General Background Information for Telecommunications Development

This document is designed to provide general background information on the development of the Vodafone and Telefónica networks. It has been prepared for inclusion with planning applications and supports network development proposals with generic information regarding;-

1. Introduction
2. Digital networks
3. Site selection process
4. Planning policy guidance
5. Site or mast sharing
6. Councils
7. Consultation with schools
8. Legal cases
9. Further information

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Note - All references in this document refer to England only.

1.0 INTRODUCTION

Over 25 years ago under the Telecommunications Act 1984, a licence was granted to Vodafone and Telefónica to provide wireless (or mobile) phone services utilising unused radio frequencies adjacent to those transmitted for over 50 years by the television industry. Initially because this wireless technology was new and the number of potential customers unknown, a number of tall masts were used to provide basic radio coverage to the main populated areas. The design strategy used was similar to that used by local radio/television i.e. tall masts to cover large distances over all types of topography.

It is important to note that in recent years form has followed function and digital technology has resulted in the development of smaller equipment. In addition, smaller radio coverage areas have resulted in antenna/mast heights being generally reduced. The industry has also been able to develop low impact designs for use in sensitive planning areas such as in Conservation Areas, on Listed Buildings, and in National Parks etc. The wireless telegraph pole solution is just one example of a design which has minimised impact on visual amenity of the local neighbourhood.

2.0 DIGITAL NETWORKS – "2G/3G" OR SECOND/THIRD GENERATION

The Vodafone and Telefónica 2G digital networks were developed in the early 1990s. This digital technology is often referred to as GSM (Global System for Mobile Communications) which is the common European operating standard enabling phones to inter-connect to other networks throughout Europe and Internationally. In April 2000, Vodafone and Telefónica were successful in their bids for two of the five licences available to provide a 'Third Generation' mobile telecommunications service known as '3G' or UMTS.

In addition to voice services, this technology enables Vodafone and Telefónica to offer high resolution video and multi-media applications. Among other things this enables office services, virtual banking, e-retailing, video conferencing and high quality broadband internet access to be provided to users on the move. This is all made possible by higher rates of data transfer allowing wireless broadband access to the Internet for mobile phones and laptop computer data card users.

The 3G radio base station is designed to provide a service via cells in a similar way as the GSM (2G) system but with a few differences. Due to the increased data transfer, the location of 3G base station sites is even more critical. Base stations must be located where the local demand exists in order to provide the required levels of service, otherwise the network will not function.

Vodafone and Telefónica will ensure they comply with planning policy guidance by ensuring apparatus be installed on existing buildings and structures, including masts wherever possible. However, in spite of these efforts, there are likely to be instances where there is a need to install additional base stations to provide contiguous service. This is largely due to the characteristics of radio propagation at this frequency, demands on the service and the high data transfer rates.

It is very important to note that mobiles can only work with a network of base stations in place where people want to use their phones (or other wireless devices). without base stations, the mobile phones we rely on simply won't work.

2.1 How the cellular radio network works

The building blocks of the mobile telecommunications network are called radio base stations which transmit and receive calls to and from mobile phones using radio waves, similar to those used in domestic television and radio equipment. Radio base stations are often associated with free-standing masts, however they can be located on, or even inside, existing buildings and other structures. Vodafone and Telefónica use "radio frequencies" to transmit and receive calls at 900 MHz or 1800 MHz for 2G whilst 3G uses slightly higher frequencies within the 2100 MHz range.

2.2 How radio signals are transmitted

The radio signals are transmitted from antennas which are part of the radio base station and cover an area known as a "cell", hence the term "cellular phone". The size of the cell is dependent on a number of factors including: the height at which the radio base station is positioned; the topography of the surrounding landscape; anticipated demand; and the population density in the area.

Radio signal transmission from a radio base station can be likened to water being distributed from a garden sprinkler. The area immediately adjacent to the sprinkler remains almost "dry". However the grass gets progressively wetter moving further away from the sprinkler, until a wettest point is reached. Then the further away from the centre, the ground becomes progressively drier. Radio base stations provide network services in a similar manner. The area immediately beneath the antennas receives limited or, occasionally, no signal. Moving further away, the signal steadily improves until it reaches an optimum level and then gets progressively weaker.

In order to use mobile phones whenever and wherever we are, a network of radio base stations is required to maintain a continuous signal or 'network service' across a geographical area. The network is designed so that the cells from each radio base station slightly overlap. Travelling even a short distance may take us through a number of cell areas. Mobile phones are designed to monitor the strength of signal from surrounding radio base stations and automatically select the clearest signal, which often comes from the nearest site. As you approach the edge of the cell area, the phone will automatically select the adjoining radio base station, to provide a continuous service. This process is known as 'call handover'.

2.3 Factors affecting network services

The siting of a radio base station is largely dependent on the characteristics of the radio signals which they transmit. Physical features such as buildings or landscape can obstruct the signals. In open rural areas one base station can typically cover several kilometres in radius. However in urban areas where surrounding buildings will obstruct the signal, this range can be reduced to as little as a few hundred metres.

2.4 Network Capacity

Radio base station sites can only receive and transmit a limited number of simultaneous calls to and from mobile phones. In areas where the use of phones is particularly high, such as major towns or cities, many sites will reach the maximum number of calls they can process. When a customer attempts to make a call in an area where the network has reached its full capacity, the 'network busy' message is displayed on their mobile phone. In order to continue to meet customer demand and improve the quality of services in these areas, there is a need to increase the capacity of the network to allow more calls to be made.

