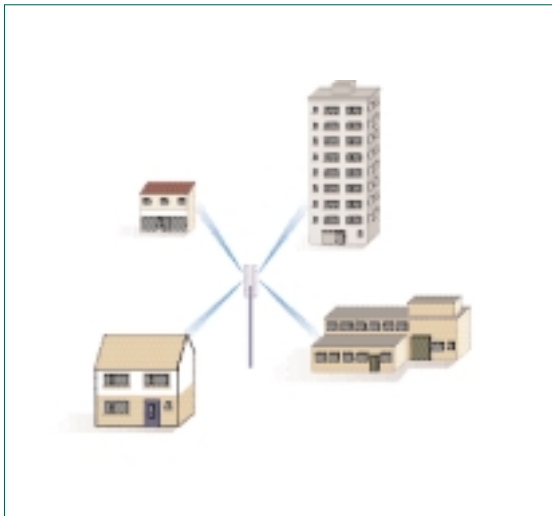


Annex A

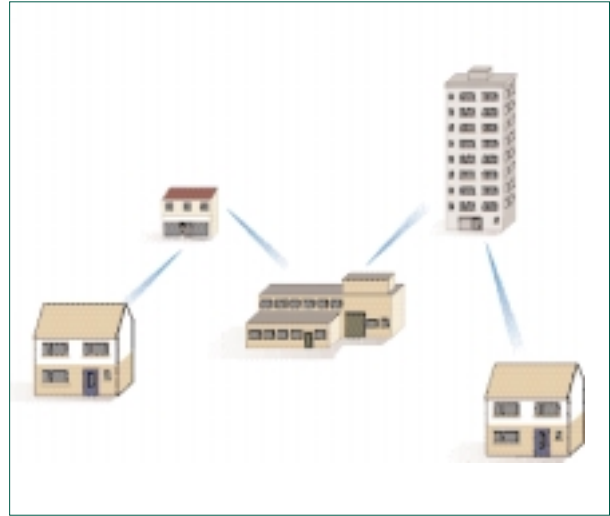
Fixed Radio Access Telecommunication Systems

1. Fixed Radio Access (FRA) systems are also sometimes known as Broadband Fixed Wireless Access or Radio Fixed Access. These systems can be configured in two ways – point to multipoint or point to point. (The existing FRA system in Scotland, operated by Atlantic Telecom, is a point to multipoint system.)

2. Point to multipoint FRA systems consist of a network of base stations with antenna pointing directly at small antenna on the connected properties. Point to point FRA systems function by each customer receiving and transmitting data for themselves and other neighbouring customers (see the figure below).



Network configuration of point to multipoint Fixed Radio Access systems



Network configuration of point to point Fixed Radio Access systems

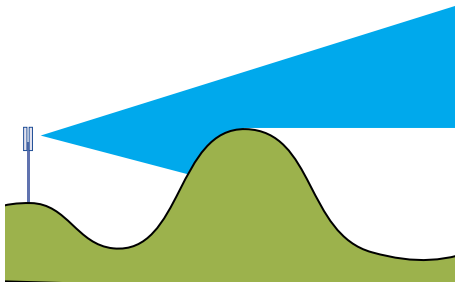
Annex B

The Exclusion Zone

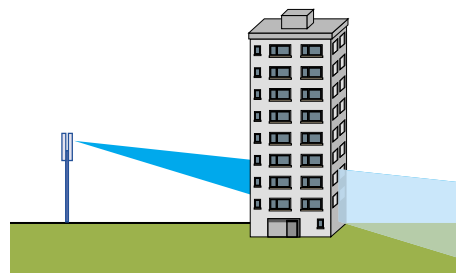
Operators of any telecommunications apparatus must abide by the Health and Safety at Work Act 1974 and the Management of Health and Safety at Work Regulations 1999. Immediately surrounding a macrocell antenna there is an exclusion zone where the equipment must be turned off before people can enter (these exclusion zones relate to an area directly in front of and at the height of the antennas). Exclusion zones for microwave dish antenna typically do not extend beyond the mouth of the dish. The exclusion zone for picocell, microcell and FRA antenna is typically contained within the casing. Appropriate radiofrequency safety signage should be placed in a prominent location. The need for an exclusion zone may affect the siting of an antenna, since an antenna cannot be located in a position where people will freely pass within the exclusion zone.

