



URGENT BUSINESS AND SUPPLEMENTARY INFORMATION

Executive

19 July 2021

Agenda Item Number	Page	Title	Officer Responsible	Reason Not Included with Original Agenda
7.	(Pages 3 - 88)	The Oxfordshire Plan Regulation 18 Part 2 Consultation Document Appendix 7 – Oxfordshire Plan 2050 Habitats Regulations Assessment	Assistant Director: Planning and Development	Published as a supplement to the main agenda due to the size of the documents

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Ricardo
Energy & Environment

Oxfordshire Plan 2050 Habitats Regulations Assessment:

Distance-based risk-zones for Plan development

Report for Oxfordshire Plan Team

Customer:

Oxfordshire Plan Team

Customer reference:

CN01607

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22 November 2019

Ricardo Energy & Environment reference:

Ref: ED12445100- Issue Number 3

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Appendix 1	Oxfordshire HRA Risk-zones
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1 Introduction

Ricardo Energy and Environment was commissioned by Oxford City Council, acting on behalf of a partnership of the five Oxfordshire district authorities¹, to undertake a Habitats Regulations Assessment (HRA) of how the emerging Oxfordshire Plan 2050 (“the Plan”) might affect designated European sites. The first stage of this HRA will involve screening the Plan for Likely Significant Effects (LSE) (HRA Stage 1) that would trigger the need for a full Appropriate Assessment (HRA Stage 2).

As the Plan has not yet been drafted, Ricardo was asked to undertake a pre-screening exercise to identify and map, at a high level, broad geographical areas that may pose potential risks to European sites from future development. This is to guide the Oxfordshire Plan Team in identifying broad areas of the county for future strategic development whilst avoiding, where possible, locations at higher risk of requiring detailed assessment and mitigation under the HRA process, due to the potential impacts on European habitat sites. The mapping of such higher risk zones or “buffers” is the aim of this pre-screening task, which is reported here.

These risk zones should not be interpreted as indicating that development within them will necessarily damage the integrity of European sites or undermine their conservation objectives. Rather, these zones serve only to highlight the possibility of strategic development within them needing a greater level of assessment under the Habitats Regulations, and potentially, a greater level of associated mitigation to overcome any adverse effects. The basic principle here is that the first consideration in the ‘mitigation hierarchy’ should be to avoid impacts wherever possible. The maps produced and described in this report are intended to facilitate such avoidance.

Whilst this work does not constitute a formal part of the HRA process, it is an initial step in helping to ensure that appropriate consideration and protection is afforded to European sites throughout the plan-making process.

2 Methodology

2.1 Study area

As a precautionary approach, all European-designated sites contained partially or wholly within a 20km radius of the five Oxfordshire district authorities are considered in this study. The use of a 20km buffer ensures that sites which are located relatively far from the Oxfordshire area, but which might be impacted by development within Oxfordshire due to exceptional pathways, are included in subsequent stages of the HRA process. Refer to Section 2.3 for additional information related to exceptional pathways.

2.2 Risk zones

In acknowledgement of the need for this to be a relatively simple and user-friendly output, the approach we have taken considers only two distance-based risk zones (‘buffers’) for each European site as follows.

2.2.1 Outer, precautionary buffer (lower risk zone)

Each European site will be represented with a standard precautionary buffer extending 10km from the European site boundary. This is a standard distance that Ricardo uses as a screening threshold in the

¹ Cherwell District Council, Oxford City Council, South Oxfordshire District Council, Vale of White Horse District Council and West Oxfordshire District Council

majority of our strategic Habitats Regulations Assessments e.g. those carried out for Thames Water's Draft Water Resource Management Plan (WRMP)² and Havant Borough Council's Local Plan³. This is a commonly applied screening threshold that has been agreed through consultation stages of HRA and typically accepted and used by Natural England for all but truly exceptional impact 'pathways' (e.g. routes for highly mobile species or impacts and functionally-linked off-site supporting habitats). 10km is also the maximum distance Impact Risk Zone (IRZ) used by Natural England to help planners and developers to screen for impacts to Sites of Special Scientific Interest (SSSI) and European sites⁴. This precautionary outer buffer therefore has significant precedent.