2.5 Technical Requirements

Vodafone and Telefónica radio engineers identify the need for a new radio base station where the existing signal strength is insufficient to support network requirements, or where demand on the system is such that we need to increase capacity. The location of each radio base station is determined by the following factors:-

- The proximity of adjacent radio base stations and the signal coverage from them.
- The terrain height of the area and surrounding topography.
- The height and density of the buildings and structures within the area.
- The potential customer demand within the area.
- The service type that is required.

3.0 SITE SELECTION PROCESS

The following site selection procedures apply to each installation to identify and sequentially discount alternative site options:-

1. Following a technical review which identifies need, Vodafone and Telefónica radio engineers undertake a desktop analysis to identify the best way of meeting the site requirement. This is completed by using Vodafone and Telefónica computerised radio propagation modelling tools. These tools show every site on both existing networks and identifies those areas where insufficient signal level exists or where there is a need to increase capacity.

2. The desktop search also identifies other operators' existing telecommunications installations. This interrogation of databases ensures any mast-sharing opportunities are maximised. Where available the LPA's mast register is also reviewed.
3. The radio engineers define a search area, which is then issued to an acquisition agent who undertakes a detailed ground search with the radio engineer to identify suitable options.
4. The acquisition agent will obtain site-specific details to identify those sites that are viable options. The possible options are short-listed according to those that combine the following: location within or close to the search area, a willing landlord with acceptable commercial terms, adherence to planning and environmental policy, and other site specific issues such as initial power and link availability. These options are then returned to the radio engineers for a computer modelling assessment, taking into account the ground height, potential available antenna height and surrounding obstructions.
5. Discussions are offered to the local planning authority to consider local policies and any protected areas and to agree additional public consultation if required. These discussions are used to identify a 'preferred' option.
6. A plan for local consultation is drawn up, and where appropriate, a consultation exercise is undertaken with the local community.
7. Finally a site survey provides a full structural analysis of the site including confirming power routes and how the site will be linked into the network. Terms with the landlord are then finalised, detailed plans prepared and the application submitted.

Vodafone and Telefónica are committed to ensuring the number and visual impact of any additional sites is minimised. Vodafone and Telefónica will continue to develop and utilise sympathetic and innovative design solutions.

4.0 PLANNING POLICY GUIDANCE ON TELECOMMUNICATIONS

The National Planning Policy Framework (NPPF) was published on 27th March 2012. The NPPF supports high quality communications infrastructure and recognises it as a strategic priority. Paragraph 42 states that: *"Advanced, high quality communications infrastructure is essential for sustainable economic growth. The development of high speed broadband technology and other communications networks also plays a vital role in enhancing the provision of local community facilities and services."*

The NPPF goes on to state in paragraph 46 that: *"Local planning authorities must determine applications on planning grounds. They should not seek to prevent competition between different operators, question the need for the telecommunications system, or determine health safeguards if the proposal meets International Commission guidelines for public exposure."*

5.0 SITE / MAST SHARING

Vodafone and Telefónica actively encourage and support site sharing for both commercial and environmental reasons. All operators are required to explore site-sharing opportunities under the terms of their licences. Vodafone and Telefónica have implemented a number of measures to identify and maximise site-sharing opportunities through their network sharing agreement.

6.0 COUNCILS

6.1 Moratoria

Government guidance on mobile telecom installations advises that local authorities should make suitable council owned property available to network operators for base station development. If suitable council sites are not made available, operators may have to look for alternative sites which the local community might find less acceptable.

Moratoria may also increase the number of new sites needed as council owned buildings are often better suited for base stations e.g. tall buildings. The operators believe it is preferable to deal with proposed developments on council property on a case by case basis.

6.2 Mast register

Guidance in the Government's Code of Best Practice on Mobile Phone Network Development recommends that local authorities develop a register of local base stations based on a map.

The Code goes on to say, *"Ideally, all the information should be available to be viewed electronically and in hard copy. Local authorities should ensure that the mast register is kept up to date and may make a reasonable charge if anybody wishes to obtain a copy of any of the information."*

7.0 Consultation with schools
The operators fully comply with Government Guidance on pre application consultation with schools and colleges. They provide evidence to the local planning authority that they have consulted the relevant body of the school or college.

The Government's Code of Best Practice on Mobile Phone Network Development gives guidance on the factors operators should consider when determining whether consultation is required, as each development is different. These factors are equally applicable for Local Planning Authorities who carry out their own consultation once the application has been submitted. A recent report stated that there is no scientific basis for siting base stations away from schools (NRPB report, January 2005)

8.0 LEGAL CASES
The following legal cases may be helpful;-

8.1 Harrogate case November 2004
The Court of Appeal gave a judgment that Government Planning Guidance in PPG8 (now replaced by NPPF) is perfectly clear in relation to compliance with the health and safety standards for mobile phone base stations. The Court of Appeal and the High Court both upheld Government policy in response to a planning inspector's decision that departed from that policy and failed to give adequate reasons for doing so.

8.2 Winchester case November 2004
The Court of Appeal decision upheld an earlier decision by Mr Justice Sullivan that a mobile phone network operator should not use its compulsory acquisition powers as part of its day to day radio base station siting processes.

