Development Control
Gloucester City Council
PO Box 2017, Pershore, WR10 9BJ
01452 396 396
development.control@gloucester.gov.uk
www.gloucester.gov.uk/planning

Application to determine if prior approval is required for a proposed: Development by or on behalf of an electronic communications code operator for the purpose of the operator's Electronic Communications Network in, on, over or under land controlled by that operator or in accordance with the electronic communications code

The Town and Country Planning (General Permitted Development) (England) Order 2015 (as amended) - Schedule 2, Part 16, Class A

Publication of applications on planning authority websites

Please note that the information provided on this application form and in supporting documents may be published on the Authority's website. If you require any further clarification, please contact the Authority's planning department.

Site Location

Disclaimer: We can only make recommendations based on the answers given in the questions.

If you cannot provide a postcode, the description of site location must be completed. Please provide the most accurate site description you can, to help locate the site - for example "field to the North of the Post Office".

Number

Suffix

Property Name

Highways Land

Address Line 1

Windsor Drive

Address Line 2

Tuffley

Address Line 3

Town/city

Gloucester

Postcode

GL4 0QH

Description of site location must be completed if postcode is not known:

Easting (x)

382282

Northing (y)

214496

Description

Applicant Details

Name/Company

Title

First name

Surname

CK Hutchison Networks (UK) Ltd.

Company Name

Address

Address line 1

450 Longwater Avenue

Address line 2

Green Park

Address line 3

Town/City

Reading

County

Country

UK

Postcode

RG2 6GF

Are you an agent acting on behalf of the applicant?

- [x] Yes
- [ ] No

Contact Details

Contact Details

Primary number

***** REDACTED ******

Secondary number

Fax number

Email address

***** REDACTED ******

Agent Details

Name/Company

Title

First name

Keith

Surname

Wright

Company Name

Gillan Consulting

Address

Address line 1

Cul Na Saithe

Address line 2

Leny Feus

Address line 3

Town/City

Callander

Country

United Kingdom

Postcode

FK178AS

Contact Details

Primary number

***** REDACTED ******

Secondary number

Email address

***** REDACTED ******

Electronic communications apparatus

Please specify the type of apparatus to be installed or altered (e.g. call box, mast)

Installation of 17m pole inc. antennas, ground based apparatus and ancillary development.

Please provide further details of the apparatus (e.g. height, size, colour etc)

Full details of dimensions on submitted drawings. Colour - grey.

Are you replacing an existing installation?

◯ Yes
⊘ No

Additional information

Are you submitting a declaration confirming that the apparatus is in full compliance with the requirements of the radio frequency (RF) public exposure guidelines of the International Commission on Non-Ionizing Radiation Protection (ICNIRP)? The emissions from all mobile phone network operators' equipment on the site must be taken into account when determining compliance.

⊘ Yes
◯ No

Are you also providing a completed Supplementary Information Template (as set out in Appendix D of the Code of Best Practice on Mobile Phone Network Development in England)?

⊘ Yes
◯ No

Neighbour and Community Consultation

Have you consulted your neighbours or the local community about the proposal?

⊘ Yes
◯ No

If Yes, please provide details

Pre-application consultation letters and a set of plans were sent on 22/12/22 to the local ward councillors for Grange (Councillors S Evans and S Morgan), and to the Headteacher and Chair of Governors of Harewood Infant School, Harewood Junior School and Holmleigh Park High School.

No responses received to date

Site Visit

Can the site be seen from a public road, public footpath, bridleway or other public land?

- [x] Yes
- [ ] No

If the planning authority needs to make an appointment to carry out a site visit, whom should they contact?

- [x] The agent
- [ ] The applicant
- [ ] Other person

Pre-application Advice

Has assistance or prior advice been sought from the local authority about this application?

- [x] Yes
- [ ] No

If Yes, please complete the following information about the advice you were given (this will help the authority to deal with this application more efficiently):

Officer name:

Title

First Name

Surname

***** REDACTED ******

Reference

Date (must be pre-application submission)

22/12/2022

Details of the pre-application advice received

no specific response received at time of application

Declaration

I / We hereby apply for Prior Approval: Development for electronic communications network as described in this form and accompanying plans/drawings and additional information. I / We confirm that, to the best of my/our knowledge, any facts stated are true and accurate and any opinions given are the genuine options of the persons giving them. I / We also accept that: Once submitted, this information will be transmitted to the Local Planning Authority and, once validated by them, be made available as part of a public register and on the authority's website; our system will automatically generate and send you emails in regard to the submission of this application.

- [x] I / We agree to the outlined declaration

Signed

Keith Wright

Date

06/01/2023

V 1.8

SITE LOCATION

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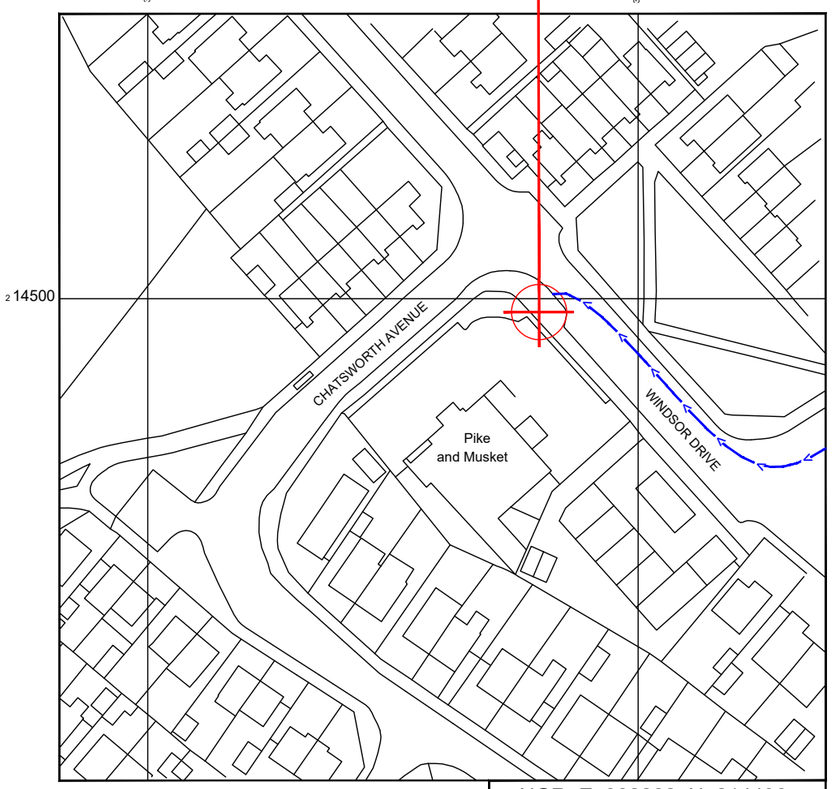
SITE AREA PLAN

0 1:50,000 1km 2

SITE PHOTOGRAPH

SITE LOCATION

N



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NGR E: 382282 N: 214496

SITE LOCATION PLAN

0 1:1250 25m 50

GOOGLE MAPS QR CODE

GOOGLE MAPS - https://goo.gl/maps/6hDVe74AAWGrXkxn8

GOOGLE STREETVIEW - https://goo.gl/maps/JHuw2AXbMoGwBntW6

NOTES:

1. ALL DIMENSIONS IN MM UNLESS OTHERWISE NOTED.

DIRECTIONS TO SITE: ON M5, TAKE EXIT 12 AND A430 TO A38 IN HARDWICKE, HEAD NORTH-EAST ON M5, AT JUNCTION 12, EXIT TOWARDS GLOUCESTER/A38, KEEP LEFT AT THE FORK AND MERGE ONTO A430, CONTINUE STRAIGHT TO STAY ON A430, CONTINUE ON A38 TO GLOUCESTER, AT THE ROUNDABOUT, TAKE THE 3RD EXIT ONTO A38, AT THE ROUNDABOUT, TAKE THE 1ST EXIT AND STAY ON A38, USE THE RIGHT 2 LANES TO TURN SLIGHTLY RIGHT TOWARDS COLE AVE/A38, CONTINUE ONTO COLE AVE/A38, TAKE GRANGE RD TO WINDSOR DR IN TUFFLEY, TURN RIGHT ONTO EPNEY RD, AT THE ROUNDABOUT, CONTINUE STRAIGHT ONTO GRANGE RD, TURN RIGHT ONTO WINDSOR DRIVE, SITE WILL BE ON THE LEFT INFRONT OF THE PUB.

Access Route To Site:

Master:	MBNL / EE / H3G:	Project:	Purpose of Issue:	Issue:
M001	H3G	DENSIFICATION SW	Planning	A

Date:	15/11/22
Drawn:	C.Pink
Checked:	D.Fieldhouse
Approved:	G.Thomas

Revision / Upgrade Description:
First Issue - Site nomination dated: TBC

Hutchison 3G UK Limited
Green Park, 450 Longwater Avenue
Reading, RG30 3UR
[redacted]
H3G Base Station Information line:
[redacted]
Available 8am-8pm Monday to Friday

Design Consultant & Principal Contractor:

CLARKE telecom
Unit E, Madison Place, Northampton Road,
Manchester, M40 5AG
[redacted]
Web: www.clarke-telecom.com

Site Name: WINDSOR DRIVE

Site ID: GLO26519

Address:
WINDSOR DRIVE
TUFFLEY
GLOUCESTER
GL4 0QH

Title: 002 SITE LOCATION PLAN

Project: H3G DENSIFICATION STREETWORKS

Purpose of Issue: PLANNING

MBNL Cell ID:	3UK Cell ID:
-	-

Master Drawing No: GLO26519_M001_H3G_DNSW_GA

Issue: A

100mm
50mm
10mm

V 1.8

SITE LOCATION

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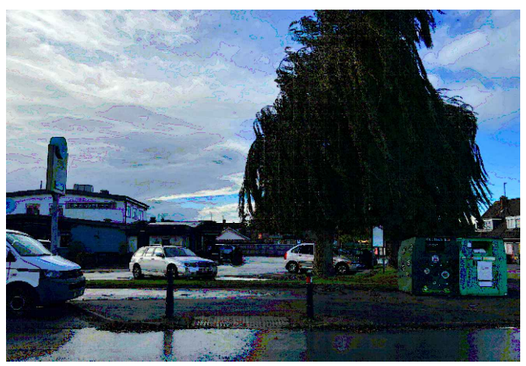
SITE AREA PLAN

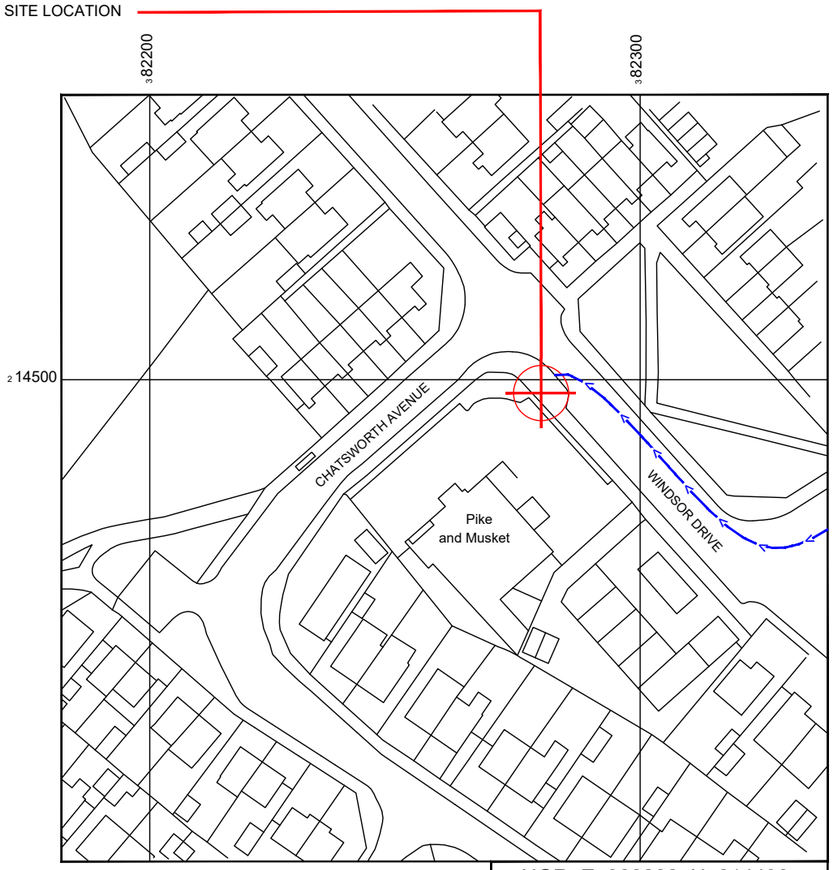
0 1:50,000 1km 2



SITE PHOTOGRAPH

N

SITE LOCATION



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NGR E: 382282 N: 214496

SITE LOCATION PLAN

0 1:1250 25m 50

GOOGLE MAPS QR CODE

GOOGLE MAPS - https://goo.gl/maps/6hDVe74AAWGrXkxn8

GOOGLE STREETVIEW - https://goo.gl/maps/JHuw2AXbMoGwBntW6

NOTES:

1. ALL DIMENSIONS IN MM UNLESS OTHERWISE NOTED.

DIRECTIONS TO SITE: ON M5, TAKE EXIT 12 AND A430 TO A38 IN HARDWICKE, HEAD NORTH-EAST ON M5, AT JUNCTION 12, EXIT TOWARDS GLOUCESTER/A38, KEEP LEFT AT THE FORK AND MERGE ONTO A430, CONTINUE STRAIGHT TO STAY ON A430, CONTINUE ON A38 TO GLOUCESTER, AT THE ROUNDABOUT, TAKE THE 3RD EXIT ONTO A38, AT THE ROUNDABOUT, TAKE THE 1ST EXIT AND STAY ON A38, USE THE RIGHT 2 LANES TO TURN SLIGHTLY RIGHT TOWARDS COLE AVE/A38, CONTINUE ONTO COLE AVE/A38, TAKE GRANGE RD TO WINDSOR DR IN TUFFLEY, TURN RIGHT ONTO EPNEY RD, AT THE ROUNDABOUT, CONTINUE STRAIGHT ONTO GRANGE RD, TURN RIGHT ONTO WINDSOR DRIVE, SITE WILL BE ON THE LEFT INFRONT OF THE PUB.

Access Route To Site:

Master:	MBNL / EE / H3G:	Project:	Purpose of Issue:	Issue:
M001	H3G	DENSIFICATION SW	Planning	A

Date:	15/11/22
Drawn:	C.Pink
Checked:	D.Fieldhouse
Approved:	G.Thomas

Revision / Upgrade Description:
First Issue - Site nomination dated: TBC

Hutchison 3G UK Limited
Green Park, 450 Longwater Avenue
Reading, RG30 3UR
[redacted]
H3G Base Station Information line:
[redacted]
Available 8am-8pm Monday to Friday

Design Consultant & Principal Contractor:

CLARKE telecom
Unit E, Madison Place, Northampton Road,
Manchester, M40 5AG
[redacted]
Web: www.clarke-telecom.com

Site Name: WINDSOR DRIVE

Site ID: GLO26519

Address:
WINDSOR DRIVE
TUFFLEY
GLOUCESTER
GL4 0QH

Title: 002 SITE LOCATION PLAN

Project: H3G DENSIFICATION STREETWORKS

Purpose of Issue: PLANNING

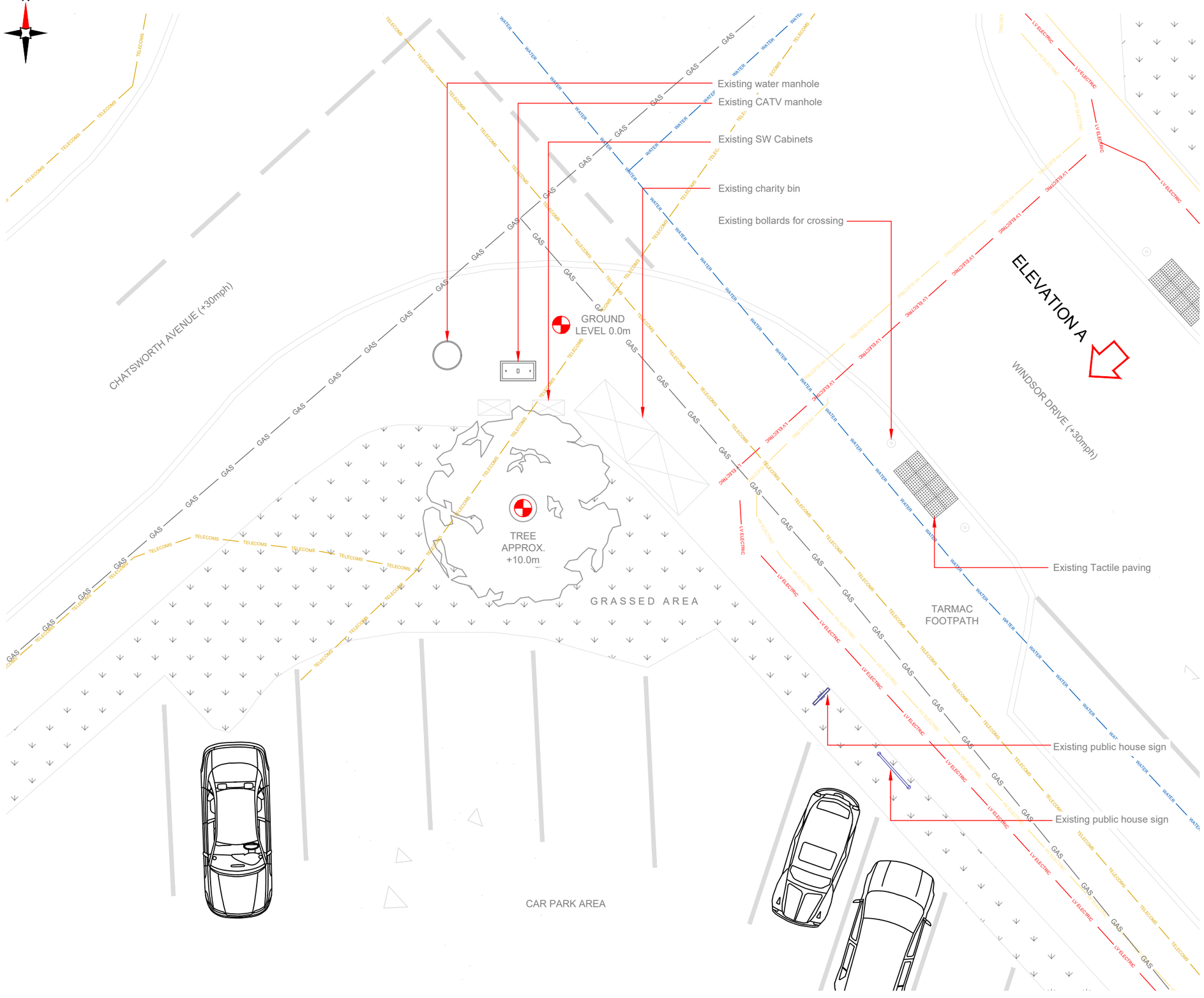
MBNL Cell ID:	3UK Cell ID:
-	-

Master Drawing No: GLO26519_M001_H3G_DNSW_GA

Issue: A

100mm
50mm
10mm

V 1.8



EXISTING SITE PLAN

0 1:100 2m 4

100mm 50mm 10mm

NOTES:

1. ALL DIMENSIONS IN MM UNLESS OTHERWISE NOTED.

SERVICES LEGEND

WATER WATER WATER
HV ELECTRIC HV ELECTRIC
LV ELECTRIC LV ELECTRIC
GAS GAS GAS
TELECOMS TELECOMS
GPR
URF URF

Master:	MBNL / EE / H3G:	Project:	Purpose of Issue:	Issue:
M001	H3G	DENSIFICATION SW	Planning	A

Date:	15/11/22
Drawn:	C.Pink
Checked:	D.Fieldhouse
Approved:	G.Thomas

Revision / Upgrade Description:
First Issue - Site nomination dated: TBC

Hutchison 3G UK Limited
Green Park, 450 Longwater Avenue
Reading, RG30 3UR
[redacted]
H3G Base Station Information line:
[redacted]
Available 8am-8pm Monday to Friday

Design Consultant & Principal Contractor:
CLARKE telecom
Unit E, Madison Place, Northampton Road,
Manchester, M40 5AG
[redacted]
WEB: www.clarke-telecom.com

Site Name: WINDSOR DRIVE

Site ID: GLO26519

Address:
WINDSOR DRIVE
TUFFLEY
GLOUCESTER
GL4 0QH

Title: 100 EXISTING H3G SITE PLAN

Project: H3G DENSIFICATION STREETWORKS

Purpose of Issue: PLANNING

MBNL Cell ID:	3UK Cell ID:
-	-

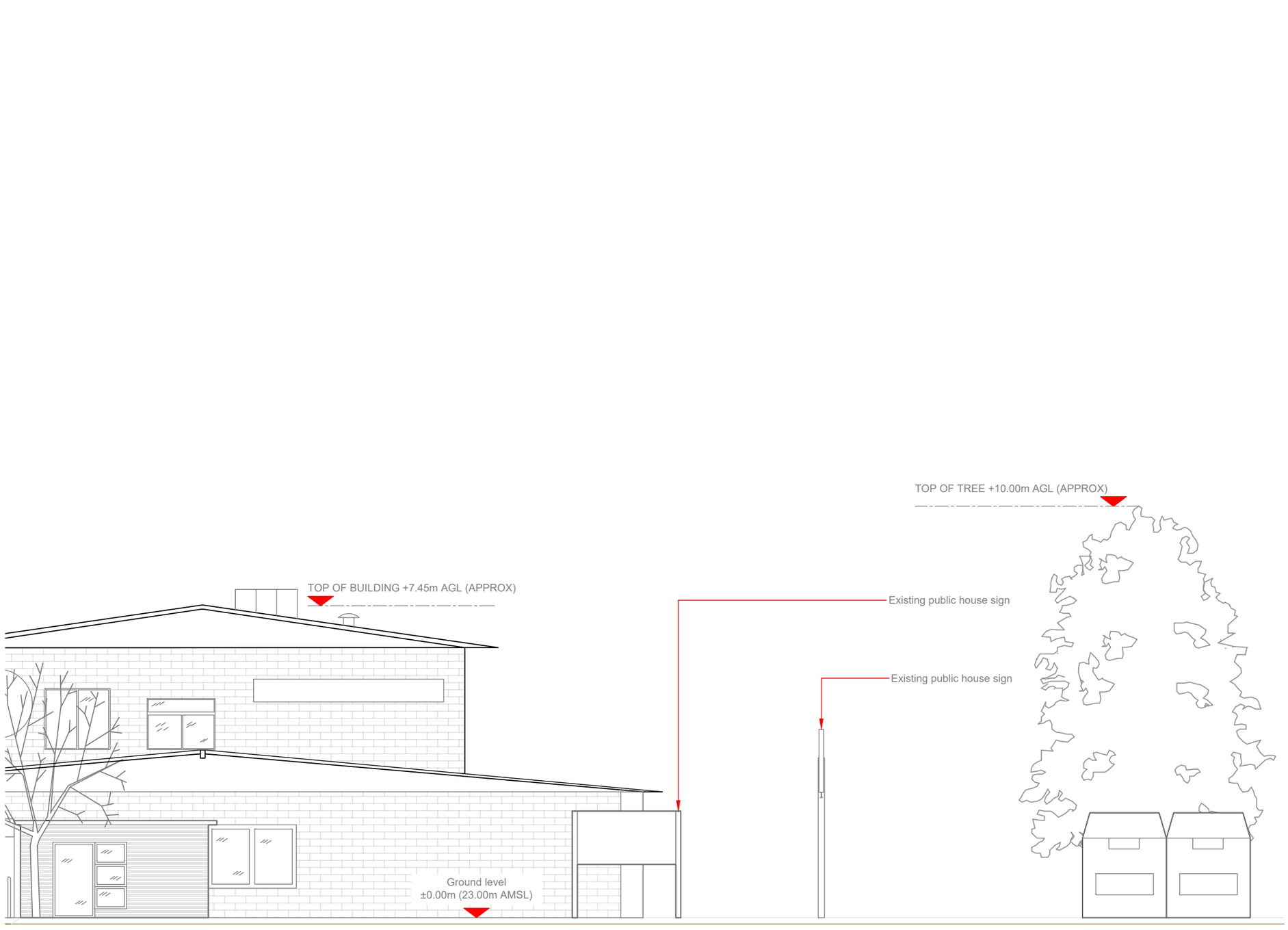
Master Drawing No: GLO26519_M001_H3G_DNSW_GA

Issue: A

V 1.8

NOTES:

1. ALL DIMENSIONS IN MM UNLESS OTHERWISE NOTED.



EXISTING SITE ELEVATION

0 1:100 2m 4

100mm 50mm 10mm

Master:	MBNL / EE / H3G:	Project:	Purpose of Issue:	Issue:
M001	H3G	DENSIFICATION SW	Planning	A

Date:	15/11/22
Drawn:	C.Pink
Checked:	D.Fieldhouse
Approved:	G.Thomas

Revision / Upgrade Description:
First Issue - Site nomination dated: TBC

Hutchison 3G UK Limited
Green Park, 450 Longwater Avenue
Reading, RG30 3UR
[redacted]
H3G Base Station Information line:
[redacted]
Available 8am-9pm Monday to Friday

Design Consultant & Principal Contractor:
CLARKE telecom
Unit E, Madison Place, Northampton Road,
Manchester, M40 5AG
[redacted]