This lower-risk zone has been mapped using yellow shading (in keeping with a 'traffic-light' approach to colour-coding of risk areas).

2.2.2 Inner buffer (higher risk zone)

For each European site selected, we have looked at the sensitivities of its qualifying feature habitats and species based on the information provided in the original request for quotation, the district level HRAs that we have reviewed⁵, site citations⁶, IRZs⁴ and applicable Site Improvement Plans⁷ (SIPs) for each site. These primarily relate to sensitivities to air quality, water level, water quality and recreation.

Inner buffer distance for each type of impact were selected based on the following considerations:

- For air quality impacts, a screening distance of 200m between the road and European site has commonly been used in HRA. We have used a more precautionary distance of 500m, based on recent modelling work undertaken by Ricardo for HRA studies.
- For impacts related to water quality and water levels/abstraction, a 2km buffer has been selected as an initial screening distance to identify where there might be water related issues impacting a designated site. This buffer is based on the SSSI Impact Risk Zones (IRZ) approach for use by Local Planning Authorities to assess planning applications for likely impacts on designated sites⁸. The IRZ approach uses a number of different distance-based buffers as an initial screening test to determine where impacts could occur. In this case, the

² Thames Water, 2018. Revised draft Water Resources Management Plan 2019, Appendix C – Habitats Regulations Assessment.

³ Ricardo Energy & Environment, 2019. Air Quality Regulations Assessment for Havant Borough Local Plan 2036, Report for Havant Borough Council. Issue 3.

⁴ The Impact Risk Zones (IRZs) are a GIS tool developed by Natural England to make a rapid initial assessment of the potential risks posed by development proposals to: Sites of Special Scientific Interest (SSSIs), Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Ramsar sites. They define zones around each site which reflect the particular sensitivities of the features for which it is notified and indicate the types of development proposal which could potentially have adverse impacts. See: <https://magic.defra.gov.uk/MagicMap.aspx>.

⁵ a) Atkins, 2017. Partial Review of the Cherwell Local Plan 2011-2031 (Part 1): Oxford's Unmet Housing Needs, Proposed Submission Plan, Habitat Regulations Assessment Screening Report. b) Atkins, 2018. Partial Review of the Cherwell Local Plan 2011-2031 (Part 1): Oxford's Unmet Housing Needs Proposed Submission Plan incorporating Focused Changes and Minor Modifications Habitat Regulations Assessment Stage 1 Screening Report and Stage 2 Appropriate Assessment. c) Oxford City Council, 2018. Oxford Local Plan 2036 Habitats Regulations Assessment: Appropriate Assessment. d) LUC, 2018. South Oxfordshire Local Plan 2034: Final Publication Version 2, Habitats Regulations Assessment Update Report. e) AECOM, 2018. Vale of White Horse LPP2, Habitats Regulations Assessment incorporating Appropriate Assessment. f) AECOM, 2018. West Oxfordshire Local Plan, Habitats Regulations Assessment incorporating Appropriate Assessment. g) CH2MHILL, 2015. Habitats Regulations Assessment Screening Report, Local Transport Plan 4 (2030), prepared for Oxfordshire County Council. h) Oxfordshire County Council, 2015. Oxfordshire Minerals and Waste Local Plan Part 1 – Core Strategy, Habitats Regulations Assessment Screening Report.

⁶ The Joint Nature Conservation Committee (JNCC) website provides information about individual designated sites, including SACs (<https://sac.jncc.gov.uk/site/>) and SPAs (<http://archive.jncc.gov.uk/page-1400>).

⁷ The Natural England website (<http://publications.naturalengland.org.uk/category/6149691318206464>) lists Site Improvement Plans (SIPs), by region, for individual designated sites.

