

This topic addresses: The quality of the air, water and land (including soil) in Oxford.

SA Objectives:

8. To reduce **traffic 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 Theme: Water, air and climatic factors.

Introduction

This topic paper addresses air quality, land quality, water quality and water resources. It systematically addresses each topic area, looking first at topic-specific plans and programmes, then looking at the current situation and any underlying trends that can be drawn. Each topic is then looked at in terms of the likely impact without a new Local Plan. Possible options for the Local Plan 2040 are looked at in the next section and then finally some key issues that have arisen are drawn out.

Air Quality

The issue of poor air quality is multi-faceted and is an important topic for the Local Plan to address. Air pollution has a variety of causes including tail pipe emissions from transport, caused by the burning of fossil fuels or the wearing of tyre and brake pads, as well as emissions from heating sources within buildings. The pollutants arising from these sources are comprised of various substances including, nitrogen dioxide, ozone, and particulate matter (small particles of solids like soot and dust).

Air pollution has a direct link with health and well-being and has been evidenced to cause and exacerbate health problems. It can be particularly detrimental for society's most vulnerable including the children, the elderly, those with long-term health conditions. Long-term exposure to air pollution has been linked to chronic conditions such as cardiovascular and respiratory diseases as well as lung cancer, leading to reduced life expectancy. Short-term increases in levels of air pollution is associated with a range of health impacts, including lung function, exacerbation of asthma, increases in respiratory and cardiovascular hospital admissions and mortality. Air quality was legally recognised as a contributing factor in the death of an individual in the UK for the first time in 2020.

The issues of poor air quality affect everyone, but there are often inequalities in exposure towards those living in more deprived communities. Whilst not always the case, more deprived communities are often challenged by a poorer quality built environment, with reduced access to open space and green infrastructure, as well as living close to main roads where pollution is worst.

Poor air quality also has negative impacts on sensitive habitats, particularly near to sources of emissions like roads with deposits of substances like nitrogen altering the suitability of the environment for certain species and changing the makeup of the ecosystem over time.

Land Quality

Using scarce resources effectively is vital to ensuring Oxford's sustainable growth and development. Oxford is a small city with a tightly drawn administrative boundary and contains a number of physical and policy constraints. Oxford's population is projected to rise and this increase brings with it increased demand for housing and other uses. This means that developable land is at a premium. It is therefore important to ensure that what land is available is used in the most efficient way possible while ensuring that there is no harm to the city's natural environment, human health and well-being.

It is also important to ensure that the quality of our soils and the stability of the land is protected as well as ensuring that people are not brought into contact with harmful contaminants that may arise from the land we build on, particularly in instance where historic land uses may have left contamination behind.

Water Quality and Resources

Water quality issues have been brought to the forefront of planning since the introduction of the Water Environment Regulations, which seek to ensure that the biological and chemical quality of watercourses in England and Wales reach a "good standard". The Environment Agency has responsibility for ensuring that relevant watercourses reach an appropriate standard.

The key concern in about water resources relates to drinking water. It is important that sufficient water resources exist for the existing and future population of Oxford. This is likely to be one of increasing concern in the light of projected warmer drier summers due to the impact of climate change. Thames Water is responsible for ensuring that there are sufficient water resources available throughout the plan period. A related issue about water resources exists in relation to protecting the natural environment. This is because certain nature sites rely on certain amounts and quality of water to maintain the particular habitats and species for which they are protected.

Air Quality: Plans Policies and Programmes

Air Quality Standards Regulations 2010 (as amended) and Air Quality Strategy

The European Directive 2008/50/EC was transposed to UK law through the UK Air Quality Standards Regulations 2010. This legislation sets short and long term legally binding limits for concentrations in outdoor air for major air pollutants that impact public health such as particulate matter (PM10 and PM2.5) and nitrogen dioxide (NO₂). Particularly important is the annual mean standard for NO₂, which is 40 µg/m³ for humans and 30 µg/m³ for vegetation. The UK Air Quality Strategy sets out the UK government's plans for dealing with all sources of air pollution.

The Environment Act 1995

Part IV of the Environment Act 1995 requires the Secretary of State to publish a national Air Quality Strategy and established the system of local air quality management. The Act also requires local authorities to regularly monitor air pollution in their areas against national targets and to take action where it is found that these targets are unlikely to be met.

If areas are found to be in exceedance of the legal limit values and improvements are necessary, those areas need to be designated Air Quality Management Areas, and an Action Plan need to be developed and put in place by the local authority which set up the actions that are going to be put in place to address air quality.

National Planning Policy Framework (NPPF)

The NPPF discusses air quality primarily within the context of transport and sets out at paragraph 103 that the planning system should actively manage patterns of growth and focus significant development at locations which are or can be made sustainable through limiting the need to travel and offering a genuine choice of transport modes. Locating development in this way can help to reduce congestion and emissions, and improve air quality and public health. The NPPF also provides advice about air quality in the context of pollution. At paragraph 181 it clearly sets out that planning policies should sustain and contribute towards the compliance with relevant limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and Clean Air Zones, and the cumulative impact from individual sites in local areas. Mitigation should, as far as possible be considered at the plan-making stage to ensure a strategic approach is taken. It could include measures such as traffic and travel management; and green infrastructure provision and enhancement.