The Court of Appeal agreed with Mr Justice Sullivan that these far-reaching statutory powers were never intended for use in day to day planning situations and should be used by an operator only as a last resort when there is no other siting alternative. The House of Lords on 16 March 2005 refused leave to appeal the Court of Appeal ruling.

8.3 Bardsey case January 2005
The Court of Appeal confirmed that the permitted development regime for mobile phone base stations is compliant with the Human Rights Act.

This was a case in which a local planning authority failed to comply with its obligations to act within the 56 day period provided under the permitted development regulations.

9.0 FURTHER INFORMATION
We trust the above answers your main queries regarding our planned installation.

The enclosed site-specific details will identify the alternative discounted options and reasons why they were rejected and how the proposed site complies with national and local planning policies.

The Local Government Ombudsman's Special Report on Telecommunication Masts gives some positive recommendations and advice to Local Planning Authorities in determining Prior Approval applications. A copy of the report is available at http://www.lgo.org.uk/pdf/phone-masts-sr.pdf

HEALTH AND MOBILE PHONE BASE STATIONS

We recognise that the growth in mobile technology has led in some cases to public concern about perceived health effects of mobile technology and its deployment, in particular about siting masts close to local communities. Quite naturally, the public seeks reassurance that they are not in any way harmful or dangerous.

We take these public concerns seriously and are committed to providing the latest independent peer-reviewed research findings, information, advice and guidance from national and international agencies on radio frequency (RF) electromagnetic fields.

Vodafone and Telefónica ensure that our radio base stations are designed and operated so that the public are not exposed to radio frequency fields above the guidelines set by the International Commission on Non-Ionizing Radiation Protection (ICNIRP). In fact, radio base stations operate at low power and emit low levels of radiofrequency fields, typically hundreds to thousands of times lower than the ICNIRP general public guidelines.

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Research Reviews

There are about 1400 peer-reviewed publications on the biological and health effects of RF signals[3], which are used in mobile communication technology. The scientific community have collated, summarised and assessed these publications in research reviews, the most influential in the UK being the Mobile Phones and Health Report (also known as the Stewart Report) by the Independent Expert Group on Mobile Phones under the chairmanship of Professor Sir William Stewart. These research reviews are used by Governments to develop policy on exposure to radiofrequency signals.

Published in May 2000, the Stewart Report concluded that the balance of evidence did not suggest that exposures to radio frequency fields below international guidelines could cause adverse health effects, although it acknowledged that biological effects might occur below these values. The report stressed, however, that a biological effect does not necessarily mean a negative impact on health. Walking, drinking a glass of water or listening to music all produce biological effects.

Since 2000, over 30 further reviews have been carried out, carefully considering many hundreds of pieces of research. Most have made similar recommendations and have come to similar conclusions: that research should continue to address any gaps in the knowledge; and that overall, the possibility of adverse health effects from mobile communications remains unproven.

In June 2011 the World Health Organisation (WHO) noted that *"A large number of studies have been performed over the last two decades to assess whether mobile phones pose a potential health risk. To date, no adverse health effects have been established as being caused by mobile phone use"* WHO factsheet 193: Electromagnetic fields and public health: mobile telephones. Research reviews are used by guideline setting bodies and Governments to develop advice and public policy on exposure to the signal used by mobile communications technology.

Compliance with International Exposure Guidelines

All Vodafone and Telefónica installations are designed, constructed and operated in compliance with the precautionary ICNIRP public exposure guidelines as adopted in EU Council Recommendation of 12 July 1999 on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz). These guidelines have been set following a thorough review of the science and take into consideration both thermal and non-thermal effects and are there to protect all members of the public 24 hours a day. In addition, precautionary measures have been taken into account when setting relevant guideline limits for the public (i.e. in the UK a safety factor of 50 times is applied to the public exposure guideline).

When measured, field strengths are typically hundreds to thousands of times lower than the precautionary ICNIRP general public guidelines.

An ICNIRP certificate is provided with every planning application and this certifies that the mobile phone base station, when operational, will meet the precautionary ICNIRP guidelines. We also provide further documentation to clarify that the ICNIRP certificate declares that emissions from all mobile phone network operators' equipment on the site are considered when determining compliance.

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[3] Source: MMF web site: http://www.mmfai.org/public/research-overview.cfm?lang=eng

ICNIRP Guidelines

The radiofrequency public exposure limits for EMF fields were developed by the International Commission on Non-Ionizing Radiation Protection (ICNIRP) http://www.icnirp.org following reviews of all the peer-reviewed scientific literature, including thermal and non-thermal effects. ICNIRP is a non-governmental organisation formally recognised by WHO. Established biological and health effects have been used as the basis for the ICNIRP exposure restrictions. The ICNIRP guidelines have been adopted for use in the European Union and the UK.

