Grey and Digital Infrastructure topic paper

> **This topic addresses:** The provision of grey infrastructure (including roads, rail, sewers and energy) and digital infrastructure (including telecoms and broadband) to meet the community's needs and support the growth of the city.
>
> **SA Objectives:**
> 1. To achieve the city's ambition to reach net zero **carbon emissions** by 2040.
> 6. To provide accessible essential **services and facilities**.
> 8. To reduce **traffic congestion and associated air pollution** by improving travel choice, shortening journeys and reducing the need to travel by car/ lorry.
> 9. To achieve **water** quality targets and manage water resources.
>
> **SEA Themes:** Water, climatic factors, material assets, human health, landscape, population and air.

Introduction

Infrastructure consists of the facilities and services which meet the needs of the local population and help to support development and growth.

Generally, infrastructure can be grouped into physical infrastructure (such as transport and utilities infrastructure); social infrastructure (such as schools, healthcare and community centres); green/blue infrastructure (such as parks, waterways and cemeteries) and digital infrastructure (such as high speed internet, mobile telecoms and smart grid energy). Infrastructure needs can arise from deficiencies in current infrastructure provision; a need for new infrastructure to support development, or as the result of increased demand because of population growth.

This topic paper focuses on physical and digital infrastructure. Physical infrastructure consists of the following types of infrastructure Transport-related, Water Supply, Wastewater (sewerage and sewage treatment works), Electricity, Renewable Energy, Gas, and Waste. Digital Infrastructure is considered as an important infrastructure component in its own right in the context of this topic paper. A discussion about social infrastructure can be found in the Cultural and Community Facilities Topic Paper[1] whilst green and blue Infrastructure is addressed in the Green Infrastructure Topic Paper[2].

Plans Policies and Programmes

National Planning Policy Framework (NPPF)
Paragraph 20 of the NPPF states that strategic policies should set out an overall strategy for the pattern, scale and quality of development, and make sufficient provision for: infrastructure for transport, telecommunications, security, waste management, water supply, wastewater, flood risk,

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[1] www.oxford.gov.uk/2040
[2] www.oxford.gov.uk/2040

and provision of minerals and energy; and community facilities (such as health, education and cultural infrastructure).

Paragraph 81 of the NPPF sets out the Government's approach to the economy and sets out how infrastructure delivery can be an important element of delivering economic growth, in particular seeking to address the potential barriers to investment, such as inadequate infrastructure, services or housing, or a poor environment.

Paragraph 113 highlights the importance of digital infrastructure setting out that advanced, high quality and reliable communications infrastructure is essential for economic growth and social well-being. The NPPF also stresses the importance of plans supporting the expansion of next generation mobile technology and sets out that full fibre connections should be prioritised to existing and new developments.

Planning for the Future – White Paper (August 2020)

With the publication of the new Planning Bill due soon there is a degree of uncertainty as to which parts of the White Paper will be taken forward. As such the details of the proposed changes set out in the White Paper – Planning for the Future[3] – are at present, not yet known.

Pillar 3 of the Planning White Paper proposes changes to developer contributions to help fund infrastructure and mitigate for the impact of new developments (Proposals 19 to 24). The changes include a reformed levy (including affordable housing delivery) to be charged as a fixed proportion of the development value above a set threshold at mandatory nationally set rate(s), with more freedom given to local authorities as to how the new levy is spent.

At present it is unclear how this might affect funding from developer contributions, as a comprehensive methodology for calculating contributions for the infrastructure levy has not yet been proposed, and thus cannot be compared to the existing funds generated via CIL and S106. In particular, it is unclear how well the funds would be able to contribute towards the delivery of affordable housing in the absence of legally binding S106 agreements. As the proposed levy would also be charged on occupation of developments (as opposed to the commencement), it is also unclear about how this may affect the overall delivery of infrastructure.

Oxford-Cambridge Arc Spatial Framework

The Government intends to develop a long-term spatial framework[4] that will support better planning in the Oxford – Milton Keynes – Cambridge arc, provide a blueprint for better-targeted public investment, give investors and businesses greater long-term certainty over growth plans, and allow communities to shape the long term future of places across the region. The spatial framework will have the status of national planning and transport policy. Locally the work of the Oxfordshire Growth Board and the joint working of all the Oxfordshire Councils to bring forward the Oxfordshire

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[3] https://www.gov.uk/government/consultations/planning-for-the-future
[4] https://www.gov.uk/government/publications/planning-for-sustainable-growth-in-the-oxford-cambridge-arc-spatial-framework

Plan 2050 will help feed into the government's spatial framework, and help to frame the ambitions and aims for Oxfordshire as an important part of the arc.