Site Name:
WINDSOR DRIVE

Site ID:
GLO26519

Address:
WINDSOR DRIVE
TUFFLEY
GLOUCESTER
GL4 0QH

Title:
150 EXISTING H3G ELEVATION

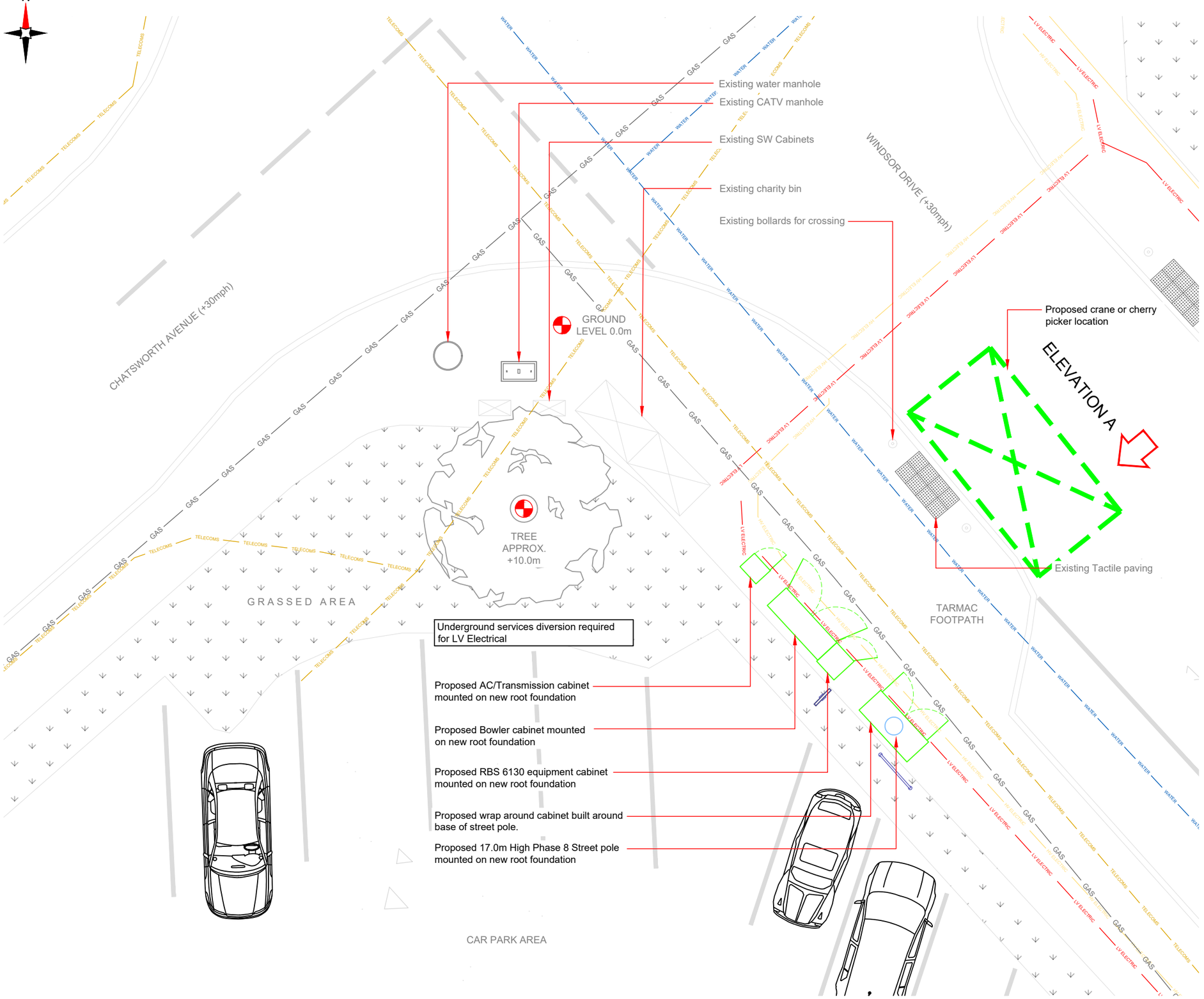
Project:
H3G DENSIFICATION STREETWORKS

Purpose of Issue:
PLANNING

MBNL Cell ID:	3UK Cell ID:
-	-

Master Drawing No:	Issue:
GLO26519_M001_H3G_DNSW_GA	A

V 1.8



PROPOSED SITE PLAN

1:100

NOTES:

1. ALL DIMENSIONS IN MM UNLESS OTHERWISE NOTED.

SERVICES LEGEND

WATER
HV ELECTRIC
LV ELECTRIC
GAS
TELECOMS
GPR
URF

Master:	MBNL / EE / H3G:	Project:	Purpose of Issue:	Issue:
M001	H3G	DENSIFICATION SW	Planning	A

Date:	15/11/22
Drawn:	C.Pink
Checked:	D.Fieldhouse
Approved:	G.Thomas

Revision / Upgrade Description:
First Issue - Site nomination dated: TBC

Hutchison 3G UK Limited
Green Park, 450 Longwater Avenue
Reading, RG30 3UR
[redacted]
H3G Base Station Information line:
[redacted]
Available 8am-8pm Monday to Friday

Design Consultant & Principal Contractor:
CLARKE telecom
Unit E, Madison Place, Northampton Road,
Manchester, M40 5AG
[redacted]
Web: www.clarke-telecom.com

Site Name: WINDSOR DRIVE

Site ID: GLO26519

Address:
WINDSOR DRIVE
TUFFLEY
GLOUCESTER
GL4 0QH

Title: 210 PROPOSED H3G SITE PLAN

Project: H3G DENSIFICATION STREETWORKS

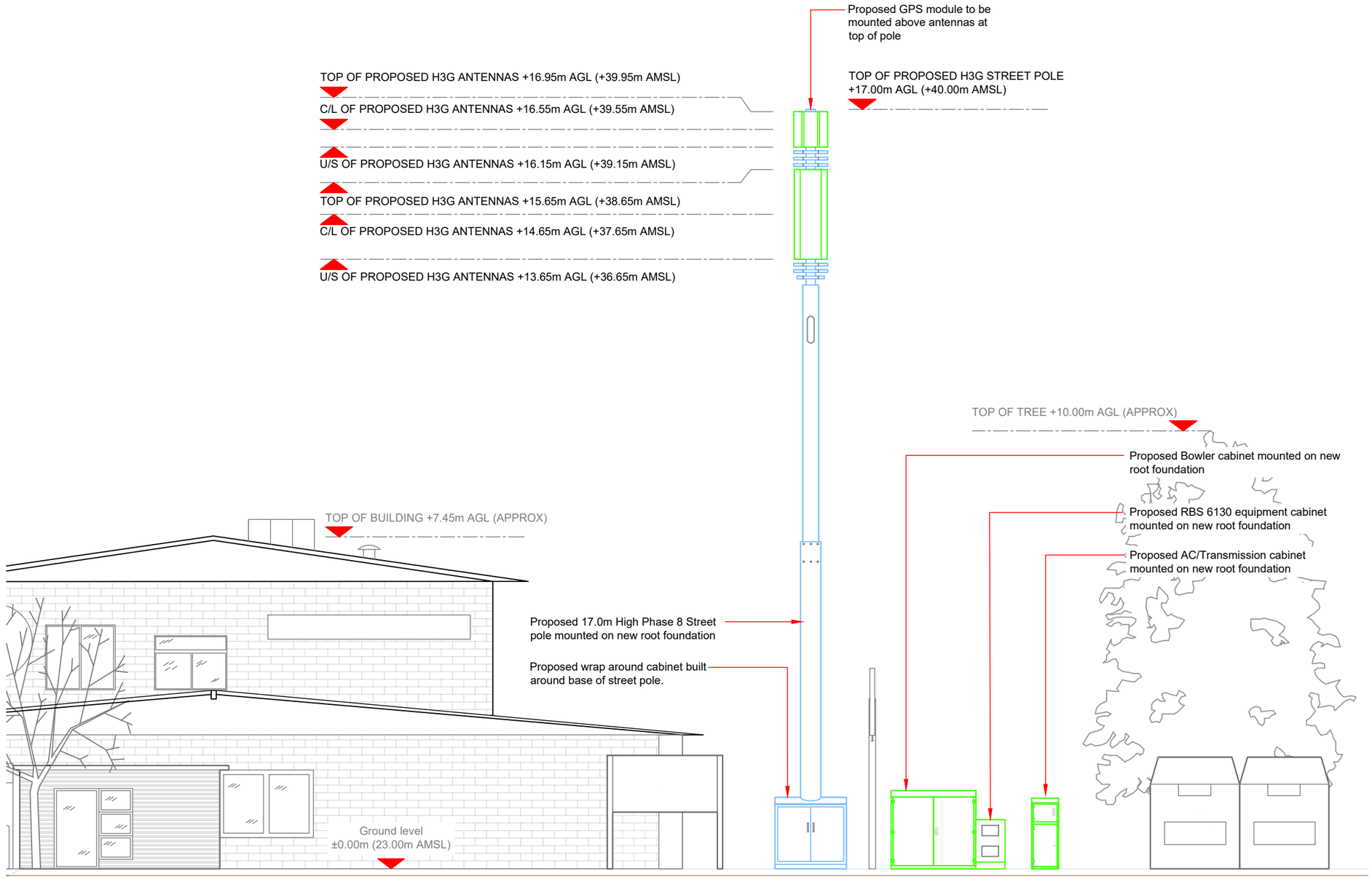
Purpose of Issue: PLANNING

MBNL Cell ID:	3UK Cell ID:
-	-

Master Drawing No: GLO26519_M001_H3G_DNSW_GA

Issue: A

V 1.8



PROPOSED SITE ELEVATION

0 1:100 2m 4

NOTES:

1. ALL DIMENSIONS IN MM UNLESS OTHERWISE NOTED.

Master:	MBNL / EE / H3G:	Project:	Purpose of Issue:	Issue:
M001	H3G	DENSIFICATION SW	Planning	A

Date:	15/11/22
Drawn:	C.Pink
Checked:	D.Fieldhouse
Approved:	G.Thomas

Revision / Upgrade Description:
First Issue - Site nomination dated: TBC

Hutchison 3G UK Limited
Green Park, 450 Longwater Avenue
Reading, RG30 3UR
[redacted]
H3G Base Station Information line:
[redacted]
Available 8am-5pm Monday to Friday

Design Consultant & Principal Contractor:

CLARKE telecom
Unit E, Madison Place, Northampton Road,
Manchester, M40 5AG
[redacted]
Web: www.clarke-telecom.com

Site Name: WINDSOR DRIVE

Site ID: GLO26519

Address:
WINDSOR DRIVE
TUFFLEY
GLOUCESTER
GL4 0QH

Title: 260 PROPOSED H3G ELEVATION

Project: H3G DENSIFICATION STREETWORKS

Purpose of Issue: PLANNING

MBNL Cell ID:	3UK Cell ID:
-	-

Master Drawing No: GLO26519_M001_H3G_DNSW_GA

Issue: A

The Institution of Engineering and Technology

Allaying health concerns regarding 5G and exposure to radio waves

An IET guide for policy makers and local planning authorities
2nd edition

theiet.org/5G-health

Contents

Allaying health concerns regarding 5G and exposure to radio waves is published by the Institution of Engineering and Technology.

Please note that the views expressed in this publication are not necessarily those of the IET. It is not intended to be a guidance note with a specified set of recommendations or actions but rather seeks to add understanding and debate around the topic.

The Institution of Engineering and Technology

The Institution of Engineering and Technology (IET) is working to engineer a better world. We inspire, inform and influence the global engineering community, supporting technology innovation to meet the needs of society. The Institution of Engineering and Technology is registered as a Charity in England and Wales (no. 211014) and Scotland (no. SC038698).

About this guide

This Institution of Engineering and Technology Guide aims to give policy makers and Local Planning Authorities a better understanding of what 5G is, and what it is not, as it affects the concerns that have been expressed about exposure to radio waves.

The document is intended as a brief overview and references for further reading are provided in the footnotes.

Prof Will Stewart FREng, FInstP, FIET, FOSA
Chairman of the IET Digital Communications Policy Panel

Prof Stephen Temple CBE FREng CEng FIET
IET Guide Lead Editor

The IET Digital Panel would welcome any comments you may have on the contents/ your ideas for future digital publications. Please get in touch via **sep@theiet.org**.

Foreword

There has been an "infodemic" of misleading and false information circulating in the media about 5G and alleged health effects. Some of it is pure fantasy, but there have also been sincere concerns expressed by some people, including scientists, who are not up to date with how 5G has evolved in the UK.

The second edition of the IET Guide "Allaying health concerns regarding 5G and exposure to radio waves" provides a bridge to understanding how the 5G technology being implemented and the frequencies being used affect radio wave exposure, compared to the earlier mobile technologies that everyone is very familiar with.

The Guide is also helpful in another respect. It brings together, in one publication, an explanation of the overall rigorous radio exposure safety framework for public mobile services, embracing both the mobile networks and smartphones. The conclusion that 5G is as safe as 4G, 3G and Global System for Mobile communication (GSM) is not a political soundbite, but a conclusion drawn from an objective detailed examination, by independent professional engineers, who belong to institutions committed to the very highest professional standards.

Professor Danielle George
IET Deputy President

Introduction

What is 5G?

5G is the next evolution in mobile technology that will provide the underlying wireless infrastructure to cope with the relentless rise in data consumption[1] and support many new applications. This includes everything from connected cars and virtual and augmented reality through to the foundations for emerging smart city and Internet of Things (IoT) technologies. It delivers this through the use of revolutionary new hardware like beam forming antennas and innovative new radio coding software at its core.

Features of 5G

Faster download speeds

It is expected that 5G will provide Gb/s data speeds. This would mean things that currently take minutes to download would only take seconds. Even more important will be the ability to support higher download speeds for many more concurrent users in the same place. This will lead to a more predictable and consistent performance.

Lower latency

5G can support significantly lower latency, where appropriate, meaning very little lag, or buffering. This could enable mobile applications that simply aren't possible today, such as multiplayer gaming, factory automation and other tasks that demand quick responses.

Greater capacity

5G will also have vastly greater capacity, allowing networks to better cope with not only the rapidly increasing data demands of customers today, but also the growth of high-demand applications being planned in the future.

[1] Ofcom "*Enabling 5G in the UK*" https://www.ofcom.org.uk/__data/assets/pdf_file/0022/111883/enabling-5g-uk.pdf.

Key observations

The 5G technology itself, ***in so far as it affects radio wave exposure***, is very similar to 4G and in terms of its pulsed signals, the same as Global System for Mobile communication (GSM), Digital Enhanced Cordless Telecommunications (DECT) phones and a version of 4G.

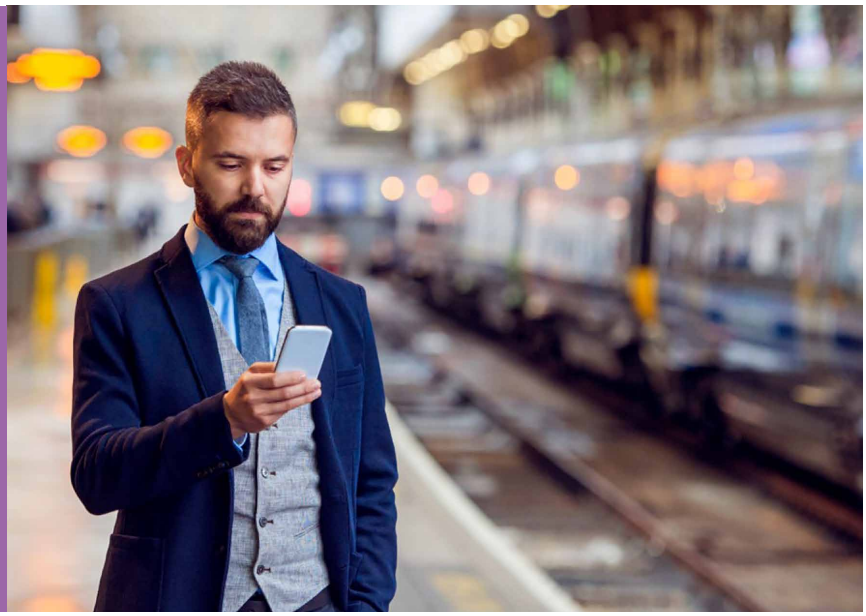
As there has been no dispensation for 5G safety standards, it will have to meet the same safety standards as 4G, 3G and GSM, meaning ***5G will be just as safe as 4G, 3G and GSM***.

There are no "higher frequency" (mmWaves) commercial 5G mobile antennas ***deployed anywhere in the UK*** and none are currently planned (due to high cost of coverage).

Reducing exposure to radio waves in the future requires more base stations ***in order to drive down both*** smartphone and base station power levels.

Electromagnetic Field (EMF) exposure guidelines developed by the International Commission on Non-Ionizing Radiation Protection (ICNIRP)

The first element of the cellular mobile radio wave exposure safety framework are the international recommended guidelines set by the ICNIRP at levels to ensure no harm[2].



The most recent set of ICNIRP guidelines were published on the 11th March 2020, following a comprehensive assessment of peer-reviewed scientific literature over two decades, covering both thermal and non-thermal effects. The guidelines are designed to ensure that all people are not exposed to electromagnetic radiation at radio frequencies[3] in a way that would have any adverse effect on the body, such as excessive heating. No evidence for cancer, infertility or other health effects[4] has been found at the exposure levels recommended in the guidelines.

The reference exposure level for bands below 6 GHz (i.e. all the frequencies currently used in the UK for GSM, 3G, 4G & 5G) has not been changed in the revised guidelines. They have been calculated by reference to specific absorption rate (SAR)[5] and incorporate a substantial margin of safety.

For bands above 6 GHz, where the body does not really absorb the Radio Frequency (RF), the guidelines are set by reference to Power Density (PD)[6], and again incorporating a substantial margin of safety.

[2] https://www.icnirp.org/en/frequencies/radiofrequency/index.html. https://www.icnirp.org/cms/upload/publications/ICNIRPrfgdl2020.pdf.

[3] The radiofrequency ranges are in the non-ionising part of the Electromagnetic Spectrum (30Hz to 300GHz), well below, for example, the visible light portion of the Electromagnetic Spectrum (c.430-740THz).

[4] Other health effects mentioned include absurd theories linking 5G to Coronavirus.

[5] **SAR** is defined as the power absorbed per mass of tissue and has units of watts per kilogram (W/kg). SAR is usually averaged either over the whole body or over a small sample volume (typically 1g or 10g of tissue).

[6] **Power density** is the amount of power per unit area (Watts/M2).

Compliance with ICNIRP guidelines for 5G mobile broadband networks

The second element of the cellular mobile radio wave exposure safety framework is *compliance* of base stations with ICNIRP recommended limits.

Ofcom intends to introduce a new condition in spectrum licences that will require licensees to ensure that all Electric and Magnetic Fields (EMF) emissions from radio equipment in excess of 10 watts (effective isotropic radiated power) complies with the relevant levels for general public exposure from the ICNIRP Guidelines. It will ensure Ofcom is in a position to take appropriate enforcement action in the event of non-compliance with the ICNIRP Guidelines.

Ofcom has already carried out their own independent measurements on some deployed 5G base stations and verified their compliance with the guidelines[7].

As part of the process for obtaining planning consent for new 4G/5G sites and upgrades, each operator will continue to confirm compliance with ICNIRP guidelines[8].

[7] See https://www.comsoc.org/publications/ctn/truth-out-there-examining-science-around-5g-paranoia.
[8] See https://www.ofcom.org.uk/manage-your-licence/radiocommunication-licences/mobile-wirelessbroadband/exposure-electro-magnetic-fields.

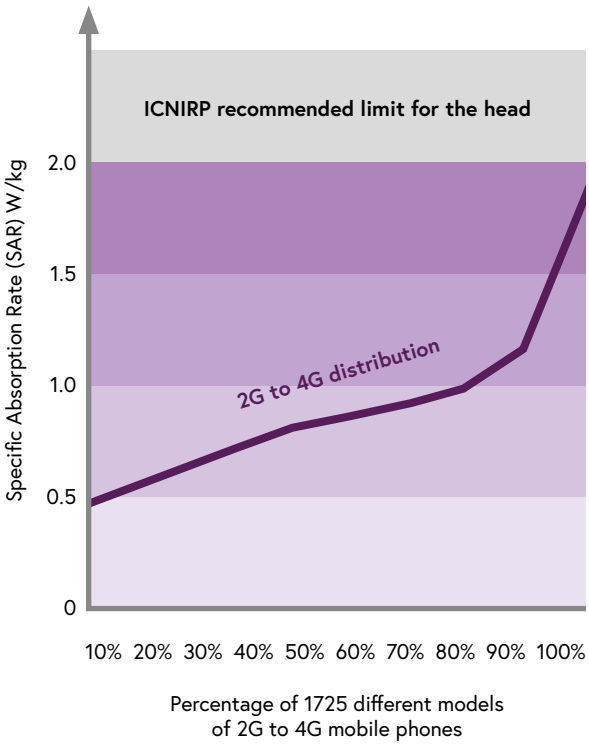
Compliance with ICNIRP guidelines for 5G smartphones and consumer choice

The third element of the cellular mobile radio wave exposure safety framework are the recommended limits for smartphones and other mobile devices.

A manufacturer, by adding a CE marking, is declaring, on its own responsibility, conformity with all of the legal requirements to achieve CE marking, including compliance with ICNIRP guidelines.

The illustration below indicates the distribution of Specific Absorption Rate (SAR) values for the head with GSM, 3G and 4G mobile technology generations based upon a very large sample of 1725 different models from 14 different manufacturers over a number of years.

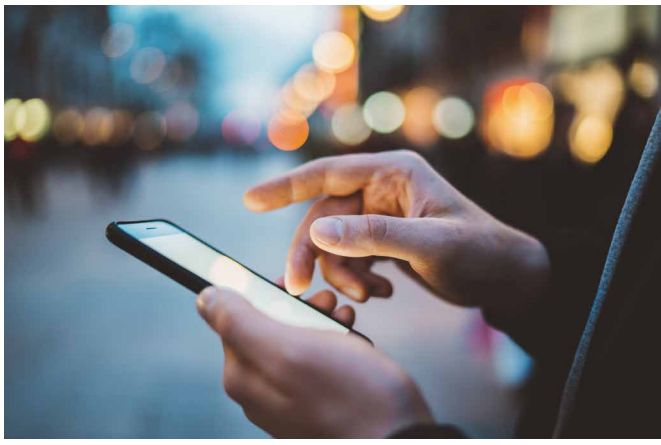
Specific Absorption Rate (SAR) values for the head with GSM, 3G and 4G mobile technology



The result shows almost 80% of all models in this very large sample had SAR values under 50% of the recommended limit. Data has been gathered on a number of 5G smartphones on sale in the UK. All the values were compliant and comparable to the earlier generations of smartphones. The frequencies built into the UK 5G smartphones were all below 6 GHz.

In recent years, SAR information for some phones has not always been easy for consumers to locate. SAR information should be included in publicly available technical specifications of all smartphones in order to facilitate consumer choice.

Finally, "handsfree working" is now standard on all smartphones. This offers consumers the discretion for further reducing RF exposure.



Exposure level reductions from new masts and small cells

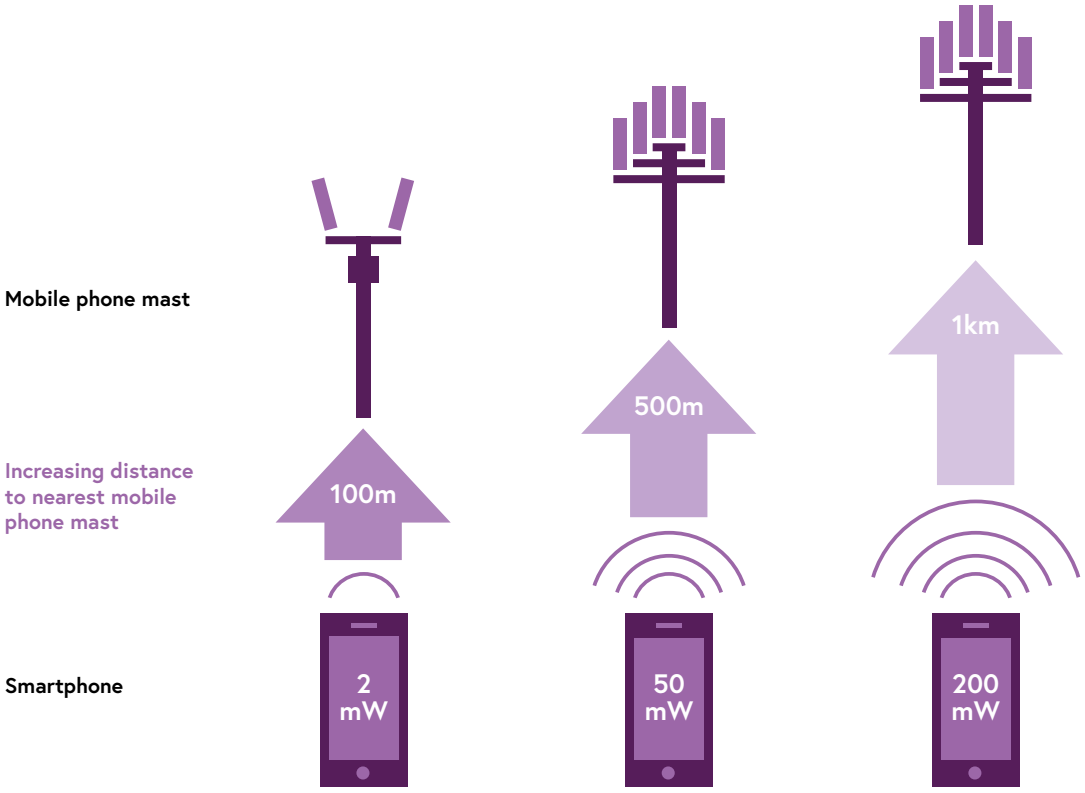
Small cells (micro-cells or pico-cells) are physically smaller antenna systems designed to work over a very short range to ease network congestion or fill in gaps in coverage.

Some people have expressed concern that a large number of 5G cells may increase a person's exposure to radio waves. However, that is not the way cellular mobile networks work. Every time a new mast or small cell is added, the distance the signal has to travel reduces. Therefore, from the laws of physics, the power needed at the smartphone and base station for a reliable connection is much less. Using the lowest practical power level is essential to prevent users located in different cells from disrupting each other's connections. It also saves the user's smartphone battery life.

For many people, their smartphone will be by far the nearest source of radio wave energy to them. As a result, more masts or 5G small cells will lead to a reduction in the overall radio wave signal strength an individual smartphone user is exposed to.

At the moment, there are relatively few small cells in use in the UK and though their numbers are likely to increase over time, we don't expect a mass rollout of them any time soon.

Illustrating how more base stations reduce smartphone powers and hence RF exposure[9]



[9] The numbers are purely illustrative and the actual powers will be determined by many factors including, importantly, the physical distance but also the urban topology between the network antenna and the smartphone.

The most widely used 5G band in the UK will be 3.6GHz

The UK and Europe proposed the use of three bands for 5G[10]. These were termed the 5G pioneer bands and each had a different purpose.

700MHz

This band is to secure pervasive national coverage. It's likely to be deployed from the traditional tall mobile phone masts. Only modest data capacity can be supported.

3.6GHz (3.4-3.8GHz)

The 3.6GHz band sits between the current WiFi bands at 2.4GHz and 5GHz that are already widely deployed in homes, offices and public places. 3.6GHz is the 'sweet spot' for achieving the best capacity over the largest areas for the lowest cost and has wide international support. The mass deployment of small low power base stations in towns and cities will most likely use this band[11].

26GHz

This high frequency (mmWaves) supports the largest capacity but at the highest cost of coverage. There are no 26 GHz (mmWaves) commercial 5G mobile antenna being deployed anywhere in the UK and none are currently planned.

Research engineers see a potential for 26GHz to be used for a data capacity lift in the limited number of locations where the 3.6 GHz frequency maxes out over the next 10 years (less than 3% of the UK[13]). Another use may be as a low power advanced manufacturing broadband access point (industry 4.0). Such examples of relatively short distance applications only need relatively low power levels.

Beam forming antennas

For the past 20 years mobile operators have typically used three or four sectored antennas, so as not to waste radio energy in directions where it's not needed. New beam forming antennas (sometimes referred to as Massive (complexity) Multiple input Multiple output antenna) make the transmission much more efficient, with the equivalent of 40, much smaller sectors, but still able to deliver the same power to a user standing at the edge of the cell's coverage area but wasting less energy to achieve this[12].

