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.

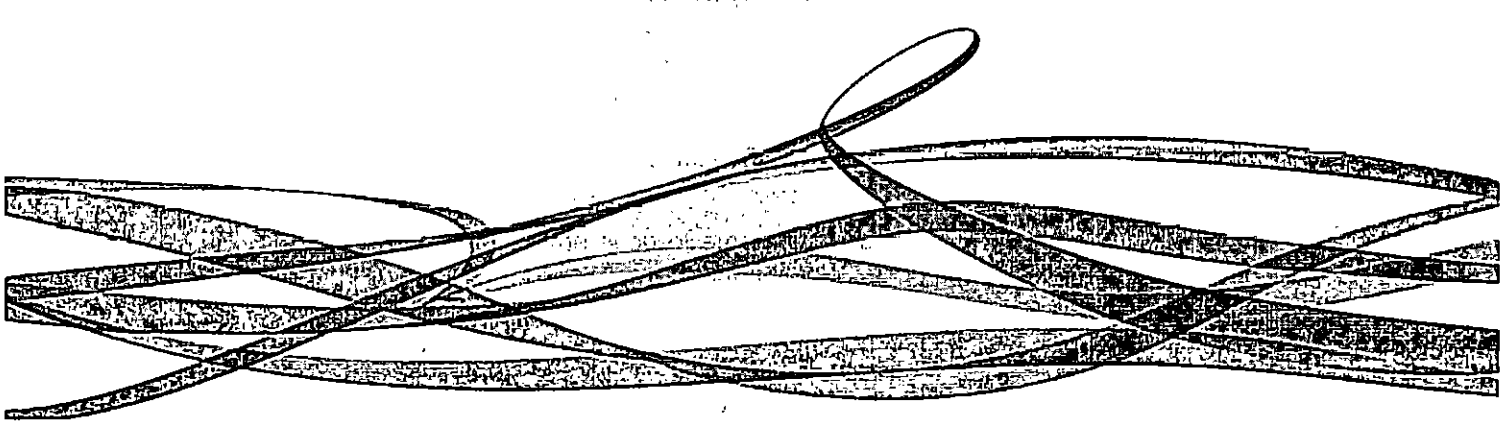
"We will build a Britain that lives on the digital frontier, with full-fibre broadband, new 5G networks and smart technologies"

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.

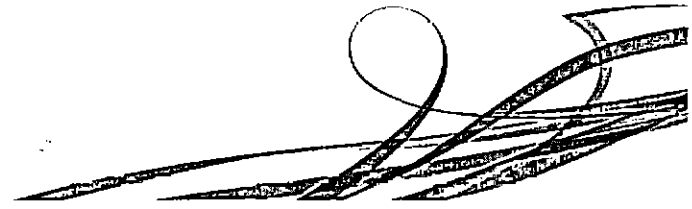
The Next Generation

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 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 it if falls behind".

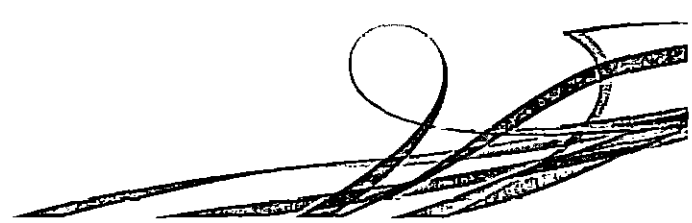
'Connected Future' National Infrastructure Commission 2016

