

Application for Planning Permission.  
Town and Country Planning Act 1990

**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.

**1. Site Address**

Number	<input type="text" value="65"/>
Suffix	<input type="text"/>
Property name	<input type="text" value="Hutchison (GI0027) At Roof Top At"/>
Address line 1	<input type="text" value="London Road"/>
Address line 2	<input type="text"/>
Address line 3	<input type="text"/>
Town/city	<input type="text" value="Gloucester"/>
Postcode	<input type="text" value="GL1 3HF"/>

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

Easting (x)	<input type="text" value="383874"/>
Northing (y)	<input type="text" value="218883"/>

Description

**2. Applicant Details**

Title	<input type="text"/>
First name	<input type="text" value="NA"/>
Surname	<input type="text" value="NA"/>
Company name	<input type="text" value="Mobile Broadband Network Limited"/>
Address line 1	<input type="text" value="Sixth Floor"/>
Address line 2	<input type="text" value="Thames Tower"/>
Address line 3	<input type="text" value="Station Road"/>
Town/city	<input type="text" value="Reading"/>
Country	<input type="text" value="United Kingdom"/>

## 2. Applicant Details

Postcode

Are you an agent acting on behalf of the applicant?

Yes  No

Primary number

Secondary number

Fax number

Email address

## 3. Agent Details

Title

First name

Surname

Company name

Address line 1

Address line 2

Address line 3

Town/city

Country

Postcode

Primary number

Secondary number

Fax number

Email

## 4. Site Area

What is the measurement of the site area?  
(numeric characters only).

Unit

## 5. Description of the Proposal

Please note in regard to:

- Fire Statements - From 1 August 2021, planning applications for buildings of over 18 metres (or 7 stories) tall containing more than one dwelling will require a 'Fire Statement' for the application to be considered valid. There are some exemptions. View government planning guidance on fire statements or access the fire statement template and guidance.
- Permission In Principle - If you are applying for Technical Details Consent on a site that has been granted Permission In Principle, please include the relevant details in the description below.
- Public Service Infrastructure - From 1 August 2021, applications for certain public service infrastructure developments will be eligible for faster determination timeframes. See help for further details or view government planning guidance on determination periods.

Description

Please describe details of the proposed development or works including any change of use.

## 5. Description of the Proposal

Has the work or change of use already started?

Yes  No

## 6. Existing Use

Please describe the current use of the site

Telecommunications site

Is the site currently vacant?

Yes  No

**Does the proposal involve any of the following? If Yes, you will need to submit an appropriate contamination assessment with your application.**

Land which is known to be contaminated

Yes  No

Land where contamination is suspected for all or part of the site

Yes  No

A proposed use that would be particularly vulnerable to the presence of contamination

Yes  No

## 7. Materials

Does the proposed development require any materials to be used externally?

Yes  No

## 8. Pedestrian and Vehicle Access, Roads and Rights of Way

Is a new or altered vehicular access proposed to or from the public highway?

Yes  No

Is a new or altered pedestrian access proposed to or from the public highway?

Yes  No

Are there any new public roads to be provided within the site?

Yes  No

Are there any new public rights of way to be provided within or adjacent to the site?

Yes  No

Do the proposals require any diversions/extinguishments and/or creation of rights of way?

Yes  No

## 9. Vehicle Parking

Does the site have any existing vehicle/cycle parking spaces or will the proposed development add/remove any parking spaces?

Yes  No

## 10. Trees and Hedges

Are there trees or hedges on the proposed development site?

Yes  No

And/or: Are there trees or hedges on land adjacent to the proposed development site that could influence the development or might be important as part of the local landscape character?

Yes  No

**If Yes to either or both of the above, you may need to provide a full tree survey, at the discretion of your local planning authority. If a tree survey is required, this and the accompanying plan should be submitted alongside your application. Your local planning authority should make clear on its website what the survey should contain, in accordance with the current 'BS5837: Trees in relation to design, demolition and construction - Recommendations'.**

## 11. Assessment of Flood Risk

Is the site within an area at risk of flooding? (Check the location on the Government's Flood map for planning. You should also refer to national standing advice and your local planning authority requirements for information as necessary.)

Yes  No

**If Yes, you will need to submit a Flood Risk Assessment to consider the risk to the proposed site.**

Is your proposal within 20 metres of a watercourse (e.g. river, stream or beck)?

Yes  No

## 11. Assessment of Flood Risk

Will the proposal increase the flood risk elsewhere?

Yes  No

### How will surface water be disposed of?

Sustainable drainage system

Existing water course

Soakaway

Main sewer

Pond/lake

## 12. Biodiversity and Geological Conservation

Is there a reasonable likelihood of the following being affected adversely or conserved and enhanced within the application site, or on land adjacent to or near the application site?

To assist in answering this question correctly, please refer to the help text which provides guidance on determining if any important biodiversity or geological conservation features may be present or nearby; and whether they are likely to be affected by the proposals.

a) Protected and priority species:

- Yes, on the development site  
 Yes, on land adjacent to or near the proposed development  
 No

b) Designated sites, important habitats or other biodiversity features:

- Yes, on the development site  
 Yes, on land adjacent to or near the proposed development  
 No

c) Features of geological conservation importance:

- Yes, on the development site  
 Yes, on land adjacent to or near the proposed development  
 No

## 13. Foul Sewage

Please state how foul sewage is to be disposed of:

Mains Sewer

Septic Tank

Package Treatment plant

Cess Pit

Other

Unknown

Are you proposing to connect to the existing drainage system?

Yes  No  Unknown

## 14. Waste Storage and Collection

Do the plans incorporate areas to store and aid the collection of waste?

Yes  No

Have arrangements been made for the separate storage and collection of recyclable waste?

Yes  No

## 15. Trade Effluent

Does the proposal involve the need to dispose of trade effluents or trade waste?

Yes  No

## 16. Residential/Dwelling Units

Please note: This question has been updated to include the latest information requirements specified by government. Applications created before 23 May 2020 will not have been updated, please read the 'Help' to see details of how to workaround this issue.

Does your proposal include the gain, loss or change of use of residential units?  Yes  No

## 17. All Types of Development: Non-Residential Floorspace

Does your proposal involve the loss, gain or change of use of non-residential floorspace?  Yes  No  
Note that 'non-residential' in this context covers all uses except Use Class C3 Dwellinghouses.

## 18. Employment

Are there any existing employees on the site or will the proposed development increase or decrease the number of employees?  Yes  No

## 19. Hours of Opening

Are Hours of Opening relevant to this proposal?  Yes  No

## 20. Industrial or Commercial Processes and Machinery

Does this proposal involve the carrying out of industrial or commercial activities and processes?  Yes  No

Is the proposal for a waste management development?  Yes  No

**If this is a landfill application you will need to provide further information before your application can be determined. Your waste planning authority should make it clear what information it requires on its website**

## 21. Hazardous Substances

Does the proposal involve the use or storage of any hazardous substances?  Yes  No

## 22. Site Visit

Can the site be seen from a public road, public footpath, bridleway or other public land?  Yes  No

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

- The agent
- The applicant
- Other person

## 23. Pre-application Advice

Has assistance or prior advice been sought from the local authority about this application?  Yes  No

## 24. Authority Employee/Member

With respect to the Authority, is the applicant and/or agent one of the following:

- (a) a member of staff
- (b) an elected member
- (c) related to a member of staff
- (d) related to an elected member

It is an important principle of decision-making that the process is open and transparent.  Yes  No

For the purposes of this question, "related to" means related, by birth or otherwise, closely enough that a fair-minded and informed observer, having considered the facts, would conclude that there was bias on the part of the decision-maker in the Local Planning Authority.

Do any of the above statements apply?

## 25. Ownership Certificates and Agricultural Land Declaration

### CERTIFICATE OF OWNERSHIP - CERTIFICATE B - Town and Country Planning (Development Management Procedure) (England) Order 2015 Certificate under Article 14

I certify/The applicant certifies that:

- I have/The applicant has given the requisite notice to everyone else (as listed below) who, on the day 21 days before the date of this application, was the owner\* and/or agricultural tenant\*\* of any part of the land or building to which this application relates; or
- The applicant is the sole owner of all the land or buildings to which this application relates and there are no other owners\* and/or agricultural tenants\*\*.

\* 'owner' is a person with a freehold interest or leasehold interest with at least 7 years to run. \*\* 'agricultural tenant' has the meaning given in section 65(8) of the Town and Country Planning Act 1990.

Owner/Agricultural Tenant

Name of Owner/Agricultural Tenant	Fanform Limited
Number	
Suffix	
House Name	
Address line 1	5 Pavilion Mews, Church Street
Address line 2	Brighton
Town/city	East Sussex
Postcode	BN1 1GX
Date notice served (DD/MM/YYYY)	06/08/2021

Person role

- The applicant
- The agent

Title	<input type="text" value="Mr"/>
First name	<input type="text" value="Roland"/>
Surname	<input type="text" value="Dahllof"/>
Declaration date (DD/MM/YYYY)	<input type="text" value="06/08/2021"/>

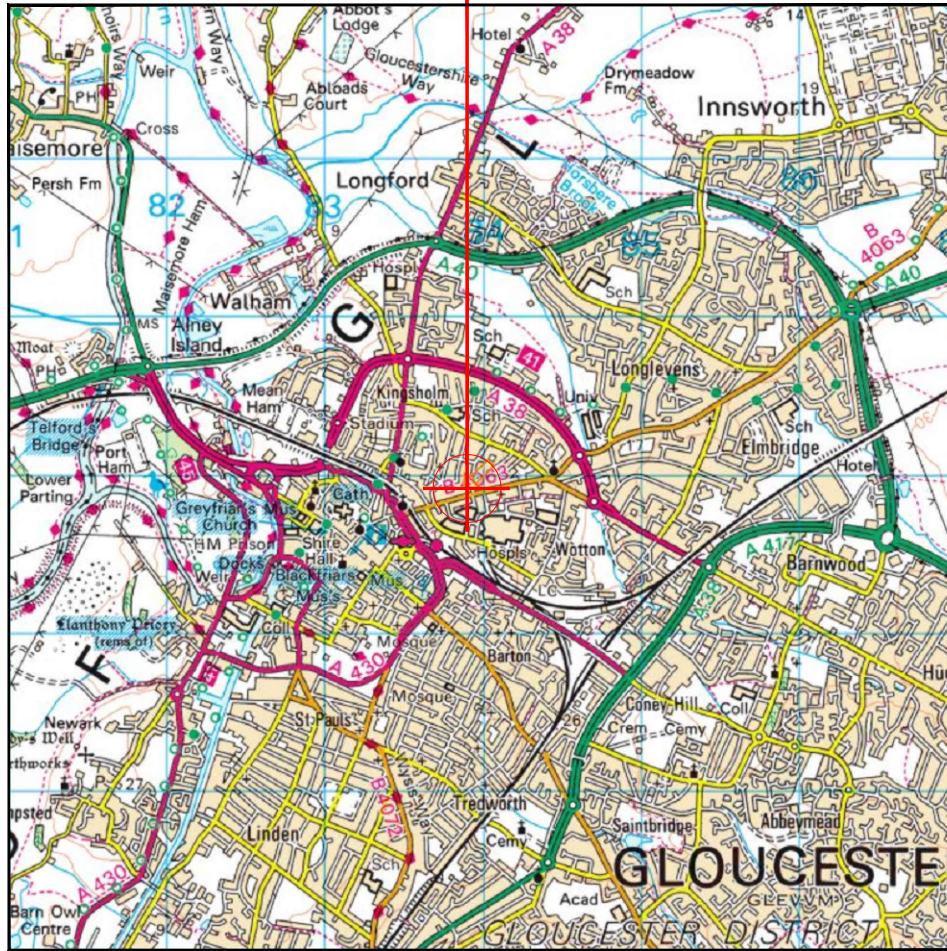
Declaration made

## 26. Declaration

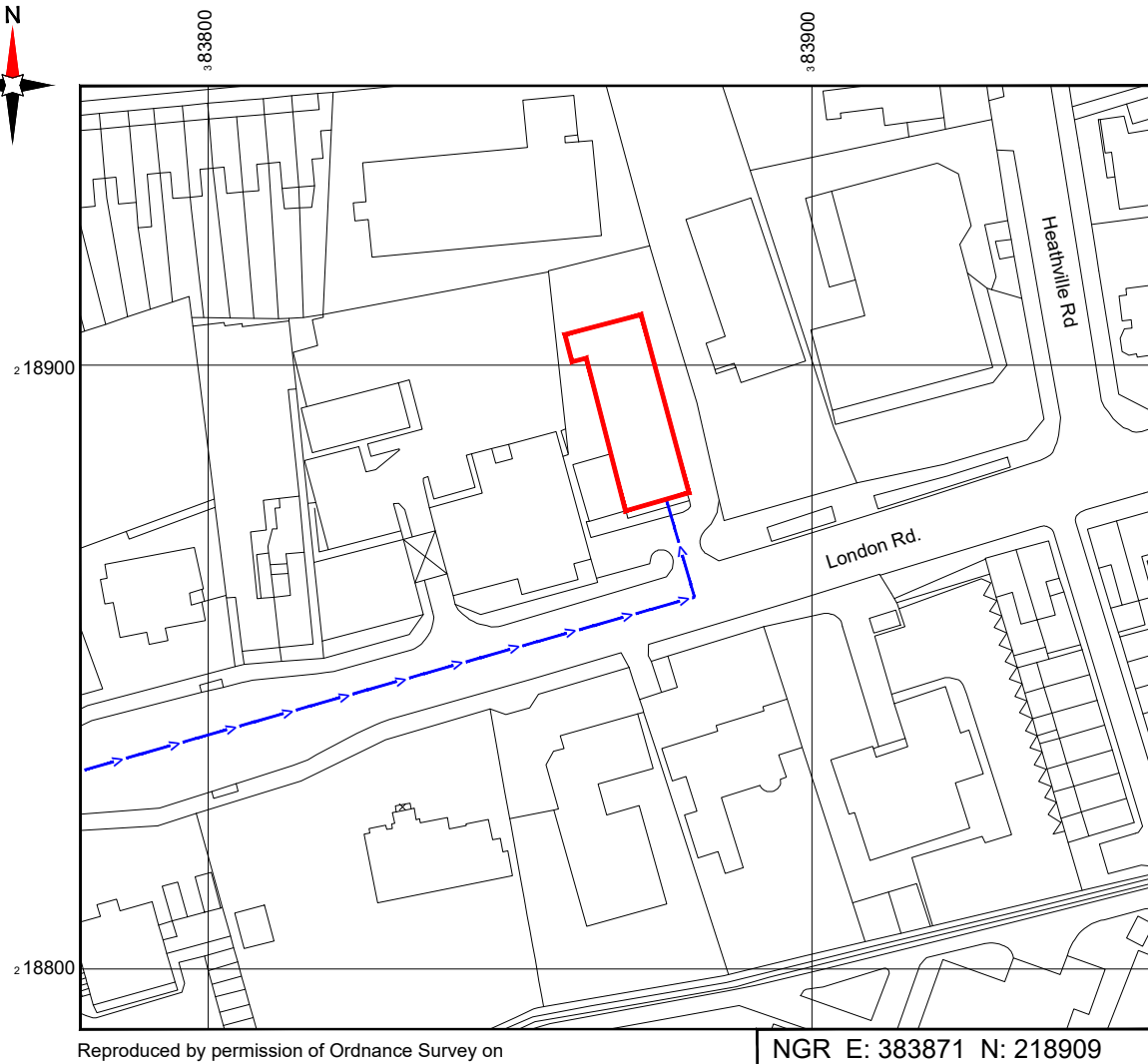
I/we hereby apply for planning permission/consent as described in this form and the accompanying plans/drawings and additional information. I/we confirm that, to the best of my/our knowledge, any facts stated are true and accurate and any opinions given are the genuine opinions of the person(s) giving them.