[10] European Commission Radio Spectrum Policy Group's "*Strategic Roadmap towards 5G in Europe*" https://rspg-spectrum.eu/wp-content/uploads/2013/05/RPSG16-032-Opinion_5G.pdf and IET "*5G Networks for Policy Makers*" report https://www.theiet.org/media/1166/5g-report.pdf.

[11] Ofcom "*Enabling 5G in the UK*" March 2018 paragraph 1.13 https://www.ofcom.org.uk/__data/assets/pdf_file/0022/111883/enabling-5g-uk.pdf.

[12] IEEE Spectrum "*5G Bytes: Massive MIMO Explained*" https://spectrum.ieee.org/video/telecom/wireless/5gbytes-massive-mimo-explained.

[13] techUK "*UK SPF publish principles for the release of 26 GHz 5G pioneer band*" https://www.techuk.org/insights/reports/item/15915-uk-spf-publish-principles-for-the-release-of-26-ghz-5g-pioneer-band.

Conclusion

5G is just as safe as 4G, 3G and GSM

This document has aimed to set out the reality around concerns regarding radio wave exposure, mobile coverage and 5G.

Small 5G base stations in our towns and cities will allow improved network coverage. They will reduce radio wave exposure to individual smartphone users and improve local 5G capacity for all manner of useful bandwidth-hungry applications. A good 5G fibre base local broadband infrastructure will be important to local communities over the coming decades in view of the ever-increasing amounts of data being consumed by the general public.

The Institution of Engineering and Technology

Our offices

London, UK

[redacted]

Stevenage, UK

[redacted]

Beijing, China

[redacted]

Hong Kong

[redacted]

Bangalore, India

[redacted]

New Jersey, USA

[redacted]

@TheIET

theiet.org

E6D20002/Digital/0720

Department for Digital, Culture, Media & Sport

Ministry of Housing, Communities & Local Government

7th March 2019

Collaborating for digital connectivity

Government is committed to supporting investment in high-quality, reliable digital connectivity so that communities can benefit from faster economic growth and greater social inclusion. It is essential to keep pace with growing demand for internet bandwidth and mobile data from local businesses, residents and those who visit our communities. As outlined in the Future Telecoms Infrastructure Review, the Government would like to see nationwide full fibre coverage by 2033. We would also like the UK to be a world leader in 5G, with the majority of the population covered by a 5G signal by 2027. We are writing to ask for your help in supporting the investment necessary to achieve these objectives.

Recent years have seen substantial investment in mobile and fixed digital infrastructure across the UK. In 2016 the Gross Value Added from the digital sector was £116.5 billion, which equates to 6.7% of the UK economy, so the benefits for individuals and the UK as a whole are substantial. While mobile coverage across the UK has been significantly improving, there are still too many areas where coverage is poor. The UK has now achieved 95% superfast broadband coverage but still only 6% full fibre coverage.

We need to create the market and policy conditions necessary to support the large-scale commercial investment required to extend and future-proof digital connectivity. A key part of this is making it easier for operators to deploy infrastructure. To help to achieve this, the Government recently reformed the Electronic Communications Code - the statutory framework which underpins agreements between communications network providers and those in both the private and public sector who can provide sites for the installation of network equipment. The purpose of the reforms was to make it easier and more cost effective for communications network providers to deploy and maintain digital infrastructure.

Local authorities have an essential role to play as site providers. As Chief Executives, you can support investment in digital communications infrastructure by ensuring your organisations have policies and procedures in place that promote effective engagement with the digital communications industry and minimise barriers to deployment.

We have published guidance for local authorities and network operators on areas such as digital leadership, considerations for the local planning authority, streetworks, and on making local authority assets available to network operators for the installation of networks. This advice follows on from the Digital Infrastructure Toolkit, which was published in 2018 and provides advice for central government and network providers regarding access to government sites.

We welcome the efforts that some local authorities have already made to enable network deployment. In future, the Government intends to publish information on how effectively local authorities are engaging with industry and adopting the principles outlined in this guidance. We would, therefore, ask you:

1. To ensure your teams are aware of, and using, the guidance the Government has provided to improve broadband and mobile connectivity in their areas.
2. If you have not already, identify a Digital Infrastructure Champion within your organisation and share these contact details with local.connectivity@culture.gov.uk, and
3. In particular, to ensure your teams are granting access to your assets and infrastructure effectively to support the rollout of full fibre and mobile networks.

I hope you agree that we should work hand in hand to support the significant new investment in digital infrastructure that can benefit our communities. With this in mind, Government will give significant weight to the extent to which local authorities have adopted the principles contained in our guidance when allocating funding for future DCMS projects aimed at boosting investment in fibre or mobile networks.

If you or any of your colleagues have any questions, please contact DCMS at [redacted]

Thank you in advance for your cooperation.

Local Government Association

A councillor's guide to digital connectivity

Guidance

Introduction

Digital connectivity is an all-encompassing term used to describe mobile or fixed connections to the internet. Being connected in this way has become part of the fabric of everyday life – as important to communities and businesses as a water, gas or electricity connection.

With better access to high speed and reliable broadband and mobile connections, local communities can access public services more conveniently and purchase goods online at a lower cost. People can work from home, cutting out their commute and improving their quality of life. Businesses can grow, become more productive, sell their products in a global market and access a raft of services not available to those offline. Tourists can find out more information about local attractions and share photographs of their experiences with friends and on social media. In contrast, areas stuck in the digital slow lane are less attractive places to live, work and visit, and risk being left behind as other areas reap the benefits of our digital revolution.

At the national level, the Government has set out its ambitions to build 'a world-class digital infrastructure' and has committed to rolling out nationwide full fibre broadband[1] coverage by 2033 and increase geographic mobile coverage to 95 per cent of the UK by 2022. However, the job of connecting the UK is far from complete.

While most people in the UK are connected to a basic broadband connection (defined later in this guide), there remain too many communities where streaming a movie at home or even sending pictures to friends and family via email is considered a luxury.

These poorly connected areas aren't just in out of the way hamlets deep in the countryside. Some inner-city areas such as Rotherhithe, in London, Deansgate in Manchester and the Baltic Triangle in Liverpool, have average speeds well below the Government's minimum aspiration.

Similarly, while many parts of the country take for granted the existence of ever-present, high-quality mobile connectivity, there are significant gaps in coverage. These gaps are usually found in rural communities, where residents suffer from partial mobile coverage, where not all mobile network operators cover an area, or 'not spots', where a mobile phone will not be able to make a call on any network.

1 A connection that can achieve download speeds of up to 1 Gbps (with similar upload speeds)

As technology continues to evolve, it is vital that all local areas have the digital infrastructure able to meet the demands of consumers and businesses both today and in the future.

This guide is structured to provide councillors with key information on digital connectivity. It explores the main issues and challenges facing our local areas and includes hints, tips and case studies from experienced councillors who have already undertaken work to get their communities better connected. It also provides a brief overview of Government policy and a glossary of widely used terms. Finally, it sets out the vital role councillors can play in this area by:

- **educating residents, voluntary and third-sector groups and businesses on the benefits of faster, more reliable connectivity**
- **bringing communities together to advocate for improved digital connectivity by applying for grants or aggregating their demand to persuade telecommunications providers to build the necessary infrastructure on their road**
- **helping residents consider where it is most appropriate to build new digital infrastructure, such as a phone mast, to improve residents' and businesses' connectivity whilst conserving local landscapes**
- **working in partnership with council portfolio holders, officers and other local stakeholders to consider the role your council can play in helping to improve communities' digital connectivity.**

For any queries relating to the guide please email [redacted]

Why digital connectivity matters

Digital connectivity is revolutionising people's quality of life. According to research commissioned by the communications regulator Ofcom, in 2017 64 per cent of people said the internet was an essential part of their day to day life.

As more of us use faster broadband and mobile services we have more choice about how and when to make voice and video calls, message friends and relatives, browse the internet, watch on-demand TV, stream music, play games, do shopping or work from home.

It is equally important for businesses too. Research by the Federation of Small Businesses found that 94 per cent of small business owners rate a reliable broadband connection as critical to the success of their business.[2] A survey conducted by the Confederation of British Industry found that 81 per cent of firms also said that they see more reliable mobile connectivity as essential.

We know that improved digital connectivity increases innovation and productivity across the economy. Increased broadband speeds alone could add £17 billion to UK output by 2024.[3] Studies have also shown mobile broadband is associated with positive impacts nationally, such as higher GDP and increased employment.[4]

The digitisation of public services also offers an important opportunity to support sustainable local services, especially in more remote settings with the public keen to use more services online.[5] Of course, it is worth noting that not all residents will feel comfortable using digital services and therefore must be accommodated via other means.

Finally, better digital infrastructure can enable local government to fully utilise advances in technology and data analysis to better understand local areas and deliver services more effectively. The transformation of public sector assets such as lamp posts into "smart infrastructure" means they can now supply public access to wifi (explained later in this guide); support environmental monitoring such as air quality or flooding; or even monitor pedestrian flow or parking spaces.

2 www.fsb.org.uk/standing-up-for-you/policy-issues/digital-economy/broadband-and-mobile-connectivity
3 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/257006/UK_Broadband_Impact_Study_-_Impact_Report_-_Nov_2013_-_Final.pdf
4 www.mobileuk.org/cms-assets/The%20Impacts%20of%20Mobile%20Broadband%20&%205G.pdf
5 The Citizen View of Government Digital Transformation, Rural England, Ipsos Mori and Sopra Seria, 2017 – 89 per cent of residents say they are ready and willing to use additional digital services when they become available.

Keith Wright

From: Keith Wright
Sent: 06 January 2023 12:04
To: [redacted]
Cc: E Valencia
Subject: GLO26519 Proposed Telecommunications development on highways land - Windsor Drive, Tuffley
Attachments: GLO26519 Developers Notice Covering Letter.pdf; GLO26519 Developers Notice.pdf; GLO26519 Planning drawings.pdf

Dear Highways

Please find attached a formal Notice and set of plans regarding the above planning application (prior approval) being made on behalf of CK Hutchison Networks (UK) Ltd.

Please let me know if you need any further information

Thanks

Esther

Esther Valencia
[redacted]

gillanconsulting
planning and development

Clarke Telecom Limited
Unit E, Madison Place,
Northampton Road,
Manchester
M40 5AG
[redacted]
www.clarke-telecom.com
[redacted]

Our ref: GLO26519

Gloucester City Council
FAO Highways Department

Email: [redacted]

BY EMAIL

6th January 2023

Dear Sir/Madam

APPLICATION FOR PRIOR APPROVAL: FOR AND ON BEHALF OF CK HUTCHISON NETWORKS (UK) LTD

PROPOSED TELECOMMUNICATIONS RADIO BASE STATION INSTALLATION GLO26519 FOOTWAY AT WINDSOR DRIVE, TUFFLEY, GLOUCESTER, GL4 0QH. NGR E: 382282 N: 214496

Please find attached a notice that is required under paragraph under Part 16 of Schedule 2 to the Town and Country Planning (General Permitted Development) (England) Order 2015 (as amended).

The notice is being served on you as the Council which owns/maintains the land to which the application relates to advise that an application for prior approval is to be submitted to the local planning authority for the proposed telecommunications equipment noted above and shown on the attached drawings. Should you wish to make representations to the local planning authority on the application then the relevant details are contained on the Notice.

Should you have any further queries regarding the proposal please do not hesitate to contact me.

Yours faithfully,

[redacted]

Gillan Consulting for Clarke Telecom
Tel: [redacted]
Email: [redacted]
(For and on behalf of CK Hutchison Networks (UK) Ltd)

Enc. Drawings
Notice

BY EMAIL

Developer's Notice as required under the Town and Country Planning (General Permitted Development) (England) (Amendment) (No.2) Order 2016

Proposed Development at: **GLO26519 FOOTWAY AT WINDSOR DRIVE, TUFFLEY, GLOUCESTER, GL4 0QH**

National Grid Reference: **E: 382282, N: 214496** Ref no: **GLO26519**

I give notice that Clarke Telecom Limited, Unit E, Madison Place, Northampton Road, Manchester, M40 5AG, on behalf of CK Hutchison Networks (UK) Ltd, will be applying to the The Chief Planning Officer Development Control, Gloucester City Council, PO Box 3252, Gloucester, GL1 9FW under Part 16 of Schedule 2 of the Town and Country Planning (General Permitted Development) (England) Order 2015 (as amended) for its determination as to whether the prior approval of the authority will be required as to the siting and appearance of:

Installation of 17m streetpole, antennas, ground-based apparatus and ancillary development.

The application and accompanying plans are available for public inspection at the offices of the above Authority at Development Control, Gloucester City Council, PO Box 3252, Gloucester GL1 9FW, during usual office hours.

Any individual and organisation wishing to make representations about the siting and appearance of the proposed development may do so in writing to the Local Planning Authority at the address above (please quote site address given above). Any representations must be received by the Local Planning Authority no later than 21st January 2023.

Name: Esther Valencia

Signed: [redacted]

for and on behalf of CK Hutchison Networks (UK) Ltd

Date: 6th January 2023

Clarke Telecom Limited
Unit E, Madison Place,
Northampton Road, Manchester,
M40 5AG, UK

[redacted]

www.clarke-telecom.com

Our ref: **GLO26519**

The Chief Planning Officer
Gloucester City Council,
Development Control,
Gloucester City Council,
PO Box 3252,
Gloucester,
GL1 9FW

BY PLANNING PORTAL

6th January 2023

Dear Sir/Madam

PROPOSED RADIO BASE STATION INSTALLATION AT GLO26519 FOOTWAY AT WINDSOR DRIVE, TUFFLEY, GLOUCESTER, GL4 0QH. NGR E: 382282 N: 214496.

This application is submitted under Part 16 of Schedule 2 to the Town and Country Planning (General Permitted Development) (England) Order 2015 (as amended) and is in accordance with the Electronic Communications Code (as amended).

This is an application for a determination as to whether the prior approval of the Authority will be required as to the siting and appearance of the development.

This application is submitted for and on behalf of CK Hutchison Networks (UK) Ltd and comprises:

- Written description of the proposed development – The installation of a 17m streetpole, antennas, ground-based apparatus and ancillary development
- **ON FOOTWAY AT WINDSOR DRIVE, TUFFLEY, GLOUCESTER, GL4 0QH. NGR E: 382282 N: 214496.**– defined within the plan indicating its location - Site Location Plan Rev A.
- Prescribed fee – paid via BACs using the Planning Portal service.
- Copy of Developer's Notice, and evidence of serving – see enclosed copy of the developers notice email delivery.
- Site does not lie within 3km of an aerodrome.
- Contact address and email address for developers – See below for details.

For your further assistance, we enclose additional information:-

- 1APP Prior Approval form – signed and dated;
- Supplemental drawings – 100 Existing Site Plan Rev A, 150 Existing Site Elevation Rev A, 210 Proposed Site Plan Rev A, 260 Proposed Site Elevation Rev A;
- Site Specific Supplementary Information Statement;
- Allaying Health Concerns Regarding 5G and Exposure to Radio Waves;
- Extract from Local Government Association Cllr Guide to Digital Connectivity;
- DCMS MHCLG Collaborating for Digital Connectivity Letter;
- MobileUK Health Fact Sheet;
- MobileUK 5G Local Authority Toolkit;
- GSMA 5G EMF Briefing;

Clarke Telecom Limited
Unit E, Madison Place,
Northampton Road, Manchester,
M40 5AG, UK

[redacted]

www.clarke-telecom.com

- HM Government Ofcom 5G Guide;
- Matt Warman MP Letter to LPA Chiefs 2021;
- Matt Warman MP Letter on 5G Broadband;
- Streetworks FAQs document; and
- ICNIRP declaration.

This application has been prepared in accordance with the Code of Practice for Wireless Network Development in England (March 2022).

The enclosed application is identified as the most suitable option that balances operational need with local planning policies and national planning policy guidance. It will deliver public benefit in terms of the mobile services it will provide.

Furthermore we would like to assist the Local Planning Authority and would like to offer to arrange a presentation or meeting with your officers and members to discuss the issues if appropriate.

We are committed to maintaining a positive relationship with all Local Planning Authorities and we would be happy to provide any reasonable additional information in relation to this application.

We look forward to receiving your acknowledgement and decision in due course.

Yours faithfully

[redacted]

Esther Valencia
Gillan Consulting for Clarke Telecom
Tel: +[redacted]
Email: [redacted]

For and on behalf of CK Hutchison Networks (UK) Ltd

All correspondence in relation to this application should be directed to the above.

However, in accordance with The Town and Country Planning (General Permitted Development) (England) (Amendment) (No. 2) Order 2016, all correspondence to the developers, in the first instance, should be sent to:

CK Hutchison Networks (UK) Ltd, 450 Longwater Avenue, Green Park, Reading, Berkshire, RG2 6GF

Select: Three UK Limited, 450 Longwater Avenue, Green Park, Reading, RG30 3UR Phone: [redacted]

Select: Please select

Declaration of Conformity with ICNIRP Public Exposure Guidelines

Declares that the proposed equipment and installation as detailed in the attached planning / General Permitted Development Order application at:

Cell No: GLO26519

Cell Name: WINDSOR DRIVE

Address:
WINDSOR DRIVE
TUFFLEY
GLOUCESTER
GL4 0QH

Drawing Number(s): GLO26519_-_-_M001_H3G_DNSW_GA_A.pdf

is designed to be in full compliance with the requirements of the radio frequency public exposure guidelines of the International Commission on Non-Ionizing Radiation Protection[1] as expressed in EU Council Recommendation 1999/519/EC of 12 July 1999 “on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz)".

Date: 01-06-2023

Completed by: J. Glover For and on behalf of: Three

Position: Head of Design

Company: Clarke Telecom If your company is not listed, please email MBNLSHQE@turntown.co.uk

[1] The updated ICNIRP Guidelines published in March 2020 are covered by this declaration

MBNL ICNIRP Certificate

v11 October 2021

DESIGN DECLARATION

The completed PDF form should be loaded on Sitenet as part of the handover process using the subcategory "01_ICNIRP". The form must also be submitted ONCE by clicking the "SUBMIT" button at the end of this form.

When issuing the ICNIRP certificate to external third parties, including Local Planning Authorities, the Design Declaration **MUST NOT** be included. Only the front page certificate should be used.
DRAWINGS USED TO ASSESS ICNIRP COMPLIANCE MUST NOT BE RELEAED TO THIRD PARTIES UNLESS WITH THE AGREEMENT OF MBNL.

TD54000 Version Used for assessment
- ○ 6.0
- ○ 7.0
- ○ 8.0

- 9.0
- 10.0
- 11.0

Existing certificates may only be reused if the site is compliant to the above (select the version of the certificate being used.)

Select Project Type: Three DNSW

If your project is not listed here, please email mbnlshqe@turntown.co.uk

MBNL Cell ID

Eg, HTM013, SOS028

Completed by: email address [redacted]

Enter the email address of the person carrying out the assessment

Completed by: subcontractor: Clarke Telecom

Enter the name of the company carrying out the assessment if not the main SWC

ICNIRP Restrictions?

- [x] No restrictions
- [x] MBNL only (ie not multi-operator)
- [ ] Restricted Carriers
- [ ] Restricted tilt
- [ ] Step Down
- [ ] Other

Please confirm whether the site has any restrictions by selecting the applicable choice(s). If there are no restrictions, select "No restrictions"

Please confirm drawing has been completed

- Yes
- No

Please confirm that the site drawings have had compliance distances plotted on them as part of this assessment

Was a FIXIT raised for this assessment

- Yes
- No

Have you visited site as part of this assessment?

- Yes
- No

Date of site visit (if applic): mm-dd-yyyy

Date

SECTOR AND POWER DETAILS (1 of 2)

Sector No.	Azimuth (deg)	Step Options (please select)	700 Power	800 Power	1400 Power	1800 Power
1/A	0	TD54000 - T&A HS2 Step 1.(	80	80	320	120
2/B	120	TD54000 - T&A HS2 Step 1.(	80	80	320	120
3/C	240	TD54000 - T&A HS2 Step 1.(	80	80	320	120
4/D	ex: 23		ex: 23	ex: 23	ex: 23	ex: 23
5/E	ex: 23		ex: 23	ex: 23	ex: 23	ex: 23
6/F	ex: 23		ex: 23	ex: 23	ex: 23	ex: 23

SECTOR AND POWER DETAILS (2 of 2)

Sector	2100	2600	3400 - 3600	3900

No.	Power	Power	Power	Power
1/A	120	ex: 23	210	ex: 23
2/B	120	ex: 23	210	ex: 23
3/C	120	ex: 23	210	ex: 23
4/D	ex: 23	ex: 23	ex: 23	ex: 23
5/E	ex: 23	ex: 23	ex: 23	ex: 23
6/F	ex: 23	ex: 23	ex: 23	ex: 23

COMPLIANCE AND MAXIMUM POSSIBLE DISTANCES USED IN THIS CALCULATION

Sector No.	Public Front Length Limit (m)	Public Front Width Limit (m)	Public Rear Limit (m)	Public Below Limit (m)	Public Min Build Height (m)
1/A	29.15	ex: 23	ex: 23	ex: 23	5.48
2/B	29.15	ex: 23	ex: 23	ex: 23	5.48
3/C	29.15	ex: 23	ex: 23	ex: 23	5.48
4/D	ex: 23	ex: 23	ex: 23	ex: 23	ex: 23
5/E	ex: 23	ex: 23	ex: 23	ex: 23	ex: 23
6/F	ex: 23	ex: 23	ex: 23	ex: 23	ex: 23

Comments Please enter any relevant comments relating to ICNIRP compliancy

Submit

Powered by Jotform

Please click submit once. If your submission is successful, you will recieve a pop-up message from JotForm that your submission was successful. If you do not recieve this message, please click the submit button again.

Our ref: GLO26519

Clarke Telecom Ltd
Unit E
Madison Place
Northampton Road
Manchester
M40 5AG

6th January 2023

Chief Planning Officer
Gloucester City Council,
Development Control,
Gloucester City Council,
PO Box 3252,
Gloucester,
GL1 9FW

Dear Sir/Madam

CLARIFICATION OF THE DECLARATION OF ICNIRP COMPLIANCE ISSUED AS PART OF THE SUBMISSION ATTACHED FOR SITE GLO26519 FOOTWAY AT WINDSOR DRIVE, TUFFLEY, GLOUCESTER, GL4 0QH. NGR E: 382282 N: 214496

I refer to the Declaration of Conformity with ICNIRP Public Exposure Guidelines ("ICNIRP Declaration"), sent with this submission in relation to the proposed telecommunications installation as detailed above.

The "ICNIRP Declaration" certifies that the proposed site shall be operated to be in full compliance with the requirements of the radio frequency (RF) guideline limits of the International Commission on Non-Ionizing Radiation Protection (ICNIRP) for public exposure and UK legislation.

This ICNIRP declaration takes into account the cumulative effect of the emissions from the proposed installation and all radio base stations present at, or near, the proposed location.

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.

If you have any further enquiries concerning the "ICNIRP Declaration" certificate or anything else in this letter, then please contact me (quoting reference GLO26519).

Yours faithfully

G Thomas

Gary Thomas
Design SWC, Clarke Telecom
Tel: [redacted]
Email: [redacted]
For and on behalf of CK Hutchison Networks (UK) Limited

SUPPLEMENTARY INFORMATION

1. Site Details

Site Name:	WINDSOR DRIVE	Site Address:	FOOTWAY AT WINDSOR DRIVE, TUFFLEY, GLOUCESTER, GL4 0QH
National Grid Reference:	E: 382282 N: 214496		
Site Ref Number:	GLO26519	Site Type:[1]	Macro

2. Pre-Application Check List

Site Selection (for New Sites only)

(Would not generally apply to upgrades/alterations to existing site including redevelopment or replacement of an existing site to facilitate an upgrade or sharing with another operator)

Was a local planning authority mast register available to check for suitable sites by the operator or the local planning authority?		No
If no explain why: We have not been able to find a publicly accessible mast register for Gloucester City Council.		
Were industry site databases checked for suitable sites by the operator:	Yes	
If no explain why:		

Site Specific Pre-application consultation with local planning authority

Was there pre-application contact:	Yes
Date of pre-application contact:	22/12/2022
Name of contact:	N/A
Summary of outcome/Main issues raised: A pre-application consultation letter and copy of the site location plan were sent to the Local Planning Authority by email on 22/12/2022. No specific comments received to date.	

Annual area wide information to planning authority

Has annual area wide information been provided?	No
If no explain why:	

[1] Macro or Micro

Summary issues raised: The relevant information is being collated and will be distributed accordingly on request.

Community Consultation

Rating of Site under Traffic Light Model:	~~Red~~	Amber	~~Green~~
Outline of consultation carried out: Pre-application consultation letters and a set of plans were sent on 22/12/22 to the local ward councillors for Grange (Councillors S Evans and S Morgan), and to the Headteacher and Chair of Governors of Harewood Infant School, Harewood Junior School and Holmleigh Park High School.			
Summary of outcome/main issues raised: No responses have been received to date.			

School/College

Location of site in relation to school/college (include name of school/college): The application site is close to Harewood Infant School, Harewood Junior School and Holmleigh Park High School.
Outline of consultation carried out with school/college: A pre application consultation letter and set of plans were sent to the schools on 22/12/22
Summary of outcome/main issues raised: No response received at time of application

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?		No
Has the Civil Aviation Authority/Secretary of State for Defence/Aerodrome Operator been notified?		No
Details of response: N/A		

Developer's Notice

Copy of Developer's Notice enclosed?		Yes	
Date served:	A developer's notice and a set of plans were sent to Gloucester City Council's Highways department via email on 06/01/2023. Copies of the developer's notice and evidence of serving are attached as part of this application.		

3. Proposed Development

The proposed site:

Clarke Telecom Ltd act on behalf of the mobile telecommunications operator CK Hutchison Networks (UK) Ltd (commonly known as Three). The proposal is to install a radio base station, in order to provide the latest 3G, 4G and new 5G technologies.

As part of CK Hutchison Networks (UK) Ltd continued network improvement program, there is a specific requirement for an installation on highways land on Windsor Drive, close to the junction with Chatsworth Avenue. It is being proposed to ensure that the latest high quality 3G and 4G service provision is provided in this area of Tuffley. The proposed column will also ensure that new 5G coverage can be provided at this location. This ensures that coverage and capacity requirements are maintained and enhanced.

Mobile telecoms networks are now ubiquitous throughout the UK. It is an expectation that an individual can connect and use their mobile phone whenever and wherever they are. With the advent of new technology, under the banner of 5G, further advances are proposed and Central Government has seen the telecoms industry, and in particular 5G, to be at the forefront of economic development.

This site will enable 5G coverage to be provided to this area of Tuffley. The Government recognises that widespread coverage of mobile connectivity is essential for people and businesses. That is why the Government is committed to extending mobile geographical coverage further across the UK, with continuous mobile connectivity provided to all major roads and to being a world leader in 5G. This will allow everyone in the country to benefit from the economic advantages of widespread mobile coverage.

As well as improved mobile signal, 5G networks are also crucial to drive productivity and growth across the sectors that local areas are focusing on through their emerging Local Industrial Strategies. Enabling and planning for 5G implementation is central to achieving the Government's objective to deliver prosperity at the local level and enable all places to share in the proceeds of growth.

