

CHAPTER FOUR

A GREEN, BIODIVERSE CITY THAT IS RESILIENT TO CLIMATE CHANGE

OXFORD
LOCAL
PLAN 2040



INTRODUCTION AND WIDER CONTEXT

- 4.1 The primary theme of the vision for Oxford in 2040 addressing the environmental pillar of sustainability, ensuring that Oxford is a green and biodiverse city that is resilient to climate change, is underpinned by five specific objectives:
- Supporting strong, well-connected ecological networks and securing net gains in biodiversity
 - Ensuring the city is resilient and able to adapt to the impacts of climate change
 - A city that is resilient and resistant to flood risk and its impacts on people and property
 - A city with a green/blue network that is protected and enhanced
 - Accessible open spaces for all with opportunities for sport, food growing, recreation, relaxation and socialising.
- 4.2 Success in addressing this theme will mean that we are better addressing existing inequalities in health and wellbeing of the city's residents, as well as the national problem of biodiversity decline and ensuring that we leave our environment in a better state in 2040 than it is today. Equally, it is a key aspect in addressing the ongoing challenge of climate change, in particular, the need to adapt to the impacts of the changing climate and to build resilience across the city so that we are better able to withstand its effects, such as overheating, flooding and drought.
- 4.3 This chapter sets out a range of options for policy falling under several sub-topics related to this theme, which are:
- Green and blue infrastructure
 - Ecology and biodiversity
 - Climate resilience (encompassing flood risk and drainage).

GREEN AND BLUE INFRASTRUCTURE

- 4.4 Green infrastructure in the city performs a vital role in supporting the health and wellbeing of our residents; providing habitat for biodiversity; building resilience to climate change and can provide a range of other environmental benefits such as mitigating flood risk through reducing impermeable surfaces and slowing run-off, ameliorating air quality and reducing noise where this is designed appropriately. This wide range of outputs and benefits is sometimes referred to as ecosystems services. The background to this topic is explored in greater detail in the accompanying Green Infrastructure and Biodiversity background paper as well as the Green Infrastructure Study (2022).
- 4.5 Analysis of the existing context of the city has been undertaken by Ethos as part of the Green Infrastructure Study. Through assessing a range of contextual issues and overlaying these over each other, it is possible to identify some potential priority areas that could benefit from new green infrastructure. Seven priority factors were considered, including: level of deprivation (according to the Indices of Multiple Deprivation), population density, percentage of tree canopy cover, access to private gardens, percentage of public open space and risk of surface water flooding. Those areas that scored poorly against the greatest number of these categories are highlighted in red and orange in Figure 4-1, meanwhile, those with the fewest priority factors scored dark and light green. Areas to the east and south score particularly high in terms of number of priority factors, although there are also areas in the centre of the city and up the central spine moving north.



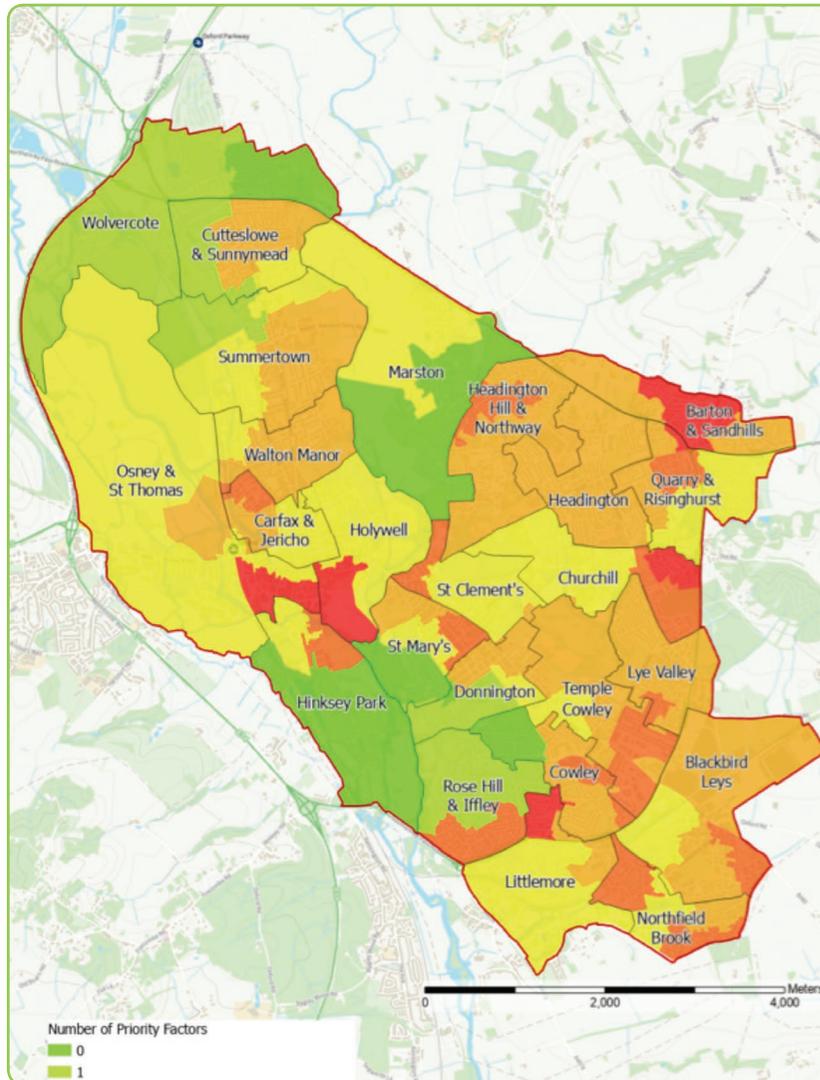


Figure 4-1: Priority areas for greening based upon number of priority factors in local area (more detail about the priority factors can be found in the Green Infrastructure Study (2022))

4.6 Many of our green spaces provide multiple functions and benefits to people and wildlife. Ethos have also undertaken an independent, high-level assessment of multi-functionality of these spaces, (assessing to what degree each site performs multiple roles for the wider area). There is no set method for assessing such 'multi-functionality' and this desk-top assessment was purely focused on identifying the number of functions a site was delivering. Twelve functions were considered, and are detailed in full in the GI study, but include accessibility, food production, children's and youth play, biodiversity, climate adaptation. Larger, publicly accessible spaces typically scored higher in terms of multi-functionality (shown in green in the below Figure 4-2), demonstrating their important role in supporting health and wellbeing. There are a number of lower scoring sites (shown in red and orange) that could be appropriate for enhancement in future so that they can play a broader role in supporting local residents and wildlife. However, it is important to recognise, that certain types of open space have a specific primary role, for example allotments or churchyards/cemeteries, and it may not always be appropriate for them to be enhanced to the same standard as parks or other amenity green spaces.

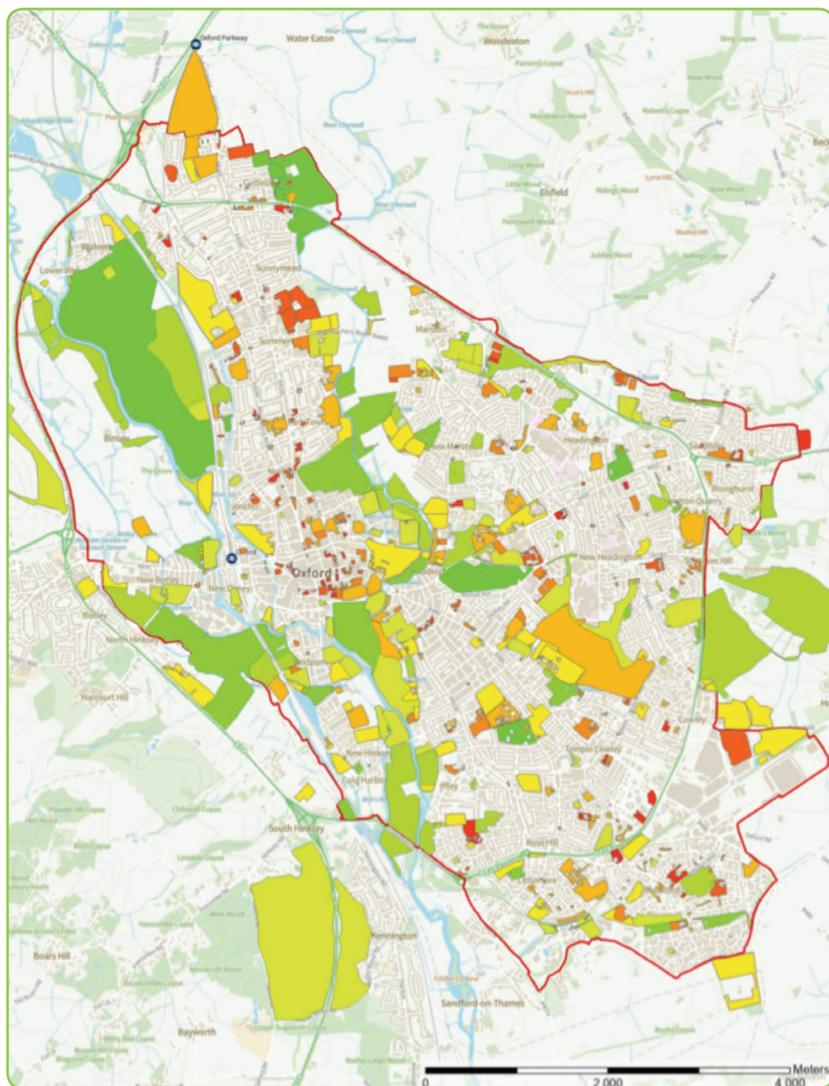


Figure 4-2: Overview of multifunctionality of open spaces (details of multifunctionality assessment can be found in Green Infrastructure Study (2022))

4.7 But green infrastructure is under a variety of pressures, from those arising from the need to accommodate new development in a constrained city; to the recreational impacts that occur as people use these spaces, as well as from climate change and pollution. As such, we propose to include a number of policies that would seek to protect the important green spaces we have, as well as to enhance and provide for new green infrastructure in the city wherever possible.

