mobile telephone masts as a result of the introduction of competition into the mobile telephony market. Subsequently Deputy Ryan as proposer was given leave by the States to withdraw the proposition on 22nd November 2006 (by a vote of *pour*: 36, *contre*: 9).

Within that report, he outlined the basis upon which the former Economic Development Committee and the Jersey Competition Regulatory Authority had worked together to ensure that Jersey Telecom would have to allow access to their existing infrastructure (built up over decades) on a proper and fair commercial basis. That Committee, through both Telecoms and later the Competition Laws, was at pains to ensure that the JCRA had sufficient powers to be able to force such arrangements upon any incumbent telecom operator and to regulate the commercial terms of any agreements.

[1] 'R.C.43/2002 (at Appendix 1) of 5th November 2002 from the previous Industries Committee details the agreements and directions from the Committee to the JCRA on environmental matters but there were no further written instructions given to the JCRA by EDC on the environmental issues associated with mast-sharing because there was a clear understanding that through pressure from the JCRA and the planning process as a whole, the sharing of infrastructure could be managed.'

Both the Minister for Planning and Environment, Senator F. Cohen and the JCRA are working within the legislative framework of their respective remits. In order to refuse planning permission for new infrastructure and the duplication of masts, antennae and dishes, the Minister would require grounds upon which to base a refusal.

Several States members had and have been lobbied on concerns over health issues which remain high on the public agenda, particularly as this is a relatively young industry and several European Jurisdictions such as Salzburg and Athens, have considerably lower EMF emission regulations in force.

6.2 Council of Ministers

The Sub-Panel received confirmation from the Chief Minister's Department that the Council of Ministers had considered the issue of mobile telephone masts on two separate occasions. In April 2006 it had received and noted the report entitled Report on Mobile Phones and Health 'Mobile Phone Base Stations' dated April 2006. The recommendations in that report reflected those in the 2000 Stewart Report.^[2] Those recommendations relating to planning were subsequently introduced by the Planning and Environment Minister. **Where recommendations did not clearly fall into a ministerial remit they do not appear to have been implemented as no action plan was agreed.**

On 16th November 2006 the matter was reconsidered in detail by the Council as it prepared its response to Deputy Ryan's proposition P.144/2006.

The Council stated in comments on the proposition that there had been 'alarmist but spurious reports about the alleged "health risks" of mobile phone masts' and that 'The effect of these has been to generate sincerely held, but nonetheless misguided, fears and concerns'. The Panel finds that the comment that concerns were based purely on alarmist and spurious reports is without evidence, as to a large degree public concerns are based on the fact that mobile signals have not been proven safe, indeed evidence suggests that no one can say that it is not without risk.

The Council supported the view of its Health Protection Section Report which had been based on the findings of the World Health Organisation (WHO), the U.K. Independent Expert Group on Mobile Phones (IEGMP), the U.K Health Protection Agency (HPA) and the International Commission on Non-Ionising Radiation Protection (ICNIRP). Those findings were based on peer-reviewed scientific evidence and advice provided by accredited governmental and scientific bodies.

In summary, the content of the health protection section report indicated that it had not thought it necessary to assess the underlying scientific research and had been required to provide the Minister with a rapid response based on the findings of the United Kingdom, Health Protection Agency and the World Health Organisation.

The Medical Officer of Health (MOH) was quoted in the Council's Comments as follows –

"the evidence and judgment of these bodies is that public exposure to lower levels of radio waves – below the accepted international standard (that Standard being Radio Frequency Public Exposure Guidelines of the International Commission on Non-Ionising Radiation, as Expressed in the EU Council Recommendation^[3]) – from mobile telephones and base stations are not likely to damage human health".

The Sub-Panel recognises that the level of EMFs in Jersey complies with that set by the International Commission on Non-Ionising Radiation Protection (ICNIRP), an accepted

international standard on such emissions. This is the standard which has been derived from observing the effects of such emissions on human tissue. That approach was endorsed in the Council's Comments to the States. The ICNIRP standard of emissions is described as being a 'precautionary approach' in the Stewart report. The Sub-Panel suggests that the term 'not likely' within the MOH statement indicates that it is recognised that there may be health risks.

Finding 1

Initially the Sub-Panel had been encouraged by the Health Protection Section report; however, it was concerned at the lack of resources available to the section and the timescales in which it had been required to prepare the report. The Sub-Panel remains concerned that there was no action plan agreed by the Council of Ministers to ensure that all of the recommendations contained in the report were allocated, resourced and undertaken, which could have allayed some public concern.

6.3 Development of mobile telephony in Jersey

Mobile telephony is a relatively young industry that has yet to undergo the scrutiny of long-term research. In order to provide some context the Sub-Panel sought a historical overview of the development of mobile telephony from Jersey Telecom. In brief it was advised that the Jersey GSM network was opened in December 1994. That network had recently been enhanced and upgraded to accommodate '3G' (Third Generation) infrastructure. The network was developed to be fully compliant with international electro magnetic field (EMF) emission standards. The conformity to those standards was confirmed to be required by the Jersey Competition Regulatory Authority (JCRA) within an operators issued telecommunications Licence for Jersey Telecom (Conditions 17.1 and 20.3). (Both of the conditions exist in the licences of the three mobile telephony operators in Jersey) The JT network supports over 102,000 subscriptions.

6.3.1 Network coverage

The Sub-Panel was advised that, in order to achieve high coverage levels whilst minimising the need for large mast structures, Jersey Telecom has rolled out a network of Micro cell sites with small antennas in conjunction with a smaller number of Macro cell sites. An increase in the number of small cell sites is likely to continue to be required (rather than fewer, but more powerful, larger sites) due to the following factors:

- The Island's topography;
- The inside coverage difficulties associated with large numbers of granite houses;
- The necessity to share the frequency spectrum between new mobile operators;
- The reuse of frequencies to increase spectrum efficiency and meet network demand.

6.3.2 Jersey Competition Regulatory Authority

The Sub-Panel considered that the JCRA had authorised the introduction of competition in the telephony market in accordance with its remit outlined within the Telecommunications (Jersey) Law 2002: Article 7(1) The impact of that decision and the lack of correlation between lower cost mobile services to the consumer and the additional infrastructure required will be considered later in the report.

The Sub-Panel received evidence from the Jersey Competition Regulatory Authority (JCRA) at its public hearing of 22nd January 2007.

Mr. W. Brown, Chief Executive Officer, JCRA and Mr. C. Webb, Legal Adviser answered the Sub-Panel's areas of particular concern, relating to the justification for the level of increased competition, the approach to public consultation and any input from Ministers during that process.

Mr. Brown explained the JCRA function and stated that –

'For the operation of a mobile telephony service in Jersey, under the Telecom Law 2001, that requires the issue of a licence by the JCRA to the operator concerned. So any new operator who wants to come to the Island to operate mobile services need to apply to the JCRA for a licence. It is our role then, after public consultation, to decide whether to grant the licence or not. If we do decide to grant it, our role then becomes one of regulating the compliance with the licence and ensuring that operators comply. [4],

He went on to consider the concerns expressed by the public over the perceived health risks associated with mobile telephone masts –

'There are 2 conditions which deal with safety issues. The first is condition 20.3 which deals with emissions from masts, or covers the emissions from masts. It requires operators essentially to comply with any recommended maximum limits which are issued by the relevant international bodies. In this case, it is the International Commission for Non-Ionising Radiation Protection, ICNIRP. The other condition which deals with environment matters deals with mast sharing, which is condition 22.1. [5],

6.3.3 OFCOM Spectrum licences

The Sub-Panel was made aware of a survey by the Office of Telecommunications (OFTEL) latterly known as the Office of Communications (OFCOM)^[6] and another on behalf of the JCRA, both conducted in the last few years in respect of Spectrum licensing.

The JCRA has confirmed that the survey that was carried out in 2003 in conjunction with Ofcom was an audit of spectrum usage only, in preparation for the issuing of additional mobile spectrum licences. The report contains only a limited number of mast sites and does not contain data that would be meaningful to the public. It was confirmed that the document had not been released into the public domain.

The JCRA published a document in 2005 seeking expressions of interest in radio spectrum both in 2nd Generation (2G) and 3rd Generation (3G) frequency bands, which Ofcom was proposing to offer. Licences for spectrum in Jersey are issued by Ofcom under the Wireless Telegraphy (WT) Act through its authority to manage spectrum in Jersey under the Communications Act 2003.

Since the original JCRA publication seeking expressions of interest^[7], Ofcom has undertaken a review of radio spectrum usage in the Channel Islands and has informed the JCRA as follows -

'Ofcom has reviewed the basis for its initial spectrum packaging proposals as contained in the Expressions of interest document published by JCRA on the 29th July 2005. Consideration has been given to the need to ensure optimal use of the radio spectrum, which in the context of the Bailiwick of Jersey means taking account of the population and the total area of the Islands. Based on these specific considerations, Ofcom has applied commonly used network planning criteria for 2G and 3G networks in determining an appropriate allocation of spectrum. Ofcom is of the view that viable 2G and 3G networks can be established in the Bailiwick with significantly less spectrum than the proposed allocations. Further spectrum may be justified once networks are deployed and adequately loaded, but the release of additional spectrum can be reviewed in the future to take account of developments in the Bailiwick.'

Ofcom and the JCRA consulted and agreed that the following licences would be made available -

3G Spectrum - 4 licences of 2x5MHz of paired FDD spectrum + 1x5MHz of TDD spectrum and 4 licences each of 2x5MHz paired FDD spectrum in the 2G spectrum in the 1800MHz Band.

Subsequent to an operator being in possession of the appropriate spectrum licence they can then apply to the JCRA for a further licence to operate a mobile telephone system.

6.3.4 Operator Licences

Class II Licences issued by the JCRA to Operators – Condition 20.3 has the following requirement – The Licensee shall ensure that non-ionising radiation emissions from its Licensed Telecommunication System are within the limits specified by the guidelines published by the International Commission for Non-Ionising Radiation Protection (ICNIRP) and that it complies with any radiation emission standards adopted and published from time to time by BSI, ETSI the European Committee for Electromechanical Standardisation and any other standards specified by the JCRA. [8]

6.3.5 Licence Conditions

Whilst the JCRA can impose conditions as part of the licence to ensure the compliance of telephone operators to adhere to best practice, there is currently no independent monitoring of emissions from mobile telephone mast stations. The Sub-Panel was advised that the licensing approach of the Office of Utility Regulator in Guernsey (OUR) whereby operators are required to permit independent assessments of emissions as requested by the Director General. It was noted that sub-clauses in Condition 4 of the Guernsey Licence provides for the requirement of information and emission testing as deemed necessary by the Regulatory Authority [9]

'4.2 The Licensee shall, within ninety days of the Licence Commencement Date, provide the Director General with a comprehensive report on its use of the radio frequency spectrum, and the anticipated future use, and provide updates on the report as requested by the Director General from time to time.

4.3 The Director General may require an examination, investigation or audit of any aspect of the Licensee's business relating to the Licensed Telecommunications Network or the Licensed Telecommunications Services or its compliance with the Conditions and the Laws, and the Licensee shall provide any assistance requested by the Director General in relation to any such examination, investigation or audit. The Director General may issue directions with regard to the manner in which such examination; investigation

or audit is carried out.

4.4 In particular, the Director General may authorise a person to carry out an examination, investigation or audit or may require the Licensee to arrange for an examination, investigation or audit of any aspect of the Licensed Telecommunications Network or the provision of the Licensed Telecommunications Services to ensure compliance with the Conditions. The Licensee shall allow the Director General's authorised representative to attend at, enter and inspect any premises under the Licensee's or any of its Associated Companies' control, and to take copies of any documents and to acquire any information in the control of the Licensee or any of its Associated Companies, as may be required in order to carry out the examination investigation or audit.

4.5 The Licensee shall bear all reasonable costs associated with any examination, investigation or audit conducted under this.'

The Sub-Panel was aware that the exact same conditions are contained within all the telecommunication licences issued by the JCRA in Jersey.

6.3.6 Number of masts

The issue of reducing the total number of masts introduced, in order to minimise the proposed proliferation, by requiring an increased sharing of masts was raised. The Sub-Panel was advised that the JCRA has the power to force a mast-sharing agreement in a company's licence to operate. However, if a new licensee has no wish to mast share and applies for planning permission to erect new masts, the Planning Minister has to refuse permission in order to force the two parties into a mast-sharing agreement. It is at that point that the JCRA can regulate for commercial fairness. Neither the JCRA nor the Minister is empowered to act unless a request is made for the JCRA to intervene by an operator.

Mr. Brown stated that it would be the Minister's prerogative to say he would not consider an application for a new mast until the option to mast share had been pursued with other operators.

The total number of recent planning applications relating to base stations/mobile telephone masts per company is as follows –

Jersey Telecom – 59 approved, 3 pending
Cable and Wireless – 51 approved, 0 pending
Jersey Airtel – 29 approved, 18 pending.

The Sub-Panel noted during the course of its review that the anticipated total installations for all three companies currently on the Island would be approximately 150. It accepted that the number of sites quoted may be subject to change. Of this total, 70-80 will be wooden-clad replica telegraph-pole designs; the remainder will be installations on existing lattice towers and roof-top sites.

The Sub-Panel understands that, with the exception of antennae that cannot be seen from a public road and antennae placed inside buildings, and equipment erected by or on behalf of the public and or parochial authorities, all telecommunications equipment requires planning permission.

The Sub-Panel sought clarification on the issue of public liability cover and the role that the JCRA might have in ensuring that telephone operators were sufficiently covered in the event of litigation attempts on health grounds.

The evidence provided is that for the JCRA to include any insurance provision within a licence agreement it would be necessary to consult with the Minister of Economic Development so that he provides social guidance in accordance with Article 8(1) of the Telecommunications (Jersey) Law 2002.

6.3.7 Planning Process and applications

The Sub-Panel is aware that as a result of the JCRA licensing companies to enable competition in the mobile telephony market, a number of planning applications have been made seeking consent for the placement of micro and macro base stations. Jersey Telecom has sought to confirm its existing sites and expand to develop the efficacy of its infrastructure. Airtel and Cable and Wireless have applied to develop their own networks for their respective mobile services.

6.3.8 Moratorium

On 26th October 2006, the Minister for Planning and Environment called a moratorium on the determination of telecommunication applications and invited Islanders to submit representations on health concerns. Some 16 submissions were received directly as a result of the moratorium. These representations were considered by the Health Protection Department.

6.3.9 Planning Application Process

The application process begins with the submission of an application to install telecommunication equipment to the Planning Department. It is then screened for the provision of adequate information, registered, advertised in accordance with the Planning and Building (Jersey) Law 2002 and referred to any relevant bodies for consultation. Telecommunications applications are assessed under Policy Nr12 of the Island Plan 2002 which states that –

“telecommunications development will normally be permitted where:

*siting and design will not unreasonably affect the character of the area;
all practicable possibilities of sharing facilities have been explored;
there would be no unacceptable impact on residential amenity;
the proposal is in accordance with other principles and policies of the Plan”.*

Prior to consideration, all telecommunication infrastructure applications are sent for comment to the Health Protection Service of the Health and Social Services Department. All applications must be accompanied with an ICNIRP certificate which provides an estimated maximum emission level from the proposed site. The comments from the Health Protection Service on the ICNIRP certificate are considered together with any representations from the public.

The Island Plan 2002 requires that consideration is given to the siting and design of any equipment. In this way, before the individual applications were submitted, each company was required to provide an overall network plan which identifies all the mast sharing sites and the anticipated number of new individual masts. A cell coverage plan was also provided to demonstrate the range of each mast and how each site linked together. For each individual

application, the operator must demonstrate that they have considered the best design solution in terms of the least visual impact on the area.

The Sub-Panel was made aware that all existing infrastructure that can support additional equipment is currently being shared by two or more companies. It was suggested that the only way more mast sharing would be possible was by providing additional lattice masts. (The Sub-Panel explored the matter of mast sharing during the course of its public hearings and the subject will be further expanded within the outline of the Jersey Competition Regulatory Authority role.)

The Sub-Panel was advised by the Planning Department that the applications since April 2006 had been conditioned in the following way:

"The development hereby permitted is temporary and shall cease on or before the (12 months from approval date) 2007 and the land restored to its former condition unless the post commissioning test is completed and the relevant measurements are in accordance with the ICNIRP certificate submitted, to the satisfaction of the Minister for Planning and Environment."

Subsequent to a post-commissioning certificate being submitted, the Planning Department seeks confirmation from the Health Protection Department that the levels are satisfactory.

The Sub-Panel was also advised that in addition to the above condition, the Planning and Environment Minister has included the following condition on applications approved since January 2007 –

"The permission hereby granted is for a temporary period of 12 months in the first instance. In the event that the Minister for Health and Social Services, during that 12 month period, should change his policy on the safety of telecommunication installations to the effect that they constitute a danger to the public nearby, the Minister for Planning and Environment will review the permission and may require the installation to be removed within a period of 3 months of the Minister for Health and Social Service's change of policy. Should the Minister for Health and Social Service's policy not change within 12 months, this permission will have permanent effect."

6.4 Health and Social Services advice (Health Protection)

The Sub-Panel accepts that the Minister for Planning and Environment is not responsible for determining policy or guidelines relating to health or to perceived health implications of planning applications. However, it notes that there is a process in place by which the Health Protection Service provides advice to the Planning Department on health matters during the assessment of applications and subsequent to, when it comments on the post-commissioning ICNIRP certificates.

6.4.1 Health Protection Report

The Sub-Panel is aware that the Minister for Planning and Environment had requested the provision of informed opinion from Health and Social Services as to the likely health impacts, if any, of mobile telephone masts. The request was for such opinion to be based on sound scientific evidence. The Planning Department received the Health Protection Public Health

Services report entitled 'Report on Mobile Phones and Health Mobile Phone Base Stations dated April 2006 and has complied with the recommendations contained therein.

Through submissions, public meetings and public hearings, the Sub-Panel has learnt that the Minister for Health and Social Services, through the Health Protection Department, requested a report researching the issue of possible or perceived health effects and this was available in April 2006 and forwarded to the Council of Ministers for consideration.

That report, as previously mentioned, was based on information from respected scientific sources representing the international community. These included WHO, the HPA, the Independent Expert Group on Mobile Phones (IEGMP) and ICNIRP. The report addressed the concerns raised by the public with regard to perceived health effects from telephone masts. During preparation of the report, discussions occurred with UK Health Protection Agency specialists in this field to determine whether there had been any scientific advance that may cast doubt on previous advice. The Medical Officer of Health was consulted and was fully aware of the content of the departments report and the ongoing dialogue that followed this piece of work.

6.4.2 Research

The Sub-Panel was made aware that a number of research projects had been undertaken, particularly with regard to childhood cancers and hyper-sensitivity of individuals residing close to masts. It was advised that some research projects have ended and reports will be available in the coming months. Other research in a variety of areas other than thermal heating of tissues has still to reach a conclusion. No new evidence has been forthcoming since the last National Radiological Protection Board report in 2004 to add any further to the knowledge of health effects.

The information provided to the Sub-Panel stated that there was no evidence to support the contention (made in public submissions) that exposure to radio frequency has adverse health effects. It is therefore the opinion of Health and Social Services Health Protection Unit that there is no reason that previous advice included within its April 2006 report should in any way be amended.

The Department advised that it retains the view provided within its report of April 2006.

The Sub-Panel heard evidence from Senator S. Syvret, Minister for Health and Social Services, at which it was advised by the Minister –

'Am I aware of health concerns relating to mobile phone masts? The answer is, yes, certainly there is a high degree of awareness of the potential risk of this kind of radiation and a lot of people in the public have concerns about it. The decision we have to make is looking at the scientific evidence, looking at the published respectable data on the issue, the research; is there evidence of a health risk? Yes, there might be, but only in terms of far, far greater levels of exposure than that which is recommended by the international regulations in the field. So, as far as actual health risks posed by mobile phone mast transmissions, and indeed other similar kinds of transmitters, which there are a number in the Island – radio masts, television transmitters, the police TETRA (Terrestrial Trunked Radio) system and so on. The levels of radio frequency radiation coming from these things are far, far lower than that which has ever been scientifically suggested or demonstrated to pose any kind of risk.' [10]

In addition when asked about any concerns about having a base station near the hospital the Minister stated –

‘On the basis of the scientific evidence, no I would not’ ^[11].

Dr. M. Repacholi, in his written evidence to the Sub-Panel, evaluated the April 2006 Report by Mr. Smith and noted –

‘One of the main concerns of people is that there is uncertainty associated with the science and hence possible long-term health effects, and further expansion of the networks should be curtailed. Health Protection provides a well thought-out and well researched response on the health issues. References to support the conclusions were made to recent reports in the UK and ICNIRP; ‘

He goes on to state –

‘An important note is made in the Health Protection report about the possible lack of communication with the public on the expansion of the network. Unfortunately this has been a problem of governments and operators world wide and is not just a local issue. WHO has recommended for some time that both government and operators should inform people to be affected by new base stations what is about to happen in their neighbourhood and provide them the necessary information for a basic understanding of the technology and safety aspects, and allow them an opportunity to comment.’ ^[12]

Finding 2

The Sub-Panel concurred that a recurring theme throughout the review had been that communication with the public must be improved. It is also notable that the Medical Officer of Health has not participated in this discussion or offered any reassurances to the public despite the significant media attention given to this matter.

6.5 Health and Safety Inspectorate

The Sub-Panel received information from the Health and Safety Inspectorate, advising that there are no specific health and safety regulations covering the issue of Non-ionising Electromagnetic Fields and Radiation (EMFs) in Jersey

The Sub-Panel received written evidence from the Minister of Health and Social Services and decided that it would be appropriate to seek evidence from the Health and Safety Inspectorate as to any special requirements for individuals working within the telecommunications industry.

The Sub-Panel received Mr. C. Myers, Director of Health and Safety Inspectorate, at its public hearing on 24th January 2007.

6.5.1 Health and Safety Legislation

Mr. Myers advised that the Health and Safety at Work (Jersey) Law 1989 does give responsibility to employers to ensure, so far as is reasonably practicable, the health and safety of their employees, which includes a requirement to provide adequate information, instruction,

training and supervision. Employers are also required, in general terms, to safeguard, so far as is reasonably practicable, the health and safety of others who could be affected by the manner in which they carry out their business.

The application of the requirement was explained as follows – Health and safety legislation is intended to be self-regulating: it sets minimum standards which employers, or others with duties under the legislation, are required to meet.

In determining the measures that should be taken to meet these legal requirements, employers should have regard for recognised national or international guidelines. The measures should set out the manner in which the monitoring of the arrangements for compliance with the Law is achieved. The Law provides for the appointment of Inspectors to enforce the requirements of the Law.

6.5.2 Work of the Inspectorate

The work of the Inspectorate was outlined, together with the departmental agreement in respect of health issues relating to planning applications for the erection of mobile telephone masts. The Sub-Panel was advised that in view of the interest of the Health Protection Section, whose remit includes public health, an agreement was reached between the Inspectorate and the Health Protection Section that they would carry out the review, and make comment as necessary, on applications made for planning permission for telephone masts. The agreement extends to Health Protection being able to refer back to the Inspectorate for comment on any issues of concern or need for clarification.

