SUPPLEMENTARY INFORMATION

1. Site Details

Site Name:	Archerhill Road SW	Site Address:	Archerhill Road Knightswood Glasgow G13 3LS
National Grid Reference:	E: 253025, N: 669389		
Site Ref Number:	CTIL 302877, TEF 088801, VF N/A	Site Type:[1]	SW Monopole

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:		
Was the industry site database checked for suitable sites by the operator:	Yes	
If no explain why:		

Annual rollout consultation with LPA

Date of last annual rollout information/submission:	This information can be emailed to the LPA on request
Name of Contact:	See above
Summary of outcome/main issues raised:	Strategic level pre-rollout meetings are held with the LPA to discuss the necessities of the project, benefits and best practice going forward.

Pre-application consultation with LPA

Date of written offer of pre-application consultation:	18th March 2020	
Was there pre-application contact:	Yes	
Date of pre-application contact:	N/A	
Name of contact:	The Chief Planning Officer	

[1] Macro or Micro

Summary of outcome/main issues raised:

Prior to the submission of this application the applicant initiated pre-consultation discussions with the local planning authority. This provides an opportunity for the LPA to discuss development proposals and identify site specific issues, however, due to the minimal nature of the proposal it was not considered necessary to pay the fee requested, therefore, no comments were received in respect to the consultation submitted at the time of submission.

Strategic level pre-rollout meetings are held with the LPA to discuss the necessities of the project, benefits and best practice going forward.

S.P.P. recognises the importance of operators and their agents establishing an informed working relationship with planning authorities and encourages pre-application discussion. PAN 62 provides further information at paragraph 114 and Annex E on the Mobile Operators Association (formerly FEI) Ten Commitments to Best Siting Practice. Commitments 1 and 2 relate to pre-application consultation with the community and the planning authority. Such consultation is undertaken in accordance with M.O.A's Traffic Light Rating & Site Selection & Planning Model.

The operators fully comply with the Guidance on pre application consultation with schools and colleges. They provide evidence to the local planning authority that they have consulted the relevant body of the school or college. A recent report stated there is no scientific basis for siting base stations away from schools (NRPB report, January 2005).

Ten Commitments Consultation

Rating of Site under Traffic Light Model:		Amber	

Outline of consultation carried out:

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 with the local Ward Councillors for Garscadden/Scotstounhill (Councillors Michael Cullen, Bill Butler, Chris Cunningham and Eva Murray), Drumchapel Community Council and MP Carol Monaghan.

Summary of outcome/main issues raised:

No comments were received in respect to the consultation submitted at the time of submission.

School/College

Location of site in relation to school/college: There are no schools in close proximity as defined by the search criteria within the CoBP.
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:	30th March 2021	

3. Proposed Development

The proposed site: There is an existing Streetworks telecommunications installation, providing vital local coverage and capacity in this busy part of Glasgow. The address of the newly proposed site is Archerhill Road, Knightswood, Glasgow, G13 3LS. There is now a requirement to upgrade this cell, to provide improved coverage and capacity, most notably in relation to 5G services. However, the nature of 5G and the network services it provides, means the equipment and antennas it uses are quite different to previous, and existing, service requirements. In particular, the nature of the antennas, and the separation required from other items of associated equipment, is such that it cannot utilise some existing structures that provide an installation for another operator, most notably in a streetworks or highways environment. In essence, in order to provide for 5G services in these situations, 02 must remove themselves from the existing streetworks installation, and provide for their own, separate, installation (further information is provided in the additional information sheet, 'Cornerstone Community Information').

"Whilst it is the case that Cornerstone remains a jointly owned company, established by the two mobile network operators, Vodafone Limited and Telefonica (UK) Limited (O2), to establish and operate a shared single grid network to provide 2G 3G and 4G coverage, this can no longer be the case with all sites for the provision of 5G service.

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

In those instances where greenfield structures and rooftop installations are currently in place, in the vast majority of cases, these will remain shared base stations. These shared base stations allow for separate antennas on supporting structures that are capable of accommodating the weight, wind loading and technological requirements associated with providing four technologies (2G, 3G, 4G and 5G) for two separate operators from a single shared location, albeit sometimes via redevelopment of the existing base station.