PROTECTING THE GREEN INFRASTRUCTURE NETWORK

4.8 Ensuring people have doorstep access to a network of green spaces is key objective for the new Local Plan and it is therefore crucial that we continue to protect these existing spaces in the city. The network can be broken down into a variety of typologies of open space, some of these, such as parks and amenity green spaces serve a wider variety of functions than other more specialised spaces, such as allotments and cemeteries. A potential green infrastructure network for the city like the existing network defined in the Local Plan 2036 has been proposed in the Green Infrastructure Study 2022, this is presented in Figure 4-3 below. It is made up of a variety of open spaces and ecological designations, as well as green belt land. Key considerations are the quality and function of spaces, connectivity and ensuring doorstep access to green spaces for people across the city. We will need to undertake further analysis and refinement to finalise the network that is to be subject to protection following the consultation, as such this is not finalised.



Figure 4-3: Potential Green and Blue Infrastructure Network as identified in the Green Infrastructure study 2022. Note, the map identifies wider green infrastructure beyond the city boundary which would not ultimately be a part of any local policy protection

4.9 The table of options set out below proposes to protect a network of different open spaces. At this stage, the options consider the protection of the open space network with the same principles applied to all types of space; however, in drafting detailed policies we may formulate individual policies for different types of green space, in a similar manner to the current local plan, for example a policy that protects outdoor sports, or a policy that protects allotments – this will be considered further at the next stage of consultation as we prepare more detailed policies. There is also an option for protecting trees, hedgerows and woodland.



POLICY OPTION SET G1: PROTECTION OF GI NETWORK AND GREEN FEATURES

a Option for policy approach

Identify a network of green and blue infrastructure for protection, informed by the green infrastructure study. Incorporate multi-functional green spaces of varying sizes, with clear criteria for inclusion in the network. All spaces in the network would be treated with equal protection, based on presumption against any net loss (because being a part of a network means that it would be challenging for them to be replaced elsewhere).

+ Potential positive consequences of the approach

Ensuring that we are protecting a network of spaces and features at various scales will help to ensure that the needs of local residents and the environment are met at various levels. Ensuring spaces are connected, and protected from further fragmentation, can help support quality of these areas and wider nature recovery. The city is limited in its green infrastructure, particularly open space. Once open space is lost, it can be very difficult to reprovide. Beginning from a standpoint that all spaces are valuable and should be protected in themselves helps to recognise this challenge.

Protecting open space regardless of quality recognises that every space has the potential to make an important contribution to health and wellbeing as well as wider sustainability, particularly to the local area.

- Potential negative/neutral consequences of the approach

The green infrastructure study has identified that some green spaces and features are of a higher quality than others – performing a more important role in supporting the city than others.

Considering the high demands for space in the city in order to meet other objectives, such as providing affordable, quality housing for residents, it may be preferable to protect only the higher quality, strategic spaces, or those with practical opportunities to enhance. This would allow us to release poorer quality spaces for other needs, rather than treat all spaces with the same degree of importance. Careful wording will be needed to ensure this approach clearly fits in with the NPPF wording that protects all green spaces unless they are shown to be surplus or can be re provided.

Related options, conclusion

Preferred Option (in combination with b and c)

b Option for policy approach

In addition to the network, have a series of separate policy protections based on different types of greenspaces (e.g. outdoor sports, biodiversity sites, allotments and greenbelt) and address each specifically. Note that none of these designated sites are considered surplus.

+ Potential positive consequences of the approach

This option could allow bespoke policy approaches to specific types of green space and any unique needs/concerns.

- Potential negative/neutral consequences of the approach

This approach may add a level of confusion where there are protections of a particular category both within and outside of the network (for example some outdoor sports pitches may be a multifunctional part of the network and others may have protection only as outdoor sports).

Related options, conclusion

Preferred Option
(in combination with a and c)

c Option for policy approach

Only allow the loss of trees, hedgerows and woodland where it is clearly justified (level of justification to be considered against quality of tree) and any loss mitigated. Require developers to demonstrate how the retention of existing trees/hedgerows and the planting of new trees/hedgerows has been considered (applying BS.5837:2012 Guidance or future equivalent) in the design and layout of new development and outside space. This should include protection and/or enhancement of tree canopy cover.

Planning permission will not be granted for development resulting in the loss or deterioration of ancient woodland or ancient or veteran trees except in wholly exceptional circumstances.

+ Potential positive consequences of the approach

Trees perform several important functions such as helping to improve air quality, supporting biodiversity and contributing to the character of an area. It is important that, where possible, developments are designed to enable the retention of established trees and to incorporate the planting of new trees. Tree canopy cover often has the biggest impact on setting and as such that correlates to the benefits that trees can bring.

Some high-quality trees are protected by Tree Preservation Orders (TPOs), but this relies on the City Council having been made aware of them and designating in this way. It is unlikely that all high-quality trees in the city are protected in this way however, thus many will not benefit from TPO protection.

- Potential negative/neutral consequences of the approach

Where high quality trees are already protected by Tree Preservation Orders, additional tree protections could be considered too onerous in the development of particularly constrained sites.

Related options, conclusion

Preferred Option (in combination with a and b)

d Option for policy approach

Do not define a network of green spaces but assign individual protection to larger strategic sites including public parks, biodiversity sites, allotments, cemeteries and outdoor sports, with sets of criteria relevant to each. Include the wording from the NPPF that sets out protection for all green spaces unless they are surplus or can be reprovided.

+ Potential positive consequences of the approach

This option recognises that there are key areas of open space with value to supporting health and wellbeing in the city. These larger spaces are likely to have more capacity for enhancement than smaller ones too. It would ensure that key areas are identified and protected across the city whilst diverting development pressure away to poorer quality areas or areas that provide less benefit overall.

- Potential negative/neutral consequences of the approach

Green infrastructure works best when thought of as an interconnected network, which this approach would ignore.

Smaller spaces and linear features contribute to and enhance larger spaces, as well having an equally important role in supporting day-to-day wellbeing – breaking up urban environment, supporting climate resilience, creating wildlife corridors and encouraging active travel.

Related options, conclusion

Alternative Option

e Option for policy approach

Do not include a policy protecting green and blue infrastructure and defer to national policy/standards.

+ Potential positive consequences of the approach

National guidance on GI standards is developing, including the full launch of the Natural England GI Framework later in 2022.

- Potential negative/neutral consequences of the approach

Relying on national standards for green infrastructure provision could risk ignoring local contextual issue and priorities which a local policy can help to address.

Related options, conclusion

Alternative Option (considered detrimental)

PROVIDING NEW GREEN INFRASTRUCTURE

- 4.10 The constrained nature of the city means that it can be difficult to deliver substantial amounts of new green space, this means that we need to work harder to secure more innovative uses of available land to accommodate new greening. Local Plan policy can have a role in securing a range of new green infrastructure across different scales of development, from lines of street trees and hedges, to making use of peripheral spaces like roof tops and walls, as well as encouraging the use of more natural surface cover in the design of new developments, instead of tarmac and concrete. By ensuring that every new development considers these opportunities appropriately, we can help to ensure that we maximise opportunities for green infrastructure and secure the various benefits associated with it, whilst cumulatively bringing about a greener healthier Oxford.
- 4.11 The policy options set out below include proposals for more tailored requirements in different areas of the city, or on different scales of development. On larger sites, there is more opportunity for creating new open space so these opportunities should be maximised; whilst particular routes in the city could also be identified as being prime locations for creating new green corridors, linking up existing open spaces and encouraging active travel through neighbourhoods that are more peripheral to local amenities or with lesser access to green space. Equally, the use of an Urban Greening Factor (a simple metric tool for quantifying green surface cover) could be an effective means of assessing and demonstrating new development has brought about a net increase in natural surface cover (like green roofs and other green permeable surfaces)– which is essential for building resilience to climate change and can have other benefits, such as improved air quality. The Urban Greening Factor is discussed more in the background paper.