Oxfordshire Plan 2050

The Oxfordshire Local Planning Authorities (including Oxford City Council), working together as the Oxfordshire Growth Board, are developing a Joint Strategic Spatial Plan (JSSP) for the area, known as the Oxfordshire Plan 2050, which will set out strategic policies for the county. An initial consultation was launched on the Plan in February 2019 and a further consultation is being launched in the summer of 2021. The summer 2021 consultation will include a number of options covering various topics with relevance to planning across the county.

The Oxfordshire Plan will be submitted to the Secretary of State for examination in September 2022. It will be important to ensure that the Oxfordshire Plan and the Oxford Local Plan 2040 work closely together; there will be many common themes and objectives and much shared evidence behind the two plans.

The OxIS – Oxfordshire Infrastructure Strategy

The original OxIS was prepared by Oxfordshire County Council in 2017 on behalf of the Oxfordshire Growth Board, to identify infrastructure needs for the County and to help secure funding for delivery. A new OxIS is being developed which considers infrastructure requirements up to 2050, and will be the Infrastructure Delivery Plan for the Oxfordshire Plan 2050. It is informed by Oxford's Infrastructure Delivery Plan and evidence bases from the other Oxfordshire authorities.

The Part 1 OxIS report will look at infrastructure from the end of the local plan periods to 2040, and the Part 2 OxIS will look at infrastructure needs to 2050 resulting from growth proposed in the Oxfordshire Plan. At the time of writing, the OxIS Part 1 is still in draft: the public consultation on the document, is due to be aligned with the Oxfordshire Plan consultation from July – September 2021.

One of the key differences between the new OxIS and the 2017 OxIS is the desire to move away from the previous transport-focussed approach while still ensuring that infrastructure projects that come forward are clearly linked to the delivery of new homes or the creation of new jobs. Five key themes of Environment; Health; Place-Shaping; Productivity; and Connectivity have been agreed by the Growth Board as appropriate themes to base infrastructure funding decisions around. The OxIS is an important strategy to continue to shape and influence investment strategies at a national, sub-regional and local level.

Oxford City Council Infrastructure Delivery Plan (IDP)

The Infrastructure Delivery Plan (IDP) is a key piece of evidence that was used to support the development of the new Local Plan 2036. Following the successful adoption of the Local Plan 2036 in June 2020, a decision was made to update the City's IDP with more of a focus on delivery in order to help prioritise which projects would be available for additional funding. This is currently being prepared and will be published later in 2021.

Specific objectives of the work to become more "delivery-focussed" include: providing an update to the city's infrastructure list in terms of need, timings and delivery of infrastructure in consultation with relevant stakeholders; understanding current constraints on the infrastructure network and how it will be impacted on by the growth in the Oxford Local Plan 2036; and presenting the information spatially to give a clear picture of how each part of the city performs. The IDP will also identify infrastructure needs spatially in relation to clusters of housing growth across different zones of the city (City Centre/West; North; South and East areas of the City).

Oxfordshire Local Transport Plan (LTP4) including Oxford Transport Strategy (OTS)

Connecting Oxfordshire is Oxfordshire County Council's fourth Local Transport Plan (LTP4). It sets out the strategies and policies for developing the county's transport system between 2015 and 2031. Where significant growth in housing and/ or employment is planned, area strategies have been developed.

The Oxford Transport Strategy (OTS) is the area strategy for Oxford City. The OTS sets out the County Council's transport vision and strategy for Oxford over the next 20 years. It identifies the current and future challenges for transport in the city, and sets out a strategy based on a combination of infrastructure projects and supporting measures to enable economic and housing growth. The OTS has three components: mass transit; walking and cycling; and managing traffic and travel demand. The strategy considers that there is no single solution to tackling Oxford's long-term challenges and that all three components are needed in combination to deliver the objectives of the OTS.

Oxfordshire Local Transport and Connectivity Plan (LTCP)

The next version of Oxfordshire County Council's statutory Transport Plan is called the Local Transport and Connectivity Plan to better reflect the County Council's strategy for digital infrastructure and for connecting the whole county. Currently in its early stages, the LTCP vision document was consulted on in February 2021. It is anticipated that the final LTCP will be completed in 2022.