New Equipment

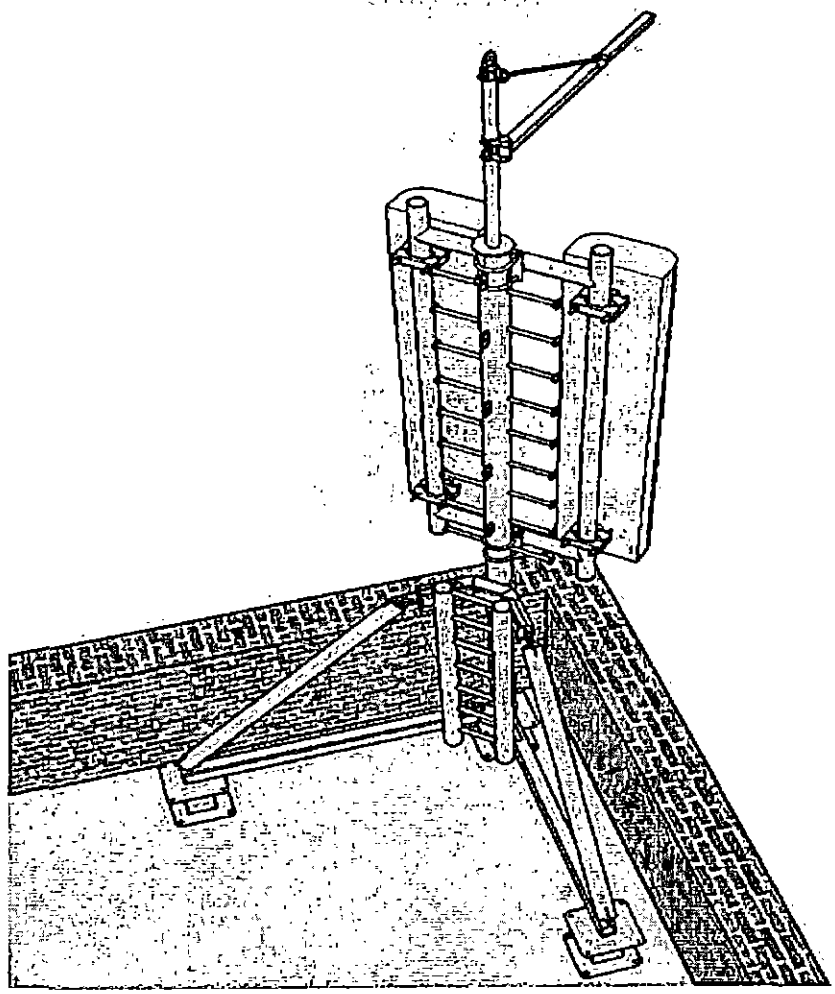
The initial rollout of equipment will be concentrated on a macro level, that being the upgrading of main hub sites but also coupled with new standalone sites. The potential for Small Cells will evolve as the technology is taken up. 5G has to be deployed smoothly and effectively and as such many existing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