POLICY OPTION SET G2: PROVISION OF NEW GI FEATURES

- a** **Option for policy approach**
Require green and blue infrastructure features on all new development – guide expectations through tailored requirements in different areas of city or on different scales of site including:
- i. On specific green corridors
 - ii. Compliance with Urban Greening Factor to demonstrate net gain
 - iii. % new open space on larger sites
 - iv. Bespoke guidance on greening within allocations policies.

+ Potential positive consequences of the approach

More bespoke tools would align with the wider spatial approach to the Local Plan and such tools/approaches could be tailored to meet specific needs/challenges in different areas of the city (e.g. areas of deficit, deprivation, with poor air quality, highly urbanised sites).

National policy encourages use of such tools as a standard. Such tools can allow for better analysis and more effective design of green infrastructure, assist in practical delivery and better quantification of benefits.

With better quantification of green infrastructure, comes the potential for better monitoring of what is being delivered in a design proposal.

- Potential negative/neutral consequences of the approach

Quantifying green infrastructure provision and its benefits can be a subjective process which is not an exact science.

There is the potential for any provision of green infrastructure by applicants to be tailored to meet only the bare minimum as required by any such policy (e.g. the minimum acceptable to meet policy), rather than striving to maximise provision or be more innovative.

Potential for more complicated/onerous development management process which would need to be addressed with quality guidance.

Related options, conclusion

Preferred Option


b Option for policy approach

Require open space as percentage of site area on larger sites and all other new development to include green and blue infrastructure features. Set out principles for what should be included. Leave requirements flexible, to respond to the site's specifics.

+ Potential positive consequences of the approach

Larger developments potentially offer the biggest opportunities for achieving new, worthwhile open space in the city – ensuring these are captured with a requirement for a specific level of open space helps to contribute to new open space provision.

Smaller sites in the city are typically more limited in what green infrastructure features they can provide, as such, requiring new provision to be factored into their design, but leaving flexibility in how this achieved, would allow for different proposals to respond in the best way possible for the site.

Requiring open space provision on smaller sites could lead to small, unusable spaces that are costly to manage and maintain and offer little value to residents, as has historically been experienced in the city.

- Potential negative/neutral consequences of the approach

Many developments in the city have historically been on smaller sites and not of the scale large enough to meet the need for open space provision on larger sites.

Asking for green infrastructure, without specifying more exact/quantifiable targets risks under provision and proposals not maximising the potential for green infrastructure on a site.

In relation to smaller sites and requiring green infrastructure without setting more exact targets, historically, it has been difficult to monitor and therefore assess the performance of similar policies.

Related options, conclusion

Alternative Option

c Option for policy approach

Set out a specific quantity standard of the number of hectares per 1,000 population for green space provision on all new developments in city.

+ Potential positive consequences of the approach

This would provide a simple target to monitor and report on.

- Potential negative/neutral consequences of the approach

Such a target would not necessarily be meaningful as greenspace may not be evenly distributed, located close to centres of population, accessible, or of quality. It is more meaningful to measure and provide greenspaces on a more localised basis. Work on the previous Local Plan identified the challenge that it is increasingly difficult to manage the provision of open space at a fixed ratio to population in Oxford as most developments are on small sites.

Related options, conclusion

Alternative Option
(considered detrimental)

- d Option for policy approach**
Do not include a policy for providing new green infrastructure, defer to national policy/standards.

- + Potential positive consequences of the approach**
This would allow for greatest flexibility for applicants to work within the constraints of their site.

- Potential negative/neutral consequences of the approach**
This option would be limited in influencing the amounts of greening undertaken on a site and would not set any minimum expectations on proposals. It could result in opportunities to maximise green infrastructure being missed and is likely to have less of a positive influence on the design of natural elements of designs.

Related options, conclusion

Alternative Option (considered detrimental)

AN URBAN GREENING FACTOR FOR OXFORD

- 4.12 This would be a new policy tool for Oxford, intended to improve the proportion of natural, green surface cover achieved on new development and is particularly well suited to areas that are highly urbanised and constrained, as is the case for many sites in the city. Reducing levels of artificial surfacing and replacing these with natural cover (e.g. greening of driveways, rooftops and walls) could have a variety of benefits, including for climate resilience and mental health of residents. The tool is not intended to replace other documents such as the Department for Environment, Food and Rural Affairs (DEFRA) biodiversity metric, or the need for submission of landscaping details alongside a proposal, but is instead, intended to supplement that work and help quantify how greening features have been incorporated into design. A full analysis of the tool, including how it could be used in a policy, the strengths and weaknesses of it, and how it might be applied across the city, is set out in the background paper. Variations of the urban greening factor are now in application in various locations around the UK, including London and Southampton.
- 4.13 The key requirement is that a level of betterment is demonstrated as a result of the development using the tool and that this would be submitted alongside the planning application as evidence. Beyond this, there are a variety of options for the scale of application across the city, it could either be targeted to specific sites or areas, or be applied more widely, and these options are set out below.

POLICY OPTION SET G3: PROVISION OF NEW GI FEATURES – URBAN GREENING FACTOR

a Option for policy approach

Incorporate the use of an Urban Greening Factor (UGF) into policy, requiring proposals to demonstrate a betterment in score (above a minimum) as part of the design of the development.

+ Potential positive consequences of the approach

Would allow for greening on sites to be quantified and seeking a betterment should help to green the city over time.

UGF tools are quick and simple to use and to be understood by a range of users, they can assist in discussing and visualising levels of greening on a site.

Could be well suited to more constrained sites due to promoting use of often wasted spaces such as walls and rooftops.

- Potential negative/neutral consequences of the approach

The simplicity of UGF tools means they are fairly limited at distinguishing quality/condition of greening measures. Where designs incorporate more complex features, their suitability will still need relevant expert assessment for quality/management etc. as with any other application.

They are not a replacement for ecological analysis and associated metrics such as DEFRA Biodiversity metric. The tool would be an additional metric to be completed by applicants alongside the DEFRA Biodiversity metric. The two tools have differing but complementary aims, but it would be an additional ask of applicants.

Related options, conclusion

Preferred Option (in combination with b)

b Option for policy approach

The scale of application of the UGF tool could be across select sites/ areas of the city, whilst its use is encouraged but not mandatory elsewhere. Potential areas of application could be:

- Major applications
- Specific site allocations which are not already sufficiently green.
- Retail/district centres
- Areas of deficit of green surface cover and/or heightened climate risk.

+ Potential positive consequences of the approach

This avoids unnecessary work by avoiding areas that are already particularly green. It is sensible to target the approach to areas in the city where the use of the tool and securing betterment would be required.

- Potential negative/neutral consequences of the approach

Could be missing out on opportunities to promote greening elsewhere in the city – encouraging the tool's use may not be strong enough to get applicants to use it elsewhere.

Related options, conclusion

Preferred Option (in combination with a)



- c Option for policy approach**
The scale of application of the UGF tool could be mandatory across all developments in the city.

- + Potential positive consequences of the approach**
The ease of use of the tool and the non-prescriptive requirement of simply achieving betterment (leaving a site greener than it started) could be quite easily applied to many areas.

- Potential negative/neutral consequences of the approach**
Some sites in the city are already quite green and achieving betterment could be difficult to achieve/of little value. The tool is better suited to harder, grey areas with little greening at present.

The tool does not distinguish between quality/condition in detail, therefore, there is a risk that on particular green sites, the policy requirement could promote replacement of existing established/quality features for other poorer quality features.

Related options, conclusion
Alternative Option

- d Option for policy approach**
Do not incorporate an UGF into policy.

- + Potential positive consequences of the approach**
The tool would be an additional metric to be completed by applicants alongside the DEFRA Biodiversity metric. The two tools have differing but complementary aims, however, it is an additional ask of applicants.

- Potential negative/neutral consequences of the approach**
The tool is a simple and practical way of quantifying and better negotiating net gains in greening on sites which has a range of benefits including climate adaptation, mental and physical health and wellbeing and biodiversity.