Local Cycling and Walking Investment Plan (LCWIP)

Local Cycling and Walking Investment Plans (LCWIPs) are being prepared for several parts of Oxfordshire. The Oxford city LCWIP was adopted by Oxfordshire County Council in March 2020. The plan sets out evidence in relation to achieving a 50% increase in cycling in the City. In particular it

- Lays out a comprehensive cycle network to focus expenditure for best value;
- Identifies a list of infrastructure improvements for both walking and cycling based on best practice and the Cycle and Walking Design Guides;
- Summarises the evidence for supportive measures, such as Low Traffic Neighbourhoods and controlled parking zones; and
- Provides cost estimates for these schemes that can be used in future bids and in planning decisions.

Oxford Local Plan 2036 (Physical and Digital Infrastructure Policies)

The infrastructure policies in the Local Plan help to support new development by ensuring that appropriate infrastructure is provided in a timely manner. Policy M1 – Prioritising Walking, Cycling and Public Transport, includes requirements relating to infrastructure improvements to the pedestrian environment, ensuring an accessible environment for cyclists, new pedestrian and cycle routes and improvements to bus network infrastructure. Policy V8 – Utilities, requires planning applications to be supported by information that capacity issues have been explored with the appropriate utilities providers and sets out that development will not be supported without sufficient evidence regarding utilities capacity. Policy V9 supports development that delivers full-fibre broadband connection speeds and appropriate electronic communications infrastructure provided that a set of criteria are met.

Current situation

Infrastructure investment usually either comes directly from new development in the form of developer contributions or direct delivery, or indirectly through the attraction of central and local government funds associated with new development. For instance, through the Local Growth Funds 1 and 2, the Oxfordshire Local Enterprise Partnership (LEP) secured £118.4m to support dynamic economic growth funding numerous infrastructure projects. They were also awarded £24.16m, as part of Local Growth Fund 3, enabling the support more projects to benefit local people and business[5].
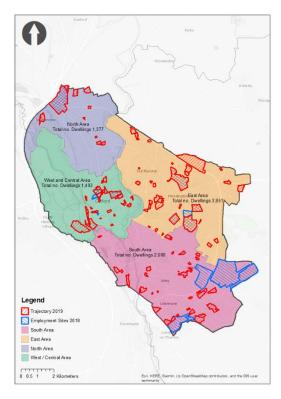
As infrastructure needs can change over time, for instance as changes in demographics occur, or new technologies emerge, investment in infrastructure does not always keep up with the pace of development, especially in areas where the cumulative effects of smaller developments are felt more acutely, such as in Oxford. When this happens, a deficit is created which can impact on the existing and future population.

Figure 1: shows where development pressures are arising as a result of planned growth established through the Local Plan 2036. The city has been divided into four broad sectors, each of which has planned housing growth of over 1,000 units. There is also development pressure adjacent to the boundary of the city with additional development (4,800 homes) planned adjacent to the South Area, more than 1100 homes proposed outside the East Area and a similar number of new homes planned (around 1,400) adjacent to the North Area of Oxford. Although these developments are outside the city there is the potential for these to put pressure on existing infrastructure facilities and services in the city.

Figure 1 also shows the locations of the city's Category 1 employment sites. The IDP refresh will look at these broad sectors of the city, where housing and employment growth will be accommodated and build a picture of where physical infrastructure would benefit clusters of schemes.

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[5] https://www.oxfordshirelep.com/about/our-programmes/local-growth-fund

Figure 1: Area-based analysis of the Local Plan 2016-2036 requirements for ca. 11,000 new homes and 25ha of new employment land in Oxford. This map only shows Category 1 employment sites.

How is infrastructure funded?

Currently in Oxford, Section 106 (S106) agreements and the Community Infrastructure Levy (CIL) are the main mechanisms in place for generating funds from development to be invested into infrastructure in order to mitigate for the impacts from development. S106 agreements set out legal conditions for on-site infrastructure needs, often for major sites and includes affordable housing contributions. CIL is a charge generated on the new floor space of new developments and is accumulated from developments across the city to be reinvested into infrastructure needs of the city.

The City's Infrastructure Funding Statement (IFS) summarises the amount of developer contributions obtained, allocated and spent in the previous financial year. CIL receipts for the 2019/2020 monitoring year were just over £3.5million and S106 contributions in 2019/2020 were just under £670k. The S106 money received was put towards a variety of contributions including affordable housing, highways management, air quality monitoring, and community facilities. Non-financial S106 contributions included public open space, affordable housing and footpath links.