As the staff of the Inspectorate does not have any expertise in the area of EMFs, any specific concerns would be discussed with Specialist Inspectors of the Health and Safety Executive.

6.6 Department of Electronics

The Sub-Panel received evidence from Mr. W. Harris, General Manager, Communications Services, Jersey Airport Department of Electronics, on 24th January 2007. An overview of the Department's role and the Terrestrial Trunked Radio (TETRA) technology was provided. The TETRA system is a public safety radio communications system designed for a very small market and is different from the privately owned GSM system for mobile telephony.

The way in which licences for the TETRA system are obtained was explained as follows -

Ofcom issues the radio-frequency licence, Jersey Airport is the licence holder as the de facto system operator and manager (but the system is owned by the emergency services). The JCRA issues the telecommunication system operator's licence under The Telecommunications (Jersey) Law, 2002. Again the licence is issued to Jersey Airport, for the same reason.

It was explained that whilst TETRA is not a statutory requirement it is the technology that was selected for the Island's public safety radio system, in line with the UK and all other European states (bar the French security services who had their own system). Mr. Harris advised that the decision was made to select TETRA in 1996 by the Defence Committee of the day.

Mr. Harris explained that the TETRA technology is similar to the GSM system but the target markets are totally different. In terms of maintaining mobile radio systems the department

follows the manufacturer's specifications for power measuring output at base stations, making sure they are on frequency and operating entirely within the terms of any the licences and not causing any interference to other providers.

Testing requires the coupling of test equipment to the transmitters. This applies equally to the TETRA transmitters as well as the 'old' type analogue transmitters. The tests include measuring emissions from both the transmitters and the antenna systems. The signal strength is measured on the ground from the base station itself out to distant parts, typically at 100 metres, 200 metres, 1,000 metres, or right across the Island. The testing is completed on the ground in a live environment. The tests are undertaken quarterly throughout the year, then on an "as needs" basis if any problems arise.

The Sub-Panel was advised that the Department of Electronics did not participate in any form of testing on the GSM network operating in Jersey. The Department was currently has access to test equipment belonging to Jersey Telecom.

6.7 Economic Development Department and the role of the Minister

The Sub-Panel received evidence from Senator P.F.C. Ozouf, Minister for Economic Development, relating to his responsibility to provide social and environmental guidance to the Jersey Competition Regulatory Authority in respect of the liberalisation of the mobile telephony market.

The Minister's responsibility in this regard is outlined in Article 8(1) of the Telecommunications (Jersey) Law 2002 –

Minister may direct or guide Authority

The Minister may, if he or she considers that it is desirable in the public interest to do so, give to the Authority written directions in respect of the principles, procedures or policies to be followed by the Authority in relation to the implementation of any social or environmental policies in respect of telecommunications.

The Sub-Panel was advised by the Minister that he was satisfied that the JCRA had acted according to the States' direction that competition in the telephony market should be introduced. The Minister did not consider that it was necessary for him to issue the JCRA with social directions and he stated –

'It is clear that the responsibility of determining planning applications is the Planning Minister's, but based upon the advice from the Health Department, and that is clear. I think the Council of Ministers has latterly found itself in a position that decisions had been made and if Deputy Ryan felt strongly and there was a public consultation on the JCRA on the issue of written directions – the JCRA initiated at the end of 2002 – I think it is the end of 2002 or beginning of 2003 – a public consultation on what the social and environmental principles should be then that should have happened at that stage. But it did not, and the JCRA made their decisions against the best practice and the prevailing view made by regulators in other places. Our regulator has not done anything different from other regulators.' ^[13]

When asked to outline the Council of Ministers' consideration of the concerns expressed by the public the Minister stated –

'I know that all Ministers read their papers prior to receiving them. I cannot recall exactly what the discussion at the Council of Ministers was, no. But I remember reading the report and I remember reading the Stewart Report, I remember reading the JT submission and I also remember – and I have got an inbox of particular mobile phone emails. I was very aware of the public concern about that which is why I think we all read the reports very carefully^[14].'

The Minister was asked about the recommendations in the Health Protection report and any allocation of responsibility by the Council of Ministers for their undertaking. He advised that there had been no formal allocation but that it was expected that the appropriate Ministers would take the necessary action in accordance with their remits.

The Sub-Panel and the Minister discussed possible improvements that could be made in providing information to the public.

The approach adopted by the Guernsey Office of Utility Regulation was discussed with the Minister and it was noted that the OUR retained the services of experts to undertake an audit of emissions from radio masts in Guernsey to ensure compliance with ICNIRP standards. The findings of the OUR 05/05R commissioned report can be found at www.regutil.gg. The survey requested by OUR examined emissions at 14 sites, largely selected with input from the Parish Constables. Spot checks have occurred subsequent to the original survey and details can be found on the OUR Guernsey website.

Finding 3

The Sub-Panel considered that an appropriate way forward would be to establish a web-site to provide specific details as to the location of all masts and to follow the example of the Office of Utility Regulation (OUR)^[15] in Guernsey by introducing random independent emission monitoring.

6.7.1 Sharing infrastructure

The Sub-Panel considers that the most involved and complex form of infrastructure sharing would be for two or three separate 3G licensees to share more and more of the elements that make up such a network. At one extreme this would be equivalent to mast sharing, at the other a single network would be run by a separate entity on behalf of two or more Licensees. Thus the model becomes a single network company "netco" with the licensees becoming service companies "servcos".

Had this process been undertaken in Jersey following direction from the relevant Government departments the increased level of competition could have been achieved with only a minor increase in the number of existing mobile phone masts, coupled with the use of the Jersey Telecom fibre optic network.

Finding 4

The Sub-Panel considers that this was an oversight at the point when competition was introduced and shows an element of disregard for the environmental and possible social (health) impact of the relevant legislation

6.8 Education, Sport and Culture Minister's view

The Sub-Panel did not call the Minister for Education Sport and Culture to a Public Hearing but was provided by the Education Department with the background papers which had supported his decisions and views. The statement made by the Minister during States question time on the 7th November 2006 was –

'As yet, there has been no detailed consultation with the Planning and Environment Department with regard to the proximity of existing telephone masts and base units to all schools in the Island. I am informed my department has no knowledge of any masts in close proximity to any of our school premises. Adopting the precautionary principle, the current policy of my department regarding applications on E.S.C. (Education, Sport and Culture) sites is to refuse at present to consider the siting of masts on key operational or highly populated sites such as schools, colleges, youth centres, sports centres, and to consider requests for other sites, e.g. on more open space, on an individual basis and decide whether to allow planning application to be made, and any approval would be subject to a Ministerial decision by myself.'

6.8.1 WiFi

The Sub-Panel has become aware that an additional area of concern to the public is due to the introduction of WiFi wireless technology for school computer systems. Further investigation into perceived health risks from the introduction of such systems is outside the terms of reference for this review.

Finding 5

However, the Sub-Panel would encourage a further examination of any research into perceived health issues relating to emissions from such systems by the Department through relevant health professionals.

6.9 Home Affairs Department – TETRA Masts

The Sub-Panel was advised that the use of TETRA is managed by a TETRA Management Group drawn from the user group, namely the emergency services, and Communications Services. They fall within the joint remit of Senator W. Kinnard, Minister for Home Affairs and the Minister for Health and Social Services.

6.9.1 What is TETRA?

The Sub-Panel was provided with an overview of what TETRA is by Mr. W. Harris, General Manager, Communications Services, Jersey Airport Department of Electronics (DoE). He advised at the Public Hearing of the 24th January 2007, that the system should not 'be confused with the GSM (Global System for Mobile communication) station.'

It was noted that the TETRA system was subjected to emission testing by the DoE; Mr. Harris advised –

'In terms of emission testing, we test emissions insofar as we check that base stations are on frequency within the designated power as approved in the licence and that they are not causing any spurious transmissions that might cause interference to other users.' [16]

6.9.2 Location of TETRA Masts

The Sub-Panel was made aware that there are security issues relating to the TETRA system insofar as it is the 'de facto' government radio-communications system. The Communications Services building is a Police 'key' point. The six TETRA base stations are on long-established communications sites. It was noted that the approach taken by the Management Group was that it would be unwise from an Island security point of view for the sites to be listed in the media.

Finding 6

The Sub-Panel was advised by visiting experts including the representative from the HPA that TETRA stations in the UK are generally included in mast siting digi-maps available to the public.

6.10 Department of Property Holdings

Following a series of questions on the number of mobile telephone masts and or base stations on States owned properties, the Director of Property Holdings provided the information required.

There are currently 38 Mobile Telephone mast sites on States owned property and 19 Telephone Kiosks with GSM aerials. There are a further 27 applications with agreements for aerials or masts pending erection or completion.

The Sub-Panel noted that the States does derive some revenue from the location of mobile mast stations on its property. In addition it was noted that some of the masts are located on the top of some public car parks.

6.10.1 Licence agreements for States Departments and Properties

The Sub-Panel was provided with an example of the 'Master Licence Agreement' and 'Site Licence Agreement' for mobile telephone masts, drafted by Her Majesty's Solicitor General. There is provision for indemnity insurance in respect of each site in the 'Master Licence Agreement', 'Site Licence Agreements' are approved by the Minister for Treasury and Resources, or the Assistant Minister. [17]

6.11 Jersey Electricity Company

Evidence was received from Mr. M. Liston, Chief Executive of the Jersey Electricity Company at a public hearing on 23rd January 2007, which confirmed that the only aspect of involvement with establishing infrastructure for mobile telephone masts by the JEC was the provision of an electricity supply from its existing electricity distribution network to a roadside pillar provided by the telephone operator. It was noted that the JEC derives some revenue from permitting operators access to some of its lattice masts and facilitating mast sharing.

Mr. Liston confirmed that all costs for making good road surfaces were borne by the operator with the exception of the first 25 yards for which the JEC is legally obliged to cover costs.

6.12 Public Meetings and submissions of evidence received orally or in writing.

The Public Meetings arranged by the Sub-Panel followed on from an earlier public meeting at Grouville Parish Hall on 25th October 2006, where it became apparent that one of the new licensees intended to erect some 40 to 50 new installations in addition to Jersey Telecoms' existing 57 masts and structures. The level of concern expressed at the meeting had focussed attention on the extent of public fears in relation to the proposed proliferation of masts and prompted the undertaking of a Scrutiny Review.

6.12.1 Public engagement

In order to engage the public and to obtain their input, advertisements were placed in the press and information was solicited from various groups. The Sub-Panel facilitated five public meetings and undertook face-to-face interviews with a cross-section of the general public based on a brief questionnaire to assist it in accessing public views.

Face to Face Interviews

The data from the face-to-face interviews has been evaluated by Mr. Tom Bunting a statistician retained to interpret any trends which were present. The interviews were based on a questionnaire developed by the Sub-Panel with the support of Mr. D. Millard, to whom it expresses its thanks and took place at a number of locations throughout the Island at various times. Mr. Tom Bunting has provided the following assessment on the data collected -

Collection

133 Respondents were either asked the questions or given the form to fill in themselves. Some respondents were asked in the Royal Square at the launch of the questionnaire, during the course of the day, whilst others were approached during a three week period at a number of commercial outlets at various times.

Demographics

We need to be careful in making definite conclusive statements from this survey as we've only interviewed 133 people, however the spread of Parishes and Ages is reasonable compared to the 2001 Census. Residential status cannot always be inferred from the tenure and there seems a slight imbalance between the private rental and states rental as compared to the last census. Gender was not recorded.

Do you own a mobile phone?

JT recently announced its 100,000th contract and C&W are also selling mobiles, but I've not been able to find a good estimate of the proportion of over 16's that own a mobile. Our survey gives 91%.

Are you aware of the health risks (of mobile phones)?

A rather leading question, however with 70% saying yes this is a clear indication that the respondents have the impression that phone masts are a health hazard.

Need for new mobile services in terms of coverage, competition and improved services.

As would be expected most respondents would welcome improvements in some form or another, however, of those expressing an opinion, 80% are happy with the mobile coverage. 79% would welcome both more competition and an improved service of some kind.

Do you believe phone masts pose a possible a health risk?

35% of respondents did not know if there were health risks involving masts, 41% believed they did (c.f. 70% saying that mobile phones posed a risk) the remaining 24% believed there was no risk. 36% of respondents believed that both mobile phones and phone masts posed a risk to health whilst 12% believe they didn't.

Where did you gain this opinion?

A lot of respondents (32%) gained these opinions from more than one source. The media (61%), which divided equally between local and national, was by far the greatest; the Internet was 12% and friends etc 7%. "Others" accounted for a significant 20%, but there's no indication of what this source was.

Would you accept more masts in the Parish?

Overall 50% of respondents were prepared to accept more phone mast in their Parish. Due to the small number of respondents it's not possible to reliably interpret the results of individual Parishes.

Do you believe there's a health risk with having a phone mast close to your home? Are you aware of the guidelines?

The respondents were divided over the issue of this health risk. 49% believed there was a risk and 41% that there wasn't a risk. 10% did not know or did not respond. 80% of the respondents were unaware of the safety guidelines governing phone masts; this lack of knowledge was roughly the same for both of the above groups.

What type of mast would you prefer? (Bigger, smaller or no change)

Overall there is a slight preference for bigger masts, with more sharing, after this "no change to the present position", and the least favoured option was for smaller masts, but more of them. There is a slight preference, but bearing in mind the small numbers it may not be significant, for the country parishes to have "no change on the present position" and for the urban and town parishes to go for bigger masts.

Should Jersey apply UK/International guidelines or develop our own

This was an either/or question but many respondents answered both sections, with occasional contradictions. If we ignore those respondents that did not answer or didn't know, 57% felt that we should go for UK/international guidelines, 22% for Jerseys' own guidelines and 22% that we should adopt both.

The Sub-Panel is aware that the findings from its face to face interviews can not be considered conclusive and provide only some indications. However the data collected provided anecdotal suggestion of a possible lack of general knowledge relating to mobile technology infrastructure

Evaluation of the evidence (some of which was anecdotal) and discussion on the issues repeatedly raised by concerned individuals and the Jersey Mast Concern Group is addressed in a generic way and has not been attributed to individuals. However, a full list of submissions is attached at Appendix 2 and the submissions are available to view on the Scrutiny website

[18]

It is accepted that those who attended the meetings or submitted evidence do not necessarily represent the public at large, and it should be recognised that many members of the public do not appear concerned or perturbed by mobile phone technology. That said, the frequency with which concerns were raised provides an insight into the aspects of the technology which the public finds most worrying.

The Sub-Panel was made aware of many of the symptoms felt by individuals which they considered were as a direct result of EMF emissions. The severity of these symptoms displays a wide range of subjective variation, ranging from mild discomfort to great distress – so great, in some cases, that those affected are considering or seeking to sell their houses with concerns that they may face financial loss due to the perception or reality of electromagnetic pollution. The Sub-Panel is aware that in many cases, the perception or possible health implications of being located near to a mobile mast station have had a quite devastating effect on the individuals or families involved, despite the ‘establishment’ view that the technology is harmless.

It was apparent to the Sub-Panel that the individuals expressing these concerns did not feel that they could rely on the protection of the States in this instance as a result of what they considered to be environmental pollution.

The Sub-Panel has included a sample of the questions it received at its public meetings [19] –

26th February 2007, Work place emissions when working in a metal framed building?

Question – ‘I work in a metal building where the powers that be have chosen to use Wi-Fi instead of fibre optic or any form of electrical connection for their servers and there are about 200 people in there and first of all it scares me because they have also put 2 masts on top of the building as well, and I am just wondering if it is possible, first of all, for you to put it on record your thoughts on the use of Wi-Fi instead of wires or fibre optic within business where there are a lot of employees, or even if there are a few employees.’

Dr. G. Carlo response ‘Well, fibre optic is better. It is more efficient, it is better technology and it is safer. In a situation with structure, with metal, so that you have a high risk of forming resonant cavities within various parts of the office building, that is not good.’

The Sub-Panel became aware as a result of evidence provided from Jersey Telecom that it operates a fibre optic spine mobile telephone network and has the capacity to allow other operators to use that facility. *Further information on fibre optic networks can be found at 6.12 and 6.16.12 of this report.*

15th February 2007, Constant emissions from base stations?

The Sub-Panel recognised that concerns in respect of cumulative impact as a result of EMF emissions, the effect of mobile mast stations cells overlapping and in respect of constant emissions were frequently raised by attending individuals.

Question *'I am a radio communications engineer. The gentleman on the end, he says about the power of the mobile phone, it adjusts itself about 6 different levels, but the base station stays constant all the time and that is quite a problem if you have overlapping cells, because they are all overlapping and the power is additive.'*

Response from Dr. Stather *'I guess it is not constant because there are signals going backwards and forwards between the base station and the phone.'*

Question *'would like to know what you have thought about the dangers when these masts will overlap another'*.

Question *'Being we are in such a small little island, there is going to be so many overlaps and how much more dangerous will it be when you are living just underneath where those overlaps are taking place and if there are so many companies involved, will it be more triple times? It could be a lot more.'*

Dr. J. Stather response *'The evidence from England, where we have made lots of measurements - and Scotland as well, and Wales - is that even though there is some overlap, the total exposure is still a very, very small fraction of the guidelines for the public'*.

Question – *'In your presentation you mentioned that ionising radiation can cause cancer but your words were; "It does not seem to be the case with non-ionising radiation." I thought the word "seem" was a little bit vague and did not sound very definite'* additional question *'if you already had cancer can you honestly say that exposure to electromagnetic fields or electromagnetic radiation would not in any way accelerate its growth?'*

Dr. J. Stather response *'It is very difficult to get a scientist to say things are black and white and he does not like that. I mean there are epidemiology studies -- first of all, I said although there does not seem to be any evidence that radio waves can initiate or cause cancer there is the potential for maybe promoting cancer that is already there. I guess that is what the epidemiology studies that are being carried out around Europe and other countries are doing by looking at whether there is some relationship between radio waves and cancer, in the brain particularly. Those studies are hopefully going to come to fruition this year with this pooling by the International Agency for Research on Cancer in this Interphone study which will be, you know, a big study which is quite powerful. There will still be the limitation though that it will not be a long term follow up of people because large numbers of people have not been using phones for a long time yet. I mean my guess is even when Interphone is published, whatever it suggests the epidemiologists will want to extend it for a few years to have more confidence in their result. If there was a significant risk we would have seen it so far, and that is not the case.'*

It was noted that the theme of such questions and concerns, focused on suggestions that the mast stations remained on constantly and emitting EMFs, the emissions from the transmitter were just one part of the emission total, as that from the antennae was additive which represented the potential for an increased cumulative total emission.

The counter to those concerns was that the peak guidelines provided to operators are about exposure of people, not about emissions from equipment.

There were many discussions and questions raised with regard to public proximity to some of the various mobile mast stations, particularly those situated on multi-storey car parks. The concerns raised were addressed by Dr. Stather and Dr. Rubin on the 15th February 2007 and the reassurances provided focused on the directionality of the antennae which was unlikely to be such that the public could stand in its direct emission line.

The Sub-Panel considered that some of the cumulative and emission direction concerns could be addressed through the provision of a comprehensive website, showing in a digi-map form the location of all masts, the level of emissions from them and the direction of the emitting lobe.

One area of questioning that raised particular concern was in relation to the perceived health risk to children as a result of EMF emissions from mobile base stations.

Question, Public Meeting of 15th February 2007 from a member of the public – *‘Could you tell me why Dr. Repacholi said categorically in his submission that after the age of 2 childrens’ immune systems are fully developed and, therefore, it is completely safe for children to use mobile phones whenever they want? Please remember he was brought over by Jersey Airtel. [20]*

Dr. J. Stather response *‘Well, I would not say that. It seems to me not unreasonable to say that if any group of the population is more sensitive than others or more susceptible than others for whatever reason, then it is more likely to be children.*

Question, Public Meeting of 15th February 2007 from a member of the public – *‘I would like to ask the panel if they have heard of the German physicist Fritz-Albert Popp because he has done, along with Robert Becker and Jack Burness - they are all physicist scientists - I am just going to read a few lines from this report and this report is from Living the Field: “And they have all experimentally demonstrated that all living things, humans, animal and plants, generate EMFs and that EM signalling is the primary means of communication between cells. A new science of bio electron magnetics has clearly established that we are fundamentally electromagnetic beings. In this view of the human body the fundamental nature of our being is frequency and exposure to external frequencies from the entire transmission infrastructure of, say, mobile phone technology can cause us to pulse to the wrong beat.’*

The Sub-Panel noted a theme of concern relating to the perception of EMF emission pulsing and frequency changes impacting on health and well being, particularly in children or adults with reduced immune systems. The Sub-Panel considers that for this reason it is essential that the appropriate local health professionals consider the findings in some of the cell research projects which have been referred to in the evidence submissions listed in the appendix of this report.

The Sub-Panel was made aware that governments and the States of Jersey have an interest in continuing to promote the growth of mobile telephony as the technology supports a number of industries that the Island is reliant upon. The requirement of mobile telephony technology

was emphasised as essential by some of the operators in their evidence to the Sub-Panel at Public Hearings.

The Sub-Panel having considered a broad range of evidence, noted that after apparently almost 20 years of research, experts are still unable establish whether EMF exposure is safe or unsafe. Although opinions vary regarding the possible risk, most agree that more research is required.

Dr. G. J. Hyland, Associate Fellow, Department of Physics, University of Warwick, provided the Sub-Panel with the following information within the written submission that he made and which presented his views^[21],

'In the UK, for example, the Government netted £22.5Billion from the auction of the 3G licences, whilst the annual revenue from mobile telephony is currently around £15Billion; clearly, it is in governments' interests not to find any problems with this bounteous technology.'

Dr. Hyland went on to express concern at the impartiality of some of the government bodies that provide information to the public and his perception that it may favour the industry.

The impartiality concern statement by Dr. Hyland has been strongly contested by Dr. Stather, UK HPA, he stated that 'the HPA is an independent agency as is the advice we give. This was also true of the NRPB.'

Finding 7

The Sub-Panel found that concerns expressed by individuals who made written or oral submissions at public meetings were that the issue may have some implications to their human rights on the basis that the European Convention on Human Rights, Convention Article 1 of the first protocol: Protection of property states that -

'Every natural or legal person is entitled to the peaceful enjoyment of his possession. No-one shall be deprived of his possessions except in the public interest and subject to the conditions provided to by Law and by the general principals of International Law.'

The Sub-Panel is aware that the Human Rights (Jersey) Law 2000 was registered in June 2000 and came into force on 10th December 2006.

6.12.2 Interpretation of the perception of risk

The Sub-Panel sought the view of witnesses attending its Public Hearings in respect of the concerns raised at its public meetings about risk.

The Sub-Panel considered that as a government body it has an overall responsibility for protecting the health of the local population. It is aware, from the public meetings it has facilitated that there are some people in Jersey who are, extremely emotionally concerned about the effects of electromagnetic radiation, from whatever source but particularly in this case mobile phones.