In August 2009, ICNIRP published a review of the guidelines for limiting RF exposure and concluded that "*it is the opinion of ICNIRP that the scientific literature published since the 1998 guidelines has provided no evidence of any adverse effects below the basic restrictions and does not necessitate an immediate revision of its guidance on limiting exposure to high frequency electromagnetic fields.*"

Further Information:

- **World Health Organisation** - http://www.who.int/peh-emf/en/
  EMF Project

- **ICNIRP** - http://www.icnirp.org/
  International Commission on Non-Ionizing Radiation Protection

- **Health Protection Agency** -
  http://www.hpa.org.uk/HPA/Topics/Radiation/UnderstandingRadiation/1158934607698/

- **UK Mobile Telecommunications and Health Research** - http://www.mthr.org.uk/

- **UK Mobile Operators Association** - http://www.mobilemastinfo.com/

Or contact:
EMF Enquiries, Cornerstone
The Exchange, Arlington Business Park, Theale, Berks, RG7 4TY
Tel. 01753 564306, emf.enquiries@cornerstonemobile.net

SITE SPECIFIC SUPPLEMENTARY INFORMATION

1. Site Details

Site Name:	Moston Station	Site Address:	Moston Station, Hollinswood Avenue, New Moston, Manchester, M40 0JA
NGR:	E388797, N403005		
Site Ref:	122313_VF	Site Type[1]:	Macro

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2. Pre Application Check List

Site Selection

Was an LPA mast register used to check for suitable sites by the operator or the LPA?	Yes	**No**
If no explain why: The LPA does not have an up-to-date mast register and rely on their own on-line planning records which detail all applications. Nevertheless this information has been reviewed where found.		
Was the industry site database checked for suitable sites by the operator:	**Yes**	No
If no explain why: n/a		

Annual roll out consultation with LPA

Date of last annual rollout information/submission:	12.10.12
Name of Contact:	j.roscoe@manchester.gov.uk
Summary of outcome/Main issues raised:	General rollout within the authority

Pre-application consultation with LPA

Date of written offer of pre-application consultation:	21.01.13	
Was there pre-application contact:	Yes	**No**
Date of pre-application contact:	N/A	
Name of contact:	N/A	
Summary of outcome/Main issues raised: A pre-application consultation email was sent to the LPA on 21.01.13 introducing a number of existing sites, which are earmarked to be upgraded as part of the new CTIL initiative. This email included the option subject to this application, in which it was said that minimal changes were proposed. To date no comments have been received. Nonetheless the proposal relates to the upgrade of an existing base station which has previously been approved by the LPA. In this regard it is clear that the principle of telecommunication development has been accepted on-site in which when balanced against the minimal changes proposed, it was considered appropriate to progress this application and seek the LPA's formal determination.		

Ten Commitments Consultation

Rating of Site under Traffic Light Model:	Green	**Amber**	Red
Outline Consultation carried out: A pre-application consultation email was sent to the ward councillors on 21.01.13 introducing a number of existing sites, which are earmarked to be upgraded as part of the new CTIL initiative. This email included the option subject to this application, in which it was said that minimal changes were proposed.			
Summary of outcome/Main issues raised: To date no comments have been received.			

School/College

Location of site in relation to school/college: - In accordance with the Code of Best Practice on Mobile Phone Network Development no schools or colleges were considered to have a direct or functional relationship with the site.
Outline of consultation carried out with school/college: -

[1] Macro or Micro

n/a
Summary of outcome/Main issues raised: - n/a

Civil Aviation Authority/Secretary of State for Defence/Aerodrome Operator consultation (only required for an application for prior approval)

Will the structure be within 3km of an aerodrome or airfield?	Yes	**No**
Has the Civil Aviation Authority/Secretary of State for Defence/Aerodrome Operator been notified?	Yes	**No**
Details of response:		

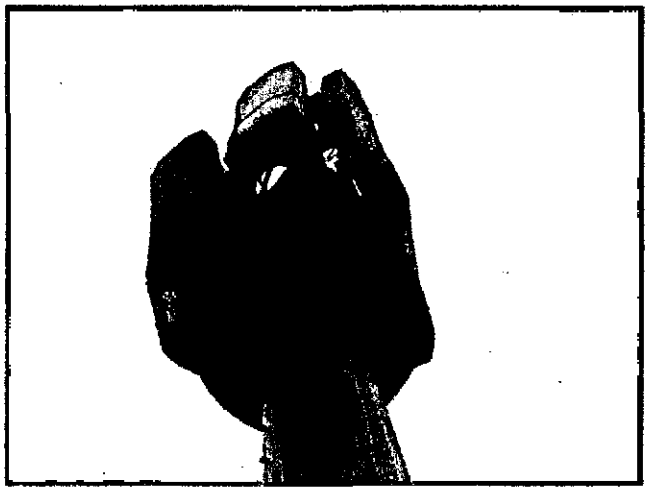
Developer's Notice

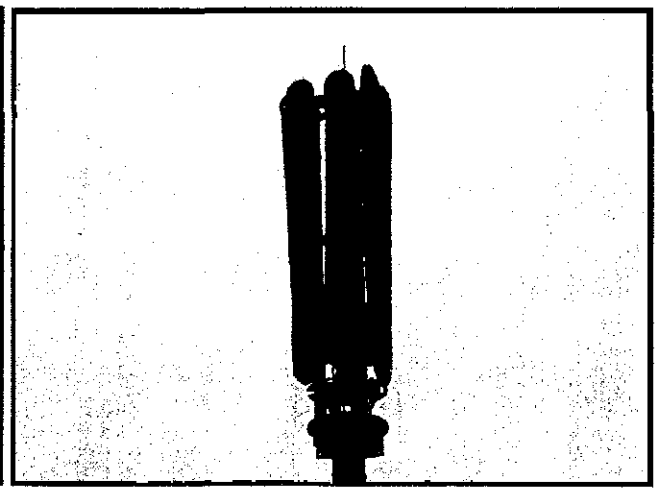
Copy of Developer's Notice enclosed?	**Yes**	No
Date served:		02.05.13