5G service provision will bring faster, more responsive and reliable connections than ever before. More than any previous generation of mobile networks, it has the potential to improve the way people live, work and travel, and to deliver significant benefits to the economy and industry through the ability to connect more devices to the Internet at the same time, the 'Internet of Things'. This will enable communities to manage traffic flow and control energy usage, monitor patient health remotely, and increase productivity for business and farmers, all through the real-time management of data.

The demand for mobile data in the UK is increasing rapidly, and as households and businesses become increasingly reliant on mobile connectivity, the infrastructure must be in place to ensure supply does not become a constraint on future demand.

The radio base station will also meet the extra demands on the network in this area as more people use internet enabled handheld devices. It is a densification project for the operator's network to fill holes in service provision including coverage and capacity. This will enable the operator's customers to be able to use their handheld devices without calls being dropped or buffering occurring where there is a gap in the operator's network coverage and capacity ability. A site in this location will fill the gap in service provision and provide high quality, reliable, advanced 3G, 4G and 5G to this suburban area of Tuffley.

The proposed radio base station is located to cover the surrounding area. This allows the most efficient use of the base station as it can cover the town from the least amount of overall base stations– this aligns with planning policy which seeks to reduce proliferation of base stations.
The target coverage area for this site is a residential suburb of Lower Tuffley to the far south of Gloucester city, just to the south of the A38. The area is predominately low level residential with narrow footpaths. There is a small shopping parade with green space separating the housing nearby to the west which offers the best opportunity for an installation in the area. The terrain is flat.
The proposed radio base station is located on the footpath at Windsor Drive, close to the junction with Chatsworth Avenue. The site is located adjacent to a pub car park and is otherwise surrounded by residential housing, with the small shopping parade nearby. There is little in the way of suitable tall buildings or tall vertical structures on which to locate antennas. There were no existing masts which could be used or shared due to geographic issues or technical reasons due to 5G coverage characteristics. This location on Windsor Drive was considered the best option to minimise overall impacts, whilst providing the required level of coverage to the target area.

The suburban nature of the surrounding land uses can be seen from the aerial image above. The area contains a number of linear items including lighting columns, road signage, pub signage, a notice board, bollards and some tall mature trees.

Network Information
As part of CK Hutchison Networks (UK) Ltd continued network improvement program, there is a specific requirement for a new mast on the highway/footway on Windsor Drive, to ensure that the latest high quality 3G and 4G service provision can be provided in this area of Tuffley for CK Hutchison Networks (UK) Ltd.

The proposed new column will also ensure that new 5G coverage can be provided at this location for CK Hutchison Networks (UK) Ltd. This ensures that coverage and capacity requirements are maintained.

The proposed new mast has been sited and designed in order to provide 5G coverage and to fill the hole in coverage for this mobile network. At present it is paramount that digital connectivity is supported and maintained throughout the country. In particular, the current massive shift in user demand from city centres and places of work to residential areas and suburbs requires an improvement in coverage and capacity throughout the whole network. The current proposal therefore provides such additional capacity to the network whilst still promoting the improved 5G technology.

The 3G and 4G provision allows internet access, video calling, data downstreaming, accessing social media networks and emailing to name just a few of the benefits. Therefore, to maintain high quality indoor 3G and 4G services in this area would promote activity in line with the general population demand as the ownership of smart devices increases. 5G service provision will bring faster, more responsive and reliable connections than ever before.

The search area is very small for this new installation. The existing sites around Tuffley are struggling to cope with demand and an increase in capacity is required; therefore a new site is required to provide reliable, high quality 3G, 4G and 5G technology.

Type of Structure *(e.g. tower, mast, etc): Valmont Phase 8 Street Pole*	
Description: The installation of a 17metre high slim-line monopole, supporting 6 no. antennas with 1 no. wraparound equipment cabinet at the base, 2 no. equipment cabinets, 1 no. electric meter cabinet, and ancillary development thereto, including the installation of a GPS module.	
Overall Height: 17m	
Height of existing building *(where applicable):*	N/A
Equipment Housing: H3G Wraparound	
Length:	0.75 Metres
Width:	1.8 Metres
Height:	1.6 Metres
Equipment Housing: Bowler	
Length:	0.66 Metres
Width:	1.9 Metres
Height:	1.827 Metres
Equipment Housing: RBS 6130	
Length:	0.7 Metres
Width:	0.65 Metres
Height:	1.1 Metres
Equipment Housing: A/C Transmission Cabinet	
Length:	0.6 Metres
Width:	0.5 Metres
Height:	1.585 Metres
Materials *(as applicable):*	

Tower/mast etc – type of material and external colour:	Steel – Grey RAL 7035
Equipment housing – type of material and external colour:	Steel – Grey RAL 7035

Reasons for choice of design, making reference to pre-application responses:

This proposal is for the installation of a new site to boost the capacity on the network in this location for the operator. The site needs to cover a certain target coverage area as the operator is experiencing capacity issues in this (sub)urban area. As demonstrated in the Alternative Sites section, the area surrounding the proposed site has been fully investigated, and it was considered that the application site was the most viable and suitable location for the proposed equipment. The search area for the proposed site is small due to the operator's requirement to fill the hole in coverage to fix coverage and capacity issues currently being experienced by its users.

The operator has carefully considered the design of the new proposed column. The operator is proposing the most sensitive design currently available to provide the necessary coverage and capacity to the surrounding area. Due to all the technologies that will be available at this location 3G, 4G and 5G, 6 antennas need to be installed at the top of the slim-line monopole. These are split into a dual stack formation where 3 antennas will be located at the top and the other 3 will be located underneath. The 3 upper antennas will provide new 5G service provision. The 3 lower antennas will provide 3G and 4G technology for the operator to the surrounding area. This makes the lower set of antennas 3.35m lower than the top of the pole. Thus, if the column were to be any lower, the antennas would not be able to clear the buildings, trees and urban clutter and as such would not be able to operate effectively.

The proposed height at 17m is essential in order to provide coverage to the target coverage area. 5G new radio technologies operate in higher frequency bands than older technologies. Since it operates at higher frequencies where attenuation of the radio signal is naturally higher and the effects of clutter are greater it will normally require a higher structure to achieve the same coverage footprint. To increase capacity and data speeds to the user, the antenna will normally need to be mounted higher than conventional antennae. These factors drive a requirement for an increase in antenna height in 5G.

The new antennas are all unshrouded for technical reasons. However, they have been designed to be as tight as possible and virtually the same width as the main column, to minimise their visual appearance. The higher the radio frequency the more signal attenuation there is. The higher frequency 5G antennas are unable to operate effectively through the Glass Reinforced Plastic that the shroud is made up of and as such if these antennas were to be covered then they would not be able to provide the necessary coverage to the target coverage area. An additional installation would be needed elsewhere within the cell area, leading to the proliferation of masts.

This is the slimmest design possible which will enable all the multi technologies to be supported from this site. If the column and shroud width were to be any slimmer then the technology would not fit in the one column and another radio base station would be required, which would lead to the proliferation of masts contrary to national Government guidance set out in the NPPF and The Code of Practice. Similarly, if the column were to be a uniform width throughout then the overall width would have to increase which would appear more visually prominent in the streetscene, than the proposed design.

The proposed design is more visually sensitive and much easier to assimilate into a streetscene than lattice towers or more traditional monopoles with bulky headframes. These non 'stealth' designs are preferred

by operators as they are structurally capable of hosting more equipment and give greater scope for antenna orientation and are thus more efficient structures. However, such designs would appear more alien in this location. Therefore, the operator has compromised on obtaining maximum coverage in order to better assimilate in to the streetscene.

The design of the column resembles as closely as possible to other vertical structures within the immediate area such as lighting columns and road signage. These vertical structures will help the proposed installation of this radio base station assimilate with the surrounding area. Form does follow function however and this is modern infrastructure for a modern technology.

The design of the column is a simple, functional, vertical structure which should not appear incongruous within the streetscene. The presence of other linear urban structures such as lighting columns will assist with assimilation in the streetscene. The column is proposed to be coloured grey to match the existing street furniture; however the column can be coloured any other colour the LPA consider appropriate.

The equipment cabinets are small for telecommunications apparatus and proposed to be coloured grey. They have been positioned at the rear of the footway alongside the proposed monopole. They will assimilate with the existing statutory undertaker equipment cabinets in this area.

It is therefore considered that the proposal before you strikes the best balance between environmental impact and operational considerations. The proposed height and design represent the best compromise between the visual impact of the proposal on the surrounding area and meeting the operator's technical requirements for the site. Taking all matters into account it is considered that this proposal, to provide the latest 3G and 4G service provision and new 5G coverage providing high quality dense coverage and capacity, would not appear out of place within the streetscene.

Health and Safety - including ICNIRP compliance

International Commission on Non-Ionizing Radiation Protection Declaration attached (see below)

International Commission on Non-Ionizing Radiation Protection 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 or near to the site are taken into account.

In order to minimise interference within its own network and with other radio networks, CK Hutchison Networks (UK) Ltd 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 CK Hutchison Networks (UK) Ltd 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.

4. Technical Justification

Enclose predictive coverage plots if appropriate, e.g. to show coverage improvement. Proposals to improve capacity will not generally require coverage plots.

Reason(s) why site required e.g. coverage, upgrade, capacity

There is a specific requirement for a new column and associated equipment cabinets at this location to allow CK Hutchison Networks (UK) Ltd (commonly known as Three) to improve the 3G and 4G coverage and capacity in the area of Tuffley and be able to provide new 5G service provision to this 'cell'. This ensures high quality indoor service provision is provided.

The dynamic nature of technological advances in the telecommunications industry coupled with ever increasing demand from subscribers dictates a continual reinvestment programme on the part of the operators. As a result, and in line with their licence requirements, mobile operators are constantly developing their networks including filling holes where there is currently a lack of service provision.

Cellular networks are made up of several individual cell areas, each of which has a base station within it. A good analogy for describing a cellular network is that of a patchwork quilt with each cell area being one of the many patches that are sewn together making up the network 'quilt'.

Notably, there are 3 main elements to a radio base station; the cabin or cabinets contain the equipment used to generate the radio signals(s), the supporting structure that holds the antennas in the air or fixes them to a building or structure and the antennas themselves, which emit the radio signals (along with the necessary amplifier or receiver units). Other elements necessary for the base station to function are a power source, feeder cables that link the equipment housing to the antennas and the various support structures, grillages and fixings, often referred to in general terms as *'development ancillary to'* the base station.

These base stations then receive and transmit to mobile devices using radio waves. The antennas operate like an aerosol spray with signal transmitted along a central orientation and dissipating with distance. The dishes operate on a direct line of sight basis, linking with dishes on other base station sites elsewhere within the wider network. The dish links also link the base station to a master control centre that manages the call handover process that occurs when a mobile user moves from one cell area to another. They also provide telemetric monitoring to ensure the site is working properly and offer remote maintenance.

In the early days of mobile communications, peripheral locations, high-level topographies and large-scale masts were often identified in order that transmission from a new base station could cover an expansive geographical area. However, whilst this approach was viable for early network generations, the number of mobile handset users has dramatically increased with time, as have the advancements in mobile technology itself. As a result, the cellular network construction and operational criteria have changed too. Because modern networks use higher frequencies with faster data rates whilst serving significantly

increased numbers of mobile device users, typical network cell areas (i.e. the geographical area targeted for coverage for which a base station development provides a solution), are now smaller in their geographical expanse and tend to be directly proportionate to the number of users within it. They are also therefore greater in their number with base stations operating at a lower power output than their predecessors.

Mobile phone base stations operate on a low power and accordingly base stations therefore need to be located in the areas they are required to serve. Increasingly, people are also using their mobiles in their homes and this means the operator needs to position base stations in, or close to, residential areas.

Mobile connectivity and service is required where customers live, work and play. 5G coverage and superfast mobile broadband data capacity demand will continue to increase exponentially with the introduction of IoT (Internet of Things), machine to machine connectivity, automated transport/industry and other 'smart' applications. To this end the existing shared infrastructure within the built environment has had to be reviewed and adapted as appropriate.

In the UK, rollout is now commencing. The main benefits of 5G are that it will be much faster and have higher capacity than 4G, with download speeds in excess of 1Gbps. To place this in context, customers will be able to download - not merely stream - a full HD movie in less than 10 seconds on a 5G network. The same task would take closer to 10 minutes on 4G.

The case for 5G is compelling as it will bring faster, more responsive and reliable connections than ever before.

The Local Government Association (LGA) has produced a Councillor's Guide to Digital Connectivity and sets out some of the benefits of 5G technology:

- Faster mobile broadband and a more consistent experience in congested areas with a very high number of devices.
- Industrial applications, enabling businesses to improve their productivity, for example through predictive maintenance and real-time analytics.
- Internet of Things (IoT) services, many of which will help council's and businesses deliver services more efficiently including:
    - Transport and logistics: connected parcels and fleet tracking.
    - Health and social care.
    - Environmental monitoring: sensors monitoring air quality and water pollution in real-time.
    - Smart agriculture and smart animal farming, smart retailing.
    - Connected and autonomous cars: allowing cars to communicate with each other, other road users and even the road infrastructure.

Good connectivity allows people to access a wide range of essential services including emailing; downloading apps; social media; helping with homework; researching local events, businesses or transport timetables; managing personal finances; shopping; contacting local authorities; arranging medical appointments; general business functions; and much, much more.

5. Site Selection Process

As explained earlier, the search area is very small for this new installation. The existing sites in and around Tuffley are struggling to cope with demand and an increase in capacity is required; therefore a new site is required to provide reliable, high quality 3G, 4G and 5G technology. The new site needs to be sited in a place where it will work alongside the existing sites in the area to provide the necessary capacity in the network, which will ensure that reliable network coverage is provided in this urban area.

Alternative sites considered and not chosen:

With no existing masts available to share and no tall buildings suitable in the search area, a ground-based solution was required. 5G antennas have a different ICNIRP profile than the previous generations of radio technology and as such they need a greater clearance from existing development. This rules out a lot of rooftop development as the areas the public or operatives can access are restricted. This is also true of locations for poles in the street as adjacent development can rule out a lot of locations unless far taller poles are proposed. This is set out in the Code of Practice and is the basis of the Government's recent relaxation of permitted development rights allowing increased height as permitted development.

As a statutory undertaker, the applicant has rights to install and maintain apparatus on the public highway and so undertook a search of potential locations. A number of locations in the local area were considered, however were found to be less suitable for a number of reasons. These reasons included:

- greater impact on residential amenity than application site
- greater impact on footway width
- underground services
- overhead wires
- within visibility splays

The alternatives considered and discounted are listed and mapped below:

1. Windsor Drive, Tuffley, Gloucester, GL4 0QW. NGR: E 382460 - N 214563
2. Grange Road, Tuffley, Gloucester, GL4 0PG. NGR: E 382430 - N 214644
3. Holmwood Drive, Tuffley, Gloucester, GL4 0PS. NGR: E 382441 - N 214657
4. Grange Road, Tuffley, Gloucester, GL4 0PG. NGR: E 382497 - N 214522
5. Osborne Avenue, Tuffley, Gloucester, GL4 0QN. NGR: E 382411 - N 214519
6. Nutley Avenue, Tuffley, Gloucester, GL4 0QR. NGR: E 382375 - N 214511
7. Nutley Avenue, Tuffley, Gloucester, GL4 0QR. NGR: E 382393 - N 214612
8. Holmwood Drive, Tuffley, Gloucester, GL4 0PS. NGR: E 382526 - N 214488
9. Holmwood Drive, Tuffley, Gloucester, GL4 0PS. NGR: E 382589 - N 214663
10. Nutley Avenue, Tuffley, Gloucester, GL4 0QR. NGR: E 382336 - N 214561

These sites can be seen on the map below

If no alternative site options have been investigated, please explain why:

N/A

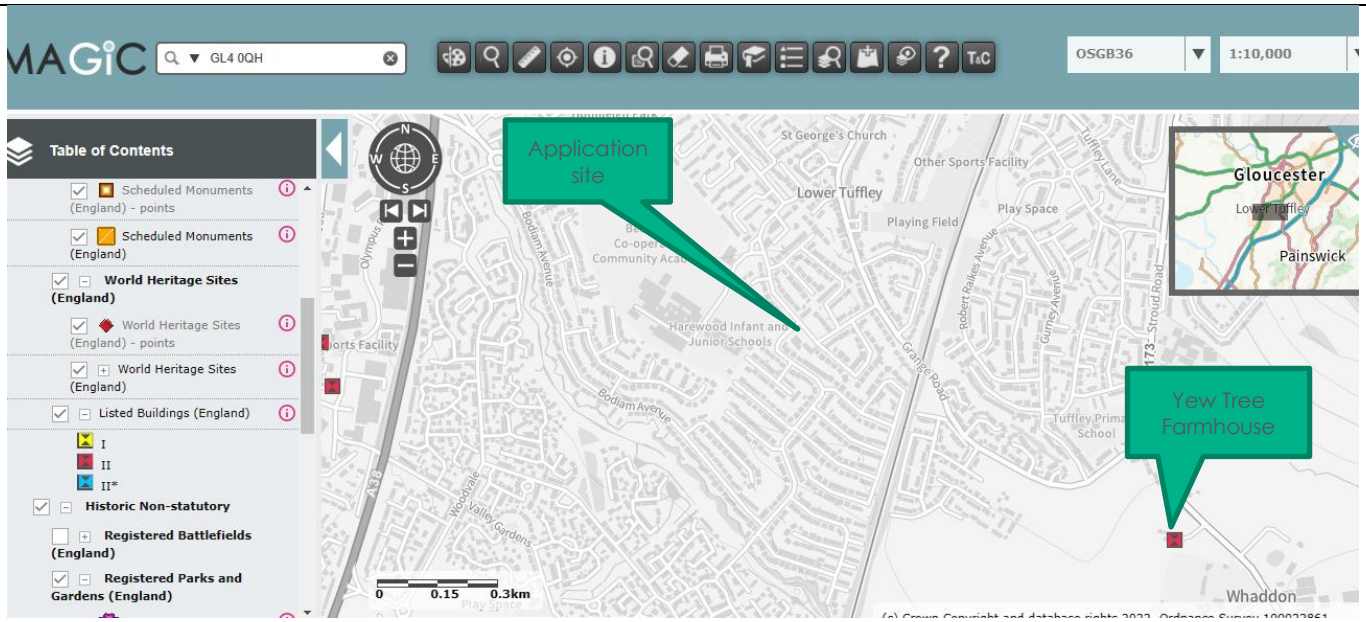
Land use planning designations:

The current use of the land is that of public highway. Windsor Drive has no specific designations associated with it however sits within a residential area. Heritage and environmental designations are discussed further below.

The Council does not have a telecommunications policy in the development plan. Development plan policies are discussed further below.

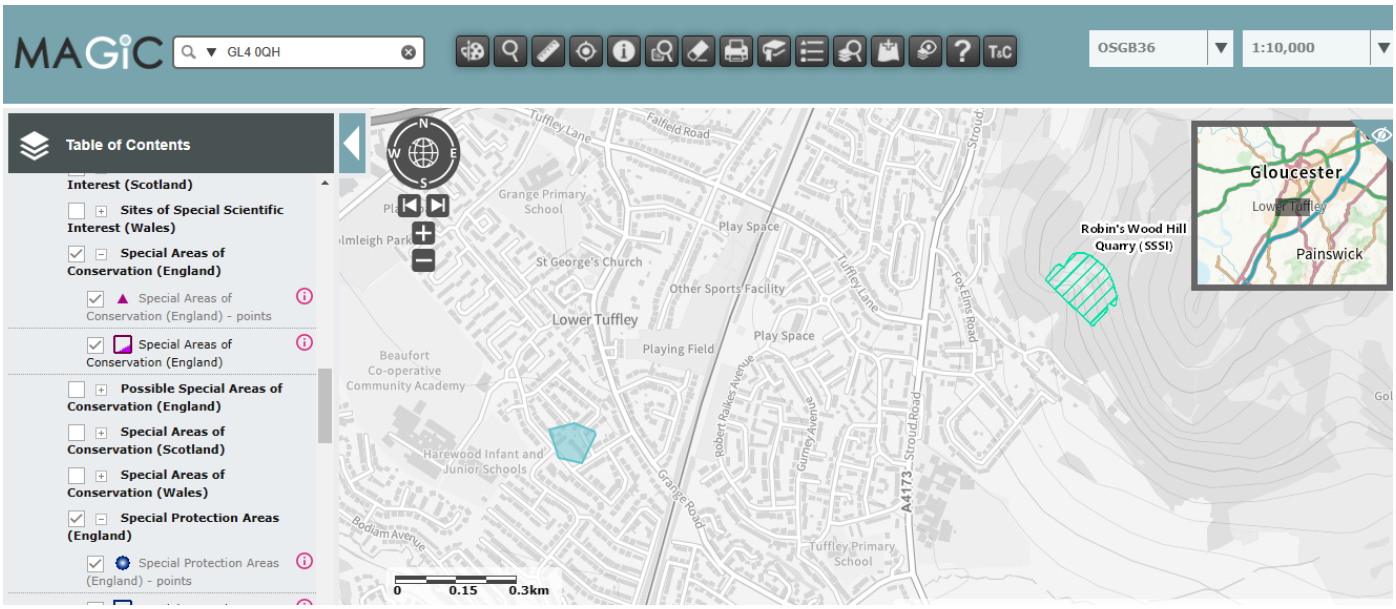
<u>Heritage</u>

No heritage assets would be affected. The DEFRA mapping below shows the nearest asset, Yew Tree Farmhouse, a grade II listed building, which lies over 1km to the southeast.



Environmental

No environmental assets or designations would be affected. The DEFRA mapping below shows the nearest asset, Robin's Wood Hill Quarry (SSSI) which lies c1.3km to the northeast.



Additional relevant information (include planning policy and material considerations):

National Planning Guidance

Planning policy is provided at the national level by the National Planning Policy Framework (NPPF). It is a material consideration in planning decisions.

It is not necessary to quote extensively from this document, but the following points are highlighted.

National Planning Policy Framework (July 2021)

The Government's National Planning Policy Framework (NPPF) was published on 24 July 2018 and updates the 2012 version. In February 2019 the NPPF was revised again, with minor alterations to wording relating to housing supply and not any parts relating to telecommunications. The NPPF was updated in July 2021, in order to strengthen sections including requirements on improved design quality, a new requirement for Councils to produce local design codes or guides, an emphasis on using trees in new developments, revised policies on plan-making, removing statues and opting out of PD rights relating to residential conversions.

The Government's latest thinking continues to strongly support communications infrastructure. The NPPF remains very supportive of high quality communications. Indeed, a whole chapter is dedicated to high quality communications, emphasising the importance that the Government attaches to digital connectivity. Paragraph 114 states that advanced, high quality and reliable communications infrastructure is essential for economic growth and social well-being. This wording echoes guidance set out in paragraph 42 of the 2012 version of NPPF. However, it also includes the importance of *reliable* communications infrastructure for both economic growth *and social well-being*.

The NPPF continues to support the expansion of electronic communications networks at paragraph 114. It notes that policies should set out how high quality digital infrastructure, providing access to services from a range of providers, is expected to be delivered and upgraded over time. The economic and social benefits of providing high quality and reliable communications infrastructure are well documented and can be found later in this Supporting Information Statement.

The NPPF makes reference to 5G:

'*Planning policies and decisions should support the expansion of electronic communications networks, including next generation mobile technology (such as 5G) …'*

With the above in mind, the Government is already forward thinking the evolution of data networks and seeks planning decisions to take account of this. 5G technology provides increased speed of data and more capacity in the network, to ensure that handheld devices can continue to be used for the purposes in which they were purchased. This will bring even greater economic and social benefits to the area.

Paragraph 115 of the NPPF retains the requirement to minimise the number of installations consistent with the efficient operation of the network but also includes being consistent with the needs of consumers and providing reasonable capacity for future expansion.

Paragraph 118 of the NPPF retains the guidance set out in paragraph 46 of the 2012 NPPF version which relates to determining applications on planning grounds only. They should not seek to prevent competition

between different operators, question the need for an electronic communications system, or set health safeguards different from the International Commission guidelines for public exposure.

At the heart of the NPPF is the retained presumption in favour of sustainable development (para 11). For decision-taking this means approving development proposals that accord with an up-to-date development plan without delay or where there are no relevant development plan policies, or the policies which are most important for determining the application are out-of-date, granting permission unless the application of policies within the revised Framework that protect areas or assets of particular importance provides a clear reason for refusing the development proposed or any adverse impacts of granting permission would significantly and demonstrably outweigh the benefits, when assessed against the policies in the revised Framework taken as a whole.

The NPPF continues to provide guidance on decision-making. At paragraph 38 it states that:

*'Local planning authorities should approach decisions on proposed development in a positive and creative way. They should use the full range of planning tools available, including…*permission in principle*, and work proactively with applicants to secure developments that will improve the economic, social and environmental conditions of the area. Decision-makers at every level should seek to approve applications for sustainable development where possible'*.

The NPPF builds on the aspiration to build a strong, competitive economy. Paragraph 81 states:

> *'Planning policies and decisions should help create the conditions in which businesses can invest, expand and adapt. Significant weight should be placed on the need to support economic growth and productivity, taking in to account both local business needs and wider opportunities for development. The approach taken, should allow each area to build on its strengths, counter any weaknesses and address the challenges of the future. This is particularly important where Britain can be a global leader in driving innovation[42]'…*

Footnote 42 of the NPPF states:

'The Government's Industrial Strategy sets out a vision to drive productivity improvements across the UK, identifies a number of Grand Challenges facing all nations, and sets out a delivery programme to make the UK a leader in four of these: artificial intelligence and big data; clean growth; future mobility and catering for an ageing society. HM Government (2017) Industrial Strategy: Building a Britain fit for the future'.

Code of Practice for Wireless Network Development in England (March 2022)

The Code of Practice provides guidance to Code Operators (referred to as 'operators' throughout the Code of Practice), including the Mobile Network Operators and wireless infrastructure providers, their agents and contractors, local planning authorities, and all other relevant stakeholders in England on how to carry out their roles and responsibilities when installing wireless network infrastructure. It is also a useful tool for other interested stakeholders such as community groups, amenity bodies and individuals with an interest in mobile connectivity.

The aim of the Code of Practice is to support the government's objective of delivering high quality wireless infrastructure whilst balancing these needs with environmental considerations. It also has an important role in making sure that appropriate engagement takes place with local communities and other interested parties.

The Code of Practice covers all forms of wireless infrastructure development, including mobile masts and cabinets. It is recommended that other wireless communications operators follow the principles of this Code of Practice, where appropriate.

Unlike previous iterations this Code of Practice has been led by the Department for Digital, Culture, Media and Sport (DCMS) and developed in collaboration with representatives of the mobile network industry, other government departments and public bodies, local planning authorities, and protected landscapes. This document replaces the previous Code of Best Practice on Mobile Network Development, which was published in 2016 and is now published by DCMS.

The Code of Practice sets out the legal and policy framework for the delivery of wireless infrastructure development.