Annex C – Factors Affecting Radio Signals

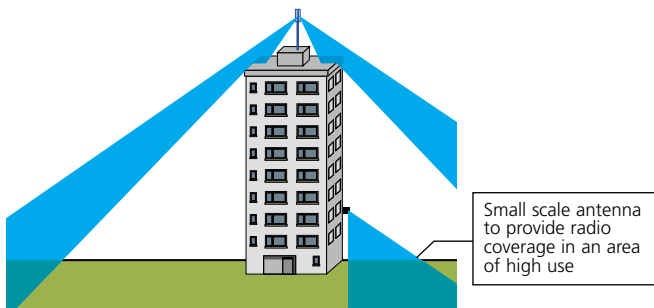
1. In a similar way to light, radio waves travel in straight lines and are affected by obstructions which can alter the radio signal. The main factors that affect radio signals are illustrated in the following diagrams:



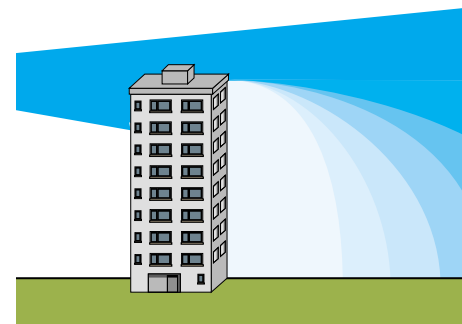
- Signal loss due to shadowing from terrain.



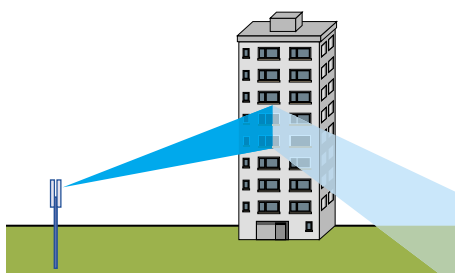
- Signal strength reduced by attenuation when passing through a building.



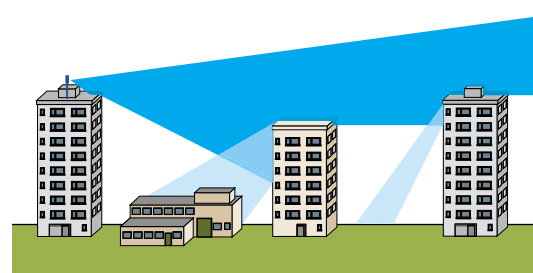
- Signal loss due to shadowing from buildings.



- Signals can 'bend' round obstructions to some extent (diffraction).



- Signal strength reduced by reflection from walls and other objects.



- Reflection can be used to achieve radio coverage in urban areas.

2. Radio waves will penetrate certain materials such as brick, stone and steel. The level of penetration will vary dependant upon the properties of the materials, i.e. its density and reflective qualities. The level of penetration (depth of signal) inside buildings is an increasingly important factor in network planning.

3. The location of transmitter antennas is important, as signals from one cell will interfere with nearby cells on the same frequency. To avoid blind spots from buildings and hills, antennas must usually be placed high up. In rural locations reflection by buildings is less likely to influence site selection than in urban areas.

Annex D

Code System Operator Licences and Summary of the Key Provisions of the Telecommunications Code

1. The Telecommunications Code in Schedule 2 to the Telecommunications Act 1984 deals with the powers to install telecommunications apparatus in the street and on private land. These powers, which are given to certain operators through the terms of their individual licences under the 1984 Act, do not override the need for planning permission or consents under tree preservation orders nor do they override any other restrictions in relation to protection of the natural heritage.