3. Proposed Development

The proposed site:

This application relates to an existing telecommunications installation which is found on-site. For reference please see below photographs of the base station in-situ: -







Type of Structure	
Description: The proposal includes the removal and replacement of the existing head frame and 6 no. antennae for a new head frame accommodating 6no. new dual band antennas and 6no. RRU's. Set beneath the antennas will be 4no. 300mm diameter dishes. The removal and replacement of 1no. equipment cabinet, the installation of 2no additional equipment cabinets and the retention of 1no. existing equipment cabinet. The dimensions of the proposed equipment cabinets are detailed below.	
Overall Height:	15 metres
Equipment Housing:	Huawei 3900AL
Length:	770mm
Width:	750mm
Height:	1800mm
Equipment housing – type of material and external colour:	Galvanised steel - painted green

Reasons for choice of design:
Vodafone Limited and Telefónica UK Limited, commonly known as O2 have entered into a new agreement in which the two companies plan to jointly operate and manage a single network grid across the UK. This initiative strengthens the network infrastructure partnership between the two companies, previously rolled out as part of 'Cornerstone'. This next phase will involve upgrading existing base stations and will be facilitated by Cornerstone Telecommunications Infrastructure Limited (CTIL), a newly formed joint venture company owned equally by the aforementioned operators. The single grid infrastructure overhauled planned by CTIL will enable both organisations to pool and consolidate their respective networks while running two, independent, nationwide networks. Each operator will keep ownership and control of its network spectrum, however as part of CTIL it will mean each operator will have responsibility to manage, maintain and provide coverage in one half of the UK. In general Telefónica will manage and maintain the network in the East, including Scotland and Northern Ireland whilst Vodafone will be responsible for those sites in the West including Wales. In due course once existing installations have been upgraded with technically preferred and robust designs, it will result in a number of other existing base station sites being decommissioned across the authority. In this instance Vodafone, are acting as the responsible operator for this part of the UK. The choice of design in this latest case has been influenced by the existing base station's siting and appearance as well as future 4G coverage requirements. As part of a sequential approach to site selection an existing base station development made available as part of the CTIL initiative was identified. However it is of note that the existing ground based installation in its current form does not meet the operators technical requirements, hence the existing base station requires upgrading and redevelopment. The head frame design pursued offers a technically preferred solution, in which where possible antennas can be titled and orientated so as to provide cell specific coverage to the demands of the target area. The height and number of antennas pursued will improve the coverage footprint from the site, whereby in progressing a robust base station and equipment design this will help to address existing and future 4G demands for mobile coverage. The proposed height of the replacement head frame including the antennas and RRUs at 15 metres is required to allow for adequate coverage to the target area. When compared to the height of the existing structure at 14.3 metres it is considered that as this is marginally taller the visual impact of the new head frame by reason of its height would be negligible. Four transmission dishes are included into the latest scheme so as to provide the operator with their own linked integration into the wider network.

4. Technical Information

ICNIRP Declaration attached	**Yes**	No
ICNIRP public compliance is determined by mathematical calculation and implemented by careful location of antennas, access restrictions and/or barriers and signage as necessary. Members of the public cannot unknowingly enter areas close to the antennas where exposure may exceed the relevant guidelines. When determining compliance the emissions from all mobile phone network operators on the site are taken into account.		

Frequency:	1800 & 2100 MHz
Modulation characteristics[2]	GSM & UMTS
Power output (expressed in EIRP in dBW per carrier) In order to minimise interference within its own network and with other radio networks, Vodafone operates its network in such a way the radio frequency power outputs are kept to the lowest levels commensurate with effective service provision. As part of Vodafone's network, the radio base station that is the subject of this application will be configured to operate in this way. All operators of radio transmitters are under a legal obligation to operate those transmitters in accordance with the conditions of their licence. Operation of the transmitter in accordance with the conditions of the licence fulfils the legal obligations in respect of interference to other radio systems, other electrical equipment, instrumentation or air traffic systems. The conditions of the licence are mandated by Ofcom, an agency of national government, who are responsible for the regulation of the civilian radio spectrum. The remit of Ofcom also includes investigation and remedy of any reported significant interference. The telecommunications infrastructure the subject of this application accords with all relevant legislation and as such will not cause significant and irremediable interference with other electrical equipment, air traffic services or instrumentation operated in the national interest.	Maximum 32 dBW
Height of antenna to top (metres above ground level)	15 metres

5. Technical Justification

Enclose predictive coverage plots.