Paragraphs 8 – 12 of the Code of Practice set out the importance of connectivity:

> '8.*Digital connectivity is vital to enable people to stay connected and businesses to grow. Fast, reliable digital connectivity can deliver economic, social and well-being benefits for the whole of the UK.*
>
> *9.As the demand for mobile data in the United Kingdom is increasing rapidly, it is important that everyone has access to dependable and consistent mobile coverage where they live, work and travel.*
>
> *10.The Future Telecoms Infrastructure Review (FTIR) and the National Infrastructure Strategy set out the government's long-term strategy for meeting its digital connectivity targets and delivering high quality, reliable digital infrastructure that works across the UK[2].*
>
> *11.The government has committed to extending mobile coverage across the UK. The government has committed to extending mobile coverage across the UK. The government's Levelling Up White Paper has set a mission that the UK will have nationwide 4G coverage, with 5G coverage for the majority of the population by 2030. In support of this, the government and the UK's mobile network operators agreed a £1 billion Shared Rural Network deal to extend 4G mobile geographical coverage to 95% of the UK by the end of the programme.*
>
> *12.Next Generation Mobile Technologies: A 5G Strategy for the UK, and the update to this, set out the government's ambition for the UK to be a global leader in 5G to take early advantage of its potential and help to create a world-leading digital economy that works for everyone. The government also wants businesses and communities to benefit from investments in 5G as soon as possible. Through the government's 5G Testbeds and Trials programme we have seen its value to manufacturing, farming, transport networks and healthcare.*

The Government recognises the key role that the Planning System plays in delivering the digital infrastructure that we need, in a sustainable and well-designed way, especially as households and businesses become increasingly reliant on mobile connectivity.

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[2] *The* Statement of Strategic Priorities for Telecommunications, The Management of the Radio Spectrum, and Postal Services followed the publication of the FTIR and reflects its conclusions

The Code of Practice sets outs 'How wireless networks function.

Para. 16 states *"Cellular wireless networks use base stations to provide an area of radio coverage. Wireless technology uses the radio spectrum to broadcast radio waves between base stations and devices. Different radio frequencies have different characteristics which, along with the density of cell site locations, affect the extent of coverage and how much data can be carried over the network. Depending on the radio frequencies used, base stations can deliver coverage over a wide area or provide extra network capacity in areas where there is a high demand for network bandwidth".*

Para. 17 sets out that *"Wireless technology continues to evolve rapidly, and mobile devices are now capable of much more. Second generation (2G) technology gave us voice calls and text messages, 3G led to the launch of smartphones, and 4G, which enabled faster browsing, allowed us to do things like watching videos on the move. 5G, the latest generation of wireless technology, is much faster than previous generations of wireless technology and can offer greater capacity and lower latency, allowing thousands of devices in a small area to be connected at the same time. 5G networks, and future mobile generations, will be vital for a range of Internet of Things uses (IoT) and Smart City applications".*

The Code of Practice establishes 'Principles and commitments' by which operators should develop their networks and that Local Planning Authorities should demonstrate their support by.

Paragraph 18 of the Code of Practice sets out the principles and commitments that operators should follow when developing their networks inter alia:

- Site sharing and use of existing structures: make use of existing structures, sites and masts wherever possible to reduce the need for new development.
- Consultation with local planning authorities, local communities and other stakeholders.
- Standardised and high-quality approach to planning applications, and the notification procedure: provide standardised supporting documentation for planning applications (where appropriate) within the context of national and local requirements.
- Compliance with guidance laid out in the International Commission on Non-Ionizing Radiation (ICNIRP) public exposure levels guidance.

The Code of Practice also sets out the requirements of the LPA in relation to the deployment of digital infrastructure:

- Incentivising connectivity: support the expansion of telecommunications networks and take a 'joined-up' approach to the wireless infrastructure planning process, including ensuring that Local Plans effectively support the deployment of digital infrastructure.
- Facilitating sites: engage with operators when new sites have been proposed and discuss site requirements.
- Engagement with operators: respond positively to requests for engagement and make decisions in line with national policy and Local Plans. For planning applications, find solutions to issues and ensure timely decisions are made.

The added emphasis on support from Local Planning Authorities in the deployment in digital infrastructure is even more evident in the revised Code of Practice. The Code of Practice recognises the importance of collaboration and partnership to help drive network coverage across the country. It goes on to state that *'In*

all instances, it is important for all parties involved in the process to take a positive approach to consultation and engagement'.

Siting and Design Principles

The government's objective is to deliver high quality, reliable wireless infrastructure whilst ensuring the impact of new network development is kept to a minimum. The siting and design of wireless network infrastructure is central to achieving this. The Code of Practice acknowledges that *'good siting and design principles should apply to all wireless network development and take into account any site specific considerations and context. Both can create better places in which to live and work and help make development acceptable to communities'.*

The Code provides guidance on siting and appearance principles. It sets out several design principles in respect of telecommunications development and acknowledges that the options for design used by an operator will be affected by site conditions including requirements to link the site to the network, landscape features and coverage and capacity requirements. The guidance includes at Para. 22 *'the choice over the site selection and design of equipment is primarily dependent upon the coverage and capacity requirements and technical constraints of a specific location, although operators should make efforts to reduce visual impacts where possible'.*

Para. 23 confirms that there should be a ***'presumption in favour of facilitating sustainable network development'*** and, as such, operators and local planning authorities, as well as all other bodies involved in the deployment process, should work together to ensure connectivity needs are met and find viable solutions to deployment issues (emphasis added).

Paragraphs 24 - 27 sets out general siting and site selection principles which Operators should consider. The Code of Practice acknowledges at Para. 24 that *'Operators use a range of sophisticated, computer-based planning tools to predict levels of signal strength and coverage from sites for 2G, 3G, 4G and now 5G. Once an operator has identified a requirement for a new cell site, a suitable site needs to be found. Elements that make a site favourable include: having existing or ready access to a power supply, access to fibre optic cables, vehicular access, and other buildings and development which may provide a level of existing screening. Operators will typically look to upgrade existing infrastructure prior to considering a new deployment, in particular for initial 5G deployment'.*

Para 25 notes that *'When selecting sites for mobile infrastructure, operators should examine local plans and designations for the area, as well as carrying out an in-person site search to identify potential options which meet their requirements. Operators should follow these general siting and site selection principles:*

- *Installation on existing buildings and structures;*
- *Erecting new ground based masts;*
- *Camouflaging or disguising equipment where appropriate;*
- *Using small scale equipment (although small cells themselves are generally used to address capacity issues as opposed to providing coverage); and*
- *Mast and/or site sharing (including redevelopment of a site to enable upgrade or sharing with another operator)'.*

Para. 26 highlights that the installation of all wireless infrastructure requires a balanced approach between the technical needs and constraints of the proposed site and the potential impact of the development. The three key technical and operational considerations for installation sites are:

- **Coverage**: wireless infrastructure needs to provide an appropriate level of coverage over the intended geographical area. This involves ensuring that antennas are elevated sufficiently (often via masts) to provide clear lines of sight for signals.
- **Capacity:** where existing network infrastructure can no longer meet the demand for network capacity in a particular area, additional sites may be required within that coverage area to meet the demand. This is more likely to be required in densely populated areas or areas of high footfall.
- **Backhaul**: the radio access network requires a connection to the core network. Backhaul is sometimes provided by a microwave link, which requires a clear line of sight between the two ends of the link.

Para 27 requires that Local Planning Authorities consider these issues and consider the need for a site within a limited search area alongside the public benefit of improved connectivity. Para. 27 further considers that in general, it should not, therefore, be appropriate for planning authorities to seek wider evidence of alternative sites (beyond that required by the NPPF), unless they consider the proposed development is unacceptable having regard to the relevant material planning considerations

In respect of 'Design', the Code of Practice at Para 28 acknowledges that the siting of wireless infrastructure will influence which design options are most appropriate for reducing the visual impact including

- **Protecting visual amenity**
- **Mitigating visual impacts**

Para. 29 acknowledges that these factors along with location and the coverage and capacity requirements can influence the type of infrastructure structure that is deployed and requires that '*planning authorities should be aware of these constraints when considering proposals. In particular:*

- *In urban areas, where there is a high level of demand for mobile data, mobile base stations are likely to need to be deployed more densely. In these settings you can expect to see more use of streetwork monopoles and rooftop installations and, in future, we are likely to see a larger number of smaller units (so-called "small cells") deployed on buildings and on street furniture.*

The Code of Practice establishes radio equipment housing (cabinets) principles. It states at Para. 30 states that *"cabinets protect radio transmitters and receivers, provide the power source for mobile equipment, and are connected to antennas via cables. Equipment cabinets are likely to be needed at most sites. The cabinets must be of sufficient size to facilitate hosting various operating equipment whilst also allowing air circulation to reduce the potential for overheating".* The Code of Practice establishes the planning and visual considerations for siting radio housing. These include:

- Colouring
- Siting on highways and footways:
- Highway safety:
- Listed buildings/ scheduled monuments and Conservation Areas:

- Access
- Trees

The Code of Practice notes that new ground-based masts will sometimes be required to accommodate the ever-increasing coverage and capacity needs of the country. 4G and 5G are likely to require further network densification in order to meet growing customer demand for data. Where higher frequencies are used, with lower signal propagation characteristics, apparatus will need to be located in closer proximity to user devices. The type of mast deployed will depend upon the location and setting, as well as the coverage requirements of the site. The Code acknowledges that there are many ways by which the potential for environmental and visual impact of a ground-based mast can be reduced.

Paragraph 39 advises that all new masts should be sited, so far as practicable, so as to minimise their impact on their setting, including the landscape and any buildings. This includes siting next to similar structures – e.g. streetworks masts should ideally be sited in line, and in harmony, with existing vertical structures such as lighting columns, to minimise their visual impact. Placing a mast within or adjacent to an existing group of trees, vegetation and other natural features can reduce visual impact. Antennas will, however, need to be sufficiently elevated to clear the tree-line.

Paragraph 40 relates to colouring and camouflage and states that where appropriate masts should be coloured to match their backdrop to minimise contrast in an urban setting. Streetworks monopoles can utilise design features such as shrouding or banding to protect visual amenity, though, for some 5G infrastructure, camouflage design solutions may not be practicable. Simple designs should be encouraged. Masts which have a complex design are more likely to dominate and be in discord with the landscape and have adverse visual impacts.

The Code of Practice states again in paragraph 64 that there are three primary technical and operational considerations for installation of radio base stations which are: ensuring that wireless infrastructure provides an appropriate level of coverage over the intended geographical area; ensuring that sites have sufficient capacity to meet user demand; and, requiring a connection to the wider network 'backhaul'. Paragraph 65 notes that planning authorities should take account of these constraints on network deployment and siting and design, when considering proposals.

Paragraphs 66 and 67 of the Code of Practice set out the 5G network deployment considerations:

> '66. *With the introduction of 5G, more equipment will be required to provide coverage and capacity. 5G, as well as 4G, are data-driven technologies, and high volumes of data will be transmitted between base stations and wireless devices. 5G will require a denser network of base stations than previous generations, including more fixed line fibre optic cable for reliable and high capacity backhaul. The siting of 5G installations will be more constrained and guided by these special technical and operational considerations*.
>
> 67. *Due to the scale and technological constraints of 5G equipment, in some cases previous camouflage design solutions, such as tree mast designs and concealing antennas in flagpoles, may not be practicable or suitable. In these cases, simple designs with particular attention to colouration and finishes may help reduce visual impacts on a site-specific basis.*

Local Policy

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".

However, the principle of development is established by the GPDO and the provisions of Schedule 2, Part 16, Class A of the GPDO do not require regard be had to the development plan. Therefore, we have had regard to the policies of the development plan only in so far as they are a material consideration relevant to matters of siting and appearance. We have proceeded accordingly below.

The development plan consist of the Joint Core Strategy (JCS). The JCS replaced the previous telecommunications policy with two more wide-ranging policies on infrastructure and on environment. None of these are particularly useful in assessing the proposal as they deal with other aspects of development. Obviously however of note is that the proposal is critical infrastructure and it is being proposed with no requirement for any other developer contributions.

Connected Nations 2021 Report (June 2021)

The importance of the internet and access to smartphones is acknowledged within the latest Online Nation 2021 Report (June 2021). The report notes that the pandemic has highlighted the importance of being online and driven changes in the take-up and use of internet services, as many people have had a critical reliance on the internet for communications, information, entertainment, and commerce. Increases in internet use in 2020 were most pronounced in spring and November 2020 lockdowns, as people turned to the internet and were more dependent than ever on online services for video calling for socialising or home-based working, home schooling, keeping in touch, films and gaming, shopping and information about the pandemic.

In September 2020, UK Internet users spent nearly 4 times as much time on smartphones than they did on computers. 68% of the time spent online was via smartphones up 4% from September 2019, this was compared to 18% of time spent online via computers and 13% via tablets.

By the end of 2020 approximately 94% of UK homes had internet access, up from 89% in 2019. Video calling became an important way for people to keep in touch during the pandemic. Zoom went from a few hundred thousand users in the first few months of 2020 to more than 13 million in April and May 2020. This has dropped to 10.4 million users in March 2021, while platforms used mainly for work and education, notably Microsoft Teams have shown a sustained increase in use (13.7 million users in March 2021m up by 5.3 million year on year).

The report found that most of the time people spend on the internet is via apps on mobile devices. Online services were a crucial way for people to find out information about the pandemic, and for governments to try and track and control the spread of the virus.

The report acknowledged that the internet helped most children continue their education throughout lockdown. Virtually all households with school-aged children had access to the internet at home. 7% did not have fixed broadband and 4% had access only to a mobile phone. 1 in 5 did not have access to an appropriate device for their schoolwork all the time. The Report found that 2020 saw the rapid adoption of digital remote education by teachers, parents and children such as video conferencing, and platforms for setting and collecting work. In the first few weeks of lockdown in spring 2020, two thirds of children in England were not receiving any live or recorded lessons. By January 2021, this was down to just one in

ten. The Report suggests that the use of these platforms may continue such as for those who can't attend school due to illness, or to provide additional revision materials.

Nine in ten 8 – 15 year olds who use social-media said it helped them to feel closer to their friends in 2020. The report stated that social video services offer huge benefits for users and the economy. They provide a platform for self-expression through enabling user-generated content (31% of adults and 40% of 13-17 year olds post video content).

Lockdown influenced the types of social video that were most popular such as the first episode of Joe Wickes' PE which was the most viewed YouTube video of 2020, and videos relating to home baking such as sourdough bread increased by 458%.

Social media serves as a means of entertainment and education for many (used by 97% of adult internet users), and as an important method of marketing for businesses (online video advertising grew by 23% in the UK in 2020).

Online retail spend in the UK increased by 48% in 2020 (compared to an average annual increase of 13% in the previous 4 years). Online share of retail spend increased from approximately 20% in 2019 to 35% in the spring lockdown and 30% in December 2020. By December 2020 11% of the UK grocery market sales were online, up from 5% at the beginning of the year. Online food delivery services also increased in demand. Just Eat being the most popular with its UK orders up 58% higher in the last quarter of 202 compared to the same period in 2019.

People have relied on the internet for news and information throughout the pandemic. During the spring 2020 lockdown 52% of people said that news and current affairs was one of their main reasons to go online.

Adults are as likely to use social media to find information about the COVID-19 pandemic as they are to use news sites and apps (approximately 1 in 3). Whilst one in eight 16 – 24 year olds considered social media to be their most important source of information about the coronavirus pandemic, compared to 5% of all UK online adults.

The report found that 91% of households used smartphones to access the internet in 2021, compared to 65% who used tablets and 47% who accessed the internet using computers. The report also noted that 61% of UK adults who access the internet did so using both computers and smart devices.

The Report notes that the smartphone is the most-used device for accessing the internet for all age groups apart from those aged 65 +. It found that in 2020, 85% of internet users aged 16 + used a smartphone to go online, compared to nearly 75% accessing the internet via a computer and just over 50% using a tablet to access the internet. One in ten adults also stated that they only use a smartphone to go online and three in ten used their phone to complete an online form or app on a weekly basis.

Levelling Up the United Kingdom (February 2022)

Digital Connectivity is a focus area and the mission is 'By 2030, the UK will have nationwide gigabit-capable broadband and 4G coverage, with 5G coverage for the majority of the population'.

Chapter 3 - The Policy Programme:

Para 3.2.4 - By 2030, the UK will have nationwide gigabit-capable broadband and 4G coverage, with 5G coverage for the majority of the population

This mission is focused on improving digital connectivity.

Digital connectivity: The case for action

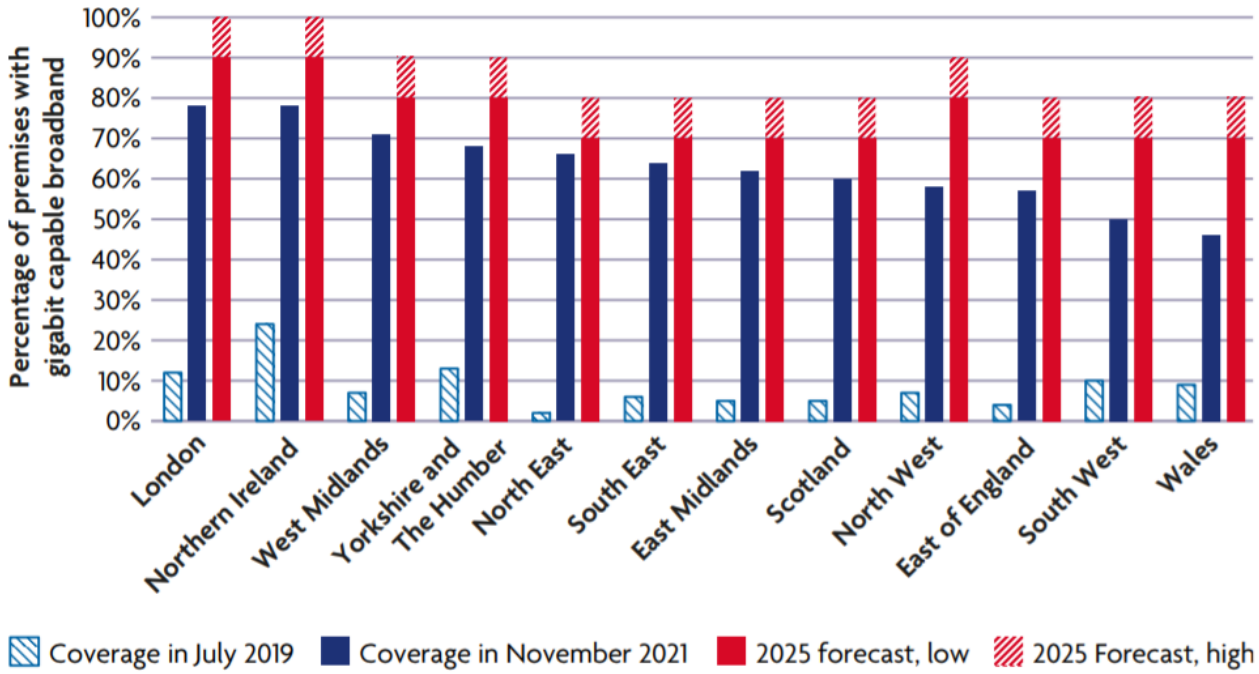
The COVID-19 pandemic demonstrated the importance of digital infrastructure right across society, from ensuring business continuity to reducing isolation. Improved digital connectivity has the potential to drive growth and productivity across the UK and widen job opportunities through remote working. However, there are significant spatial disparities in the quality of broadband and mobile networks, with rural areas likely to experience worse digital connectivity than urban areas. Infrastructure is only part of the picture: economic benefits will only materialise if businesses and workers have the skills to take advantage of improved infrastructure.

More broadly, high quality digital infrastructure can deepen local labour markets through remote working, making it more attractive for both workers and companies to locate regionally. It also allows for the development of high-value sectoral clusters, which can drive growth and jobs in new areas. Existing specialisms in the UK regions have the potential to generate strong tech clusters, such as fntech in Scotland and Wales, e-Commerce in the Northwest and Northern Ireland, and Agri-Tech in Yorkshire and the Humber. The sector also provides opportunities for raising living standards – median earnings for the sector are 50% higher than the UK average.

The policy programme In 2020, the UK Government published the National Infrastructure Strategy, committing to providing £5bn in public funding to roll out gigabit broadband to at least 85% of the country by 2025, and subsequently to as close to 100% as possible, working with the private sector.

Public investment will target premises that are hardest to reach and which would otherwise not be provided for by the private sector, ensuring no areas are left behind. Gigabit coverage has increased from 10% to over 60% in less than two years. Since 2019, coverage has improved across the UK, and the UK Government anticipates the following additional improvements to be delivered as a minimum by 2025, as set out below.

Figure 3.1 Gigabit coverage improvements, UK countries and regions, 2019, 2021 and 2025 (forecast)



Source: Levelling Up the United Kingdom.

5G has the potential to radically change the way people live and make businesses more productive and competitive. The UK Government's ambition is for the majority of the population to have access to a 5G signal by 2027. Since 2017, the UK Government has provided £200m in funding for 5G Testbeds and Trials, supporting over 200 start-ups and SMEs across a range of sectors – including healthcare, manufacturing, Agri-Tech and creative industries – to better understand how to use the technology to develop new solutions and services.

In 2022, the UK Government will publish the Wireless Infrastructure Strategy. This will review how far the private sector will go to deliver wireless infrastructure – including 5G – across the country and determine whether there are any market failures in places that need to be addressed, and how the UK Government could tackle these.

Box 3.9 - West Midlands 5G The West Midlands 5G (WM5G) Testbed started in 2018 with the mission of testing and proving the benefits of 5G to public and private sector productivity, creating jobs and boosting growth. The UK Government has invested £21m over three years, alongside investment from local government and the private sector. By working with local authorities and Mobile Network Operators (MNOs), WM5G has accelerated 5G deployment by over six months, resulting in the West Midlands being amongst the best connected places for 5G in the UK. In addition, WM5G has delivered a number of UK firsts, including a 5G road sensor network, 5G connected ambulance and capsule endoscopy trials, and a 5G application accelerator programme called 5prinG, which has already upskilled over 400 organisations on the benefits of 5G and allowed over 60 start-ups to develop new 5G products and services.

We must ensure that people have sufficient digital skills to reap the benefits and prosperity arising from the digital economy. In 2020, the UK Government introduced a new digital skills entitlement, giving adults with

low or no digital skills in England free access to new digital skills qualifications based on employer-supported national standards. The UK Government continues to work with local leaders to develop Local Digital Skills Partnerships. These collaborative partnerships are now operating in seven regions across England, with an eighth formally launching in Hull and East Yorkshire in early March. The UK Government will work with devolved administrations to consider how best to share the insights and evaluation of the programme to help build digital skills capability across the UK.

Planning Assessment

The main issues arising from this prior approval application are whether the proposed streetpole and cabinets, due to their scale and siting, are acceptable, and whether any perceived harm would outweigh the significant social and economic benefits associated with the increased and improved connectivity provided by the proposal and other valid material considerations as outlined in the NPPF, which fully supports the roll out of 5G and the next generation connectivity to accelerate business opportunities and growth to ensure the economy is resilient and competitive.

The streetpole and associated antennas fully comply with the NPPF as it will increase overall connectivity across this area of Tuffley. Access to a high quality, reliable superfast mobile network is not just 'a nice to have' but an essential part of everyday life. Indeed many, including the former Minister for Digital Infrastructure Matt Warman, consider it to be the fourth utility service as important as gas, water and electricity, a lifeline for many especially during the COVID-19 pandemic where people were able to see their loved ones, speak to friends and family and arrange virtual meetings allowing some form of normality in a very abnormal situation.

The principle of development has been established by the Government when the new permitted development rights came into force in April 2022, which enabled sites such as this one to be built under the operators permitted development rights, (as the column height does not exceed 25m), with prior approval for siting and appearance being the only matters that the local planning authority can take into consideration.

Of specific note is that this proposal only uses 17m of these rights (or 32% less than the maximum allowed) – this in itself demonstrates that impacts are being minimised through the appearance of the apparatus.

Planning Practice Guidance explains how a prior approval application differs from a planning application at paragraph 28. It states that:

> '*The statutory requirements relating to prior approval are much less prescriptive than those relating to planning applications. This is deliberate, as prior approval is a light-touch process which applies where the principle of the development has already been established* (emphasis added)*. Where no specific procedure is provided in the General Permitted Development Order, local planning authorities have discretion on what processes they put in place. It is important that a local planning authority does not impose unnecessarily onerous requirements on developers and does not seek to replicate the planning application system*' (emphasis added).

The Planning Portal also provides Application Type Guidance. This guidance states that:

> '*Certain forms of telecommunication development, for example, mobile telephone masts, are known as 'permitted development' and subject to prior approval from the local planning authority. The prior approval procedure means that the principle of development is not an issue. The LPA can only consider the siting and appearance of the proposal'.*

Siting

The siting of the proposed radio base station has been carefully considered. To this end, there are a number of existing (albeit smaller) vertical elements of street furniture in the immediate vicinity, including lighting columns, road signage, pub signage, a notice board, bollards tall mature trees and statutory undertakers' equipment cabinets which will help assimilate the pole into the highways setting. The majority of views of the pole will be experienced by those travelling along Windsor Drive and Chatsworth Avenue where items such as the pole are not necessarily uncommon features.

A recent image of the streetscene can be seen above. This shows the application site, the streetscene and the surrounding residential properties and commercial premises which will experience some visual impact from the proposed pole. The local impacts are noted by the applicant however it should be recognised that installations such as this do need to be located in suburban areas as much as in others as this is where demand is derived from.

This is in accordance with the aspirations of the NPPF and Local Plan. It should be stressed here that form follows function – whilst it is tempting to make direct physical comparisons with existing vertical features, the different use must be at the foremost of the mind – form follows function. For example, whilst the streetlights are lower (at approx. 5m, or around one third the height of the proposed pole), far more than three streetlights will be required to provide lighting to the same area as the proposed streetpole will provide 4G and 5G connectivity to. Indeed, hundreds of streetlights would be required to fulfil that function. In addition, road signs need to be located where they can be easily read by road users i.e. lower.

Technical requirements have dictated the siting of the proposed equipment. The operator has spent a considerable amount of time identifying a potential site and the proposed location is considered to present the best balance between operational/technical requirements and environmental impact. As explained throughout this document, the search area is small due to the nature of reasoning for the site to improve coverage and capacity issues currently being experienced by this operator and its users.

The operator's equipment cabinets are similar to those of other statutory undertakers which are commonplace in urban areas. Their limited height and scale will ensure that these cabinets will not be detrimental to the visual amenity of the area.

In line with the requirements of NPPF, there are no existing suitable telecommunications installations for the operator to share, that would provide the necessary coverage to the target coverage area. Similarly, there are no buildings which are suitable and available that the operator could utilise to operate their equipment. Therefore, a new ground-based installation is required. The discounted options are set out above and their reasons for being discounted are fully explained.