2. The Code contains a number of provisions, some of which may be relevant in the development context and these are briefly summarised below:

- Paragraph 2 gives operators the right to install apparatus on private land, with the prior agreement of the occupier.
- Paragraph 3 provides that operators' activities should not interfere with or obstruct access to other land, without the agreement of the occupier of that other land.
- Paragraph 5 enables an operator to go to the Courts to apply for a compulsory order authorising it to install its apparatus on land if a person, whose agreement is needed under the Code to place that apparatus upon that land, has refused it.
- Paragraph 9 gives operators powers to carry out works in the street and install apparatus under or over the street.
- Paragraph 10 gives operators the right to fly lines over any land without the occupier's consent (although the termination points will require consent).
- Paragraph 15 enables water and sewerage authorities to make agreements with licence holders for the placing of telecommunications apparatus in conduits within their control.
- Paragraph 17 allows for objections to overhead apparatus more than 3 metres high by owners or occupiers of land affected.
- Paragraph 18 requires an operator to fix a notice giving details of how and where to object to the installation of such overhead apparatus.
- Paragraph 19 enables an operator to require the occupier of land on which there is a tree to lop it (but not to top or fell it), if it overhangs the street and interferes with telecommunications apparatus.
- Paragraph 20 sets out a procedure to be followed whereby an operator may be required to alter or remove apparatus in the way of development.
- Paragraph 21 sets out the restrictions on the rights of owners to require the removal of apparatus. Where an owner is entitled to require the removal of any of the operator's apparatus (for example at the end of a lease), they must serve a notice on the operator requiring removal. The operator may however serve a counter-notice within 28 days stating the steps which the operator proposes to take for the purpose of securing a right to keep the apparatus on the land. Where a counter-notice is given the owner may only enforce the removal of the apparatus through pursuance of an order of the court.

- Paragraph 22 states that an operator is not entitled to keep apparatus installed if it is no longer in use and is unlikely to be used.
 - Paragraph 23 provides for the procedures to be followed when a local authority, public utility or other code operator wants to alter the apparatus of a code operator in the course of any street works. The code operator can, if he so wishes, undertake the alteration himself or supervise the work. The expense of alteration is borne by the undertaker who wants the alteration made.
3. The Secretary of State for Trade and Industry has power to modify code-related conditions in licences granted under the 1984 Act, including the conditions relating to the physical environment. Planning authorities should let the Communications and Information Industries Directorate of the Department of Trade and Industry (DTI), (151 Buckingham Palace Road, London SW1W 9SS), know of any practical difficulties which may be experienced with the terms of individual licences.
4. Licences can be inspected at the major offices of the code operator concerned and can be purchased from the Office of Telecommunications (OFTEL), 50 Ludgate Hill, London EC4M 7JJ. Copies of licences of the local broadband cable operators will be sent to the local authority or authorities for the locality as they are granted. Also see the DTI web site at: www.dti.gov.uk/cii/regulatory/telecomms