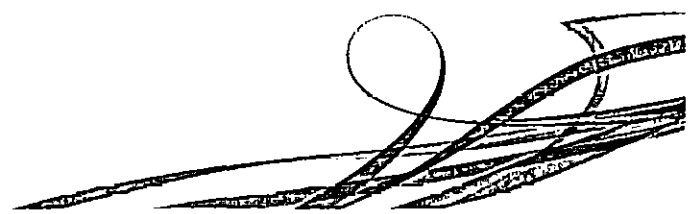


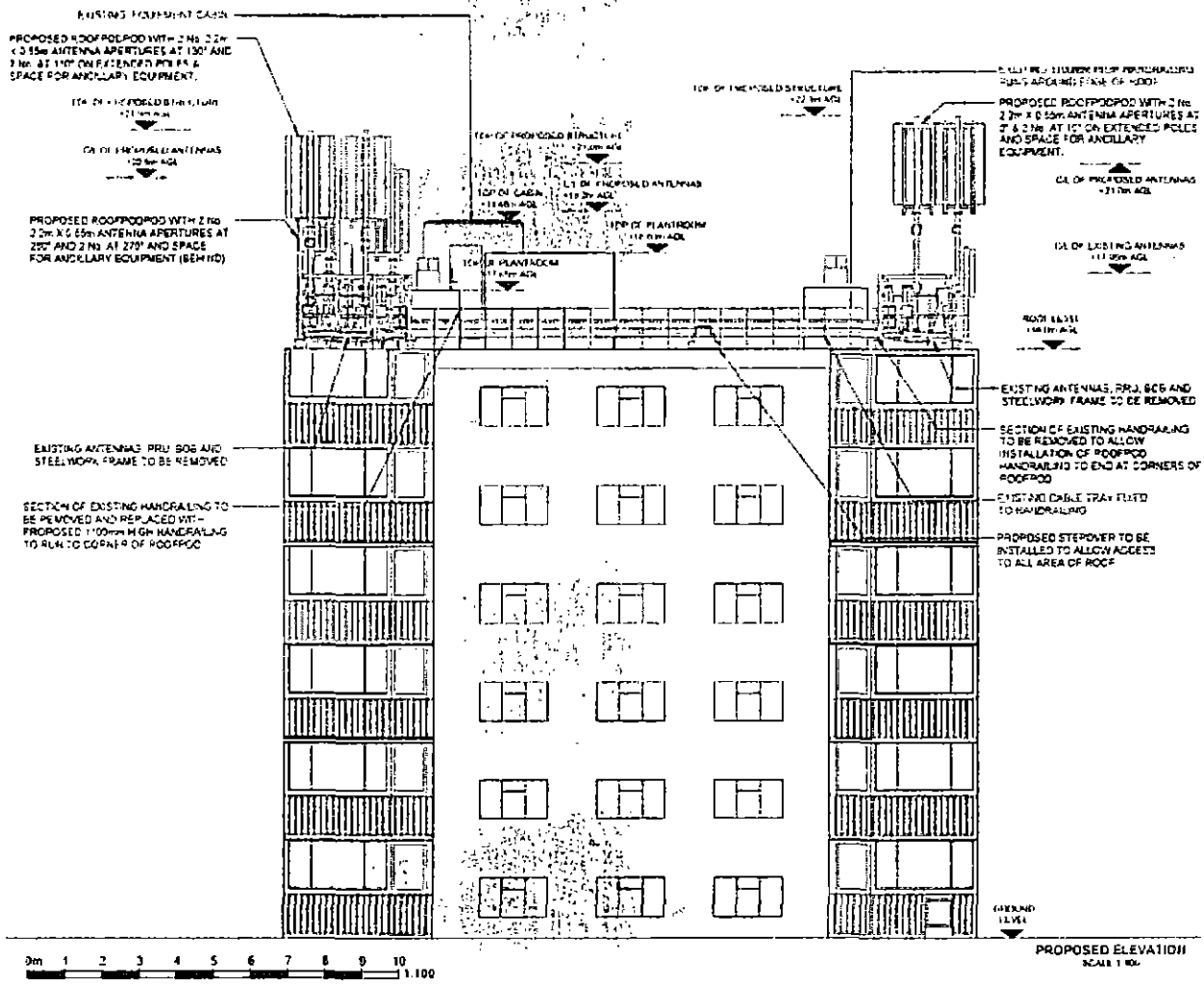
structures and ancillary equipment on existing sites will also be complemented by new sites and it is anticipated that in high demand areas such as city centres further new installations will be required.



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.



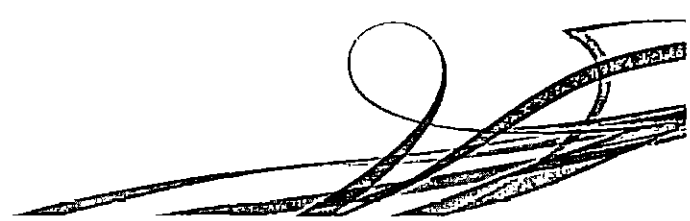


Note increased number of antennas closer to the building edge

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



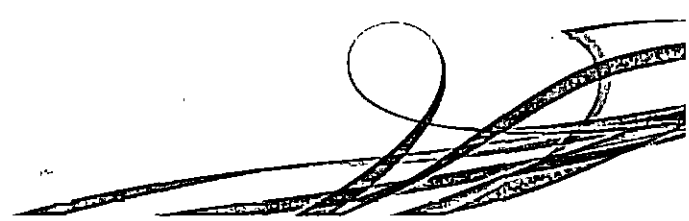
Outcomes

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.



Our Ref: 96046

8th August 2019

The Highways Department
Barnsley Metropolitan Borough Council
PO Box 601
Barnsley
S70 9FA

Dear Sir/Madam,

Proposed EE and Hutchinson 3G UK Ltd Telecommunications Installation:

At Wakefield Road DNS, Wakefield Road, Athersley, Barnsley, S71 3TY

I write to formally advise you that, on behalf of EE Ltd and Hutchinson 3G UK Ltd I am submitting a full planning application to upgrade the current equipment at the above named mentioned site.

