

Committee	Dated:
Streets and Walkways Sub Committee	Delegated
Subject: Wireless Concession	Public
Which outcomes in the City Corporation's Corporate Plan does this proposal aim to impact directly?	9a, 9d
Does this proposal require extra revenue and/or capital spending?	No
Report of: City Surveyor, Director of Built Environment	For Decision
Report author: Simon McGinn, CPAT Manager	

Summary

In 2017 the City Corporation entered into a wireless concession with Cornerstone to deliver the deployment of a free Citywide WiFi network. As part of the agreement the concession partner was also required to deliver shared infrastructure on our highway assets for use by the mobile network operators (MNO's) in relation to providing small cell capacity for their 4G and 5G networks. In October 2019 the Streets and Walkways Sub Committee agreed to allow replacement of ten 3 metre columns with 8 metre columns for deployment of wireless infrastructure and granted delegated authority to the Town Clerk and Chairman and Deputy Chairman to approve further replacement columns in 150 locations to improve mobile coverage. The further 150 locations were considered necessary to support the future deployment of 4G and 5G networks in 2021.

The MNO's are now at a point where they need additional capacity in their network to support 4G/5G usage. The concession partner has been in dialogue with the four licensed MNO's about their technical and capacity requirements and each has agreed to participate in the trial of shared infrastructure. Subject to their being a satisfactory outcome of the trial all MNO's have expressed an interest in utilising a wider City network.

The proposal seeks to undertake a trial of the shared telecommunications infrastructure along Queen Victoria Street in ten locations and if this satisfies the requirements of the MNO's, to progress to the full City roll-out. This report provides an update on the proposals to deliver a Citywide 4G and 5G shared infrastructure network and seeks your agreement to install eight 8 metre columns to support the proposed trial. Following a successful trial, it is proposed to deploy the infrastructure across the whole of the City in four phases for completion by Q4 2022. Further reports seeking agreement to the locations of new eight metre columns will be provided in respect of these phases, following extensive discussions and agreement from technical officers in accordance with the process chart attached in Appendix 1. Wider deployment will only follow the concession partner obtaining contractual commitment from at least two MNO's to utilise the network infrastructure.

Without the deployment of the shared infrastructure the individual MNO's will seek to deploy their own cabinets and columns, each with their own fibre connections. In combination this could result in up to four times the number of assets in the highway to satisfy their customer demands. The proposed Citywide solution would see the deployment of circa 220 eight metre columns, to replace existing columns, which would have a much lesser impact than if the MNO's seek to deploy their own infrastructure.

The delivery of digital infrastructure is in line with outcomes 9a) and 9(d) of the Corporate Plan which seeks to champion and facilitate a world leading digital experience and the themes contained in the interim report of the Recovery Task Force considered at your January meeting which seeks to promote the delivery of outstanding environments.

This deployment would also provide infrastructure that the City Corporation could utilise to support development of smart city applications through deployment of IoT sensors. The concession partner has agreed that the City could utilise the fibre and power free of charge for any citywide roll out of IoT technology, reducing significantly costs associated to any deployment. Together the proposal accords with the requirement of the wireless concession agreement and through delivering world leading infrastructure that would enhance the City's reputation as a global financial and business services centre and would enrich the experience of workers, visitor and residents.

Recommendation(s)

- I. To note the update on the deployment of a citywide 4G and 5G network; and
- II. To agree the use of eight 8 metre columns along Queen Victoria Street to facilitate the trial of shared mobile infrastructure for 4G and 5G networks

Main Report

Background

1. In September 2016 the Planning and Transportation Committee resolved to approve the inclusion of street furniture assets as part of a Wireless Concession to deliver mobile internet connectivity through a WiFi, 4G and 5G network deployment. Cornerstone were awarded the Wireless Concession in March 2017 for a period of 15 years. At the time you were advised that the Concession would encourage greater investment from mobile operators to enable more comprehensive deployment of current networks (3g, 4g and WiFi) and new emerging technologies such as 5G, which will support agile working and future Smart Cities applications.
2. In October 2019 the Streets and Walkways Sub Committee agreed to allow replacement of ten 3 metre columns with 8 metre columns for deployment of wireless infrastructure and granted delegated authority to the Town Clerk in consultation with the Chairman and Deputy Chairman to approve further replacement columns in up to 150 locations to improve mobile coverage. The

further 150 locations were considered necessary to support the future deployment of 4G and 5G networks in 2021.