Oxfordshire County Council's Infrastructure Funding Statement (IFS) is also available online and identifies income and expenditure for education, highways and public transport, fire service, libraries and other county responsibilities.

Analysis of current infrastructure provision

This next section provides a brief analysis of current infrastructure provision in the city. It looks at physical and digital infrastructure using publicly available sources to paint a picture of the current situation. Firstly physical infrastructure is considered and then a brief discussion about digital infrastructure takes place.

Physical Infrastructure

Transport

Road

Peak period congestion is a persistent problem, with traffic building at bottlenecks. Within the centre, cars, buses and delivery vehicles compete for limited space with pedestrians and cyclists.

As part of its Road Investment Strategies, Highways England has produced a series of route-based strategies and is continuing to do so. Of particular relevance to Oxford are the Solent-Midlands strategy, and the London-Scotland West Strategy. Highways England have set out a series of improvements to the strategic road network, including several close to Oxford such as those related to A34 Junction improvements for the 2020-2025 period.

Oxford's Park & Ride sites have been hugely successful in reducing traffic in the city centre by providing an easy and attractive option for people entering the city. However, the Oxford Transport Strategy (OTS)[6] identified that there are already substantial link and junction delays on all approaches to the ring road, with particular hotspots located to the west (A420, A40), north-west (A44) and south (A34, A4074) during the morning period.

There are excellent frequent bus services to the centre of Oxford from a range of destinations both locally and further afield, which helps enable reduced car use. Upwards of 190 buses and coaches enter the city centre per hour at peak times. This does have impacts in terms of noise, air pollution and substantial use of space in city centre streets. The Oxford Transport Strategy set out an aspiration for 2035 that Oxford will provide its residents and visitors with a connected, modern mass transit network which provides a cheaper, faster, and more reliable travel option than the private car for the majority of journeys to and between destinations in the city; this requires ongoing improvements to the network.

The road network also accommodates active travel options like cycling and walking. The OTS highlights the success of the city in its high mode shares for walking and cycling when compared to other local authorities. Various public realm improvements and pedestrian route enhancements have taken place in the city, particularly in the centre. However, the OTS identified that there is still a perceived lack of high quality continuous routes and that the severance of walking and cycling routes is a common issue at the edges of the city too. Constraints of narrow roads, mature trees and street furniture are also a challenge to providing continuous fully segregated cycle lanes or paths on most of the roads in the city and, where segregation has been possible, it has often already been implemented.

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[6]https://mycouncil.oxfordshire.gov.uk/documents/s33711/Background%20CA_JUN2816R12%20Connecting%20Oxfordshire%20vol%208%20part%20i%20-%20Oxford%20Transport%20Strategy.pdf

Rail

Congestion is not a problem unique to road travel. The city is a key stop for trains going through to the region to urban centres such as Reading and London, but these can be overcrowded at the busiest times of day. It has been difficult to get a seat during peak periods on weekdays, though the effects of the Covid-19 pandemic might change this situation in the long term. The OTS noted that, due to future improvements to the rail network and services, growth in patronage of train services could be as much as 70% at Oxford Station by 2026.

As well as on-train crowding, there is limited infrastructure capacity on the rail network. The physical extent of the network means that it is now very difficult to increase the number of trains without major investment. This could become a major constraint to potential growth in the enterprise zones and the Knowledge Spine that underpins regional growth strategies.

Utilities
Water resources

Thames Water has a duty to maintain the security of the water supply, and every five years they are required to produce a Water Resources Management Plan (WRMP) which sets out how they plan to meet customer's needs while protecting the environment over the plan period. The WRMP19 identified demand management through a combination of leakage reduction, smart metering and the promotion of water efficiency as the best way to negate a water deficit in the Swindon-Ofordshire area in the short to medium term (2020-2045). This has been estimated to provide a 4.6Ml saving by 2030 which should be sufficient to off-set the deficits estimated.

The City Council commissioned a Water Cycle Study (WCS) to support the production of the current Infrastructure Delivery Plan. The WCS identifies, and where possible, quantifies the capacity of all water-related infrastructure and the wider environment within the city to support new housing and commercial developments. The WCS considered that, based on the Dry Year Annual Average forecasts in Thames Water's WRMP19, there should be enough water to supply Oxford for the majority of 2036 and beyond. However the Dry Year Critical Period forecasts show that during periods peak demand a deficit will begin in 2022, growing to potentially 2.85Ml/d by 2036.