Yours faithfully,

Damian Hosker
BA (Hons), MA, MRTPI
Planning Consultant
Email: d.hosker@whptelecoms.com

EE Limited
Trident Place, Mosquito Way,
Hatfield, Hertfordshire, AL10 9BW
Phone: +44 (0)1707 315000

Three UK Limited
Star House, 20 Grenfell Road
Maidenhead, SL6 1EH
Phone: +44 (0)1628 765000

Declaration of Conformity with ICNIRP Public Exposure Guidelines

Certifies that the proposed equipment and installation as detailed in drawing number(s) noted below within the attached planning / GPDO application at:

Cell No:	96046
Cell Name:	WAKEFIELD ROAD DNS
Address:	
	WAKEFIELD ROAD,
	ATHERSLEY,
	BARNSLEY,
	S71 3TY
Drawing Number(s):	411,412,413,451

Is in full compliance with the requirements of the radio frequency (RF) public exposure guidelines of the International Commission on Non-Ionising Radiation (ICNIRP), as expressed in EU Council recommendation of 12 July 1999 (1999/519/EDC) " â??on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz)".

*Reference:	
Date:	2019-08-01
Completed by:	Andrew Wilkinson
Position:	
Company:	WHP Telecoms

For and on behalf of EE and Three UK

SITE SPECIFIC SUPPLEMENTARY INFORMATION

1. Site Details

Site Name:	Wakefield Road DNS	Site Address:	Wakefield Road DNS Wakefield Road Athersley Barnsley S71 3TY
NGR:	E: 434556, N: 409261		
Site Ref Number:	96046	Site Type: Macro	Upgrade (Monopole Swap Out)

2. Pre Application Check List

Site Selection

Was an LPA mast register used to check for suitable sites by the operator or the LPA?		No
If no explain why: After a phone call to the LPA it was felt that the industry database was a more up to date source of information.		
Was the industry site database checked for suitable sites by the operator:	Yes	
If no explain why: N/A		

Pre-application consultation with LPA

Date of written offer of pre-application consultation:	2nd August 2019	
Was there pre-application contact:		No
Date of pre-application contact:	N/A	
Name of contact:	The Director of Planning	
Summary of outcome/Main issues raised: No comments have been received In respect to the proposal.		

Ten Commitments Consultation

Rating of Site under Traffic Light Model:	Amber		
Prior to the submission of this application the applicant initiate pre-consultation discussions with the local planning authority. This provides an opportunity for the LPA to discuss development proposals and identify site specific issues. Further consultation has also been carried out with the Ward Councillors.			

Summary of outcome/Main issues raised:
No responses had been received at the time of submission.

School/College

Location of site in relation to school/college:
There are no schools in close proximity that overlook the site.
Outline of consultation carried out with school/college:
N/A
Summary of outcome/Main issues raised:
N/A

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

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

Developer's Notice

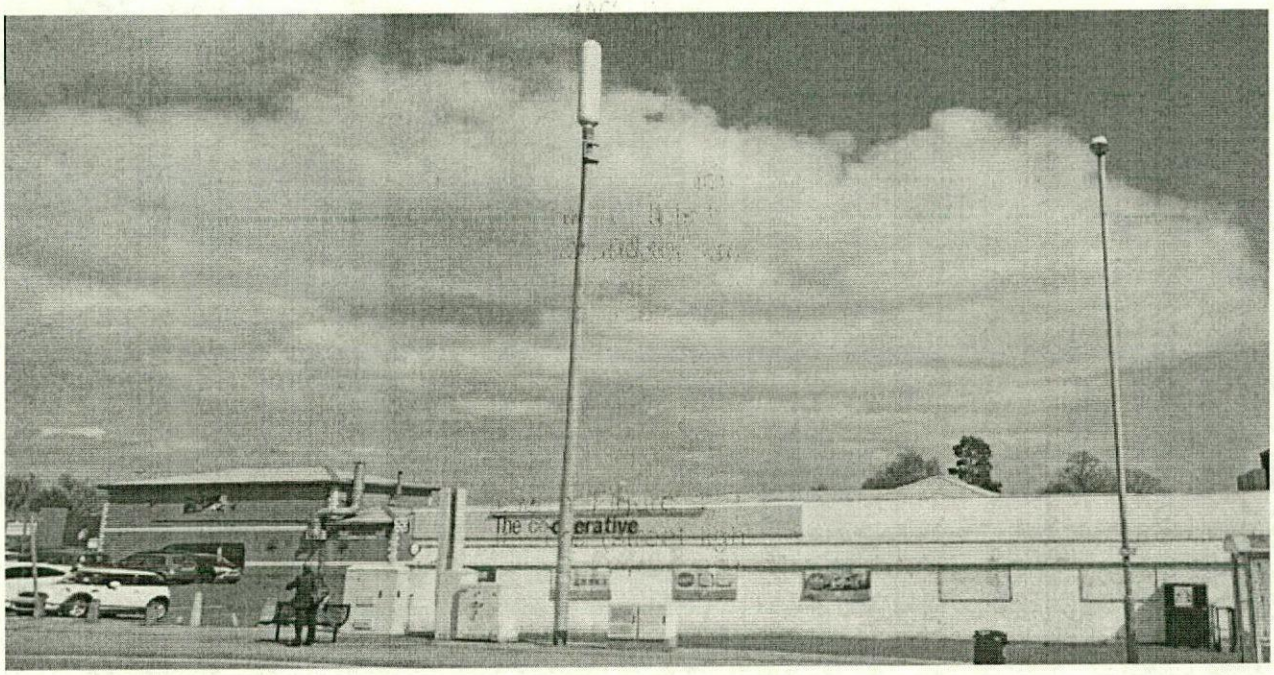
Copy of Developer's Notice enclosed?		Yes	
Date served:	8th August 2019		