Date (cannot be pre-application)

SITE LOCATION



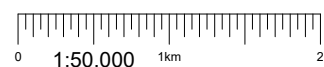
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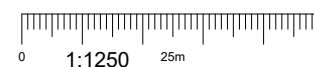
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NGR E: 383871 N: 218909

SITE AREA PLAN



SITE LOCATION PLAN



SITE PHOTOGRAPH



GOOGLE MAPS QR CODE

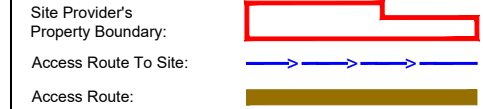
GOOGLE MAPS - <https://goo.gl/maps/meYfrzyHJDAK5s3V9>

GOOGLE STREETVIEW - <https://goo.gl/maps/Fj9BdBKKwQPfpnLA9>

NOTES:

1. ALL DIMENSIONS IN MM UNLESS OTHERWISE NOTED.

DIRECTIONS TO SITE:  
ON A40 HEAD SOUTH, AT ROUNDABOUT TAKE THE 3rd EXIT ONTO  
OVER CAUSEWAY/A417 AND CONTINUE FOR 0.7mi. USE THE MIDDLE LANE TO  
CONTINUE ON ST OSWALDS Rd/A417 FOR 0.2mi THEN TURN RIGHT ONTO  
PRIORY Rd/A430. CONTINUE ONTO GOUDA WAY FOR 292ft THEN CONTINUE  
ONTO BLACK DOG WAY/A430 FOR 0.1mi. TURN LEFT ONTO LONDON Rd AND  
AFTER 0.3mi SITE WILL BE LOCATED ON THE LEFT SIDE.



Master: M003	MBNL / EE / H3G	H3G	Project: H3G Unilateral	Purpose of Issue: Planning	Issue: C
Date:	26/05/2021				
Drawn:	E. Bouihrouchan				
Checked:	G. Fitzgerald				
Approved:	A. Rees				
Master: M002	MBNL / EE / H3G	H3G	Project: H3G Unilateral	Purpose of Issue: Planning	Issue: B
Date:	24/05/2021				
Drawn:	E. Bouihrouchan				
Checked:	G. Fitzgerald				
Approved:	A. Rees				
Master: M001	MBNL / EE / H3G	H3G	Project: H3G Unilateral	Purpose of Issue: Planning	Issue: A
Date:	17/05/2021				
Drawn:	E. Bouihrouchan				
Checked:	G. Fitzgerald				
Approved:	A. Rees				



**ARCC Communications Ltd**  
Unit 27F-G Hartlebury Trading Estate  
Crown Lane  
Hartlebury  
Worcestershire  
DY10 4JD

Site Name: 65 LONDON ROAD/BRUTON KNOWLES

Site ID: 1106474

Address:  
65 LONDON ROAD  
GLOUCESTER  
GLOUCESTERSHIRE  
GL1 3HF

Title: 002 SITE LOCATION PLAN

Project: H3G UNILATERAL

Purpose of Issue: GENERAL ARRANGEMENT

EE Cell ID:	MBNL Cell ID:	3UK Cell ID:
22841	GLO014	GL0027

Master Drawing No:	Issue:
1106474_GLO014_22841_GL0027_M003	C



GROUND LEVEL  
+0.00m AGL

ROOF LEVEL  
+13.3m

LOWER  
ROOF LEVEL  
+9.9m

EXISTING EE 1No. 1800 MHA

EXISTING MBNL 1No. HUAWEI  
ATR4518R4 ANTENNA MOUNTED  
ON TRIPOD STEELWORK

EXISTING H3G 1No. 800 MHA

EXISTING MBNL 1No. RD0448 1800/2100 MHA

EXISTING EE 1 No. BTS3900A CABINET MOUNTED ON  
PLINTH FIXED TO MAFI 91075 FREESTANDING FRAME

EXISTING EE 1No. APM30H CABINET MOUNTED ON  
PLINTH FIXED TO MAFI 91075 FREESTANDING FRAME

EXISTING H3G 2No. 5301 RRU

EXISTING AC OUTDOOR UNIT

EXISTING H3G 1No. APM5930 (AC) CABINET AND  
1No. OFS5906 "L" RACK ON CONCRETE BASE

EXISTING H3G 3No. 5501

RRU

EXISTING MBNL NEC NODE B CABINET  
ON CONCRETE BASE C/W 3No. SBC2100,  
3No. Mk2 UCU's, FLEXI UNITS & TX

EXISTING AC DISTRIBUTION BOX ON PLATFORM  
WALL IN WEATHERPROOF ENCLOSURE

EXISTING MBNL 1No. HUAWEI  
ATR4518R4 ANTENNA MOUNTED  
ON TRIPOD STEELWORK

EXISTING H3G 1No. 800 MHA

EXISTING EE 1No.1800 MHA

EXISTING MBNL 1No. RD0448  
1800/2100 MHA

EXISTING STEP OVER

EXISTING UNPROTECTED  
EDGE

EXISTING FALL ARREST LINE  
ON ROOF

EXISTING CABLE TRAY

EXISTING ROOF DOUBLE  
ACCESS DOORS

EXISTING 1100 HIGH FREE  
STANDING SAFETY  
HANDRAIL

EXISTING FIXED HOOPED ACCESS LADDER

EXISTING FALL ARREST LINE  
ON ROOF

EXISTING EE 1No. 1800 MHA

EXISTING H3G 1No. 800 MHA  
IN GRP SHROUD

EXISTING MBNL 1No. RD0448  
1800/2100 MHA IN GRP SHROUD

EXISTING MBNL 1No. HUAWEI ATR4517R1  
ANTENNA MOUNTED INSIDE GRP SHROUD  
FIXED TO CHS POLE (CHS POLE SIZE TBC)

EXISTING CABLE TRAY

ELEVATION A

EXISTING SITE PLAN



A	0°
B	120°
C	240°

NOTES:

- ALL DIMENSIONS IN MM UNLESS OTHERWISE NOTED.

Master:	MBNL / EE / H3G:	Project:	Purpose of Issue:	Issue:
M003	H3G	H3G Unilateral	Planning	C
Date:	Revision / Upgrade Description:			
26/05/2021	E. Bouhrouchan Fixit No. 63772 approved			
Drawn:	Checked:			
E. Bouhrouchan	G. Fitzgerald			
Checked:	Approved:			
G. Fitzgerald	A. Rees			
Master:	MBNL / EE / H3G:	Project:	Purpose of Issue:	Issue:
M002	H3G	H3G Unilateral	Planning	B
Date:	Revision / Upgrade Description:			
24/05/2021	E. Bouhrouchan Sectors A & C Top hat extension			
Drawn:	Checked:			
E. Bouhrouchan	G. Fitzgerald			
Checked:	Approved:			
G. Fitzgerald	A. Rees			
Master:	MBNL / EE / H3G:	Project:	Purpose of Issue:	Issue:
M001	H3G	H3G Unilateral	Planning	A
Date:	Revision / Upgrade Description:			
17/05/2021	E. Bouhrouchan First Issue - Site nomination dated: TBC			
Drawn:	Checked:			
E. Bouhrouchan	G. Fitzgerald			
Checked:	Approved:			
G. Fitzgerald	A. Rees			



**ARCC Communications Ltd**  
Unit 27F-G Hartlebury Trading Estate  
Crown Lane  
Hartlebury  
Worcestershire  
DY10 4JD

Site Name: 65 LONDON ROAD/BRUTON  
KNOWLES

Site ID: 1106474

Address:  
65 LONDON ROAD  
GLOUCESTER  
GLOUCESTERSHIRE  
GL1 3HF

Title: 100 EXISTING SITE PLAN

Project: H3G UNILATERAL

Purpose of Issue:  
GENERAL ARRANGEMENT

EE Cell ID:	MBNL Cell ID:	3UK Cell ID:
22841	GLO014	GL0027

Master Drawing No:	Issue:
1106474_GLO014_22841_GL0027_M003	C

100mm  
50mm  
10mm



EXISTING EE 1 No. BTS3900A CABINET MOUNTED ON PLINTH FIXED TO MAFI 91075 FREESTANDING FRAME

EXISTING EE 1No. APM30H CABINET MOUNTED ON PLINTH FIXED TO MAFI 91075 FREESTANDING FRAME

EXISTING 1100 HIGH FREE STANDING SAFETY HANDRAIL

EXISTING FIXED HOOPED ACCESS LADDER

EXISTING MBNL 1No. RD0448 1800/2100 MHA

EXISTING MBNL 1No. HUAWEI ATR4517R1 ANTENNA MOUNTED INSIDE GRP SHROUD FIXED TO CHS POLE (CHS POLE SIZE TBC)

C/L OF ANTENNAS +17.3m AGL

PLATFORM ROOF LEVEL +15.8m AGL

MAIN ROOF LEVEL +13.3m AGL

EXISTING MBNL 1No. HUAWEI ATR4518R4 ANTENNA MOUNTED ON TRIPOD STEELWORK

EXISTING H3G 1No. 800 MHA

EXISTING MBNL 1No. HUAWEI ATR4518R4 ANTENNA MOUNTED ON TRIPOD STEELWORK

EXISTING H3G 1No. 800 MHA

C/L OF SECTORS A & C +15.47m AGL

EXISTING EE 1No. 1800 MHA

EXISTING H3G 1No. 800 MHA

EXISTING EE 1No. 1800 MHA

EXISTING MBNL NEC NODE B CABINET ON CONCRETE BASE C/W 3No. SBC2100, 3No. Mk2 UCU's, FLEXI UNITS & TX

EXISTING 3No. 5501 1800/2100 RRU

EXISTING EE 1No. APM 5930 (AC) CABINET AND 1No. OFS5906 "L" RACK ON CONCRETE BASE

EXISTING 2No. 5301 1400 RRU

EXISTING MBNL 1No. RD0448 1800/2100 MHA

EXISTING MBNL 1No. RD0448 1800/2100 MHA

EXISTING EE 1No. 1800 MHA

A	0°
B	120°
C	240°

NOTES:

1. ALL DIMENSIONS IN MM UNLESS OTHERWISE NOTED.

Master:	MBNL / EE / H3G:	Project:	Purpose of Issue:	Issue:
M003	H3G	H3G Unilateral	Planning	C
Date:	Revision / Upgrade Description:			
26/05/2021	E. Bouihrouchan Fixit No. 63772 approved			
Drawn:	Checked:			
E. Bouihrouchan	G. Fitzgerald			
Checked:	Approved:			
G. Fitzgerald	A. Rees			
Master:	MBNL / EE / H3G:	Project:	Purpose of Issue:	Issue:
M002	H3G	H3G Unilateral	Planning	B
Date:	Revision / Upgrade Description:			
24/05/2021	E. Bouihrouchan Sectors A & C Top hat extension			
Drawn:	Checked:			
E. Bouihrouchan	G. Fitzgerald			
Checked:	Approved:			
G. Fitzgerald	A. Rees			
Master:	MBNL / EE / H3G:	Project:	Purpose of Issue:	Issue:
M001	H3G	H3G Unilateral	Planning	A
Date:	Revision / Upgrade Description:			
17/05/2021	E. Bouihrouchan First Issue - Site nomination dated: TBC			
Drawn:	Checked:			
E. Bouihrouchan	G. Fitzgerald			
Checked:	Approved:			
G. Fitzgerald	A. Rees			



**ARCC Communications Ltd**  
 Unit 27F-G Hartlebury Trading Estate  
 Crown Lane  
 Hartlebury  
 Worcestershire  
 DY10 4JD

Site Name: 65 LONDON ROAD/BRUTON KNOWLES

Site ID: 1106474

Address: 65 LONDON ROAD GLOUCESTER GLOUCESTERSHIRE GL1 3HF

Title: 150 EXISTING ELEVATION A

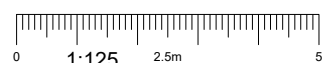
Project: H3G UNILATERAL

Purpose of Issue: GENERAL ARRANGEMENT

EE Cell ID:	MBNL Cell ID:	3UK Cell ID:
22841	GLO014	GL0027

Master Drawing No:	Issue:
1106474_GLO014_22841_GL0027_M003	C

EXISTING ELEVATION A



Ground level

100mm  
50mm  
10mm



GROUND LEVEL  
+0.00m AGL

ROOF LEVEL  
+13.3m

LOWER  
ROOF LEVEL  
+9.9m

EXISTING STEP OVER

PROPOSED 1No. REMOTE DC BOB & 1No. REMOTE FIBRE BOB TO BE INSTALLED ON FREESTANDING FRAME

PROPOSED 1No. GPS NODE ON BRACKET TO BE INSTALLED ON SECTOR 3 SUPPORT POLE

ICNIRP CHAIN & SIGN

EXISTING EE 1No. 1800 MHA

EXISTING MBNL 1No. HUAWEI ATR4518R4 ANTENNA TO BE SWAPPED FOR COMMSCOPE RRZZHHTTS4-65B-R7 ANTENNA ON EXISTING TRIPOD STEELWORK

EXISTING H3G 1No. 800 MHA TO BE REMOVED

PROPOSED 1m TOP HAT EXTENSION

EXISTING MBNL 1No. RD0448 1800/2100 MHA

PROPOSED H3G 2No. 14-21 PASSIVE ROUTERS TO BE INSTALLED ON CABLE TRAY

EXISTING MBNL 1No. RD0448 1800/2100 MHA TO BE REMOVED

ACCESS ROUTE

EXISTING EE 1 No. BTS3900A CABINET MOUNTED ON PLINTH FIXED TO MAFI 91075 FREESTANDING FRAME

EXISTING EE 1No. APM30H CABINET MOUNTED ON PLINTH FIXED TO MAFI 91075 FREESTANDING FRAME

EXISTING AC OUTDOOR UNIT

EXISTING H3G OFS5906 L RACK C/W APM5930 (AC) ,2No. 5301 RRU & 3No. 5501 RRU TO BE SWAPPED FOR eHYBRID (2TIER) CABINET WITH BB6648-4G & BB6641-5G