Related options, conclusion
Alternative Option

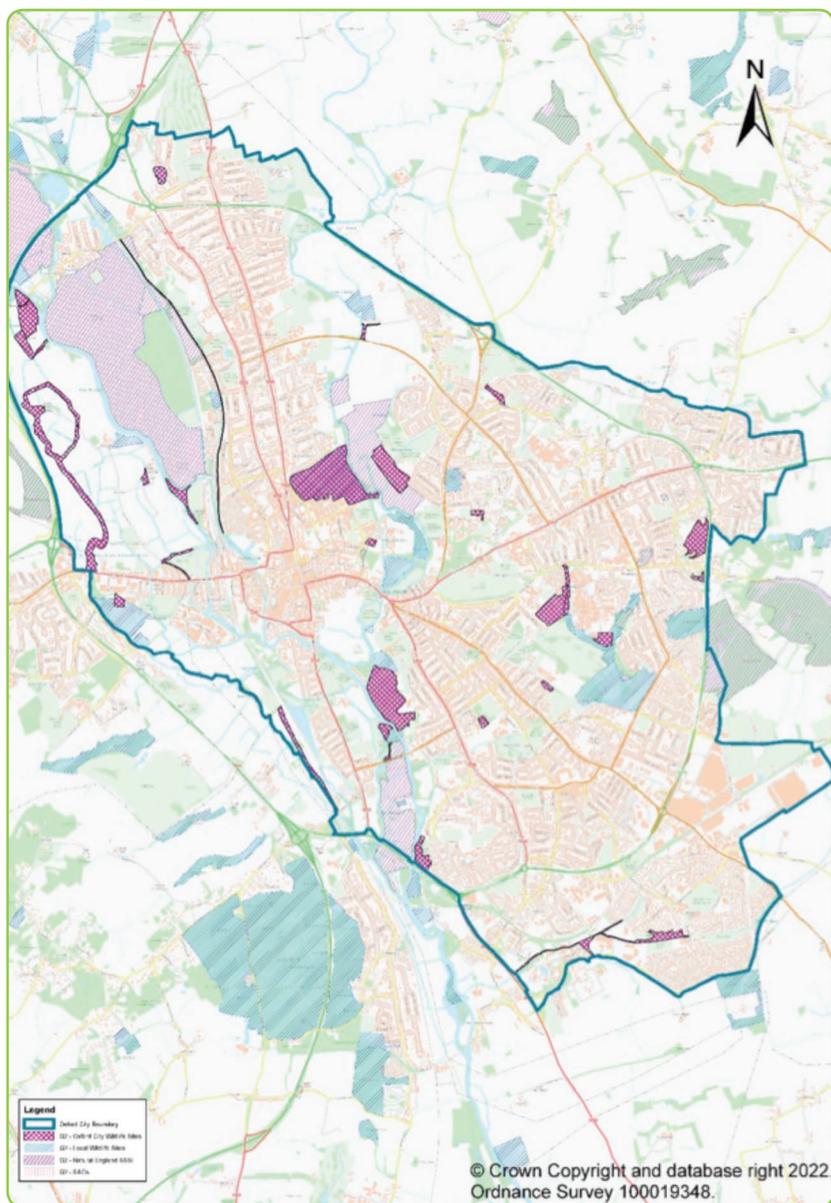


Figure 4-4: Sites of ecological and biodiversity importance

BIODIVERSITY AND ECOLOGY

- 4.14 The green infrastructure network is made up of a variety of typologies of green space and a key component of this network are those sites which are particularly important for ecology and geodiversity. There is a hierarchy of nationally and locally designated sites across the city for their special ecological value which are subject to varying levels of protection and merit protection. Not only are these spaces refuges for sensitive flora and fauna, but they also support the wider ecological network that spans across the county. This topic is explored in greater detail within the accompanying Green Infrastructure and Biodiversity background paper.
- 4.15 The UK is suffering from biodiversity decline at varying scales for a variety of reasons, from climate change to habitat fragmentation. Urban areas have been shown to be experiencing particularly pronounced levels of decline due to pressures of new development and pollution from a range of sources. Beyond protecting designated sites, it's also important to recognise that elsewhere in the city there may be important habitats or species that are worthy of protection and it will be important for new development to consider these in the design of any proposals. New development, when planned properly, can contribute to improving biodiversity in the city too.
- 4.16 The Environment Act 2021 received royal assent and the provisions related to ecology and biodiversity are expected to come into force in late-2023. A key provision is the requirement for most new development to deliver a minimum 10% biodiversity net gain; an increase on the 5% required by the Oxford Local Plan 2036. Local planning policy can potentially shape how net gain is delivered, for example by identifying what strategies developers should consider in delivering net gain. The following also sets out options for how we can further support biodiversity net gain in the city beyond the Environment Act, but also how we will protect the most valuable ecological sites in the city from development.

BIODIVERSITY NET GAIN AND THE ENVIRONMENT BILL

- 4.17 Developers must follow the mitigation hierarchy, which requires them to avoid, minimise and mitigate impacts on ecology and biodiversity, compensating for losses only as a last resort. The Defra Metric is constructed in a way that encourages net gain to be delivered by avoiding impacts on valuable habitats in the first instance, then enhancing existing habitats and finally, by creating new ones.
- 4.18 Where developers are unable to achieve at least 10% net gain on-site, they will have the options of delivering it off-site either by delivering gains on other land under their control, by paying a third-party to deliver offsetting on their behalf (e.g. through a habitat bank) or as a last resort by purchasing a statutory credit.
- 4.19 This is a key consideration for Oxford as often the density of proposed development, in addition to the presence of other constraints around public open space and drainage, make it very challenging (and in some cases impossible) to deliver net gain on-site. Therefore, offsetting is frequently required.



- 4.20 Details of how exactly the requirements of the Environment Act are to be implemented in practice are still to be confirmed; however, it is assumed that there will be a role for local policy in helping to steer elements of the Act such as how off-site net gain is delivered. The biodiversity metric encourages off-site gains to be delivered in the same district but does not require this. Net gains that cannot be accommodated onsite should first be steered into the local area, with the next preference being to sites elsewhere in the city that require enhancement, and then to identified priority areas for biodiversity within the wider county, as informed by a relevant strategy. The lack of habitat banks in Oxford City and the limited availability of land means it may be necessary to work through this hierarchy. It is also for this reason that whilst we could potentially go beyond the 10% net gain requirement, and have set out an option for it below, this would not necessarily be delivered within the city boundaries. It may be preferable to explore other options that focus on delivering additional ecological enhancements onsite, as are explored following this section. Opportunity areas within Oxfordshire are to be highlighted within the forthcoming Local Nature Recovery Strategy likely to be prepared by Oxfordshire County Council and the Oxfordshire Nature Recovery Network.

POLICY OPTION SET G4: DELIVERING MANDATORY NET GAINS IN BIODIVERSITY IN OXFORD

a Option for policy approach

Set out a hierarchy for how 10% net gain as required through Environment Act should be delivered, particularly where on-site net gain is not possible. Guidance would seek to secure off-site delivery in the local neighbourhood in first instance, then within city boundary, then county. Off-site delivery within Oxfordshire, if no opportunities are available in the city, would be sought within the opportunity areas of the forthcoming Local Nature Recovery Strategy, and the Oxfordshire Nature Recovery Network. Payment to a body managing schemes would be the final option in the hierarchy.

+ Potential positive consequences of the approach

The supporting guidance for how the requirements of the Environment Act should be implemented is still being developed. Whilst the Act sets out certain requirements, e.g. mandatory 10% net gain on new development, it is likely that there will be a role for local policy in determining how broader matters such as off-site delivery are implemented. This policy would help to ensure that any off-site delivery of net gain would be to the benefit of the local area in first instance before options further afield are considered.

- Potential negative/neutral consequences of the approach

The city has limited capacity for taking on additional biodiversity enhancement to the scale and specific standards required through the Environment Act/DEFRA metric. As such, whilst a policy could try to focus any off-site delivery in the local area, geographical constraints may limit its effectiveness and options further afield, even beyond the boundary, may be necessary regardless. Off-site offsetting may also deliver better outcome for biodiversity if geared towards landscape-scale nature conservation.

Related options, conclusion

Preferred Option

b Option for policy approach

Require higher than 10% net gain on certain sites, in excess of the minimum requirements of the Environment Act.

+ Potential positive consequences of the approach

Recognises the importance of supporting biodiversity and acting on biodiversity decline nationally.

- Potential negative/neutral consequences of the approach

10% net gain on sites as required by Environment Act is likely to be challenging enough in many areas of city. A higher target is not considered realistic/deliverable particularly on many smaller, constrained sites and could result in more off-site mitigation, as opposed to on-site measures, and that mitigation can't all be within the city, but will be through contributions to schemes across the county.

Additional demands in terms of net gain could impact ability/viability to provide for other needs. The expense of this will affect the affordability and therefore selection of other policy approaches that are equally important.

Related options, conclusion

Alternative Option (considered detrimental)



- C Option for policy approach**
Do not include a policy addressing biodiversity net gain requirements as set out in Environment Act, defer to national guidance/policy.

+ Potential positive consequences of the approach
Environment Act is a landmark piece of legislation which will already result in an increased focus on delivering for biodiversity on all new developments. It may be that this is brought into the NPPF at a national policy level instead.

- Potential negative/neutral consequences of the approach
The national requirements in the Environment Act are not informed by local context. Many sites in the city are constrained in nature without the space to provide for new habitat on site, thus having to rely on offsite delivery elsewhere in city (and as last resort beyond city). Could result in limited benefit to local area.