National Planning Practice Guidance (NPPG)

The air quality section in the NPPG provides more detail about how air quality should be taken into account in development plans, highlighting the importance of taking a strategic approach to air quality and seeking to help secure net improvements in overall air quality where possible. The NPPG highlights the importance of air quality for both human health and as an important consideration in the assessment of sensitive habitats or designated sites of importance for biodiversity.

Oxford City Air Quality Management Plan 2021-2025

Adopted in January 2021 this Air Quality Management Plan sets an ambitious target of meeting a local annual mean (Nitrogen Dioxide) NO₂ target of 30µg/m³ by 2025. The Plan has developed a set of 30 actions and measures that will be delivery by Oxford City Council and partners. The Plan includes four priority areas of intervention which are as follows:

- a. Developing partnerships and public education;
- b. Support for the uptake of Low and Zero emission vehicles;
- c. Reducing emissions from domestic heating, industry and services;
- d. Reduce the need to travel, explore opportunities for modal shift and increase the uptake of sustainable transport.

Oxford Local Plan 2036

Policy RE6 specifically addresses air quality requiring mitigation measures to be put in place where negative impacts on air quality are identified. The policy also requires an air quality assessment to be

carried out for major development which would carry risk of exposing individuals to unacceptable levels of air pollution.

The City Council has also produced a guidance document relating to air quality and planning applications which is intended to help ensure that air quality is adequately considered in the preparation of development proposals and planning applications for the city of Oxford. The guidance is aimed at creating a better understanding of the air quality requirements that need to be considered and taken into account prior to the submission of a valid planning proposal.

Land Quality and Soil: Plans Policies and Programmes

National Planning Policy Framework (2019) and National Planning Practice Guidance

The National Planning Policy Framework (NPPF) sets out that plans should include a clear strategy for accommodating objectively assessed needs in a way that makes use of as much previously developed (brownfield land) as possible (para.117). It also sets out that planning policies should give substantial weight to the value of using suitable brownfield land for homes and other identified needs.

In para 170, the NPPF highlights that policies and decisions should protect and enhance soils; as well as prevent new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil pollution or land instability. The NPPF also supports appropriate opportunities to remediate despoiled, degraded, derelict, contaminated or unstable land at paragraph 118(c).

The Planning Practice Guidance¹ considers that not all previously developed, or brownfield land is of poor quality stating that “it is possible that some may have high environmental or biodiversity value – such as providing habitats for protected species or bringing about biodiversity benefits in their own right”.

Oxfordshire County Council Minerals and Waste Plan²

The County Council has an adopted Minerals and Waste Core Strategy which sets out the over-arching county policy for minerals and waste 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 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. As such this site was not taken forward for further assessment. There are no other sites within Oxford.

¹ (PPG: Paragraph 003 Reference ID 8-003-20190721)

² Oxfordshire Minerals and Waste Plan: <https://www.oxfordshire.gov.uk/residents/environment-and-planning/planning/planning-policy/minerals-and-waste-policy>

Land Quality Strategy for Oxford (2020)³

This City Council strategy seeks to ensure that Oxford's residents and the natural environment are not exposed to unacceptable risks from land contamination and to improve our environment for a sustainable future. The strategy seeks to achieve this through working with developers, landowners and other key stakeholders to manage risks from land contamination effectively and efficiently. The first objective of the strategy is "To deal with contamination through development control and building control wherever possible". In order to achieve this, the strategy sets out that it seeks to "ensure that land contamination is taken into account when developing planning policy documents".

Oxford Local Plan 2036

The Oxford Local Plan 2036 contains a policy on Land Quality. Policy RE9 contains requirements for development proposals where there is a likelihood of land contamination including the need for investigations and mitigation and/ or remediation as required. Other policies in the Plan also contain requirements for waste management, for example Policy RE7 relates to managing the impact of development and Policy DH7 considers external services features and storage.

Water Resources and Water Quality: Plans Policies and Programmes

The Water Environment (Water Framework Directive) (England and Wales) Regulations 2017

These regulations aim to improve and integrate the way water bodies are managed in England and Wales. They require England and Wales to reach good chemical and ecological status in inland and coastal waters by 2027.

National Planning Policy Framework (2019) and National Planning Practice Guidance

Planning policies are expected to safeguard and enhance the natural environment by preventing new and existing development from contributing to or being adversely affected by soil, air, water or noise pollution or land instability. Where possible, development should contribute to the improvement of local environmental conditions, including water quality, by taking into account relevant information resources such as river basin management plans (para 170e).

Development should also be appropriately sited/located in such a way as to take account of the likely effects of pollution on human health and living conditions and the natural environment (para 180). For example, plans can steer potentially polluting development away from sensitive areas, particularly those in the vicinity of drinking water supplies or groundwater catchment areas. The PPG⁴ highlights that, where appropriate, measures to improve water quality, for example sustainable drainage schemes, can be used to address impacts on water quality in addition to mitigating flood risk.

³ Land Quality Strategy (2020): https://www.oxford.gov.uk/downloads/file/7483/land_quality_strategy

⁴ (PPG Paragraph: 006 Reference ID: 34-006-20161116)

Thames River Basin District Management Plan, Environment Agency 2015

River Basin District Management Plans provide a framework for the protection and enhancement of water environments in river basin districts nationwide. They describe the current state of the water environment, pressures affecting the water environment, environmental objectives for protecting and improving waters, and a programme of measures and actions needed to achieve the objectives as set through the Water Environment Regulations. These plans are to be reviewed every 6 years by the Environment Agency with updated plans due to be completed in December 2021⁵. The Thames River Basin District Management Plan covers a wide area including Oxford, and it identified a number of significant water management issues impacting upon the river basin as a whole, (and are not necessarily reflective of Oxford specifically) including issues relating to physical modifications to water bodies; pollution from waste water; pollution from towns, cities and transport; changes to the natural flow and level of water; negative effects of invasive non-native species; and pollution from rural areas.