EXISTING MBNL NEC NODE B CABINET ON CONCRETE BASE C/W 3No. SBC2100, 3No. Mk2 UCU's, FLEXI UNITS & TX

EXISTING SBC 2100 WITHIN NEC NODE B TO BE REMOVED

PROPOSED H3G 1No. LOCAL FIBRE BOB & 1No. LOCAL DC BOB TO BE INSTALLED ON CABLE TRAY

EXISTING AC DISTRIBUTION BOX ON PLATFORM WALL IN WEATHERPROOF ENCLOSURE

EXISTING CABLE TRAY

PROPOSED 1No. REMOTE DC BOB & 1No. REMOTE FIBRE BOB TO BE INSTALLED ON FREESTANDING FRAME

PROPOSED H3G 2No. 14-21 PASSIVE ROUTERS TO BE INSTALLED ON CABLE TRAY

EXISTING MBNL 1No. HUAWEI ATR4518R4 ANTENNA TO BE SWAPPED FOR COMMSCOPE RRZZHHTTS4-65B-R7 ANTENNA ON EXISTING TRIPOD STEELWORK

EXISTING H3G 1No. 800 MHA TO BE REMOVED

EXISTING EE 1No. 1800 MHA

PROPOSED 1m TOP HAT EXTENSION

EXISTING MBNL 1No. RD0448 1800/2100 MHA

PROPOSED H3G 1No. FREESTANDING FRAME TO BE INSTALLED C/W 1No. ERS 8863 3600, 1No. ERS 4480 L1800/2100 ,1No. ERS 2460 L800 ,2No. ERS 2012 L1400 & 2No. FILTERS

EXISTING CABLE TRAY

EXISTING STEP OVER TO BE RELOCATED

EXISTING UNPROTECTED EDGE

EXISTING FALL ARREST LINE ON ROOF

RF WARNING SIGNAGE TO BE INSTALLED ON DOOR

EXISTING ROOF DOUBLE ACCESS DOORS

EXISTING 1100 HIGH FREE STANDING SAFETY HANDRAIL

EXISTING FIXED HOOPED ACCESS LADDER

EXISTING FALL ARREST LINE ON ROOF

PROPOSED 1No. REMOTE DC BOB & 1No. REMOTE FIBRE BOB TO BE INSTALLED ON FREESTANDING FRAME

EXISTING EE 1No. 1800 MHA

EXISTING H3G 1No. 800 MHA IN GRP SHROUD TO BE REMOVED

EXISTING MBNL 1No. RD0448 1800/2100 MHA IN GRP SHROUD

EXISTING MBNL 1No. HUAWEI ATR4517R1 ANTENNA TO BE SWAPPED FOR COMMSCOPE RRZZHHTTS4-65B-R7 ANTENNA MOUNTED INSIDE GRP SHROUD FIXED TO CHS POLE (CHS POLE SIZE TBC)

PROPOSED H3G 2No. 14-21 PASSIVE ROUTERS TO BE INSTALLED ON CABLE TRAY

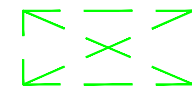
PROPOSED H3G 1No. FREESTANDING FRAME TO BE INSTALLED C/W 1No. ERS 8863 3600, 1No. ERS 4480 L1800/2100 ,1No. ERS 2460 L800 ,2No. ERS 2012 L1400 & 2No. FILTERS

ELEVATION A

NOTES:

- ALL DIMENSIONS IN MM UNLESS OTHERWISE NOTED.

PROPOSED CRANE OR CHERRY PICKER LOCATION:



Master:	MBNL / EE / H3G:	Project:	Purpose of Issue:	Issue:
M003	H3G	H3G Unilateral	Planning	C
Date:	Revision / Upgrade Description:			
26/05/2021	Fixit No. 63772 approved			
Drawn:	Checked:			
E. Bouhrouchan	G. Fitzgerald			
Approved:	A. Rees			
Master:	MBNL / EE / H3G:	Project:	Purpose of Issue:	Issue:
M002	H3G	H3G Unilateral	Planning	B
Date:	Revision / Upgrade Description:			
24/05/2021	Sectors A & C Top hat extension			
Drawn:	Checked:			
E. Bouhrouchan	G. Fitzgerald			
Approved:	A. Rees			
Master:	MBNL / EE / H3G:	Project:	Purpose of Issue:	Issue:
M001	H3G	H3G Unilateral	Planning	A
Date:	Revision / Upgrade Description:			
17/05/2021	First Issue - Site nomination dated: TBC			
Drawn:	Checked:			
E. Bouhrouchan	G. Fitzgerald			
Approved:	A. Rees			



**ARCC Communications Ltd**  
Unit 27F-G Hartlebury Trading Estate  
Crown Lane  
Hartlebury  
Worcestershire  
DY10 4JD

Site Name: 65 LONDON ROAD/BRUTON KNOWLES

Site ID: 1106474

Address: 65 LONDON ROAD GLOUCESTER GLOUCESTERSHIRE GL1 3HF

Title: 210 PROPOSED H3G SITE PLAN

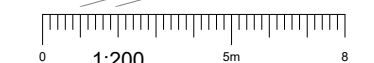
Project: H3G UNILATERAL

Purpose of Issue: GENERAL ARRANGEMENT

EE Cell ID:	MBNL Cell ID:	3UK Cell ID:
22841	GLO014	GL0027

Master Drawing No:	Issue:
1106474_GLO014_22841_GL0027_M003	C

PROPOSED H3G SITE PLAN



100mm  
50mm  
10mm

EXISTING EE 1 No. BTS3900A CABINET MOUNTED ON PLINTH FIXED TO MAFI 91075 FREESTANDING FRAME

EXISTING EE 1No. APM30H CABINET MOUNTED ON PLINTH FIXED TO MAFI 91075 FREESTANDING FRAME

EXISTING 1100 HIGH FREE STANDING SAFETY HANDRAIL

EXISTING FIXED HOOPED ACCESS LADDER

RF WARNING SIGNAGE TO BE INSTALLED ON DOOR

PROPOSED 1No. REMOTE DC BOB & 1No. REMOTE FIBRE BOB TO BE INSTALLED ON FREESTANDING FRAME

EXISTING MBNL 1No. RD0448 1800/2100 MHA

EXISTING MBNL 1No. HUAWEI ATR4517R1 ANTENNA TO BE SWAPPED FOR COMMSCOPE RRZZHHTTS4-65B-R7 ANTENNA MOUNTED INSIDE GRP SHROUD FIXED TO CHS POLE (CHS POLE SIZE TBC)

C/L OF ANTENNAS +17.3m AGL

PLATFORM ROOF LEVEL +15.8m AGL

MAIN ROOF LEVEL +13.3m AGL

EXISTING MBNL 1No. HUAWEI ATR4518R4 ANTENNA TO BE SWAPPED FOR COMMSCOPE RRZZHHTTS4-65B-R7 ANTENNA ON EXISTING TRIPOD STEELWORK

EXISTING H3G 1No. 800 MHA TO BE REMOVED

PROPOSED 1m TOP HAT EXTENSION

PROPOSED 1No. REMOTE DC BOB & 1No. REMOTE FIBRE BOB TO BE INSTALLED ON FREESTANDING FRAME

PROPOSED H3G 1No. FREESTANDING FRAME TO BE INSTALLED C/W 1No. ERS 8863 3600, 1No. ERS 4480 L1800/2100, 1No. ERS 2460 L800, 2No. ERS 2012 L1400 & 2No. FILTERS

PROPOSED 1No. GPS NODE ON BRACKET TO BE INSTALLED ON SECTOR 3 SUPPORT POLE

EXISTING MBNL 1No. HUAWEI ATR4518R4 ANTENNA TO BE SWAPPED FOR COMMSCOPE RRZZHHTTS4-65B-R7 ANTENNA ON EXISTING TRIPOD STEELWORK

PROPOSED 1m TOP HAT EXTENSION

EXISTING H3G 1No. 800 MHA TO BE REMOVED

C/L OF SECTORS A & C +16.47m AGL

EXISTING EE 1No. 1800 MHA

EXISTING H3G 1No. 800 MHA TO BE REMOVED

EXISTING EE 1No. 1800 MHA  
PROPOSED H3G 2No. 14-21 PASSIVE ROUTERS TO BE INSTALLED ON CABLE TRAY

PROPOSED H3G 1No. FREESTANDING FRAME TO BE INSTALLED C/W 1No. ERS 8863 3600, 1No. ERS 4480 L1800/2100, 1No. ERS 2460 L800, 2No. ERS 2012 L1400 & 2No. FILTERS

EXISTING MBNL NEC NODE B CABINET ON CONCRETE BASE C/W 3No. SBC2100, 3No. Mk2 UCU's, FLEXI UNITS & TX

EXISTING SBC 2100 WITHIN NEC NODE B TO BE REMOVED

PROPOSED H3G 1No. LOCAL FIBRE BOB & 1No. LOCAL DC BOB TO BE INSTALLED ON CABLE TRAY

EXISTING H3G OFS5906 L RACK C/W APM5930 (AC), 2No. 5301 RRU & 3No. 5501 RRU TO BE SWAPPED FOR eHYBRID (2TIER) CABINET WITH BB6648-4G & BB6641-5G

ICNIRP CHAIN & SIGN

PROPOSED H3G 2No. 14-21 PASSIVE ROUTERS TO BE INSTALLED ON CABLE TRAY

EXISTING MBNL 1No. RD0448 1800/2100 MHA

PROPOSED 1No. REMOTE DC BOB & 1No. REMOTE FIBRE BOB TO BE INSTALLED ON FREESTANDING FRAME

PROPOSED H3G 1No. FREESTANDING FRAME TO BE INSTALLED C/W 1No. ERS 8863 3600, 1No. ERS 4480 L1800/2100, 1No. ERS 2460 L800, 2No. ERS 2012 L1400 & 2No. FILTERS

PROPOSED H3G 2No. 14-21 PASSIVE ROUTERS TO BE INSTALLED ON CABLE TRAY

EXISTING MBNL 1No. RD0448 1800/2100 MHA

EXISTING EE 1No. 1800 MHA

NOTES:

- ALL DIMENSIONS IN MM UNLESS OTHERWISE NOTED.

Master:	MBNL / EE / H3G:	Project:	Purpose of Issue:	Issue:
M003	H3G	H3G Unilateral	Planning	C
Date:	Revision / Upgrade Description:			
26/05/2021	E. Bouihrouchan Fixit No. 63772 approved			
Drawn:	Checked:			
E. Bouihrouchan	G. Fitzgerald			
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M002	H3G	H3G Unilateral	Planning	B
Date:	Revision / Upgrade Description:			
24/05/2021	E. Bouihrouchan Sectors A & C Top hat extension			
Drawn:	Checked:			
E. Bouihrouchan	G. Fitzgerald			
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17/05/2021	E. Bouihrouchan First Issue - Site nomination dated: TBC			
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E. Bouihrouchan	G. Fitzgerald			
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**ARCC Communications Ltd**  
 Unit 27F-G Hartlebury Trading Estate  
 Crown Lane  
 Hartlebury  
 Worcestershire  
 DY10 4JD

Site Name: 65 LONDON ROAD/BRUTON KNOWLES

Site ID: 1106474

Address:  
 65 LONDON ROAD  
 GLOUCESTER  
 GLOUCESTERSHIRE  
 GL1 3HF

Title: 260 PROPOSED H3G ELEVATION

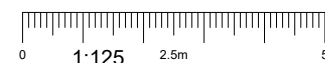
Project: H3G UNILATERAL

Purpose of Issue: GENERAL ARRANGEMENT

EE Cell ID:	MBNL Cell ID:	3UK Cell ID:
22841	GLO014	GL0027

Master Drawing No:	Issue:
1106474_GLO014_22841_GL0027_M003	C

PROPOSED H3G ELEVATION A



Ground level

100mm  
50mm  
10mm



Date: 06 August 2021

Our Ref: 22841/GLO014/RD

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

**Submitted via Planning Portal**

Dear Sir or Madam,

**PLANNING APPLICATION FOR TELECOMMUNICATIONS UPGRADE AT 65 LONDON ROAD/BRUTON KNOWLES, GLOUCESTER, GLOUCESTERSHIRE, GL1 3HF  
(NGR: E 383871 / N 218909) (SITE REF: 22841)**

Avison Young are planning consultants acting on behalf of Mobile Broadband Network Limited (MBNL), which is a joint venture co-owned by EE Limited and H3G UK Limited, to submit the application contained herein for the upgrade of an existing telecommunications base station as proposed below.

Description of Development:

*The removal and replacement of 3No. Existing antennas with 3No. Upgraded antennas, the removal and replacement of 1No. OFS5906 L Rack with 1No. e-Hybrid cabinet, the installation of 1No. GPS unit and ancillary development thereto.*

Enclosed you will find an application prepared on behalf of EE Limited and H3G UK Limited who are licensed operators that provide Cellular Network based upon the Global System for Mobile (GSM) standard and Universal Mobile Telecommunications System (UMTS) within the United Kingdom.

The supporting documents submitted with this application are as follows:

- Application Form (as generated through Planning Portal)
- Drawings 22841\_65 London Road\_002, 100, 150, 210, 260\_C
- Planning Statement (Design and Access Statement)
- ICNIRP Certificate
- 5G and Future Technology
- Connected Growth Manual – Digital Infrastructure
- IET Guide to 5G

The application fee of £462 will be paid via the Planning Portal.

Yours faithfully,

Graduate Surveyor  
Telecoms

**Avison Young**  
**For and on behalf of Mobile Broadband Network Limited**

## **DESIGN AND ACCESS STATEMENT**

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The following design and access statement is enclosed in support of this proposal and demonstrates the general development principles that have been adopted in the final detailed design of this proposal.

### **1. HISTORY & BACKGROUND**

Everything Everywhere Limited is a 50-50 joint venture between Deutsche Telekom and France Télécom and was formed in 2010 through the merger of their respective T-Mobile (UK) and Orange U.K. businesses. On 3 September 2010, Everything Everywhere announced that Orange would join Mobile Broadband Network Ltd (MBNL), the joint venture management company formed in December 2007 between T-Mobile UK Ltd and Hutchison 3G UK Ltd (H3G UK). In 2016, Everything Everywhere was chosen to work in conjunction with the Home Office to deliver the Emergency Services Network (ESN), which will deliver a smarter, better and cheaper communications capability.