⁸ Natural England, 2019. Natural England's Impact Risk Zones for Sites of Special Scientific Interest (For use by Local Planning Authorities to assess planning applications for likely impacts on SSSIs/SACs/SPAs & Ramsar sites and determine when to consult Natural England).

2km buffers has been used as a minimum buffer to identify where any potential surface or groundwater impacts may occur.

- For recreational impacts, a buffer distance of 2km was selected for most European sites based on Natural England's IRZs for residential development. A larger buffer distance of 7km was selected for European sites identified as having a higher potential for recreational pressure impacts, specifically Wittenham SAC and Thames Basin Heaths SPA. A report by Natural England⁹ on engagement with the natural environment, which examined the distance travelled by people for visits to the outdoors, found that the distance travelled was less than 1 mile (1.6km) for 43% of visits, between 1 to 2 miles (1.6km to 3.2km) for 25% of the visits, between 3 to 5 miles (4.8km to 8.0km) for 15% of the visits and greater than 5 miles (8.0km) for 17% of the visits. While it is recognized that people may travel over 8km to reach a countryside location, we considered 2km and 7km to be suitable buffer distances for the purposes of this study.

For each European site, we have then selected what we consider to be a single appropriate inner buffer distance for that site based on the largest inner buffer related to its particular sensitivities. See Table 1 for a summary.

The inner buffer recognises that the outer 10km buffer is highly precautionary in many instances, and the likelihood of significant effects will still be very low in many places within that buffer. Therefore, this zone between each site's bespoke inner buffer and the standard 10km outer buffer allows greater spatial freedom for scenario development, whilst recognising some degree of risk. Within each site's chosen inner buffer, the risk of LSE, and therefore needing full Appropriate Assessment, is elevated further. The inner buffer represents a zone that may be best avoided, where possible, in the process of identifying broad locations for strategic scale development to avoid potential impacts on nature conservation, or used with caution if avoidance is not possible. It is important to note that these buffers are used as a high level guide only and the recommended buffer zone for HRA assessments is the wider 10km buffer. Once details of the plan are confirmed, a more detailed assessment of impacts and impact risk zones will be undertaken to determine what the likely type of impacts to water could occur and the area over which they may occur.

The selection of the appropriate inner buffer for each European site is based on professional judgement using existing sources of information rather than commissioning any site-specific detailed studies (e.g. on levels of recreation) or undertaking detailed stakeholder consultation (both of which would be undertaken as part of a future Stage 2 Appropriate Assessment). However, Natural England was consulted on this approach and feedback from Natural England has been taken into consideration (in particular see Section 2.3).

This higher-risk zone has been mapped using orange shading (in keeping with a 'traffic-light' approach to colour-coding of risk areas).

Table 1: Site criteria used to determine inner buffer distance

Site	Qualifying feature	Sensitivities	Maximum inner (higher-risk) buffer
Aston Rowant SAC	<ul style="list-style-type: none"> • <i>Juniperus communis</i> formations on heaths or calcareous grasslands 	Air Pollution Recreational Pressure	2km for recreational pressure

⁹ Natural England, 2015. Monitor of Engagement with the Natural Environment – The national survey on people and the natural environment, Annual report for the 2013-2014 survey.