Related options, conclusion

Alternative Option (considered detrimental)

PROTECTING AND PROVIDING FOR BIODIVERSITY ONSITE IN OXFORD

- 4.21 As noted in the introduction to this section, there are many sites in the city with the potential for supporting valuable flora and fauna and it is important that applicants consider this before they apply for planning permission. Biodiversity net gain is concerned with protecting, enhancing and creating habitats. Protected species are considered entirely separately in the planning process. Planning policy needs to consider how development will affect existing flora and fauna.
- 4.22 The development process also offers the opportunity to support additional biodiversity in the local area through sensitive and well-thought-out design that incorporates wildlife friendly measures that can support nature, such as bird and bat boxes, insect homes, wildflower planting, and hedgehog holes. There is likely to be a role for a local policy that requires wildlife- friendly development, this could be a valuable way of making space for nature that may be easier to secure on smaller more constrained sites where the net gain requirement may not result in many ecological enhancements on-site. This would also help demonstrate how Oxford City Council is seeking to meet its revised duty to conserve and enhance biodiversity that will be established when the Environment Act comes into force.
- 4.23 One means of providing certainty for applicants and officers in what is expected would be by setting out a list of potential biodiversity measures we would want to see on sites. This list of measures would be put together in agreement with the City Council's ecologist and other key stakeholders so that it represents simple but meaningful features that would be most suitable to supporting the city's natural environment and local species that could benefit most. A more prescriptive policy could set out a minimum number of measures to be secured at different scales of development (e.g. minor or major). Applicants would be asked to demonstrate that they have scored a number of points from a published biodiversity points list, an example of which (that would need to be tailored to Oxford's specific context) is included in Figure 4-5.

- 1 A bird box for every apartment
- 2 A biotope for specified insects in the courtyard (water striders and other aquatic insects in the pond)
- 3 Bat boxes in the courtyard
- 4 No surfaces in the courtyard are sealed, and all surfaces are permeable to water
- 5 All non-paved surfaces with the courtyard have sufficient soil depth and quality for growing vegetables
- 6 The courtyard includes a rustic garden with different sections
- 7 All walls, where possible, are covered with climbing plants
- 8 There is 1 square meter of pond area for every 5 square metres of hard-surface area in the courtyard
- 9 The vegetation in the courtyard is selected to be nectar rich and provide a variety of food for butterflies (a so-called 'butterfly restaurant')
- 10 No more than five trees or shrubs of the same species
- 11 The biotopes within the courtyard are all designed to be moist
- 12 The biotopes within the courtyard are all designed to be dry
- 13 The biotopes within the courtyard are all designed to be semi-natural
- 14 All stormwater flows for at least 10 metres on the surface of the ground before it is diverted into pipes
- 15 The courtyard is green, but there are no mown lawns
- 16 All rainwater from buildings and hard surfaces in the courtyard is collected and used for irrigation
- 17 All plants have some household use
- 18 There are frog habitats within the courtyard as well as space for frogs to hibernate
- 19 In the courtyard, there is at least 5 square metres of conservatory or greenhouse for each apartment
- 20 There is food for birds throughout the year within the courtyard
- 21 There are at least two different old-crop varieties of fruits and berries for every 100 square metres of courtyard
- 22 The facades of the buildings have swallow nesting facilities
- 23 The whole courtyard is used for the cultivation of vegetables, fruit and berries
- 24 The developers liaise with ecological experts
- 25 Greywater is treated in the courtyard and re-used
- 26 All biodegradable household and garden waste is composted
- 27 Only recycled construction materials are used in the courtyard
- 28 Each apartment has at least 2 square metres of built-in growing plots or flower boxes on the balcony
- 29 At least half the courtyard area consists of water
- 30 The courtyard has a certain colour (and textures) as the theme
- 31 All the trees and bushes in the courtyard bear fruit and berries
- 32 The courtyard has trimmed and shaped plants as its theme
- 33 A section of the courtyard is left for natural succession (that is, to naturally grow and regenerate)
- 34 There are at least 50 flowering Swedish wild herbs within the courtyard
- 35 All the buildings have green roofs

Figure 4-5: An example of a green points list highlighted in the TCPA expert paper 'The Green Space Factor and the Green Points System' (2011)⁷

⁷ <https://tcpa.org.uk/resources/the-green-space-factor-and-the-green-points-system/>



POLICY OPTION SET G5: PROTECTING AND ENHANCING ONSITE BIODIVERSITY IN OXFORD

- a** **Option for policy approach**
Include policy requirements that seek to ensure applicants identify/ assess/protect any existing habitat of value on a site.

+ Potential positive consequences of the approach
Whilst a separate policy would address protected designated sites, there are often habitat features/species that exist elsewhere in the city which are valuable and need to be protected where possible. Ensures developers assess potential impacts on legally protected species.

- Potential negative/neutral consequences of the approach
This would involve additional checks and assessment for applicants before commencing work.

Related options, conclusion

Preferred Option (in combination with b)

- b** **Option for policy approach**
Policy with prescriptive requirements to secure biodiversity features on site. Could require a specific enhancement on each site selecting from a pre-defined 'biodiversity points list' (e.g. bat box, bird box, wildflowers), or a minimum number of points (potentially one target for minors and higher target for majors). Could potentially be supported by updated Technical Advice Note (TAN).

+ Potential positive consequences of the approach
Highlights on-site biodiversity measures as a priority for the Local Plan/Oxford City Council.

Policy could be tailored to challenges of delivering biodiversity net gain in a constrained city like Oxford.

Would primarily seek to secure some sort of onsite improvement and support/fill in gaps left by Environment Act which may result in off-site compensation for on-site impacts.

More specific targets (e.g. through point system) would be more practical to monitor and implement. A pre-defined list would provide guidance to applicants about what is most suitable for their site/location.

- Potential negative/neutral consequences of the approach
Every site is likely to be different, risk that a prescriptive list/point system could be too blunt a tool, limiting any benefits.

On more constrained sites, the scope for biodiversity enhancements will still be challenging.

Related options, conclusion

Preferred Option (in combination with a)





c Option for policy approach

Policy that requires biodiversity features/ecological measures but is not prescriptive about what measures are incorporated/or how much/or the standard of those measures. Could potentially be supported by updated TAN.

+ Potential positive consequences of the approach
Highlights on site biodiversity measures as a priority for the Local Plan/Oxford City Council.

Allows more flexibility than Option b for developers to work within the constraints of a site.

- Potential negative/neutral consequences of the approach
Less prescriptive policy and lack of quantifiable targets for what measures are expected could result in less effective policy and less influence on what comes forward. Without a minimum target, proposals may be more likely to fail at maximising opportunities on a site.

Related options, conclusion

Alternative Option (in combination with a)



d Option for policy approach

No bespoke policy on supporting biodiversity on site, instead, via complimentary policies (e.g. sustainable design and construction), include requirements to incorporate general ecological enhancements.

+ Potential positive consequences of the approach
Constrained city means achievable measures could have limited effect anyway, protection of established ecological sites nearby may be more effective overall.

- Potential negative/neutral consequences of the approach
The Environment Act requirements likely to have issues with achieving onsite net gain in many parts of city, resulting in off-site contributions, exemptions also, meaning net gain in real terms could be limited. A specific policy would highlight this as a priority for the City Council, not including one could weaken this position.

General encouragement of ecological enhancements means effectiveness of policy is hard to quantify and monitor.

Related options, conclusion

Alternative Option (in combination with a)





e Option for policy approach
Do not include a policy for protecting and enhancing on site biodiversity, defer to national policy/standards.

+ Potential positive consequences of the approach
Environment Act is a landmark piece of legislation which will already result in an increased focus on delivering for biodiversity on all new developments.

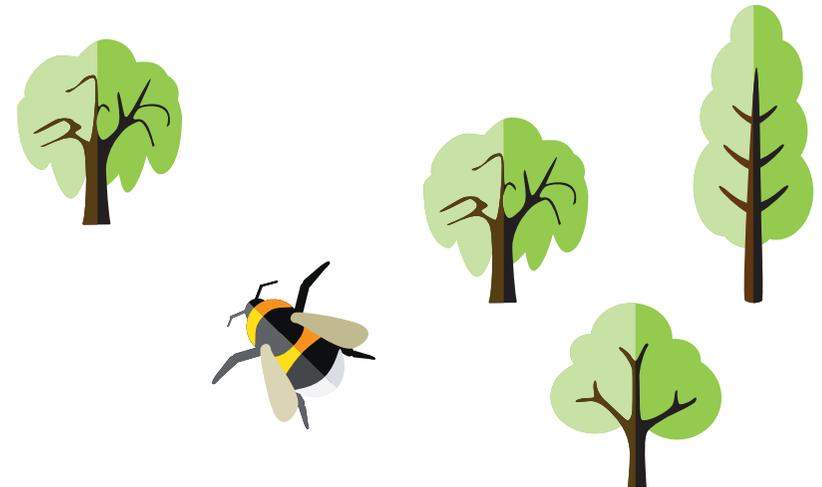
- Potential negative/neutral consequences of the approach
Environment Act 10% net gain is focused primarily on habitat creation which equates to habitat units. Many sites in the city are constrained in nature without the space to provide for new habitat on site, thus having to rely on offsite delivery elsewhere in city (and as last resort beyond city). Could result in limited benefit to local area and lead to ecological impoverishment.

Related options, conclusion
Alternative Option (considered detrimental)



PROTECTING OXFORD'S ECOLOGICAL NETWORK

4.24 Earlier in this chapter, several options have been set out relating to wider green infrastructure network and the protection of key typologies of green space (e.g. parks, allotments, cemeteries, outdoor sports). But the city also hosts a hierarchy of ecological sites, from the internationally and nationally important Special Areas of Conservation (SAC) and Sites of Special Scientific Interest (SSSIs) to more locally valuable designations, such as Local Wildlife Sites, Oxford City Wildlife Sites⁸ and Local Nature Reserves. The ecological sites not only form an integral part of the wider green infrastructure network but are valuable in themselves for the role they play in supporting our flora and fauna and should be protected from development which could compromise their special features. In addition, we are currently reviewing the local sites and considering whether there are any additional sites in the city which ought to be protected as part of the ecological network for their local biodiversity value, more detail will follow in the next consultation.