Annex E

Operator Commitments

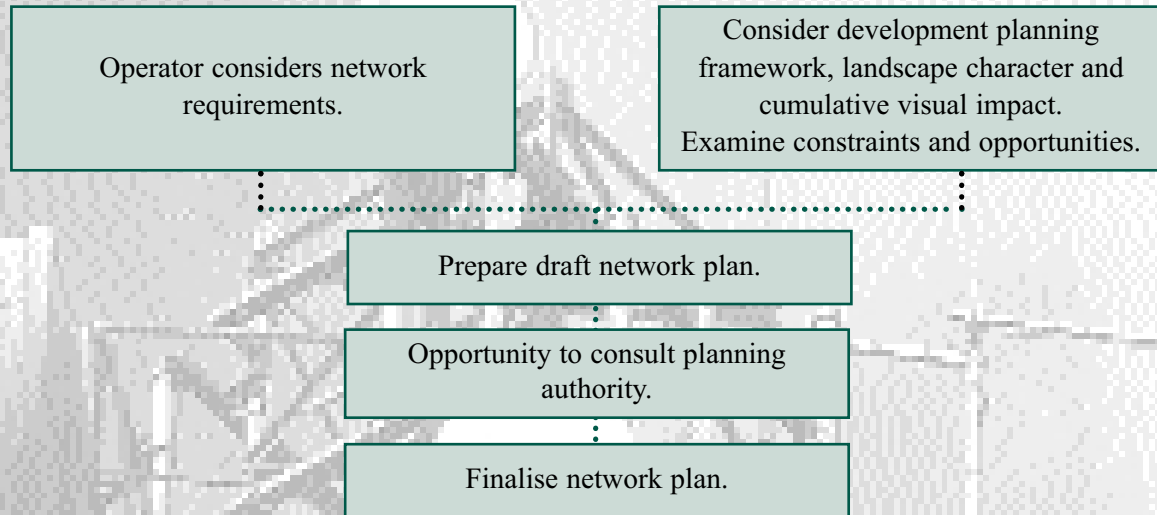
The Federation of the Electronics Industry (FEI), representing the main mobile telecommunications operators, has made the following ten commitments to:

1. develop, with other stakeholders, clear standards and procedures to deliver significantly improved consultation with local communities;
2. participate in obligatory pre-rollout and pre-application consultation with local planning authorities;
3. publish clear, transparent and accountable criteria and cross-industry agreement on site sharing, against which progress will be published regularly;
4. establish professional development workshops on technological developments within telecommunications for local authority officers and elected members;
5. deliver, with the Government, a database of information available to the public on radio base stations;
6. assess all radio base stations for international (ICNIRP) compliance for public exposure, and produce a programme for ICNIRP compliance for all radio base stations as recommended by the Independent Expert Group on Mobile Phones;
7. provide, as part of planning applications for radio base stations, a certification of compliance with ICNIRP public exposure guidelines;
8. provide specific staff resources to respond to complaints and enquiries about radio base stations, within ten working days;
9. begin financially supporting the Government's independent scientific research programme on mobile communications health issues; and
10. develop standard supporting documentation for all planning submissions whether full planning or prior approval.

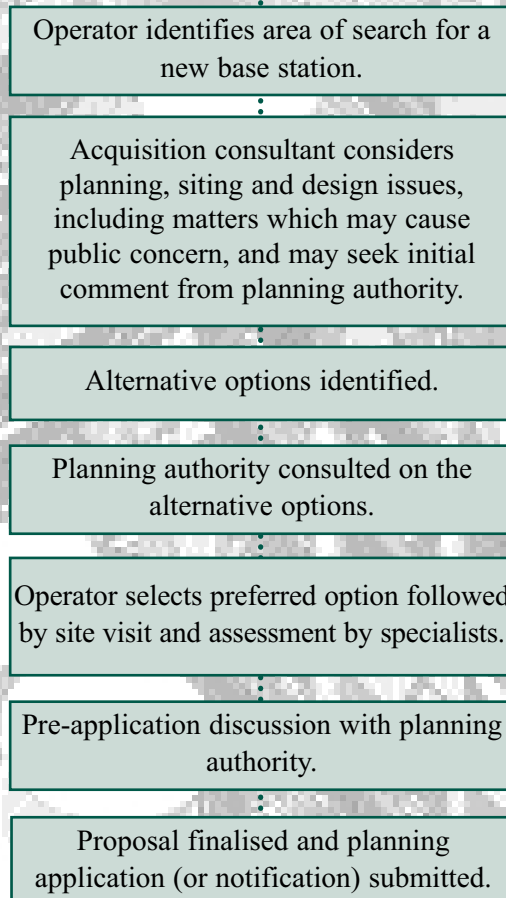
The FEI template of information to be provided with a planning application explains the reasons why a base station is required, alternative options considered, the reasons for the choice of design as well as relevant technical information. It has also committed mobile operators to sending network plans to planning authorities before every major phase and on an annual basis, during September/October (starting 2001).