Current Position

3. Cornerstone completed the roll out of the WiFi network in September 2017. To date, the City of London Wireless Concession has been successful in delivering a world leading, free to use, public gigabit WiFi network and establishing the City of London as the first UK city to be provided with a pervasive 4G Small Cell network. In total the current network consists of 146 WiFi Access Points and 202 Small Cells positioned on 227 street columns across the Square Mile.
4. At the time of deploying the 4G small cell network, only one MNO was actively deploying small cells in the UK. The three remaining MNO's were either not active in the small cell arena, or only running small scale trials and lab testing small cell equipment. In response, the initial small cell network was designed and deployed to specifically fit around the technical and budget requirements of a single MNO. The initial network was also not intended to serve 5G as the standards had not been fully developed at the time.
5. The most critical mobile data demand locations are city centres, and the City of London is the most demanding and concentrated location in the UK for mobile data connectivity. The four licensed MNO's all require significant additional capacity in the City for both their 4G networks and the roll out of 5G networks during 2021/2022. Cornerstone has been working with their infrastructure provider, Freshwave, and the MNO's to develop a world class wireless solution which will enable superfast, feature-rich connectivity for everyone in the City of London.
6. The Government is committed to supporting the deployment of gigabit broadband across the country, ensuring that every home and business in the UK can access gigabit broadband services as soon as possible. Next-generation fixed-line and mobile infrastructure brings fast and reliable connectivity and will drive faster local economic growth and greater social inclusion. In addition to financial investment, the Government is working to remove the barriers that slow down or prevent deployment of infrastructure, through a range of measures including legislative reform and regulatory reform and the provision of new digital services, such as the Barrier Busting Task force.

Proposals

7. Cornerstone and their technology infrastructure provider, Freshwave, are seeking agreement to undertake the roll out of new shared infrastructure to provide for the need of the licensed MNO's to deliver the necessary capacity and resilience in their 4G and 5G networks to support the needs of workers, visitors and residents. This will take the form of an initial pilot along Queen Victoria Street which will demonstrate the technical solution works for licensed MNO's. Following agreement of the MNO's to the technical solution, it is then proposed to undertake a citywide roll-out of a further 200 installations to provide Citywide coverage. The proposed deployment would ensure the City has world leading

small cell infrastructure to provide for the City's needs, both now and in the future. Unique to the solution will be the provision of fibre to each of the cabinets which will deliver 40 times the current capacity and will allow each of the operator's sufficient bandwidth to support upgrades to their networks in line with projected demand.

8. The pilot seeks to deploy equipment on and adjacent to ten columns along Queen Victoria Street, that will allow them to trial the deployment of the infrastructure with all four of the MNO's. The MNO's have written to Cornerstone confirming their willingness to undertake the trial and have agreed commercial terms for the use of the pilot sites. There has been extensive technical discussion with the MNO's regarding their requirements and all are keen to progress at pace, as an acceptable shared solution would negate the need for them to undertake their own detailed planning to deploy additional capacity for their networks, saving considerable time and money.
9. The technical solution provides siting the equipment cabinets within six metres of a column. The cabinets will each have their own fibre connection and will house the 4G and 5G cells. The fibre will be linked to the columns below ground through coaxial cables. As a general principal, wherever possible the columns will replace existing columns to minimise clutter and the impact on the highway usage. Where existing columns are utilised, it will be necessary to add a small feeder box to the base of the column due to existing cable congestion in the columns. There will be no need for the feeder box where new columns are proposed. Two antennae will be installed on the main column in addition to potentially 5G cells where required by MNO's. The precise need for additional 5G cells will be determined during the trial. The dimensions of the equipment are as follows:
 - Equipment cabinet 1467mm x 1250mm x 230mm
 - Feeder box 600mm x 200mm x 120mm
 - Antennas 400mm x 200mm
 - 5g small cell 200mm x 213mm x 125mm