However, to address some site specific coverage and data capacity demand, the 5G equipment upon many street furniture base station structures cannot be shared by both operators. This is due to variations in the make-up of the independent Vodafone and Telefonica (O2) networks.

It is critical to understand that the UK's four Mobile Network Operators (MNOs), including Vodafone and Telefonica (O2), all utilise different technology spectrums to provide their mobile service. The spectrums the Operators utilise are allocated by Ofcom, as industry regulators on behalf of UK Government, through licence agreements with each of the individual MNOs. As such, each MNO must utilise the spectrum licenced to them. Each part of the RF spectrum has variations in terms of RF propagation. Therefore, the four individual MNO networks, and their sharing arrangements, cannot be compared directly and there will be variations in how all four networks are deployed and developed. For this reason, all MNOs, including Vodafone and Telefonica (O2), whom continue to be competitors but share base stations where possible, have a completely different network configuration they need to fit within and build 5G service around. Therefore, the network has to be built differently, with different antennas and equipment, to take account of those spectrum and licence variations and this will to lead to necessary infrastructure variations cell to cell, depending on site specific demand, local constraints and requirement. As such, the various networks will have variations in how their infrastructure is deployed and developed.

As noted, most infrastructure should be capable of sharing, however, the slim line street furniture base stations that have been inserted into the local street scene are not capable of accommodating all of the differing equipment that is required to meet the site specific demand of both operators and customers for this area from a single street furniture pole, being mindful of the spectrum variations. To this end, many existing shared street-work installations are being removed from the 'single grid', meaning the existing pole will become operator unilateral for 5G provision. This

creates the necessity for an additional new street furniture base station in the cell to accommodate the technological requirements of the other unilateral operator – either Vodafone or Telefonica (O2).

Given the maturity of the two independent networks, and the single grid consolidation over the last few years, any new street furniture base station needs to be located in close proximity to the existing site – thereby retaining customer coverage and experience within a previously shared 'cell'. The new pole will accommodate all the technologies for the single operator and the 'cell' will benefit from improved service provision from both operators, including the introduction of 5G service to the area. To continue to share an existing structure at this location would require significant redevelopment of the existing structure to a much more structurally robust mast capable of hosting all the differing antennas and equipment from both operators to address their spectrum variations. This would move away from the relatively uniform and slimline street furniture poles proposed and therefore it is felt that a secondary, more slimline, street-pole is a more appropriate and sensitive solution to 5G service provision whilst minimising impact for a street furniture setting."

The cell search area is illustrated in Figure 1 below with the discounted options and the other potential sites that were investigated. Prior to the submission of this GPDO application all viable options were investigated and the the optimum solution from a planning and technical perspective has been proposed. The other potential sites have been discounted and as stated above the optimum solution progressed.

Figure 1:

The area is residential in nature however the proposal has been placed a great distance away from residential properties. The proposed site is located off Archerhill Road surrounded by existing street furniture (Streetligths) and opposite the proposal is Glasgow BMX centre with a mature tree line, which will provide partial screening.

There is an existing streetworks monopole already situated along Archershill Road approximately 60m west, thus meaning the LPA have already deemed this an acceptable area to house a streetworks monopole and associated equipment. The proposed site and surrounding area can be seen below in Figure 2-4.

Figure 2:

It has not been possible to site the installation immediately adjacent to the existing structure due to technical separation requirements and the site is position far enough away to remove this issue. The site has been carefully selected in a position capable of providing the required essential coverage whilst minimising visual intrusion for local and residential receptors.