The Sub-Panel sought the view of witnesses on the fact that people suffer from stress as a result of their own perception of risk, and moreover the perception of risk to their children. It

asked how that situation might be overcome, in particular with regard to **the perception that there is a huge risk as opposed to a measured risk.**

The Sub-Panel was provided by the following scenario and approach by Mr. S. Smith (Head of Health Protection Service)^[22], an example of an analogy used when explaining the way in which people perceive risk and its evaluation as follows: –

I think it is very difficult. It is getting people to try and be rational about what are the overall risks in their life from activities that they undertake and that are undertaken around them.

I have always in this argument used the experience of the motor vehicle because motor vehicles are very much like mobile phones. You have an individual piece of equipment, whether it is a handset or it is a car. It requires, in order to operate, a central point at which you get power, i.e. a telephone mast or a petrol station, and they all give rise to health impacts. They have both been encompassed by the public immensely. I mean, 90,000-odd handsets in an Island of 88,000 people. 66,000 cars on an Island of 88,000 people, tells you how they have both been embraced.

If you went out to the public tomorrow and said the effect of cars is too great because people are dying, we are going to stop vehicles on the Island, the outcry would be immensely because people have, over the years, understood, yes, there is a risk but the benefits of being able to carry huge amounts of material, people, very quickly from A to B is too a great a benefit to lose. It is a bit like mobile phones. If you turned around tomorrow and said: "Well, the risk from mobile phones are too uncertain so we are going to stop the mobile telephone market" the outcry would be immense because people rely on them for security, for contact, for ease of communication. So there is a very big similarity. If you go back to the car, when the car first came in, they were seen by people as this huge danger. If you want a car you have got to send a runner out in front with a flag to clear the people and safeguard it.

The issues for cars then are not much different to mobile phones now. There is an uncertainty and an understanding there was a risk. But as time has gone on that risk has disappeared and now if you look at cars we worry about people getting knocked down and killed but the bigger issue people now complain about is the fact they create emissions that cause climate change and that is altering the environment.

The Sub-Panel accepted the suggestion that there is a requirement to assess the level of perceived risk from an impartial point of view. However, it equally recognised that some of the elevated level of concern and perception of risk appeared to stem from the lack of choice residents were facing and the imposition of the masts in the vicinity of their homes. (*The imposed/involuntary and assumed/voluntary risk/perceived risk, as a result of exposure to mobile mast stations emissions is briefly addressed in sections 6.12.1 and 6.12.13.*)

The issue of imposed and assumed risk was further explored by the Sub-Panel with Mr. M. Liston, Chief Executive Officer, Jersey Electricity. He provided his view on the issue of risk as follows -

'I think in all cases there is an effect from misinformation and especially when there is a perceived health risk and that risk is being imposed rather than taken voluntarily. I think

we all know that as human beings we react very differently to imposed risk and assumed risk. So very often we find people who will be worried about such things as emissions from television masts but will smoke 60 cigarettes a day or go bungee jumping in their holidays. I think in all cases the solution, or part of the solution is a source of understandable and authenticated information so people can, assuming that they have not got themselves into a position of prejudice where they will not, accept a body of opinion which represents scientific best opinion.

On occasions people have spoken to me about their concerns about the health effects of mobile telephony. Quite extraordinarily people who express some concerns about the proximity of a mast seem little concerned by their usage of a mobile phone handset and the risks are very different, even though there is still no evidence of a health risk I think it is well known that heating effects caused by long use of mobile phones near the head exist. Whether those heating effects lead to long term health problems is another matter not yet proven. But I think the scientific community, as a body, says that we need to do more research in this area.

I think probably what many people might find surprising is that the dosage from phone masts in a community like Jersey - I do not mean in a particular installation so many yards away from a particular mast, but in general - the dosage from the installation of mobile phone masts is about the same as from broadcast television and radio. One is very new in the public experience and one has been around for so long that it is probably not even identified as a risk. [23]

The Sub-Panel considered that some of the concerns may be as a result of a lack of information, particularly in the form of comparative information providing clear guidelines on what other everyday items emit similar levels of EMFs. That said the Sub-Panel is of the opinion that further research and the evaluation of new and progressing research on the possible impact of EMF emissions on human health should be undertaken.

The Sub-Panel was provided with further reassurances from Dr. M. Repacholi during his appearance at its Public Hearing of 23rd January 2007. The Sub-Panel was advised -

'I totally agree. In fact, we came out in the EMF project with a dialogue on EMF and it is on the website in about 14 different languages because it became so popular that each different country wanted it in its own language. It was on how to communicate risk, how to understand why people perceive risks differently from scientists, how you can better understand why they are feeling this. I know the previous witness mentioned that whether an exposure is voluntary or involuntary will have an impact. People will happily use their mobile phone, but they do not want to be exposed to something involuntarily, which is 1,000 to 10,000 times less'.

The Sub-Panel accepted that the issue of risk and its understanding was an area that might be improved through the provision of detailed and accurate information relating to mobile technology. It considered that the appropriate forum for that approach would be on the website, it would recommend that it identify the location of all mobile mast and TETRA stations, together with emission levels. It also considered that the perception of risk could not be removed on the basis that concerned individuals could not be presented with absolute evidence that mobile technology and EMF emissions posed no risk.

6.12.3 Concerns over locations and site notices

The Sub-Panel has become aware of the stress and concern felt by some individuals in respect of the erection of some mobile base stations in residential areas. Concerns relating to process and site notices and their siting have been raised. The Sub-Panel is satisfied that the Planning Department has operated within its procedures and has tried to assist the public within the constraints of its remit. That said it may be that a more consultative approach by the operators with some form of more prominent advertising than a site notice may be more appropriate in such cases.

The Sub-Panel considers that it may be appropriate for operators to provide hand-delivered information leaflets to properties in the vicinity of proposed mobile mast sites. In addition the issue of Human Rights and any possible infringement as a result of mast siting should be considered. This issue was considered by the Sub-Panel and will undoubtedly require a comment from H.M. Attorney General as to the principles involved. The Sub-Panel has outlined its view in item 6.12.1 of this report.

The Sub-Panel has received details relating to some specific cases and has obtained information and forwarded that to relevant individuals. The Sub-Panel stresses that its review remit was not to examine individual site issues for the location of mobile masts but to assess any perceived health risks that might be associated with them.

6.13 Petition presented by Jersey Mast Concern Group

The Sub-Panel was provided with a copy of a petition undertaken by the Jersey Mast Concern Group; the header outlines the concerns expressed by the members of public who participated through signing the petition. A total of 978 signatures were included.

6.13.1 “Why are we against mobile phone technology?”

We are not against mobile phone technology. They are very useful and have saved lives in emergencies. We are against the unregulated growth of the new mast network for the third generation (3G) of wire-less communications because the new masts are not only closer together in Jersey, they are closer to residential areas and schools than usual ‘best practice’ recommendations and will also operate at higher frequencies. We believe evidence, which strongly suggests that higher frequency services (like 3G and the new TETRA services) are more dangerous to humans, especially children.

6.13.2 Why does Jersey need 200+ masts in an area of 45 square miles?

It doesn't, so why did the JCRA (Jersey Competition Regulatory Authority) allow provision for 4 licences to telecommunications companies in such a small and adequately served area?

6.13.3 Why do we want to make ‘health’ the issue?

Because many people have genuine and legitimate concerns about the adverse effects on their health from mobile phone masts close to schools, hospitals and homes. We would be prudent to adopt, in full, the precautionary approach recommended by the Stewart Report (2000) and to look at policy adopted by other countries around the world. It is imperative that health is not excluded as a pertinent planning issue.

We, the undersigned people of Jersey have brought this Island-wide petition to The

Minister for Planning and Environment who is requested to take the necessary steps, in conjunction with other Ministers as appropriate, to ensure that no mobile phone mast or base station can be situated less than 300 metres from private residences, schools, residential homes, and other sensitive areas. Also that further erection of masts should be halted whilst there is serious doubt as to the effects of radiation that is emitted, on the health of the population of the Island.

Finding 8

The Sub-Panel considers that the level of participation in the petition process reflects the serious concerns held by some of the general public, and is of the opinion that it is essential that these concerns are addressed from a fully informed perspective through the evaluation of the new research that is becoming available.

6.13.4 Symptoms and perceived effects

The evidence received described various symptoms and diseases which are believed to have arisen due to the proximity of mobile mast stations or aerials to people's homes, schools or places of work. The most frequently mentioned range of symptoms and concerns included headaches, sleep disturbance, depression, stress, tiredness, thyroid and adrenal problems, increased risk of cancer. It was suggested that much more research is required with regard to the occurrence of cancer clusters and their cause. Some concerns were also expressed with regard to increased Alzheimer's Syndrome, epilepsy and other neurologically related illnesses.

The Sub-Panel accepts that there appears to be a commonality to many of the symptoms reported under exposure to the microwave emissions from GSM, TETRA and UTMS Base-stations, whether those symptoms are perceived or otherwise. It notes that despite the quite significant differences between the signals, there is a possibility that thermal influences do not represent the whole story of potential or perceived risk at which the precautionary approach is directed, but, that a more general non-thermal influence of the radiation (which still remains to be identified) could also be at work.

6.13.5 Electro-magnetic sensitivity

Many individual submissions addressed the issue of electro-magnetic sensitivity and the lack of its recognition by some health professionals. Many requested further research to include the possible impact of EMFs on individuals with lowered immune systems. Suggestions were made that General Practitioners should be provided with more training in order that such conditions might become more recognised and accepted as a condition.

The attention of the Sub-Panel was drawn to the issue that it is precisely because of the possibility of a similar deleterious electromagnetic interference between mobile phone signals and electronic control systems that the use of mobile phones is prohibited on aircraft: the prohibition is not thermally driven. Our internal, *biological* electrical control systems could be similarly vulnerable.

It was emphasised throughout the Public Meetings and during some Public Hearings as well as within some of the written submissions, that the repercussion of these electromagnetic sensitivities on the health of those exposed *varies* from person to person, according to their physiological/neurological/genetic predispositions at the time of exposure.

It was noted that many individuals will *not* be obviously affected at all by exposure to the signals from a Base-station. That situation could be viewed as being exploited by those with a vested interest in not wishing to find any problems.

Some individuals who attended upon the Sub-Panel considered that they were badly affected by EMFs or were electro-sensitive.

6.13.6 Dr James Rubin, Kings College

Dr. James Rubin, Mobile Phones Research Unit, King's College London, was invited to deliver a presentation to the Public at a meeting on 15th February 2007 by the Sub-Panel^[24]. Dr. Rubin has been studying electro-sensitivity, with funding provided by the UK Mobile Telecommunications and Health Research programme for the past 4 years. Dr. Rubin has conducted a 'provocation study' into electro-sensitivity using double-blind test conditions. In this study, people who reported being sensitive to mobile phone signals were deliberately exposed to real and fake signals. However, neither the researchers, nor the volunteers, were told when the signals were 'on' and when they were 'off'. The findings of the research were that the volunteers were unable to effectively identify when the emissions were on or off and that symptoms (which could be severe) could be present with either test.

He describes electro-sensitivity as a very diverse phenomenon for which there is no certainty that everyone who uses the label to describe their condition is suffering from the same thing. The best evidence currently available suggests that exposure to electromagnetic fields is probably not the cause of the symptoms that are ascribed to electro-sensitivity. Instead, for some people other forms of medical or psychiatric illness may underlie their condition, while psychological factors may be important for others.

Although sufferers often try to cope with their condition by purchasing screening materials or removing electrical devices from their homes, it is possible that these techniques bring relief primarily because of the placebo effect. To date, the only treatment that has shown any promise through formal clinical trials is cognitive behavioural therapy. ^[25]

The Sub-Panel was advised that in some cases, a psychosomatic element can indeed be a confounding factor. However, many of the submissions, including those made by Dr. G. Langly-Smith suggested in summary and in his opinion the *consistency* between the nature of the symptoms reported by many people in different countries should not be ignored. Many of the symptoms were initially discovered under 'blind' conditions – *i.e.* those affected did not become aware of the presence of a Base-station in their locality until *after* they experienced ill-health. Furthermore, the *consistency* between the nature of the reported symptoms and the kinds of non-thermal effects that the signals are known, from laboratory experimentation, to provoke is a compelling reason to take these reports of ill-health seriously, rather than dismissing them.

6.13.7 Testing of technology

In addition, questions were raised as to why drugs are subjected to rigorous testing but new technology is not. That question remains to be addressed and a conclusion will not be reached within the parameters of this review.

Dr G. Carlo in his evidence at a Public Hearing on the 26th February 2007 suggested that testing and research has focused on the scientific aspects. He provided an overview of the situation with regard to the usual route by which Public Health issues are recognised when he stated.

“The advice provided by your Health Protection Department - that is a piece of data that is important, but that is not the only data. You have to have clinical information and clinical input, because when you have an emerging health threat, it is always, always, always the clinicians who see it first. There has never been a health threat that has ever been identified by anybody in the government, never been a health threat that has been identified first by an epidemiological study, ever, in history. It is always the doctors. So if you do not have the clinical input, you are selling yourself short.”

With regard to the testing of technology he went on to advise that -

“...normally a device such as a mobile phone or cell phone that is a consumer device that emits radiation would go through a process of pre-marketing testing where there would be a series of in vitro and in vivo studies done prior to marketing so that predictions of risk to the population that might use them could be made. However, cell phones were exempted from that based on the input from the mobile phone industry in 1984. That input was based on science that was present in the public domain at the time that indicated that the only health effect that could follow from microwave exposure had to do with heating of biological tissue, and that because cell phones operated at very, very low power they would not be able to heat tissue and therefore they should be excluded from this onerous process of pre-market testing. That was known as the low power exclusion. By 1993 it had become clear that there were at least questions being raised in the public domain through this hearing process, and because there was no pre-market testing there were no relevant data with which to address those concerns or those questions.”

The Sub-Panel is aware that a significant amount of research has now been commissioned into the safety of mobile phones by a number of jurisdictions, including the United Kingdom which has recently launched a research programme headed by Professor Lawrie Challis outlined in item 6.13.22 of this report. In addition on the 26th March 2007 new coverage by the BBC suggested that a satellite handling mobile phone calls in London has been backed by the London Development Agency (LDA).

It was reported that the technology will reduce the need for unpopular masts and could also be used to track motorists. The agency voted to provide £12m in grants to London-based communications firm Inmarsat to develop the project. The firm has now secured the necessary government support to place a bid with the European Space Agency to launch the satellite in French Guiana in 2011^[26].

6.13.8 Emission testing

In addition it was suggested that the emission-testing of mobile masts was not sufficiently robust, as it was carried out by the operators themselves and did not appear to be ongoing at regular intervals, or require the publication of the emission levels. The Sub-Panel recognises that the exposure of people to EMF emissions in the vicinity of base stations are expected to be well below ICNIRP guidelines yet there is no independent audit to ensure that this is the case.

Finding 9

This lack of monitoring of the mobile telephony industry by an independent body allocated by an authority such as Ofcom or the JCRA is an area which the Sub-Panel agrees should be addressed.

6.13.9 Mobile Masts in the proximity of schools

There was concern about the siting of base stations near schools and hospitals and some submissions were received from individuals associated with private nursery schools. Additional concerns were expressed in respect of children, especially the very young during their formative growth years. This coupled with the proliferation of masts, the loss of freedom of choice through the imposition of a mast site, in an individual's living or working environment and the lack of mast location or emission level information, particularly in respect of overlapping and cumulative emission effects, through a website such as The Office of Communications (Ofcom) 'Sitefinder' Mobile Phone Base Station Database, adds to those concerns and fears in some cases.

The erection of masts near schools raised the level of concern; attention was drawn to the approach taken by 50% of Scottish Councils who are preventing masts near schools. The jurisdiction of Salzburg, Austria which has an emission standard, set well below that set by ICNIRP was offered as an example to be followed. At a public meeting on 18th January 2007 it was suggested that the Greek Government has adopted a bill dated 10th August 2006, requiring mobile masts, radar and high voltage lines to be 500 metres away from schools^[27] (this information has yet to be confirmed), Some of the other contentions made were that more mast-sharing should be imposed on operators to reduce the number of masts required.

6.13.10 Public liability insurance and litigation

The Sub-Panel was made aware that some of the concern was due to suggestions that telephone operator insurers were not prepared to offer public liability insurance cover in respect of possible health problems or effects as a result of EMF emissions from mobile telephone base station within an insurance agreement. If that cover were included it was suggested that the level of cover would not be sufficient to cope with the number of claims which would be likely. It was drawn to the attention of the Sub-Panel that a number of 'Class Action' law suits were being pursued through the Supreme Court in the United States of America.^[28]

The Sub-Panel was interested to note Dr. Carlo's concept of trespass on your property with regard to the level of EMF emissions in a persons home or that their property is subjected to, even if we don't have a law on trespass in Jersey some element of choice would be given back to individuals were this to be the case.

Finding 10

The Sub-Panel suggests that ongoing investigation should be undertaken into the wider issue of 'Electro-smog' which is a growing area of concern in other jurisdictions. It is considered that the Planning and Environment Department

set up and regularly monitor an Island assessment of the situation as part of its overall activity and that a periodic review of the findings should be publicly available and published.

The Sub-Panel accepts that there would be financial implications to the States for this assessment. It considers that the funds could be recoverable from the telecommunications operators.

The issue of adequate public liability insurance was discussed with the JCRA at the Sub-Panel's Public Hearing on 22nd January 2007. The JCRA advised that the licences it issued to operators did not insist on insurance against possible health issue litigation arising from emissions from mobile masts and base stations. It was confirmed at the Hearing that this was not a requirement of the licence. However it was suggested that it may be that the companies would decide that that is a prudent measure for them to take.

During the course of its Public Hearings the Sub-Panel was advised that all of the operators had general liability cover which limits claims against the operator for anything, bodily injury, damage to property, damage or loss to third party and so on. Radio base stations were confirmed as included within that general liability insurance but the policies were not specifically agreed to cover electromagnetic risk, but it was not excluded. The Sub-Panel recognised that the level of overall insurance varied between the operators and that individual claims generally carried a ceiling level.

The Jersey Mast Concern Group drew the attention of the Sub-Panel to work undertaken by Dr. G. J. Hyland, Associate Fellow, Department of Physics, University of Warwick.

Dr. Hyland provided a submission to the Sub-Panel and stated that -

'Since the advent of this technology, an ever-increasing number of people in many different countries have been reporting a similar array of adverse health symptoms of a predominantly neurological kind, such as sleep disturbance, headache, inability to focus and concentrate, impaired memory, confusion, and sensation of pressure in the head. As is quite correctly stated in the Report on Mobile Phones & Health – Mobile Phone Base-stations prepared by the States of Jersey Department for Health & Social Services even non-pathological distress & discomfort can affect physical and mental well-being, and should thus itself 'be considered as a potential health hazard'.

Dr. Carlo at the Public Hearing dated 26th February 2007, stated that -

"...the liability issue is huge. You will have illnesses; you will have illnesses based on what you already have; fact. In the asbestos situation, the peak deaths from asbestos will not occur until 2020, the year 2020, so this is the kind of situation that you are dealing with so that as these conditions, these medical conditions, begin to become evident in your population, who is responsible? Is it the industry? Is it you? The Government? Those are important questions that have to be asked now, because there is no doubt that within 3 years you will have clusters of conditions among groups of people in your community, based on what has already occurred. So that liability question is serious and that should be one of the foremost questions that you put to the industry as they come in here. I would highly recommend that you do that and make sure that there is proper insurance..."

6.13.11 Property values and depreciation

Other issues raised were related to the possible devaluation of properties caused by the proximity of base stations, not only due to the visual impact which, it was recognised had to some extent been addressed by the Minister for Planning and Environment, but due to the perceived health risks from the emissions. One piece of evidence was received from a UK Estate Agent relating to this concern and suggests devaluation of a property that would have been worth £190,000 being likely to only achieve a sale of £110,000 to £120,000. It is important to note that this is the only instance of any written suggestion that property value might be affected^[29]. In addition the correspondence related to UK property and no similar view or confirmation has been received in respect of local property sales.

6.13.12 Banks' requirement for Surveyors to include the location of masts

The Sub-Panel received anecdotal evidence that suggested that some Banks were requiring information relating to the siting of power and or phone masts/base stations in the vicinity of properties prior to accepting any valuations or approving mortgages.

Finding 11

The terms of reference of this review have not focused on economic issues. However the Sub-Panel would recommend that the impact on the value of property as a result of the siting of mobile telephone masts in the proximity of private residence should be investigated. It is suggested that it may be appropriate for Senator. T. Le Sueur, Minister for Treasury and Resources undertake some investigation into the concerns expressed.

It is suggested that monitoring on the possible effect on house prices should be based on the House Price Index for 2006 which can be found at - www.gov.je/Statistics/RPI+and+Prices/HousePrices/

6.13.13 Thermal heating of human tissue

One view is that the current recommendations by Government Health Organisations, both local and international, Telecommunication Operators and Scientists/Researches working on thermal impact on tissues, is one of general consensus, that EMFs do not represent any health risk and that a precautionary level in accordance with ICNIRP emission standards is sufficient to protect the population. However, that view does suggest that further long term research is not necessary, continued research was in fact recommended in the 'Stewart Report' – Report of the Independent Expert Group on Mobile Phones 2000.

The evidence or anecdotal evidence expressed by many members of the public and the Jersey Mast Concern Group in written submissions, at public meetings and Public Hearings, together with experts, Scientists/Researches working in the field of EMFs impact on human cells requested increased precaution until further cell research was completed. Their concern was focused on the ability of the human cell to operate without interruption from EMF emissions. The suggestions included that research currently being undertaken by individuals in the medical profession, focusing on human cellular interconnectivity was finding that peoples well being and health could be significantly affected by the power levels set by ICNIRP. That standard was considered to be outdated as the data was collated from research projects pre 1999 at which point ICNIRP undertook its assessment of emission level project. ICNIRP Guidelines are further explained in section 2.17 of this report and can be found in full at www.icnirp.de/

In a submission from Cable and Wireless dated 21st March 2007 it was stated –

'Cable and Wireless believes that adoption of ICNIRP guidelines remains the best means of measuring the level of emissions from radio base stations, as recommended by the Stewart Report and World Health Organisation. This has been supported by the Jersey Planning Authorities. The ICNIRP Level of 9 Watts/m² for the equipment used by Cable and Wireless in the maximum level of exposure to the public in any one point. The predicted ICNIRP levels for a typical base station are 0.033839803 Watt/m² which is 0.375% of the International Standard. This means that the total ICNIRP level at the site would be significantly below the International standards level of acceptance. Preliminary reports of our actual test results are consistently proving to be significantly lower than the predicted amounts.'

It has been suggested by numerous concerned individuals that of key concern is the involuntary exposure of the population – a situation which it has been asserted by some is not the case when a new drug or foodstuff is introduced and which, by contrast, would be subject to quite rigorous testing before being licensed. In the case of exposure to mobile telecommunication signals, the 'establishment' view is that *if the signals do not heat you, they cannot harm you*. The Sub-Panel considered that the lack of research or consideration by the establishment of other possible effects on the body as a result of being subjected to EMFs has done nothing to allay the fears and concerns expressed.

Finding 12

The Sub-Panel is aware of a growing number of research projects focused on the possible interruption of human cell activity as a result of Electro Magnetic Field (EMFs). It will request that the Minister for Health and Social Services would provide its Health Protection Department with the necessary resources to evaluate the findings of some of those projects and to report to the States.