3G and 4G signals by their very nature (as they carry high data rates) do not penetrate over long distances, (5G even less so), just a few hundred metres, depending on the topography of the land, building clutter and vegetation including trees in the area which can reduce their effectiveness. Therefore 3G, 4G and 5G radio base stations need to be close to their customer demand. Therefore, a new site is required to provide new 5G service provision as well as enhance their 3G and 4G coverage to this cell area. The operator's search area is naturally smaller, than would otherwise be the case if the operator wasn't already providing service provision from this location. This severely limits the options for siting a new installation in the area.

As Section 5 above demonstrates there are no more suitable sites that are located within less sensitive locations than the current proposed site, and, as this is a site to improve coverage and capacity issues which is even more restricted in locating a more suitable site in which to provide new coverage to the target coverage area across Tuffley.

In line with NPPF, the proposed installation is an item of essential infrastructure and therefore will not cause any loss of privacy. The column and antennas do not emit any noise, odour, vibration, artificial light or disturbance from air. The only noise emitted is from a cooling fan within the equipment cabinets, which only operate during hot weather conditions. However, within a few metres the noise is inaudible, particularly when taking into account the ambient noise levels of the area which include passing traffic. The proposed installation will not cause any traffic generation as it is not a visitor destination. Maintenance of the equipment cabinets is usually once or twice a year, where the engineer can walk to site with handheld tools.

Appearance

The design of the monopole has been carefully considered. To this end, it is a simple, functional slim-line streetpole, with the main column being split in to two sections. The upper section is 406mm and the lower section is 457mm in width. This column width is essential in order to safely support the antennas at the top of the column and the feeders for all four technologies which are hidden within the main column. The column is proposed to be painted grey, in order to match the street lighting columns and other street furniture in the area. However, the monopole can be painted any colour should the Local Planning Authority consider that an alternative colour would be more appropriate.

If the column were to be any lower, the antennas would not be able to clear the surrounding trees and urban clutter as such would not be able to operate effectively. A lower height would lead to a poor user experience for a large part of the target coverage area. As such, this would fail the operators design brief and an additional installation would have to be found leading to the proliferation of masts contrary to national planning guidance contained in the NPPF.

In order to reduce the visual impact on the surrounding area the antennas have been positioned in a dual stack formation, with 3 antennas at the top of the mast at an antenna centre line height of 16.55m and the other 3 antennas are proposed to be located underneath at an antenna centre line height of 14.65m. The

antennas are positioned as tight as possible and will only be marginally wider than the main column width, rather than being a bulky headframe, and as such will not appear dissimilar to a shrouded design.

It is essential that the 5G antennas are unshrouded. As the radio frequencies get higher, required for data carrying, the antennas are less able to propagate through immediate blockages including Glass Reinforced Plastic, which is what the shroud is made from. This affects the 5G antennas more so than any other technology. The result being they cannot operate effectively close to Glass Reinforced Plastic or any other blocking material. Therefore, there is a technical reason why the 5G antennas need to be unshrouded. The latest 4G technology are also affected more so than older technologies (by propagation) and are therefore less efficient if they are shrouded. As such, the other antennas also need to be unshrouded to ensure that the latest technologies are provided to the surrounding area maximising their propagation.

The presence of the linear structures including road signage and lighting columns will ensure that the proposed column should not appear incongruous within the streetscene.

The installation of this 17metre high slim-line column designed to be as similar as possible to the other linear structures found in the immediate area will be no more at odds with the streetscene and character of the area than the other vertical structures in urban and suburban areas. Streetpoles such as this are now commonplace across the UK.

It is accepted that the height of the proposed installation is taller than other pieces of surrounding linear items of street furniture. This in itself is not a valid reason to conclude that it is not appropriate at a specific location. Indeed, Inspectors at appeal have noted that by their very nature to be effective masts are required to be taller than surrounding structures – see also discussion above in relation to form following function.

Telecommunications apparatus by its very nature must be taller than surrounding built and natural form to ensure its efficient operation. It is an essential piece of infrastructure, like pylons and telegraph poles. The proposal should not be considered negatively due to it being taller *per se* than the adjacent street furniture. Reasonable consideration of the proposal in the context of the surrounding buildings and vertical elements of street furniture should conclude that the presence of these seeks to provide a setting wherein a base station may appear more congruous from which to provide an important service. Permitted development rights extend to 25m at this location – it is important to note that this means that there is an *in principle* permission for this height of pole. However, the pole being proposed is 17m i.e. 8m lower (32% less) and so this is a demonstration of minimising impacts through the design of the pole.

NPPF states at paragraph 115 the number of radio and electronic communications masts, and the sites for such installations, should be kept to a minimum consistent with the needs of consumers, the efficient operation of the network and providing reasonable capacity for future expansion. In order to provide the latest 4G technology and 5G service in this locality, and to ensure that the coverage in the area is reliable and does not buffer or drop out, a new site is required. The operator has already explained above, it is unable to shroud the antennas, but the design is as slim as possible and will represent a simple, functional, vertical structure in the streetscene similar to the existing lighting columns on the street.

If the column and shroud were to be any slimmer, then the multi technologies would not be able to fit in the same installation and an additional radio base station would be required which would be contrary to national planning guidance (i.e. proliferation). It would also not be structurally capable of supporting all the technologies including the latest 4G coverage as well as 5G service provision. If the column were to be the same width throughout, then it would have to be as wide as the antennas at the top of the column. This would appear more visually prominent in the streetscene than the current proposals.

The design of the radio base station is one of the most sensitive designs available to the operators, designed to resemble typical existing urban linear street furniture. This is in line with the requirements of NPPF which supports equipment which is sympathetically designed and camouflaged where appropriate [paragraph 115], The Code of Practice as well as the aspirations of national and local planning policy.

The proposed new site therefore accords with NPPF and the development plan because the equipment will resemble other linear structures within the area and will expand the network, ensure high quality communications infrastructure is maintained whilst minimising the number of radio base stations in the area. Placing masts near similar structures such as lighting columns, utilising simple and unfussy designs is acknowledged in the Code of Practice on Mobile Network Development in England to be less likely to dominate and be in discord with the streetscene and as a result less likely to have a detrimental impact on the visual amenity of the surrounding area.

Lack of Coverage – Material Consideration

The current proposals will facilitate the development of an advanced broadband telecommunications infrastructure in line with National Government guidance contained within the NPPF which supports infrastructure especially where growth takes place. By providing the latest 4G technology and new 5G service provision the proposals will support the aspirations of Central Government for everyone to have access to the superfast highway network wherever they are, and that the majority of the population have access to a 5G service by 2027.

Mobiles can only work with a network of base stations in place where people want to use their mobile phones or other wireless devices. Without base stations, the mobile phones and other devices we rely on simply won't work. The proposed new mast has been sited and designed in order to provide new 3G, 4G and the latest 5G coverage and to improve the existing mobile network where there is currently a hole in coverage.

The way 5G works, it is closely connected with the Smart City agenda and will enable centralized control of lots of different street infrastructure owned or managed by councils, such as streetlights, water meters and bus stops.

Trials have already begun across the UK to demonstrate the potential of 5G and how it can improve and drive productivity and efficiency. In June 2019, West Midlands 5G partnered with BT and University Hospitals Birmingham to trial the UK's first 5G Connected Ambulance. Real-Time communications between the paramedics and the hospital doctors enabled the effective diagnosis of the patient at an early stage of care. The trial showed how a paramedic performed a remote-controlled ultra-sound scan on a patient in an ambulance over a public 5G network. These trials show how digital connectivity and technology can reduce patient waiting times and save lives (Source: WM5G).

In line with the NPPF, the proposals will provide world-class connections and access to opportunity for all in this cell area, as well as providing world-class digital infrastructure which provides the platform for the east Waterfoot area to embrace emerging technologies and societal changes. 5G infrastructure is fundamental to enable digital technologies to function. The proposals will ensure that any Three customer in this cell area will be able to access resilient, seamless connectivity at a speed they need anywhere at any time. Without the more basic technology solutions such as 5G, smart-region solutions and value-added outcomes will struggle to be brought to fruition.

Without this new site, the operator's customers would continue to experience an increase in numbers of dropped calls and buffering unable to access the internet on their handheld devices. They would also not

be able to access the 5G network, a demand which is increasing rapidly as users update their handheld devices to ones that are 5G compatible. If the 5G network is not available, then users would not be able to utilise these handheld devices for the purposes in which they were purchased. This would be contrary to the aspirations of Central Government which aspires to everyone having access to the superfast highway network wherever they are, and that the majority of the population have access to a 5G service by 2027.

In accordance with the NPPF the proposed installation will help improve the area's economic prosperity, strengthen the (sub)urban economy's by supporting local businesses to start, grow, adapt and diversify. It will support a better environment for today and tomorrow by reducing the need to travel and in turn minimise carbon emissions. The radio base station will support the delivery of healthcare provision and accessibility by enabling people greater access to online services, NHS appointment reminders, reminders to take medicines, make appointments etc. As well as assisting hospital outpatient appointments and emergency consultations carried out remotely via video link, connected ambulances, live streaming of CCTV footage etc.

By enhancing the 3G and 4G service provision to the surrounding area and providing new 5G coverage into the operator's network, this would fully support the NPPF and the ambitions of the SYMCA which recognises the importance of higher data capacity and increasing speeds in order to drive economic growth.

The Councilor's Guide to Digital Connectivity notes that a survey conducted by the Confederation of British Industry found that 81% of firms said that they see more reliable mobile connectivity as essential. Studies have also shown that mobile broadband is associated with positive impacts nationally, such as higher GDP and increased employment.

Therefore, the Government fully supports high quality communications infrastructure, even more so with the advent of 5G. The NPPF continues to strongly support telecommunications connectivity and states at paragraph 114 that local planning authorities should support the expansion of electronic communications networks. It acknowledges that advanced, high quality and reliable communications infrastructure is essential for economic growth and social well-being.

The demand for mobile data in the UK is increasing rapidly, and as households and businesses become increasingly reliant on mobile connectivity, the infrastructure must be in place to ensure supply does not become a constraint on future demand.

The proposed installation in this location will fill the current gap in the latest high quality service provision and enable the operator and MVNOs who buy network space off this operator to maintain access to their handheld devices wherever they are for the purposes in which they were purchased. This is fully in line with the Government's aspirations that everyone has access to the superfast communications network, contained within the NPPF.

Access to the internet in whatever medium now impacts every facet of our lives but only benefits those who can access and use it. The benefits of internet connectivity are key for both residents and businesses alike and a radio base station in this location providing the latest 3G, 4G and 5G technologies will support the NPPF.

In line with guidance contained within the NPPF a radio base station in this location will enable fast, reliable, secure internet accessibility wherever the user is located. This would fully meet the latest operators' coverage and capacity requirements for 3G, 4G and new 5G provision. This would be wholly in line with the Government's latest aspirations to strongly support advanced, high quality and reliable communications infrastructure, essential for economic growth and social well-being. Where the NPPF notes that decisions

should support the expansion of electronic communications networks. An installation outside this search area, regardless of whether there are existing sites, would not allow the operator to provide their desired level of coverage and therefore would not adequately maintain and provide new coverage and capacity.

As part of the operators 4G licence obligations, many customers will benefit significantly from a vastly improved service provision in this locality. They will be able to gain access to the very latest technologies and connectivity, including 5G, to high-speed data services. Digital technology has catalysed the interconnection of the global economy, with the internet enabling the free exchange of goods and services, providing consumers with greater choice and businesses with access to skills, resources and customers.

The Code of Practice acknowledges that upgrading and improving mobile networks will not be possible without the necessary infrastructure on which we rely. With increasing consumer demand and the Government's aspirations for high quality communications infrastructure it is ever more important to improve connectivity and capacity.

In the Code of Practice there is emphasis on the need for Local Planning Authorities to take account of network deployment and siting and design, when considering proposals. In relation to the introduction of 5G network deployment the Code acknowledges the requirement of additional equipment to provide necessary coverage and capacity. With the increasing consumer demand and the Government's ambitious aspirations it is becoming more important to improve connectivity and capacity. This is due to the ever-increasing demand for data hungry applications to be available to a range of connected devices, such as smartphones and tablet computers. However, the Code notes that upgrading and improving mobile networks will not be possible without the necessary infrastructure on which they rely. Therefore, there is a significant need to locate the equipment in this area.

The operator not only has a license requirement to provide a certain level of 3G/4G coverage to the population the operators are obliged to meet the growing consumer demand for 5G coverage, but especially as more people are also purchasing 5G enabled devices, in line with their license obligations and the operators competitive market driven "requirement" to provide a high-quality service. Customers expect to be able to access their portable handheld devices wherever they are, whether that be indoors or outside. The current network coverage in this area is struggling to cope with demand and therefore the new site is required to increase capacity on the network in this residential suburban area.

The OFCOM Online Nation 2021 Report highlights the importance of smart phones and thus in turn connectivity. In September 2020, UK Internet users spent nearly 4 times as much time on smartphones than they did on computers. The report found that most of the time people spend on the internet is via apps on mobile devices. Social media serves as a means of entertainment and education for many, and as an important method of marketing for businesses. The report found that 91% of households used smartphones to access the internet in 2021, compared to 65% who used tablets and 47% who accessed the internet using computers. The Report notes that the smartphone is the most-used device for accessing the internet for all age groups apart from those aged 65 +.

It is therefore imperative that the operator continues to invest in ensuring that the latest technologies are available on its network, so that customers are able to continue to use their handheld devices wherever they are, for whatever reason, for the purposes in which they were purchased.

Economic and Social Benefits

The NPPF strongly supports sustainable development. Mobile communication plays a significant role in sustainable development, being able to access the internet via a mobile device allows people to access a

wide range of central and local government services buy groceries, manage finances, apply for jobs/university, and carry out school projects, send emails, download applications, send and receive instant messages, participate in social media, streaming and downloading data to name just a few of the benefits of being able to use an internet enabled handheld device. It also allows people to work from home or on the move without needing to return to the office. Residents and businesses will enjoy better accessibility, assisting home-base working by improving the electronic means of communication and the roll-out of high-speed broadband helping to promote live-work development. This reduces travel time, carbon emissions and increases the speed in which information is processed/shared. The proposals therefore fully comply with NPPF and development plan to minimise the effects of climate change, reducing the need to travel, and therefore the carbon footprint.

In such instances, as described above, the NPPF supports development that improves the economic, social and environmental conditions in the area. By filling the current gap for 3G and 4G coverage and capacity in this area and providing new 5G services will fully meet this national policy objective. Continuing to transform the digital connectivity of the city-region to drive economic growth and innovation, working to meet national targets of full roll-out of 5G technology for most people by 2027 which is in line with Central Government objectives.

Mobile connectivity is essential to the future success of the economy. The combined value of 4G and 5G mobile connectivity is estimated to add £18.5bn to the economy by 2026 (Councils and Connectivity Sept 2018). Mobile connectivity is essential to creating a better society. Digital inclusion can help people gain employment, become more financially secure and improve health and well-being. Mobile connectivity is essential to fulfilling the potential of new technologies. Innovations such as artificial intelligence and connected cars will change how we work, spend our leisure time and run our public services.

Providing the latest digital infrastructure to enable improvements in digital technology empowers and enables residents to have the highest quality of life, supports the creation of high-quality jobs and achieves the maximum productivity levels. It also helps the economy to be resilient and competitive. It will help Tuffley be a world-leading digital region and one which its businesses, public service providers and citizens are using digital technology by default and to the fullest to grow their businesses and improve productivity to access skills, training and employment opportunities to address global challenges that have a local impact such as ill health, social isolation, and pollution; to improve living standards and well-being, helping people to lead prosperous and rewarding lives; and to improve the quality and value for money of public services.

Practical Applications of 5G Connectivity as Example of Material Socio-Economic Benefit: -

Education:
The relationship between 5G and education is evolving at a massive rate with educators exploring the relevance of Virtual Reality (VR) technologies for education and training. Crucially, VR can support remote learning, allowing students a presence in the classroom even when working elsewhere.

5G's ability to deliver real-time information (low latency), ultra-fast speeds (critical for high-definition images and video), increased capacity and heightened security will also allow learning on the job, thanks to technologies such as Augmented Reality (AR) goggles, which can give engineers real-time instructions on how to fix a machine on a production line, for example.

Health:
Patients across the country are now becoming accustomed to relying on remote healthcare services such as NHS 111, virtual GP appointments, and ordering online deliveries of essential medical supplies.

5G will prove critical in providing the infrastructure required to deliver remote health services over the next decade. By design, 5G's ability to deliver real-time information (low latency), ultra-fast speeds (critical for high-definition images and video), increased capacity and heightened security are going to be fundamental in scaling the patient benefits of remote healthcare and keeping medical records secure and private. For instance, trials have shown that connecting ambulance crews to expert resources using 5G allows paramedics to work with doctors and conduct specialist procedures in real time whilst on the road.

There is a demand for mobile connectivity in areas where geography, logistics or economics – or a combination of all 3, make it difficult. Mobile network capacity needs to grow to meet the demand of mobile users, who are consuming ever increasing amounts of data.

Paragraph 38 of the revised NPPF states that:

*'Local planning authorities should approach decisions on proposed development in a positive and creative way. They should use the full range of planning tools available, including…*permission in principle*, and work proactively with applicants to secure developments that will improve the economic, social and environmental conditions of the area. Decision-makers at every level should seek to approve applications for sustainable development where possible'*.

Providing high quality 3G, 4G and 5G coverage and capacity in this area fully meets this part of the NPPF. The social and economic benefits are a significant material consideration which should be weighed against the visual impact associated with a radio base station in this location. HM Treasury outlined such benefits in its report '*Fixing the Foundations: Creating a More Prosperous Nation*' – July 2015. Paragraph 7.1 of the plan stated that reliable and high quality fixed and mobile broadband connections support growth in productivity, efficiency and labour force participation across the whole economy. They enable new and more efficient business processes, access to new markets and support flexible working and working from home.

Paragraph 7.2 goes on to highlight strong support for high quality communications infrastructure. It states

'*by reducing red tape and barriers to investment, the Government will support the market to deliver the internationally competitive fixed and mobile digital communications infrastructure the UK's businesses need to thrive and grow, and which will enable the UK to remain at the forefront of the digital economy. The Government is working with business so that the market can play the lead role in delivering against the ambitions set out in the Digital Communications Infrastructure Strategy, published March, of near universal 4G and ultrafast broadband coverage.'*

The Government recognises that widespread coverage of mobile connectivity is essential for people and businesses. People expect to be connected where they live, work, visit and travel. That is why the Government is committed to extending mobile geographical coverage further across the UK, with continuous mobile connectivity provided to all major roads and to being a world leader in 5G.

This will allow everyone in the country to benefit from the economic advantages of widespread mobile coverage. As well as improved mobile signal, 5G networks are also crucial to drive productivity and growth across the sectors that local areas are focusing on through their emerging Local Industrial Strategies. Enabling and planning for 5G implementation is central to achieving the Government's objective to deliver property at the local level and enable all places to share in the proceeds of growth.

The Government is determined to ensure the UK receives the coverage and connectivity it needs. To this end, the Government wants to be a world leader in 5G, the next generation of wireless connectivity, and for communities to benefit from the investments in the new technology.

The case for 5G is compelling as it will bring faster, more responsive and reliable connections than ever before.

MPs have noted in parliament that the UKs Superfast Broadband connectivity was 'relatively poor'. As such, there is continuing and growing strong national support for high quality communications infrastructure. Further to the Government's commitment to improve connectivity, on 24th November 2016 the new permitted development rights for telecommunication operators came into force, designed to lift the restrictions on mobile operators such is the significance and weight the Government place upon the benefits attached to modern connectivity. In April 2022, the permitted development rights were further relaxed to make the roll out of 5G even quicker in line with the Government's campaign to *'Speed up Britain'*.

In October 2016, there was also the BIG Infrastructure Group (as Chaired by MP Grant Shapps) Report release calling on operators to improve their network. This is signed and has comments from numerous MPs nationally.

A National Needs Assessment – A Vision for UK Infrastructure was also published in October 2016 (https://www.ice.org.uk/getattachment/media-and-policy/policy/national-needs- assessment-a-vision-for-uk-infrastr/National-Needs-Assessment-PDF-(1).pdf.aspx). It sets out the infrastructure needs for the UK which includes the importance of digital technology. An extract of this assessment can be found below:

'A lack of digital connectivity has a detrimental effect on business operations, productivity and output and hence competitiveness in the global marketplace. Securing digital connectivity is thus critical to the UK's long-term prosperity. A key challenge for the digital sector is a persistent digital divide between those who have access to the latest technologies and those who do not, with resulting social and economic exclusion, particularly as dependence on e-services and digital communications increases'.

The Assessment goes on to note that '*Universal digital connectivity would serve as an equaliser of economic opportunity in that it enables participation in a modern digital economy'*. Therefore, this Needs Assessment further explains the consequences of a lack of coverage and the effects this has on social and economic prosperity. This clearly highlights the importance of improving high quality 3G and 4G coverage to this area of Tuffley and the wider area of Gloucester.

Ministers from the DCMS and MHCLG wrote to all CEOs of Council's in England (March 2019) setting out its position in respect of supporting investment in high-quality, reliable digital connectivity **'Collaborating for digital connectivity'.** The Government acknowledges that such infrastructure is essential for communities to benefit from faster economic growth and greater social inclusion. Ministers state:

'It is essential to keep pace with growing demand for internet bandwidth and mobile data from local businesses, residents and those who visit our communities. As outlined in the Future Telecoms Infrastructure Review, the Government would like to see nationwide full fibre coverage by 2033. We would also like the UK to be a world leader in 5G, with the majority of the population covered by a 5G signal by 2027. We are writing to ask for your help in supporting the investment necessary to achieve these objectives.

Recent years have seen substantial investment in mobile and fixed digital infrastructure across the UK.

While mobile coverage across the UK has been significantly improving, there are still too many areas where coverage is poor. The UK has now achieved 95% superfast broadband coverage but still only 6% full fibre coverage.

We need to create the market and policy conditions necessary to support the large- scale commercial investment required to extend and future-proof digital connectivity. A key part of this is making it easier for operators to deploy infrastructure. To help to achieve this, the Government recently reformed the Electronic Communications Code - the statutory framework which underpins agreements between communications network providers and those in both the private and public sector who can provide sites for the installation of network equipment. The purpose of the reforms was to make it easier and more cost effective for communications network providers to deploy and maintain digital infrastructure.

Local authorities have an essential role to play as site providers. As Chief Executives, you can support investment in digital communications infrastructure by ensuring your organisations have policies and procedures in place that promote effective engagement with the digital communications industry and minimise barriers to deployment'.

Health and Safety

The proposed installation conforms to current government planning guidelines regarding potential health effects arising from telecommunications development. The operator has attached a declaration that the site conforms to ICNIRP guidance. This is in full accordance with NPPF.

Recent court cases have confirmed that the *public perception* of health risks can be a material consideration within the land-use planning system. 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.

The publication of the National Planning Policy Framework continues to highlight the Governments view that the planning system is not the appropriate mechanism for determining health safeguards. It sends a clear message to local planning authorities stating that they 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'. This is reiterated in the Code of Practice.

Notably, Ofcom have now undertaken 5G audits in the major cities and the results indicate that the exposure levels are a small fraction of the limits. This further reinforces the PHE guidance in respect of 5G which states: "It is possible that there may be a small increase in overall exposure to radio waves when 5G is added to an existing network or in a new area. However, the overall exposure is expected to remain low relative to guidelines and, as such, there should be no consequences for public health." (https://www.gov.uk/government/publications/5g-technologies-radio-waves-and-health)

Summary

The operator is limited in siting options as there is a requirement to fill the current hole in coverage and to provide improved 3G/ 4G coverage and capacity for this area of Tuffley whilst also providing new 5G

services. The requirement is to fill the hole in coverage to provide the latest technology whilst improving the provision of coverage and capacity to the surrounding local area.

Site selection was progressed in accordance with the applicant's licence obligations, advice in the NPPF and the Code of Practice and represents the least environmentally intrusive, technically suitable, available option.

The siting of the proposed radio base station has been carefully considered. The proposed height at 17metres is essential in order for the antennas to clear the surrounding urban clutter and trees and ensure the antennas are able to reach the target coverage area, to provide new high quality, reliable 3G, 4G and 5G service provision to the Gloucester City Council area. This will fully meet the national Government's aim of '*ensuring that everyone is connected to the information superhighway*' and the national policies set out in the NPPF. If the height of the column were to be reduced then the antennas would not be able to operate effectively, leading to a degraded service for the operator's customers especially for the higher frequency technologies including the latest 4G technology and new 5G service provision.

The social and economic benefits of providing reliable and high quality mobile broadband connections including 5G support growth in productivity, efficiency and labour force participation across the whole economy. This is fully supported by the NPPF. These benefits are strong material considerations which any perceived loss of visual amenity to the surrounding area.

The applicant considers the proposed installation in terms of its siting and appearance would not cause significant harm on the street scene and any perceived harm would be outweighed by the need for the proposal when balanced against the development plan and its relevant policies, the NPPF, Code of Practice, and other material considerations.

We confirm that submitted drawings have been checked for accuracy.

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5G, EMF Exposure and Safety

Introduction

The debate on health concerns related to Electromagnetic Field (EMF) exposure has been ongoing through every generation of mobile technology. The adoption of 5G and expanded use of features such as the use of millimetre wave (mmWave) spectrum and small cells has resulted in heightened media discussion, and some misinformation.

This booklet provides an introduction to 5G technology, an explanation as to how 5G networks operate, and provides an overview of the international safety guidelines for the levels of EMF exposure.

Misinformation around the safety of 5G technology has also gained media traction. Providing answers to some common questions, the Frequently Asked Questions section addresses issues in respect to 5G, public health and the environment.

5G, EMF Exposure and Safety

What is 5G?

5G is the next generation of mobile technology that will transform the role of mobile connectivity in society. Designed to support new applications through gigabit data rates, low latency and high reliability, it will also provide efficient support for larger numbers of connections, enabling the Internet of Things (IoT).

In technical terms 5G delivers improved data rates (up to 100 times faster than current mobile networks), supporting virtually instant access to services and applications, with network latency significantly reduced. In addition, it offers network slicing technology making it possible to dedicate a unique part of a 5G network for a particular service.

How does a 5G network work?

5G networks will use a combination of smart antenna technologies and small cells to deliver radio signals where they are needed.

Conventional antennas provide coverage similar to how a floodlight illuminates a wide area. New 5G smart antennas act like flashlights, providing coverage where it is needed and reducing unwanted signals. Smart antennas increase capacity and improve efficiency.

Small cells are currently used by mobile networks to provide localised coverage and/or capacity and their use will expand with 5G. They may be mounted on street lights or inside buildings where over 80% of mobile usage occurs.

Many initial 5G deployments will be at frequencies similar to 3G/4G mobile networks and Wi-Fi. This also means that many existing antennas sites can be reused for 5G.

To achieve higher capacity 5G can also use higher frequencies that are used today by the mobile and satellite industries for other purposes. These frequencies are known as millimetre-waves (mmW or mmWaves).

The core part of the 5G network will initially use 4G control functions before transitioning to standalone 5G networks.

What are the international exposure guidelines and why are they relevant?