⁸ Oxford City Wildlife Site (OCWS) are sites of local importance for wildlife and nature, because of either connectivity, rare or exceptional features, habitat provision, diversity and/or local value for naturalness, learning and appreciation of nature.

POLICY OPTION SET G6: PROTECTING OXFORD'S ECOLOGICAL NETWORK

a Option for policy approach

Include a policy which protects the city's network of national and local designated sites from development. Set out that proposals will need to consider a range of potential impacts depending on the context of application and proximity to any protected site(s), particularly, but not limited to:

- Loss of protected land
- Recreational impacts
- Changes to the hydrological regime (groundwater, primarily),
- Impacts on water quality
- Impacts from air pollution.

Define hierarchy within the network, with level of protection based upon importance/value of species/habitat they have been designated for such as:

- International designations (SAC)
- National designations (SSSIs)
- Irreplaceable habitats and Local Wildlife Sites
- Priority habitat.

+ Potential positive consequences of the approach

Ensures that the city's most important areas of habitat and species are protected from the direct and indirect impacts of inappropriate development in future.

Protection of SACs set in legislation, protection of SSSIs and irreplaceable habitats set in NPPF. No specific protection for locally designated sites, although the NPPF requires local plans to identify, map and safeguard such sites.

Oxford City Council has multiple tiers of locally designated sites; notably, more stringent criteria area applied in designating local wildlife sites (LWS) versus Oxford City Wildlife Sites (OCWS). It is appropriate to ensure the level of protection is proportionate to the level of ecological interest.

Also ensures protection of sites/habitats that are of notable ecological value but this has not been previously identified through selection of designated sites.

- Potential negative/neutral consequences of the approach

Protecting designated habitats is important for supporting biodiversity in the city, however, there are likely to be other smaller/undesignated habitats which provide an important supporting/connecting role which will need to be safeguarded where possible also.

Space in the city is under demand to deliver upon a variety of objectives, including providing for affordable/quality housing and jobs – these needs must be balanced with the need for protecting biodiversity, but will necessarily be limited as space is secured for other purposes like this.

Related options, conclusion

Preferred Option



- b** **Option for policy approach**
Do not include a policy protecting ecological sites and defer to national policy/standards.

+ **Potential positive consequences of the approach**
There is already legislation and national policy governing the upper levels of the hierarchy so may not be necessary to repeat that locally.

- **Potential negative/neutral consequences of the approach**
Particularly for local sites of ecological importance, the Local Plan is the key means through which these designations are protected from inappropriate development.

Related options, conclusion

Alternative Option (considered detrimental)

CLIMATE RESILIENCE

- 4.25 Climate change is the greatest threat facing society today and the way we design and build the built environment has a key role to play, not only in how we mitigate our impacts on the climate, but also in how we can withstand the impacts of a changing climate in future. This chapter contains policy options that show how we will secure radical reductions in carbon emissions needed over the next couple of decades, whilst policy options for building Oxford's resilience to climate change into the future are set out below. A certain amount of climate change is already effectively baked into our future, even if the world were to stop emitting carbon tomorrow, due to the long-term effects of the carbon already within the atmosphere, so adaptable and resilience will be essential.
- 4.26 Oxford's risk from future climate change is primarily related to flooding and overheating as has been explored in the accompanying climate risk assessment. A significant amount of the city lies within areas of higher flood risk. Climate change is projected to bring about wetter winters, and more intense rainfall events that could exacerbate this flood risk. A further climate hazard relates to overheating, the city is heavily urbanised with significant areas of artificial surface cover which generally tend to exacerbate heat compared with more rural surroundings (also known as the urban heat island effect). Again, as with much of southern England, climate change is expected to exacerbate this problem, with future climate expected to involve hotter, drier summers and more heat wave events.
- 4.27 The burden of climate change is not an equal one, with the elderly, the young and the disabled typically being more at risk to its impacts than others. Furthermore, the pronounced inequalities we see across our communities is likely to exacerbate the unequal burden of risk from climate change's impacts, with the most deprived communities being subjected to the highest levels of risk. These communities tend to have fewer financial resources to implement their own adaptation measures such as



air conditioning, or flood-proofing for example. Equally, we tend to see higher incidences of poor health and life-limiting health conditions which can be exacerbated by climate risks in more deprived communities and households.

- 4.28 For these reasons, a strong set of policies is needed that can help to ensure that development is adapted to future climate change and that we avoid unintentional maladaptation (design choices that could exacerbate risks). Alongside other policies such as those relating to design and health impact assessment, the following options have been prepared to cover these issues.

FLUVIAL FLOOD RISK AND NEW DEVELOPMENT

- 4.29 The most significant source of flood risk is fluvial in nature, arising from the city's particular geography sitting at the confluence of two rivers, as well as the canal and a variety of smaller water courses. Flood risk, in terms of frequency and duration of flooding, is likely to increase with climate change. These issues are explored in greater detail in the accompanying Flood Risk background paper.
- 4.30 Due to the constrained nature of the city, the need for housing and regeneration in certain areas, and the broad expanse of flood risk zones, it is unlikely that all development will be able to avoid flood risk entirely, and that some will take place in areas at risk from flooding. It is therefore crucial that the Local Plan includes a strong policy to ensure new development is informed by a Flood Risk Assessment (FRA) where required and takes place in an appropriate way that is cognisant to these risks, safely managing them, preventing increase, and facilitating reduction in flood risk where possible. Also, we will need to ensure that new development that does come forward is safe in terms of access and egress and would not put undue burden on emergency services. But there are decisions to be taken as to what levels of risk we as a city are happy to accommodate.

- 4.31 National policy sets out when the sequential test will be needed to inform proposals, and when the exception test should be applied. Ultimately, new development needs to avoid areas of highest flood risk wherever possible and must not exacerbate flood risk elsewhere. There are situations where certain types of development are too high risk within the flood zone (for example self-contained basement accommodation). However, there may be occasions where development can be brought forward with the incorporation of appropriate resistance and resilience measures and subject to specific limitations, where it may otherwise have been unacceptable – for example within brownfield areas of the functional flood plain (3b). Not only would this allow for the potential of locating development in the most sustainable locations for accessing other services/amenities in the city and for meeting other objectives such as the pressing need for new affordable housing, but it could also allow for flood risk to be improved on existing sites through careful regeneration and incorporation of high-quality flood mitigation measures.

THE OXFORD FLOOD ALLEVIATION SCHEME (OFAS)

- 4.32 The OFAS is a partnership project led by the [Environment Agency](#) which will create a new stream approximately 5km long starting just north of the Botley Road and passing under the A423 Kennington Railway Bridge (Southern by-pass) to the south before re-joining the River Thames. OFAS will reduce flood risk from the River Thames to businesses, residential properties, major roads and the railway development particularly at risk from flooding in the Botley and Abingdon Roads area. The scheme will incorporate environmental improvements to the area, including creating new wetland which will link up existing wildlife sites.
- 4.33 Flood management in the city is primarily managed by the Oxford Area Flood Partnership which includes the Environment Agency, Network Rail, Oxford City Council, Oxfordshire County Council, Vale of White Horse DC and Thames Water plc.

POLICY OPTION SET G7: FLOOD RISK AND FLOOD RISK ASSESSMENTS (FRAS)

- a Option for policy approach**
Reiterate national policy and set out requirements for when an FRA will be required, particularly where there is less certainty within national policy (e.g. extensions). Include expectations for how flood risk ought to be assessed, avoided, managed and mitigated. This will include where flood risk could be impacted off-site.

+ Potential positive consequences of the approach
This option would make explicit the City Council's expectations for when FRAs are to be submitted, and how flood risk is to be addressed in Oxford.

It would ensure that where flood risk is present on a site, this is effectively assessed and then addressed in the most appropriate way through the design of the development.

Despite strength of national policy regarding flood risk, it does have some weaknesses/ambivalence towards certain situations, for example how FRA is to be applied to extensions, and local policy can provide greater certainty regarding our expectations.

- Potential negative/neutral consequences of the approach
National policy is generally strong regarding when FRAs are to be expected and how they ought to be completed. Policy is also strong regarding how flood risk ought to be addressed by new development. This could result in some repetition.

Related options, conclusion

Preferred Option (in combination with b, c and d - with either e, or f)

- b Option for policy approach**
For extensions proposed within floodzone 3b – set out some key principles/requirements that will need to be met to address flood risk before these will be permitted.

+ Potential positive consequences of the approach
Applications for extensions are a regular occurrence across the city, including within floodzone 3b. Owing to the constraints within the city we are seeking to allow some householder extensions if it can be demonstrated that it will not result in a significant increase in flood risk. This option would set out greater certainty as to what is expected.

