

**Report of:** Environmental Health Business Manager

**To:** Housing Advisory Board  
Executive Board

**Date:** 5<sup>th</sup> September 2006 (HAB)  
11<sup>th</sup> September 2006 (EB)

**Item No:**

**Title of Report :** A Review of the Health Effects From Mobile Phone  
Masts and Base Stations

### Summary and Recommendations

**Purpose of report:** A previous decision by the Housing Committee in February 2000 called for a moratorium on the installation of telecommunication aerials on council owned residential properties for a five year period. The committee's decision also called for a report to be drawn up regarding the health issues surrounding telecommunications masts at the end of the moratorium period.

The purpose of this report is to provide an overview of the current position regarding mobile phones and the health risks. It is not to address development control issues, which are a matter for Planning Services. It presents a brief description of the technology and particular areas that may cause concern. It also gives a summary of the Stewart Report and the Government action that has been taken so far, including the programme of research that is underway, funded jointly by the Government and the mobile phone industry.

**Key decision:** No

**Portfolio Holder:** Councillor Murray (Improving Housing Portfolio)

**Scrutiny Responsibility:** Housing Scrutiny Committee

**Ward(s) affected:** All

**Report Approved by:**

**Portfolio Holder -** Councillor Murray  
**Legal -** Jeremy King  
**Finance -** David Higgins

**Policy Framework:** Improving the environments where we live and work

**Recommendation(s):** The **Housing Advisory Board** is asked to consider the contents of the report and advise the Strategic Director, Housing, Health and Community that in exercise of his delegated powers he might wish to recommend the Executive Board:-

(a) Endorse the findings;



(b) Leave in place the moratorium on new phone mast leases and review again once the results of the current research projects are published.



The **Executive Board** is asked to consider the contents of the report, the views of the Housing Advisory Board and the recommendation of the Strategic Director, and in the light of these, reach an executive decision.

## 1. Introduction

- 1.1 The use of mobile phones has increased substantially since the technology first came into use in the 1980s. Increased demand has led to the rapid deployment of growing numbers of antenna sites, many of which are located close to people's homes and workplaces. This in turn has led to concern that radio waves could be harmful to health.
- 1.2 In response to this concern the government established a independent expert group (IEGMP)<sup>1</sup> to examine possible effects of mobile phones and base stations on health, including well being. The group published the Stewart Report in April 2000, which concluded that the balance of evidence does not suggest that mobile phone technologies put the health of the general population of the UK at risk.
- 1.3 Nonetheless, the Stewart report recommended the precautionary approach, where the national and local government, industry and consumers become actively involved in addressing concerns about possible health effects of mobile phones.
- 1.4 Amongst the many recommendations the advice to government was to adopt the ICNIRP<sup>2</sup> guidelines on public exposure to radiofrequency radiation as a precautionary measure. It was also recommended that the planning procedures be revised so as to make the process more open and transparent. It was also recommended that a substantial health related research programme be undertaken.

## **2 Mobile Phone Technology**

- 2.1 Mobile phone technology works on the basis of a series of cells, each of which requires a base station to operate. There are three types of base station: the macrocell, microcell and picocell. The macrocell is the largest and provides the main coverage. The microcell and picocell are smaller units mounted lower down, providing extra infill coverage where the signal is weak or there is greater demand. In order for base stations to communicate they require antennas, fixed to buildings or masts, which beam the signal.
- 2.2 The radio signals fed into antennas produce beams that are radiated into the cell around the base station. The beam is narrow in the horizontal axis and is slightly tilted downwards. Typically a macrocell antenna mounted at high level the beam would reach the ground at approximately 50 to 300 metres distance away.
- 2.3 The base stations are linked together, which enables calls to be transferred from cell to cell to their final destination. Each base station can only cope with a limited number of calls at any one time. Therefore if demand exceeds the capacity of an existing base station an additional mast will be needed.
- 2.4 When a call is made on a mobile phone a surge in power output in both the mobile phone and the base station occurs so that the connection can be made. The further away the handset is from the base station the stronger the signal required to make a connection. Therefore the presence of a nearby base station greatly reduces the exposure to the handset user.
- 2.5 Furthermore, base stations at greater distances from each other require stronger signals to communicate with neighbouring antenna. Conversely, base stations in close proximity to each other can operate at much lower levels.
- 2.6 Consequently there is a view that in order to minimise public exposure base stations should be located as close as possible to where people use handsets and operators should install enough base stations so that the radio frequency levels can be kept uniformly lower. This assumes that overall demand for the service is unchanged.
- 2.7 The technology is moving on with the development of third generation (3G) mobile communications systems. The systems enhances present services and offers multimedia and Internet services. This new technology operates at much higher radiofrequencies which cannot be beamed over as large an area as the earlier 2G system and the resultant smaller cells leave gaps in the radio coverage. Therefore the 3G service requires more base stations than the 2G service.