Figure 3:

Figure 4:

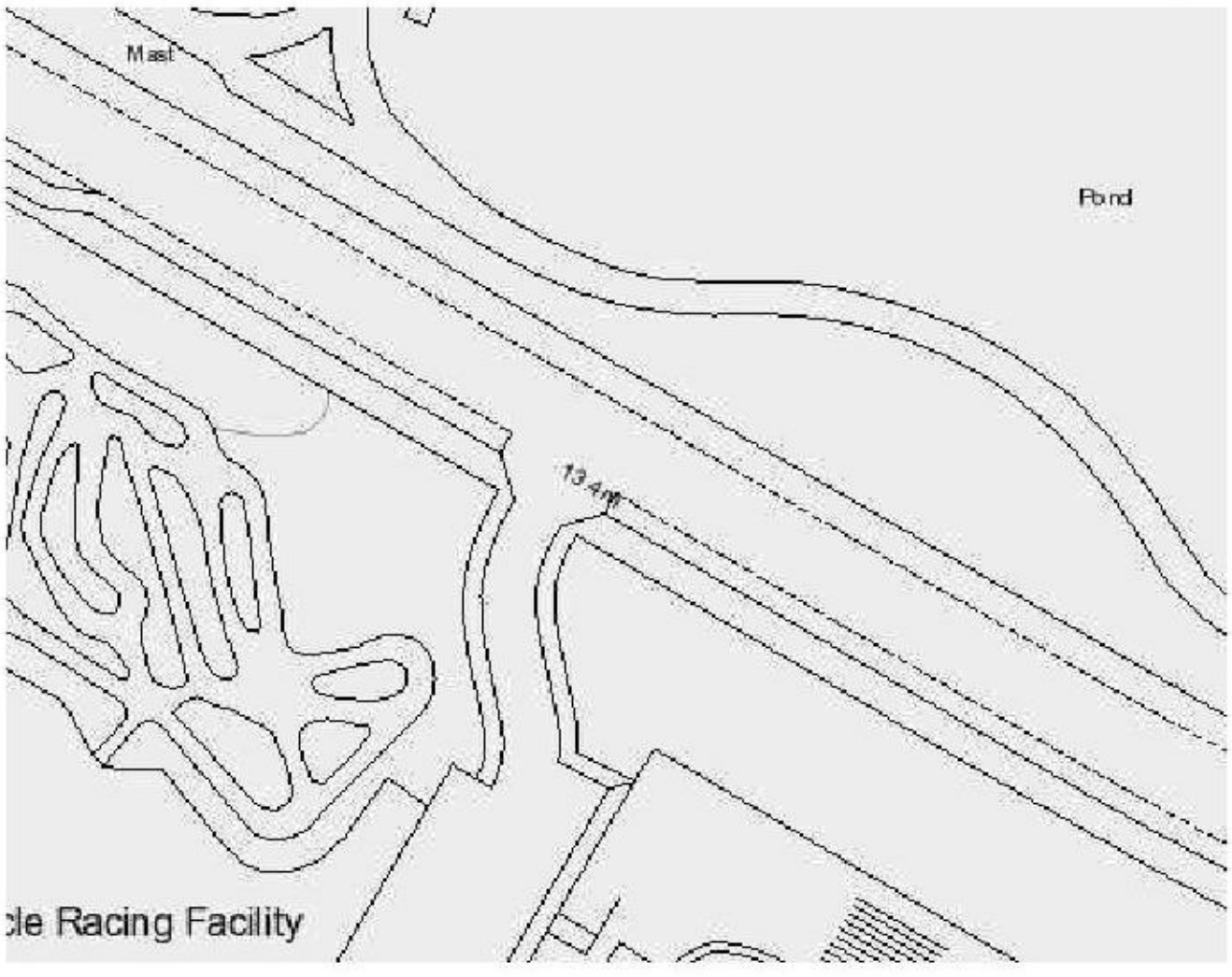
The site selection process has also been influenced by the numerous vertical elements of street furniture distributed around the vicinity of the site including street lighting columns, road signage and the existing telecommunications monopole. The proposed new installation will therefore not appear as an incongruous feature when viewed in the context of the existing vertical structures.

Site Ref	302877	Site Address:	Archerhill Road, Knightswood, Glasgow, G13 3LS

Local Planning Authority:Glasgow City Council

Development Plan: Glasgow City Development Plan (2017)

Site and its surrounds (LP Map Extract – reference only)



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

Glasgow City Council does not have a specific telecoms policy. Therefore PAN62 is of relevance. The National Planning Policy section of this supporting statement goes into detailed analysis of why this site is in compliance with PAN62.