Both the cabinets and small cell infrastructure benefits from permitted development rights under the General Permitted Development Order and do not require planning permission or prior approval.

10. As part of the pilot your agreement is being sought for the following:

- to replace seven existing columns with 8 metre columns,
- install a new 8 metre column on Poultry adjacent to Bank junction.
- Re-use two existing columns. One of the existing columns is a 10 metre column at the junction of Queen Victoria Street with White Lion Hill. The other column to be reused is an existing street light column opposite St Nicholas Cole Abbey which is to be relocated away from the church to the east.

Details of all the proposed locations together with photomontages to demonstrate before and after appearances have been provided and will be made available for your review.

11. The pilot locations have been reviewed with the relevant technical officers and locations have been determined to have minimal impact in terms of use of the highway. An equalities impact assessment has been undertaken and all locations will have at least a 2m clearance to allow safe movement.
12. Following the completion of the pilot a process flow chart (Appendix 1) has been drafted that sets out the stages of consultation in respect of agreeing future locations for the wider City roll out. If agreed the wider rollout would be delivered in four phases with completion programmed Q4 2022. Each subsequent phase will be subject to technical officer approval to agree locations for the equipment in advance of seeking your agreement for deploying new 8 metre columns. The success of the trial, and agreement to progress the wider roll-out will be measured by the MNO's agreeing to utilise the network, as the solution is bespoke for their specific use and will require significant capital investment by the wireless concession partner. Without the shared infrastructure solution each of the individual MNO's will deploy their own infrastructure resulting in the possibility of there being up to four times the number of poles and cabinets in the highway to support the future needs of the four MNO's.
13. The Government has made it clear that local authorities should do all they can to offer their assets to MNO's and are in the process of consulting on a revision to the Electronic Communication Code to ease landlord blockages to roll-out of broadband infrastructure and are finalising amendments to the General Permitted Development Order to support rollout of 5G networks.
14. The existing wireless concession relates to the use of assets across the whole of the City's estate located in the Square Mile and is based on open access to all MNO's. The investment in upgrading the infrastructure to support the 4G/5G requirement of operators would only be financially viable as a model on the basis that the MNO's agree to utilise the infrastructure. The MNO's have all confirmed their interest in participating in the Pilot. As part of the trial the MNO's will be seeking assurance that the project meets key success criteria covering the design, ease of deployment, security, quality of service and that the technology is bringing overall coverage and capacity benefits to the network (and importantly the end customer) Cornerstone has confirmed that following a successful trial outcome the wider City rollout will not commence until at least two of the four MNO's have contractually committed to utilise the infrastructure across the Square Mile. This will demonstrate the acceptability of proposal both in relation to technical requirements and in commercial terms.
15. The concession partner will be responsible for the cost of installing new columns and deployment together with repairs and maintenance of the infrastructure and has identified service level agreements with the MNO's. Once deployed and it becomes necessary to redeploy infrastructure because of proposals to redevelop a property, the owner of the site will be expected to pay for the cost of relocation. Where in the future the City Corporation seeks to redesign highways for highway management / public realm purposes the concession partner has agreed to pay for

the costs of up to five relocations per year. This exceeds request to relocate furniture to date and is considered sufficient.