6.13.14 Press coverage

The Sub-Panel is aware of a huge amount of press coverage on telephone base/mast stations both locally and in the United Kingdom (UK) and noted that the concerns expressed in the forum to a large extent reflected that which it received as evidence. In addition it noted that UK press coverage tended to link adverse health effects with the use of the mobile phones themselves rather than with the base stations.

With regard to the siting of base stations it should be noted that impact on the local environment could potentially adversely impact on the public's well-being as much as any direct health effects. The Sub-Panel considers that the lines of communication between network operators and the public could be improved regarding the placement of base stations, as the public continues to distrust the operators in relation to issues of public health.

The Sub-Panel was made aware that some efforts had been made by telephone operators to approach the relevant authorities in particular by Cable and Wireless who stated at the public hearing of 22nd January 2007 –

'There should be improved consultation by the operator with community prior to the selection of the site. We have made a number of attempts, both to reach out to yourselves, to Senators, Deputies and Constables, to explain the location of our sites.' [30]

Finding 13

The Sub-Panel finds that whilst some efforts have already been made improved communications from the operators and States Departments with the public are essential.

The Sub-Panel received helpful inputs from the telephone operators and their experts. The operators and their experts emphasised their commitment to safety and reported that there was no weight of scientific peer reviewed evidence which had been published in recognised medical or scientific publications to show any adverse health effects from EMFs.

During the meetings with operators reference was made to the many other small jurisdictions, which have similar levels of competition in their mobile telephony industries and thereby a similar mobile mast coverage requirement.

A map outlining the level of mobile mast station coverage can be found at the following web address – www.gsmworld.com/cgi-bin/ni_map.pl?cc=je&net=jt

The operators had knowledge of some of the scientific research being undertaken on the human cell and possible EMF interruption, and of the many projects assessing the relationship between EMFs and specific illnesses. The contention, by the operators and their experts, was that many of these projects were not able or had not been replicated. When asked at the Public Hearing of 24th January 2007, about the origins of the scientific research evaluated, or the organisations approached, by Airtel to assist in its decision making on health issues and concerns expressed by the public about mobile telephone masts safety. Mr. D. Watson, Chief Executive Officer of Jersey Airtel stated –

'Personally, I look for credibility. I think anything to do with health is extremely sensitive and emotive and important to people, and rightly so. I tend to look for who do I think are credible and why. I have looked at different organisations. The World Health Organisation – and I am not putting myself forward as an expert and I know about all these things – but my understanding and knowledge of the World Health Organisation is that it has a degree of independence that is largely unmatched by anybody else. I think it is a body that has a reputation and credibility that is accepted widely throughout the world, and therefore I believe it is worth listening to. Governments around the world look to it to provide information, and obviously you have got a lot more background on that from Mike Repacholi yesterday. In terms of other documents that have come to my notice, some through the Internet, though I have asked others for input, and I have been told it has not been subjected to appropriate scientific scrutiny and evaluation in many cases.'

The Sub-Panel was made aware that the industry questioned the robustness of any research prior to giving credence to the findings. It was suggested that the key questions for the validation of research findings were –

Were the scientists that were involved experts within that field of research?

Has the study been published in any major scientific/medical journals?

Has it been reviewed by expert peers?

Has the work been validated by another group of scientists in a different environment to

add strength to the conclusions?

6.13.15 Independent emission testing

Mr. D. McDermott, Associate Director of Corporate Affairs, Jersey Telecoms suggested that many of the concerns expressed by the public could be allayed through the introduction of independent emission monitoring. He advised that Jersey Telecoms complied with the ICNIRP standards and the terms of its licence issued by the JCRA and on that basis the company was acting in response to the best available standards.

Mr. D. Smith, Chief Executive of Cable and Wireless, responded to public concerns over health issues as follows –

'I appreciate the concerns and as a company you would expect us to take this seriously and we do. As far as we are concerned, all the internationally accepted research indicates that as long as the emissions are well within ICNIRP guidelines there is no threat to health. That is what the research tells us and, therefore, that is what we support.' [31]

Finding 14

The Sub-Panel notes from the evidence received from the mobile telephone operators, that based on the scientific guidance that they have been provided through the WHO, the UK HPA and ICNIRP, that they do not believe that mobile telephone mast station EMF emissions pose a threat to health if those stations operate within ICNIRP guidelines and comply with best practice standards.

6.13.16 Dr. Repacholi formerly of WHO

Dr. M. Repacholi, formerly with the World Health Organisation attended a Public Hearing on 23rd January 2007 and provided information relating to funding provided for research programmes in electromagnetic fields. He advised that funding is frequently a partnership approach between individual governments and industry and on occasion by the European Commission. He outlined the control measures put in place on jointly-funded projects which prevented funders and researchers communicating directly. Dr. Repacholi also likened base stations emissions to radio and televisions emissions adding that

'The strength of the signals is so low from a base station that it is incapable of having some effect on the central nervous system, from all the information that we have.' [32]

When giving evidence Dr. Repacholi advised that whilst individuals did show symptoms as a result of their proximity to masts these would be as a result of the fear of those masts and radiation not as the result of any electro magnetic field emissions. That view was supported by the research undertaken by Dr. J. Rubin mentioned earlier in the report.

6.13.17 WHO Factsheet 193

The World Health Organisation (WHO) fact-sheet No. 193 [33] outlines the difference between mobile phone handsets and base stations exposure situations. Radio Frequency (RF) exposure to a user of a mobile phone is far higher than to a person living near a cellular base station. However, apart from infrequent signals used to maintain links with nearby base stations, the handset only transmits for the duration of a call, whereas base stations transmit continuously.

The fact-sheet states that base stations transmit power levels from a few watts to 100 watts or more, depending on the size of the region or "cell" that they are designed to service. Since antennae direct their power outward and narrowly in the vertical direction but more broadly in the horizontal direction, and do not radiate significant amounts of energy from their back surfaces or towards the top or bottom of the antenna, the levels of RF energy inside or to the sides of the building are normally very low.

WHO has identified research needs to make better health risk assessment and promoted the research to funding agencies which suggest that –

Current scientific evidence indicates that exposure to RF fields emitted by mobile phones and their base stations, is unlikely to induce or promote cancers.

Other health risks: Scientists have reported other effects of using mobile phones including changes in brain activity, reaction times, and sleep patterns. These effects are small and have no apparent health significance. More studies are in progress to give more substance to the issues.

6.13.18 Health Protection Agency

Dr. J. Stather, Deputy Director of the Radiation Protection Division, UK Health Protection Agency was invited by the Sub-Panel to provide a presentation at a public meeting on 15th February 2007^[34].

Dr. Stather advised the meeting that the HPA was content with the safety of the technology being used. He advised that the HPA considers that emissions from base stations that were below ICNIRP standards do not present a threat to health. The view of the HPA was that based on the weight of validated scientific evidence there was no evidence to suggest that EMF emissions were dangerous. It considered that the precautionary approach recommended in the 'Stewart' Report was appropriate. In addition he added that research into a variety of areas was likely to be reviewed by the HPA but those reviews would take place on research that had already been subject to scientific peer review.

In respect of some of the more recent research undertaken relating to human cells and the perception of the increased occurrence of cancer, or other illnesses as a result of being subject to EMFs he stated the following –

'For the future; well there have been quite a number of small epidemiology studies published looking at mobile phone use and effects on health. As an organisation we have not really commented on those because each one on its own is pretty small in terms of the power to detect whether there is an effect or not. But there is ... From the International Agency for Research in Cancer (IARC) they are going to pool about 13 different studies and we expect that result to be published this year. That should have a lot more power to see whether there is or is not an effect and I am sure, when that comes out, we will comment on it. The research by the Mobile Telecoms Health Research Programme, there should be a summary of that research published, you know, early this summer this year and then we might hear there will be an extension with a prioritised list of research projects for the future.'^[35]

Dr. Stather advised that it was the intention of the HPA to review these findings during 2007. Many of the concerns expressed in Jersey had reflected those in the UK when the Stewart Report was underway. It was explained that the report had included the review of scientific evidence, epidemiology, human health studies, and experimental studies in animals, cellular

studies, dosimeters, and the science as a whole. 30 experts had given evidence across a whole spectrum.

The Sub-Panel was provided with the following point of clarification - At various points through the report reference is made to the National Radiological Protection Board (NRPB) and the Health Protection Agency (HPA) and advice on exposure guidelines for EMFs. NRPB had responsibility for giving advice on exposure guidelines for EMFs up to 1st April 2005 following which its responsibilities were subsumed into the HPA.

6.13.19 Professor Lawrie Challis research

The Times and many other media released information in January 2007 relating to a new item on mobile phone related research project, expected to be announced in the middle of the year. It will be the second Mobile Telecommunications and Health Research Programme MTHR programme. The Chairman will be Professor Lawrie Challis and it will be managed by an independent Programme Management Committee. Following the publication of the report by the Independent Expert Group on Mobile Phones a research programme, called the Link MTHR, has been set up to look into the possible health impact of Mobile Telecommunications. It will involve a long term mass study on the impact of mobile phones. It is anticipated that 200,000 volunteers including long term users will be monitored for a period of at least five years to plot mobile phone use against any serious diseases that they develop.

Funds of around £7 million have been allocated to the programme by industry and Government.

Professor Lawrie Challis had during 2005 released the findings from his previous research for which the headlines were 'Radiation from hands-free mobile phones can be reduced to virtually zero by a simple tiny magnetic bead which costs a few pence, a government adviser says.' Professor Challis's findings stated that clipping a ferrite bead on kits stops the radio waves travelling up the wire and into the head. He called on the mobile phone industry to start using them "as standard". In those findings he stated that the beads, which often measure less than 1cm in diameter, were commonly used to stop data interference in computers.

Professor Challis, who is chairman of the Mobile Telecommunications and Health Research Programme, told BBC News: "There is no evidence yet that mobile phones are harmful to health but people have not been using them long enough for us to be sure

Professor Challis was noted to have taken part in a number of mobile telephone technology research projects and was on the Stewart committee which looked into mobile phone safety in 2000, he advised that whilst studies have shown hands-free kits reduce radiation, emissions still travel up the wires on the outside and are absorbed by the head.

Ferrite beads are commonly used in computers to stop interference work by absorbing these "unintentional" emissions.

The industry responded to the findings and Michael Milligan, General Secretary of the Mobile Manufacturers Forum, rejected Professor Challis's call for them to be used on hands-free kits.

"I agree they can have an impact. But the bigger issue is that mobile phones are tested to be complying with standards and have been passed safe."

Finding 15

The Sub-Panel finds that if Professor Challis suggests that there is evidence support the introduction of a simple item such as a ferrite bead that is inexpensive to include can render emissions inert then that prevention should be included in the manufacture of the product as a matter of course.

6.13.20 Essex University research

The research project funded by the Mobile Telecommunications and Health Research programme is currently looking for volunteers to take part in the research. Details of the study can be found below and those wishing to take part should contact the researchers directly^[36].

The programme will investigate whether the electromagnetic fields emitted from mobile phone base-stations have a direct affect on human health and well-being. The principle investigator is Professor Elaine Fox from the Psychology Department.

The first part of the project will investigate whether some people are particularly sensitive to the type of electromagnetic fields generated by mobile phones and their associated base-stations and masts. The concept of the “*electromagnetic hypersensitivity syndrome*” (EHS) is controversial and the research team will attempt to understand this syndrome in more detail by means of a large questionnaire-based survey, in addition to talking in detail to people who believe that they are hypersensitive to electromagnetic fields.

The second part of the project will involve an experimental study in which the research team will test people, who report being hypersensitive to electromagnetic fields, as well as those who are not, under double-blind conditions. The electromagnetic field emitted by the base-station is standard and well below recommended guidelines. The study will allow them to establish in a scientifically-valid way whether mobile-phone base-stations really are affecting people’s health and feelings of well-being.

The Sub-Panel is aware that the findings of the research are currently out for peer review and will provide valuable additional scientific evidence on the subject that must be reviewed and considered.

Finding 16

The findings of the Essex University research projected managed by Professor E. Fox has the potential to answer many of the questions raised by concerned individuals during the course of the review. It is essential that such potentially significant pieces of research be properly publicised and considered by the Minister for Health and Social Services Department

6.13.21 Global Systems for Mobile Communications – telephone conference hearing

Dr. J. Rowley, Director of Research and Sustainability, Public Policy Team, Global Systems for Mobile Communications Associated (GSM) provided oral evidence in which he outlined the way in which the industry contributed on a 50/50 basis with Government to research telephony technology. The safe guard to ensure independent robustness of the research is the establishment of an oversight committee and the use of third parties for payment and reporting

[37]. When invited to comment upon the perceived view of risk held by some of the general public and the scientific view of risk. Dr. Rowley asserted that –

'The critical problem is that challenge of bridging the gap between the scientific understanding of risk, and uncertainty and public perception regarding risk and uncertainty'. [38]

6.13.22 Danish Cohort

The Sub-Panel's attention was drawn to the Danish Cohort Study, a huge study from Denmark which offered the latest reassurance that cell phones do not trigger cancer. Dr. Repacholi, formerly from WHO made reference to the research which outlines that, scientists tracked 420,000 Danish cell phone users, including 52,000 who had used the equipment for 10 years or more, and some who started using those 21 years ago. They matched phone records to the famed Danish Cancer Registry that records every citizen who gets the disease and reported that cell-phone callers are no more likely than anyone else to suffer a range of cancer types.

The study, published in the Journal of the National Cancer Institute, is the largest yet to find no bad news about the safety of cell phones and the radio frequency energy they emit.

But even the lead researcher doubts it will end the debate –

'There's really no biological basis for you to be concerned about radio waves," said John Boice, a Vanderbilt University professor and scientific director of the International Epidemiology Institute in Rockville, Md. "Nonetheless, people are'.

So Boice and colleagues at Copenhagen's Danish Cancer Society plan to continue tracking the Danish callers until at least some have used the phones for 30 years. This so-called Danish cohort "is probably the strongest study out there because of the outstanding registries they keep," [39]

6.13.23 Dr. George Carlo

Dr G. Carlo at the Public Hearing of 26th February 2007 stated –

'There was a study that came out a couple of months ago from Denmark, a Danish epidemiological study, and this was hailed as the last nail in the coffin, there are no problems. Your guys must have read it, the guys who think there is no problem. I will send you a critique of that so you can give it to them. But what ended up happening was that that study was only relevant to phones that were used between 1985 and 1995, those big old brick things. They are not even in use any more. So when you rely on epidemiological studies, you are always going to be a dollar short and a day late. It is just the worst way for you to be trying to protect your people. I keep going back to the fact that there is a safe way forward'.

Finding 17

It was apparent from the written and oral evidence received by the Sub-Panel that it was essential that information relating to the science of mobile telephony should be delivered to the general public in a clear and consistent way to minimise any misconceptions that may occur. In addition the timing and the

6.13.24 Weight of science

The Sub-Panel was reminded by the industry and some experts that evidence considered and evaluated by organisations such as WHO, the HPA, ICNIRP to mention but a few, focused its attention on the weight of scientific evidence which had found that mobile telephone mast emissions did not produce a thermal effect in human tissue and thereby did not represent a danger to health. The consensus view from those expert groups was that exposure below radio frequency levels supported by NRPB and ICNIRP do not cause adverse health effects to the general population. That view was supported by the Council of Ministers, the Minister of Health and Social Services, the Minister for Economic Development and the Minister for Planning and Environment.

6.13.25 Jersey Mast Concern expert

The Jersey Mast Concern group facilitated visits by Mr. B. Trower, Scientific Adviser to the Radiation Research Trust. The Sub-Panel afforded Mr. Trower the opportunity to present his evidence orally at a Public Hearing, his anecdotal evidence had been collated over a number of years and this was supported by his review of 20 research papers suggesting links between EMFs and illnesses. Some of these papers had been peer reviewed and included, research into the role that electromagnetic fields play in the increased incidence of cancer. ^[40]

6.13.26 Athens ruling

The Sub-Panel's attention was drawn to the action in Athens where 10 masts were removed as they were considered in the authorities' opinion to pose a threat to human health. He outlined the research papers that he had highlighted and explained a range of illnesses that could be attributed to the EMFs from mobile telephone masts.

The press report on the Athens Appeal Court ruling, 18th July 2006, ^[41] required the removal of 10 mobile telephone antennas, eight of which were in Athens, and must be removed as they pose a threat to public health.

'The ruling rebuffs an appeal by an unidentified mobile operator for the suspension of a decision by the National Telecommunications and Post Commission (EETT) to remove the poles. In justifying its ruling, the court cited "urgent concerns regarding the protection of public health." All 10 antennas in question had been hidden in chimneys, electric boilers and other appliances to thwart residents and authorities.

"(The ruling) is a very positive decision, a blow against the unaccountability of (mobile) firms, but is not enough. We need a more collective approach," Loukas Margaritis, a professor at Athens University, told Kathimerini. "Scientifically, there is no doubt that radioactivity is a health risk, even within the limits imposed by legislation," he said. He added that a solution would be to relocate the antennas to the outskirts of towns, and set them at much higher levels to lessen the impact of emissions'.

6.13.27 Salzburg

The Sub-Panel had during the course of its evidence gathering, been made aware that some other jurisdictions such as Salzburg, Austria had an approved reduced EMF level to that supported by ICNIRP. However, further research highlighted that whilst Salzburg sought a reduced level it had not been effectively achieved.

The "Salzburg milliwatt" is not a limit, but a political demand

The political demand from the province of Salzburg to introduce a new limit of 0.001 W/m² (the so-called "Salzburg milliwatt") was brought before parliament but was rejected by a large majority on January 31, 2002.^[42]

In February 2002, this political demand was further differentiated and tightened. The stricter political demand from February 2002 would mean the end of all full mobile communications coverage, because every network operator would only be entitled to a fraction of the permitted exposure level for its radio networks. With the current four mobile communications providers in Austria, this would mean that each operator would only be entitled to one-fourth of the exposure level.

6.13.28 Electro sensitivity and other jurisdictions approach

Mr. Trower also drew the attention of the Sub-Panel to the issue of electro-sensitivity and suggested that research in Switzerland supported the view that approximately 3% of individuals living around mobile base stations are electro-sensitive. Mr. Trower advised that a similar study was replicated by The Irish Doctors' Environmental Association (IDEA), the findings suggested 3% of the population were electro-sensitive^[43]. Dr. Rubin suggested that the findings of IDEA did not claim to know what the prevalence of electro-sensitivity was in Ireland.

Switzerland requires that lower installation limit values are set when an installation provides radio service in or nearby a "place of sensitive use". These places are deemed to be rooms in buildings that are regularly occupied by persons for prolonged periods, public or private children's playgrounds designated in spatial planning legislation as well as those areas of undeveloped sites on which aforementioned uses are permitted. It has to be emphasized that each installation has to comply with the installation limit value at places of sensitive use but also in these places aggregated emissions are only limited by ICNIRP emission values.

Switzerland is very often presented as role model for applying the precautionary principle regarding electromagnetic fields (EMF) emitted from stationary mobile communications equipment. Regardless of the political and legal efforts made to allay public concerns discussions remain lively and controversial. "The clear lesson is that the implementation of restrictive limits based on precautionary arguments does not reduce public concern. Indeed, these limits often mean that more antenna sites are required, which can lead to an increase in public resistance."^[44] This situation (on going since 2004) has not changed as yet. Moreover, it turns out as one of the major problems for 3G network roll out.

6.13.29 Dr Gerd Oberfeld

Submissions received from Dr. Gerd Oberfeld, University of Salzburg, confirmed that Switzerland and Italy have legislation in place which sets tougher standards than those recommended by ICNIRP. The Swiss legislation (dependent upon frequency) sets standards between 4 - 6 volts per m (say) 60,000 - 100,000 microwatts/m² (only for 3G and GSM masts), whilst Italian legislation (irrespective of source) has set the standard at 100 milliwatts/m² (i.e. 100,000 microwatts/m²) for all frequencies (100 kHz-300GHz)^[45].

He contends that the practice applied in South Tyrol is an excellent example to review. South

Tyrol has a range of maximum exposures between 1 - 3 V/m (3,000 and 20,000 microwatts/m²) for mobile phone masts as the government of South Tyrol (Environmental Agency, Dr. Luigi Minach) has negotiated each mobile phone antenna site in an effort to reduce exposures which applies retrospectively to the older mobile mast/base station sites^[46].

Finding 18

It is important to clarify and evidence statements to ensure that the public is provided with accurate information. The move by Salzburg should not be discounted due to the parliament decision, but new research evidence should provide the basis for such a move. It is also interesting to note that the introduction of restrictive limits did not allay public concern but evidence appears to suggest that more regions in a number of jurisdictions are considering further more stringent precautions.

6.13.30 Salzburg Conference 2000 information provided by Deputy J. Le Fondre

J. Le Fondre, Deputy for St. Lawrence on a recent visit to Austria was afforded an opportunity to meet with Dr. Gerd, Oberfeld, who has and continues to research cell towers and public health issues; he forwarded a significant amount of evidence. That evidence was from “The International Conference on Cell-tower Siting – Linking Science & Public Health”, held on 7th and 8th June, 2000 in Salzburg, Austria. On an international level the conference brought together leading scientists and experts from technical sciences, bioscience and medicine, and especially from public health, aiming at the discussion of the present knowledge about the exposure to and the health effects of high frequency electromagnetic fields, with particular focus on public health and the precautionary principle. 25 contributions were made at the conference and summaries of these are available on the Land-sbg web site.^[47] The report and contributions suggest that the rapid development in the mobile telecommunications is leading to an increased exposure due to electromagnetic fields in the immediate environment of a population. The report suggests that in order to guarantee, that these technologies, working in the high-frequency range with variable modulations, have no negative impacts on human health and well-being, it is essential to restrict the exposure.

The main question is from which basis the exposure limits for the protection of human health and well-being are derived. In 1998 ICNIRP (International Commission on Non-Ionizing Radiation Protection) a Non-Government Group (NGG) acknowledged by the World Health Organization (WHO), proposed reference values for the protection of human health from non-ionizing radiation. ICNIRP holds the position, that in the high frequency range relevant effects on human health only appear in the case of excessive warming of tissues of more than 1° Celsius which is related to a specific absorption rate (SAR) of 4 watts/kg tissue.

Finding 19

It is suggested that continued monitoring of new research should be undertaken by the Health Protection Department to ensure that its own Minister and the Minister for Planning and Environment are provided with the most update recommendation possible.

The Conference finding stated that –

'The International Conference on Cell Tower Siting made it clear, that the proposal of ICNIRP for the protection of human health from high frequency electromagnetic fields, on which the current recommendations of WHO and EU-Council are based, are on the one hand scientifically untenable and on the other hand not able to protect human health.'

Dr. Oberfeld and others directed the Sub-Panel to the report entitled 'Building a Digital Community from The City of Provo in Utah, United States of America.

The report outlines how they have explored and have undertaken the building of a municipal fibre optic telecommunications system. City officials reviewed and visited other municipalities that had systems in place. A sharp decline in costs during the years from when the city first began to study the technology encouraged the city to develop a Fibre to the home telecommunication system, one which clearly had advantages technologically, and it considered would provide for a more robust long term solution.