### 3 Current View on Health Effects

- 3.1 The main conclusions of the Stewart Report are that mobile phone technology is relatively new, therefore there has been little opportunity for adverse health effects to manifest and there is little research specifically relevant to radiofrequency (RF) emissions. The report went on to say that the balance of evidence to date suggests that exposure to RF radiation below NRP<sup>3</sup> and ICNIRP<sup>2</sup> guidelines do not cause adverse health effects to the general population. However it acknowledged that it is not possible to say that RF radiation is totally without risk, there is a perceived risk to the public that needs addressing and that the gaps in knowledge are sufficient to justify a precautionary approach. Finally the report pointed out that there is a greater risk from the use of handsets than from the base station.
- 3.2 It was therefore recommended that the ICNIRP guidelines be adopted in line with the other countries of the EU. It also recommended that a robust planning template be set up whereby permitted development rights are removed for masts and that there be a more open and transparent process in determinations of applications. Priority was to be given to research, particularly in relation to signals from handsets and the use of Mobile phones. Research was to be independent and compliment work sponsored by the EU and other countries. Finally a national register of base stations was to be set up to provide openly available and reliable information on locations and an independent random audit of all base stations be carried out to ensure compliance with the ICNIRP guidelines.
- 3.3 The government accepted the findings of the Stewart Report. Subsequently, PPG<sup>4</sup> was revised in 2001 giving improved planning arrangements to take account of the development of the technology, the health considerations and the need for more consultation with local people.
- 3.4 A Code of Best Practice on Mobile Phone Network Development was also produced jointly by central and local government and the mobile phone industry. This contained ten operators' commitments. These included:
- Improving consultation with local communities
  - Producing a programme for ICNIRP compliance of all radio base stations
  - Providing financial support to the government's scientific research programme
  - Entering into an agreement, committing themselves to mast sharing wherever practicable
- 3.5 The Mobile Telecommunications and Health Research Programme (MTHR)<sup>5</sup> was also set up to look into the possible health impact of mobile telecommunications. Government and industry have allocated

funds of around £7million to the programme. A list of the current research programme is contained in Appendix 1.

- 3.6 Various national and international bodies, including the NRPB<sup>3</sup> (now part of the Health Protection Agency HPA<sup>10</sup>) and the WHO<sup>6</sup> have formed a view on mobile phone technology. The general consensus is that despite a growing international body of research there is no convincing evidence that exposure to RF<sup>7</sup> radiation is harmful to health. However, there is a need for continuing properly funded, independent research into the nature and extent of the effects of RF radiation on humans and the effectiveness of the current guidelines.
- 3.7 The Advisory Group on Non-Ionising Radiation (AGNIR)<sup>8</sup>, which reports to the board of the NRPB<sup>3</sup> (now part the HPA<sup>10</sup>) was given the task of reviewing the health effects of mobile phone technology and a review was issued in January 2004. The main conclusions were that in aggregate the research published since the Stewart Report does not give cause for concern. The weight of evidence does not suggest there are any adverse health effects from exposures below guidelines, but research is still limited Therefore the possibility of health effects remains and continued research is needed. There is also a need for a further review once the results of major studies from MTHR<sup>5</sup> and the EU that are now underway are published.
- 3.8 Although evidence of adverse health effects is still unproven the HPA has raised issues that need consideration.
- There are data which suggest that RF can interfere with biological systems
  - An increased risk of acoustic neuromas in people with more than ten years use of mobile phones has been reported in Sweden.
  - There are suggested possible brain function effects resulting from the use of 3G phones.
  - A number of people have reported symptoms that they ascribe to electromagnetic sensitivity arising from exposure to various everyday EMF sources.
  - There are ongoing concerns about the nature of the signals emitted by TETRA<sup>9</sup>.
  - Concerns remain about the impact of base stations on health, including well-being.