The proposed upgrade subject to this application is part of the operators' continuous efforts to improve the existing 3G and 4G network across the country, in addition to introducing 5G technology to cater for current and future customer demands. It is evident that mobile phone usage has grown exponentially over recent years as more than 90% of the population now own a mobile phone. Customers expect to be able to use their mobile phones and tablets in all locations as these devices have become intrinsic to our personal and professional lives. UK operators are continuously trying to improve their network infrastructure in order to adapt to the changing environment and keep up with customer demands. With constant advancements in radio technology, it is therefore a natural consequence for base stations to be upgraded to accommodate newer versions of radio equipment.

As part of EE and H3G's ongoing network programme, there is a requirement for infrastructure improvements in this area of and the surrounding local community. The proposed upgrade works will allow for better coverage and increased capacity to satisfy the traffic demands set by mobile users passing through this region, and will also help towards futureproofing the network to reduce the frequency of works required at the site.

#### **Site Selection**

The applicant has adopted a sequential approach to site selection which is encouraged in the Code of Best Practice for Mobile Operators and the NPPF. Efforts have been made to utilise existing telecommunications sites wherever possible to prevent the proliferation of base stations. In this instance there was a suitable existing base station in the search area that could be upgraded to accommodate the required technologies for the operator's needs. As a result, it was not required to identify alternative site options.

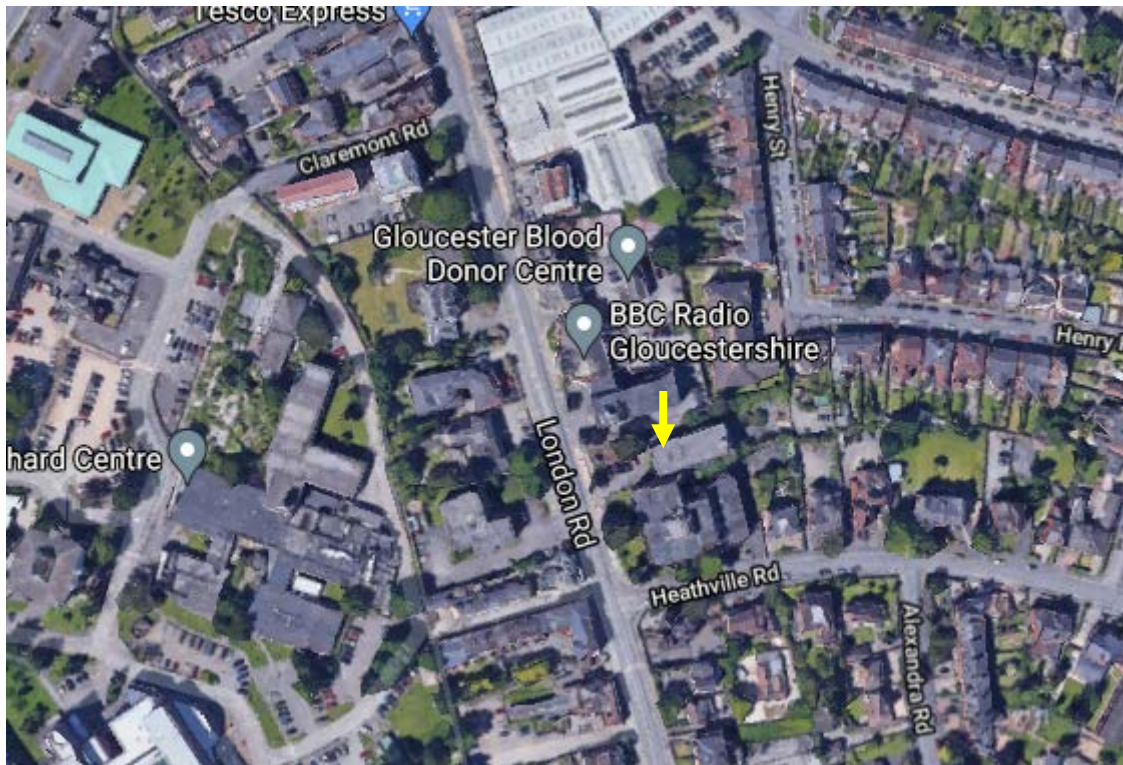
### **2. DESIGN**

#### **2.1 THE PROPOSAL**

The application site is located at 65 London Road/Bruton Knowles, Gloucester. The surrounding area is of mixed commercial/residential use. The proposed works comprise the removal and replacement of 3No. Existing antennas with 3No. Upgraded antennas, the removal and replacement of 1No. OFS5906 L Rack with 1No. e-Hybrid cabinet, the installation of 1No. GPS unit and ancillary development thereto.

As the site proposes the installation of a replacement cabinet located within the London Road conservation area, an application for Full Planning permission is needed.

The host building accommodates an existing base station which is an established feature of this streetscape that serves as an important cell within the wider mobile network due to the high density of users in this urban environment.



Aerial view of the site

### Heritage Statement

The London Road Conservation Area includes parts of the previous London Road Conservation Area, which was originally designated by Gloucester City Council on 22 February 1984. Variety is a keynote of the conservation area's character, with every kind of building style, from early medieval to contemporary, reflecting the constant reuse and reinvention of a key suburb and commercial thoroughfare, serving as gateway and exit to the city, and a transitional zone from the city centre to the suburbs and the countryside beyond.

Although the site is located within a conservation area it is not located on a listed building as referenced in the below image from Historic England where listed buildings are represented by blue triangles.



Overview of listed buildings in the surrounding area

## 2.2 DESIGN CONSIDERATIONS - SITING AND APPEARANCE

The applicant has sought to cause as little impact on the visual amenity of the area as possible whilst also ensuring that sufficient coverage requirements are achieved. A further explanation of the application's technical justification is explained in a later section of this statement however, it should be acknowledged from the offset that the proposed 3No. replacement antennas are technically necessary in order to create the power and capacity that the 5G frequency demands. Moreover, the proposed height of the antennas is the lowest possible height to ensure correct signal conveyance whereby a reduction in height may impact on the site's functionality as well as health and safety in relation to ICNIRP compliance. The operator's general practice will always endeavour to propose the minimum height and least amount of equipment necessary to sufficiently achieve the desired coverage levels and it should be recognised that any reduction in height or equipment would compromise the site's effectiveness within the network. There are no alternative design solutions available with the required technologies meaning the proposed scheme is the least visually intrusive design for the site's upgrade.

Whilst it is not necessary to outline alternative locations as the proposal seeks to utilise an existing base station, it should be noted that if an upgrade cannot be progressed at this location, a new base station within proximity to this site would be required to satisfy coverage objectives. The existing base station was deemed acceptable in its inception meaning that no concerns were raised in relation to the surrounding conservation area and associated sensitive assets. Though it is recognised that changes to a telecommunications site will to a degree be recognisable in any given environment, the visibility of equipment does not automatically lead to detrimental harm as each site must be assessed on its own merits and balanced against the public benefits to be provided in accordance with Paragraph 196 (NPPF). In this respect significant weight should be given to improving existing 4G coverage and introducing 5G technologies in recognition of the government's support for this form of development. The application site is an established feature of this urban street scene where telecommunications equipment is commonly found which sets precedence at this location.



Google Streetview image of the site

As the scheme seeks to replace the same number of antennas and will not introduce additional equipment in this regard, the overall change in appearance is thought to be minimal given the existing context. The proposed replacement cabinet will be positioned away from the roof's edge with limited views from ground level. The applicant considers these changes to be barely noticeable to residents and visitors in the local community when taking into account the existing layout at present which is a recognised feature of this landscape.



The overall height of the antennas to sectors A and C will have a minor increase of approximately 1.0 metre which is necessary to ensure ICNIRP compliance. Taken as a whole, the antennas will be read within the same air space across the skyline and compared to the existing site at present the cumulative effects of the proposed upgrade is minimal. Consequently, it is thought that visual amenity is not detrimentally impacted by this upgrade scheme but would in fact be maintained as a result of the minor development works. Although the base station is more discernible at a localised level, the simplistic design of the upgrade scheme will mimic a similar visual appearance to the current situation. As a result, the applicant considers the proposal to be acceptable in regards to its siting and appearance.

Following on from this, it is recognised that the equipment can be read at height from wider vantage points however the setting of this application site upon a modern building within an area that is urban in character should be taken into consideration in the assessment of this application. Additional regard should also be given to the natural eye line of local residents and passers-by as the equipment is located on a rooftop in which visibility would necessitate a bystander to purposefully look upwards. The applicant believes such views would be uncommon and irregular which in turn reduces the risk of visual prominence. As mentioned previously the proposed works will offer a marginal visual change to the existing base station which is not thought to be noticeable from a greater distance.

In addition to this, there are several screening elements along the neighbouring road networks which will further reduce these views including buildings and street items such as trees and lighting columns that offer a similar vertical emphasis in the skyline. For passing traffic, these built features will block the site's visibility resulting in momentary and infrequent viewpoints only. These points are evidenced in the below images taken from the immediate locality where the existing equipment can be seen but is relatively small in profile due to the distance, the building's height above ground level and the size comparison with the building itself.



These images illustrate the existing equipment's congruous nature across the skyline from these distant viewpoints meaning its overall prominence is negligible to passing pedestrians and motorists. The inconspicuous nature of the current base station is a transferable point that should be applied to the assessment of this application given the minor alterations proposed. These arguments should therefore be materially considered in the determination of this submission.

Following on from this, the proposal is not considered to adversely impact residential amenity despite the proximity of dwellings and schools in the local area. The equipment is situated on the rooftop away from residential windows and other private spaces meaning there is no direct influence on the natural enjoyment of daylight, outlook or privacy for the local community. Additionally, it should also be reiterated that the application site accommodates an existing base station which sets precedence for telecommunications equipment at this location and is also befitting of the surrounding urban environment. As well as this, the applicant's decision to upgrade an existing site as opposed to identifying a new location is in accordance with planning guidance so as to prevent undue harm to visual amenity and proliferation.

In summary the proposed design is considered to be respectful of the surrounding elements and does not cause detrimental harm to the visual amenity of the immediate environment. The siting and appearance of this proposal is therefore within the boundaries of acceptability as it will cause minimal interruption to the current landscape and is in line with the NPPF of utilising existing sites and buildings. When taking into account the existing precedence for telecommunications equipment, the proposed upgrade displays a level of consistency with the current site which results in a similar extent of visual impact as the equipment presently in situ. Therefore, the applicant strongly believes the scheme demonstrates a sympathetic design that would not detract from the architectural merit of the surrounding conservation area and the proposed works are capable of being absorbed into the roofscape.

Overall, it is considered that the scheme does not demonstrate substantial harm to the surrounding heritage assets, and in any event, it is argued that the public benefits of the proposal would outweigh any perceived harm. As the scheme seeks to introduce 5G technologies during a climate where economic recovery is paramount, the public benefits associated with this upgrade cannot be undervalued.

### **3. PLANNING POLICY CONSIDERATIONS**

Section 38 (6) of the Planning and Compulsory Purchase Act 2004 states that Local Planning Authorities should determine proposals in accordance with development plan policies, unless material considerations indicate otherwise. Material considerations may include, inter alia, central government guidance, High Court and Inspector's decisions etc.

#### **3.1 LOCAL PLANNING POLICY**

The following local planning policies are relative and have been considered in the submission of this application. It is argued that the proposal is in accordance with the below policies which promote high-quality connectivity and supports new telecommunications infrastructure when it can be demonstrated that the design and siting of the base station is respectful to its surroundings.

The Gloucester, Cheltenham and Tewkesbury Joint Core Strategy 2011 – 2031, Adopted 2017 contains the following policies relevant to this application.

#### **Policy INF6: Infrastructure Delivery**

In accordance with this policy the application will improve the provision of mobile phone coverage to residents and visitors in this area which is an important cell in the overall network given the amount of potential users. Through this policy the council recognises the importance of constantly improving infrastructure for the continued advancement of society and economy and thus, the application should be considered favourably.

#### **SD8 – Historic Environment**

In relation to this policy, the site is located within a conservation area, but is not on a listed building. The fact there is existing equipment already located on the rooftop sets a precedence for telecommunications development in this area. The proposal has been designed using the least amount of equipment required to meet operational needs. It is considered that public benefits of increased connectivity outweigh the minimal visual impact on the host building and wider conservation area. This option has been weighed up against other options that are available, and it is considered that this proposal has the least visual impact.

#### **SD14 – Health And Environmental Quality**

In relation to this policy this development will facilitate an advancement in the telecommunications network in this area. It should be recognised that the provision of telecommunications infrastructure promotes remote forms of communications such as video conferencing and reduces the need to travel

which therefore reduces carbon dioxide emissions which contribute to climate change. Additionally, the provision of good telecommunications network has a range of benefits from improved connectivity, including increased download speeds leading to more productive economic activity. There are also social benefits such as remote educational opportunities and improved wellbeing including reduced loneliness. It is considered that the benefits of increased connectivity outweigh the minimal visual impact on the area and permission should not be withheld.

### **3.2 NATIONAL PLANNING POLICY**

This legislation was formally adopted in July 2018 and replaces the previous version which was introduced in 2012.

In relation to this policy the following sections are relevant in determining this application:

#### **Section 2 – Achieving Sustainable Development**

Paragraph 7 – *“The purpose of the planning system is to contribute to the achievement of sustainable development. At a very high level, the objective of sustainable development can be summarised as meeting the needs of the present without compromising the ability of future generations to meet their own needs.”*

The NPPF also encourages the achievement of sustainable development which can provide public benefits to building stronger and more competitive economic areas, as well as enhancing social communities through increased communication and connectivity.

#### **Section 4 – Decision-Making**

Paragraph 38 – *“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 brownfield registers and 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.”*

#### **Section 6 – Building a strong, competitive economy**

Paragraph 80 – *“significant weight should be placed on the need to support economic growth and productivity... this is particularly important where Britain can be a global leader in driving innovation.”*

#### **Section 10 – Supporting high quality communications**

Paragraph 112 – *“Advanced, high quality and reliable communications infrastructure is essential for economic growth and social well-being. Planning policies and decisions should support the expansion of electronic communications networks, including next generation mobile technology (such as 5G) and full fibre broadband connections.”*

In relation to these paragraphs, the Government's Industrial Strategy sets out a vision to drive productivity improvements across the UK, and sets out a delivery programme to make the UK a leader in *“artificial intelligence and big data”*. The improvement of telecommunications capacity and provision of 5G is imperative to allow for areas to be connected, and is essential for economic growth.

Paragraph 113 – *“The number of radio and electronic communications masts, and the sites for such installation, 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... Where new sites are required (such as for new 5G networks, or for connected transport and smart city applications), equipment should be sympathetically designed and camouflaged where appropriate.”*

In relation to this paragraph, it is demonstrated that a sequential approach to site selection has been adopted to ensure that existing telecommunications installations have been explored in the first

instance to prevent the proliferation of masts. A suitable existing base station was identified in this instance.