Thames Water Resources Management Plan 2020-2100

The Thames Water Resources Management Plan 2020 - 2100 sets out the preferred programme for managing water resources in the Thames Water supply area until 2100. The plan sets out forecasts of supply and demand, alongside demand management and water supply options across the Thames Water supply area. It also sets out a programme of investment to ensure that water resources within the Thames Water area are appropriately managed. This is to make sure that water supply is maintained to existing homes and planned new development within the Thames Water supply area.

The plan notes three key challenges facing the management of the water supply in future: a growing population, climate change and the need to protect the environment. By 2045, without taking action, the plan projects a water supply shortfall of 387 million litres per day, which increases to 688 million litres per day by 2100. In order to tackle the shortfall, the plan proposes a variety of measures including leakage reduction, smart meter installation, free water efficiency measures and advice for customers, as well as new water supply schemes.

Oxford Local Plan 2036

The Oxford Local Plan contains policies that make reference to the management of water resources and the protection of water quality. For instance Policy RE1 contains requirements for improved water efficiency standards in order to limit water use in new developments and Policy RE4 sets out requirements for sustainable drainage, surface water flows and groundwater recharge. Linkages between the green and blue infrastructure network are covered in the accompanying Green Infrastructure Topic Paper.

⁵ <https://consult.environment-agency.gov.uk/environment-and-business/working-together/results/riverbasinplanning2021-workingtogetherconsultationresponsereportforengland.pdf>

The Planning White Paper

Water, air and soil quality is not directly referenced as part of the proposals set out in the government's white paper 'Planning for the Future' which was published in 2020⁶. These issues appear to be consolidated into what is referred to as environmental impacts/ objectives/ characteristics/ assets/ standards/ benefits/ etc. in the Planning White Paper. The White Paper stresses the importance of these aspects of the environment but does not provide specific advice as to air/water/soil quality impacts or standards.

Oxfordshire Plan 2050

The Oxfordshire Local Planning Authorities (including Oxford City Council), working together through the Oxfordshire Housing and Growth Deal, are working towards the development of a Joint Statutory Spatial Plan (JSSP), known as the Oxfordshire Plan 2050, which will set out strategic policies for the county to 2050. 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, potentially including in relation to natural capital. Air quality is mentioned in relation to it being a "regulating service" within the context of natural capital (the elements of nature that directly or indirectly produce value to people).

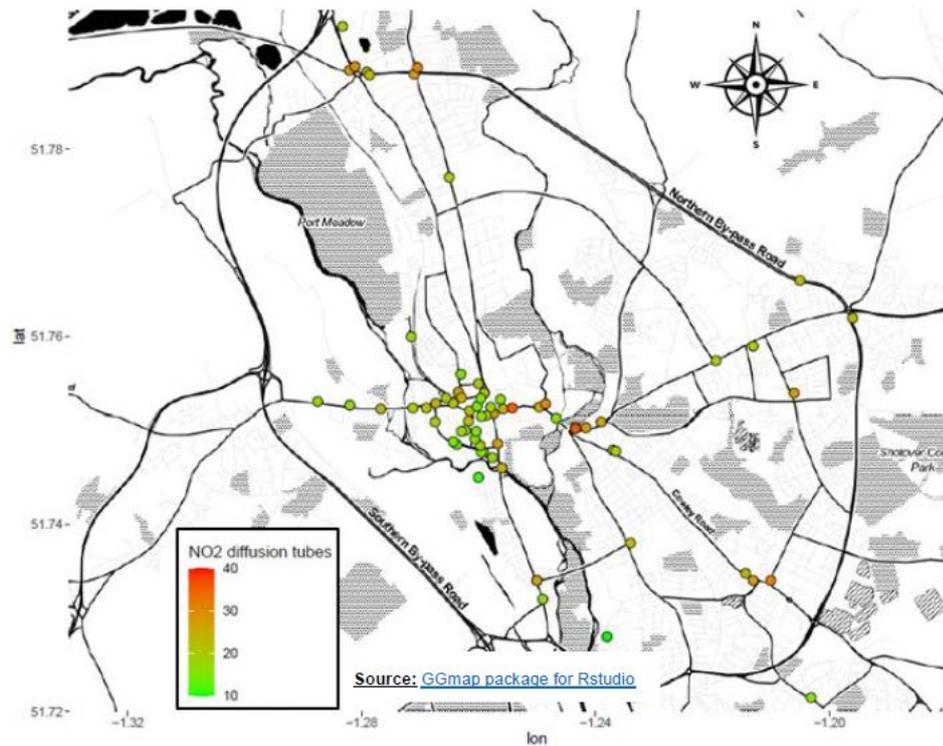
The Oxfordshire Plan will be submitted to the Secretary of State for examination in September 2022. It will be important to ensure that the Oxfordshire Plan and the Oxford Local Plan 2040 work closely together; there will be many common themes and objectives and much shared evidence behind the two plans.