Policy Analysis:

This proposed development at the site seeks to consolidate all requisite elements (for site sharing) into one location, minimised to ensure the scale and mass of the design is sympathetic to its surrounds, thus limiting visual impact on the wider character of the area and being suitably distant from sensitive receptors (the selection site has been deliberate in that the provision of digital coverage as required can be provided, with the least impact on residences (which are a distance to the east and west)), yet providing capacity to ensure that it would deliver the level of service needed in this location. In this regard the proposal would accord with the Development Plan.

It is accepted the scheme would qualify as a visual change but any perceived harm would be materially outweighed by the tangible benefits the development would bring in terms of enhanced digital services to residents, businesses and visitors alike. It fully accords with the requirements of PAN62.

The visual effects have been further reduced by keeping the height of the pole down to the absolute minimum capable of achieving the required line of sight over the target area. The new pole has been sited nearby to the existing streetworks structure, and thus the visual and environmental issues are unchanged. The cabinets are located at the base of the new pole. This is all considered unlikely to have any material impact on the local area.

The Scottish Government outlined their vision for improving mobile connectivity in 'Realising Scotland's full potential in a digital world: A Digital Strategy for Scotland (2017)'. The document sets out the Government's plans 'for ensuring that we put digital at the heart of everything we do - in the way in which we deliver inclusive economic growth, reform our public services and prepare our children for the workplace of the future. It's a strategy for Scotland, not just the Scottish Government. It recognises the profound challenges that digital poses for the nature of work, for society and for both the world and domestic economies. It also accepts that no single organisation can hope to have the answers to these questions and therefore looks to create a culture and environment of partnership in which we take collective action to ensure that nobody is left behind and we all remain safe, secure and confident about the future'.

The strategy document lists a wide range of actions associated with achieving this vision including:

- Actions to deliver high quality connectivity across all areas of Scotland
- Actions to support people and communities
- Actions to promote digital inclusion and participation
- Actions to ensure that all premises in Scotland will be able to access broadband speeds of at least 30 Megabits per second by 2021

The policy document urged UK Government and Ofcom to apply the 'outside in' principle when auctioning the spectrum of 5G frequency bands by placing obligations on operators to deliver coverage to the most rural areas before focusing on high-population density areas.

In 2019 Digital Scotland published 'Forging our Digital Future with 5G: A Strategy for Scotland' placing emphasis on the Scottish Government's obligations to ensure that all of Scotland (including rural areas) benefits from the deployment of 5G network infrastructure. The strategy document acknowledges the Scottish Government's aspiration to be at the forefront of the digital revolution thereby establishing the whole country as a leading 5G digital nation. The document identifies key 5G connectivity and coverage delivery objectives along with a wide range of associated benefits including:

- The role enhanced connectivity can play in making Scotland more productive and efficient as a country and the contribution 5G can make in transitioning towards a zero-carbon economy
- Acknowledges that 5G will be transformational for businesses, public services and for individual citizens
- Recognises the role that 5G could play in helping to sustain remote and rural areas
- The technical capability of 5G to satisfy the needs of a wide range of innovative 'use cases' by delivering extended bandwidth, reliable ultra-low latency, and/or a high density of connected devices
- Facilitating 5G connectivity by preparing local authorities to support 5G deployment in terms of asset management and planning regulations
- Emphasises the importance of continuing to support the 5G Rural First initiative
- Ensures the Scottish policy framework supports the 5G infrastructure rollout
- Identifies the need for a review of permitted development rights for electronic communications
- Publish revised guidance replacing the existing Planning Advice Note 62: Radio Telecommunications.

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

Type of Structure:	
Description: Proposed GPS Module mounted to top of pole. Proposed 3No. Antennas mounted upper and 3No. Antennas mounted t lower spinf of SW pole Top of proposed Antennas +17.33m AGL U/S of proposed Antennas +16.51m AGL Proposed 3No RRU's mounted to SW pole spine Propsoed 2No. 300ø Dishes Top of proposed pole +20.00m AGL Top of proposed Antennas +19.73m AGL U/S of proposed Antennas +17.53m AGL C/L of proposed Dishes +15.00m AGL Proposed 20.0m High Hutchinson Engineering Orion SW Pole on new D9 Root Foundation Propsoed Yorkshire equipment cabinets to be installed on new root foundation.	
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:	RAL7035 – Grey
Equipment housing – type of material and external colour:	RAL7035/ RAL6008 – Grey