Site	Qualifying feature	Sensitivities	Maximum inner (higher-risk) buffer
	<ul style="list-style-type: none"> Asperulo-Fagetum beech forests 		
Burnham Beeches SAC	<ul style="list-style-type: none"> Atlantic acidophilous beech forests with <i>Ilex</i> and sometimes also <i>Taxus</i> in the shrublayer (Quercion robori-petraeae or Ilici-Fagenion) 	Air Pollution Recreational Pressure Water levels/abstraction Water Quality	2km for recreational pressure (also covers water effects) (Note: site is beyond 10km from Oxfordshire)
Chilterns Beechwoods SAC	<ul style="list-style-type: none"> Asperulo-Fagetum beech forests Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (*important orchid sites) Stag beetle <i>Lucanus cervus</i> 	Air Pollution Recreational Pressure Water levels/abstraction Water Quality	2km for recreational pressure (also covers water effects)
Cothill Fen SAC	<ul style="list-style-type: none"> Alkaline fens Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (Alno-Padion, Alnion incanae, Salicion albae) 	Air Pollution Recreational pressure Water levels/abstraction Water Quality	2km for water effects (also covers any recreational pressure)
Hackpen Hill SAC	<ul style="list-style-type: none"> Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (*important orchid sites) Early gentian <i>Gentianella anglica</i> 	Air Pollution Recreational Pressure	2km for recreational pressure
Hartslock Wood SAC	<ul style="list-style-type: none"> Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia) (*important orchid sites) <i>Taxus baccata</i> woods of the British Isles 	Air Pollution Recreational Pressure	2km for recreational pressure
Kennet & Lambourn Floodplain SAC	<ul style="list-style-type: none"> Desmoulin`s whorl snail <i>Vertigo moulinsiana</i> 	Air pollution Water levels/abstraction Water quality	2km for water effects (also covers any recreational pressure)
Kennet Valley	<ul style="list-style-type: none"> Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> 	Air pollution Water levels/abstraction	2km for water effects (also covers

Site	Qualifying feature	Sensitivities	Maximum inner (higher-risk) buffer
Alderwoods SAC	(Alno-Padion, Alnion incanae, Salicion albae)		any recreational pressure) (Note: site is beyond 10km from Oxfordshire)
Little Wittenham SAC	<ul style="list-style-type: none"> Great crested newt <i>Triturus cristatus</i> 	Air pollution Recreational pressure Water levels/abstraction Water Quality	7 km for recreational pressure (greater distance due to greater draw of visitors according to existing study)
North Meadow & Clattinger Farm SAC	<ul style="list-style-type: none"> Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis) 	Air Pollution Recreational pressure Water levels/abstraction Water Quality	2km for water effects (also covers any recreational pressure) (Note: site is beyond 10km from Oxfordshire)
Oxford Meadows SAC	<ul style="list-style-type: none"> Lowland hay meadows (Alopecurus pratensis, Sanguisorba officinalis) Creeping marshwort <i>Apium repens</i> 	Air Pollution Water levels/abstraction Water Quality Recreational pressure	2km for water effects (also covers any recreational pressure)
River Lambourn SAC	<ul style="list-style-type: none"> Water courses of plain to montane levels with the Ranunculion fluitantis and Callitriche-Batrachion vegetation Bullhead <i>Cottus gobio</i> Brook lamprey <i>Lampetra planeri</i> 	Water levels/abstraction Water quality	2km for water effects (also covers any recreational pressure)
Thames Basin Heaths SPA	<ul style="list-style-type: none"> Nightjar <i>Caprimulgus europaeus</i> Woodlark <i>Lullula arborea</i> Dartford warbler <i>Sylvia undata</i> 	Air Pollution Recreational Pressure	7km for recreational pressure (Note: site is beyond 10km from Oxfordshire)
Windsor Forest & Great Park SAC	<ul style="list-style-type: none"> Old acidophilous oak woods with <i>Quercus robur</i> on sandy plains Atlantic acidophilous beech forests with <i>Ilex</i> and sometimes also <i>Taxus</i> in the shrublayer 	Air Pollution Water levels/abstraction Water Quality Recreational pressure	2km for recreational pressure (also covers water effects)

Site	Qualifying feature	Sensitivities	Maximum inner (higher-risk) buffer
	(Quercion robori-petraeae or Ilici-Fagenion) <ul style="list-style-type: none"> • Violet click beetle <i>Limoniscus violaceus</i> 		(Note: site is beyond 10km from Oxfordshire)

2.2.3 Areas outside the buffers (very low risk zone)

Beyond the 10km buffer described above in Section 2.2.1, identification of areas for strategic development generally carries a very low risk of having LSE. In other words, unless there are identified exceptional impact pathways (see 2.3 below), strategic development in this zone should not require detailed analysis during the HRA process. This very low risk zone has been mapped using green shading (in keeping with a 'traffic-light' approach to colour-coding of risk areas).