Air Quality - Current situation

The City Council declared an Air Quality Management Area (AQMA) for NO₂ in central Oxford in 2003, which was expanded in 2005. In relation to this AQMA, the Council produced and published its first Air Quality Action Plan in 2006 seeking to address pollution in central Oxford, by focussing on emissions from buses which were identified as the main source.

⁶ <https://www.gov.uk/government/consultations/planning-for-the-future>

Figure 1: Map showing Oxford's diffusion tube locations by levels of NO₂⁷



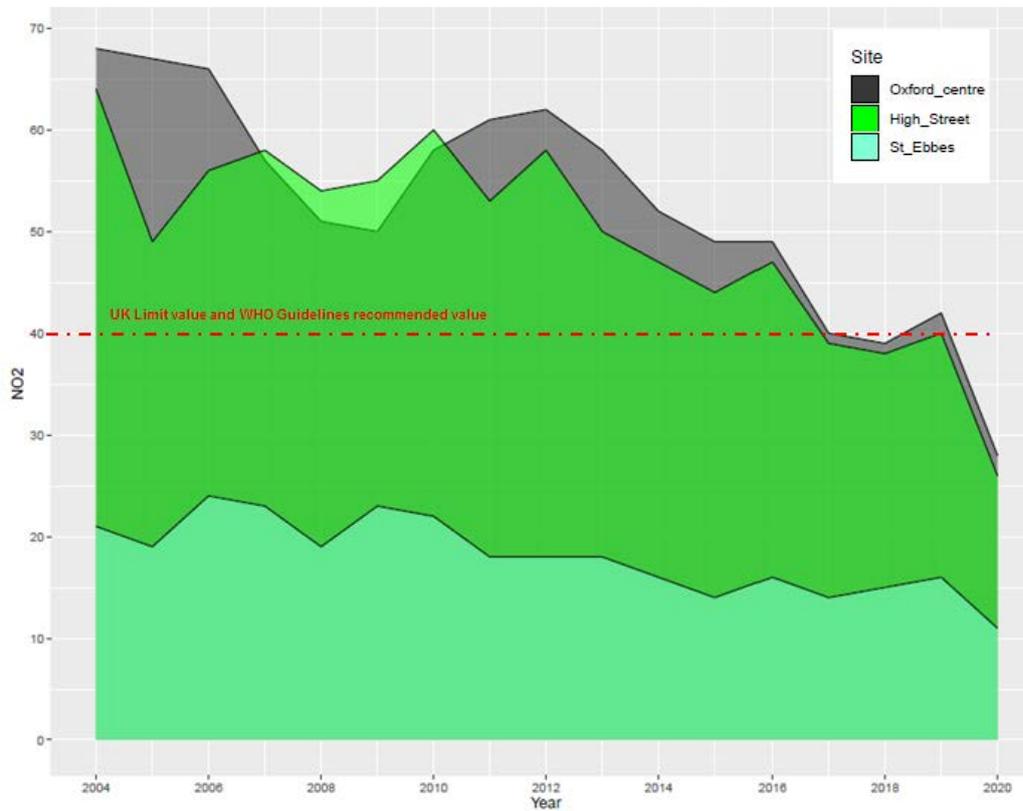
Despite good progress being made with the 2006 AQAP, significant breaches of the national objectives for NO₂ still existed and additional hotspots were identified. Therefore, following further detailed assessments of air quality, a city-wide AQMA was declared in September 2010. The most recent Air Quality Action Plan (AQAP) is for the period from 2021-2025 and includes an ambitious headline target to “achieve a local mean NO₂ target of 30µg/m³ by 2025”.

Figure 1 summarises the results from the city’s large number of diffusion tubes positioned at various locations across Oxford. The data shows that exceedances seem to occur mainly in the city centre but also at locations such as St Clements Street and Cuttleslowe Roundabout. Real-time information from the city’s air quality monitoring stations can be found (as well as some historic diffusion tube data analysis from 2016-2019) at www.oxfordshire.air-quality.info.

Figure 2 shows historical analysis of air quality data from 2004-2019. This data shows that NO₂ levels have significantly improved in the city of Oxford. For instance, in 2004 NO₂ levels were over 60 µg/m³, while in 2019 levels were around 40 µg/m³.

⁷ Oxford City Council, 2019 Air Quality Annual Status Report (June 2020)

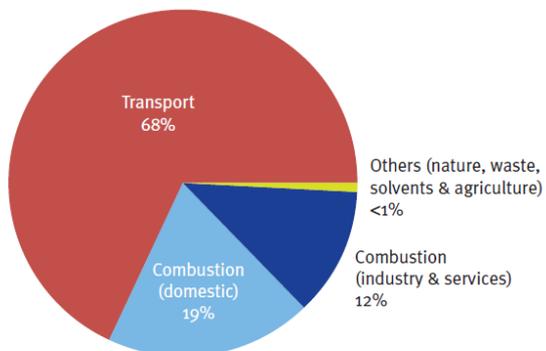
Figure 2: Long term trends of Annual Mean NO₂ (µg/m³) at Oxford's continuous monitoring stations, 2004-2020. (Source: Oxford City Air Quality Annual Status Report 2020)



Emissions Sources by Activity Sector

The following diagrams (Figures 3-5) show the contribution to total emissions of NO_x and particulates of each activity sector in Oxford from analysis provided by Ricardo Energy and Environment⁸ as part of a source apportionment study.

Figure 3: Source of total NO_x emissions in Oxford (Source: Oxford City Air Quality Action Plan 2021-2025)



⁸ Ricardo Energy and Environment were commissioned in 2019.