The HPA particularly supports the need for further research in these areas. Also the large INTERPHONE study of brain tumour and other cancer risks in relation to mobile phone use should be published in the next few years and is likely to be of particular importance.

- 3.9 In response to public concerns about health risks several action groups have been set up to give a public voice. There have been claims made of ill health caused by mobile phone masts. The symptoms range from

sleep disorder, fatigue, skin rashes, memory loss, and allergies to claims of cancer clusters in the vicinity of masts.

- 3.10 Mast Sanity is a national organisation opposing the insensitive siting of mobile phone and TETRA<sup>9</sup> masts in the United Kingdom. Mast Sanity is claiming to have knowledge of numerous ill health clusters and is supporting a national health survey to gain more knowledge about other undetected clusters. It has produced a health questionnaire on it's website for members of the public who feel they are affected by masts.
- 3.11 Mast Action is a voluntary national organisation launched in the House of Commons in December 2000. The organisation is not against the technology, but objects to the insensitive, unnecessary siting of masts close to homes, schools and hospitals. It has launched a legal service to residents living in close proximity to base stations. It acknowledges that the confirmation of proven health risk is still awaited and offers a letter, written by counsel, to residents wishing to notify property owners that should a link be proven by scientific evidence then they may be liable for compensatory claims.
- 3.12 It is suggesting that by permitting and profiting from the erection and operation of a mast on their property, property owners could be causing harm to those living in the immediate vicinity. In addition, should it be apparent that the siting of a mast has had a detrimental effect on property prices nearby, residents may be entitled to claim compensation for losses incurred.
- 3.13 A joint research project with a network provider has commenced in the City. It is providing locally derived data recording levels of EMF from a range of sources in the 500kHz to 3GHz frequency band, which includes emissions from television, radio and mobile phone base stations. The weekly results can be viewed on the Oxford City Council website.

#### **4. Conclusion and Recommendation**

- 4.1 The general consensus is that despite a growing international body of research there is no convincing evidence that exposure to RF radiation is harmful to health. However, there is public concern about the technology and there are claims that effects on health have been caused although these have not been proven so far. Some studies have indicated health effects but they require follow-up studies to confirm the findings. There is an ongoing programme of research being undertaken both nationally and internationally and this will need to be reviewed once results are published.
- 4.2 The moratorium on new phone mast leases was agreed in 2000 as a precautionary measure in response to the limited knowledge about the

technology and potential health effects at that time. The general opinion of national and international bodies has remained unchanged since 2000; that is that although there is no convincing evidence that exposure to RF radiation is harmful to health, continuing research is needed. Research is underway, but has not yet been published. Therefore considering only health grounds and excluding financial and development control issues, as the position has not changed since 2000; there are no grounds for lifting the moratorium on new phone mast leases at the present time. It should be reviewed periodically as and when results of the current research projects are published. The moratorium does not and cannot apply to the renewal of existing phone mast leases.

4.3 The **Housing Advisory Board** is asked to consider the contents of the report and advise the Strategic Director, Housing, Health and Community that in exercise of his delegated powers he might wish to recommend the Executive Board to:-

- (a) Endorse the findings;
- (b) Leave in place the moratorium in respect of new phone mast leases and review again once the results of the current research projects are published.

The **Executive Board** is asked to consider the contents of the report, the views of the Housing Advisory Board and the recommendation of the Strategic Director, and in the light of these, reach an executive decision.

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**Background papers:** Only published works



- 1 Independent Expert Group on Mobile Phones
- 2 International Commission for Non-Ionising Radiation Protection
- 3 National Radiological Protection Board
- 4 Planning Policy Guidance 8
- 5 Mobile Telecommunications and Health Research Programme
- 6 The World Health Organisation
- 7 Radiofrequency



- 8 Advisory Group on Non-Ionising Radiation
- 9 Terrestrial Trunked Radio
- 10 Health Protection Agency (replacing National Radiological Protection Board)