First published in 1998, the International Commission for Non-Ionizing Radiation Protection (ICNIRP) guidelines on limiting exposure to radiofrequency EMF (RF-EMF), establish limits to protect workers and the public. Wireless technologies operate in compliance with these guidelines or national regulations, and the World Health Organisation (WHO) formally recognises this independent non-governmental organisation.

The ICNIRP 1998 guidelines form the basis of regulatory limits for mobile network antennas and devices in most parts of the world and are supported by the WHO.

In March 2020, the 1998 ICNIRP guidelines were updated. The updated guidelines cover all frequencies used for mobile communications, including the frequencies used for 5G.

As part of the ICNIRP review process, an extensive assessment was carried out of the available scientific evidence and research on EMF and health, and this review covered studies across the entire radio frequency spectrum including the frequencies that can be used for 5G.

The review concluded that the 1998 limits provide protection for 5G. The 2020 Guidelines also introduce better and more detailed guidance, in particular, for frequencies above 6 GHz.

The WHO has concluded that EMF exposure below the limits recommended in the ICNIRP guidelines do not appear to have any known consequence on health.

The ICNIRP strongly recommends that countries update to the new ICNIRP (2020) guidelines.

Why is it necessary to harmonise RF-EMF exposure limits?

The WHO strongly promotes the use of international standards that provide the same or similar level of health protection for all people and endorses the guidelines of ICNIRP.

The WHO notes that large disparities between national limits and international guidelines can foster confusion for both regulators and policy makers, increase public anxiety, and provide a challenge to manufacturers and operators of communications systems who need to tailor their products to each market.

Restrictive limits do not offer any additional health protection against established health effects and do not lead to lower exposures in public areas. They make mobile network deployment less efficient, make co-location of antennas difficult, and increase the number of antenna sites that are required.

Is mobile safe?

The radio signals used by mobile technologies are extensively researched and have been for decades. The frequencies used for mobile operate in compliance with national or international EMF exposure guidelines, which cover all frequencies currently used by 5G and under consideration for 5G.

In March 2020 ICNIRP stated that the 1998 guidelines still provide protection against all known health effects of high-frequency radiation within the frequency range 100 kHz – 300 GHz (5G is using frequecies below 1 GHz, 1-6 GHz and above 6 GHz). The final limits for Radio Frequency transmitting devices, such as mobile phones and tablets, intended for use by the public are unchanged below 6 GHz. The 2020 update provides additional guidelines for frequencies above 6 GHz. This update has been anticipated by the industry for some time and test methods exist to ensure the compliance of 5G devices in the market. Public health agencies and expert groups consistently conclude that the guidelines protect all persons (including children) against all established health risks.

Mobile operators encourage national regulatory authorities to adopt international recommendations on EMF exposure levels for mobile communications to protect industry workers, mobile consumers and the public.

Frequently Asked Questions

Every generation of mobile technology has sparked some health discussion, however, the radio signals used by mobile technologies have been extensively studied for decades and the scientific evidence gathered is the basis for international safety guidelines.

Several myths around the safety of 5G technology have, however, gained some media traction. The following provides answers to some of the common questions that have surfaced in print, broadcast and social media.

Is 5G carcinogenic?

The International Agency for Research on Cancer (IARC), which reviews evidence for cancer hazards, classifies radio frequency signals in the same group as eating pickled vegetables (i.e. that there was limited evidence that they could cause cancer in humans). Eating processed meat falls in a higher classification than radio signals (i.e. there is stronger evidence that they might cause cancer in humans).

ICNIRP says that trends in brain cancer incidence rates do not show any increase since mobile phones were introduced, and concludes that no effects of radio signals on cancer have been substantiated.

The WHO says that studies provide no indication that base stations signals increases the risk of cancer or any other disease.

In February 2020 , the US Food and Drug Administration in a review of animal and epidemiological studies of radio signals and cancer concluded that:

"To date there is no consistent or credible evidence of health problems caused by the exposure to radio frequency energy emitted by cell phones".

Do we need more research on 5G before we can claim that it is safe for consumers?

Over the past two decades, extensive studies on radio signals used by mobile technologies have been undertaken and research continues. The WHO stated in February 2020 that:

"To date, and after much research performed, no adverse health effect has been causally linked with exposure to wireless technologies... Provided that the overall exposure remains below international guidelines, no consequences for public health are anticipated."

Based on strong scientific evidence, international safety guidelines include all the frequencies under consideration for 5G. The GSMA and its members welcome ongoing independent research.

Is 5G dangerous for the environment?

The same exposure limits that protect people also protect the environment. The responsible German government agency (Bundesamt für Strahlenschutz) has stated that there is no scientifically reliable evidence of a risk to animals and plants exposed to radio signals at or below the limits in the international guidelines. In addition, the Antenna Bureau in the Netherlands (Antennebureau) has also refuted conspiracy-theorist claims that 5G tests harmed birds.

In addition, one of the goals of 5G is a 90% reduction in energy use. This will be achieved by reducing the power of transmitters when they are not in use, implementing sleep modes and reducing the amount of signaling needed to maintain connectivity.

I've heard children could be at greater risk. How can they be protected?

There have been many independent scientific reviews and these have consistently concluded that the international guidelines are protective of all persons, including children. However, there are currently few studies specific to children and this topic remains an active research area. The international exposure guidelines have been developed based on conservative assumptions to be protective of all persons.

National authorities in some countries recommend voluntary precautionary restrictions on phone and Wi-Fi use by younger children due to concern about possible greater vulnerability and to limit longer lifetime exposures if there is an unrecognised health risk. The WHO does not recommend specific measures for groups such as children and pregnant women.

Mobile phones are designed to automatically reduce power to the lowest possible level to make a quality connection. When used in areas of good reception a mobile phone will operate at lower transmit power.

I have read social media articles linking the spread of COVID-19 with 5G. Is this true?

No. WHO states that there is no link between 5G and COVID-19, confirming that viruses cannot travel on radio waves and/or mobile networks.

The WHO maintains that COVID-19 is spread through respiratory droplets when an infected person coughs, sneezes or speaks.

5G mobile networks do not spread COVID-19 and the GSMA urges governments around the world to take swift action against disinformation, vandalism and threats against mobile networks.

There have been reports that link 5G with interference with weather forecasting and its potential consequences. Is this correct?

Technical studies conducted by the International Telecommunications Union (ITU) confirm that 5G will not cause any harm to existing services, including weather forecasting. With the separation between weather forecasting spectrum and potential 5G spectrum, as well as reasonable power limits supported by most governments and the mobile industry, 5G presents no risk to weather forecasting.

Will 5G increase my exposure to EMF?

There may be a small localised increase in exposure levels when 5G is added to an existing site or when coverage is provided in a new area. However, 5G total exposure levels will remain below - and very low relative to - the international exposure limits. Based on the results from measurements of trial and commercial 5G networks the exposure levels will be similar to existing mobile services. Advanced base station designs and new technology features that are part of 5G provide higher capacity to meet consumer demand. As such, additional antennas will be required, and the number of small cell installations will increase. All mobile communication systems are designed, however, to minimise power to reduce systems interference.

Will large numbers of small cells for 5G mean an increase in exposure?

One of the goals of 5G deployments is to provide much higher data rates and the use of small cells will provide this enhanced capacity. Based on the results from current 5G trials and commercial networks, expected maximum exposure levels will be similar to existing mobile services and a small fraction of the international exposure guidelines.

Are testing standards in place for 5G devices and networks?

An international standard for assessment of mobile networks exists for all planned 5G frequencies.

Many initial 5G deployments will be at frequencies similar to existing 3G/4G mobile networks, and the same mobile device compliance limit values will also apply to 5G devices.

For 5G devices operating in frequency bands higher than those used by current mobile phones, new test procedures are in development and standardisation activities have been initiated.

The International Electrotechnical Commission has published a Technical Report providing guidance on current test methods. A final international technical standard will be completed by 2021.

How do you respond to petitions calling for 5G to be stopped?

The science mentioned in these petitions is already well known to the international scientific community and has been evaluated by independent expert groups who consistently conclude that the international guidelines protect all members of the public and the environment.

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HM Government

5G mobile technology: a guide

5G is the latest mobile technology. It brings greater speed, capacity and functionality to mobile services, opening up new opportunities for consumers, businesses and public services.

Companies have been rolling out 5G in the UK since 2019. However, some people have raised concerns that the introduction of 5G could affect people's health and have even linked it to the coronavirus pandemic.

These claims are completely unfounded and should not be used as a basis to block or delay 5G rollout.

This guide explains the facts about 5G to help you deal with queries from the public and to combat the disinformation that is spreading online.

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making communications work
for everyone

What is 5G?

5G is the new, fifth generation of mobile technology. Like previous mobile generations, including 3G and 4G, 5G uses the **radio spectrum**. The radio spectrum supports all of the wireless services used by people and businesses every day – including making a mobile phone call, listening to the radio or going online using Wi-Fi.

What are the differences between 5G and 3G and 4G?

There is nothing fundamentally different about the physical characteristics of the radio signals that will be produced by 5G compared to previous technologies like 3G and 4G.

Compared to previous generations of mobile services, 5G offers faster internet speeds and the ability to connect thousands of different devices in a small area. This means it could help create new 'smart' services for people in public spaces – providing real-time information to them about the local area and availability of services. It can also be used in healthcare, agriculture and other industries – for example, connecting machinery in factories to make production more efficient.

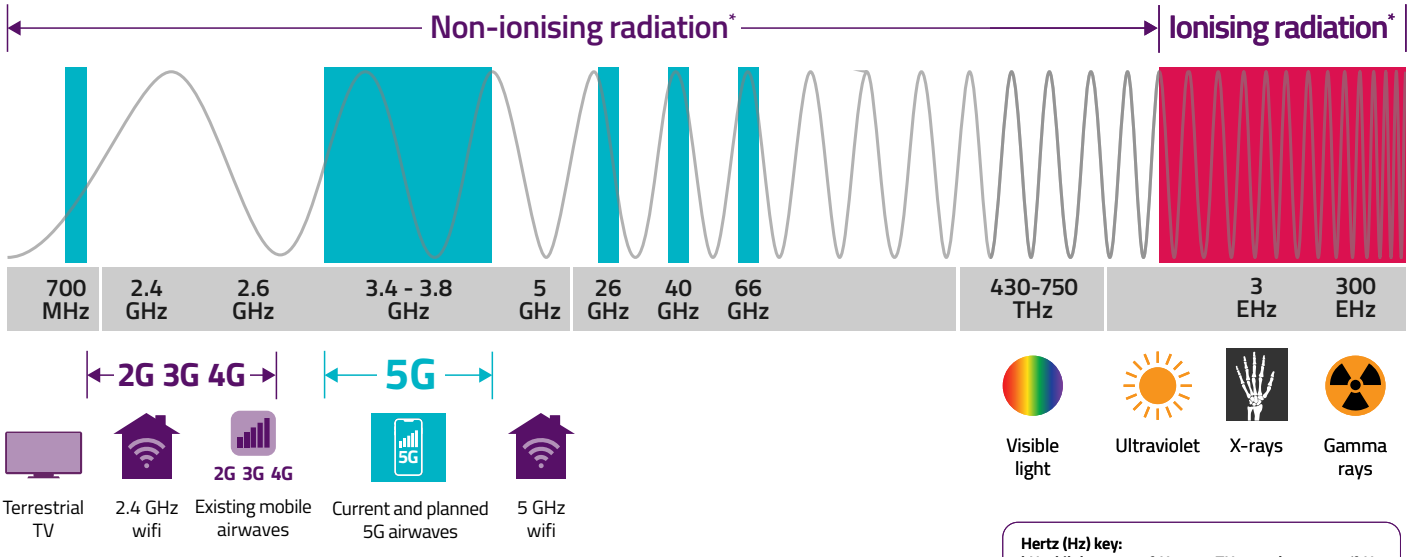
5G also makes use of certain advances in technology which are described further in this guide.

Which radiowaves does 5G use?

5G is re-using spectrum that has previously been used to deliver services such as TV broadcasting, wireless broadband and other types of transmissions that have been in the environment for many years.

Initially, mobile phone companies have deployed 5G in frequency bands which are close to those already used for previous generations of mobile technology (sometimes called low- and mid-frequency spectrum). 5G can also make use of higher frequency spectrum, and some 5G trials have already taken place in these frequencies.

All frequencies that are currently and will in future be used for 5G fall within the part of the electromagnetic spectrum that includes radiation which is classed as 'non-ionising'. This means that these radio waves do not carry enough energy to directly damage cells. This is different from 'ionising' radiation, which is generally considered to be hazardous to humans and includes gamma (nuclear) radiation as well as x-rays, which occur at the higher frequency end of the electromagnetic spectrum.



**Radio frequencies needed for common household items to work, from televisions to microwave ovens (usually between 3KHz and 300GHz), produce radiation which is classed as 'non-ionising'. This means that it does not have sufficient energy to break chemical bonds or remove electrons, as opposed to 'ionising radiation', which occurs at much higher frequencies and is generally considered to be hazardous to humans. (Source: International Commission for Non-Ionizing Radiation Protection (ICNIRP))*

Figure A: The Electromagnetic Spectrum

What do health experts say about 5G?

Health experts have studied the effects of radio waves on health for many years.

In the UK, Public Health England (PHE)[1] takes the lead on public health matters associated with electromagnetic fields, or radio waves, and has a statutory duty to provide advice to the UK Government on any health effects that may be caused by exposure to electromagnetic fields, including radio wave emissions.

PHE endorses the international guidelines for limiting exposure to radio waves, published by the International Commission for Non-Ionising Radiation Protection (ICNIRP). These guidelines cover many uses of radio frequencies, including Wi-Fi, Bluetooth and mobile technologies. The guidelines were updated in March 2020 and take full account of 5G operating at higher frequencies.

In relation to 5G, PHE have said that "the overall exposure is expected to remain low relative to guidelines and, as such, there should be no consequences for public health".

Mobile companies are also required to ensure that their signals do not exceed the limits set out in the ICNIRP guidelines for the protection of the general public.

Have 5G masts been tested to ensure they are safe?

Ofcom carries out measurements to confirm transmitter base stations do not exceed the restrictions set out in the ICNIRP guidelines. Over the past few months, **Ofcom has measured radio wave emission levels at 5G sites in 10 UK towns and cities** and, in all cases, the levels recorded are a small fraction of those in the ICNIRP guidelines.

The maximum measured at any mobile site was approximately 1.5% of the guideline levels – including signals from other mobile technologies such as 3G and 4G. The highest level from 5G signals specifically was 0.039% of the maximum set out in the guidelines.

Ofcom will continue to monitor 5G signal levels as 5G becomes more widely adopted.

Will the technological advances of 5G result in increased risks for the general public?

Use of higher frequencies (millimetre wave)

At the moment, all mobile phone companies in the UK are operating mobile services in frequencies between 700 MHz and 3.8 GHz. This includes 2G, 3G and 4G as well as all current 5G deployments. These frequencies are at the lower end of the microwave frequency range (microwaves are generally considered to encompass frequencies between 300 MHz and 300 GHz)[2].

5G can also make use of higher frequency spectrum, and some 5G trials have already taken place in these frequencies. Higher frequency bands that could be used for 5G include the 26 GHz, 40 GHz and 66 GHz frequency bands (as illustrated in Figure A above). The term millimetre wave or mmWave is often used to describe these higher frequencies. The advantage of these frequencies is that they can deliver very high speeds and high capacity with very low latency (the time between instructing a wireless device to perform an action and that action being completed).

At these frequencies, the signals do not travel as far and do not carry through walls or objects as easily as low- and mid-frequency spectrum, so they are not suited to providing wide-area mobile coverage. They are instead most likely to be used in areas with the highest demand from mobile phone users - so-called 'hotspots'.

The use of these frequencies is not new – they have been used for many years for other radio services, including point-to-point links, satellite earth stations and radio astronomy. The ICNIRP guidelines cover all frequencies that will be used for 5G, including mmWave, and all operators are required to comply with these guidelines. The latest version of these guidelines, published in March 2020, contains some additional restrictions for use at these higher frequencies.

Advanced antenna technology (massive MIMO and beamforming)

New advanced 'massive MIMO' (multiple input, multiple output) and 'beamforming' antenna technology mean that antennas used in mobile networks will be able to direct signals only to where they are needed – for example, directly to your mobile handset. This technology is already used in

1. On 18 August 2020, the Government created the National Institute for Health Protection. This brings together Public Health England, NHS Test and Trace and the analytical capability of the Joint Biosecurity Centre under a single leadership team. The organisation will be formalised and be operating from spring 2021. 2. Note, the use of the term 'microwaves' here should not be confused with 'microwave ovens' - these use a very specific set of frequencies which, incidentally, are also widely used for Wi-Fi, albeit at much lower power levels.

4G to some extent but will be used more widely in 5G.

The antennas themselves are not 'massive' in size – in fact, they are similar in size to the antennas used in previous generations of mobile technology. Rather, they are massive in that they are made up of a larger number of smaller antennas than antennas used for previous generations.

This technology means 5G transmissions will be more efficient as they will not be transmitting in directions where the signal is not needed, tending to reduce incidental radio wave exposure levels in the environment. Even so, operators will still need to ensure that the emission levels from these new antennas are compliant with the restrictions in the ICNIRP guidelines.

Small cells

At the moment, 5G equipment is generally being added to existing mobile phone masts. However, over time, more smaller transmitters (known as "small cells") may be used to provide capacity in specific locations.

While more small cells might be needed, they will operate at much lower powers than existing mobile masts as the signals do not need to travel as far. In addition, use of small cells will have the benefit of enabling mobile phones to operate at lower powers. This means that, in general, small cells will be unlikely to cause any increase to the overall radio wave exposure levels experienced by a mobile phone user, and may cause a decrease.

However, a significant increase in the number of small cells is not expected immediately as operators are concentrating on adding 5G technology to their existing sites.

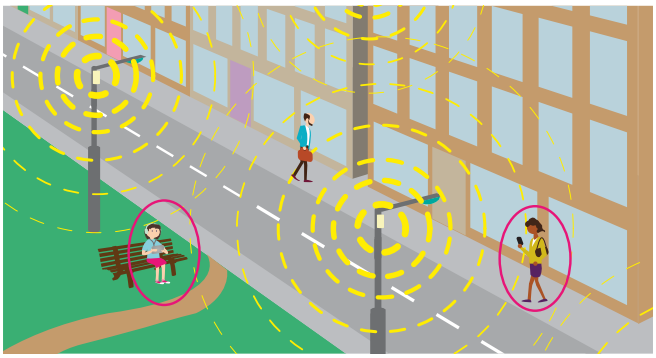


Figure B: Small cell deployment in a city centre

5G and Coronavirus

Recently, conspiracy theories have been shared online that claim 5G mobile is connected to the spread of the coronavirus. This is wrong. There is no scientific basis or credible evidence for these claims.

Some areas of the country have seen mobile phone masts vandalised because of these incorrect claims. Engineers from the mobile phone operators have also been threatened in the street while they work. These types of incidents put lives at risk. If a mobile phone mast stops working, either because it has been vandalised or because engineers can't carry out vital maintenance, people in that area can't call the emergency services, dial the NHS on 111 or contact their friends or family.

Mobile phones have been used by volunteers to organise support for their local communities to collect medicines and get food for those who cannot go out during the Covid-19 crisis. People's safety and wellbeing can be put at risk if the mobile phone network isn't available.

Which organisations are responsible for public safety relating to 5G?

The UK Government's priority is to promote investment and innovation in 5G, to ensure that services and applications are widely available for the benefit of UK consumers and businesses, to drive economic growth and boost productivity. The UK Government has published guidance in respect of 5G and coronavirus (COVID-19), and the sharing of false information.

Planning law and policy requires that planning applications for electronic communications development should be accompanied by a statement or declaration that certifies that when operational, equipment will be compliant with the ICNIRP guidelines for limiting exposure to electromagnetic fields[3].

Public Health England (PHE) takes the lead on public health matters associated with electromagnetic fields, or radio waves, and has a statutory duty to provide advice to Government on any health effects that may be caused by exposure to electromagnetic field emissions. PHE has published advice on exposure to radio waves at the following link: https://www.gov.uk/government/collections/electromagnetic-fields#radio-waves

Ofcom is responsible for managing use of the radio spectrum in the UK. Ofcom regularly carries out radio frequency electromagnetic field (EMF) measurements near mobile phone base stations to test whether EMF levels are within ICNIRP guidelines. Further information on Ofcom's work in relation to EMF is available at the following link: https://www.ofcom.org.uk/manage-your-licence/radiocommunication-licences/mobile-wireless-broadband/exposure-electro-magnetic-fields.

3. Planning law is a devolved matter. Please see: The Town and Country Planning (General Permitted Development) (England) Order 2015 (as amended); The Town and Country Planning (General Permitted Development) (Scotland) Order 1992 (as amended); The Town and Country Planning (General Permitted Development) (Wales) Order 1995 (as amended); The Planning (General Permitted Development) Order (Northern Ireland) 2015.

Department for Digital, Culture, Media & Sport

INT2019/11842/DC
November 2019

Local Authority Chief Executives

5G - The Next Mobile Generation

More than any previous generation of mobile networks, 5G has the potential to transform the way we live and improve economic productivity. Networks will have the capacity for millions more devices to be connected at the same time, enabling businesses and communities to operate more efficiently. It will allow cities and communities to manage traffic flow, monitor air quality and control energy usage through real-time management of high volumes of data.

A recent report estimated that local authorities will share collectively an annual £2.35 billion of efficiency savings, from reduced social care costs for the elderly through 5G monitoring, to savings through smarter street lighting.[1] We want the UK to take early advantage of these benefits, so it is good news that all of the four main mobile network operators - EE, O2, Three and Vodafone - have started to deploy 5G networks. We expect 5G to go live in up to 50 cities and towns by the end of 2020. In order to support the deployment of 5G and extend mobile coverage, particularly in rural areas, the Government recently published a consultation on the principle of proposed reforms to permitted development rights, which closes on 4 November.

The National Planning Policy Framework ("the Framework") for England[2] supports the expansion of high quality communications, including next generation mobile technology, such as 5G. The Framework states that planning applications for mobile base stations should include a statement of compliance with international guidelines on limiting exposure to electromagnetic fields known as the International Commission on Non-Ionizing Radiation Protection guidelines ("the ICNIRP guidelines"[3]). It also states: "Local planning authorities must determine applications on planning grounds only. They should not seek to prevent competition between different operators, question the need for an electronic communications system, or set health safeguards different from the International Commission guidelines for public exposure."

Public Health England ("PHE") has recently updated its advice in respect of 5G and states: "It is possible that there may be a small increase in overall exposure to radio waves when 5G is added to an existing network or in a new area. However, the overall exposure is expected to remain low relative to guidelines and, as such, there should be no consequences for public health."[4] I understand that PHE colleagues regularly provide

[1] "The value of 5G for cities and communities", Juniper Research and O2 https://d10wc7q7re41fz.cloudfront.net/wp-content/uploads/2018/03/Smart-Cities-Report.pdf

[2] https://www.gov.uk/government/publications/national-planning-policy-framework--2

[3] https://www.icnirp.org/cms/upload/publications/ICNIRPemfgdl.pdf

[4] https://www.gov.uk/government/publications/5g-technologies-radio-waves-and-health

advice to your public health officers across a range of health topics.

In compliance with PHE advice, mobile network operators have committed to follow the ICNIRP guidelines. ICNIRP is an independent organisation which is formally recognised by the World Health Organisation. It issues guidelines on human exposure to electro-magnetic fields, based upon the consensus view of a large amount of research carried out over many years. This includes the frequencies used by 5G and all other mobile / wireless technologies. Over the last two decades there have been over 100 expert reports on EMF and health published internationally[5] with well over 3,000 studies[6] informing these reviews and the existing scientific exposure guidelines.

Ofcom will carry out audits of mobile base stations on an ongoing basis to ensure that ICNIRP guidelines are not exceeded and publish the results of these audits on its website.

The Department for Digital, Culture, Media and Sport (DCMS) is working with colleagues in Ofcom, PHE and the network operators to provide some workshops for the benefit of council officials to help them understand the technology and the science relating to these health concerns. DCMS officials are also working with both the Local Government Association and the Association of Directors of Environment, Economy, Planning and Transport to support local authorities in this regard and would welcome any further feedback through those channels or directly.

If you or any of your colleagues have any questions, please contact DCMS at [redacted]

[redacted]

Matt Warman MP
Parliamentary Under Secretary of State for
Digital and Broadband

[5] https://www.gsma.com/publicpolicy/consumer-affairs/emf-and-health/expert-reports
[6] https://www.emf-portal.org/en

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[redacted]

Local Authority
Chief Executives - England Only

INT2021/09526/DC
24 May 2021

Dear Chief Executives

Mobile Connectivity and 5G infrastructure - Planning

Digital connectivity is – now, more than ever – vital to enable people to stay connected and businesses to grow. The demand for mobile data is increasing rapidly, and the COVID-19 pandemic has highlighted how important it is that we all have access to reliable, high quality mobile connectivity.

The Government is committed to extending mobile network coverage across the UK and providing uninterrupted mobile signal on all major roads, and our ambition is for the majority of the population to have access to a 5G signal by 2027. Last year we agreed a £1 billion Shared Rural Network deal with the UK's mobile network operators to extend 4G mobile geographical coverage to 95% of the UK by 2025.

The Government is also investing £200 million in a programme of 5G testbeds and trials to encourage investment in 5G so that communities and businesses can benefit from this new technology. The increased capacity, reliability and functionality offered by 5G is opening-up the potential for new, innovative services for individuals and increased productivity for industry.

The planning system plays a key role in delivering the infrastructure that we need as households and businesses become increasingly reliant on mobile connectivity. Following our consultation on the principle of reforms to permitted development rights to support 5G deployment and extend mobile coverage[1], we recently published a technical consultation on the details of our proposed changes.[2]

[1] Proposed reforms to permitted development rights to support the deployment of 5G and extend mobile coverage

[2] Changes to permitted development rights for electronic communications infrastructure: technical consultation

The National Planning Policy Framework ("the Framework") for England states that planning policies and decisions should support the expansion of electronic communications networks, including next generation mobile technology, such as 5G.

The Framework is clear that decisions on applications should be made as quickly as possible, and within statutory timescales unless a longer period has been agreed by the applicant in writing. In relation to electronic communications development, it also states that local planning authorities must determine applications on planning grounds only and they should not seek to prevent competition between different operators, or question the need for an electronic communications system. As set out in planning practice guidance, it is in the public interest for local planning authorities to have effective delegation arrangements in place to ensure that decisions on planning applications that raise no significant planning issues are made quickly and that resources are appropriately concentrated on the applications of greatest significance to the local area.[3]

We know that some constituents have expressed concerns about the potential harmful effects on human health of 5G. Public Health England (PHE), the Government's independent advisers on matters of public health, is clear that there is no credible evidence of a negative impact of mobile technology, including 5G on people's health. Central to PHE's advice are the guidelines published by the International Commission on Non-Ionizing Radiation Protection (ICNIRP), which is formally recognised by the World Health Organisation.[4]

The National Planning Policy Framework requires mobile infrastructure providers to self-certify their compliance with the ICNIRP guidelines. It also sets out that local planning authorities should not set health safeguards different from the International Commission guidelines for public exposure.