Paragraph 114 – *“Local planning authorities should not impose a ban on new electronic communications development in certain areas, impose blanket Article 4 directions over a wide area or a wide range of electronic communications development, or insist on minimum distances between new electronic communications development and existing development. They should ensure that:*

- a) *They have evidence to demonstrate that electronic communications infrastructure is not expected to cause significant and irremediable interference with other electrical equipment, air traffic services or instrumentation operated in the national interest; and*
- b) *They have considered the possibility of the construction of new buildings or other structure interfering with broadcast and electronic communications services.”*

Paragraph 115 – *“Applications for electronic communications development (including applications for prior approval under the General Permitted Development Order) should be supported by the necessary evidence to justify the proposed development. This should include:*

- a) *The outcome of consultations with organisations with an interest in the proposed development, in particular with the relevant body where a mast is to be installed near a school or college, or within a statutory safeguarding zone surrounding an aerodrome, technical site or military explosives storage area; and*
- b) *For an addition to an existing mast or base station, a statement that self-certifies that the cumulative exposure, when operational, will not exceed International Commission guidelines on non-ionising radiation protection; or*
- c) *For a new mast or base station, evidence that the applicant has explored the possibility of erecting antennas on an existing building, mast or other structure and a statement that self-certifies that, when operational, International Commission guidelines will be met.”*

In relation to this paragraph, the site is not located within 3km of a statutory safeguarding zone surrounding an aerodrome, technical site or military explosives storage area. Nearby schools and nurseries in close proximity have been consulted. An ICNIRP certificate is provided with this application to confirm that the proposal will not exceed International Commission guidelines. As the scheme is utilising an existing base station, it was not necessary to identify alternative site options.

## **Section 12 – Achieving well-designed places**

Paragraph 124 – *“Good design is a key aspect of sustainable development, creates better places in which to live and work and helps make development acceptable to communities.”*

In relation to this paragraph, the application seeks to upgrade an existing telecommunications site located on London Road and the proposed equipment is the least amount possible to allow the site to transmit sufficiently; we therefore consider this design to be respectful to the character of the area. Although the site’s change in appearance will to an extent be recognisable features of this street scene, efforts have been made to limit the visual impact on the surrounding amenity.

## **Section 16 – Conserving and enhancing the historic environment**

Paragraph 189 – *“In determining applications, local planning authorities should require an applicant to describe the significance of any heritage assets affected, including any contribution made by their setting. The level of detail should be proportionate to the assets’ importance and no more than is sufficient to understand the potential impact of the proposal on their significance. As a minimum the relevant historic environment record should have been consulted and the heritage assets assessed using appropriate expertise where necessary.”*

In relation to this paragraph, the relevant historic environment records are referred to within this document within the Heritage statement (section 1.3.1), and the impact of the proposal on these historical assets are explained in section 1.3.2.

Paragraph 196 – *“Where a development proposal will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal including, where appropriate, securing its optimum viable use.”*

It is considered that the proposal is in accordance with this paragraph as the application seeks to upgrade an existing telecommunications base station. The upgrade has been designed sensitively to be respectful of these recognised heritage assets.

To conclude, the applicant therefore considers the proposal to be in accordance with local and national planning policies.

#### **4. TECHNICAL JUSTIFICATION**

In the assessment of this application, material weight should be given to the public benefits that will be provided to local residents and visitors in this area. The site will form part of an improved coverage network which will also introduce 5G technology to allow for faster download speeds and better signal. More information on 5G can be found in the accompanying documents: *5G and Future Technology, Connected Growth Manual Digital Infrastructure* and *The Institution of Engineering and Technology's Guide for Local Planning Authorities Regarding 5G Masts and Small Cells*.

The demand and focus on delivering the 5<sup>th</sup> generation of mobile phone technology is the primary objective of licensed operators in the UK. In today's climate the existing 4G network has allowed users to video stream at much faster data speeds allowing the integration of smart phones into wider uses than previous generations. The inevitable consequence of technological advancements means that customers expect tasks to become even quicker and simpler.

To quote the *5G and Future Technology* document, *“It is estimated that 5G will directly contribute to an additional £7 Billion a year to the UK economy in just six years from roll-out. Although 5G will undoubtedly bring new opportunities and huge benefits to society, we cannot escape from the requirement that new structures, antennas and ancillary equipment will be needed. But to do so the network needs to be surveyed, designed and planning approval obtained. It has been acknowledged by Government that we must ensure that we have the infrastructure in place to deliver 5G across our major centres and transport networks.”*

The introduction of 5G technology will improve the country's digital connectivity and appeal to visitors and businesses alike through the creation of smarter technology which will benefit the British economy.

*“Examples of this new world that will emerge from ubiquitous 5G coverage involves such things as connected and autonomous vehicles, traffic management, smart manufacturing with heterogenous autonomous machines, direct machine to machine communication, advanced medical devices, automated agriculture, far greater security provision, more stable and reliable connectivity and advances in further application development with uses not yet identified. All of the above provides an insight into the future development of connectivity in our modern world and also provides a further insight into the expected minimum eight-fold increase in data usage by each mobile operator over the next 5-6 years.”*

The national government recognises the importance of the 5G rollout which is a stance taken by government minister Margot James, the NPPF and The National Infrastructure Commission.

*“5G has the potential to dramatically transform the way we go about our daily lives, and we want the citizens of the UK to be amongst the first to experience all the opportunities and benefits this new technology will bring...”* – Margot James, the government minister for digital).

*“Advanced, high quality and reliable communications infrastructure is essential for economic growth and social well-being. Planning policies and decisions should support the expansion of electronic communications*

*networks, including next generation mobile technology (such as 5G) and full fibre broadband connections.” – NPPF (July 2018)*

*“Getting 5G deployment right will be critical in a future where connectivity is becoming integral to almost all parts of the economy, and the UK will put its future growth and competitiveness at risk if it falls behind.” – ‘Connected Future’ National Infrastructure Commission 2016*

Although Central Government understands that this may present concerns with the various design solutions proposed, it is important that all Local Planning Authorities understand the technical needs of 5G and better understands the wider advantages of such new technology. The government have also expressed support for new telecoms installations and the deployment of new technology. It is seen as essential for the country to develop and exploit the advantages of such new technology to the direct benefit of the public and the economy.

### **Coverage**

The licence granted to EE and H3G demands that strict coverage qualities are met nationwide. It is essential that the benefits of mobile phones are available across the population. Mobile networks are constantly reviewed to ensure that there is adequate coverage and capacity to meet customer demands. In the current environment there is an expectation for signal coverage to be available at home, in the workplace, while shopping, enjoying leisure activities or in transit.

### **Quality**

In order to ensure there is sufficient coverage within buildings such as homes, shops, offices etc. the radio signal has to be of adequate strength to penetrate walls. In urban and suburban areas a dense network of base stations is therefore required, which are sometimes less than 1 km apart. The improvement of 3G and 4G signal and introduction of 5G in this area will encourage economic advancement in accordance with the NPPF which seeks to develop connected environments.

### **Capacity**

The upgrade of telecommunications masts across the country is an inevitable consequence of the continued growth of mobile phone usage. More sites are required to address the increasing traffic demands of each mobile user for tasks such as video or music streaming. Each cell or base station is limited to handling a finite number of calls meaning that areas of high usage will require additional cells to meet network demands and avoid congestion.

### **The Radio Implication of the Site**

Radio signals are transmitted through the network by using fixed links at such frequencies that necessitate an uninterrupted line of sight. To achieve this, the installation must reach a sufficient height above surrounding buildings and trees. The installation must also be in a position to provide strong radio coverage to the target area that can also be received inside buildings.

The radio planning tool identifies deficiencies in the network and predicts the location from which the optimum coverage will be provided. Within these areas existing base stations are selected for an upgrade. The proposed installation subject to this application stems from this process where it is imperative for mobile operators to provide high quality coverage to its customers. This is achieved through the improvement of existing network infrastructure and introduction of new base stations to fill in blank spots.

## **5. HEALTH AND SAFETY**

The proposal for this site has been designed within International Commission on Non-Ionising Radiation Protection (ICNIRP) public exposure guidelines and therefore Health and Safety concerns should not be a planning consideration. An ICNIRP certificate is submitted with this application.

In addition to this, The Institution of Engineering and Technology's *Guide for Local Planning Authorities regarding 5G Masts and Small Cells*, provides a brief overview of 5G technology and the health issues that are often misunderstood. It concludes by saying, *"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. And 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."*

## **6. CONCLUSION**

A requirement for improved network coverage has been identified in this area. This is an upgrade of an existing site which will provide essential services for residents and businesses within the immediate vicinity. The proposed works have been designed sensitively in consideration for the character and appearance of the surrounding area in which the least amount of works has been proposed to minimise the visual impact of the proposal.

The applicant considers the proposal to be an acceptable development which should be viewed favourably by the local planning authority.

Digital Infrastructure underpins the digital, cultural and social infrastructures to develop places where people want to live, work and visit. Over the next few decades our digital networks will be the enabling infrastructure that drives economic growth and productivity.

The Digital Infrastructure sector contributed £33bn to the UK economy in 2017 (1.8% of GVA), up by a third since 2010.<sup>40</sup> A core contributor to connected growth in local areas, direct benefits from improved digital connectivity include large increases in download speeds leading to more productive economic activity. It is estimated that by subsidising upgraded infrastructure in certain postcodes £9bn of turnover was added to firms in those postcodes.<sup>41</sup>

Government has set targets for nationwide full fibre coverage by 2033 and for the majority of the population to be covered by a 5G signal by 2027. Full Fibre to the Premises (FTTP) will deliver future-proof, reliable, gigabit-capable connections. These will support greater productivity and economic benefits, underpinning growth sectors such as creative industries and tourism, and helping to reduce inequalities between and within regions. Good quality broadband and mobile coverage has become a modern necessity, both at home and work.

A range of evidence shows direct benefits from improved digital connectivity, including large increases in download speeds leading to more productive economic activity.<sup>42</sup> Wider potential impacts are in areas such as remote healthcare, education, travel and transport, and wellbeing, including loneliness. Gigabit-capable technology will ensure future opportunities in these areas, plus technologies such as AI or the Internet of Things, will be available to everyone in every region.

## Baseline

There are several areas to consider as part of developing an evidence base and strategy.

Following £1.7bn investment of public money from government and local authorities into the BDUK Superfast programme, superfast (>24Mbps) broadband coverage is at 95% of the UK, according to the latest [Connected Nations 2018](#) report from Ofcom, with Fibre to the Cabinet (FTTC) the most widely used technology.

Full fibre, or Fibre to the Premise coverage is currently at 6.20% across the UK.<sup>43</sup> The BDUK Superfast programme is continuing to roll out and has turned its focus to full fibre, with other government interventions including the Local Full Fibre Networks and Rural Gigabit Connectivity programme designed to deliver full fibre and stimulate commercial investment. The [Connected Nations 2018](#) report can help places quantify the state of local coverage, while [Thinkbroadband](#) has detailed maps illustrating local coverage, which can be both browsed by area and searched by postcode.

The [Universal Service Obligation](#) is currently being implemented by Ofcom. It is expected to allow consumers with connectivity below 10Mbps to be able to request a USO connection subject to conditions, from the beginning of 2020, funded via an industry cost-sharing mechanism.

Government is working to ensure that 95% of the UK has good coverage by 2022. Government wants the UK to be a world leader in 5G, and for the majority of the population to have access to a 5G signal by 2027. Mobile network operators are preparing for the launch of commercial 5G services, with initial launch cities and investment plans identified and first commercial deployments expected in the second half of 2019.

## Agreeing Objectives

DCMS's [Future Telecoms Infrastructure Review](#) (FTIR) (2018) sets out our roadmap to achieve the

40 [DCMS Economic Estimates 2017: GVA](#)

41 [Evaluation of the Economic Impact and Public Value of the Superfast Broadband Programme](#)

42 For example Deloitte, [Value of Connectivity: Economic and social benefits of expanding internet access](#), 2014

43 See Thinkbroadband for updates on broadband roll out statistics: <https://labs.thinkbroadband.com/local/>



government's digital connectivity targets, chiefly by encouraging commercial investment across the UK and creating the conditions to support deployment. It found c.10% of UK premises are unlikely to benefit from commercial investment without some form of additional funding. Government is committed to an 'outside-in' approach to ensure these harder to reach areas are addressed at the same pace as the rest of the country.

On mobile, the FTIR concluded that 5G offers potential new revenue opportunities for existing carriers and opens up opportunities for new players to enter the UK mobile market. New players could provide tailored solutions to connectivity challenges and help unlock the full potential of 5G. The FTIR recommends policies that maintain the benefits of competition between the mobile network operators, while encouraging new solutions.

The FTIR also focuses on the growing convergence between fixed and mobile markets. Delivering the high speed and high capacity capabilities of 5G will require dense fibre networks, and in some places 5G could provide a more cost-effective way of providing ultra-fast connectivity to homes and businesses.

When developing a strategy for digital infrastructure within a local area, recommendations for LIS objectives include:

- Supporting commercial deployment by reducing barriers for industry providers, and proactively using existing powers to promote commercial provision.
- Publicly funding gigabit-capable interventions targeted at non-commercial areas (the 'final 10%') that are unlikely to receive commercial investment.
- Ensuring any publicly funded interventions are sufficiently future-proofed, and reflect the growing convergence between fixed and mobile networks.
- Encouraging consumer take-up of broadband services in order for users to realise the benefits, and to support greater commercial investment.

These objectives should be made Specific Measurable Achievable Realistic and Time-limited according to local conditions and ambitions.

## Designing interventions

Public funding will be dependent on local areas having a clear plan to reduce and remove barriers to deployment and adopting best practice. You should work with providers to support commercial deployment of both broadband networks and mobile coverage infrastructure (in terms of conventional macro-level mast deployment and small-cell deployment at street-level):

- The [Digital Connectivity Portal](#) provides guidance for local authorities and network operators on effective policies and processes to facilitate deployment of broadband and mobile networks.
- Introduction to Community-led schemes provides guidance on options.

Public models for deployment of fixed broadband include:

- [BDUK Superfast programme](#): rolling out superfast broadband across the UK via local body delivery partners.
- [Local Full Fibre Networks challenge fund](#): models including Public Sector Anchor Tenancy / Building Upgrade / Asset Reuse.
- Local Full Fibre Networks [Gigabit Broadband Voucher Scheme](#).
- [Rural Gigabit Connectivity programme](#): trialling a public building hub model with rural specific vouchers to deliver gigabit connectivity to rural areas in the 'final 10%'.

Identifying the location of areas within the non-commercial 'final 10%' will become clearer with further roll out in the coming years. Currently, premises without access to superfast broadband are considered more than likely to be within the 'final 10%'. It is recommended that any public investment be initially targeted at areas and premises with sub-superfast speeds.

Fixed broadband policies are strongly encouraged to align with government policy to deliver gigabit capable networks. While publicly funded interventions should be targeted at the non-commercial 'final 10%', they should align with areas and premises currently targeted by other public programmes to avoid overbuild (e.g. [DEFRA's Rural Broadband Infrastructure Scheme](#) which funds Local Authorities to deliver superfast broadband to rural businesses and communities).