Annex F – Main Stages of Network Planning and Site Selection

Network Planning



Site Identification



(The FEI has also prepared a site selection and planning model with 4 main stages: (1) area wide planning authority consultation (annual and pre-roll out); (2) site selection and identity/consultation strategy; (3) community consultation and (4) planning submission.)

Annex G

Model Conditions

Conditions and their wording should be a matter for discussion between the planning authority and site operator and will depend upon the specific details of each individual site. Planning authorities seeking to attach conditions to planning permissions should refer to SODD Circular 4/1998 and its addendum, as well as the model conditions below. Planning authorities are not expected to attach all the model conditions to each consent but rather use only those considered necessary.

1. Redundant equipment – In the event that equipment becomes obsolete or redundant it must be removed and the site reinstated to the satisfaction of the planning authority within [specify] months.

Reason: To minimise the level of visual intrusion, and ensure the reinstatement of the site to a satisfactory standard.

2. Redundant equipment on buildings – In the event that equipment is removed from the building for any reason, all cabling, fixings and ancillary items shall be removed and all fixing holes made good to the satisfaction of the planning authority within [specify] months of the date on which the equipment is removed.

Reason: To minimise the effect on the fabric of the [listed] building, and ensure the reinstatement of the site to a satisfactory standard.

3. Access tracks – The land required for the access track proposed to enable construction of the base station, mast structure and ancillary developments, shall be fully reinstated to an agreed condition, immediately following completion of the construction works to the satisfaction of the planning authority.

Reason: To minimise the level of visual intrusion, and to protect the quality and character of [specify] as far as practicable.

4. Power supply – Development shall not be commenced until such time as it has been demonstrated to the satisfaction of the planning authority that the power line required to serve the proposed base station, mast structure and ancillary developments shall be constructed underground with no electricity poles or other structures relating to the proposed new power line linking to the site being visible above ground [from X to Y].

Reason: To minimise the level of visual intrusion and protect the quality and character of [specify] as far as practicable.

5. Fencing – Development shall not be commenced until such time as the written approval of the planning authority has been obtained in respect of the details of any boundary fencing or other form of enclosure and the approved works shall thereafter be implemented and maintained to the satisfaction of the planning authority.

Reason: To minimise the level of visual intrusion and protect the quality and character of [specify] as far as practicable.

6. **Colour** – The detailed specification of all the elements including the support structure, associated equipment housing cabinets, antennas and cabling shall be approved by the planning authority prior to their construction and shall not be altered thereafter unless agreed in writing.

Or – Upon installation, the mast, fencing cabin and all other related equipment, fixtures or fittings shall be coloured [specify] and thereafter they shall be maintained as such, to the satisfaction of the planning authority.

Reason: To minimise the level of visual intrusion and protect the quality and character of [specify] as far as practicable.

7. **Advertising** – No symbols, sign, logos, or other lettering shall be displayed on any part of the structure, antennas, equipment housing or fencing without the prior written approval of the planning authority, except small signage necessary for operational reasons.

Reason: To minimise the level of visual intrusion and protect the quality and character of [specify] as far as practicable.

8. **Mast sharing** – The mast shall be structurally capable of being shared by additional radio telecommunication equipment.

Reason: To enable potential mast sharing.

9. **Lighting** – The site shall not be illuminated by lighting without the prior written approval of the planning authority.

Reason: To minimise the level of visual intrusion and protect the quality and character of [specify] as far as practicable.

10. **Landscaping** – See addendum to Circular 4/1998 which contains some examples of model conditions relating to landscaping.

Glossary

Antenna – A passive electrical component which can transmit and receive radio waves.