Sourcing water through abstraction licences is limited in Oxford. This is mainly due to the potential negative impacts upon the Oxford Meadows Special Area of Conservation (SAC). At present, there are four licences, the majority of these are not for public use, and their impact on water resources in Oxford is thought to be minimal.

Wastewater treatment

The Oxford sewer network manages demand from over 250,000 customers sited in Oxford and the surrounding areas. The catchment is served by the Oxford Sewage Treatment Works (STW), located outside the city boundaries to the south of the city, and Littlemore Pumping Station.

The Oxford STW is one of the most important structural assets with respect to future development in Oxford. In recent years it has benefitted from a large increase in capacity following a project to

upgrade the sludge stream and introduce a Thermo-Hydrolysis plant. The upgrade should provide the required additional sludge treatment capacity required for the growing local population. Thames Water will undertake further work if required during the plan period to ensure that infrastructure keeps pace with growth. However the current management plan for the Oxford area does not include measures to increase capacity of the Oxford STW. The Oxford STW lies within an area of growth allocated in the South Oxfordshire Local Plan for South of Grenoble Road.

In the short/ medium term, there is a commitment to implement interventions that address any problems at the inlet of the STW. Longer term, a commitment exists to continue to monitor the effects of growth and climate change on the STW to ensure that it can cope with any future increases in catchment population.

In terms of environmental capacity, the Environment Agency suggests that most of the watercourse in the Oxford area have good or high ecological status and good chemical status. This suggests that overall, they are not vulnerable at present and that there should be environmental capacity to permit development. However this depends on correct measures being followed by developers, the Environment Agency, local authorities and water companies.
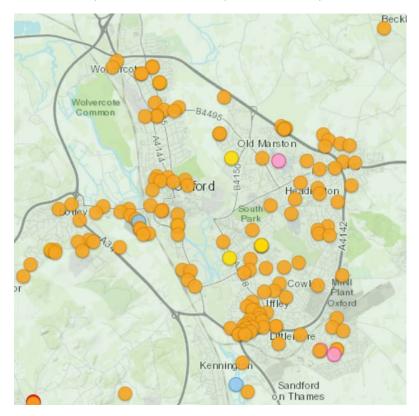

Energy

Scottish Southern Electricity Networks (SSE) is responsible for delivering electricity distribution across southern England, including Oxford.

Throughout the development of the Local Plan 2036 the Council liaised with SSE in relation to the likely impacts of proposed development allocations in the plan on their networks; and to ensure that any upgrades to the network that may be required to serve the proposed levels of development will be provided in a timely manner. Similar engagement will be necessary as part of the Oxford Local Plan 2040 process, especially once more detail is known about quantum and distribution of required development.

Oxford has set out ambitious objectives in relation to cutting carbon emissions and moving towards being a net zero city by 2040, (these are discussed in greater detail in the carbon reduction topic paper). Renewable energy generation technology will play an important role in this endeavour and there is a variety of renewable energy infrastructure schemes around the city. The online platform 'The Peoples Power Station' which was developed by the Low Carbon Hub[7] maps a variety of renewable energy and energy efficiency projects across Oxfordshire and a snapshot of the distribution for Oxford is included in Figure 2. As Figure 2 shows, the majority of installed schemes in the city are solar photovoltaics. This is likely to reflect the constrained nature of the city such as its density of urban development as well as heritage protections.

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[7] https://www.lowcarbonhub.org/p/programmes/peoples-power-station/

Figure 2: Renewable energy generation schemes in and around Oxford. Orange markers indicate solar photovoltaics, yellow is solar thermal, pink is combined heat and power and blue is hydro.

Renewables and low-carbon energy technologies are usually secured to comply with policy requirements in the Development Plan when negotiating on planning applications and will therefore generally be funded by developers.

As well as electricity supply, a gas supply is often regarded as an essential utility provision for new development. The national high pressure gas transmission system is owned by National Grid, but the lower pressure local distribution network in the Oxford area is owned by SGN. As part of the development of the Local Plan 2036, SGN assessed all of the sites proposed for the Regulation 19 consultation to identify whether there could be any issues with the gas network. The results of the network capacity assessment showed that the majority of sites would be unlikely to have any issues connecting to the gas network. This was due to appropriately sized gas mains and pressures in the surrounding area. Ongoing discussions will also be needed as part of the Oxford Local Plan 2040.