Interventions to consider include encouraging planning authorities to adopt de minimis provisions with regard to small-cell mobile infrastructure, and working with Mobile Network Operators to proactively identify possible sites for infrastructure deployment / improvement.

## Monitoring progress

Projects should assess reducing the digital divide between communities, as well as benefits to the economy and the public sector.

[The Ofcom connected nations](#) report should be referred to in order to monitor geographical coverage of fixed and mobile infrastructure, which are likely to be important outcomes for any digital infrastructure programme outlined by a LIS.

Monitoring of interventions should also focus on the connection between the policy outputs (i.e. FTTP coverage) and specific economic outcomes, such as the effect on local firm performance and productivity. Monitoring should also consider value for money.

The [Superfast Broadband evaluation](#) provides an example of how these outcomes are monitored at a local level. This will provide you with ideas of how to evaluate your interventions in the digital infrastructure space and highlights the tangible economic and wellbeing benefits that increased connectivity brings to communities.



Photo by Lucrezia Carnelos on Unsplash



# Allaying health concerns regarding 5G and exposure to radio waves

An IET guide for local planning authorities regarding 5G masts and small cells

[theiet.org/5g-health](https://theiet.org/5g-health)

# Introduction



The UK has an ambitious programme<sup>2</sup> to become a world leader in 5G; the fifth generation of mobile technology. The aim of this document is to give local planners a better understanding of what 5G is – and isn't – as this affects both future coverage and concerns that have been expressed about exposure to radio waves. The document is intended to be a brief overview and references for further reading are provided at the bottom of each page.

## What is 5G?

5G is the next transformational technology that will provide the underlying wireless infrastructure to cope with relentless rise in data consumption and support many new applications<sup>3</sup>. 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.

## Features of 5G

### Faster download speeds

It's expected that 5G will provide speeds of between 1GBps and 10GBps; much faster than today's 4G networks. This would mean a full HD movie could be downloaded in 10 seconds, as opposed to 10 minutes today.

### Lower latency

5G has been designed to have significantly lower latency, 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.

<sup>2</sup> Department for Culture Media & Sport "Next Generation Mobile Technologies: A 5G strategy for the UK" [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/597421/07.03.17\\_5G\\_strategy\\_-\\_for\\_publication.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/597421/07.03.17_5G_strategy_-_for_publication.pdf)

<sup>3</sup> Ofcom "Enabling 5G in the UK" [https://www.ofcom.org.uk/\\_\\_\\_data/assets/pdf\\_file/0022/111883/enabling-5g-uk.pdf](https://www.ofcom.org.uk/___data/assets/pdf_file/0022/111883/enabling-5g-uk.pdf)

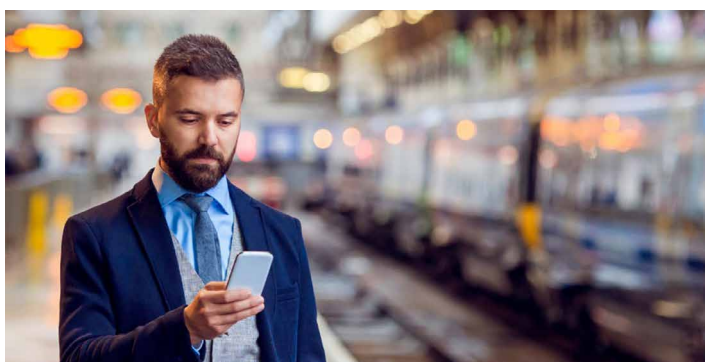
## Key observations

- 1 Operators will continue to design and build sites to be rigorously compliant with the International Commission on Non-Ionizing Radiation Protection (ICNIRP). The commission's guidelines cover all frequencies used for 5G.
- 2 The use of small 5G base stations in towns and cities will reduce exposure of radio waves to individual smartphone users.
- 3 The most widely deployed 5G spectrum band in public places will be 3.6GHz.
- 4 A new generation of 5G antenna called massive MIMO will not be 'massive'.
- 5 A good 5G fibre based local broadband infrastructure will be important to local communities over the coming decades.<sup>1</sup>



<sup>1</sup> Future Telecommunications Infrastructure Review, DCMS, 23 July 2018 see <https://www.gov.uk/government/publications/future-telecoms-infrastructure-review>

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



Mobile operators in the UK design and build their masts, rooftop antennas and other installations to be compliant with exposure guidelines developed by the ICNIRP<sup>4</sup>.

These guidelines are prepared following a comprehensive assessment of all the peer-reviewed scientific literature, including thermal and non-thermal effects. The guidelines are based on evaluations of biological effects that have been established to have health consequences. The World Health Organisation (WHO) recommends that countries adopt the ICNIRP guidelines<sup>5</sup>.

As part of the process for obtaining planning consent for new 5G sites and upgrades, each operator will continue to confirm compliance with ICNIRP guidelines<sup>6</sup>.

## Exposure levels due to 5G small cell networks

Small cells, also known as micro-cells or pico-cells, are smaller antenna systems designed to work over a very short range, such as a hundred metres. They can be deployed in high usage urban areas, in conjunction with large cells on normal masts, to ease network congestion<sup>7</sup>. Some people have expressed a concern that a large number of 5G cells may increase a person's exposure to radio waves.

However, the particular feature of cellular radio is that every time a new base station or cell is added, the distance the signal has to travel is shorter. Therefore, under the laws of physics, the power needed is reduced, leading to a decline in the smartphone power level required to connect to a base station. For many people, their smartphone will be by far the nearest source of radio wave energy to their bodies. As a result, more 5G cells will lead to a reduction in the overall radio wave signal strength an individual smartphone user is exposed to<sup>8</sup>.

<sup>4</sup> See <https://www.icnirp.org/en/frequencies/high-frequency/index.html>

<sup>5</sup> World Health Organisation Standards and Guidelines <https://www.who.int/peh-emf/standards/en/>

<sup>6</sup> See <https://www.ofcom.org.uk/manage-your-licence/radiocommunication-licences/mobile-wireless-broadband/exposure-electro-magnetic-fields>

<sup>7</sup> See <https://www.smallcellforum.org/what-is-a-small-cell/>

<sup>8</sup> "Public exposure to radiofrequency electromagnetic fields in everyday microenvironments: An updated systematic review for Europe" September 2019 <https://www.sciencedirect.com/science/article/pii/S0013935119303068> and "Impact of 5G technology on human exposure" Dr. Fryderyk Lewicki ITU-T SG5, Chairman of WP1 Orange Polska, Poland Expert Meeting: Electromagnetic Field Level and 5G Roll-out November 2017 <https://www.itu.int/en/ITU-D/Regional-Presence/Europe/Documents/Events/2017/EMF/Fryderyk.pdf>

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

The UK and Europe will use three bands for 5G<sup>9</sup>. These are termed the 5G pioneer bands and each has 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.



**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 smartphones, homes and offices. 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 as the cost of covering wider areas is much lower than at 26GHz<sup>10</sup>.



**26GHz**

Sometimes referred to as millimetre or mmWave, 26GHz will be used to provide very high capacity in the limited number of locations of exceptionally high traffic density and applications, such as industry 4.0 (very advanced manufacturing). It will also be used in the relatively few locations where the 3.4-3.8GHz band maxes out. Total coverage by mobile operators at this frequency could be as small as 3% of the UK land area<sup>11</sup>.

## The 5G massive MIMO antenna

The name given to a new kind of 5G antenna – Massive MIMO (multiple input, multiple output) – has provoked some unnecessary concerns.

Although the name would imply something large in scale, in reality the antenna elements of a massive MIMO system are actually tiny. An antenna helps direct the radio energy along a specific path, known as beam forming, rather than spraying it in all directions.

For the past 20 years mobile operators have typically used three or four sectored antennae, so as not to waste radio energy in directions where it's not needed. The 5G massive MIMO antenna makes the transmission more efficient, with the equivalent of 40 sectors, each delivering the same power to a user standing at the edge of coverage but wasting less energy to achieve this<sup>12</sup>.



<sup>9</sup> 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](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>

<sup>10</sup> 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](https://www.ofcom.org.uk/_data/assets/pdf_file/0022/111883/enabling-5g-uk.pdf)

<sup>11</sup> 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>

<sup>12</sup> IEEE Spectrum "5G Bytes: Massive MIMO Explained" <https://spectrum.ieee.org/video/telecom/wireless/5g-bytes-massive-mimo-explained>

# Conclusion



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. And 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.



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# Electromagnetic Field (EMF) measurements near 5G mobile phone base stations

## Summary of results

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A [Welsh version of the Overview](#) is available

**Technical Report**

**Publication Date:** 21 February 2020 (updated 17 April 2020)

# Contents

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# 1. Overview

- 1.1 This is an updated version of our original 5G measurement report, which included Electromagnetic Field (EMF) measurements at 16 UK sites and was published on 21 February 2020. This updated version includes measurements at six additional locations that were completed in the first half of March 2020. The results are consistent with those from the initial 16 locations and have not changed the summary findings of this report presented below.
- 1.2 The purpose of our measurements was to verify that 5G-enabled mobile base stations remained within the EMF limits set out in the Guidelines from the International Commission on Non-Ionizing Radiation Protection (ICNIRP)<sup>1</sup>.

## What we've found

To date, we have carried out EMF measurements at 22 locations near 5G mobile phone base stations in 10 cities across the UK, including Belfast, Cardiff, Edinburgh and London. We have targeted this first set of measurements in areas where there are likely to be high levels of mobile phone use, including in and around major transport hubs and shopping centres. The base stations we visited all support a range of mobile technologies in addition to 5G, including 2G, 3G and 4G.

The results so far indicate that:

- In all cases, the measured EMF levels from 5G-enabled mobile phone base stations are at small fractions of the levels identified in the ICNIRP Guidelines, the highest level recorded being approximately 1.5% of the relevant level;
- 5G currently contributes a small amount to the EMF levels measured at each location. At all locations, the largest contribution to the measured levels comes from previous generations of mobile technology (2G, 3G, 4G). The highest level we observed in the band used for 5G was just 0.039% of the relevant level.

- 1.3 Ofcom has been carrying out radio frequency electromagnetic field (EMF) measurements near mobile phone base stations for many years.<sup>2</sup> These measurements have consistently shown these are well within the internationally agreed levels published in the ICNIRP Guidelines.
- 1.4 While all the frequency bands now in use by mobile phone base stations have been used for various services for many years, our previous EMF measurements did not include the specific frequency bands now being rolled out by the mobile operators for 5G. The results

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<sup>1</sup> Guidelines for limiting EMF exposure that will provide protection against known adverse health effects are published by the International Commission on Non-Ionizing Radiation Protection (ICNIRP). ICNIRP is formally recognised by the World Health Organization (WHO). The Guidelines are available on the ICNIRP website [here](#).

<sup>2</sup> Ofcom inherited a programme of EMF measurements started by its predecessor, the Radiocommunications Agency (one of the five regulators whose duties were subsumed by Ofcom when it was created).

reported here therefore concentrate on measurements near 5G-enabled mobile phone base stations.

- 1.5 The results show that, at all locations where we conducted measurements, the EMF levels are at small fractions of the maximum levels identified in the ICNIRP Guidelines. A detailed summary of results is presented in Section 4.
- 1.6 In the UK, Public Health England (PHE) leads on public health matters associated with radiofrequency electromagnetic fields, or radio waves, and has a statutory duty to provide advice to Government on any health effects that may be caused by EMF emissions<sup>3</sup>. On 5G, PHE's view is that *'the overall exposure is expected to remain low relative to guidelines and, as such, there should be no consequences for public health'*.<sup>4</sup>
- 1.7 Clearly, the deployment of 5G networks and the take-up of 5G services is at an early stage. We will therefore continue to undertake EMF measurements to monitor the overall trends in the long term. This will include measurements in new areas and repeat measurements at a number of the locations which we have already visited. We will continue to publish these measurements on our website as they become available.

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<sup>3</sup> The Scottish Government set out its position on 5G and public health in a [statement](#) published alongside its [5G strategy](#) in August 2019. This noted that "the advice provided by PHE is fully endorsed by the Chief Medical Officer for Scotland". Public Health Wales notes on its [website](#) that "specialist radiation protection information and advisory services are provided in Wales by Public Health England's Centre for Radiation, Chemical and Environmental Hazards (CRCE)".

<sup>4</sup> See: <https://www.gov.uk/government/publications/mobile-phone-base-stations-radio-waves-and-health/mobile-phone-base-stations-radio-waves-and-health>

## 2. Background

- 2.1 In March 1999, the Chairman of the National Radiological Protection Board (NRPB, now part of Public Health England) was asked by the Minister for Public Health to set up an independent expert working group to assess the current state of research into possible health risks from mobile phones. The Independent Expert Group on Mobile Phones (IEGMP) was set up in April 1999 and was chaired by Sir William Stewart.
- 2.2 The IEGMP published its report in May 2000 (the Stewart Report), recommending the establishment of an independent audit of EMF emissions from mobile base stations.<sup>5</sup> In response to this report, the Government commissioned the Radiocommunications Agency (RA) to implement a national measurement programme to ensure that emissions from mobile phone base stations did not exceed the levels identified in the ICNIRP Guidelines for general public exposure. Ofcom has continued this programme since its establishment in 2003.
- 2.3 In 2012, this activity switched from a proactive to a reactive programme. From this date onwards, Ofcom has continued to conduct EMF exposure measurements on request. This is provided as a free service to qualifying schools and hospitals (i.e. those that do not benefit financially from base stations installed on their property). Further information about Ofcom's EMF exposure measurement surveys are published in our information sheet [OfW80](#).
- 2.4 In recent years, the number of requests for EMF exposure measurements has been declining. However, the introduction of 5G has seen a renewed interest in the potential impact of radio waves on health and Ofcom has received an increasing number of queries about the safety of 5G deployments.
- 2.5 This report presents the results of proactive EMF exposure measurements undertaken by Ofcom at locations near 5G-enabled mobile phone base stations.

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<sup>5</sup> IEGMP, [Mobile Phones and Health](#), 2000 (archived 10 September 2010)

### 3. High-level methodology

- 3.1 In this section we set out the high-level methodology we have used to measure general public exposure to EMF near 5G-enabled mobile base stations.
- 3.2 We have measured the EMF exposure level at selected test locations using a field strength analyser with an isotropic probe following a procedure based on the in-situ RF exposure measurement method set out in section B.3.1.2 of IEC 62232:2017<sup>6</sup>.
- 3.3 The power density reference levels from the ICNIRP Guidelines for general public exposure (applicable to mobile phone frequencies) are as follows:

<i>Frequency range</i>	<i>Power density (W m<sup>-2</sup>)</i>
400 – 2,000 MHz	$f/200$ *
2 – 300 GHz	10

\* Where  $f$  is the frequency in MHz

The measurements were conducted over the individual frequency bands used for mobile base station (downlink) transmissions as well as across all other frequency bands between 420 MHz to 6 GHz (see

3.4 below for more details).