16. The roll out of the network will provide the necessary infrastructure to support future deployment of IoT sensors which would in turn provide a platform for the City to develop smart City capabilities. The concession partner has confirmed that they will provide access to the dark fibre and power for each of the assets at no cost to the City Corporation. Access to fibre and power are normally the most expensive elements of any managed smart service and the free provision of this will be of benefit to the City Corporation in terms of supporting the future smart city agenda.

Options

17. The terms of the wireless concession obligated the concession partner to deploy shared infrastructure to support the future deployment of 4G and 5G networks. The Streets and Walkways Committee previously agreed that up to 150 new 8 metre columns could be deployed to support future roll-out of 4G and 5G networks subject to the agreement of the Chairman and Deputy Chairman. The precise location of the new 8 metre columns can be reviewed as part of the process. Failure to allow the columns to be sited would mean that the concession partner would not be able to deliver the shared infrastructure required as part of the concession agreement. The Concession Partner could choose to terminate the agreement which would mean the free public WiFi network that has currently been provided would no longer remain. Such a scenario would mean the reputation of the City as a place to do business would be adversely impacted and that key outcomes of the Corporate Plan could not be delivered.

Corporate & Strategic Implications

18. The deployment of world leading shared mobile 4G and 5G infrastructure would accord with Corporate Plan outcomes 9a and 9d
 - 9a – Champion and facilitate a world leading digital experience
 - 9d – Improve the experience of arriving in and moving through our spaces
19. Para 3.2 of the Draft City of London Local Plan 2036 set out the vision to support a thriving economy and reference “the City’s continued economic success will be underpinned by world-leading digital connectivity and data services both within buildings and in the public realm.”

Financial implications

20. The rollout, maintenance and management of the columns will be paid for by the wireless concession partner who will engage the highways term contractor (currently Riney’s) to undertake the works. The wireless concession technical partner, Freshwave, will be responsible for the technical fit out of the columns. There will be no direct financial cost to the City Corporation

Resource implications

21. The Strategic Infrastructure Advisor in the CPAT team will be responsible for co-ordination of the internal technical review of proposals and for the wider deployment of the network in line with the process chart in appendix 1. The wider roll-out will be done over four phases completing in Q4 2022 and will require a technical officer group to work on the detailed locations in line with approved guidance. Whilst this will require some resourcing, given that the installations will be shared infrastructure, the overall level of resource will be less than if all the MNO were to deploy their own separate infrastructure.

Legal implications

22. The existing concession agreement provides for the use of City assets which are either owned by or leased or licenced to the City by third parties to which the supplier requires access to and/or use in order to provide the services. The proposed equipment to be deployed benefits from permitted development rights under S16 of the General Permitted Development Order.

Risk implications

23. The key risks associated with the project relate to the potential that the assets would not be utilised and that MNO's may seek to deploy their own infrastructure in the highway. The concession partner has confirmed that they will not progress to roll-out of the wider City network without first agreeing contractual terms with at least two of the four MNO's to deploy their 4G/5G cells on the shared infrastructure. The MNOs have all committed to participating in a small cell trial in and provided the pilot successfully meet the requirements of the defined trial criteria they are seeking to move to City wide deployment. All MNOs have been engaged with the concession partner on the trial discussions and have communicated their desire to deploy following a successful pilot. Guidance contained in the Electronic Communication Code Regulations and Mobile UK's Good Practice Guide makes it clear that operators should be looking at solutions to share infrastructure where practicable. The pilot will demonstrate that the technical solution works for all the MNO's and the commitment to demonstrate that at least two MNO's have contracted to use the infrastructure, would demonstrate commercial terms are in accordance with market rates for this type of managed service.

Equalities implications

24. A Test of Relevance has been undertaken to determine whether a full equalities impact assessment needs to be undertaken in relation to the pilot locations. The proposals will all have more than two metre clearance in the footway and this will be key to ensuring all future locations are compliant. Provided this clearance is achieved there is not considered to be an adverse impact on the groups falling within the protected characteristics and a full Equalities Assessment will not be required. If the pilot does not proceed the risk of a proliferation of apparatus on the highway installed under telecommunications powers is increased. This would risk causing interference to highway users including users who are partially sighted or have wheelchairs or buggies.