Reasons for choice of design:
The scheme essentially represents an upgrade of an existing cell, but given the characteristics of 5G, it is not possible to alter the current pole. The nature of 5G and the network services it provides, means the equipment and antennas it uses are quite different to previous, and existing, service requirements. In particular, the nature of the antennas, the amount of equipment and the separation required from other items of associated equipment, is such that it cannot utilise some existing structures that provide an installation for another operator, most notably (for TEF) in a streetworks or highways environment. In essence, in order to provide for 5G services in these situations, TEF must remove themselves from the existing streetworks installation, and provide for their own, separate, installation. The 5G antennas are some 3 times as heavy as previous antennas, while the associated Remote Radio Units also now need to be placed at the top of the pole, thus many streetworks designs are no longer structurally capable of hosting all the equipment of 2 operators. It should be noted that the alternative option that could accommodate both operators would be a more traditional 'greenfield' mast, with

an open headframe and more bulky design, which would be inappropriate in a streetscene location. In this context, two slimmer, more uniform, poles are a better solution in terms of visual impact and local amenity.

In simple terms, the 5G TEF antennas, and associated equipment to be utilised, cannot be accommodated on a traditional shared Streetworks pole design and so separate poles must be provided. As well as enabling the delivery of 5G, it will also increase the capacity of the 2G/3G/4G network which is incredibly stretched in these urban areas due to local demand on the service.

To provide the required 5G services, it is necessary to deploy a new streetworks pole and a new external small cabinet. However, this will be placed within the same context as the existing installation.

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	

Frequency:	This can be emailed to the LPA on request
Modulation characteristics[2]	This can be emailed to the LPA on request
Power output (expressed in EIRP in dBW per carrier)	This can be emailed to the LPA on request
In order to minimise interference within its own network and with other radio networks, Telefónica UK Limited operates its network in such a way the radio frequency power outputs are kept to the lowest levels commensurate with effective service provision	

[2] The modulation method employed in 2G (GSM) is GMSK (Gaussian Minimum Shift Keying) which is a form of Phase modulation
The modulation method employed in 3G (UMTS) is QPSK (Quad Phase Shift Keying) which is another form of Phase Modulation
The modulation method employed in 4G (LTE) is 64 QAM (Quadrature Amplitude Modulation) which is another form of Phase Modulation
The modulation method employed in 5G is 256 QAM (Quadrature Amplitude Modulation) which is another form of Phase Modulation

As part of Telefónica UK Limited network, the radio base station that is the subject of this application will be configured to operate in this way. All operators of radio transmitters are under a legal obligation to operate those transmitters in accordance with the conditions of their licence. Operation of the transmitter in accordance with the conditions of the licence fulfils the legal obligations in respect of interference to other radio systems, other electrical equipment, instrumentation or air traffic systems. The conditions of the licence are mandated by Ofcom, an agency of national government, who are responsible for the regulation of the civilian radio spectrum. The remit of Ofcom also includes investigation and remedy of any reported significant interference. The telecommunications infrastructure the subject of this application accords with all relevant legislation and as such will not cause significant and irremediable interference with other electrical equipment, air traffic services or instrumentation operated in the national interest.	
Height of antenna (m above ground level)	20.0m AGL

5. Technical Justification

Reason(s) why site required e.g. coverage, upgrade, capacity (map attached if required):
Whilst it is the case that Cornerstone remains a jointly owned company, established by the two mobile network operators, Vodafone Limited and Telefonica (UK) Limited, to establish and operate a shared single grid network to provide 2G 3G and 4G coverage, this can no longer be the case with all sites for the provision of 5G service. Mobile connectivity and service is required where customers live, work and play. 5G coverage and superfast mobile broadband data capacity demand will continue to increase exponentially with the introduction of IoT (Internet of Things), machine to machine connectivity, automated transport/industry and other 'smart' applications . To this end the existing shared infrastructure within the built environment has had to be reviewed and adapted as appropriate. In those instances where greenfield structures and rooftop installations are currently in place, in the vast majority of cases, these will remain shared base stations. These shared base stations allow for separate antennas on supporting structures that are capable of accommodating the weight, wind loading and technological requirements associated with providing four technologies (2G, 3G, 4G and 5G) for two separate operators from a single shared location, albeit sometimes via redevelopment of the existing base station.