- Potential negative/neutral consequences of the approach
Whilst the Local Plan can set out some basic principles that should be applicable to most situations, there is likely to always be an element of site-specific context which will need to be considered and may require deviation from these principles.

With more extensions permitted within flood zone 3b there is a risk of cumulative impacts from increased developed footprint over time.

Related options, conclusion

Preferred Option (in combination with a, c and d - with either e, or f)



c **Option for policy approach**
Prevent self-contained basement flats in areas at risk from fluvial flooding.

+ Potential positive consequences of the approach
There is a higher level of risk to life in self-contained basement flats than in basement accommodation more widely when in areas of flood risk. This policy approach would make self-contained basement flats unacceptable in such areas.

- Potential negative/neutral consequences of the approach
Could reduce opportunities for development of sites which are otherwise in accordance with national policy and where risks could be largely addressed through specific mitigation measures. Such development is already prevented by national guidance in FZ 3 and subject to an exemption test in FZ2 so a specific option would not be considered necessary.

Related options, conclusion

Preferred Option (in combination with a, b and d - with either e, or f)

d **Option for policy approach**
Prevent culverting of open watercourses.

+ Potential positive consequences of the approach
Culverting of open watercourses can introduce additional flood risk in the local area due to potentially throttling water flows during heavy rainfall events as well as risks of blockages during storm events that can exacerbate flooding. It can also have detrimental effects for the quality of the watercourse, removing habitat and harming local species.

- Potential negative/neutral consequences of the approach
Could reduce opportunities for development of sites if the open watercourse cannot be incorporated into the scheme.

Related options, conclusion

Preferred Option (in combination with a, b and c – with either e, or f)



- e Option for policy approach**

Allow only water compatible uses and essential infrastructure in undeveloped flood zone 3b. However, allow limited development (e.g. redevelopment of existing structures) on brownfield within zone 3b, with high standard of mitigation, where built footprint of a site is not increased and where risk is demonstrably decreased. Apply sequential test for development in other flood zones in accordance with national policy. In any circumstance where proposal would conflict with safe access and egress requirements, it would be refused.

+ Potential positive consequences of the approach
Allowing only water-compatible and essential infrastructure in undeveloped flood zone should not increase flood risk elsewhere or result in unnecessary net loss of functional floodplain.

In Oxford there is much existing (and historic) development in areas of flood risk; it is important that those existing properties can be improved/reused/redeveloped to make efficient use of land. This approach would provide for careful regeneration of existing development sites but limiting further changes in built footprint should help to ensure no increase in flood risk elsewhere (with potential for improvement). Also, encourages use of brownfield land over developing on greenfield sites and can allow development close to where people already live.

- Potential negative/neutral consequences of the approach
Where development is proposed on brownfield sites in flood zone 3b, it will be essential for proposals to have appropriately assessed risks and be able to demonstrate that new development would not: reduce the water storage capacity of the floodplain; impede flows of water; create or increase any risks for occupants, or of flooding elsewhere.

The policy would need to provide clarity on what constitutes the built footprint of a site and what conditions are acceptable under the policy – e.g. if the footprint remains the same, is it acceptable to be relocated within a site?

Related options, conclusion

Option (in combination with a, b, c and d)

f Option for policy approach

Allow only water compatible uses and essential infrastructure in undeveloped flood zone 3b. However, allow limited development (e.g redevelopment of existing structures) on brownfield within zone 3b, no restriction on built footprint change if risk is demonstrably decreased. Apply sequential test for development in other flood zones in accordance with national policy. In any circumstance where proposal would conflict with safe access and egress requirements, it would be refused.

+ Potential positive consequences of the approach

Same positives as above for option B, except, this option allows for greater use (e.g. densification) of site compared with option a – as long as design of development ensures flood risk is ultimately reduced compared to pre-development.

- Potential negative/neutral consequences of the approach

Where development is proposed on brownfield sites in flood zone 3b, it will be essential for proposals to have appropriately assessed risks and be able to demonstrate that new development would not: reduce the water storage capacity of the floodplain; impede flows of water; create or increase any risks for occupants, or of flooding elsewhere.

A demonstrable reduction in flood risk alongside an increase in built footprint could be very difficult to achieve in practice.

Related options, conclusion

Option (in combination with a, b, c and d)

g Option for policy approach

Prevent development of greenfield sites within flood zone 3a, but with specific exemptions (e.g. for allocated sites).

+ Potential positive consequences of the approach

Greenfield sites are likely to have a role as flood storage and this option would preserve this function and help to ensure no increased flood risk elsewhere. Exemptions could be possible for specific allocated sites where the required evidence has been gathered at the Local Plan stage to support this.

- Potential negative/neutral consequences of the approach

This policy could restrict opportunities for utilising land for other uses e.g. to meet the city's housing need, which could come forward designed in a way that is safe from flooding, does not shift flood risk elsewhere, and is in accordance with the NPPF.

Related options, conclusion

Alternative Option (considered detrimental)



- h Option for policy approach**
Do not include a policy about flood risk but rely on national policy instead.

- + Potential positive consequences of the approach**

Simply relying on national policy could be easier for developers to understand and work with.

National policy on flood risk is fairly developed and well tested and may ultimately be transferred into National DM policies.

- Potential negative/neutral consequences of the approach**

Oxford has a unique flooding environment and particular constraints on development in city. There is a risk that a more generalised approach misses opportunities to address this.

Related options, conclusion

Alternative Option (considered detrimental)



Figure 4-6: London Borough of Enfield (susdrain)



Figure 4-7: Leeds Skelton Lake Services (susdrain)

SURFACE WATER FLOOD RISK AND MITIGATION MEASURES

- 4.34 Flood risk also arises from surface water flooding sewers and groundwater. Where new development comes forward and incorporates expanses of hard, impermeable surface cover, it is likely to increase the risks of certain types of flooding such as surface water and sewers because of the increases in surface run-off. Considering the potential for more occurrences of intense, heavy rainfall events in future due to climate change, these risks are likely to be exacerbated. Incorporating Sustainable Drainage Systems (SuDS) into new development and appropriate drainage measures can help to mitigate these risks. However, opportunities to minimise risks arising in the first place should always be sought, although we acknowledge that some development such as hard surfacing over front gardens can be undertaken under permitted development rights.
- 4.35 Sustainable drainage systems (SuDS) can take many forms but green, natural flood storage solutions, such as swales and tree pits have additional benefits for the environment and the quality of new development, introducing multi-functional benefits that can contribute to biodiversity, mental health, urban cooling as well as improving water quality by filtering out contaminants before they are introduced into more sensitive environments. Two best practice examples have been included below.
- 4.36 Drainage considerations are also important for ensuring that the city's sewer system can cope with additional pressures from new development, however, they are also important for other reasons. It will be essential to ensure that new development assesses and mitigates any impacts they may have on surface and groundwater flows (as covered in the next options table - R3) which could negatively impact upon some of the most sensitive ecological sites in the city, such as the Lye Valley, the SAC and the SSSIs.



POLICY OPTION SET G8: SUSTAINABLE DRAINAGE SYSTEMS (SUDS)

- a Option for policy approach**
Require SuDS on all new developments (including minors), unless this is shown not to be feasible, and include guidance on how they should be implemented. Incorporate hierarchy style approach to SuDS design, prioritising green SuDS and maximising multi-functionality.

+ Potential positive consequences of the approach
Same benefits as option A, but with more detailed specifications on the types of SuDS to be implemented, with a priority given to green, natural features.

Green, multi-functional SuDS can contribute to wider placemaking and have variety of benefits that extend beyond water management, including improving water quality, reducing urban heat, promoting biodiversity and better placemaking.

- Potential negative/neutral consequences of the approach
Whilst well-designed SuDS can deliver multiple benefits, this should not come at the cost of their role as flood risk mitigation where this is required – potential this could be complicated by seeking to deliver wider multi-functionality, particularly where inappropriately designed.

Additional management/maintenance requirements for green SuDS would need to be factored into design and costs of schemes.

Related options, conclusion

Preferred Option (in combination with b)

- b Option for policy approach**
Expect that foul water is separated from surface water drainage on development sites.

Require a Foul and Surface Water Drainage Strategy for all new build residential development of 100 dwellings or more; non-residential development of 7,200sqm or more; or student accommodation of 250 study bedrooms or more.

+ Potential positive consequences of the approach
Would ensure that appropriate consideration is given to foul water drainage and how this is handled on a site regarding sewer system.

Would ensure that design of foul water drainage is appropriately informed by strategy on larger developments.

- Potential negative/neutral consequences of the approach
Additional requirements placed upon developers in order to achieve planning permission.

Related options, conclusion

Preferred Option (in combination with a)

- c Option for policy approach**
Require SuDS on all new developments (including minor household applications), unless this is shown not to be feasible, and include guidance on how they should be implemented.

+ Potential positive consequences of the approach

This approach would ensure that new development include SuDS wherever possible and set out guidance for how this ought to be designed.

SuDS can help to reduce risks of flooding, particularly during times of intense, heavy rainfall by capturing surface water run-off and reducing pressure on sewers.