Attenuation – Reduction in strength of a radio signal as a result of atmospheric absorption, obstruction by buildings etc.

Base Station – A fixed radio transmitter/receiver which electronically relays signals to and from handsets and other data terminals. Generally taken to include all the component of the development – the antenna, mast or supporting structure, equipment housing, cable runs, fencing, planting, landscaping, access, power supply and land lines.

Broadband – a service or connection allowing a considerable amount of information to be conveyed, such as television pictures. Generally defined as a bandwidth greater than 2Mbits per second.

Code System Operator – An operator of a telecommunications system under Schedule 2 of the Telecommunications Act 1984, known as the "Telecommunications Code".

Convergence – denotes the meeting of separate communications technologies so that they no longer have unique associations with particular functions. For instance, an internet television can combine some of the functions of a radio, television, personal computer and telephone (source DTI).

De minimis – This term covers minor works which, in relative terms, may not have a material effect on the external appearance of the building or structure on which they are installed. As a result they may not come within the legal definition of development and hence not require planning permission, though listed building consent may still be required.

Directional antenna – Any antenna which picks up or radiates antenna signals better in one direction than another.

Director General of Telecommunications – see OFTEL.

FRA – Fixed Radio Access – A low power radio system for connecting individual subscribers in buildings to a base station. See small antenna.

GPRS – General Packet Radio Service. A system which transmits information in short bursts and is therefore suited to internet services. It can carry live video though it does not have the full facilities offered by 3G systems.

Ground Based Mast – a mast constructed on the ground either directly or on a plinth or other structure constructed for the purpose of supporting the mast.

GRP – Glass Reinforced Plastic.

GSM – Global System for Mobile Communications or Groupe Speciale Mobile – the second generation digital mobile technology used in Europe and other parts of the world.

ICNIRP – International Commission on Non-Ionizing Radiation Protection. Responsible for co-ordinating knowledge of protection against the various non-ionising radiations. It works closely with organisations of the United Nations including WHO, ILO and UNEP. Strong support is received from the Commission of the European Communities. Work encompasses environmental health criteria on different aspects of non-ionizing radiation. Set up by the International Radiation Protection Association. (www.icnirp.de)

OFTEL – Office of Telecommunications (the UK telecommunication watchdog). A government department which acts as telecommunications regulator but is independent of ministerial control. It is headed by the Director General of Telecommunications, who is appointed by the Secretary of State for Trade and Industry. The DTI Communications White Paper proposes the creation of a new regulator called the Office of Communications (**OFCOM**). It will combine the existing functions of the Broadcasting Standards Commission, Independent Television Commission, OFTEL, the Radio Authority, the Radiocommunications Agency and possibly the video classification function carried out by the British Board of Film Classification.

Omni-directional antenna – Antenna that radiates or receives signals equally well from all directions.

PSRCP – Public Safety Radio Communications Project, known as the Airwave service. A digital radio telecommunication service being developed for the emergency services.

Roaming – Roaming agreements allow a customer of one mobile operator to use another mobile operator's network to make or receive a call – usually because the customer is out of range of their own network. Two of the existing operators (Vodafone and BT Cellnet), accepted modifications to their licences to allow the new entrant (Hutchison 3g¹) to roam on their networks until 2009, although it is not anticipated that this will be used. At present there is no roaming between operators in the UK.

Small Antenna – An antenna for use in connection with a telephone system operating on a point to fixed multi point basis, which does not exceed 50 cm in any linear measurement and does not, in two dimensional profile, have an area exceeding 1,591 sq. cm. (see GPDO)

Transmitter – Electronic equipment which generates radio frequency electromagnetic energy and is connected to an antenna.

TACS – Total Access Communications System.

TETRA – Terrestrial Trunked Radio.

UMTS – Universal Mobile Telecommunications System.

3G – Third Generation of mobile telephony technology which uses broadband radio to carry large amounts of data.

¹Hutchison 3g is due to be rebranded in late 2001.