However, to address some site specific coverage and data capacity demand, the 5G equipment upon many street furniture base station structures cannot be shared by both operators. This is due to variations in the make-up of the independent Vodafone and Telefonica networks. As noted, most infrastructure should be capable of sharing, however, the slim line street furniture base stations that have been inserted into the local street scene are not capable of accommodating all of the equipment that is required to meet the site specific demand of both operators and customers for this area from a single street furniture pole. To this end, many existing shared street-work installations are being removed from the 'single grid' with the necessity for additional new street furniture base stations accommodating the technological requirements of a single operator – either Vodafone or Telefonica (O2).

Given the maturity of the two independent networks, and the single grid consolidation over the last few years, any new street furniture base station needs to be located in close proximity to the existing site – thereby retaining customer coverage and experience within a previously shared 'cell'. The new pole will accommodate all the technologies for the single operator and the 'cell' will benefit from improved service provision from both operators, including the introduction of 5G service to the area. To continue to share an existing structure at this location would require significant redevelopment of the existing structure to a much more structurally robust mast capable of hosting all the equipment from both operators. This would move away from the relatively uniform and slimline street furniture poles proposed and therefore it is felt that a secondary, more slimline, street-pole is a more appropriate and sensitive solution to 5G service provision whilst minimising impact for a street furniture setting.

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

Site Type	Site name and address	NGR	Reason for not choosing site
	Possible Sreeetworks on Kilcloy Avenue Road, near to the junction with Sibton Close Truce road Knightswood Glasgow	Eastings 435973 Northings 281999	Possible Streetworks option on Truce road, just further west from the existing Vofaphone installation this has been discounted due to the proximity of residential .
	Possible Sreetwork's Riley Street Clarion road Knightswood Glasgow	Eastings 435878 Northings 282164	Possible Streetworks option on Clarion, just further south west from the existing Vofaphone installation, this has been discounted due to the proximity to residential.

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

Environmental information (refer to Section 2 of Site Finder Report): See above (Section 3 Proposed Develoment box)
Land use planning designations: The sites designation is not a material consideration.
Additional relevant information (include planning policy and material considerations): Practical Applications of 5G Connectivity as Example of Material Soci-Economic Benefit:- Education: The relationship between 5G and education is evolving at a massive rate with educators exploring the relevance of Virtual Reality (VR) technologies for education and training. Crucially, VR can support remote learning, allowing students a presence in the classroom even when working elsewhere. 5G's ability to deliver real-time information (low latency), ultra-fast speeds (critical for high definition images and video), increased capacity and heightened security will also allow learning on the job, thanks to technologies such as Augmented Reality (AR) goggles, which can give engineers real-time instructions on how to fix a machine on a production line, for example. Health: Patients across the country are now becoming accustomed to relying on remote healthcare services such as NHS 111, virtual GP appointments, and ordering online deliveries of essential medical supplies. 5G will prove critical in providing the infrastructure required to deliver remote health services over the next decade. By design, 5G's ability to deliver real-time information (low latency), ultra-fast speeds (critical for high definition images and video), increased capacity and heightened security are going to be fundamental in scaling the patient benefits of remote healthcare and keeping medical records secure and private. For instance, trials have shown that connecting ambulance crews to expert resources using 5G allows paramedics to work with doctors and conduct specialist procedures in real time whilst on the road.

Confirmation that submitted drawings have been checked for accuracy

Contact Details

Name: (Agent)	Principal Planner Damian Hosker BA(Hons) MA MRTPI	Telephone:	[redacted]
Operator:	CTIL – 02	Fax no:	N/A
Address:	WHP Helena House Troy Mills Troy Road Leeds LS18 5GN	Email Address:	d.hosker@whptelecoms.com
Signed:		Date:	31st March 2021
Position:	Principal Planner (on behalf of Cornerstone and above operator)	Company:	WHP Telecoms Ltd