Reason(s) why site required e.g. coverage, upgrade, capacity
A retained base station site is required in this location in order to maintain existing network coverage and capacity, as well as catering for future networks demands for both Vodafone and Telefónica, commonly known as O2 to this area of Manchester. Vodafone and Telefónica are both Electronic Communications Code Systems Operators licensed under the terms the Communications Act 2003 to provide mobile personal communications networks in the UK. In order to improve the level of service it provides for their customers in line with its licence requirements, both companies are constantly developing their networks, as well as refining and modernising their equipment. Given the dynamic nature of technological advances in telecommunications products, coupled with the demands on operators from subscribers to provide new and better quality services, this dictates a continual reinvestment programme in the infrastructure behind the use of mobile devices. Operators are currently involved in developing sites to provide coverage to areas which have not benefited from access to the full services they offer and to areas of their existing network where increased capacity or improved service quality is required. Many more people now use mobile devices for personal and business purposes and to a large proportion of the UK population; the use of a mobile phone is now considered an essential part of people's everyday lives both at work and in their leisure time. These customers legitimately demand and expect to have adequate signal coverage and capacity for their mobile devices throughout the country. Mobile phones are now intrinsic to our personal and professional lives and with that people expect they will be able to use their devices when and wherever they need them. However it remains the case in some areas and at particular times of the day, capacity on mobile networks may not keep up with demand, creating network congestion, poor download speeds and service disconnections. Combating these technical deficiencies are at the forefront of the origins of a new search cell instruction and the need to upgrade exiting base station sites in an operator's network. The ownership and use of mobile devices has changed dramatically since its mass market conception in which the introduction of pre-pay mobile tariffs in the late 1990s led to rapid growth in mobile phone take-up. This resulted in fierce competition between operator providers which lead to falling prices, meaning mobile phones and usage are a lot more affordable to the general consumer market. As the cost of a handsets and bundle packages has fallen this has coincided with the decline in the use of fixed line calls, whereby according to the independent regulator and competition authority, Ofcom, in 2006 household mobile take-up passed that of fixed lines for the first time. Indeed the Mobile Operators Association have said that *"the volume of calls from mobile phones exceeded the volume of calls from fixed phones in 2011, comprising 52% of total voice calls"*

[2] The modulation method employed in GSM is GMSK (Gaussian Minimum Shift Keying) which is a form of Phase modulation
The modulation method employed in UMTS is QPSK (Quad Phase Shift Keying) which is another form of Phase Modulation

Mobiles are now ubiquitous to most peoples lives in which according to the MOA there are now 81.6 million subscriptions in the UK. With regards the basic functionality of mobile phones the MOA suggest that mobile consumers in the UK sent over 150 billion texts in 2011 with the average person believed to send 50 texts a week. Although the main functionality of mobile phones to support voice calls and messaging remains at its core, in recent years the emergence of smart phones and high-spec wireless devices has put added pressures on operators networks as customers demand reliable data streaming and coverage capacity. In this regard the increased ownership of smart phones is driving significant increases in the number of people accessing the internet on mobile phone networks, creating the emergence and growth of the 'pocket internet'. Indeed the MOA highlight that the average time spent using mobile data services was 2.1 hours a month in 2011, while the volume of data consumed more than doubled in the 18 months to January 2012. Accordingly as data volumes over mobile networks has increased this demand has put significant strain on operators existing networks infrastructure and thus the need for more base stations. Ofcom have reported that over a quarter of the population in the UK said they have a smart phone, more than double the number two years ago, in which 23% of adults are reported to access internet content and or send emails from their mobile phones. In this respect many consumers have commented that typical mobile speeds and usage caps are insufficient for the use of data-hungry mobile devices seeking to download music, video content and applications. Indeed internet-based communications services such as social networking sites and instant messaging has put added pressure on mobile phone networks as the growth in the average time spent online can be attributed to the use of the internet becoming more mainstream and accessible via mobile devices.

The MOA reports that *"Mobile telecommunications are vital for the UK's economic competitiveness and in promoting social inclusion. There are now over 81.6 million mobile subscriptions in the UK. Over 5.1 million people now access mobile broadband services via a laptop and dongle, and 39 per cent of UK adults use their mobile phone for internet access."* Ofcom have noted that many households now have a variety of means of telecommunications available at their finger tips from their use of satellite systems, fixed line telephones, broadband and mobile phones. However there has been a growth in the proportion of mobile-only homes as network providers increase the amount of minutes that are bundled within mobile contract line rental and market dongle support, meaning that it is not always necessary to have a landline in order to be able to access the internet. Furthermore it was said by the MOA that at the end of 2011 the Mobile Operators Association report that 15% of adults live in a home that has a mobile phone but no landline. In-building coverage and capacity is a key objective of the operators infrastructure rollout and upgrade, however given the very nature of mobile devices which can be taken and used wherever they are needed, this has resulted in the need for high threshold levels of 3G coverage to provide this indoor service to its customers. Also in light of the use of smart phones, SIM card enabled tablets as well as mobile supported satellite navigation systems, this means that in car and outdoor signal strengths need to provide adequate and reliable coverage for the use of hand portable devices. According to YouGov, satisfaction among mobile users with 'staying connected' has seen the steepest declines of all network-related attributes, with 20% of mobile broadband rating their experience as poor in July 2009, compared to 9% in June 2008.

In light of the above it is emphasised that the only reason an operator seeks to place a base station anywhere is to improve the service to its customers. NPPF confirms that local planning authorities should not question the need for a proposed telecommunications development. Indeed it would not be financially viable for operators to develop their existing networks further and invest time and monies into any particular case, if there was no demand for the mobile phone service it seeks to provide. Irrespective of the above to many the correlation between their own personal mobile phone usage as opposed to the wider customer needs and demands in a particular area are unrelated matters. Given peoples expectations that their mobile devices will function 24-7, when and wherever they need them, it should not be taken for granted that there is a robust telecommunication infrastructure behind their use. New base stations are required as each cell can only support a finite number of users at any one time. If there is a high customer demand in a cell then greater capacity is required. Therefore a base stations contribution within the operators network should be seen as an important economic driver and material planning consideration.

Further detail regarding the general operation of the Vodafone and Telefónica networks can be found in the accompanying document entitled 'General Background Information for Telecommunications Development'. This information is provided to assist the local planning authority in understanding any technical constraints on the location of the proposed development.