Minerals and Waste

Another important aspect of infrastructure in the city relates to minerals and waste processing. The County Council is the Minerals and Waste Planning Authority and adopted a Minerals and Waste Core Strategy in 2017. This sets out the over-arching policies for minerals and waste in Oxfordshire to ensure that sufficient building materials and waste management facilities are available to meet the proposed levels of growth in Oxfordshire to 2031.

The County Council is in the process of producing a Site Allocations document. The most recent consultation was an update to the Site Allocations methodology which was undertaken in January 2021. Previously the preferred options consultation which looked at a number of sites across the county, took place in early 2020. The preferred options consultation looked at one potential minerals extraction site within Oxford but it was not carried forward for further assessment. This was due to numerous constraints and the fact that the site did not align with the overall strategy for minerals extraction set out in the Core Strategy.
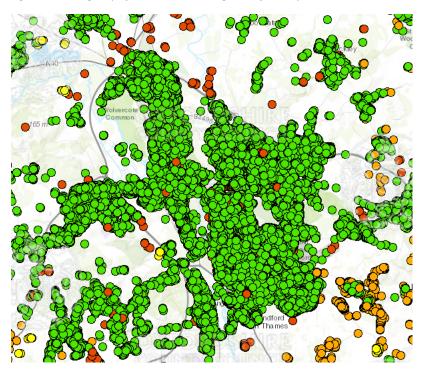
Waste infrastructure is used in the collection, treatment and disposal of residential and commercial waste. The current focus of waste policy is on more sustainable approaches to waste, namely increasing the value recovered and decreasing the amount sent to landfill. There is one Household Waste Recycling Centre (HWRC) within Oxford at Redbridge, Abingdon Road. Other waste sites include Horspath Road (recycling transfer), Pony Road (hazardous waste), Cowley Marsh Depot (recycling/ transfer) and Jackdaw Lane (metal recycling).

The Minerals and Waste Core Strategy sets out in Policy W11 that these waste and recycling sites are safeguarded in the plan for these uses, and proposals for development that would directly or indirectly prevent or prejudice the use of these sites will not be permitted unless the site is allocated for development in an adopted local or neighbourhood plan; or equivalent waste management capacity can be appropriately and sustainably provided elsewhere; or it can be demonstrated that the site is no longer required for waste management.

Digital Infrastructure

Of increasing importance, particularly exposed by the recent Covid-19 pandemic and the shift to remote working for many, is the distribution and quality of digital infrastructure around the city, such as telecoms and broadband. High quality broadband connection is essential for accessing various services online over the internet. Connections have been improving greatly across the Oxfordshire area over the last ten years. Figure 3 highlights that availability of superfast connections across the city is now widespread, although there are still some areas where this needs to be improved.

Figure 3 showing map of broadband coverage in Oxford City[8].

Work is being undertaken by the County Council towards the roll out of full-fibre for commercial buildings, with the aim that this will also support the delivery of high quality digital infrastructure to surrounding residential properties. Another County Council project is supported by a funding source available from central government which can only be used for the 'final 20%' harder to reach properties and ensure that they have 'superfast' connectivity. Although it is often used to support the delivery of broadband outside of urban areas the fund may apply to some areas of Oxford.

Another important aspect of digital connectivity is coverage of telecoms and mobile phone networks. Coverage varies across the city based upon which of the four main mobile network operators are being used to provide this service, with higher generations of network (up to 5G which is currently being rolled out nationally), able to offer increased performance and download speeds. Figure 4 illustrates the network coverage of each of the four providers across the city – it highlights that the city is broadly covered by mobile networks, but that access to the newer 5G network, which can offer more reliable connections in busier places and for higher intensity data transfer, is still very limited.

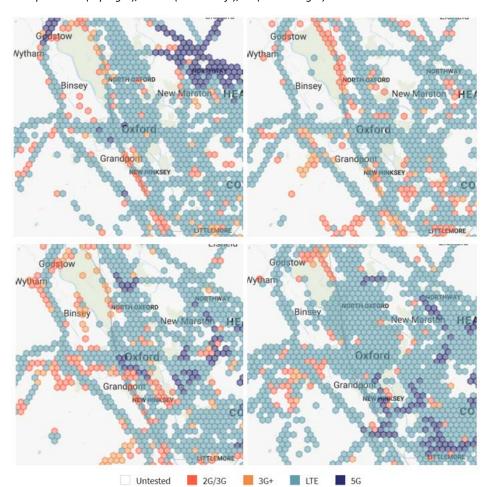[8] https://digitalinfrastructureoxfordshire.co.uk/progress-so-far/coverage-map

Figure 4 – Mobile phone network coverage (June 2021) for each of the main network providers in the UK: Three UK (top left), Vodaphone UK (top right), O2 UK (bottom left), EE (bottom right)[9].