3. Proposed Development

The proposed site:
The proposed site at Wakefield Road DNS, Wakefield Road, Athersley, Barnsley, S71 3TY is an established telecommunication installation. This submission is purely to upgrade this existing installation with new equipment to facilitate 5G coverage. The current monopole installation is being replaced however, only with a larger 5G monopole installation of similar monopole design to facilitate significantly improved connectivity. The sharing of base stations between multiple operators is one of the key strategic policy principles contained within the NPPF. H3G and EE have a network sharing agreement and thus these installations are fully compliant with the NPPF. It is key to consider that the ESN (Emergency Services Network) also share on EE masts and thus this installation will also be compatible for ESN.

The existing site can be seen below in Figure 1, the site is located off Wakefield Road surrounded by tall existing street furniture (street lights) with a co-op and other commercial premises the rear. The nearest residential property is located side on to the proposal and thus is not directly over looking it.

Figure 1:



There are no other viable alternative options other than to upgrade the existing installation. Discounted options were put forward and assessed at the original planning application stage and this was deemed to be the most appropriate location. Given the height that is required for this site sharing 5G upgrade there is a lack of available rooftops.

The area is residential in nature and this is the only potential location that is set away from properties in what is a constrained cell search. Long distance views will benefit from partial screening from the existing street furniture and trees. Only oblique views form residential properties will be apparent. Please note any Highways issues with the number of cabinets and maintaining visibility splays at the junction and maintaining footpath widths has been robustly assessed.

In keeping with the National Planning Framework (NPPF). guidelines of using high quality communications infrastructure the proposed design has been selected to minimise its visual impact upon the immediate and wider locale whilst being 5G ready for the Operators highlighted above.

The presence of the existing column sets a clear precedent for telecommunications development in this location and indicates that the principle of this proposal is acceptable in terms of siting. As stated above the National Planning Policy Framework advocates site sharing, and as such we believe that there are no sequentially preferable locations within the defined site search area.

Although it is accepted that the height and width will be increased, it is felt that such an increase in the overall bulk of the installation would not detract from the character of the area in which the proposal sits.

Any other proposal to satisfy the identified requirement would result in the addition of a separate ground based column elsewhere in close proximity to the existing structure. In our opinion, such a proposal would, in this instance, unnecessarily add to the clutter in this location and result in a greater visual impact.

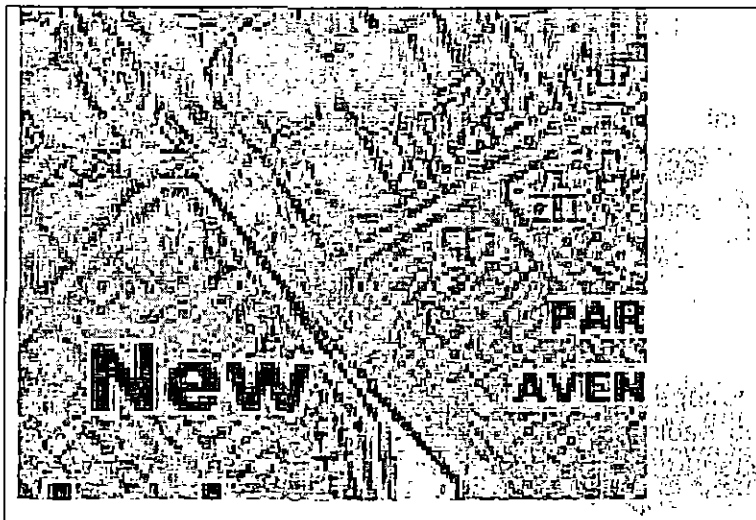
As previously stated the proposed site is an established telecommunication installation. This submission is purely to upgrade this existing telecoms installation with new equipment to facilitate 5G coverage.