**Table 3.1: Frequency bands covered in this report**

Frequency band	Frequency range	Technology <sup>7</sup>
700 MHz	738-788 MHz	Not currently used. Spectrum award planned in 2020
800 MHz	791-821 MHz	4G
900 MHz	925-960 MHz	2G, 3G, 4G
1400 MHz	1452-1492 MHz	4G (Supplementary downlink)
1800 MHz	1805-1880 MHz	2G, 4G
1900 MHz	1900-1920 MHz	4G
2100 MHz	2110-2170 MHz	3G, 4G
2300 MHz	2350-2390 MHz	4G
2600 MHz	2570-2690 MHz	4G
3.4 GHz	3410-3680 MHz	5G, 4G
3.8 GHz	3680-4200 MHz	Various
Others <sup>8</sup>		

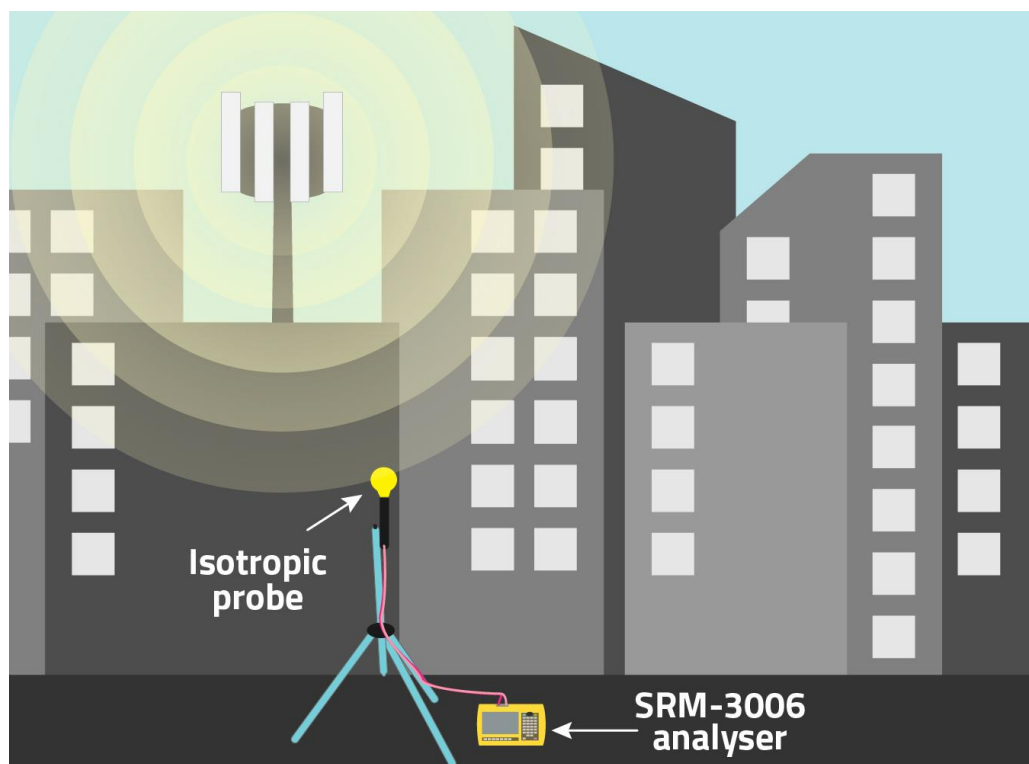
<sup>6</sup> International Electrotechnical Commission, [IEC 62232:2017: Determination of RF field strength, power density and SAR in the vicinity of radiocommunication base stations for the purpose of evaluating human exposure](#), 23 August 2017

<sup>7</sup> Note: this is an indication of the type of technologies typically deployed in these bands. Not all frequency bands and technologies will be in use in any one location.

<sup>8</sup> All other frequencies between 420 MHz and 6 GHz

- 3.5 We used a field strength analyser (Narda SRM-3006),<sup>9</sup> connected to an isotropic electric field (E-field) probe, to carry out the measurements. As illustrated in Figure 3.1 below, the probe is mounted on a tripod at a height of 1.5m above ground level. The use of an isotropic probe means that the measurement result is not affected by the direction of signal arrival and the polarisation of the measured field.

**Figure 3.1: Narda SRM-3006 field strength analyser connected to an isotropic E-field probe mounted on a tripod 1.5m above ground level**



- 3.6 The SRM-3006 analyser together with the probe has an overall operating frequency range from 420 MHz to 6 GHz. This is sufficient to cover all the frequency bands currently used for mobile phone base station transmissions.
- 3.7 For the measurements reported here, the SRM-3006 was set to its Safety Evaluation mode. In this mode, the analyser automatically adjusts its resolution bandwidth to 5 MHz and its frequency step size to 2.5 MHz and repeatedly sweeps across all frequencies from 420 MHz to 6 GHz at a rate of approximately 1 sweep per second. At each frequency step the analyser measures the root mean square (rms) field strength. As specified in the ICNIRP Guidelines, the measurements at each location are averaged over a six minute period.
- 3.8 The SRM-3006 reports the exposure level as a percentage of a selected safety standard limit (e.g. the levels from the ICNIRP Guidelines). Exposure levels are reported for each individual frequency band and the total EMF emission level across all bands measured (420 MHz – 6 GHz) is also reported.

<sup>9</sup> <https://www.narda-sts.com/en/products/selective-emf/srm-3006-field-strength-analyzer/>

## 4. Summary of test results

4.1 At the time of publication, we have carried out measurements close to known 5G-enabled mobile phone base stations in 22 locations<sup>10</sup> across England, Scotland, Wales and Northern Ireland. This section provides a high-level summary of the results for all locations visited.

4.2 The map below shows the cities where we have conducted measurements to date.

**Figure 4.1: Cities where we have conducted measurements**



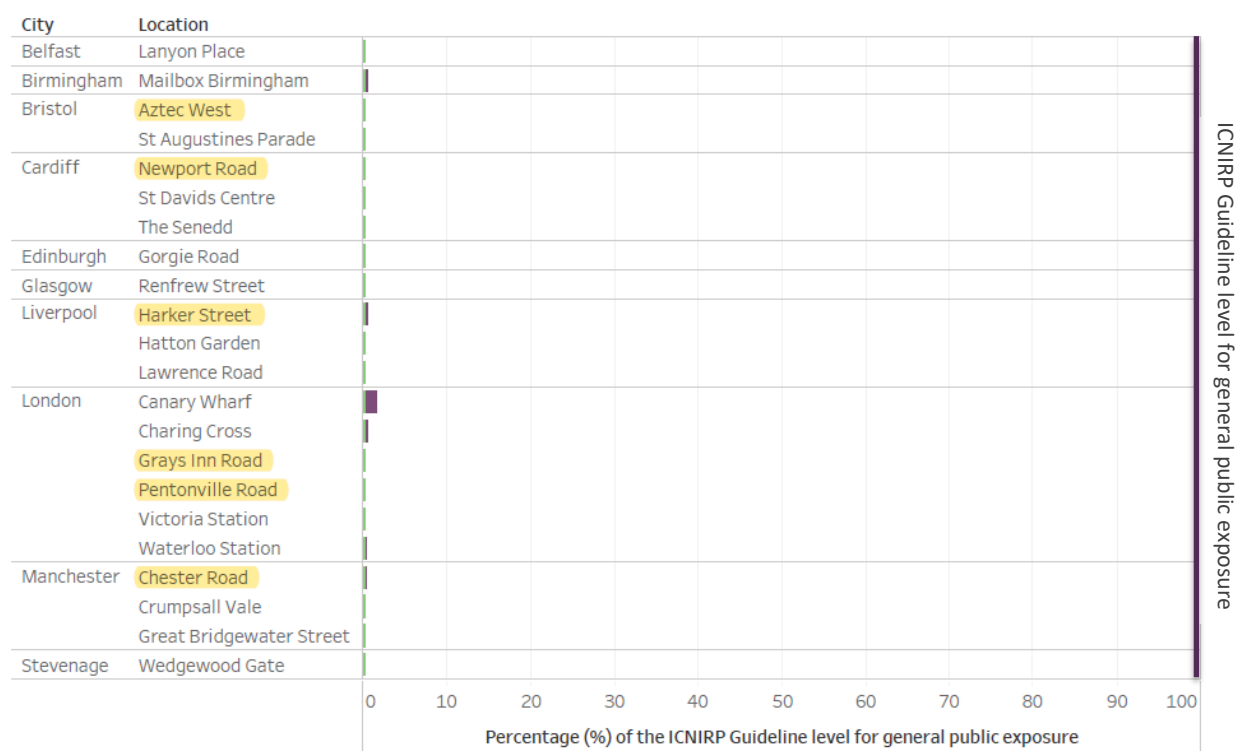
<sup>10</sup> The original version of this report, published on 21 February, included measurements at 16 locations. We updated the report on 17 April 2020 to include 6 additional locations.



4.3 Figure 4.2 below shows the highest average exposure level that we recorded at each location. Table 4.1 on the following page shows the same data in tabular form. The exposure levels are expressed as a percentage of the reference levels for general public exposure in the ICNIRP Guidelines<sup>11</sup>. The chart presents two measured levels:

- a) the exposure level measured across all mobile frequency bands; and
- b) the exposure level for the 5G frequency band (currently, 5G is deployed in the 3.4-3.6 GHz band).

**Figure 4.2: Highest recorded average exposure levels at all 5G-enabled sites visited<sup>12</sup>**



**Legend**

- Highest 5G Band Value (%)
- Highest All Band Value (%)

Note: Some of the smallest bars in the chart are green in colour. This is not because the 5G band value is the same as or larger than the All band value. Rather, it is because both values are lower than can be effectively displayed within the resolution constraints of the chart. In all cases, as would be expected, the 5G band value is lower than the All band value. The detailed values are presented in Table 4.1

<sup>11</sup> All figures below (or equal to) 100% are considered as being within the recommended exposure limits.

<sup>12</sup> Six new locations were added in our update on 17 April 2020 and are highlighted in yellow in the chart.

Table 4.1: Highest average exposure levels at all locations visited<sup>13</sup>

City	Measurement location	Highest All Band value (% of ICNIRP level)	Highest 5G Band value (% of ICNIRP level)
Belfast	Lanyon Place	0.0807	0.0006
Birmingham	Mailbox Birmingham	0.4688	0.0386
Bristol	Aztec West Business Park	0.1431	0.0010
	St Augustine's Parade	0.0460	0.0068
Cardiff	Newport Road	0.0978	0.0016
	The Senedd	0.1195	0.0060
	St David's Centre	0.0823	0.0041
Edinburgh	Gorgie Road	0.1419	0.0004
Glasgow	Renfrew Street	0.1399	0.0044
Liverpool	Harker Street	0.4608	0.0239
	Lawrence Road	0.1371	0.0069
	Hatton Garden	0.0894	0.0011
London	Canary Wharf	1.4960	0.0000
	Charing Cross	0.5970	0.0014
	Grays Inn Road	0.0420	0.0013
	Pentonville Road	0.0711	0.0117
	Victoria Station	0.2483	0.0042
Manchester	Waterloo Station	0.3828	0.0065
	Chester Road	0.3017	0.0053
	Crumpsall Vale	0.0736	0.0016
Stevenage	Great Bridgewater Street	0.2460	0.0019
	Wedgwood Gate	0.0654	0.0008

4.4 As can be seen from Figure 4.2 and Table 4.1 above, EMF emission levels from 5G-enabled mobile phone base stations remain at small fractions of the reference levels for general public exposure in the ICNIRP Guidelines, with the highest level recorded being approximately 1.5% of the reference level.

4.5 The base stations we visited all support a range of mobile technologies in addition to 5G, including 2G, 3G and 4G. In all locations, the largest contribution to the measured levels comes from previous generations of mobile technology (2G, 3G, 4G). The highest level we observed in the band used for 5G was just 0.039% of the reference level.

4.6 We note that the measurement results presented in this report are not directly comparable with previous EMF measurement surveys for several reasons. For example, our

<sup>13</sup> The six new locations in this updated version of the report are highlighted in yellow.

current programme of measurements has been focused on areas where we can expect to see the highest levels of mobile phone use, whereas previous measurements were largely focused on schools, hospitals or residential areas. In addition, our latest measurements include a larger number of frequency bands, including frequencies recently made available for 5G.

- 4.7 The measurements show some variation between the exposure levels measured at each location. This is likely to be due, at least in part, to differences in the position of the measurement probe relative to the base station at each location. We took all measurements in publicly accessible areas, and these areas were at varying distances to the mobile phone base station serving the area. In all cases however, we sought to take measurements at locations with the highest signal strength near the base station.
- 4.8 The deployment of 5G networks and the take-up of 5G services in the UK is still at an early stage. We will therefore continue to undertake EMF measurements to monitor the overall trends in the long term.
- 4.9 This will include repeat measurements at a number of the locations which we have already visited as well as measurements in new areas.
- 4.10 We will continue to publish the results of these measurements on our website as they become available.

## 5. Glossary

### List of acronyms and units

5G	The fifth generation of mobile telecommunications technology
Base station	Radio transmitter infrastructure that controls and communicates to mobile phones
Downlink	In mobile communication, a downlink refers to the transmission link from the base stations to the mobile devices such as mobile phones or tablets.
E-field strength	Electric field strength
EMF	Electromagnetic fields
Far field	Regions where the distance from the measurement point to the source is greater than $D^2/\lambda$ where D is the diameter of the source antenna and $\lambda$ is the wavelength of the frequency.
GHz	Gigahertz (1 GHz is equivalent to 1000 MHz)
ICNRIP	The International Commission on Non-Ionizing Radiation Protection
IEC	The International Electrotechnical Commission
IEGMP	The Independent Expert Group on Mobile Phones
kHz	Kilohertz (1 kHz is equivalent to 1000 Hz)
MHz	Megahertz (1 MHz is equivalent to 1000 KHz)
NRPB	The National Radiological Protection Board, now part of Public Health England
Ofcom	The Office of Communications
RA	The Radiocommunications Agency
rms	The root mean square (rms) is defined as the square root of the arithmetic mean of the squares of a set of numbers
W m <sup>-2</sup>	Watts per square metre, a measure of radiated power density.



# 5G and Future Technology – Delivering the UK’s Telecoms Future

## 5G setting the scene

Mobile connectivity is becoming ubiquitous and the expectation is that it should be available throughout the country. From the first generation of analogue phones to modern 4G enabled smart phones, people have embraced the benefits provided by increased connectivity and the applications that smart phones can control. As digital systems and mobile telephony develop it has become apparent that the mere requirement to make a telephone call is secondary to the overall advantages and opportunities that modern smart phones and increased data speeds can offer.