Likely trends without a new local plan

Without a new Local Plan, the policies within the current Local Plan 2036 would remain in place until 2036 or until they become otherwise out of date. The Oxfordshire Infrastructure Strategy, which will form the Infrastructure Delivery Plan for the Oxfordshire Plan 2050, will set out the key strategic infrastructure requirements of planned developments across the county. The County Council would continue to set out its priorities for roads, schools, libraries etc., and the City Council would continue to produce its own capital programme to fund local infrastructure projects such as community hubs.
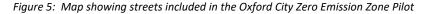
In the absence of a new Local Plan, however, the risk that the policies in the existing local plan would not remain up-to-date (once the plan was over 5yrs old) would increase. National Policy is clear about the consequences of not having an up-to-date plan and the ability to require infrastructure contributions and delivery might be reduced. In short, without a new plan, appropriate infrastructure delivery to support development coming forward in the city could not be guaranteed.
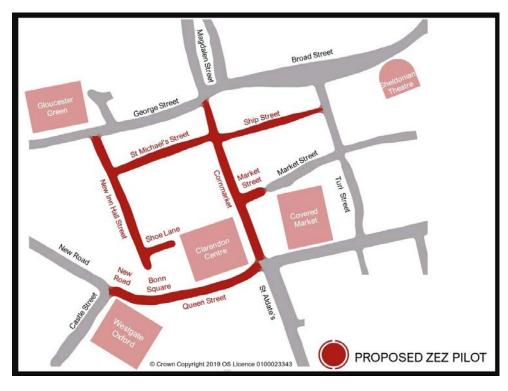
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[9] https://www.rootmetrics.com/en-US.

The Oxford Transport Strategy (the County's area strategy for the city included in its current Local Transport Plan - LTP4) sets out the following planned improvements that are of the greatest significance to Oxford. It is likely that a number of these would continue to be progressed:

- Redevelopment of Oxford Railway Station
- East-West Rail Phases 1 & 2
- Great Western modernisation
- Cowley Branch line
- Oxford rapid transit routes
- Conventional bus network
- Supporting infrastructure, e.g., corridor prioritisation, corridor studies, appropriate stops and transport hubs

A number of important city-wide transport schemes are currently being delivered as part of the implementation of the Oxford Transport Strategy. For instance, the Oxford Zero Emission Zone[10] (ZEZ) which is to be introduced to a number of city centre streets in August 2021 is one of a number of joint City and County Council schemes designed to reduce traffic and emissions. Figure 5 below shows a map of the streets included in the Oxford Zero Emission Zone Pilot which is set to begin in August 2021. It is hoped that the ZEZ will lead to cleaner air, quieter streets and contribute to mitigating the impacts of climate change. The scheme is designed to reduce traffic volumes, encourage the uptake of zero-emission vehicles and lead to other positive behavioural changes; it is intended to reduce vehicle emissions and improve air quality whilst maintaining access to the city for those who need it.

Figure 5: Map showing streets included in the Oxford City Zero Emission Zone Pilot

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[10] https://www.oxfordshire.gov.uk/residents/roads-and-transport/connecting-oxfordshire/oxford-zero-emission-zone

Another important joint City and County Council infrastructure scheme is Connecting Oxford[11]. This project puts forward bold plans to tackle congestion and the poor public transport connections into and across some parts of the city, particularly the city's eastern arc which links parts of North Oxford, Marston, Headington and Cowley. Originally announced and consulted upon in September 2019, Connecting Oxford consisted of a number of linked proposals including:

- Restricting car traffic by introducing additional 'bus gates' (similar to the restriction on Oxford's High Street) across the city to improve journey times for people travelling into and around the city, and so road space can be reallocated to improve walking and cycling routes.
- New high frequency fast bus routes connecting neighbouring towns and the Park & Rides to Oxford's eastern arc, which is seeing the greatest growth in employment but is currently less well served by public transport, particularly around the ring road.
- New and improved cycle and walking routes, including utilising space created by removing vehicles from the road to provide safe and attractive alternatives to driving into and around the city.
- A charge for workplace parking provided by larger employers in the eastern arc, which would help fund the proposed transport improvements and create a disincentive to drive to work. Discounts for the new bus services would be available for staff of employers paying the workplace parking levy.
- Improved journey times for commuters driving into and around the city as a result of less congestion.