Figure 4: Sources of total PM₁₀ emissions in Oxford (Source: Oxford City Air Quality Action Plan 2021-2025)

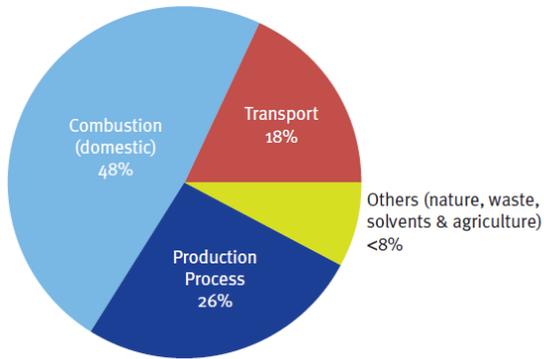
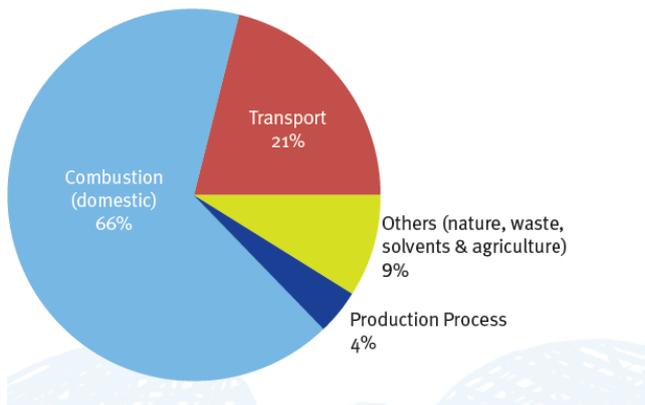
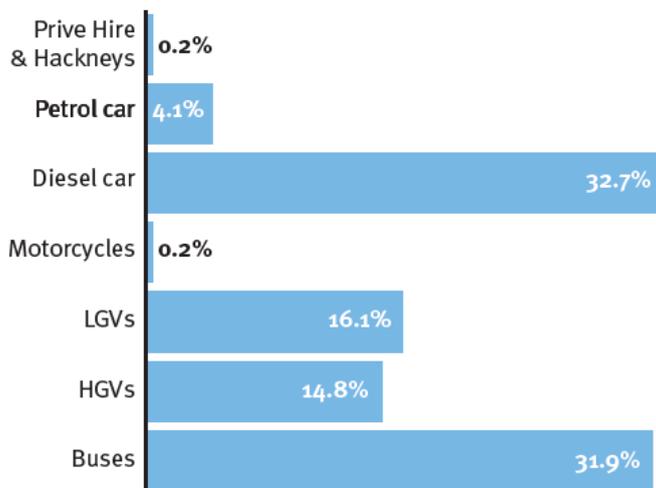


Figure 5: Sources of total PM_{2.5} emissions in Oxford (source: Oxford City Air Quality Action Plan 2021-2025)



Figures 3 to 5 show that in Oxford, transport comprises approximately 68% of the total emissions of NO_x, in comparison to only around 18% of total PM₁₀ and 21% of total PM_{2.5} emissions. Domestic combustion (e.g., boilers, stoves and other domestic appliances), on the other hand, makes up just 19% of NO_x emissions compared to 48% of PM₁₀ emissions and 66% of PM_{2.5} emissions.

Figure 6 – Total NO_x emissions in Oxford, per vehicle type (Source: Oxford City Air Quality Action Plan 2021-2025)



The breakdown of contributions to NO_x emissions per vehicle type shows that the current biggest contributors in the city are diesel cars (32.7%) followed closely by buses (31.9%).

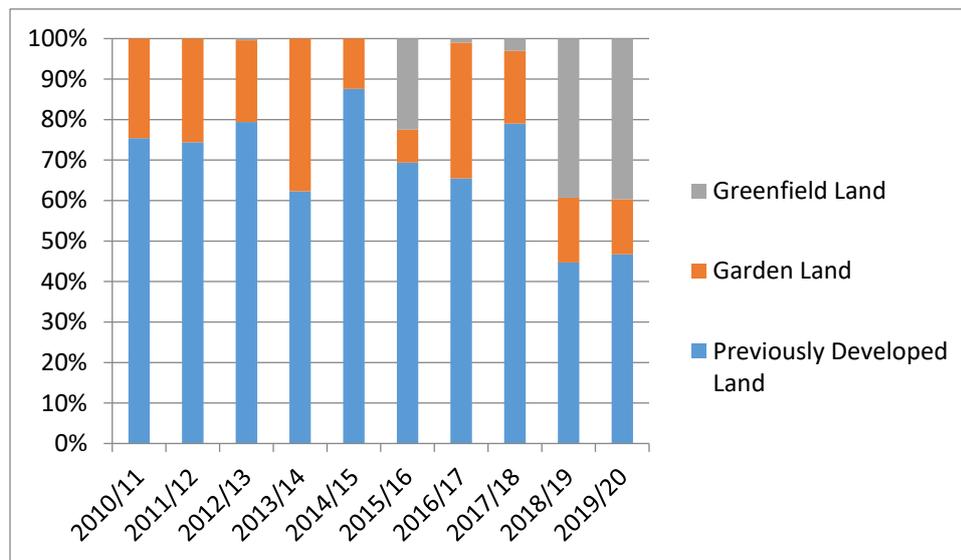
Previously Developed Land - Current Situation:

The NPPF does not include a target for development on previously developed land and leaves it to local planning authorities to determine the most appropriate target. The Oxford Local Plan also does not set a specific target, other than a policy requiring that development schemes must seek to make the most efficient use of land (Policy RE2).