Sets out that SuDS would be required on minor schemes also (which are not addressed in national policy).

- Potential negative/neutral consequences of the approach

SuDS may be more challenging to deliver on smaller sites where space is limited.

Would need to ensure that proposals are accompanied by appropriate infiltration studies.

Related options, conclusion

Alternative Option

- d Option for policy approach**
Do not include a policy about SuDS but rely on national policy instead.

+ Potential positive consequences of the approach

There is a variety of industry guidance about good design for SuDS which could be utilised by developers. Equally the City Council could set out its expectations in the form of supporting guidance/technical advice note.

- Potential negative/neutral consequences of the approach

Guidance in national policy about SuDS is limited in terms of 'good design' and regarding wider objectives (e.g. water quality), it also only addresses SuDS on major schemes. A local policy could be more explicit in terms of what is expected/ suitable for Oxford, including on minor applications. This option would arguably not address the local context of flood risk in the city and the need for all new development to address it.

Related options, conclusion

Alternative Option (considered detrimental)

GROUNDWATER FLOWS AND SENSITIVE SITES

- 4.37 There are several ecological sites in the city that are sensitive to changes in groundwater flows and impacts on hydrological environment. New development can potentially have impacts on local hydrology and this needs to be assessed and appropriately mitigated where it has the potential to negatively affect sensitive sites.



POLICY OPTION SET G9: GROUNDWATER FLOWS AND SENSITIVE SITES

- a** **Option for policy approach**
Require assessment of impacts on ground/surface water flows where a development is in proximity of a protected/sensitive site e.g. Oxford Meadows SAC, Lye Valley SSSI. Only permit development where no adverse effects would result.

+ **Potential positive consequences of the approach**
This option would seek to ensure that proposals take account of any impacts they might have in relation to ground and surface water flows on nearby sensitive sites and mitigate any potential harmful effects.

- **Potential negative/neutral consequences of the approach**
Could reduce the capacity of development sites in proximity to sensitive sites (unless appropriate mitigations to water flows can be provided) with subsequent impacts on ability to deliver on other objectives (e.g. housing, employment).

Related options, conclusion

Preferred Option (in combination with b)

- b** **Option for policy approach**
Include a bespoke policy for the Lye Valley to consider the impact of development upon the hydrogeology of the Lye Valley SSSI – this would be informed by the results of the Lye Valley hydrogeological study and may need to be supported by separate guidance.

+ **Potential positive consequences of the approach**
Provides clarity for those seeking to develop within the vicinity of the Lye Valley in terms of what would be considered acceptable development in that it would not reduce the infiltration rates to this important habitat. Could also form the basis of improved validation process for planning application and minimise delays where information is requested later in the process.

Affords protection to this SSSI.

- **Potential negative/neutral consequences of the approach**
The policy would formalise how the SSSI protections are enforced through the planning process and could lead to delays and more applications being refused in the catchment area(s).

Related options, conclusion

Preferred Option (in combination with a)



- C Option for policy approach**
Do not address ground water and surface water impacts on sensitive sites.

+ Potential positive consequences of the approach

Small scale applications for extensions and larger proposals may be approved within the Lye Valley catchment or within proximity to other sensitive sites.

- Potential negative/neutral consequences of the approach

Lacks clarity for both developers, Natural England and officers determining applications in the Lye Valley.

Not protecting this SSSI.

Related options, conclusion

Alternative Option
(considered detrimental)

RESILIENT DESIGN AND CONSTRUCTION

- 4.38 The policy options set out above are intended to ensure that new development addresses flood risk and the future impacts of climate change in relation to flooding in the city, but climate change is elevating other environmental risks that could negatively impact the city and that will need to be considered in the design of new development. A resilient design and construction policy would help to ensure that proposals address a suite of wider issues to ensure that new buildings and spaces are well adapted to future climate change, and sustainably designed in a way that can support wider environmental objectives in the plan too. It can help address the other key hazard of future climate change, that of overheating in new development during especially hot summers.
- 4.39 It is likely that several other policy areas in the plan could pick up on some of these issues, for example the embodied carbon policy would guide developers to selecting more sustainable materials that are less carbon intensive to manufacture; meanwhile, design policies will encourage healthy place making of new developments which, when successful, can mitigate consequences of climate change, such as overheating. Equally, the updates to Building Regulations will help to ensure that matters of overheating are addressed upfront in the design of new homes and buildings more so than in previous years. However, having a specific policy that sets out the key issues for adaptation of building design to meet the consequences of climate change, whilst helping to ensure that these are considered individually along with other design considerations set out elsewhere in the plan, would help to ensure that applicants address this as a priority and could help to support our belief that the issue is a key concern for the future growth of the city.
- 4.40 If we opt for including a bespoke policy, rather than relying on Building Regulations alone, then this would be likely to cover a range of issues, from the need for limiting water use in new developments, to the incorporation of a cooling strategy (detailing measures to address overheating like shading, passive cooling etc), flood resistance/resilience measures, infrastructure that is designed to function under future weather extremes as projected to occur due to climate change. It is likely that we would seek to require an applicant to demonstrate that they have designed in accordance with the policy via a design checklist, or a separate resilience checklist that would need to be submitted with or in support of an application.

POLICY OPTION SET G10: RESILIENT DESIGN AND CONSTRUCTION

a Option for policy approach

Set out a discrete adaptation/ resilience policy, whilst continuing to address risks in other policies where relevant. Ask applicants to demonstrate how they have designed in accordance with policy via the design checklist or a separate checklist. Cross referencing to other relevant policy requirements (e.g. flooding) as well as incorporating other specific requirements such as:

- Need for climate resilience impact assessment
- Details of a cooling strategy (for the building and surrounding spaces in large schemes, addressing alignment and shading) intrinsic to the design (not having implications for carbon use), including measures for addressing overheating risk for lifetime of development
- Measures to conserve water and specific target for water use
- Flood resistance/resilience measures
- Supporting infrastructure such as electricity supply and broadband designed to function in extreme weather conditions (such as prolonged periods of very high temperatures of heavy rainfall).

+ Potential positive consequences of the approach

Would set out a strong position/stance on the issue of climate adaptation and building resilience to climate impacts which could negatively impact on health and wellbeing.

Bringing the range of policy areas into one checklist could be helpful.

Would specifically pick up on issue of overheating in new development and require applicants to detail what measures they have included in design/construction to address this and maintain thermal comfort for occupants during hot summer periods.

- Potential negative/neutral consequences of the approach

Many aspects of climate adaptation will be dealt with through other policies, there is a danger of repetition e.g. with health, flood risk, design, and GI.

Will need to find a consistent and concise way for applicants to demonstrate they have met these policy requirements without forcing them to repeat work in multiple places in their application. The design checklist would be one means of doing this. Could allow for cross-referencing to evidence prepared to meet other policy requirements where relevant.

Related options, conclusion

Preferred Option (in combination with b)



b Option for policy approach
Require major development to achieve certification against a recognised sustainability assessment – e.g. BREEAM/HQM.

+ Potential positive consequences of the approach
There are several sustainability certification schemes in existence which are well recognised by industry such as BREEAM. These schemes often take a holistic view of design and ensure that considerations like climate change are weighed up alongside other design measures.

Certification would ensure a high standard of sustainable design in major developments and help to ensure consistency across for applicants.

- Potential negative/neutral consequences of the approach
Schemes such as BREEAM are not specifically focused on climate resilience/adaptation alone, it is usually one element that is assessed amongst a range of sustainability considerations. Points that underpin certification can usually be scored across a variety of categories – though we could require points in certain places as we do at present with requiring 4 points under the water topic of BREEAM under RE1.

This option would force applicants to pursue independent certification with a particular provider, though we could specify that any equivalent is acceptable to provide more flexibility.

Relying on this kind of certification alone may not fully maximise climate resilience objectives.

Related options, conclusion

Preferred Option (in combination with a)

c Option for policy approach
Address climate risks as theme purely through other policies, e.g. design flood risk, green infrastructure. No requirement for specific policy addressing issue.

+ Potential positive consequences of the approach
Ensures resilience/adaptation is central to thinking across local plan policy framework.

Avoids repetition of requirements/considerations set out in other complementary policy areas (e.g. flooding and green infrastructure).

- Potential negative/neutral consequences of the approach
Climate resilience aspects can be lost amongst other objectives when they are not given sufficient consideration.

There are some specific adaptive measures, and wider sustainable construction issues which may not easily fit into other policy areas without making them overly long/unwieldy.

Related options, conclusion

Alternative Option

- d Option for policy approach**
No policy on climate adaptation/resilience – rely on national guidance.

+ Potential positive consequences of the approach
Some elements of building resilience to climate change will necessarily be covered elsewhere e.g. flood risk requirements are strong in NPPF, overheating will be tackled more fully within building regs from the summer 2022 onward.

- Potential negative/neutral consequences of the approach
Ignores local context – e.g. heritage, dense urban environment.

National policy hasn't traditionally been particularly strong on adaptation.

Could miss opportunities to tie together benefits for many complementing agendas – e.g. health, air quality.

Related options, conclusion

Alternative Option (considered detrimental)