A fibre optics approach has many advantages over the traditional copper wire technology that has been used over the last hundred years. Dr. Robert Ridge, Ph.D., the City of Provo's Director of Information Services, has weighed in on the proper role of wireless offerings. Wireless data connections are actually quite tenuous. Climatic conditions such as rain, snow, and wind can cause connection problems. Line of sight between antennas is required for good wireless connections but not always possible. Security of wireless networks is considered to be inadequate by most Network Managers. That environment allows anyone to light up new wireless radios anytime anywhere. Each new radio brings with it noise for any of the existing wireless networks. This noise results in loss of connections, reduced bandwidth speeds and a host of other problems. Wireless network managers have a never-ending challenge to find a way to transmit in an often crowded and ever-changing environment.

The Sub-Panel heard evidence from Dr. G. Carlo at its Public Hearing on 26th February 2007; he supported a fibre optic network approach to mobile telephony systems advising that he was not against technology but recommended a safe approach to its operation.

6.14 UK Government approach – Stewart Report and ICNIRP

International Commission on Non-Ionizing Radiation Protection (ICNIRP) guidelines are based on a careful analysis of all scientific literature (both thermal and non-thermal effects) and offer protection against all identified hazards of Radio Frequency (RF) energy with large safety margins.

Both measurements and calculations show that RF signal levels in areas of public access from base stations are far below international guidelines, typically by a factor of 100 or more. RF exposure levels to a user from mobile handsets are considerably larger but below international guidelines.

In response to public concerns, WHO established the International Electromagnetic Fields (EMF) Project to assess the scientific evidence of possible health effects of EMFs. Specific studies have been identified to address the problem of localised exposure. The project established a formal mechanism for reviewing the research results and conducting risk assessments of RF exposure. It is also developing public information materials, and bringing together standards groups worldwide in an attempt to harmonise international exposure standards.

The Radiation Protection Division (RPD) of the Health Protection Agency (HPA) has established a discussion group on electromagnetic fields (EMFs).

The Electromagnetic Fields Discussion Group (EMFDG) chaired by Sir William Stewart, FRS, FRSE, the chairman of the HPA. The RPD has a responsibility to give advice on protection standards for EMFs. It also needs to ensure that when information is presented to the public, it should be informative and address any concerns.

Government has in place national guidelines produced by the National Radiological Protection Board (NRPB) on the maximum levels of exposure to RF radiation emitted from mobile phones, base stations and other sources ('the NRPB guidelines'). These guidelines were established in 1993 when mobile phone technology was in its infancy. The guidelines were based on a comprehensive review of the scientific literature carried out by NRPB, a statutory body, which advises Government on radiological issues related to health.

In 1998 the International Commission on Non-Ionizing Radiation Protection (ICNIRP) published its own guidelines covering exposure to RF radiation. These were based on essentially the same evidence as that used by NRPB. However, under the ICNIRP guidelines, the maximum levels of exposure of the public are about five times less than those recommended for workers. The reason for this approach was the possibility that some members of the general public might be particularly sensitive to RF radiation. However, no detailed scientific evidence to justify this additional safety factor was provided.

The ICNIRP guidelines for the public have been incorporated in a European Council Recommendation (1999), which has been agreed in principle by all countries in the European Union (EU), including the UK. In Germany the ICNIRP guidelines have been incorporated into statute

Both the HPA and ICNIRP guidelines are based on the need to avoid known adverse health effects. At the time these guidelines were drawn up, the only established adverse effects that were considered possible were those that might be caused by the heating of tissues.

Finding 20

Both NRPB/HPA and ICNIRP recommendations are based on research data predating 1999. It would be appropriate for ongoing local monitoring of new and current scientific research work into fields other than the heating of tissues. It is noted that since that time ICNIRP has continued to monitor but has not seen the need to review its guidelines.

6.14.1 Independent Expert Group on Mobile Phones Report - The 'Stewart Report'

In 1999 the UK Government asked the National Radiological Protection Board (NRPB) to set up the Independent Expert Group on Mobile Phones to consider the health effects from the use of mobile phones, base stations and transmitters. That Group produced what became known as the 'Stewart Report'.

The Stewart Report was commissioned and tasked to undertake the following:

- consider present concerns about the possible health effects from the use of mobile phones, base stations and transmitters
- conduct a rigorous assessment of existing research
- give advice based on the present state of knowledge
- make recommendations on further work that should be carried out to improve the basis for sound advice.

The Stewart Report was published on 11th May 2000. That Report concluded that –

‘the balance of evidence to date suggests that exposure to RF radiation below NRPB guidelines do not cause adverse health effects to the general population’.

In addition it found that –

‘it is not possible at present to say that exposure to RF radiation, even at low levels below national guidelines, is totally without potential adverse health effects’.

The Stewart Report recognised that there was a lack of detailed health research in this area and recommended a ‘precautionary approach’ in relation to health issues and phone masts.

One of the key conclusions was:

“The balance of evidence indicates that there is no general risk to the health of people living near to base stations on the basis that exposures are expected to be small fractions of international guidelines. However there can be indirect adverse effects on their well-being in some cases”.

From the evidence that it has seen the Sub-Panel considers that the finding in part may have increased some of the concerns expressed by the Public and some of the scientists. Particular those researching biological and neurological effects from EMFs other than those related to tissue heating.

The UK Government responded by asking the NRPB to undertake a further review, which it delegated to its own independent Advisory Group on Non-ionising Radiation (AGNIR). This report was published in 2003, and included specific conclusions on cellular, animal, brain activity and cognitive function studies and cancer and non-cancer epidemiology. Essentially its findings supported those of the Stewart Report:

‘In aggregate the research published since the IEGMP report does not give cause for concern. The weight of evidence now available does not suggest that there are adverse effects from exposures to RF fields below guideline levels, but the published research on RF exposures and health has limitations, and mobile phones have only been in widespread use for a relatively short time. The possibility therefore remains open that there could be health effects from exposure to RF fields below guideline levels; hence continued research is needed.’

6.15 States of Jersey approach to the Stewart Report recommendations

The approach taken by the States of Jersey through the Ministers has been that of compliance with the recommendations of the Stewart’s IEGMP Report 2000 and in most instances it has

gone beyond those recommendations. It is important to note that the UK government has not fully adopted all of the Stewart's recommendations.

Practicality of Exclusion Zones in Jersey: It would be extremely difficult, if not impossible, to find enough land parcels in Jersey to support a mobile network that was 300-500 metres from any home or school. Despite finding appropriate land parcels, there is the reality that the owner of that land may not consent to the installation. There have been several installations to date that have not been located in the optimum place in a certain area because the land owner has refused consent, and they have had to be installed at the next best location. It is a requirement of the Planning Department that each application is submitted with supporting information that details other locations in the area that have had to be discounted and the reasons for those decisions.

Exclusion Zones Internationally: For clarification, the Stewart Report does not recommend any distance requirements from schools. The Planning Department has had direct written confirmation from the French Agency for Environmental and Occupational Health Safety and the French Ministry for Health that France "has not adopted any specific regulations relating to exclusion zones between mobile phone base stations and schools/residences". The only standard is the maximum value for exposure to Electromagnetic Emission levels. The French 'proposed law' is a private bill put forward by one member – Mr. Masses. The private bill has not yet been to a general discussion of parliament and is currently with a commission to test its validity. The process for private bills in France is almost the same as in the UK. The process is lengthy and it is reasonable to presume that the process this private bill has to take is in the order of years. The Planning Department has also had direct written confirmation from the Australian Radiation Protection and Nuclear Safety Agency that Australia "do not have any distance requirements between facility and other land uses such as residences, schools or hospitals". New Zealand has a trans-Tasman agreement that adopts the standards of the ARPANSA. ^[48]

6.16 The technology and siting of masts

The Sub-Panel is aware that to a large extent mast siting is subject to the geographical area to which service is to be provided and that that service is subdivided into cells.

In order for an efficient service to be provided the operator must ensure that customers can continuously use a mobile phone whilst on the move, to achieve that cells have to overlap slightly. When a user nears the edge of a cell and enters the overlap area with the next cell, the network can hand over from one base station to the next. The size of the cell depends on current and future customer call usage in this geographical area, and also on the physical terrain of the area. Radio signals are attenuated by man-made and natural obstacles such as buildings, trees, hills and valleys, and this has an impact on the quality of mobile phone coverage. The issue of reducing emissions to a much lower level was raised by Mr. B. Trower although that suggestion was refuted by the operators and technical evidence received, on the basis that full coverage was essential and demanded by both private and business users.

This means that to achieve in-building coverage, antennas need to be close to the building or that the coverage be provided by in-building distributed antenna systems.

Mobile phones and base stations emit RF radiation. In both cases levels of exposure generally reduce with increasing distance from the source.

6.16.1 Public Cellular Telephony

Ofcom describes cellular telephony, Global System for Mobile Communications (GSM) and Universal Mobile Telecommunications Service (UMTS) in summary is as follows - [49]

A mobile phone (Cellphone) is a wireless user station that is connected to the public phone network by a radio link rather than a fixed cable. Because of this flexibility, users of mobile phones can make or take calls almost anywhere within the UK and, through roaming onto other networks, abroad. The term public means that the network is accessible to all and not for the exclusive user closed group of people.

GSM was developed to provide improved quality and flexibility over the first generation analogue mobile phone services and to standardise the technology needed to allow mobile phones to make and receive calls when the user is travelling abroad. GSM has evolved to offer many advanced technical features that are used to support a wide portfolio of services. The key advantages that GSM has over the previous analogue services are better speech quality, confidentiality, international roaming, Short Message Service "texting", web-browsing and picture messaging.

6.16.2 Electro-magnetic radio/frequency

The frequency ranges used by GSM are in the 900 MHz and 1800 MHz bands.

UMTS is the Third Generation (3G) of mobile communications. UMTS has provided mobile users with full interactive multimedia capabilities at data rates. The frequency ranges used by 3G are in the 1900 MHz and 2100 MHz bands.

Frequencies

The following frequencies are currently licensed for GSM cellular telephony:

GSM 900:

880 - 915 MHz mobile to base 925 - 960 MHz base to mobile

GSM 1800:

1710 - 1781.5 MHz mobile to base 1805 - 1876.5 MHz base to mobile

3G

2110 - 2170 MHz base to mobile 1920 - 1980 MHz mobile to base

Base transmit and Mobile transmit in Time Division: 1900 - 1920 MHz

TETRA operates in the 380-400MHz band.

6.16.3 What are EMFs?

Electric and magnetic fields (EMFs) are produced by power lines, electrical wiring, and electrical equipment. There are many other sources of EMFs. EMFs are invisible lines of force that surround any electrical device. Electric fields are produced by voltage and increase in strength as the voltage increases. The electric field strength is measured in units of volts per meter (V/m). Magnetic fields result from the flow of current through wires or electrical devices and increase in strength as the current increases. Magnetic fields are measured in units of

gauss (G) or tesla (T). Most electrical equipment has to be turned on, i.e., current must be flowing, for a magnetic field to be produced. Electric fields, on the other hand, are present even when the equipment is switched off, as long as it remains connected to the source of electric power.

Electric fields are shielded or weakened by materials that conduct electricity (including trees, buildings, and human skin). Magnetic fields, on the other hand, pass through most materials and are therefore more difficult to shield. Both electric and magnetic fields decrease as the distance from the source increases.

Even though both electric and magnetic fields are present around electrical equipment and power lines, most recent research has focused on potential health effects of magnetic fields. This is because some epidemiologic studies have reported an increased cancer risk associated with estimates of magnetic field exposure. [50]

6.16.4 Are EMFs all around us?

The Sub-Panel was provided with some technical explanations relating to that EMR or EMF is. It was explained that all modern electronics emit electromagnetic radiation. Radio waves, microwaves, visible light, and x-rays are all examples. Electromagnetic waves are produced by the motion of electrically charged particles. These waves are also called "electromagnetic radiation" because they radiate from the electrically charged particles. They travel through empty space as well as through air and other substances.

6.16.5 How do I know where EMFs are?

The internal circuits of personal computers generate EM fields. Also, cathode ray tube (CRT) displays generate EM energy over a wide band of frequencies. As do mobile telephones. To prove this simply place a radio receiver of any kind and use it at the same time as you use your personal computer, or mobile phone and you will probably hear RF noise in the receiver that originates in the computer or from the phone.

6.16.6 What is EMI (Electromagnetic Interference)?

EMI (electromagnetic interference) is the result of disruption caused by an electromagnetic field. This is why mobile phones are not allowed to be used in hospitals, aeroplanes or petrol stations. The EM radiation emitted from them can interfere with sensitive equipment and poses a danger to safety.

EMI was traditionally used to describe how one EM field emitted from one electronic device effects the operation of another electronic device; EMI can now also be used to help explain the ways in which EM radiation affects living things. [51]

6.16.7 Radiation patterns

All transmitting antennas have a radiation pattern. For radio communications purposes, it is generally only the electrical or 'E' field that is of interest, as opposed to the magnetic (H) field. Antenna manufacturers describe this radiation pattern in polar diagrams showing what the pattern looks like in a horizontal plane (i.e. a bird's-eye view) and in a vertical plane (azimuth). The shape of the radiation pattern is determined by the design of the antenna.

An isotropic source is used as a reference standard, i.e. a point source that radiates equally in all directions. In practical terms, the basic element of an antenna is a single element called a

dipole, representing some fraction of the wavelength of the signal to be transmitted. GSM transmitters are normally coupled to highly directional antennas that concentrate the transmitter's power into the desired direction. These are called 'panel arrays' and it is common to see a number of these mounted on a mast to cover areas of specific interest.

On a polar diagram, the direction of maximum radiation is shown as 0dB and the diagram has a scale against which the lower powers of the main and side lobes can be calculated. It is common to find telecom operators employing down-tilt techniques to ensure that the main lobe truly points at the area of interest rather than passing over the top of it.

It is worth noting that the power density decreases exponentially as one moves away from an antenna (according to the equation $p = P/4\pi r^2$, where p is the received power per m² at some remote point from a transmitting source of power P at a distance r metres).

6.16.8 Macro, micro and picocells

It was noted from numerous sources that base stations communicate with mobile phones within a defined area or 'cell'. These can be of three types: *macrocells*, *microcells* and *picocells* depending upon their size and the power output of the antenna.

Macrocells provide the main structure for the base station network. The base stations for macrocells have power outputs of tens of watts and communicate with phones up to about 35 kilometres (22 miles) distant. The ability to communicate is affected by the local topography. It is likely that the number of cells on this Island continue to increase. Measurements that have been made indicate that exposures of the general population from these sites are typically many hundreds, or thousands of times lower than existing exposure guidelines.

Finding 21

There remain concerns, nevertheless, about whether the emissions from all base stations are uniformly low, about whether the emissions could cause unknown health effects, and whether, with the increased use of mobile telecommunications, their output will have to rise.

Microcells are used to infill and improve the main network, especially where the volume of calls is high. They are sited in places such as airports, public building, office building or private residences. Their number is increasing in line with the growth in demand for mobile phones. The microcell base stations emit less power than those for macrocells and their range is a few hundred metres.

Finding 22

We understand that exposures above guidelines do not occur, provided the case surrounding the antenna is kept in place. However, as with some other items of electrical equipment there could be a possibility of overexposure if the case were to be removed.

Picocell base stations have a lower power output than those of microcells (a few watts) and are generally sited inside buildings. It is likely that the number of picocells within buildings may increase as a result of the increased competition and the requirement for all of the operators to establish their own networks. It was noted that picocells can be and are located in telephone

boxes.

Finding 23

The Sub-Panel is satisfied that the emissions should not exceed the ICNIRP guidelines; the system of random audits proposed by the Sub-Panel to be undertaken by an independent company appointed under an authority such as OFCOM or the JCRA under advisement will provide an independent check on the output from all base station antennae.

6.16.9 Cumulative Effects and Excursions

Dr. G. Carlo

The Sub-Panel received evidence from Dr. G. Carlo at a Public Hearing on 26th February 2007 where he suggested that excursions or peaks of EMF can occur unchecked –

'When you are doing all of these information exchanges on the phone, you need more power. The fact is that at 0.6 watts of transmission power it is not enough to allow you to watch a movie, so what is happening is that there are excursions going up into 4 or 5 times the standard and nobody is looking because when they approve the phone they are given a prototype. Okay, this phone has passed, fine.

Then what happens is the phone has programming that allows it to excursion. When you get up into 20 to 25 watts per kilogram, you are getting close to heating, so when you get too close to heating you have another mechanism to worry about on top of the biological mechanism. Interestingly, in the United States, there is a group called the IEEE (Institute of Electrical and Electronics Engineers).

You have that over here too; it is a bunch of industry guys. They make recommendations like ICNIRP. So, what has happened in the US is they want to raise the 1.6 watts per kilogram to 16 watts per kilogram. But the problem is that there are people like us who are watching them, so they do not want to go through the process where there are public hearings on changing that standard, because we would have the same discussion in front of the cameras in the US and they do not want that. So, what they have done is they have figured out a way to a "technical adjustment" that would avoid the process of going through a public hearing. That technical adjustment is that instead of averaging for the SAR, the standard, over one gram of tissue, they average over 10 grams of tissue. If you average over 10 grams of tissue, effectively you are raising the standard, or the allowable limit, by 10, so now you get up to 16'.

The assertion by Dr Carlo in respect of excursions or peaks was refuted by the operators.

Jersey Telecom

In a response dated 21st March 2007 from Jersey Telecom it was stated that –

'Dr Carlo seems to suggest that phone companies turn up the transmission power from base stations when nobody is looking. This is absolute rubbish. The power emitted from any cell site has to be carefully controlled in order to avoid interference with other base stations using the same frequencies. Indeed, because of the concern about interference, the power output is deliberately kept down to only what is required to ensure a reliable connection and no more. Thus to turn up the power when no one is

looking, as suggested, would actually be counter productive and not in the best interests of any of the operators or their customers. [52]

Cable and Wireless

This view was supported by Cable and Wireless in its letter dated 21st March 2007 [53], when it confirmed that the company adopts the ICNIRP guidelines which remain the best means of measuring the level of emissions from radio base stations, as recommended by the Stewart Report, WHO and supported by the Jersey Planning Authorities.

Mr. D. Smith, Chief Executive Cable and Wireless

The Sub-Panel raised the issue of possible cumulative EMF emission effects at its Public Hearing of 22nd January. The issue was raised as a result of questions asked by concerned individuals who were of opinion that the overlapping of emission from multiple masts in a small area could cause a cumulative effect which could exceed safety standards.

Mr. Smith responded to the concern as follows -

'I think I would simply draw your attention back the fact that our predicted emissions, as I said, are no more than 1 per cent of the internationally accepted guidelines. So I would expect, and I do not know, but I would expect other operators in Jersey to be along similar lines. So, if, and my engineering colleague can correct me if I am wrong, it is a cumulative factor and 1 per cent becomes 2 per cent, I would not class that a significant increase in risk'. [54]

Dr. G. Langly-Smith

In respect of concerns raised in connection with possible EMF emission cumulative effects as a result of mobile mast station overlapping the Sub-Panel was advised by Dr .G. Langly Smith, at its Public Hearing of 22nd January 2007 that in his opinion –

'The emissions from telephone masts are microwaves but have pulsing modulation, so they have this pulsing which is very penetrating to the tissues of the body. It does not matter if they are high or low, they still have a damaging effect.'

Dr. G. Langly-Smith stated in respect of EMFs-

'They are constant, unremitting and cumulative. We were talking a little bit about the electro-sensitive people on Thursday night at St. Helier and these people accumulate the effects of electromagnetic frequencies and it takes a long time to get it out of the body and get back to normal. Although the effect is not felt in the early days and they often evade the body's senses, they nonetheless are acting as a constant stress to our bodies; hence, the well-known term "electromagnetic stress". Continual bombardment by these emissions eventually leads to breakdown in biologic systems'.

6.16.10 What is ICNIRP, what are its aims and who are its members?

ICNIRP is the International Commission on Non-Ionizing Radiation Protection. It is a body of independent scientific experts consisting of a main Commission of 14 members, 4 Scientific

Standing Committees covering Epidemiology, Biology, Dosimetry and Optical Radiation and a number of consulting experts. This expertise is brought to bear on addressing the important issues of possible adverse effects on human health of exposure to non-ionising radiation.

What are ICNIRP's aims?

ICNIRP's principal aim is to disseminate information and advice on the potential health hazards of exposure to non-ionizing radiation to everyone with an interest in the subject. ICNIRP's information and advice covers all of the non-ionizing radiations including, the optical radiations (ultraviolet, visible and infrared - and lasers), static and time-varying electric and magnetic fields and radiofrequency (including microwave) radiation, and ultrasound. Much of the information that ICNIRP provides is published in the form of scientific reviews and reports and the proceedings of scientific meetings. The results of these reviews combined with risk assessments carried out in collaboration with the World Health Organization, WHO, result in the publication by ICNIRP of Exposure Guidelines. Examples of these are guidelines limiting exposure to electromagnetic fields, to laser radiation, to ultraviolet radiation, to incoherent optical radiation and to ultrasound.

Who are ICNIRP's members?

ICNIRP's members are independent experts in the scientific disciplines necessary for non-ionizing radiation protection. ICNIRP's main Commission members are elected by the Commission under the rules of its Charter. Nominations are invited from all the national radiation protection bodies represented by the International Radiation Protection Association, IRPA, and from ICNIRP's main Commission itself. The Chairman and Vice-chairman of the Commission are elected by the members of the main Commission. Individual membership of the main Commission is limited to 12 years. Members of the Scientific Standing Committees are nominated by the Chairmen of the Standing Committees and the members of the main Commission and agreed by the main Commission. Consulting experts are similarly nominated and agreed. All members of the main Commission, Scientific Standing Committees and Consulting Experts, are listed on the ICNIRP WebPage www.icnirp.org. ICNIRP Commission members do not represent either their countries of origin or their institutes nor can they be employed by industry. Members are reminded frequently of the need to declare any interests detrimental to ICNIRP's status as an independent advisory body. ^[55]

6.16.11 ICNIRP tables and levels to be explained or graphs included

The Sub-Panel was provided with the ICNIRP recommended level of EMF emissions as follows –

The ICNIRP precautionary level for 900MHz (2g) is 4.5W/m^2 ,

The ICNIRP precautionary level for 1800MHz (2g) is 9W/m^2 ,

The ICNIRP precautionary level for 2100MHz (3g) is 10W/m^2 .

The lowest suggested level of all the websites, news articles and scientific reports reviewed by the Planning Department for a precautionary approach is 1W/m^2 . The maximum level

proposed in Jersey for all three bands is 0.3W/m^2 . The levels involved in Jersey are thousands of times less than the level of emissions recommended as safe by the IEGMP 'Stewart Report'. Adoption of these safe levels was an integral part of the precautionary approach recommended in the Stewart Report. However, all three operators could operate at the ICNIRP reference level and this would still be considered to be taking a precautionary approach in accordance with the Report.