6. Site Selection Process – alternative sites considered and not chosen

If no alternative site options have been investigated, please explain why:
In accordance with the operators licence obligations, NPPF and the Code of Best Practice on Mobile Phone Network Development, Cornerstone has reviewed existing telecommunications provision operated by Vodafone and Telefónica in the intended target area. An existing base station has been identified in which taking advantage of their Cornerstone agreement a sequential approach to site selection has been taken. Nonetheless it should be

appreciated deriving from the origins of the now existing base station, alterative sites would have been considered.

Planning Policies

Local Planning Policy

It is recognised that Section 38 (6) of the Planning and Compulsory Purchase Act 2004 states that *"If regard is to be had to the development plan for the purpose of any determination to be made under the planning Acts the determination must be made in accordance with the plan unless material considerations indicate otherwise"* The development plan framework is provided by the Manchester City Council Development Plan, although it is acknowledged that the Local Planning Authority are working towards formulating a Local Development Framework which will in time supersede this document. In the meantime it is considered that the following planning policy is applicable: -

Policy DC17.1 - Telecommunications
"Applications for telecommunications developments will normally be approved if the Council can be satisfied that the development has been sited and designed to minimize its impact on residential amenity and in environmentally sensitive areas. Wherever possible, the Council will expect the potential of existing buildings and masts, including the sharing of such facilities, to be fully explored before agreeing to additional separate development."

National Planning Policy

National Planning Policy Framework (2012)

5 - Supporting high quality communications infrastructure
The National Planning Policy Framework (NPPF) set out Central Government's planning policies for England and how these are expected to be applied. It replaces a number of planning documents including Planning Policy Guidance 8 – Telecommunication. NPPF sets out the Central Government's requirements for the planning system only to the extent that it is relevant, proportionate and necessary to do so. It provides a framework within which local people and their accountable councils can produce their own distinctive local and neighbourhood plans, which reflect the needs and priorities of their communities.

Pertinent to telecommunications development section 5 of NPPF sets out the Governments general overview regarding supporting high quality communications infrastructure and is stated as follows: -

"42. Advanced, high quality communications infrastructure is essential for sustainable economic growth. The development of high speed broadband technology and other communications networks also plays a vital role in enhancing the provision of local community facilities and services.

43. In preparing Local Plans, local planning authorities should support the expansion of electronic communications networks, including telecommunications and high speed broadband. They should aim to keep the numbers of radio and telecommunications masts and the sites for such installations to a minimum consistent with the efficient operation of the network. Existing masts, buildings and other structures should be used, unless the need for a new site has been justified. Where new sites are required, equipment should be sympathetically designed and camouflaged where appropriate.

44. Local planning authorities should not impose a ban on new telecommunications development in certain areas, impose blanket Article 4 directions over a wide area or a wide range of telecommunications development or insist on minimum distances between new telecommunications development and existing development. They should ensure that:

- *they have evidence to demonstrate that telecommunications infrastructure will not cause significant and irremediable interference with other electrical equipment, air traffic services or instrumentation operated in the national interest; and*
- *they have considered the possibility of the construction of new buildings or other structures interfering with broadcast and telecommunications services.*

45. Applications for telecommunications development (including for prior approval under Part 24 of the General Permitted Development Order) should be supported by the necessary evidence to justify the proposed development. This should include:

- *the outcome of consultations with organisations with an interest in the proposed development, in particular with the relevant body where a mast is to be installed near a school or college or within a statutory*

safeguarding zone surrounding an aerodrome or technical site; and

- *for an addition to an existing mast or base station, a statement that selfcertifies that the cumulative exposure, when operational, will not exceed International Commission on non-ionising radiation protection guidelines; or*
- *for a new mast or base station, evidence that the applicant has explored the possibility of erecting antennas on an existing building, mast or other structure and a statement that self certifies that, when operational, International Commission guidelines will be met.*

46. Local planning authorities must determine applications on planning grounds. They should not seek to prevent competition between different operators, question the need for the telecommunications system, or determine health safeguards if the proposal meets International Commission guidelines for public exposure."

Code of Best Practice on Mobile Phone Network Development (2002)
The Code of Best Practice was published in November 2002 and produced jointly by all Mobile Phone Operators, and representatives of Central and Local Government. It provides clear and practical advice to ensure that delivery of significantly better and more effective communication and consultation between operators, local authorities and local residents.

The limits of permitted development are summarised in the Code of Best Practice on Mobile Phone Network Development in which in paragraph 66 there is particular reference to equipment cabinets less than 2.5 metres in volume.

Paragraph 126 acknowledges the options for design used by an operator will be affected by site conditions, technical constraints, landscape features and capacity requirements. The main options would include mast and or site sharing; and installation on existing buildings and structures.

With regards mast and site sharing it is stated in paragraph 127 that *"it has been a longstanding Government policy objective to encourage telecommunications operators, wherever practicable, to share masts and sites as a means of reducing overall mast numbers."*

Paragraphs 140 - 145 identify general design principles in which camouflaging or disguising equipment is considered materially appropriate. In reducing the environmental and visual impact of a ground based installation the Code of Best Practice promotes the use of simple and uncomplicated designs.