The last monitoring cycle included reporting relating to the proportion of residential completions on previously developed land. This was on the basis of targets in the Oxford Core Strategy. The 2019/20 Annual Monitoring Report⁹ showed that 46.7% of housing completions were on Previously Developed Land. Figure 7 shows that a higher proportion of completions took place on greenfield land in the 2018/19 and 2019/20 monitoring years. This was due to the first phase of Barton Park being completed which is a large strategic greenfield site.

⁹ https://www.oxford.gov.uk/downloads/file/7416/annual_monitoring_report_2019-2020

Figure 7: Proportion of total housing completions delivered on Previously Developed Land (Oxford City Council Annual Monitoring Report 2019/20)



In Oxford, previously developed land can only meet a limited supply of the city’s housing and employment land needs. As such, as part of the Local Plan 2036, a range of additional greenfield sites were looked at for their suitability specifically to help address the city’s housing need. Policy G3 sets out the approach to the release of certain greenfield sites (which includes sites that were previously in the Green Belt). The implications of development on the Oxford Green Belt are the subject of a separate topic paper.

While the Local Plan does not set a minimum density for development across the city, there is an expectation that in the city and district centres, that higher density developments, will be acceptable given the sustainable nature of these locations. As such the plan sets out in Policy RE2, that development proposals in the city and district centres should aim for densities of 100 dwellings per hectare. It is also worth noting that site allocations for residential development in the city also, on the whole, include minimum housing numbers (from which minimum densities can be calculated). Chapter 9 of the Oxford Local Plan 2036 provides information about the site allocations.

Soil – Current Situation

Oxford contains several wedges of agricultural land. The best and most versatile agricultural land (Grades 1, 2, and 3a) is considered to be a national resource and should not be lost. Most of the agricultural land in Oxford is not of this quality, however, there are some parcels of Grade 2 agricultural land north of Binsey and in the Cherwell Valley.

Oxford has seen significant industrial change to the present day in fact Oxford’s industrial history has resulted in a substantial amount of land affected by contamination. Almost all of the former major industrial sites have now been remediated and redeveloped, such as Lucy’s in Jericho and the former car factory site in Cowley. However, there remain a number of smaller sites that have the potential to be affected by contamination.

In 1989, Oxford City Council commissioned a review of former landfill sites in the city. It was a comprehensive review that allowed the city council to manage the risks associated with those sites.

A review of council owned allotment sites was also carried out in the 1990s following some concerns about the quality of the land for growing produce. Since then, some council-owned land, such as former depots, has been redeveloped for housing and the necessary site investigations and remediation has been secured through the planning process.

Oxford City Council maintains a public Contaminated Land Register in accordance with the relevant legislation. There are currently no entries on the Contaminated Land Register. It is worth noting that the register does not include the details of sites that have been remediated through the planning process. There is the possibility that contaminated sites which have not been identified remain and thus could be added to the register in the future.

Water Quality – Current Situation

The Thames River Basin District Management Plan has limited information that is readily accessible about Oxford specifically. This is because River Basin District Management Plans are not aligned with local authority boundaries, instead aligning themselves to catchment areas. For instance Oxford, sits in both the Cherwell and Ray and the Gloucestershire and the Vale catchments (Figure 8).

Figure 8: River management catchments with the Thames River Basin District¹⁰



Data exists at the national level and at the catchment level. Figure 9 shows the number and different type of water body within the Thames River Basin District.

¹⁰ Part 1: Thames river basin district River basin management plan (2015): <https://www.gov.uk/government/publications/thames-river-basin-district-river-basin-management-plan>

Figure 9 - Water bodies within the Thames River Basin District

Water body categories	Natural	Artificial	Heavily modified	Total
Rivers, canals and surface water transfers	287	21	106	414
Lake	7	47	19	73
Coastal	0	0	1	1
Estuarine	1	4	5	10
Groundwater	47	0	0	47
Total	342	72	131	545

Figure 10 shows the ecological and chemical (2015) classification for surface waters in the Thames River Basin District.

Figure 10 - Ecological and Chemical (2015) classification for surface water within the Thames River Basin District

No. of water bodies	Ecological Status or Potential					Chemical Status	
	Bad	Poor	Mod	Good	High	Fail	Good
498	27 (5%)	112 (22%)	320 (64%)	39 (8%)	0 (0%)	5 (1%)	493 (99%)

Figure 11 shows the chemical and quantitative (2015) status for groundwater in the Thames River Basin District.

Figure 11 - Chemical and quantitative status for groundwater within the Thames River Basin District

No of water bodies	Quantitative Status		Chemical Status	
	Poor	Good	Poor	Good
47	22 (47%)	25 (53%)	18 (38%)	29 (62%)

The Management Plan makes some generally applicable recommendations relating to the impacts of physical modifications, managing pollution from wastewater, managing pollution from towns and cities, and potential impacts and changes to natural flow and levels of water on the natural environment, with the Management Plan, however, the level of detail is such that it can apply across the river basin district. The Oxford Meadows SAC is mentioned directly in the context of potential sensitivities to changes in its balanced hydrological regime.