6.16.12 Fibre Optics

Fibre optics technology comprises of thin strands of extremely pure optical glass. Some of the key reasons that fibre optics technology is considered superior to older technology are as follows:

It is thinner, less expensive and co-exists with electrical wires.

Fibre optics has higher carrying capacity than copper wires.

It provides less signal degradation than copper wires.

It is ideally suited for digital signals which are important for computer networks.

It does not suffer from crosstalk from other conductors.

The recommendation of operating a mobile telephony network using a fibre optic network was proposed by a visiting expert Dr. G. Carlo^[56]. It was subsequently confirmed that the Jersey Telecom mobile telephony network uses a fibre optic connection to its base stations thereby reducing the need for some EMF emissions.

A fibre optic connexion from base station to base station would provide the following -

1. Replace microwave links that are being used by the operators;
2. It would have absolutely no effect on mobile phone emissions from masts (in the 900 and 1800MHz phone bands);
3. there would be no microwave emissions in the link bands (2.4GHz upwards) for each link that was supported by fibre;
4. It should be noted that site-to-site microwave links are low power, essentially, 'pencil' beams, they are highly focused so that as much power as possible is focussed from the transmitting antenna to the receiving antenna with minimal spillage. Antenna adjustment is, therefore, crucial to ensure that the antennas are properly aligned

Microwave links are designed to have clear line of sight between the transmitting and receiving antennas. The paths between the antennas are designed for an unobstructed line of sight, i.e. no hills, no buildings, no people and generally no foliage. The risk, of course, is that someone will build in that line-of-sight in which case the link will stop working and the operator would have to engineer its way out of the problem. Ergo, there is, generally, no significant risk of exposure from a properly engineered microwave link.

If all the operators were to use fibre instead of microwave links then the reduction at particular points in space *in the link bands* would be reduced by anything up to 100%. There are other services that use microwave links so there would never be a 100% reduction (the Airport radar operates at 1GHz).

6.16.13 Jersey Telecom

As regards the use of a fibre optic network, Jersey Telecom already connect most of its base stations back to the mobile exchange via either fibre optic cable or Asymmetric Digital

Subscriber Line (ADSL) links over copper pairs rather than radio. It has been done this way largely on the grounds of reliability and low susceptibility to electrical interference. If it was felt to be necessary for all operators to do this in Jersey, for whatever reason, then Jersey Telecom would be pleased to offer fibre optic connections to the other operators. Currently, primarily due to cost and accessibility considerations, the other operators tend to use radio to connect their base stations to their mobile exchange.

6.16.14 Cable and Wireless

In a submission from Cable and Wireless dated 21st March 2007 they suggest that 'any alternative technologies as indicated by Dr. Carlo carry significant legal, regulatory, cost, technical and consumer impacts. The suggested technologies are vastly different from worldwide GSM Mobile Telephony technologies and result in significant issues.'

The Sub-Panel, whilst not expert in the technology, did not agree with all of the views expressed by Cable and Wireless on the basis that Jersey Telecom currently operates its mobile system using a fibre optic network.

6.16.15 Noise Field Diffusing Technology

The Sub-Panel has reviewed some of the products on the market with regard to noise field diffusion and would assert that, whilst it mentions some of those products and the science upon which they are based, it is not expressing support or otherwise with regard to their efficacy. In depth research has not been undertaken in this area as the subject is beyond the scope of this review.

6.16.16 The Molecular Resonance Effect Technology

The Molecular Resonance Effect Technology (MRET) built into the Cell Chip avoids the impact of electromagnetic radiation by superimposing a 'noise field' consisting of low frequencies of electromagnetic oscillations that resemble resonance frequencies of living cells in the body. These oscillations compensate and neutralize the harmful effects of EMR generated by cell phones and electronic devices while simultaneously providing support for cellular functions in the body.

Information researched on MRET found that in 1994 Nobel prize winners, Gilman and Rodbell determined that the body's cells communicate with each other by subtle low electromagnetic signals. These signals carry all the vital information that, through the process of transduction, are translated into biochemical and physiological processes of the body. EMR can potentially distort and disrupt these cellular communication signals resulting in abnormal cellular metabolism and consequently illness.

One of the companies providing products based on noise diffusion technology explains its function and capabilities as follows –

'We all benefit from the convenience of mobile phones, computers, and other electronic technology, but there is an expanding body of evidence that suggests the modern world is full of consequential electromagnetic pollution which can damage our health and especially that of children. Health warnings against the harmful effects of non-ionising electromagnetic radiation, particularly that produced by the mobile phone, are well documented by many leading experts including the General Secretary of the World Health Organisations and numerous government advisors. Neurosurgeon, Leif Salford, referred to the 1.3 billion users of mobile phones as "the largest biological experiment in

the history of the world'.

6.16.17 Bioguard and Biophone

The Bioguard and Biophone are the result of many years research by Professor Svetlav Danev into the intercellular reaction promoted by electromagnetic resonance. Bioguard and Biophone contain inorganic crystals that are tuned to be receptive to basic life-form frequencies and will "mirror" all incoming bio-resonance within this band. The feedback of the cells' own oscillations then helps to neutralise the impact that the Environmental Law Foundation (ELF) and Very Low Frequency (VLF) waves would otherwise have caused. The electrical charge of every cell in a living body produces its own resonance, which interacts and communicates with the resonance of the neighbouring cells. Alien sources (such as a mobile phone computers and power lines) introduce waves that can distort the body's natural resonance, leading to a breakdown in intercellular communication.

The supporters of products such as biophone suggest that a well-understood effect of microwave radiation is **dielectric heating**. They claim that many people who use a mobile or cordless phone experience the effects of this radiation by a sensation of heat on and around the ear which today is commonly called '**Hot Ear**' in which any dielectric material (such as living tissue) is heated by rotations of polar molecules induced by the electromagnetic field. In the case of a person using a cell phone, most of the heating effect may occur in the head surface, causing its temperature to increase. It is claimed that biophone can provide cell phone radiation protection, mobile phone radiation protection, electromagnetic pollution, electro-pollution, hot ear syndrome, electronic pollution, protect from mobile phone.

It is claimed that the products can prevent symptoms such as 'hot ear' due to mobile phone radiation, headaches due to mobile phone radiation, electromagnetic smog, protect from electronic pollution and protection from computers, [\[57\]](#)

6.16.18 Jersey Telecom response to noise diffusion technology

The Sub-Panel felt that it was important to seek the views of the telephone operators with regard to suggestions that the technology could afford some protection from the impact of EMFs. Jersey Telecom responded as follows –

'As regards "noise diffusing technology", we do not believe there is any merit in it. The history of the "technology" is that in the early 1980s Dr. Litovitz and co-workers in the USA claimed that in cell studies they saw biological effects when a constant signal was applied for a period of time (5 - 10 seconds), which they termed the coherence period. When this constant signal was disturbed by the introduction of a noise waveform the signal coherence was lost and the biological effects were no longer observed. To my knowledge no other group has seriously investigated these ideas and important elements of related studies by this group have not been confirmed in more recent studies. These more recent studies have also identified artefacts such as large temperature rises in the exposed cells that were not reported by the original investigators. Given that the timescales for biological processes range from milliseconds to years, there is no scientific rationale to explain the observations by Litovitz et al and they must therefore be regarded with caution. I should also point out that this study by Dr. Litovitz was done at a time when mobile telephony services were analogue rather than digital as we have currently, thus casting further doubt on the validity and applicability of the study in today's environment'. [\[58\]](#)

6.16.19 Cosmetic Solutions

The Sub-Panel became aware of certain cosmetic solutions produced and acclaimed as being capable of protecting the skin against modern pollution. It claims that the protection includes artificial electromagnetic waves generated by domestic communications equipment.

The research paper written by Lionel de Benetti, the head of Clarins Research and Development will soon be published in the Journal of Investigative Dermatology.

Until the paper is published we have no access to this paper which contains details of Clarins research on electromagnetic waves and their effect on the skin.

The product by Clarins makes the following claim 'Expertise 3P protects skin from the electromagnetic effects of today's modern day conveniences like cell phones and computers. As pure and as clear as water, this delicate, refreshing mist gently, effectively and invisibly shields skin from the aging effects of electromagnetic waves, and neutralizes the harmful effects of pollution and artificial lighting'

The Sub-Panel considers, that by implication, the claims made by the producers as to the abilities of the product, suggest the underlying findings of the research, have identified some form of impact on the skin and should be considered as part of a wider assessment and evaluation of new evidence.

6.17 Scientific Evidence Evaluation

6.17.1 Different types of studies are required

Despite public concern about the safety of mobile phones and base stations, rather little research specifically relevant to these emissions has been published in the peer-reviewed scientific literature. This presumably reflects the fact that it is only recently that mobile phones have been widely used by the public, the demand for mobile telephones in Jersey has exceeded the level of population, and as yet there has been little opportunity for any health effects to become apparent. There is, however, some peer-reviewed literature from human and animal studies, and an extensive non-peer-reviewed information base, relating to potential health effects caused by exposure to EMF/RF radiation from mobile phone technology.

There is now scientific evidence, however, which suggests that there may be biological effects occurring at exposures below these guidelines This does not necessarily mean that these effects lead to disease or injury, but it is potentially important information. There are additional factors that need to be taken into account in assessing any possible health effects.

Populations as a whole are not genetically homogeneous and people can vary in their susceptibility to environmental hazards. There are well-established examples in the literature of the genetic predisposition of some groups, which could influence sensitivity to disease. There could also be a dependence on age, general health, diet and many other factors.

Finding 24

The Sub-Panel is of opinion that it is not possible at present to say that exposure to EMFs, even at levels below national guidelines as set by ICNIRP, is totally without potential adverse health effects. It further suggests that the gaps in knowledge are sufficiently significant to justify an increased precautionary

approach to that suggested by the 'Stewart' report. The Sub-Panel accepts that ICNIRP guidelines are based on a large database which formed the basis for its risk assessment. However, it considers that it is essential that careful consideration be given to large scientific research projects currently being undertaken and part funded by the UK government.

A precautionary approach will result in costs to be borne by the operators, however, it is considered to be an essential approach at this early stage in understanding of mobile phone technology and its potential to impact on biological systems and on human health.

A mix of studies in different research areas are essential for the full evaluation of potential risk to health resulting from the effect of electromagnetic fields.

Laboratory studies currently being undertaken on human cells aim to identify the fundamental mechanisms that link electromagnetic field exposure to biological effects possibly leading to illness. They aim to identify mechanisms based on molecular and/or cellular changes as a result of being subjected to an electromagnetic field.

Epidemiological studies or human health studies are another direct source of information on long term effects of exposure. Researchers in such studies try to establish if there is a statistical association between the incidence of a specific condition or disease and exposure to electromagnetic fields. It is accepted that findings from such research can take many years to produce a comprehensive overview of any change in occurrence or incidence of disease.

Whilst viewing such information the Sub-Panel was aware that any cohort study of the population would display a range of symptoms, illness and disease that would be unconnected to any effect from mobile telephony. The Sub-Panel recognises that Electro Magnetic Fields are present both in a natural form and are emitted from many various forms of modern technology, such as televisions, telephone base stations in the home, computers, wireless systems in the home, microwave ovens, radio, baby monitors and many more.

Something that is associated statistically with increased incidence of a certain disease may not always turn out to be an actual cause of the disease this was highlighted by M. Repacholi, Dr. J. Clarke, HPA, Dr. J. Rubin, Kings College and Dr. J. Rowley, GSM. The summary of the views they expressed suggested that it is necessary in order to judge whether the association reported in a study is causal, epidemiologists consider several criteria, including the following:

Strength of association- the stronger the association, the more confident we can be that the disease is due to the exposure being studied. Evaluation has to undertaken of whether or not other factors could be the cause of a disease.

Consistency - consistency requires that an association found in one study appear in other studies involving different study populations and methods. Consistently found associations are more likely to be causal. With regard to EMFs, study results disagree in important ways, such as the type of cancer associated with EMF exposure, so scientists cannot be sure whether the increased risks are due to EMFs or other factors. All of the experts suggested that peer review and replication wher key to robust scientific research.

Biological plausibility - When associations are weak in an epidemiological study, results of laboratory studies are more heavily relied upon to support the association. Some scientists will remain skeptical about an association between EMFs and cancer until a plausible biological explanation is found. Experiments with laboratory animals and cells are currently under way to provide information about possible biological effects of EMF exposure.

6.17.2 Telephone Operators and GSM

The Sub-Panel recognises that the mobile phone industry impacts on people and business and has become an essential part of the Island's infrastructure. It is accepted that there are benefits that the development of mobile telecommunications can bring, provided there is no adverse impact on health. It is also important to remember that the percentage of the population expressing concerns in respect of the technology is subject to the imposing of mobile telephone masts in the vicinity of their residences or places of work. Individuals can chose not to use mobile telephones but the element of choice has been removed from many with regard to mobile telephone masts and as such it is essential that the States as a whole ensures that the very highest level of precaution possible be taken.

The Sub-Panel received confirmation from the telephone operators during its Public Hearings that the finance industry in particular was dependent upon an efficient mobile telephony service.

Finding 25

The Sub-Panel notes from the evidence received from the mobile telephone operators, that based on the scientific guidance that they have been provided with, through the WHO, the HPA and ICNIRP, that they do not believe that mobile telephone mast station EMF emissions pose a threat to health if those stations operate within ICNIRP guidelines and comply with best practice standards.

APPENDIX 1

STATES OF JERSEY



Committee of Inquiry: mobile telecommunications

**Lodged au Greffe on 2nd November 2006
by Deputy P.J.D. Ryan of St. Helier**

STATES GREFFE

PROPOSITION

THE STATES are asked to decide whether they are of opinion –

- (a) to establish a Committee of Inquiry in accordance with Standing Order 146 in order to investigate –
 - (i) the health risks associated with the emissions from mobile network antennae and dishes;
 - (ii) the environmental impact of the proliferation of multiple network infrastructures;
andto report to the States thereon within a period of 6 months from the establishment of the Committee;
- (b) to request the Minister for Planning and Environment to suspend consideration of all new and existing planning applications involving the mobile telecommunications network infrastructure pending the results of this investigation.

DEPUTY P.J.D. RYAN OF ST. HELIER

REPORT

In my time on the Economic Development Committee I attended regular meetings with the JCRA when the JCRA's regulation of competition in the telecommunications market was discussed.

During these discussions one of the main concerns of the Committee and the JCRA centred around the need and indeed the utter desirability for Jersey Telecom to allow access on a proper and fair commercial basis to their existing infrastructure built up over decades. Indeed the Committee through both Telecoms and later the Competition Laws was at pains to ensure that the JCRA had sufficient powers to be able to force such arrangements upon any incumbent telecoms operator and to regulate the commercial terms of any agreements.

R.C.43 (at Appendix 1) of 5th November 2002 from the previous Industries Committee details the agreements and directions from the Committee to the JCRA on environmental matters but there were no further written instructions given to the JCRA by EDC on the environmental issues associated with mast sharing because there was a clear understanding that through pressure from the JCRA and the planning process as a whole, the sharing of infrastructure could be managed.

It appears that we are currently in a dilemma in that the JCRA are carrying out their responsibilities according to the law but the Planning Authorities are also carrying out theirs, according to the laws that apply to planning, and finding it difficult to refuse planning permission for new infrastructure and the duplication of masts, antennae and dishes. The JCRA do have the power to force a mast-sharing agreement on Jersey Telecom as it is in their licence agreement issued on 1st July 2003, but the onus on the willingness to share has to come from another licensee wanting to share with JT. Therefore if a new licensee has no particular wish to share masts and applies for planning permission to erect new masts, it is up to the Planning Minister to refuse permission in order to force the 2 parties together into a sharing agreement before the JCRA can then in turn regulate for commercial fairness.

At a Grouville public meeting on 25th October it became apparent that one of the new licensees intended to erect some 40 to 50 new installations in addition to Jersey Telecoms' existing 57 masts and structures. Alarming enough as this news was to the public attending, when it was realised that this situation was likely to be repeated for all new operators the gasps of shock and alarm and the general feeling of anger and frustration at the meeting were palpable.

This was particularly so when officers in attendance from the planning department confirmed that the department's power to refuse planning permission for new infrastructure under existing law was limited.

Clearly this is a case of 'unintended' results from decisions made in good faith, but there appears to be no easy solution to ensure that the public interest is protected.

A public inquiry is one way to bring out the facts, not to re-examine the competition issues but more to focus on the unintended disbenefits in health concerns and unknowns as well as the visual environmental effects of the proliferation of potentially up to 150 extra pieces of infrastructure sited in some of our most highly visible locations and in green zones.

The health issues are very high on the public agenda, particularly as this is a very young industry and several European Countries have considerably tougher regulations in force. A public inquiry would also give the relevant Ministers and the JCRA time to review the situation, carry out further public consultation if they wish and determine whether or not extra statutory powers are required to better regulate infrastructure sharing.

Finance and manpower statement

There will be costs involved in carrying out a public inquiry, but such is the public concern over this issue, I believe the public will accept that it will be money well spent. By avoiding possible future

protracted disputes and public consultations over planning permissions for new infrastructure, costs are likely to be saved by the planning department and therefore the public in the long term.

The costs are likely to be in the region of £10,000 for a part time seconded officer for 6 months, in the event that one is required, and £3,000 for sundry expenditure.

TELECOMMUNICATIONS (JERSEY) LAW 2002 – SOCIAL AND ENVIRONMENTAL POLICIES

Presented to the States on 5th November 2002
by the Industries Committee

R.C.43/2002

TELECOMMUNICATIONS (JERSEY) LAW 2002 - SOCIAL AND ENVIRONMENTAL POLICIES

Foreword

The Industries Committee is empowered under the Telecommunications (Jersey) Law 2002 to give the Jersey Competition Regulatory Authority (JCRA), after consultation with it, written directions about “social and environmental policies” to be followed by the JCRA. Those policies could be seen as fundamental to the setting of various licence conditions by it. The Industries Committee is required to make public such policies.

The attached Report sets out the social and environmental policies that have been agreed between the Industries Committee and the JCRA.

Report

Social policies

Relevant social objectives provided in the Island Plan are –

to minimise social deprivation through ensuring that adequate assistance is given to those in greatest need;

to make better provision for those with disability.

In considering licence applications and in setting conditions for such licences, the JCRA should be required to aim at supporting the above social objectives. Suggested written directions on Social Policies are –

“In considering licence applications and in setting conditions for such licences, the JCRA should have due regard for –

the States’ strategic objectives to “*minimise social deprivation through ensuring that adequate assistance is given to those in greatest need*” and “*to make better provision for those with disability*”;

the provision of basic telephony for -

- those who are particularly likely to need to summon assistance in their homes or elsewhere due to disability, age or other factors;
- those requiring special facilities because of physical, mental or other challenges in using telecommunications services;
- public access for the purpose of summoning emergency services.”

Environmental policies

Relevant environmental objectives provided in the Island Plan are –

- to preserve open land while recognising and responding to the need to provide the Island’s economic and social policy objectives;
- to discourage development in the rural environment;
- to protect the best of the Island’s architectural heritage;
- to protect the Island’s natural ecosystems, and conserve their associated flora and fauna;
- to limit the impact of noise and other nuisances;
- to ensure compliance with international commitments;
- to raise levels of environmental awareness and responsibility.

In considering licence applications and in setting conditions for such licences, the JCRA should be required to aim at supporting the above environmental objectives. Suggested written directions on Environmental Policies are –

“In considering licence applications and in setting conditions for such licences, the JCRA should have due regard for –

- **the States’ strategic environmental objectives as set out in the Island Plan, including but not limited to the following –**
 - **to preserve open land while recognising and responding to the need to provide the Island’s economic and social policy objectives;**
 - **to discourage development in the rural environment;**
 - **to protect the best of the Island’s architectural heritage;**
 - **to protect the Island’s natural ecosystems, and conserve their associated flora and fauna;**
 - **to limit the impact of noise and other nuisances;**
 - **to ensure compliance with international commitments;**
 - **to raise levels of environmental awareness and responsibility;**

- **the need to minimise as far as is practicable any present and future detrimental impact on the natural and built environment of Jersey and on the health of its population.”**

STATES OF JERSEY



COMMITTEE OF INQUIRY: MOBILE TELECOMMUNICATIONS (P.144/2006) – COMMENTS

Presented to the States on 21st November 2006
by the Council of Ministers

STATES GREFFE

COMMENTS

Deputy Ryan has asked the States to establish a Committee of Inquiry in order to investigate –

- '(i) *the health risks associated with the emissions from mobile network antennae and dishes; and*
- (ii) *the environmental impact of the proliferation of multiple network infrastructures'.*

The Council of Ministers has given detailed consideration to this matter, and it believes that a Committee of Inquiry would be wholly inappropriate. Deputy Ryan has highlighted 2 main areas of potential concern, namely the health implications and the environmental impact of mobile phone masts, and the Council's comments on these 2 areas are given below –

(a) The health implications

The Council of Ministers is mindful that members of the public and some States members have been concerned at alarmist but spurious reports about the alleged "health risks" of mobile phone masts. The effect of these has been to generate sincerely held, but nonetheless misguided, fears and concerns.

It has been suggested, for example, that mobile phone masts are responsible for a wide range of medical conditions, including the increased incidence of Alzheimer's Disease, Motor Neurone Disease, epilepsy, sleep disorders, throat infections, hyperactivity, and cancer. In support of such claims, reference is made to articles which have been published in magazines and on the internet.

The States needs to be cautioned that there are countless mischievous, reckless and irresponsible opinions and pseudo-scientific articles which abound on this subject. They include articles published on the internet that are so presented as to give the misleading impression that the authors are sponsored by august scientific bodies, or indeed by international or governmental agencies.

The Council believes that the States should continue to abide by and accept the impartial, peer-reviewed scientific evidence and advice which is provided by accredited governmental and scientific bodies. These are the bodies which the States of Jersey has been guided by over the years in the field of health-related science and technology. These bodies have self-evidently served Jersey well. It would be ill-advised and dangerous for the States of Jersey to depart from them on the matter of mobile telephony.

They include the World Health Organisation (WHO), the U.K. Independent Expert Group on Mobile Phones (IEGMP), the U.K.'s Health Protection Agency (HPA) and the International Commission on Non-Ionising Radiation Protection (ICNIRP). The work of these bodies is on-going and the Health Protection Team maintain a very active "watching brief" on their work. The Medical Officer of Health has stated that *"the evidence and judgment of these bodies is that public exposure to lower levels of radio waves – below the accepted international standard – from mobile telephones and base stations are not likely to damage human health"*.

There is no likelihood of adverse health impacts in the field of cancer, Alzheimer's, sleep disorders, hyperactivity, "non-specific distress", hearing loss, or epilepsy. This is both the consistent, considered and contemporaneous judgement made by the scientific authorities referred to above.

The levels of mobile telephony emissions are far lower than radio and television emissions with these latter emissions contributing a significant proportion of the "background" radio frequencies which the public are exposed to. As to "highly localised" emissions, the proliferation of such commonplace household devices as microwave ovens, TV remote controls, light dimmer switches, wireless toys, baby monitors and other such products is now increasing the proportion of personal exposure to radio frequencies.