Climate implications

25. The proposed shared solution will reduce the need for additional infrastructure being located in the highway and so will reduce the need to excavate. The proposed infrastructure will provide the opportunity for developing the smart city aspirations of the City Corporation including IoT sensors that can monitor and provide data on environmental impacts such as pollution.

Security implications

26. All the SmartPoles and also the Cabinets will have high security locks installed, these will be CPNI or equivalent approved (BS EN15684:2012 / BS EN1303:2008) electronically managed locks where access will be strictly controlled. The concession partner and their technical infrastructure provider, Freshwave will be primary key holders, access may also be provided to our highways term contractor or the City under strict controlled measures. Unsupervised access will not be granted to any third party.

Conclusion

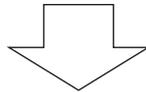
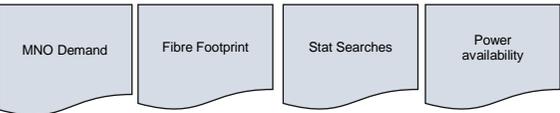
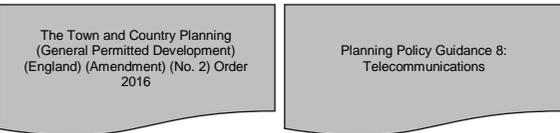
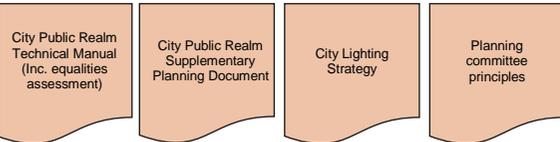
27. The proposed trial of new shared 4G and 5G infrastructure requires the deployment of eight new 8 metre columns to support radio antenna and 5G cells. There will be associated equipment cabinets within six metres of the street columns that will house a fibre connection for each column together with the majority of 4G and 5G equipment needed to support the networks of each of the MNO's. These cabinets can be deployed under code operator powers and benefit from deemed consent under the General Permitted Development Order.
28. The Streets and Walkways Committee previously delegated authority to agree the locations of the new 8 metre columns to the Town Clerk in consultation with the Chairman and Deputy Chairman. The wireless concession partner has agreement from all four of the UK's licensed MNO's to participate in the trial and to utilise the network subject to the trial demonstrating that the infrastructure would deliver the necessary technical and performance levels required to support their networks. Subject to first achieving contractual agreement with at least two of the MNO's, the wireless concession partner will then deploy a City-wide network.
29. The locations of the street columns to be replaced as part of the wider City deployment will be agreed with a technical officer team in advance of seeking agreement from the Chairman and Deputy Chairman in accordance with the process chart in Appendix 1. The shared infrastructure solution would mean that the MNO's will not have to deploy their own individual cabinets and columns so would reduce the cumulative impact on the highway. The deployment would ensure the City has world leading 4G and 5G infrastructure by the end of 2022 and will support the needs of workers, residents and visitors

Report author

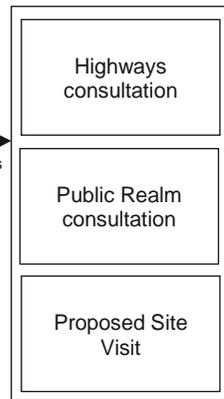
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Site Selection Process

Design Requirements



Existing Column, Cabinet Location
Batch of 50 sites

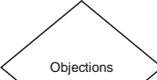
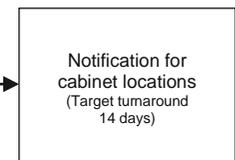


(Target turnaround 28 days)



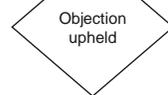
Yes

No



No

Yes



No

Yes