Water Resources – Current Situation

The Thames Water Resources Plan 2015-2040 breaks down the Thames Water area into several distinct water resources zones. Oxford lies within SWOX water resources zone which covers Swindon, Oxford and London.

The Environment Agency has developed a methodology for identifying and classifying relative levels of water stress in England. The government has used this information to designate areas of serious water stress for the purposes of accelerating water-metering. Oxford lies within an area of serious water stress.

Average water consumption in the UK is 150 litres/ person/ day. The government planning assumption is that this should be reduced to 110 litres/person/day by 2050¹¹. Oxford's Local Plan 2036 recognises this increased pressure for water and as such has included, within Policy RE1 that increased standards of water efficiency are delivered in all residential and non-residential developments. Policy RE1 requires that new residential development for instance, meet water efficiency standards of 110litres/ person/ day.

Air Quality: Likely trends without a new local plan

Transport-related projects such as Connecting Oxford, the Zero Emission Zone, the County Council's Local Cycling and Walking Infrastructure Plan (LCWIP) and the Workplace Parking Levy are all likely to help to improve air quality by reducing emissions associated with transport. These are likely to bring benefits without a new local plan as they are being driven via different work-programmes other than town planning. These are discussed further in the Transport Topic Paper. Reducing emissions from transport is likely to have the most impact in terms of reducing oxides of Nitrogen (NO_x) as these are the emissions most associated with transport.

Nationally there are also air quality improvements which will arise during the plan period as a result of, for instance the gradual phasing out of petrol and diesel vehicles as well as additional small impacts associated with improvements in technologies from brakes and tyres.

Impacts of Covid and Brexit

In the short-term there have been improvements in air quality due to Covid as people have travelled less during lockdown (due to working from home). Indeed over the past year, air pollution levels in Oxford dropped by an average of 29% - achieving the lowest levels of air pollution since this data was first monitored in 1996¹². However it is not clear if this trend will continue given the potential increased reliance on private car, and the potential for reduced capacity on public transport due to social distancing. Overall, there is uncertainty about how air quality will be impacted upon however

¹¹ <https://www.gov.uk/government/publications/meeting-our-future-water-needs-a-national-framework-for-water-resources/meeting-our-future-water-needs-a-national-framework-for-water-resources-accessible-summary>

¹² https://www.oxford.gov.uk/news/article/1853/air_pollution_in_oxford_sees_29_decrease_during_2020

it is likely to worsen if transport levels return to pre-COVID levels after the pandemic, especially if there is increased reliance on the private car.

Brexit has had limited direct impacts on air quality.

Air quality and the climate emergency

Addressing air quality through the Local Plan will also help to address the climate emergency. Reducing emissions from transport and the domestic sector will help to reduce the amounts of carbon dioxide going into the atmosphere that contributes to climate change.

Improving air quality can also reduce the impacts from climate change. For example, a risk from increasing incidences of hotter, drier summers is that they can exacerbate the production of ozone from other gases emitted from transport which are harmful to human health. Thus by reducing emissions, this risk can be reduced, thus building resilience to climate change in future.

Land: Likely trends without a new local plan

The results of the projected growth in the city's population is likely to include a greater demand for land for housing and other uses; increased pressure for higher densities; a continued reliance on previously developed land; and a continued need for the remediation of contaminated sites. Increased development pressures are likely to increase the pressure to develop greenfield sites, including agricultural land, within the city boundary, which could have subsequent implications for degrading soils if unmitigated, as well as the potential to have an adverse impact on the amenity of residents and visitors to the city.

Water Quality: Likely trends without a new local plan

The Thames River Basin Management Plan outlines some key measures that would be likely to improve to water quality. These include aspirations to re-naturalise the river corridor and restore degraded ecosystems. The River Basin Management Plan provides predictions for improvements to water quality for 2021. The 2021 update anticipated in December 2021 is likely to provide an indication as to whether water quality predictions are as expected.

On 05 October 2020 a cross-party motion was passed at a Full Council meeting of Oxford City Council to apply for Bathing Water Status for a section of the River Thames. A successful designation by the Department for the Environment, Food and Rural Affairs would mean improved monitoring of water quality and better protection for the river from pollution. While outside of the scope of the planning system, this is a positive step for ensuring good quality river water at the Thames in Oxford.

Water Resources: Likely trends without a new local plan

Water supply in the Thames Valley comes from surface water and groundwater abstraction. Within Oxford's water resource zone (the SWOX area) modelling undertaken by Thames Water has shown that there is a risk that in those years where water demand is at its greatest (during the summer peak period) that there may not be enough water (given the fact that Oxford is in an area of water stress). The existing Local Plan 2036 puts measures in place to deliver water-efficient residential and non-residential developments through requirements set in Policy RE1 which include limiting average daily water consumption in new residential developments to 110 litres/ person/ day. According to the Thames Water Resources Plan 2015-2040 planned growth across the SWOX area is likely to increase the demand for household water while non-household water requirements are likely to remain fairly static.

Air Quality - What can a new plan offer?

Figure 12 summarises the information shown in Figures 3-5 earlier in this report. It shows that different sectors are responsible for differing contributions of the pollutants - Oxides of Nitrogen (NOx); Particulate Matter 2.5 (PM2.5) and 10 (PM10), into the environment. As can be seen, transport has the biggest impact on NOx emissions, whereas domestic and non-domestic emissions contain the most particulate matter.