The “health risks” associated with mobile telephony are very clear. The first order health risk is for a person to use a mobile phone while driving a vehicle (an illegal act in Jersey but nonetheless prevalent). The second order health risk is for a person to use a mobile phone by placing it next to one’s ear. Far, far below these risks comes radio frequency emissions from mobile telephony. Thus, if we acted on the basis of ‘risk’, we would abandon our use of mobile phones.

Further, we need to understand just how low actual radio emissions from mobile telephony are in Jersey. The International Commission on Non-Ionising Radiation Protection (ICNIRP) has set the universally accepted international standard on such emissions. This is the standard which has been derived from observing the effects of such emissions on human tissue. This cautionary standard has a “precautionary margin of safety” built in. The mobile telephony installations in Jersey, *even when operating at the maximum of their output, are typically 200 times lower than this ICNIRP standard.* Thus prudence, caution and a huge margin of safety are characteristic of mobile telephony on the Island.

(b) Environmental impact

In the report accompanying his proposition, Deputy Ryan states that attention should be given to the ‘visual environmental effects’ of mobile phone masts.

In considering this issue, it is important that there should be a clear understanding of the current position. Three companies have been granted consent by the Jersey Competition Regulatory Authority to operate a mobile telephone service in Jersey, namely Jersey Telecom, Cable and Wireless, and Jersey Airtel Limited (Airtel). The networks of the first 2 of these companies are now almost complete (*i.e. mobile phone masts, antennae, and associated equipment*), whilst Jersey Airtel have approximately 30% of their network already approved.

The anticipated total for the 3 mobile phone companies is approximately 150 installations. Over 100 are already erected and the Planning Department considers that the visual impact of the current installations is minimal. Of the total of 150 installations, 70-80 will be wooden-clad replica telegraph pole designs, approximately 40 of which are already in place. The remainder are installations on existing infrastructure and roof-top sites.

All existing infrastructure that can support additional equipment is currently being shared by 2 or more companies. The only way more mast-sharing is possible would be by building large lattice masts like those at Five Oaks and Les Platons. These structures are considered to be more detrimental to the landscape than the smaller telegraph pole designs.

Every planning application is individually assessed in order to minimise its impact on visual amenity. In some instances, the Planning Department has requested that installations are relocated or they are not permitted. The Minister for Planning and Environment has insisted that the design for individual sites be a wooden-clad replica telegraph pole with as much equipment as possible hidden inside the structure. It is considered that these poles reflect the character of Jersey more appropriately than any other style available on the telecommunication market.

(c) Economic implications of a Committee of Inquiry

In bringing forward his proposals for a Committee of Inquiry, Deputy Ryan has proposed that the Minister for Planning and Environment should ‘*suspend consideration of all new and existing planning applications involving the mobile telecommunications network pending the results of this investigation.*’ It is indicated in the report that the Committee of Inquiry would need about 6 months to carry out its work.

The Council of Ministers believes that a 6-month moratorium on all new and existing planning

applications will have adverse economic implications. In particular, the moratorium would prevent the third telecoms operator (Airtel Limited) from entering the market for 6 months or more, pending the outcome of the work of the Committee of Inquiry. In this connection, the Council considers it is important that there should be a level playing field for all 3 mobile phone operators, thereby enabling all of them to operate in accordance with their licence conditions and offer greater consumer choice to Islanders.

The economic consequences of a decision to appoint a Committee of Inquiry are summarised in the letter dated from the Jersey Competition Regulatory Authority, which is attached as an appendix. The comments of the JCRA are endorsed by the Minister for Economic Development.

(d) Conclusion

In conclusion, the Council believes that a decision to appoint a Committee of Inquiry would be highly undesirable. Mobile phone masts are not considered by accredited governmental and scientific bodies to pose a health hazard, whilst their impact on the landscape is considered to be minimal. Should the States agree to a 6-month moratorium on all new and existing planning implications, this could have significant economic implications.

The Council of Ministers recommends therefore that the proposition be rejected.

APPENDIX 2

Mobile Phone Mast Review - Selected Bibliography with Links to Major Reports

Guidelines for Limiting Exposure to Time-Varying Electric, Magnetic, and Electromagnetic Fields (up to 300 GHz). Health Physics 74 (4): 494-522; 1998. (ICNIRP)
<http://www.icnirp.de/documents/emfgdl.pdf>

'Mobile Phones and Health' - Report of the Independent Expert Group on Mobile Phones (Stewart Report 2000)
<http://www.iegmp.org.uk/report/text.htm>

Establishing a Dialogue on Risks from Electromagnetic Fields (WHO 2002)
http://www.who.int/peh-emf/publications/en/EMF_Risk_ALL.pdf

AGNIR (2003). Health effects from radiofrequency electromagnetic fields. Report of an Advisory Group on Non-ionising Radiation.
http://www.hpa.org.uk/radiation/publications/documents_of_nrp/abstracts/absd14-2.htm

Mobile Phones and Health 2004 – Documents of the NRPB
http://www.hpa.org.uk/radiation/publications/documents_of_nrp/abstracts/absd15-5.htm

Health and Electromagnetic Fields (European Commission 2005)
http://ec.europa.eu/health/ph_determinants/environment/EMF/brochure_en.pdf

Scientific Committee on Emerging and Newly Identified Health Risks (SCENIHR 2006)
Preliminary Opinion on Possible effects of Electromagnetic Fields (EMF) on Human Health
http://ec.europa.eu/health/ph_risk/committees/04_scenihr/docs/scenihr_o_006.pdf

Framework for developing health-based EMF standards (WHO 2006)
http://www.who.int/peh-emf/standards/EMF_standards_framework%5b1%5d.pdf

Fact sheet N°193 Revised June 2000. Electromagnetic fields and public health: mobile telephones and their base stations: [WHO | Electromagnetic fields and public health: mobile telephones ...](#)

Address to Welsh Assembly (Parliament) by B. TROWER On Wireless Telecommunications 3rd October 2006 http://www.mastsanity.org/index.php?option=com_content&task=view&id=109&Itemid=90

Possible Effects of Electromagnetic Fields from Phone Masts on a Population of White Stork (*Ciconia ciconia*) ALFONSO BALMORI : http://www.powerwatch.org.uk/news/20051006_storks.pdf

Public exposure to radio waves near GSM microcell and picocell base stations – Institute of Physics:
<http://www.iop.org/EJ/abstract/0952-4746/26/2/005>

Mobile Phone Base Stations – Siting and Safety – National Grid Wireless:
<http://www.uk.nationalgridwireless.com/downloads/Mobile%20Phone%20Base%20Station%20-%20Siting%20and%20Safety.pdf>

WHO Workshop on Base Stations and Wireless Networks 15-16 June 2005 Geneva Switzerland:

http://www.who.int/peh-emf/meetings/base_stations_june05/en/index.html

Code of Best Practice on Mobile Phone Network Development – Office of the Deputy Prime Minister:
<http://www.communities.gov.uk/index.asp?id=1144926>

Electrosmog in the environment - Swiss Agency SAEFL:
<http://www.statesassembly.gov.je/scrutiny/documents/docs/34102-13793-1912007.pdf>

JNCI Journal of the National Cancer Institute 2006 Abstract: Danish Report
<http://jnci.oxfordjournals.org/cgi/content/abstract/98/23/1707>

Cellular Telephone Use and Cancer Risk – US National Cancer Institute
<http://www.cancer.gov/cancertopics/factsheet/Risk/cellphones>

Ten Commitments to best siting practice – Mobile Operators Association
http://www.mobilemastinfo.com/planning/best_practice.htm

Science and Technology Committee – Mobile Phones and Health 1999 Recommendations
http://www.hpa.org.uk/hpa/news/nrpb_archive/response_statements/1999/response_statement_9_99.ht

The Zapping of America: Microwaves, Their Deadly Risk and Cover-Up
Paul Brodeur.

Further useful Links:

Independent Expert Group on Mobile Phones
www.iegmp.org.uk

LINK collaborative research web site
www.ost.gov.uk/link/

Department of Trade and Industry
www.dti.gov.uk/industries/telecom/mobile_phones_health_environment.html

Home Office
www.homeoffice.gov.uk/docs/TETRA.html

Advisory Group on Non-ionising Radiation report
[Health Effects from Radiofrequency Electromagnetic Fields](http://www.dti.gov.uk/industries/telecom/mobile_phones_health_environment.html)

Mobile Phone Base Stations - How Mobile Phone Networks Work
<http://www.radio.gov.uk/topics/mpsafety/school-audit/mobilework.htm>

Mobile Phone Base Stations - Frequently Asked Questions
http://www.Ofcom.org.uk/consumer_guides/mob_phone_base_stat/faqs/?a=87101

Sitfinder (Mobile Base Station Database)
<http://www.sitfinder.radio.gov.uk/>

Legislation and regulation

Department of Trade and Industry - Communications and Information Industries (CII) Directorate www.dti.gov.uk/cii/

The text of UK legislation is available from the HMSO

<http://www.hmso.gov.uk/index-content.htm>

A summary listing of some radio spectrum legislation can be found at
<http://www.radio.gov.uk/topics/legislation/leg-index.htm>

European Radio Office
www.ero.dk

The Channel Islands
Guernsey Office of Utility Regulation (OUR)
<http://www.regutil.gg/>

Jersey Competition Regulatory Authority (JCRA)
<http://www.jcra.je/>

Frequency plans
United Kingdom Table of Radio Frequency Allocations 9 kHz - 105 GHz
http://www.radio.gov.uk/publication/ra_info/ra365.htm

The GSM frequency plans used by operator's world wide including the UK may be found at
<http://www.ero.dk/gsm>

Health and related matters

National Radiological Protection Board (NRPB)
www.nrpb.org.uk

International Commission on Non-Ionizing Radiation Protection (ICNIRP)
www.icnirp.de

World Health Organisation (WHO)
www.who.int/emf

Department of Health - Mobile Phones and Health
www.doh.gov.uk/mobile.htm

Stewart Report ("Mobile Phones and Health")
www.iegmp.org.uk

APPENDIX 3

Health Protection

Public Health Services

Excerpt from Report on Mobile Phones and Health Mobile Phone Base Stations

Mobile Phones and Health

Mobile Phone Base Stations

Introduction

The States of Jersey have recently opened up the mobile telephony market to competition and as a consequence a number of network suppliers have been provided with licenses to set up their networks across the island. As part of that process the suppliers have been required to make application to the Planning and Environment Department for the positioning of base stations critical for the effective operation of their systems.

A number of concerns have been voiced from residents because of the uncertainty surrounding the safety of the equipment involved, and the potential siting of this equipment close to sensitive receptors. Complaints have focussed on the 'health impacts' of such a system and that on the basis of this uncertainty the further expansion of the mobile telephony system should be curtailed. However, this would appear to be at odds with the general principle of risk management and is certainly at variance with the view of the international community with regards to the use of mobile networks. This view would also throw into doubt the continued use of the existing mobile phone network on the island.

If one considers the risks to human health posed by this technology in comparison to other personal behaviours such as smoking, diet and sexual health that have been shown to result in premature death, such a stance does not compare. In other activities, society puts in place controls and does not deny activity by ensuring adequate safeguards. A case in point is that of the use of motor vehicles, there are significant similarities between mobile phones and the motor vehicle, both provide a discrete level of individual ownership, operation and control; they provide a rapid means of communication or travel respectively far in excess of alternatives; they require a network of facilities in order to operate; those network facilities have the potential to impact both on the user and on the premises they neighbour. Both provide a measure of perceived security to their owner.

Conclusions

There is consensus amongst all of the expert groups who have looked at the potential for adverse health effects that the balance of evidence to date suggests that 'exposure to Radio frequency radiation below NRPB and ICNIRP guidelines do not cause adverse health effects to the general population'. To that end it is incumbent upon the States to ensure that any operator fully complies with those international standards, and openly shows compliance. The most appropriate way of ensuring this would be through the planning application process, which is subject to public scrutiny.

Currently there is little information available to the public, and the government about the siting of base stations and their potential to affect the health of residents; this leads to suspicion and mistrust. There needs to be a central database of information available covering the siting, number of transmitters and

power outputs of the equipment.

In the case of the Cable and Wireless network, the information put forward in support of the planning applications indicates that in line with the agreement held with the expert groups, the level of emission from the hardware should be an order of magnitude of 1000 times less than the guidelines. There will however, need to be measurement of the actual levels following commissioning to show compliance.

There is also a need to ensure that the current operator JT, who has not had any scrutiny of past installations, is also required to show compliance with the **guidelines** even though it may be recognised that part of that compliance the equipment in use is likely to be of an equal standard internationally to proposed installations.

Recommendations

The States of Jersey should ensure that:

- All base stations are to be subject to the scrutiny of the planning applications process to ensure compliance with internationally agreed standards,
- There should be improved consultation by the network operator with the community prior to the selection of a site for a base station,
- Emissions from base stations must as a minimum meet the ICNIRP guidelines for public exposure, as expressed in the EU Council Recommendation. However, the States should seek to ensure that Network operators voluntarily agree to comply with levels lower than international guidelines,
- Measurement of the actual levels of radiation from base stations must be undertaken following commissioning to show compliance and be a condition of the planning permit,
- Mobile Phone network operators deliver with the States of Jersey a **database** of information available to the public on radio base stations,
- There is cross industry agreement on the sharing of sites and masts for radio base stations wherever possible.

Stephen D Smith
Assistant Director, Health Protection

12 April 2006

GLOSSARY

This report has been written as far as possible in plain English with the minimum of 'jargon'. All acronyms are spelt out in full when they first appear, but for the sake of clarity their meanings are repeated here.

Full definitions are at the appropriate points in the text.

3G – The third generation of mobile networks in which the ability to make standard voice calls is supplemented by the ability to make video calls or to download data at speeds approaching those of early broadband internet connections.

ADSL - Asymmetric Digital Subscriber Line

AGNIR – Advisory Group on Non-Ionising Radiation

CELL – the unit of coverage allocated to an area adjacent to a mobile base station

EDD – the Economic Development Department

EMF – Electro-Magnetic Field

EMR – Electro-Magnetic Radiation

EMS – Electro-Magnetic Sensitivity

GSM – Global System for Mobile (Communications)

HPA – Health Protection Agency

H&SS – Health and Social Services

ICNIRP – International Commission on Non-Ionizing Radiation Protection

IEGMP – Independent Expert Group on Mobile Phones

JCRA – Jersey Competition Regulatory Authority

MHz – Mega Hertz

NRPB – National Radiological Protection Board

P&E – Planning and Environment

SAR - stands for Specific Absorption Rate, which is the unit of measurement for the amount of RF energy absorbed by the body when using a mobile phone

SMS – Short Message Service

TETRA - Terrestrial Trunked Radio

UMTS - Universal Mobile Telecommunications Service

WHO – World Health Organisation

Index of Submissions

Item No	Date Recd	Title of Doc	From
1	11.01.07	submission individual - no peer review evidence just dissemination of fear	Derek Bernard
2	10.01.07	Masts on her property @ Mont Mallet	Kathy Rondel
3	28.11.06	Consultations between Steve Smith and K Johnson on moratorium	Steve Smith
4	4.1.07	Letter from Minister P&E to Mrs Joanna Banks	Planning
5		Questions to P&E re masts	JMMCG
5.1		www.jerseymastconcern.co.uk Dr Blackwell information	JMMCG
5.2	1.2.07	Interview with Radiologist Prof Dr Eckel	JMMCG
5.3	1.2.07	Next up news - Proposed law - French National Assembly	JMMCG
5.4	13.7.05	National Assembly - Proposed law 2491	JMMCG
6		Petition against masts	JMMCG
7		Masts and health issue concerns e mail to Deputy Ryan	Patricia Hamilton
8		Telephone Masts and Base Stations Jersey Environment Forum	Hugh Forshaw
9	29.11.07	Concern over the proliferation of masts	Jim Drew
10	21.12.07	discussing moratorium and Mr Smith Report email and letter to Mrs Carlyon dated 19.12.06 from P&E Minister	Jersey Community Relations Trust
10.1	13.01.07	concern about health issues interested in 103 phone pole on the topic	Mrs Carlyon
11	28.11.07	ICNIRP critics base evidence on media reports and articles	Kelly Johnson Planning
11.1	21/22.11.06	Statement from Minister in the States re health and planning	Minister
11.2	28.11.06	explanatory email from Kelly outlining research to explain the physics of mobile base stations	Kelly Johnson Planning
12	28.11.06	Letter to Planning re Health concerns	Steve Smith
13	11.01.07	no scientific evidence to prove any danger	Alexis Marett
14	10.01.07	concerns over immune system implications	Mrs A Pafitis
15	14.01.07	disappointed mast in field 99 at Maufant approved	Mr A Boleat
16	29.12.06	Letter from Senator Cohen to Miss Simpson re concerns health issues	Sen Cohen
16.1	02.01.07	Questions to P&E re masts	Miss J Simpson
17	02.11.06	Committee of Inquiry: Mobile Telecommunications	Deputy P. Ryan
17.1	21.11.06	P144/2006 Committee of Inquiry	Council of Ministers
17.2	21.11.06	Written questions Minister Planning and Env by Deputy Le Hérisier on planning permission	States
17.3	22.11.06	P144/2006 Committee of Inquiry - transcript	States
17.4	21.11.06	Oral question to Housing Minister re Masts	States
18	Apr-06	Report on Mobile Phones and Health - Mobile Phone Base Stations	Health Protection Public Health Services
18.1	27.11.06	Mobile Phones and Health pollution and monitoring	Le Bas Centre
19	03.11.06	Jersey Mobile Phone Base Stations (Masts)	??
20		Phone mast locations from JEP and Web site and Telecommunications Masts and Safety Zones as outlined in Island Plan	

21	16.11.06	Council of Ministers report	COM
22		Mobile Phone Masts and International Approaches - there is no verified gov approach worldwide	
23	20.11.06	Health Risks and commercial responsibilities Letter to Senator Shenton	Chief Minister
24	31.03.06	Deputy Troy - Western Fire Station Questions	Richard Glover
25	19.11.06	Granville Langly-Smith - Telephone Masts - Grave Dangers to our Health and letter to Deputy Breckon dated 28.11.06	Langly-Smith
26	19.11.06	Mobile Masts - Field 99 protest - also email to Deputy Breckon outlining concerns dated 06.12.06	Lisa Langstone
26.1	26.10.06	Grouville Parish Hall Meeting and Masts	Lisa Langstone
26.2	28.1.07	JEP reports and sponsored witnesses	Lisa Langstone
27		The effects of microwave radiation from Telecommunication base stations - with supporting documentation	Douglas Ford
28	26.10.06	La Rochelle St L - concern over amount of applications due to competition letter and response from Senator Shenton	Jo Banks
28b		Info on Dr George Carlo	Jo Banks
29	03.10.06	Transcript evidence from JCRA at JT public Hearing	Economic Sub Panel Hearing
30	11.01.07	Field 103 concerns	W Marsh
31	10.01.07	Concern application by Airtel in St Mary	N J Pagnam
32	29.12.06	2 Letters concern as a result of attached report on cancer risks cluster cases	Marilyn Melvin
33	09.01.07	Dr Oberfield research article with letter	Mr C Thoma
34	26.11.06	concern over masts in Grouville (Airtel) letter to Senator Shenton - Also Fax from Viberts Lawyers just copy for members nothing else	D. Kirkham
35	15.11.06	JEP Articles - Dial M for Mistrust - Education ban mobile masts at schools -Milbrook Park mast - No More Phone Masts- Danger from masts is real - balance of health and modern life - whats the hurry- mobile phone mast petition presented	JEP Articles in date order
36	15.1.07	E mail regarding More Masts	Christopher Davey
36b	23.1.07	More masts - a crazy waste of resources	Christopher Davey
37	16.1.07	E mail regarding More Masts	Judy Dickson
38	15.1.07	Letter about mast siting	Collette Garnier
39	17.1.07	E Mail re: ME and masts	Carole Bourke
40	16.1.07	E mail re local mobile mast group	Christine Garnier
41	16.1.07	E mail with Planning summary	Kelly Johnson Planning
42	14.1.07	Letter re: field 467, St Lawrence	T Evans
42b	21.1.07	Further letter about concerns of mast near St Lawrence primary school	T Evans
43	14.1.07	Letter with synopsis of danger of EMFs & mobile phone masts	M Mignot
43b	6.2.07	Agreement to upload letter to website	M Mignot
44	15.1.07	Letter objecting to proposed mast in field 426, St Mary	N de la Haye
45	16.1.07	JEP articles dated 15.04.06 + 13.04.06	
46	18.1.07	E Mail - Cable & Wireless want to install mast on land at Gorey	David Rondel
47	19.1.07	E Mail with several docs about radiation	M Weatherall

48	19.1.07	E Mail with doc about reduction in milk yield	M Weatherall
49	19.1.07	E mail with details of Electrosensitivity	MastSickness UK
50	16.1.07	Letter re mast erection	J Heys
51	18.1.07	E Mail with Submission about radiation	L Woolf
52	18.1.07	E Mail re: Masts and Health Risks	N Langly-Smith
53	18.1.07	Health & Safety Inspectorate submission	Colin Myers
54	19.1.07	E Mail re: Hautlieu Meeting	L Langstone
55	18.1.07	Submission	Dr Langly-Smith
55b	23.1.07	Report by Dr Carlo on Danish Study	Dr Langly-Smith
56	18.1.07	Submission	Dr R Rowley
57	19.1.07	Opposed to increasing masts	Jacky Austin
58	19.1.07	Effects of Electromagnetic radio frequency emissions	Mrs G Lyden
58b	23.1.07	Details of book "The Zapping of America"	Mrs G Lyden
59	19.1.07	Personal Account of effects of electromagnetic fields	Margaret White
60	20.01.07	Personal Account of effects of electromagnetic fields testing and concerns	Angie Pafitis
60b	26.1.07	Quotes from Stewart Report	Angie Pafitis
61	20.01.07	Submission and questions for departments and operators	Christine Garnier
61b	26.1.07	Letter about Michael Repacholi	Christine Garnier
62	21.01.07	Submission and questions for departments and operators	Dave Rotherham
63	19.01.07	Submission re Masts in St Lawrence	Ruth Wilson
63b	22.1.07	Copy of letter sent to Senator Cohen	Ruth Wilson
64	22.01.07	Submission re Young children (Jersey Childcare Trust)	Fiona Vatcher
65	22.01.07	Submission - childrens health	Eluned Price
66	22.01.07	Submission & CV	M Repacholi
66b	June 2000	WHO fact sheet 193	M Repacholi
67	22.01.07	Letter about children and microwaves	A worried parent
68a	22.01.07	A critical overview of death of Officer Dring	B Trower
68b	22.01.07	Microwave levels	B Trower
68c	22.01.07	Presentation for Consultant Oncologists - July 2003	B Trower
68d	22.01.07	Report on microwave radiation - January 2005	B Trower
68e	22.01.07	Address to Welsh Assembly - October 2006	B Trower
68f	22.01.07	ICNICP Statement - Protection against non-ionizing radiation	B Trower
68g	24.1.07	Comparison standards for public exposure levers - Powerwatch June 2000	B Trower
68h	24.1.07	Copy of front page of The Times of 20/01/07	B Trower
68i	24.1.07	Report by A Balmori - White Stork	B Trower
68j	24.1.07	EM Radiation Research Trust	B Trower
68k	24.1.07	Report by G J Hyland - May 2003	B Trower
68l	24.1.07	Letter from H Lai to Vermont House of Representatives	B Trower
68m	24.1.07	Report from Russia by V Binhi - Feb 2003	B Trower
68n	24.1.07	Review by ECOLOG Institut - April 2000	B Trower
69	11.01.07	Ariel on Hotel La Tour	Lady Gooch
69b	9.2.07	Concern about masts	Lady Gooch
70	19.01.07	Permission for daughter, Ruth Wilson to present information	Jane Clarke
71	22.1.07	e mail re: Guernsey OUR Mast Audit	J Telecom
71b	Feb 2005	OUR Audit of Emissions from Radio Masts in Gsy	J Telecom
71c	25.01.06	Media release ref: Mast Audit by OUR	J Telecom