Site Ref	96046	Site Address:	Wakefield Road, Athersley, Barnsley, S71 3TY

Local Planning Authority: Barnsley Metropolitan Borough Council

Development Plan: Barnsley Local Plan (2019)

Fig.1: LP Plan Extract (Reference Only):



Site and its surrounds

Policy Relevant to the Development Site:

The site is designated as being within the settlement boundary, with urban uses to the north, east, south and west. The site designation is a not material consideration. The site is an existing telecommunications site.

Barnsley Metropolitan Borough Council does not have a specific telecoms policy. Therefore the NPPF is of relevance. The National Planning Policy section of this supporting statement goes into detailed analysis of why this site is in compliance with the NPPF.

Policy Analysis:

The proposed works on this existing site would not be to the visual detriment of the surrounding area (although it would introduce a visual change), and would not result in demonstrable harm to the character of the area, but are necessary to ensure improved delivery of service, would respect and continue to maintain the appearance of the area, and would be suitably distant from potentially sensitive users so according with the principles of the Development Plan.

It fully accords with the requirements of the NPPF

Central Government attaches great importance to the design of the built environment and outlines this within Section 12 (para. 124) of the National Planning Policy Framework. It states:

"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 keeping with the National Planning Policy Framework (NPPF). guidelines of using: "high quality communications" (Section 10), the proposed design has been selected to minimise visual impact upon the street scene by integrating with the existing built environment.

The design of the proposed equipment is considered to be the least visually intrusive option available. Although it is accepted that there will be an intensification in the amount of equipment it is felt that such a minor increase would not detract from the character of the area in which the proposal sits.

Enclose map showing the cell centre and adjoining cells:
This can be emailed to the LPA on request.

Type of Structure	
Description: Description: It is imperative to consider from a planning perspective that this is purely an upgrade to existing installation – The structure already exists. Top of Tower +20.0m AGL. C/L of AAU +19.60m AGL. C/L of AAU +18.30m AGL. C/L of Apertures +16.60m AGL. C/L of Apertures +14.70m AGL. Proposed Phase 7 Monopole C/W Wraparound Cabinet at base. Proposed EE Cabinet. Proposed EE Cabinet. Proposed MK5 Link AC Cabinet. Proposed FREDO Cabinet. Proposed 3No. H3G Cabinets.	
Overall Height: +20.0m AGL	
Height of existing building	N/A
Equipment Housing:	
Length:	See drawings
Width:	See drawings
Height:	See drawings
Materials	
Tower/mast etc – type of material and external colour:	See drawings - Galvanised
Equipment housing – type of material and external colour:	See drawings - Grey Steel

Reasons for choice of design:
The sharing of base stations between multiple operators is one of the key strategic policy principles contained within the NPPF. EE Ltd is the new operating company which used to be T Mobile and Orange. In keeping with the National Planning Policy Framework (NPPF), guidelines of using "high quality communications infrastructure", the proposed design has been selected to minimise visual impact upon the street scene

4. Technical Information

ICNIRP Declaration attached ICNIRP public compliance is determined by mathematical calculation and implemented by careful location of antennas, access restrictions and/or barriers and signage as necessary. Members of the public cannot unknowingly enter areas close to the antennas where exposure may exceed the relevant guidelines. When determining compliance the emissions from all mobile phone network operators on the site are taken into account.	Yes	

5. Technical Justification

Reason(s) why site required
The National Planning Policy Framework clearly states that authorities should not question the need for the service, nor seek to prevent competition between operators. Notwithstanding this fact, the Applicant considers it to be important to explain the technical justification for the site *and how the facility fits into the overall network.* The site is required to provide enhanced coverage for EE Ltd, ESN and H3G LTE.

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

Discounted Options
In accordance with the sequential approach outlined in the National Planning Policy Framework (NPPF) following search criteria have been utilised. Firstly, consideration is always given to sharing any existing telecommunication structures in the area, secondly consideration is then given to utilising any suitable existing structures or buildings and thirdly sites for freestanding ground based installations are investigated. This sequential approach is outlined below: a) Mast and Site Sharing b) Existing Buildings Structures c) Ground Bases Installations In compliance with its licence and the sequential approach outlined in the NPPF all attempts to utilise any existing telecommunication structures where they represent the optimum environmental solution have been employed. The Ofcom Site Finder mast register is always examined prior to the submission of an application.