Figure 12: Table showing breakdown of Domestic, Non-Domestic and Transport Emissions by pollutant¹³

	Domestic Emissions	Non-Domestic Emissions	Transport
NOx	19%	12%	68%
PM10	48%	26%	18%
PM2.5	66%	4%	21%

Town planning is primarily concerned with new, rather than existing, developments. The new Local Plan is most likely to have a significant impact upon domestic and non-domestic combustion emissions as its focus is on the built environment. It is therefore important to ensure that new development does not worsen the existing situation and if possible improves it.

In relation to transport, the Local Plan will have a role in encouraging and supporting modal shift toward more active and sustainable transportation options. It will be important to guide new development to consider issues of connectivity, walking and cycling infrastructure, access to public transport, and the provision of electric vehicle charging infrastructure. It will also be important to align the policies of the plan with the city's Air Quality Action Plan to maximise the effectiveness of both documents on the issue of air quality.

¹³ Oxford City Air Quality Action Plan 2021-2025

https://www.oxford.gov.uk/info/20216/air_quality_management/206/air_quality_management_in_oxford/2

Land Quality – What can a new plan offer?

Given the compact nature of the city and the limited amount of unconstrained land (either by nature conservation designations, flood plain, green infrastructure or Green Belt) brownfield sites are likely to remain an important source of land for development in Oxford. This is also expected to be the main way that potentially contaminated sites would be identified, remediated and brought back into use should they be required to meet the city's development needs. The forthcoming Local Plan 2040 will need to be supported by appropriate evidence including housing and employment land needs assessment, which can uncover development opportunities that may not have otherwise arisen. There may also be the potential to further incentivise the remediation of poor quality brownfield land. Such remediation could include using this land for the enhancement of green infrastructure features, safeguarding biodiversity and the provision of amenity land for residents and visitors.

It is likely that the new Local Plan would benefit from the inclusion of policies which relate to the protection of the environment, in this context protecting the soil from pollution as a result of development proposals. Such an approach is likely to be important for ensuring the longer-term sustainability and protection of Oxford's natural environment.

Water Quality and Resources – What can a new plan offer?

It will be important to develop a sound evidence base to ensure that the Local Plan 2040 is able to give a clear steer in terms of water quality and resources. The Local Plan 2036 included a Water Cycle study and it will be important that the Local Plan 2040 considers this approach going forward. The Oxfordshire Plan 2050 is also developing a Water Cycle Study so that will provide a useful starting point for any future work looking at water quality and water resources in Oxford City.

In terms of the water environment it will also be important to create linkages with other policy areas. Water and land resources are closely linked in Oxford where waterbodies (and their natural floodplains) form a large part of the city's footprint. Linkages between the natural and built environment will be important both in terms of water quality and resources and looking holistically (such as through a water cycle study) can be an important way to plan holistically for the city.

An important policy area with clear linkages to both water resources and water quality is the Green Infrastructure. Urban greening such as street trees, green walls and roofs, and sustainable drainage features can all play an important role in capturing rain-water run-off and providing water storage. In the process, appropriate green infrastructure can also be used to filter and clean water of contaminants and chemical compounds which otherwise could run into waterbodies. Sustainable construction practices such as rainwater harvesting and grey water recycling can also help to address water quality and resource issues.

The increase in demand for water resources arising from population growth, which is aligned with housing and employment growth, has the potential to increase stress on water resource and the capacity to deal with wastewater. Wastewater capacity is looked at in more detail in the Infrastructure Topic Paper but given that there are limited options to deal with wastewater arising from development in Oxford, additional or upgraded facilities may be needed during the plan period.

Conclusion

In conclusion, by addressing the quality of Oxford's air, land and water the City Council is directly attempting to improve the environment that we live and work in. Improving the city's air quality is a key issue. Poor air quality can often be associated with pollution created by vehicles on the road. It is particular crucial to protect our children and elderly members of society who are most at risk from poor air quality.

Having a city where the quality of the environment is of a good standard for everyone is crucial, as this will help contribute to reducing inequalities across the population in terms of both physical and mental wellbeing.

Finally, from an economic point of view having uncontaminated land, as well as being good for health, means there is far greater economic potentially to develop and improve the existing infrastructure and services within Oxford.

Sustainability/Plan issues

Air

- There is a city-wide Air Quality Management Area (AQMA) as well as constraints on new development arising due to potential air quality impacts on Oxford Meadows SAC.
- Tackling congestion, for example by reducing journeys to and within Oxford by motorised traffic would help improve air quality.
- Encouraging uptake of low and zero emission vehicles, in particular buses and taxis which will continue to need to access the city centre.
- Tackling emissions from domestic and non-domestic sources is likely to improve air quality.

Land

- Higher costs associated with dealing with contaminated sites could increase pressure to develop greenfield sites.
- Prioritising brownfield land for development may reduce opportunities for the remediation of contaminated sites which could be repurposed for public amenity or as green infrastructure with a focus on ecological/biodiversity functions.
- Protection of soils from pollution arising from new development.

Water

- Oxford is already in an area of serious water stress.
- Increased demand for water is likely to put continued pressure on water resources. Additional focus on water efficiency measures will need to be looked at through the plan-making process.
- Climate change, particularly incidences of hotter, drier summers may exacerbate water supply issues and create increased water shortages.

- Nutrients from wastewater could impact local water bodies causing eutrophication. This may have knock on implications in terms of the Water Environment Regulations, and the city's ambitions for bathing water status for parts of the River Thames.