The Government has developed guidance to help councils and local politicians deal with queries from the public, counter misinformation and explain the facts about 5G.[5] This will help support your role in facilitating the rollout of next-generation infrastructure, and prevent misleading claims becoming a barrier to rollout. As part of the support the Government is providing to local authorities on mobile infrastructure and the Town and Country Planning Regulations, we will be arranging a webinar on this topic for local authorities, and would encourage your planning teams to attend. Please contact the email address below for further information.

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[3] Planning Practice Guidance - Determining a planning application

[4] A summary of Public Health England's advice on radio waves can be accessed at: https://www.gov.uk/government/collections/electromagnetic-fields#radio-waves; Ofcom takes frequent measurements of EMF levels near mobile base stations to ensure compliance with international guidelines. These measurements can be found on Ofcom's website at: https://www.ofcom.org.uk/spectrum/information/mobile-operational-enquiries/mobile-base-station-audits.

[5] 5G mobile technology: a guide; Mobile UK, the industry representative body, has also published a Local Authority Toolkit for councillors and officers to help explain how 5G technology works.

If you or any of your colleagues have any questions, please contact the Department for Digital, Culture, Media and Sport at [redacted]

Yours sincerely,

Matt Warman MP
Minister for Digital Infrastructure

Cc: Local Authority Chief Planning Officer

Local Authority Toolkit

5G & Health

Mobile UK

Introduction

Many people are unaware of the benefits of 5G or misunderstand what it is.

This is often because the information publicly available about 5G uses technical jargon, which makes it difficult to understand and explain to others. As a result, people can sometimes be swayed by false theories and unsubstantiated claims that 5G presents a danger to our health. This document has been created to help overcome some of the barriers to understanding this exciting technology. Over the following pages, we cover:

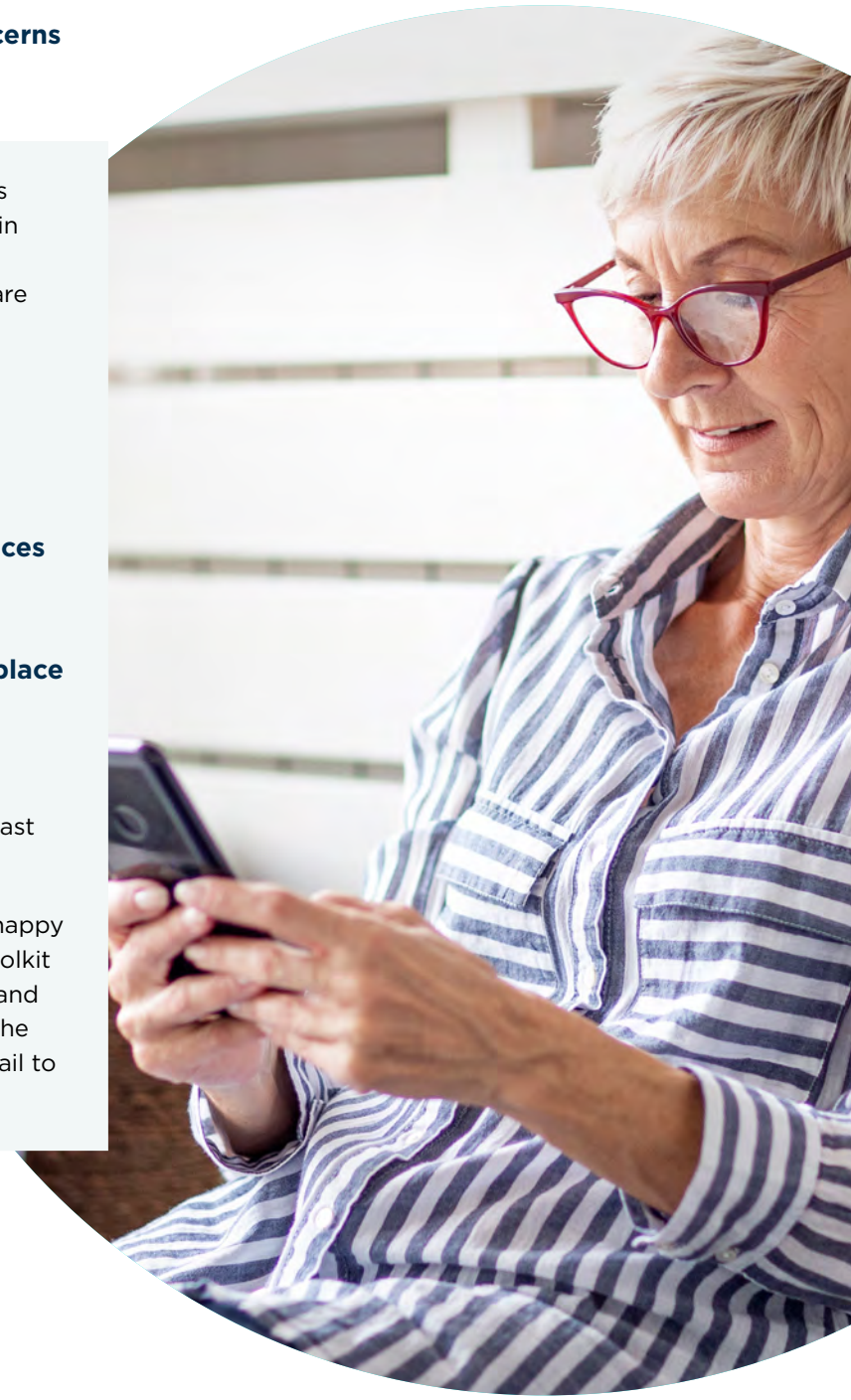
- **What is 5G?**
- **What difference will 5G make to our lives?**
- **Myth-busting facts to address common concerns**

Also available to accompany this toolkit is a series of information packs outlining the benefits of 5G in specific settings and sectors, brought to life with case studies and relevant statistics. These packs are available on the Mobile UK website and cover the following topics:

- **How 5G will help healthcare**
- **How 5G will increase rural opportunities**
- **How 5G will support the emergency services**
- **How 5G will help councils**
- **How 5G will improve the home and workplace**
- **How 5G will help the environment**

On the website you will also find an additional information document which may be useful for mast planning applications, as and when necessary.

If you would find it useful we are also more than happy for you to publish any of the documents in this toolkit on your own channels and share with colleagues and constituents. If you wish to do so and would like the documents to be co-branded please send an e-mail to [redacted]



What is 5G?

In a nutshell, 5G is the fifth generation of mobile internet connectivity, succeeding 4G, 3G and before that 2G.

It will offer much faster data download and upload speeds and will allow more devices to simultaneously access the mobile internet.

As the world depends more and more on mobile connectivity and we are consuming more data, existing networks are becoming congested. This is particularly the case when there are lots of people in the same place, at the same time, trying to access online services.

5G has the capacity to handle this demand and has the unique ability to 'splice' the network. This gives councils, businesses and the emergency services the ability to have their own dedicated, reliable part of the 5G network.

Due to its speed, ability to connect multiple devices at the same time and the significant drop in the time it will take to send information from one point to another, 5G has the power to transform and save lives.

What difference will 5G make?

Now, we know that on paper 5G sounds like an improvement, but what difference will it really make. How will it improve our lives on a day-to-day basis?

High speed mobile internet

Everyone will have access to fast and uninterrupted sharing, streaming, and browsing via their mobile phone network. It will mean accessible near gigabit capable speeds when you are out and about and could, in the future, work alongside or provide an alternative to fibre and wires in the home.

Multiple connected devices

Countless devices will be able to access mobile online services at the same time. It will mean you can always stay connected. For example, if you are at a football stadium or a crowded festival with everyone trying to simultaneously upload and share their experiences to social media without loss of connection.

Reducing latency to a minimum

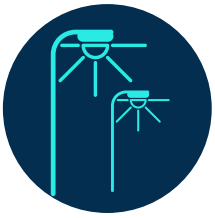
Delays between information sent and received will become virtually impossible to perceive. Real-time content sharing and data will become a reality. This will effectively make buffering and loading delays a thing of the past, with data only taking 1 millisecond to be received by a device after it has been requested – it currently it takes up to 60 milliseconds.

How will 5G make a difference to the environment?

5G will help make towns and cities more sustainable, reducing energy consumption

5G will not just improve our day-to-day connectivity, it will help reduce the environmental impact of our towns and cities, and ultimately, help save lives.

5G will be crucial in further enhancing smart cities, connecting multiple devices and sensors that will make our societies more sustainable and increase resource efficiency. For example:



5G-connected streetlights will detect when streets are empty and dim lighting to save energy, emit less CO_2 and reduce local council carbon tax contributions

5G connections between appliances and services providers and your home can reduce your household energy use and costs

Smart transport systems will help us reduce emissions when we travel

Home solar power and small-scale wind farms will integrate instantly with the national grid to share excess renewable energy

We will be able to download data in a more efficient way, using less energy

CASE STUDY

In partnership with Telefonica, the Spanish city of Malaga has converted its street lights to be 5G-connected. This allows for lighting to be adjusted according to conditions and for faulty street lights to be immediately identified. Malaga has cut its energy bill to the tune of millions as a result.

Source: O2

Mobile UK

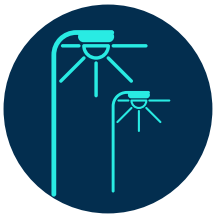
How will 5G make a difference to towns and cities?

5G will not just improve our day-to-day connectivity, it will help make our towns and cities safer, and ultimately, help save lives.

5G will help make the roads in our towns and cities safer and minimise congestion

Connected cars will communicate with each other, vastly reducing the number of accidents and resulting traffic jams and allowing cars to travel close together to keep traffic moving steadily

Connected devices will be able to alert drivers of upcoming hazards, detecting accidents before they happen and protecting vulnerable road users



Smart streetlights can include sensors to detect noise and disturbances that may relate to citizen safety concerns

CASE STUDY

Glasgow is trialling a smart street system lighting which also detects noise and disturbances that may relate to citizen safety concerns.

Source: Future City Glasgow Website

Mobile UK

How will 5G make a difference to the emergency services?

5G will not just improve our day-to-day connectivity, it will ultimately help save lives.

5G will help save lives by revolutionising the way emergency services operate

5G will further enhance the capabilities of existing 4G-enabled connected ambulances which means doctors and surgeons, in hospital, can virtually assist paramedics at the scene of an incident, saving vital minutes treating the patients

With 5G-enhanced video links at the scene of an emergency, the control room will be able to see what is happening in real time and with more clarity than 4G - including the precise positions of all emergency personnel

4G and 5G enabled drones will be able to act like police helicopters, observing large areas, providing live footage to help keep crowds safe and monitoring emergency situations such as a large fire or major incident, at a fraction of the current cost

Smart traffic light systems will allow an ambulance to change traffic lights to clear congestion along their route, improving vital response and arrival times in an emergency

CASE STUDY

In Bristol, thermal cameras specifically designed to alert the authorities when people fall into the water, were installed in the harbour. The technology was put in place after ten people tragically died drowning in one year alone. The council control centre is notified via 5G when a person breaks the virtual barrier at the harbour edge and fire and rescue are subsequently alerted. The lives of two people have already been saved using the technology.

Source: BristolLive

Mobile UK

How will 5G make a difference to public health?

5G will help tackle public health crises

5G will not just improve our day-to-day connectivity, it will improve our health, tackle loneliness and isolation and ultimately, help save lives.

5G-connected drones will be able to deliver essential medicines to patients in remote areas, or those with accessibility issues

5G-connected wearables, such as fitness wristbands and body monitors, can provide critical health updates to GPs and other medical professionals, alerting them to potentially life-threatening issues, such as falls, premature heart attacks and strokes

5G-connected health devices could help doctors and GPs remotely diagnose and support treatment plans, meaning patients will have quicker access to healthcare and doctors will be able to see more patients

5G will allow council's to improve health and social care provision, while saving money. 5G-connected devices will help care for people in their homes and within care settings, such as using telehealth to monitor vital signs remotely, reduce loneliness and observe medicine administration using 4K video. The 5G networks will enable councils to be at the forefront of the latest technology to support their citizens

CASE STUDY

5G trials in Liverpool have focussed on the use of the technology in social care settings. Sensors detect accidents and concerning behaviour patterns of vulnerable people while in their own home. A push-of-the-button device was created so that isolated residents could instantly talk to somebody when they are feeling lonely. These innovations - that help residents live in their own home for longer - can only be reliably rolled-out with 5G.

Source: Liverpool 5G

Your questions answered

5G & cancer

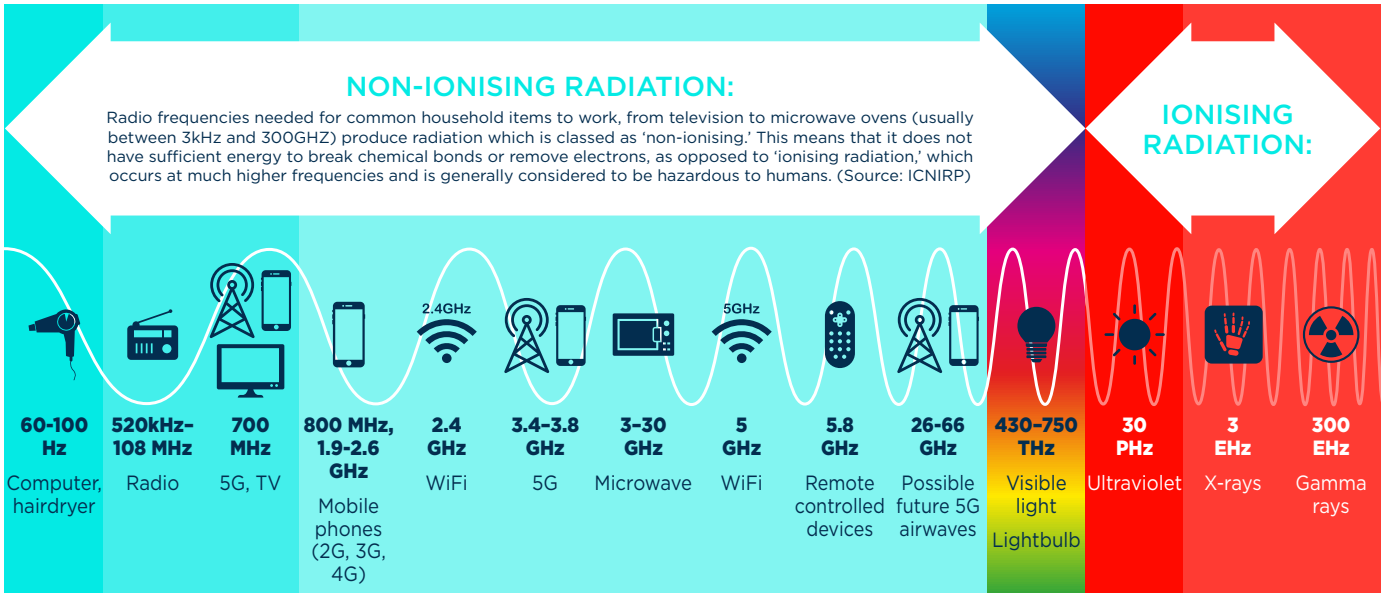
We are aware that some people are concerned that 5G could cause cancer. Importantly, this type of radiation is classed as mainly harmless when used within guidelines.

There is currently no scientific evidence to show that using mobile phones, or 5G within guidelines increases the risk of cancer.

Mobile phones and mobile masts transmit and receive radio waves, which are a type of electromagnetic radiation. Importantly, this type of radiation is classed as mainly harmless, or in scientific terms, non-ionising, just like our TVs, remote controls, home WiFi and so on. The strength of the signals is extremely weak and therefore does not have enough energy to damage DNA or directly cause cancer.

Many people who are concerned about 5G and cancer cite that the International Agency for Research on Cancer classified mobile phones as 'possibly carcinogenic.' This dates back to 2011, following a series of studies that were not considered conclusive, nor did they take into account factors that could distort the data. Mobile signals were therefore added to this category as a precautionary measure. To put this in context, talcum powder and eating pickled vegetables are also classed as 'possibly carcinogenic.'

It is widely recognised that non-ionising radiation is not capable of directly causing cancer when used within guidelines. As you can see from the graph below, 5G still falls way short of the ionising (harmful) part of the spectrum.



Mobile UK

Your questions answered

Masts and radiation

What type of radiation does 5G use?

Sometimes the word 'radiation' scares people, because it is an invisible thing and something many people do not understand, or easily confuse with 'radioactivity.'

Radiation is simply the release of energy, just like the light from the sun, or heat from our bodies. Most radiation is harmless, or in scientific terms non-ionising. It is part of our everyday lives, without us even realising it. Many household items such as our TVs, radios, lightbulbs, remote-controlled toys and WiFi, even our own bodies, emit a level of radiation. But importantly, the levels we are exposed are so low they are not powerful enough to cause adverse health effects. 5G, mobile phones and masts all safely fall into the same category.

Are 5G masts dangerous?

The strong consensus of scientific opinion and public health agencies, such as the World Health Organisation, is that no health risks have been established from exposure to the low-level radio signals used for mobile communications, including 5G.

While masts (or base stations) transmit and receive radio waves to connect the users of mobile phones and other devices to the internet, the strength of those radio waves is very low, in publicly accessible areas.

The UK's telecoms regulator, OFCOM carried out tests at 5G-enabled mobile masts across the country. The highest emission levels (e.g. radiation) recorded at mobile phone masts were consistently well within the strict safety guidelines that monitor radiation levels.

These strict guidelines are governed by the International Commission on Non-Ionising Radiation Protection (ICNIRP) a universally acknowledged non-governmental organisation recognised by the World Health Organisation (WHO). The guidelines apply to frequencies up to 300GHz, well within the frequencies that could be used for 5G. Anything below this threshold is considered to not cause adverse health effects and is therefore safe for the public.

What type of radiation is 5G?

5G uses a specific frequency of radio waves to deliver the internet to mobile devices, just like 4G and 3G before that.

This type of radiation, and for that matter much stronger radiation, is commonly part of our daily lives as explained above. In the UK, existing 4G signals sit between 800MHz and 2.6GHz. Whereas 5G will operate at 700MHz and 3.4GHz to 3.6GHz – the TV remote you use several times a day operates at 5.8GHz.

Visible light is also a type of radiation, for example the light from your TV or a lightbulb. This is much higher than these everyday items but is still classed as non-ionising, and therefore not associated with any adverse health effects. Visible light operates at a frequency 100,000 times higher than 5G.

Dangerous radiation, that can cause harm from prolonged exposure, like UV rays from the sun, X-rays and gamma rays are even higher up the spectrum – at frequencies a quadrillion times higher than 5G.

Ofcom, the telecoms regulator, states:

"All frequencies that are currently and will in future be used for 5G fall within the part of the electromagnetic spectrum that includes radiation which is classed as 'non-ionising'. This means that these radio waves do not carry enough energy to directly damage cells. This is different from 'ionising' radiation, which is generally considered to be hazardous to humans and includes gamma (nuclear) radiation as well as x-rays, which occur at the higher frequency end of the electromagnetic spectrum."

Further Information

For further information, below we have listed additional external sources that you may find helpful in regard to 5G and health.

Ofcom and HM Government 5G health guide:
https://uploads-ssl.webflow.com/5b7ab54b285deca6a63ee27b/5f3fbf86c97b38101210ae5a_5G%20EMF%20Guide.pdf

Public Health England - 5G technologies: radio waves and health:
https://www.gov.uk/government/publications/5g-technologies-radio-waves-and-health/5g-technologies-radio-waves-and-health

World Health Organization (WHO) - Radiation: 5G mobile networks and health:
https://www.who.int/news-room/q-a-detail/radiation-5g-mobile-networks-and-health

Which? - Is 5G safe?:
https://www.which.co.uk/news/2020/06/is-5g-safe-everything-you-need-to-know-on-the-5g-powered-future/

BBC - Does 5G post health risks?:
https://www.bbc.co.uk/news/world-europe-48616174

BBC Click - Testing the safety of 5G:
https://www.youtube.com/watch?v=k2t1dUCyE0I&feature=youtu.be

Cancer Research UK - Do mobile phones cause cancer?:
https://www.cancerresearchuk.org/about-cancer/causes-of-cancer/cancer-myths/do-mobile-phones-cause-cancer

#5G CHECK THE FACTS

mobileuk.org

Mobile UK

5G Masts & Health

5G is a generation leap in mobile technology with multiple benefits. However, with new technology, it is understandable that people wish to seek reassurance as to its safety and how it works.

This guide provides an explanation of 5G and the equipment behind it, including the antennae and the masts, to ensure that there is no cause for concern in regard to health.

5G & Radio Waves

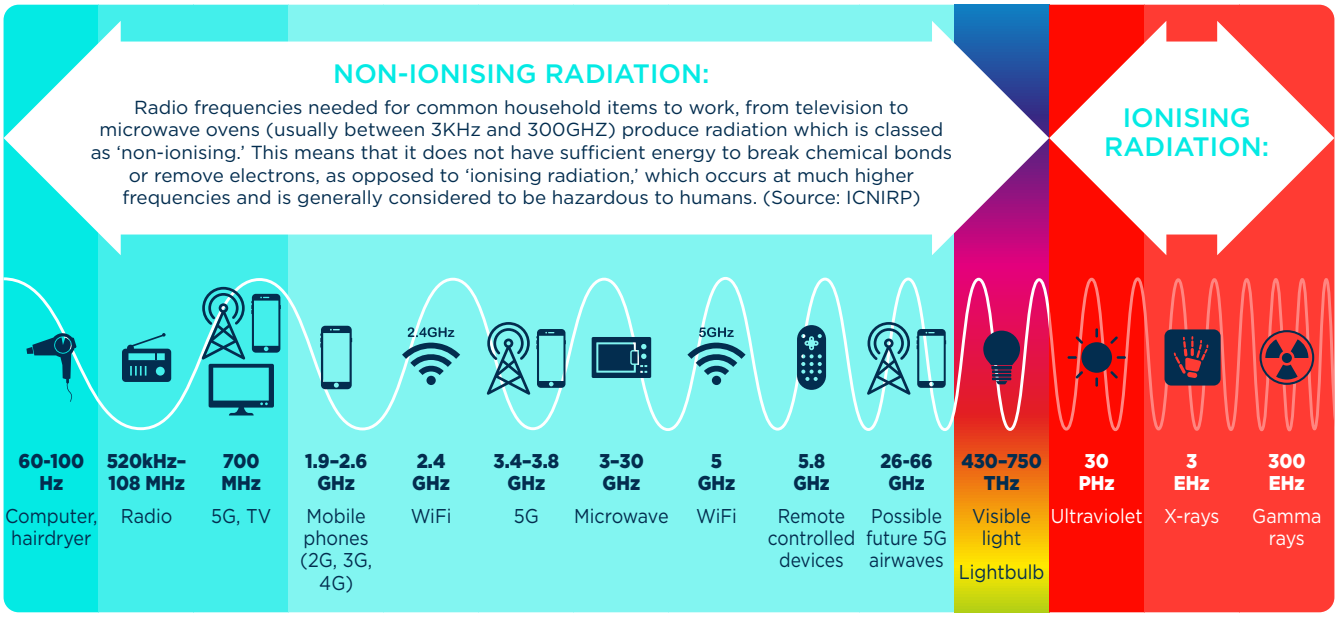
5G is broadcast using radio waves, which are a type of radiation in what is commonly referred to as the 'electromagnetic spectrum.' Sometimes the word 'radiation' scares people, because it is an invisible thing and something many people do not understand, or easily confuse with 'radioactivity.'

Radiation is simply the release of energy, just like the light from the sun or heat from our bodies. Most radiation is considered harmless, or in scientific terms, non-ionising when used within guidelines. It is part of our everyday lives, without us even realising it. Radio waves are used by your TV, radio and remote control.

5G uses a specific frequency of radio waves, just like 4G and before that 3G. The exposure to these radio waves is very low and crucially, many times lower than public safety guidelines dictate.

All frequencies that are currently and will in future be used for 5G fall within the part of the electromagnetic spectrum that includes radiation which is classed as non-ionising. This means that these radio waves do not carry enough energy to directly damage cells. This is different from 'ionising' radiation, which is generally considered to be hazardous to humans and includes gamma (nuclear) radiation as well as x-rays, which occur at the higher frequency end of the electromagnetic spectrum.

- Ofcom



5G Masts & Health

Research into the safety of 5G and mobile phone signals

Research into the safety of radio waves has been conducted for more than 80 years, across the UK and around the world. The strong consensus of scientific opinion and public health agencies, such as the World Health Organisation (WHO), is that no dangers to health have been established from exposure to the low-level radio signals used for mobile communications, including 5G, when used within guidelines.

Strict safety guidelines

All mobile operators must ensure that their radio base stations (also known as masts) are designed and built so that the public are not exposed to radiofrequency fields above the strict safety guidelines which govern and limit public exposure to electromagnetic fields. In fact, base stations operate at low levels, emitting levels of radio waves many times lower than the guidelines.

The International Commission on Non-Ionising Radiation Protection (ICNIRP) is the universally recognised non-governmental organisation that governs the safety levels of electromagnetic field or radio wave exposure and is accepted by the World Health Organisation (WHO). The guidelines, updated in 2020, monitor frequencies up to 300GHz, anything below this threshold is considered to not cause adverse health effects and is therefore safe for the public. 5G radio waves fall well within this category, operating at 700MHz and between 3.4GHz 3.6GHz.

Testing of 5G masts

In fact, the UK's telecoms regulator Ofcom carried out tests at 5G-enabled mobile masts across the country. The highest emission levels (e.g. radiation) recorded at mobile phone masts were consistently well within the strict safety guidelines that monitor radiation levels.

Further Information

As the world depends more and more on mobile connectivity and we are consuming more data, existing networks are becoming congested. 5G has the capacity to handle this and future demand, as it will offer much faster data and upload speeds, allow more devices to access the mobile internet at the same time, and significantly reduce the amount of time it takes to send information from one point to another.

The rollout of 5G is not just about the benefits to each individual mobile phone user but the wider societal benefits of providing connectivity to all, such as the emergency services, local businesses and the provision of council services; the capability of 5G can transform, and ultimately help save lives.

For more information on 5G and health, and to learn about the wider benefits of 5G visit **www.mobileuk.org.uk/5G-and-health**

For further information from external sources regarding 5G and health, the following links may be helpful:

World Health Organization (WHO) - Radiation: 5G mobile networks and health: **https://www.who.int/news-room/q-a-detail/radiation-5g-mobile-networks-and-health**

BBC - Does 5G post health risks?: **https://www.bbc.co.uk/news/world-europe-48616174**

Which? - Is 5G safe?: **https://www.which.co.uk/news/2020/06/is-5g-safe-everything-you-need-to-know-on-the-5g-powered-future/**

BBC Click - Testing the Safety of 5G: **https://www.youtube.com/watch?v=k2t1dUCyE0I&feature=youtu.be**

Cancer Research UK - Do mobile phones cause cancer?: **https://www.cancerresearchuk.org/about-cancer/causes-of-cancer/cancer-myths/do-mobile-phones-cause-cancer**