Concerning the erection of new ground based masts, paragraph 148 provides examples of where the environmental and visual impact of the mast can be greatly reduced. Paragraph 148 states:

- *Placing the mast near similar structures. For example, industrial and commercial premises, road signs and lamp posts;*
- *Using simple and unfussy designs. Masts which have complex designs are more likely to dominate and be in discord with the landscape and have adverse visual impacts; and*
- *Appropriate colouring.*

Annex B, paragraph 5 states that *"Radio signals are susceptible to interference and need clear visibility around the site; this means that some locations are not suitable for base station sites. The antennas need to be placed so they can cover the area of the cell and this means that they need to be placed high, often on a building or telecommunications mast. The height required will vary depending on the type of antenna, the area to be covered, surrounding topography and heights of adjacent buildings or trees."*

Annex B, paragraph 6 acknowledges that the number of base station sites depends on the area to be covered and the number of people who want to use the service. A new base station may be required to provide coverage, capacity, improve the quality of service and/or to replace an existing site.

Reasons for Siting & Appearance
From the outset, it should be appreciated that irrespective of the installation's use as a telecommunications base station, the change in form of an existing tall structure will always be, to some degree, a noticeable alteration to those residents and regular passers by found closest. However it should be recognised that visibility or a development's height and design does not automatically result in an overwhelming adverse harm. Similarly, it should be acknowledged that the presence of the existing telecommunications installation on-site may result in a number of preconceptions regarding the new proposal now subject to this application. In reflection it should be appreciated that these opinions may actually derive from the previous planning history and or the siting and appearance relating to the now existing mast. Irrespective of these viewpoints and what has gone before, it should be acknowledged that the existing base station is now established on-site, in which this provides a good reference

point for the latest scheme's siting and appearance.

In light of the above it is considered that the planning assessment of this case should concentrate on whether the proposed changes in terms of its form when compared to the existing development are significant as to outweigh other material planning matters. Indeed it should also be ascertained as to whether there is still a need for the base station and if there have been any notable changes in terms of the development's site specific siting and surroundings. Also the latest proposal subject to this application should be reviewed against the up to date planning policy regarding telecommunications development.

As discussed previously with regards the choice of design when comparing the appearance of the existing installation with the proposed scheme, it is considered that the latest upgrade development will not undermine the visual amenity of the area. In this respect balanced against the other matters as below, it is considered that the latest CTIL proposal is acceptable.

With regards the need for the development it has been highlighted previously that the existing base station requires upgrading to meet the existing and future 4G demands of mobile users. In this respect it's continue presence and operation is essential in providing network coverage for Telefonica and Vodafone.

It should be acknowledged that a sequential approach to site selection has been taken, whereby the proposal seeks to replace an existing ground based installation found at the application site. In light of the character of the target area and the constraints it presents, it is considered that the proposed site remains an appropriate location in which to retain a telecommunications development. Indeed as the existing base station is an established feature on-site and the new head frame is a direct replacement, it is clear that there will be no change in terms of its position. With regards the surrounding characteristics, it is considered that this locality remains a suitable context for a telecommunications base station as the immediate uses found next to the existing base station remain materially unaltered. Indeed it is also of note that the existing mast at Moston Station is co-located next to existing streetworks style base stations found along Hollinswood Avenue.

It is recognised that the above application was determined prior to the adoption of the aforementioned NPPF. Nevertheless it is evident that the planning policy context has not altered significantly since permission was initially granted, in which the key principals of telecommunication development are deep rooted in planning policy. In this regard it is reasonable to presume that the NPPF has derived from PPG8 which was applied in the first instance. Therefore it is considered that there is limited material conflict between the latest adopted planning policies used today when compared to the policy context that has gone before. Taking into account the local planning policies which are applicable it is considered that the proposal accords with the Council development plan.

In light of the above the applicant considers that the proposal strikes a good balance between environmental impact and operational considerations.

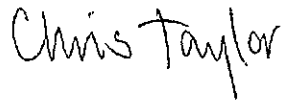
Health & Safety

Court cases have confirmed that the public perception of health risks can be a material consideration within the land-use planning system. However the weight to be attached to this issue has to be determined accordingly in each case by the decision maker. It has been generally held, and widely established at planning appeal, that health concerns are not a sufficient basis alone for withholding planning permission providing it has been demonstrated that the proposed installation will comply with the ICNIRP guidelines.

It should be recognised that it has been long since established that it is Central Government's stance that the planning system is not the appropriate mechanism for determining health safeguards. It remains Central Government's responsibility to decide what measures are necessary to protect public health. Most notably it is Central Government's view that if a proposed development meets the ICNIRP guidelines for public exposure it should not be necessary for a Local Planning Authority, in processing an application for planning permission or prior approval, to consider further the health aspects and concerns about them.

In this respect the operators believe that it is not necessary to consider health effects further. Vodafone and Telefónica as operators are committed to ensuring that all new installations are ICNIRP compliant therefore it is considered that there is no basis for this case to be refused on health and safety grounds or for reasons relating to public concerns about health and safety. An ICNIRP compliance certificate is attached as part of this submission, as required by NPPF paragraph 45, in which the ICNIRP declaration takes into account the cumulative effect of the emissions from the proposed installation and all radio base stations present, at or co-located near to the proposed installation. Radio frequency emissions from the proposed installation will be may times lower than the ICNIRP reference standard in all publicly accessible areas around the installation. In the light of the above information, it is clear that the weight to be given to such concerns should not be so great as to warrant a refusal of the case on health grounds.

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