If no alternative site options have been investigated, please explain why:
This is an upgrade to existing sites thus no other standalone new facilities have been investigated. In line with the sequential site selection process this proposal is to upgrade an existing site and not a new additional mast. A new additional mast to facilitate the upgrade would not be in line with NPPF, as stated by upgrading the current facility the most

sequentially preferable option has been progressed.

The current siting was agreed by the LPA as the most appropriate location when the original installation was approved by the Council. Discounted options were supplied with the original planning submission and thus the principle of the siting is already established.

7. Additional Relevant Information

Background to the Proposal

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

A further limiting factor is that the position has to be one that fits in with the existing network. Sites have to form a patchwork of coverage cells with each cell overlapping to a limited degree with the surrounding base stations to provide continuous network cover as users move from one cell to the other. However, if this overlap is too great unacceptable interference is created between the two cells.

DEVELOPMENT PLAN POLICY.

Development plan considerations have a special significance in law. Section 54A of the Town and Country Planning Act 1990 (The Act), and re-iterated in Section 38 of the Planning and Compensation Act 2004, it is stated that:

"Where in making any determination under the Planning Acts regard is to be had to the Development Plan, determination shall be made in accordance with the Development Plan unless material considerations indicate otherwise."

NATIONAL PLANNING POLICY

The Government remain committed to promoting telecommunications and place emphasis on the importance of telecommunications to the wider economy. The National Planning Policy Framework (NPPF July 2018) sets out the Government's planning policies for England and how these are expected to be applied at the Local level. It provides a framework within which local people and their accountable Councils can produce their own distinctive local and neighbourhood plans, which reflect the needs and priorities of their communities.
The purpose of the planning system is to contribute to the achievement of sustainable development. There are three dimensions of sustainable development, each of which give rise to the need for the planning systems to perform a number of roles including;

- Economic Role – contributing to building strong, responsive and competitive economy;
- Social Role – Supporting strong vibrant and healthy communities; and
- Environmental Role – Contributing to protecting and enhancing our natural, built and historic environment.

The NPPF contains at its core a presumption in favour of sustainable development which runs

through both plan-making and decision-making processes. The NPPF recognises the vital importance of high quality telecommunications and dedicates a whole chapter to this. Chapter 10 of the NPPF outlines the Governments support for high quality communications. The paragraphs below clearly outline the overarching support from Central Government for telecommunications and how Local Planning Authorities should embrace this vital infrastructure:

Paragraph 112 states:

"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. Policies should set out how high quality digital infrastructure, providing access to services from a range of providers, is expected to be delivered and upgraded over time; and should prioritise full fibre connections to existing and new developments (as these connections will, in almost all cases, provide the optimum solution)."

It continues in Paragraph 113

"The number of radio and electronic communications masts, and the sites for such installations, should be kept to a minimum consistent with the needs of consumers, the efficient operation of the network and providing reasonable capacity for future expansion. Use of existing masts, buildings and other structures for new electronic communications capability (including wireless) should be encouraged. 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." Operators always follow the sequential site selection process. Where an existing site can be shared or upgraded this will always adhered to before a new proposal is put forward for consideration.

The support for telecoms and the need not to constrain Operators is laid out in Paragraph 116

"Local planning authorities must determine applications on planning grounds only. They should not seek to prevent competition between different operators, question the need for an electronic communications system, or set health safeguards different from the International Commission guidelines for public exposure."

Conclusion

We consider that the development is complaint with the council's policy and that in accordance with Section 38 (6) of the Planning and Compensation Act 2004 permission should be granted for the installation.

We consider the development complies with both central government and local planning policy guidance where the underlying aim is to provide an efficient and competitive telecommunication system for the benefit of the community while minimising visual impact.

Taking into account the factors of technical constraints, available sites and planning constraints we consider that this site and design clearly represents the optimum environmental solution.

On the basis of a recognised need to expand and promote telecommunications networks

across the region, it is considered that the proposal fully accords with the requirements of the National Planning Policy Framework and Local Plan Policies.

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Signed:		Date:	8th August 2019
Position:	Planning Manager	Company: (on behalf of above operator)	WHP