72	22.01.07	Concern about masts near school and youth club in St Lawrence	Judy Cornwall
73a	23.1.07	Reply to panel re income from masts and insurance liability	Mike Liston
73b	23.1.07	Answers to mobile phone mast questions	Mike Liston
74	23.1.07	Part B COM minute from 06/04/06	Janet Marshall
75	23.1.07	Concern about masts near school and youth club in St Lawrence	Mary Evans
76	24.1.07	Installation of cordless phones	Carole Bourke
77	23.1.07	Concern about extra masts	Mavis Baudains
78a	23.1.07	Mobile Manufacturers Forum details	Thomas Barmuller
78b	24.1.07	Fax with URLs for MMF brochures & EMF policy in Austria & Switzerland	Thomas Barmuller
78c	30.1.07	Download of MMF information	Thomas Barmuller
79a	25.1.07	E mail asking panel to consider his concern	Lakshman Karajigikar
79b	25.1.07	Concerns regarding radiation	Lakshman Karajigikar
80	24.1.07	Concerns about mast due to be placed in Victoria Village	
80b	09.02.07	Request for submission to be kept off website	
81a	24.1.07	Submission	Will Harris
81b	24.1.07	NRPB documents	Will Harris
82	22.1.07	Letter re Planning Application Field 687, Grouville	Mr & Mrs Leck
83	26.01.07	Submission relating to detrimental affect on local landscape etc	Men of the Trees
84	26.01.07	Competition & Spin	Duncan Baxter
85	26.1.07	Objection to planning permission for mast in Trinity	Robin Smith
85b 1 to 16	30.01.07	File with background info relating to submission	Robin Smith
85c	31.01.07	E Mail with info of link to JT coverage map	Robin Smith
86	24.1.07	Concern about health issues relating to masts	Miss A Phillips
87	22.1.07	Objection to permission for mast in Grouville	Mr & Mrs A Le Gal
88	24.1.07	Education Ministers stance on mast sites & Les Creux Country Park	Mick Heald
89	30.01.07	Letter from Comite des Connétables	K Vibert
90	16.10.06	EMF Discussion Group Minutes	
91	2.2.07	Report on Phone Masts on States Property + blank agreement + Site Licence Agreement	P Tucker, Pty Holdings
92	9.2.07	Letter from Airtel re Insurance	D Watson
93	13.2.07	Submission	Dr J Rubin
94	9.2.07	Letter from Jersey Telecom re Insurance	Jersey Telecom
95		Stewart Report - 1 Summary & Recommendations	
95b		Stewart Report - 4 Radiofrequency Fields fr Mobile Phone Tech	
95c		Stewart Report - 6 A Precautionary Approach	
95d		UK Gov response to committee report	
95e		UK Planning Policy Guidance: 8 Telecommunications	
95f		UK Code of Best Practice on mobile phone Network development	
96		Submission - Presentation	Dr James Rubin
97		Submission - Presentation	Dr John Stather

98	19.2.07	Letter from C & W re Insurance	David Smith
98B	19.2.07	C & W Agreement of Lease - Confidential	
99	21.2.07	Notes on meeting with Dr Gerd Oberfeld, Salzburg Confidential	Deputy Le Fondre
100	21.2.07	Report on the Inadequacy of current Safety Guidelines	Dr G Hyland
101	25.2.07	Letter to Senator Cohen	Dr Blackwell
102		Letter re Dr Carlo's visit & attachments	Eileen O'Connor
103		E Mail re Dr Carlo's address to MP's	Eileen O'Connor
104		Re Dr Carlo and Sefton Report	Eileen O'Connor
105		Info on Dr Repacholi	
106		Comment on transcript from St Brelade Public Meeting & E mails with Senator Syvret	Caroline Coote
107	8.3.07	Letter to Deputy Breckon	Dr James Rubin
108		House valuation info	Jo Banks
109	9.3.07	E Mail re Public Liability Insurance	D McDermott
110		Letter about DVD's	Jo Banks
111		MRET information	Bill Harris
112	14.3.07	Letter from Jersey Medical Society	
113	19.3.07	E mail re Washington Hotel, Clarendon Road	Martyn Gallery
114	21.3.07	Reply E mail re Washington Hotel, Clarendon Road	Kelly Johnson
115		Letter from Jersey Telecom re Dr Carlo	R Dodkins
116		Letter from C & W re Dr Carlo	D Smith
117		E mails from JCRA re Oftel	G Marett

Index of Background Information

Background Information Index			
Item No	Date Recd	Title of Doc	From
1		Scientific Committee on Emerging and Newly Identified Health Risks SCENHIR	EU Com
2		Australian Government - About Mobile phone networks Fact Sheet EME Series No. 6	Aus Gov
3		Public exposure to radio waves near GSM microcell and picocell base stations	Inst of Physics
4		Health and electromagnetic fields	EU Com
5		Exposure to Radio Waves near Mobile Phone Base Stations (do not upload as it's an ISBN just weblink to this one)	NRPB Report
5.1		Mobile phone masts and health concerns - EM Radiation Research Trust	EM Radiation
5.2		Mobile Phone Base Stations - Siting and Safety	Nat Grid Wireless
6		Establishing a dialogue on risks from electromagnetic fields	WHO
6.1		Email referring to Dr M. Repacholi from WHO	Patricia Hamilton
6.2		Life Energies - corruption at the World Health Organisation	Shivani Arjuna
6.3		Electromagnetic fields and public health, base stations and wireless technologies	WHO
6.4		A brief review of continuing activity	WHO
6.5		Workshop on Base Stations and Wireless Networks 15-16 June 2005 Geneva Switzerland	WHO
6.6		Framework for Developing Health Based EMF Standards	WHO
6.7		11th International Advisory Committee 7/9 June 2006 Geneva Report of activities from UK HPA	WHO
6.8		International EMF Project 2003/2004 Report of UK Activity and 2005 UK Report with planning guide	WHO
6.9		Contact details	WHO
7		Research Briefing - UK Judge Rejects Alleged Health Effects from Base Stations - Judge Kirkham (Dr Hyland provided evidence)	MMF Mobile Manufacturers Forum
7.1		Technology and Construction Court - 2 members of the Public against 3G UK Limited Case No. 4 BM 50028	Birmingham High Court
8		Working Party on Telecommunications and Information Services Policies - The implications of WiMAX for competition and regulation	OLIS JT03204793'
8.1		Email referring to WiMAX	Ian Clarkson
9		Goldsworth Residents Against the Masts - the Awful Truth	www.nomasts.org.uk
		Stewart Report - Report on Mobile Phones and	

10		Health	iegmp
10.1		Mobile Phones and Health (ISBN do not upload)	HPA
10.2		Planning and Policy Guidance 8 - Telecommunications www.communities.gov.uk	Communities and Local Gov
10.3		Code of Best Practice on Mobile Phone Network Development - Office of Dep PM	Code - OPD00530
10.4		Review of the code of Best Practice on Mobile Phone Network Development - Office of Dep PM	
10.5		Mobile phone base stations and health - Dep't of Health	DH
11		Electrosmog in the Environment - p1-13	Swiss Agency SAEFL
11.1		Electrosmog in the Environment - p16-30	SAEFL
11.2		Electrosmog in the Environment - p31-45	SAEFL
11.3		Electrosmog in the Environment - p46-58	SAEFL
12		Report of EPC Committee - planning aspects of telecommunications apparatus	Welsh Assembly
12.1		Response of the Minister to EPC Committee Report	Welsh Assembly
12.2		M Haden to Panel with links to Welsh report - 01.12.06	Mike Haden
13		Wyre Forest District Council Mobile Phone Masts Review	Wyre Forest District Council
14		WHO Electromag Fields. Mobile phones stations health risks fact sheets - 28.11.06	WHO
15		Mobile Phone Base Stations and Human Health	Prof. John Moulder
16		Center for Electromagnetic Safety - Russian standards	Center for Electromagnetic Safety
17		Myths about TETRA and The Reality	Mast Sanity TETRA website
17.1		Does TETRA pulse and does it matter	TETRAWatch
18		BBC News report 'Mobiles cleared of cancer risk' - 13.12.06	BBC News
18.1		BBC News Report - Manchester plans free city Wifi- 1.12.06	BBC News
18.2		BBC News Report 'Wifi worry' - 13.12.06	BBC News
18.3		The Times - Mobiles don't cause cancer - 06.12.06	Times 6.12.06
18.4		Conservatives - Tackling Anxiety over Mobile Phone Masts	Article 2.4.06
18.5		York Evening Post - Mobile Phone Masts - 21.12.04	thisisyork.co.uk
18.6		Mast Sanity - Government Must Act Immediately - 11.01.05	www.mastsanity.org
18.7		BBC Articles 'Phone Masts-A Health Risk' and 'Child Warning over Mobile Phones'	BBC News
19		JNCI Danish Report - 13.12.06	Oxford Journals
19.1		Cellular Telephone Use and Cancer Risk - Update of a Nationwide Danish Cohort	National Cancer Institute

20		Council of Ministers briefing- 16.11.06	Minister
20.1		Mobile Phone Masts and International Approaches - Planning Dep't	Minister
20.2		Email from Kelly Johnson 'Research into masts' - 28.11.06	Planning
20.3		RE Mast types and locations	Planning
21		H&SS Department - Report on Mobile Phones and Health - April 2006	Steve Smith HSS
22		petition raised by jersey mast concern couk top page	jmmcg
22.1		Questions from JMMCG	JMMCG
23		Table of epidemiological studies near base stations	WEB
24		BMA - Mobile phones and Health, an Update - January 2005	BMA
25		AP Mobile Press Release - Mobile Phone Masts; Planning for the Future - 20.07.04	All Party Parl Mobile Group
25.1		AP Mobile - Report; Mobile Phone Masts - July 2004	All Party Parl Mobile Group
26		Mobile Operators Association - Ten Commitments to best siting practice	Mobile Ops
26.1		MOA - Frequently Asked Questions	Mobile Ops
26.2		MOA - Health Reports	Mobile Ops
26.3		MOA - Base Stations and Masts	Mobile Ops
27		UK media articles-includes The Register, The Times, Norwich Evening News	The Register
28		Science and Technology Committee - Mobile Phones and Health - Sept 1999	Commons
29		NRPB - Health Effects from Radiofrequency Electromagnetic Fields	NRPB Report
30		Science and Technology Committee, Third Report; Mobile Phones & Health	STC
31		EM Facts Consultancy - Dairy Cow behaviour near transmitting antenna	Institute of Pharmacology, toxicology and Pharmacy
32		French Law Proposition - mobile telephone equipment and public health - 06.07.2006	French National Assembly
33		Barrie Trower CV confidential	Barrie Trower
34		2005 Scrutiny Report to Birmingham City Council re Phone Masts	Birmingham City Council
35		List of Authorities	Prof O Johansson
35.1		Omega News	
35.2		Article from The Courier re Prof Johansson	
36		Lloyds Insurance Enquiry	Lloyds Help desk
37		List of Telephone Kiosks used by JT	T Knights - JT
38		Letter from C & W to residents	C & W

39		Web article - Vodafone & Orange to share UK radio access network	The Register
40a	09/02/07	Fax from Jo Banks with info re Prof O Johansson	Jo Banks
40b	09/02/07	Interview with Olle Johansson - Mystery in the Skin	O Johansson
40c	09/02/07	Spotlight on O Johansson	Het bitje
40d		How shall we cope with the increasing amounts of airborne radiation?	O Johansson
40e		Research Studies done on Microwave Radiation	Irish Drs Environmental Assoc
41		TETRA radio repeater, St Peter's Valley	Cent M L'Amy
42	13/02/07	Results of Website vote on 103	C Ghidoni
43	14/02/07	Westminster Meeting by George Carlo	
43b	20/02/07	E Mail from E O'Connor re Westminster Meeting	
43c	14/10/06	Letter from Dr G Carlo to EM Radiation Research Trust	Dr G Carlo
44	15/02/07	Limerick mast of school refused on health grounds	Jo Banks
45	19/02/07	Brussels severe on GSM Masts	
45b		Better translation of article re Brussels	
46		Subjective Symptoms, sleeping problems etc	Hutter & others
47		Sleep disturbances in the vicinity of short-wave broadcast transmitter Schwarzenburg	Abelin & others
48		Electrohypersensitivity	O Johansson
49		Electromagnetic Hypersensitivity	M Havas
50		The ICNIRP Guidelines: RF Risk assessment built on a house of cards	D Maisch
51		3rd International Workshop of Biological Effects of Electromagnetic Fields	O Gerd & Others
52		10 Medical Rules for cell phone use	Vienna Medical Assoc
53		Neurobehavioral effects among inhabitants around mobile phone base stations	G Abdel-Rassoul & Others
54		Pooled analysis of 2 case control studies	Hardnell & Others
55		Establishment of exposure limits	Italian Regulation
56		Does regulation protect the population	Extract from Swiss Website
57		EMF Information Platform links to websites	
58		Regulation for the protection of the general population in Switzerland	Baumann & Others
59		Ordinance relating to protection from Non-ionising radiation	Swiss Federal Council
60		Swiss follow up study of TNO study	Swiss Federal Council
61		E mail re Salzburg	J Le Fondre
62		Does Acute Exposure to mobile phones affect human attention?	Russo & Others
63		Sefton Scrutiny Report	

64	26/02/03	Scrutiny of Mobile Phone Masts	Bradford Council
65		On Second Hand Radiation	R C Kane
66		Building a digital community	
67	13/04/07	Info re Fibre Optic Networks	W Harris

Telephone Masts Questionnaire Results

About You											
Which Parish do you live in?											
Grouv	10	Trinity	7	St B	11	ST C	4	St H	31	St J	3
St L	12	St Mart	10	St Mary	3	St O	5	St P	17	St S	20
Age:											
16-24	15	25-34	24	35-44	21	45-54	26	55-64	27	over 65	19
What is your residential status?											
owner occupier	83	States Rental	6	Private Rent	27	Lodgings	14				
Do You own a mobile?											
		yes	121	no	12						
Are you aware of the health risks?											
		yes	93	no	36						
Need for new services											
	Strongly disagree	Disagree	Don't Know	Agree	Strongly Agree						
I believe mobile phone network coverage is adequate	2	21	15	80	14						
I welcome more competition in the mobile phone market	4	21	11	70	26						
I welcome improved services in the mobile phone market	4	20	16	62	29						
Mobile Phone Masts											
Do you believe that mobile phone masts pose a health risk?											
	Yes	No	Don't Know								
	55	32	46								
Where did you gain this											
	Local Media	Uk Media	Internet	Friends/Family	Other						

opinion from?	53	56	22	12	36
Would you accept more phone masts in your Parish?			Yes	No	
			53	66	
Do you believe that there would be any health risks associated with having a phone mast close to your home?	don't know	yes	no		
	10	65	55		
Increasing competition in the market will require changes to phone masts. Would you prefer to see:	Bigger masts (more mast sharing)	Smaller masts (but more of them)	Neither (no change)		
	57	31	43		
Are you aware of any safety guidelines applying to mobile phone masts?		Yes	No		
		24	107		
In terms of safety standards should Jersey:					
Apply best UK and International guidelines	Yes	No	Don't Know		
	90	6	19		
	<u>OR</u>				
Develop its own independent guidelines					
	49	20	13		

List of Recipients of Draft Report

Draft Report sent for comment

Sent to		Replied
Senator F Cohen	Minister for Planning	Yes
Senator S Syvret	Minister for Health	Yes
Senator P Ozouf	Minister for Economic Development	Apologies
Mike Liston	JEC	Yes
Daragh McDermott	JT	Yes
David Watson	Airtel	Yes
David Smith	Cable & Wireless	Yes
W Brown & C Webb	JCRA	Yes
S Smith	Health Protection	Yes
W Harris	Engineering Dept	Yes
C Myers	Health and Safety	
B Trower		Yes
G Carlo		
J Stather		Yes
J Rubin		Yes
M Repacholi		Yes
Christine Garnier		Yes
J Banks		
G Langly-Smith		

[1] Committee of Inquiry: mobile telephones P.144/2006 (withdrawn)

[2] Stewart Report - Report of the Expert Independent Group on Mobile Phones 2000

[3] RFPEG of INCIRP, EU Council Recommendation 12th July 1999 on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz) - 1999/519/EC

[4] Public Hearing evidence JCRA Mr W Brown, 22nd January 2007, page 3

[5] Public Hearing evidence JCRA Mr W Brown, 22nd January 2007, page 7

[6] www.Ofcom.org.uk/consult/policy_making/guidelines.pdf

[7] www.jcra.je/pdf/050729%20Expressions%20of%20Interest%20mobile%20spectrum.pdf

[8] Class II licence issued by JCRA under the Telecommunications (Jersey) Law 2002 page 19

[9] Office of Utility Regulation - Telecommunications Licence Terms and Conditions for New Entrants Condition 4 Provision of Information page 5

[10] Public Hearing, 16th February 2007 Health and Social Services Minister evidence page 3.

[11] Public Hearing, 16th February 2007 Health and Social Services Minister evidence page 15.

[12] Briefing for the States of Jersey Sub-Panel on Mobile Phone Masts, Dr. M. Repacholi, Former Coordinator, Radiation and Environmental Health, WHO evidence submission No. 66

- [13] Public Hearing evidence from Senator P. F. C. Ozouf , 15th February 2007, page 12
- [14] Public Hearing evidence from Senator P. F.C .Ozouf , 15th February 2007, page 21
- [15] Audit of Emissions from Radio Masts in Guernsey; report and information notice
www.reutil.gg
- [16] Public Hearing transcript dated 24th January 2007, Mr. W. Harris, General Manager, Communications Service.
- [17] Sample licence contained within evidence submission 91 from Department of Property Holdings.
- [18] Scrutiny Web Site <http://www.scrutiny.gov.je>
- [19] Transcripts of all the public meetings are available at www.scrutiny.gov.je
- [20] Dr Repacholi in his comments back to the Sub-Panel stated that the question was misleading. He did not mention children in his written submission. . I did not mention children in my written submission. Further in my testimony I mentioned the results of a WHO workshop on Children and EMF. Further I did not make any categorical statement, I said that we still need more information and WHO had set a research agenda to find it.
- [21] Evidence submission Item 100, Dr. G.J. Hyland 20.02.2007 - available on the Scrutiny Web Site
- [22] Transcript from Public Hearing dated 24th January 2007, Mr. S. Smith, Head of Health Protection Service
- [23] Public Hearing transcript 24th January 2007, Mr. M. Liston, CEO, JEC available of the Scrutiny website.
- [24] Public meeting transcript of 15th February 2007 is available on the Scrutiny website.
- [25] Dr James Rubin, Electro sensitivity paper, Mobile Phones Research Unit, Kings College London.
- [26] www.smstextnews.com/2007/03/12m_satellite_reduces_need_for_mobile_phone_masts.html
- [27] Public meeting transcript dated 18th January 2007, page 37
- [28] Public Hearing and meeting transcript 26th February 2007 page 16
- [29] Evidence Submission No. 108 - Estate Agents Letter dated 2001.
- [30] Transcript Public Hearing 22nd January 2007, Cable and Wireless page 109.
- [31] Transcript from Public Hearing dated 22nd January 2007, page 113, Mr. D. Smith, Chief Executive Cable and Wireless.
- [32] Public Hearing evidence transcript M. Repacholi (WHO) 23rd January 2007 page 26
- [33] World Health Organisation Fact Sheet No 193, June 2000
<http://www.who.int/mediacentre/factsheets/fs193/en/print.html>
- [34] Public Meeting Transcript dated 15th February 2007 is available on the Scrutiny website
- [35] Transcript from Public meeting dated 15th February 2007, Dr J. Stather, HPA page
- [36] E-mail: ehstudy@essex.ac.uk URL: <http://www.essex.ac.uk/psychology/EHS/>
- [37] Research funding and safeguards - further information available on page 5, transcript Public Hearing conducted by telephone, 23rd January 2007, Dr. J. Rowley, GSM.
- [38] Transcript from Public Hearing conducted by telephone, 23rd January 2007, Dr. J. Rowley, GSM, page 7.
- [39] <http://jnci.oxfordjournals.org/cgi/content/abstract/98/23/1707>
- [40] A full list of the research mentioned by Mr. Trower can be found in the submissions index in the appendices Submission item no 68
- [41] Web address for the press article Athens Appeal Court ww.ekathimerini.com/4dcgi/_w_articles_politics
- [42] For information on the origin of the "Salzburger milliwatt," see "fmk dokumente 2" at <http://www.fmk.at/medieninfo/medieninfo.cfm?cat=backmat>

- [43] www.ideaireland.org/emr Irishresearch.htm
- [44] Report «Second Mobile Communications Seminar», Résidence Palace, Brussels, September 2004
- [45] EMF standards for Italy and Switzerland:
See: Italy: http://www.who.int/docstore/peh-emf/EMFStandards/who-0102/Europe/Italy_files/table_datoteke/Italy_DPCM_RF_eng.pdf
Switzerland: <http://www.bafu.admin.ch/elektrosmog/01079/index.html?lang=en> go to point 3 (legislation on NIR)
- [46] http://www.provinz.bz.it/umweltagentur/2908/elektro/index_d.htm
- [47] www.land-sbg.gv.at/celltower
- [48] Information in respect of exclusion zones provided by the States of Jersey Planning Department.
- [49] Details relating to mobile telephony and frequencies can be found at [ww.Ofcom.org.uk/find_document](http://www.Ofcom.org.uk/find_document)
- [50] www.niehs.nih.gov/emfrapid/html/Q&A-Workplace.html
- [51] Further explanation on these issues can be found at <http://www.radiationresearch.org/>
- [52] letter dated 21st March 2007 from Jersey Telecoms written submission no 115
- [53] letter dated 21st March 2007 from Cable and Wireless written submission no 166
- [54] Public Hearing oral evidence from Mr. D. Smith, CEO Cable and Wireless 22nd January 2007.
- [55] ICNIRP promulgates its information through its WebPage www.icnirp.org and its publications www.earthprint.com.
- [56] Transcript of Public Hearing 26th February 2007, Evidence from Dr. G. Carlo.
- [57] <http://www.discoverymagnets.co.uk/bioguard.htm> and www.magnetsforall.com/site/1346576
- [58] Evidence submissions 115 from R. Dodkins on behalf of Jersey Telecoms