***“We will build a Britain that lives on the digital frontier, with full-fibre broadband, new 5G networks and smart technologies”***

**BEIS Industrial Strategy – Building a Britain fit for the Future 2017**

It is anticipated that the next generation of smart phones will be only a small part of wider mobile connectivity. The first generation provided voice calls, the second generation allowed basic data such as texting and the third generation offered internet access and the development of apps. Since then the smart phone has developed further and the fourth generation has brought video and much faster data speeds allowing the integration of the smart phone into wider use.

***“Securing the mobile networks necessary to put the UK at the forefront of this emerging technology will be critical to the growth of our economy”.***

**‘Connected Future’ National Infrastructure Commission 2016**

The next generation of mobile telephony is 5G and it brings a revolutionary approach to



managing spectrum and greatly increasing data speeds. The advantages this presents range from near-instant downloads of HD films to connected cars, smart medical devices and smart cities.

***“5G has the potential to dramatically transform the way we go about our daily lives, and we want the citizens of the UK to be amongst the first to experience all the opportunities and benefits this new technology will bring....”***

***Margot James, the government minister for digital.***

5G also integrates the previous generations of mobile telephony through either utilising the existing radio spectrum and/or combining the advantages of previous generations and using multiple platforms to manage coverage and capacity. It is estimated that 5G will directly contribute to an additional £7 Billion a year to the UK economy in just six years from roll-out. Although 5G will undoubtedly bring new opportunities and huge benefits to society, we cannot escape from the requirement that new structures, antennas and ancillary equipment will be needed. But to do so the network needs to be surveyed, designed and planning approval obtained. It has been acknowledged by Government that we must ensure that we have the infrastructure in place to deliver 5G across our major centres and transport networks.

## The Next Generation

The growth of digital connectivity over the last few decades has transformed all aspects of life within the UK. It has provided the opportunity to work differently, to socialise and interact differently, to bring the world closer and to offer new commercial opportunities. The internet and mobile connectivity rely upon the deployment of new fibre networks. Utilising these fibre networks allows each mobile base station to link back into the wider core network, however, the requirements in the future are for ubiquitous coverage and this will mean the more complex, more remote locations throughout the country will need further new installations. In addition, 5G offers download speeds far in excess of what can be achieved today, even by fixed line broadband. Such increased speeds and low latency provides the potential for far greater opportunities.

Examples of this new world that will emerge from ubiquitous 5G coverage involves such things as connected and autonomous vehicles, traffic management, smart manufacturing with heterogenous autonomous machines, direct machine to machine communication, advanced medical devices, automated agriculture, far greater security provision, more stable and reliable connectivity and advances in further application development with uses not yet identified. All of the above provides an insight into the future development of connectivity in our modern world and also provides a further insight into the expected minimum eight-fold increase in data usage by each mobile operator over the next 5-6 years.

## Current Planning Legislative Environment

The existing 4G network rollout has been relatively rapid. However, it was apparent that there were certain restrictions and complications, particularly within the Planning regime, that hindered a more effective rollout. Telecoms Planning is governed by secondary legislation set by central government and the Devolved Authorities and much work has been made to lessen the adverse effects of

previous generations of legislation. In England, Part 16 of the General Permitted Development Order ([2016 SI No. 1040](#)) was revised in November 2016 and increased permitted development rights for Electronic Communications Code System Operators. In order to benefit from the potential that 5G offers, these regulations will need to be relaxed further and altered to address the particular requirements of the new infrastructure proposed. This approach is supported in National Planning Policy:

***“Advanced, high quality and reliable communications infrastructure is essential for economic growth and social well-being. Planning policies and decisions should support the expansion of electronic communications networks, including next generation mobile technology (such as 5G) and full fibre broadband connections”.***

**National Planning Policy Framework July 2018**

Consultation is ongoing with the relevant government departments in order that a better understanding of the requirements is being presented and understood, however, it is imperative that the UK prepares itself in order to enable this new technology and to lessen the burden of over complex regulations. Reducing barriers to network deployment should therefore be considered a strategic necessity given the potential for 5G to help digitise wider areas of the economy. Mobile telephony is seen as a critical aspect of the future of our country and the Government directly supports the increase and expansion of services and new technology:

***“Getting 5G deployment right will be critical in a future where connectivity is becoming integral to almost all parts of the economy, and the UK will put its future growth and competitiveness at risk if it falls behind”.***

**‘Connected Future’ National Infrastructure Commission 2016**

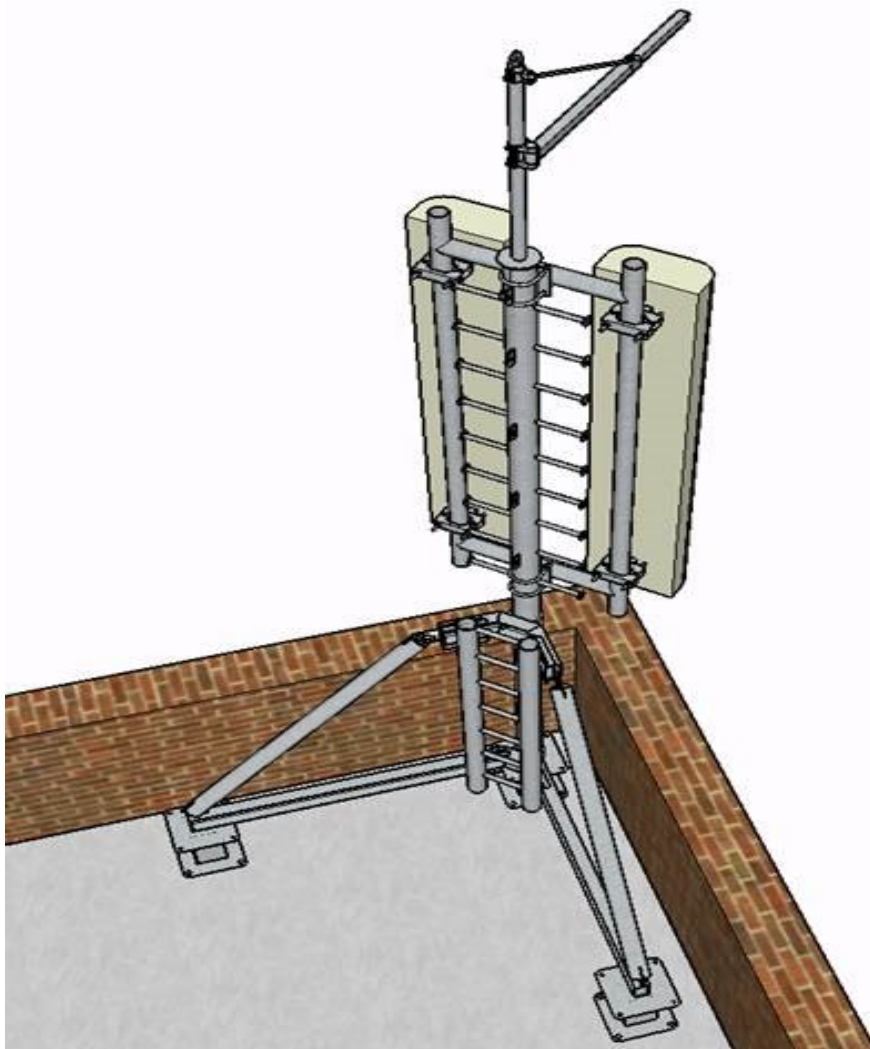
## New Equipment

The initial rollout of equipment will be concentrated on a macro level, that being the upgrading of main hub sites but also coupled with new standalone sites. The potential for Small Cells will evolve as the technology is taken up. 5G has to be deployed smoothly and effectively and as such many existing rooftops and stand-alone greenfield towers will need to be upgraded and redeveloped to accommodate the new equipment and antennas.

5G operates across multiple spectrums and therefore requires additional antennas and new equipment cabinets. The signals that are broadcast are more prone to the shadowing effect of adjacent buildings or structures, and also the ‘clipping’ effect of building edges. Consequently, the location of antennas on existing rooftops is critical to its effectiveness. All new proposals will be set out in associated drawings and the broadcast levels will also be within agreed ICNIRP (International Commission for Non-Ionising Radiation Protection) guidelines.

The higher frequencies that 5G will use can provide more bandwidth and thus greater capacity but the signal will not travel as far as those of previous generations. The implications to the built environment will be that more infrastructure needs to be deployed with the added significant increase in capital required. In order to meet future demands for connectivity the new installations will

have to be designed to optimise the network and thus provide a public benefit in addition to the existing telecoms generations and frequencies used. Additional structures and ancillary equipment on existing sites will also be complemented by new sites and it is anticipated that in high demand areas such as city centres further new installations will be required.

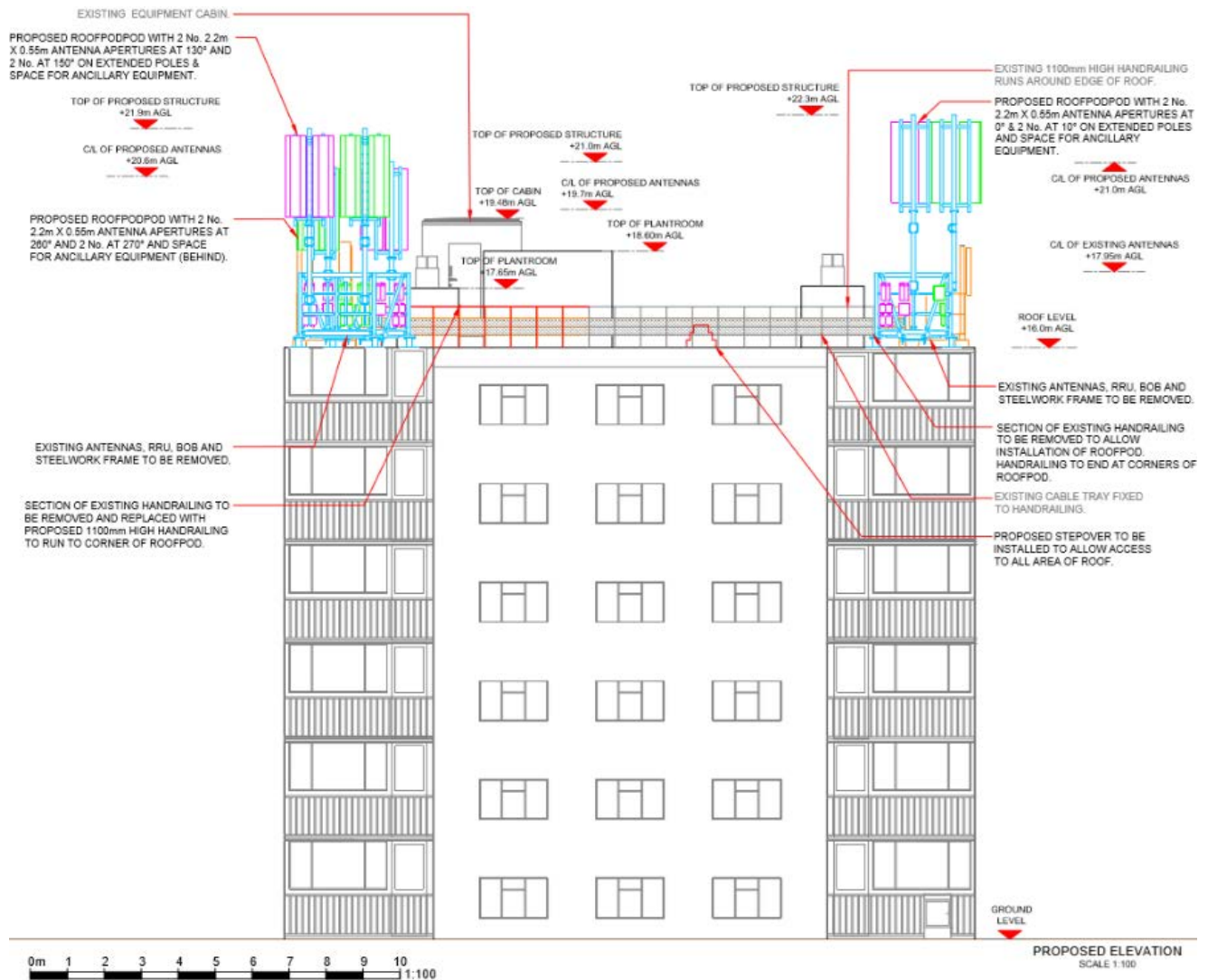


**Note typical location of antennas at roof edge**

It is anticipated that many of the proposals will involve locating antennas closer to the building edge to avoid such 'clipping' and if this is not possible then the antennas may have to be located on structures in the centre of the roof but raised to a height to avoid the same 'clipping' issues. This presents more complex issues for both the designers and for the Local Planning Authorities, where previously 2G, 3G or 4G systems could be accommodated without the need for extra supporting structures or raising the antenna heights. 5G has a far more complex radio requirement and is affected far more than existing systems by surrounding obstructions and structures. Consequently, in order to install new equipment supporting the 5G rollout designs will be very different to those of the existing networks.







Note increased number of antennas closer to the building edge

In order for the UK to benefit from the huge potential of 5G Local Planning Authorities will have to weigh the Public Benefits of such connectivity with the requirements to instruct and manage the built environment. Central Government understands that this may present concerns with the various design solutions proposed but it is important that all Local Planning Authorities understand the technical needs of 5G and better understands the wider advantages of such new technology. This is further emphasised within the National Infrastructure Commission's report in 2016, where National Digital Strategy will be directed through the Economy and Industrial Strategy Cabinet Committee in order to:

***“Support and challenge local government in their plans to enable the delivery of digital infrastructure; both in terms of ensuring that these plans help the UK to meet its national objectives, and that local authorities develop consistent approaches to support the deployment of mobile infrastructure across the country”.***

**‘Connected Future’, National Infrastructure Commission 2016**

## Outcomes

Central Government has expressed a support for new telecoms installations and the deployment of new technology. It is seen as essential for the country to develop and exploit the advantages of such new technology to the direct benefit of the public and the economy. It is seen that Local Government is key to the effective deployment of new technology and the upgrading of existing technology. Support and understanding from Local Government is needed to process Planning Applications, to offer the use of publicly owned assets to locate new equipment and to liaise with Mobile Network Operators in creating the infrastructure required. This is supported by the encouragement the National Infrastructure Commission has indicated in their Connected Future report 2016:

***“Local government should actively facilitate the deployment of mobile telecoms infrastructure”.***

**Connected Future, National Infrastructure Commission 2016**

It is suggested that Local Government will directly benefit from new and improved connectivity which will directly improve the local economy, social interaction, improved services, higher productivity and the reduction of social exclusion. The introduction of new infrastructure is required for all of the reasons above but also to prepare the UK for wider and greater advances benefiting from ubiquitous coverage and improved connectivity.

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