The County Council is currently working with Chiltern Railways on their proposal to reopen the Cowley Branch Line for passenger trains, creating stations at Oxford Business Park and Oxford Science Park and served by an extension of the London Marylebone to Oxford service. This would provide a useful new connection to the Eastern Arc, intersecting the proposed Rapid Transit Line 3 at Oxford Business Park and serve growth in this part of the city and adjoining areas.

Impacts of Covid-19 and Brexit

The short-term impacts of Covid-19 have already changed how we use our existing infrastructure. Current social distancing measures mean that for example, public transport patronage has been reduced as fewer people are able to safely sit near one another and movement through public spaces (particularly in historic city centres like Oxford) has needed to be rethought with measures such as one-way pedestrian flow and other short-term measures being required. Working from home has meant that the need for other travel has also been reduced. Demand for digital infrastructure has increased dramatically with the increased levels of working from home as people need faster connection speeds to keep pace with video calls and large amounts of data-transfer coming over their home Wi-Fi.

At the time of writing, lockdown restrictions are easing and the UK's vaccination programme is being carried out efficiently and effectively. As restrictions ease, there is likely to be an increase in demand for infrastructure after a period of underuse. However, what we are not certain about is

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[11] https://www.oxfordshire.gov.uk/residents/roads-and-transport/connecting-oxfordshire/connecting-oxford

what the difference between pre- and post-COVID infrastructure will look like. The Council will continue to monitor the situation with respect to future infrastructure needs as the Local Plan production continues (and for subsequent Local Plans in future).

The impacts of Brexit on infrastructure relates to the uncertainty of investment and growth and the knock on effect this has on being able to plan for effective infrastructure delivery. According to the Bank of England's Monetary Policy Report (May 2021), most businesses consider that the impacts of uncertainty related to Covid will take longer to resolve.[12]

Options for the new Local Plan

Providing appropriate physical and digital infrastructure helps the delivery of sustainable communities and helps Oxford to be a sustainable city. It will be important for officers to engage with a variety of stakeholders as part of the development of the Local Plan in order to identify future infrastructure needs in the city. Discussions with colleagues and partners at the County Council and utilities providers will be integral in determining the infrastructure needed to support new development going forward.

The following are some examples of infrastructure schemes that could be incorporated as part of the new Local Plan:

- Opportunities for 'Greening the Grey' infrastructure – incorporation of green elements into traditionally grey infrastructure in design – this can be through green walls and roofs incorporated into developments, or other green features.
- Opportunity to explore what post-COVID infrastructure might look like.
- Opportunity to explore the concept of a 15 minute city[13], whereby facilities that meet people's daily needs are located within a short walk or cycle trip from their home. This could be particularly relevant to the development of the West End Innovation District.
- What infrastructure will be needed to help deliver truly a Carbon Neutral city by 2040.
- How utilising Smart Grid/ Smart City opportunities can assist in transforming Oxford into a fully Carbon Neutral city by 2040.
- The role of project LEO (Low Energy Oxford).
- How the digitisation of utilities assist in infrastructure management.
- The role green energy plays and can the Local Plan help deliver heat networks and other low-carbon and green energy solutions
- The role of the Local Plan in promoting electric vehicles infrastructure.
- Ensuring the delivery and optimum benefits of schemes such as bus gates; Workplace Parking Levy; City-wide Controlled Parking Zones roll-out; Zero Emission Zone and Low Traffic Neighbourhoods

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[12] Bank of England, Monetary Policy Report May 2021 https://www.bankofengland.co.uk/-/media/boe/files/monetary-policy-report/2021/may/monetary-policy-report-may-2021
[13] *The 15 minute city is an urban concept whereby city residents are able to meet most of their needs within a short walk or bicycle ride from their homes.*

Sustainability and Plan Issues

Sustainability/Plan issues

- Meeting the infrastructure needs of additional development in the city over the Local Plan period.
- Ensuring new infrastructure addresses the climate emergency (low carbon, climate resilient).
- Incorporating natural solutions as part of new infrastructure.
- Ensuring infrastructure supports people to live healthy, active lives (e.g. walking/cycling, doctors etc).
- Ensuring that the city is resilient and adaptable to future changes in technology (self-driving vehicles etc).