2.3 Exceptional impact pathways

For this exercise, at this stage, we have not included a conclusive assessment of exceptional pathways (those beyond 10km from a European site). That is not to say that they could not operate for certain European sites; rather, that to determine whether they do would require significant effort and detail which is beyond the scope of this early pre-screening exercise. At this stage, we have included all European sites within 20km of the Oxfordshire area. Any strategic development and policies proposed within the 10-20km zone would be subject to careful consideration at HRA Stage 1 Screening and, if LSE were identified, at Stage 2 Appropriate Assessment. Examples of potential exceptional pathways would be air pollution arising along major transport routes and from large combustion plants, downstream water impacts of pollution and non-native species transfer and whole catchment impacts to migratory/highly mobile qualifying fish species.

In particular, for air quality impacts from vehicle traffic, the risk of LSE will relate to the distance of designated sites from roads where development is likely to significantly increase traffic volume. The normal screening distance for air quality impacts has generally been 200m between the road and European site (although recent Ricardo modelling has shown up to 500m may be appropriate). However, a development could potentially generate significant increases in traffic flows in close proximity to a European site which is many kilometres away. Therefore, major roads are likely to be exceptional impact pathways from developments to European Sites, which will need to be examined once traffic modelling is available at the HRA screening stage.

Recent consultation with Natural England indicated that examples of sites which fall within 200m of major roads include Oxford Meadows SAC, Aston Rowant SAC and Chiltern Beechwoods SAC. Natural England has also highlighted Burnham Beeches SAC as being susceptible to air quality impacts from distant sources.

2.4 Limitations and assumptions

This exercise was designed to help inform scenario development for the Oxfordshire Plan from an HRA perspective. If the buffer zones included are avoided when developing scenarios then the chance of LSE will be greatly reduced but not necessarily removed. Conversely, if scenarios are located within the buffer zones it is not necessarily the case that there will be a LSE or future adverse effect on site integrity; just that the likelihood of that happening is increased.

The buffer zones applied are typically precautionary in nature and should therefore not be the sole reason for not advocating development in certain areas. Local knowledge held by the team developing the Plan should also be brought to bear in such instances. For example, the buffer zones applied are simple concentric rings around the boundary of each European site – they do not take into account local conditions, land use, potential barriers such as roads or railways or other factors which could determine whether or not a development scenario would have LSE. Whilst we have made reasonable endeavours to identify suitable and robust distance thresholds for the inner buffer based on existing information, we have not undertaken a comprehensive literature review to determine these, nor conducted bespoke studies, as that level of detail is beyond the scope of this exercise (and will be undertaken as required in later stages of the HRA of the Oxfordshire Plan as it emerges).

3 Results

The results of this distance-based pre-screening exercise to inform the Oxfordshire Plan scenario development are shown in **Appendix 1** (precautionary 10km buffer and inner buffer). For visual impact and simplicity, we have used the following traffic light system:

- **ORANGE** Higher risk of LSE if development occurs within this zone.
- **YELLOW** Lower risk of LSE if development occurs within this zone.
- **GREEN** Very low risk of LSE if development occurs within this zone.

Given that the intended purpose of the maps is to inform the development of the Oxfordshire Plan 2050 (see Section 1), no interpretation of the results is given here.

4 Next steps

Now that this initial distance-based pre-screening exercise has been completed, it can be used by the Oxfordshire Plan 2050 team to further develop their spatial scenarios and prepare their draft Plan for formal HRA consideration in due course.

It may be useful to seek Natural England's views on this report before using it for spatial planning.

After a draft Oxfordshire Plan 2050 has been prepared, subsequent stages of the HRA process will be undertaken. The Stage 1 screening assessment will consider and assess impacts arising from the Oxfordshire Plan 2050, both alone and in combination with other plans and projects. In combination impacts are likely to include air quality impacts arising from increased vehicle traffic associated with the strategic plans developed by neighbouring local authorities. A search for relevant plans and projects to consider for the in-combination assessment will be carried out during the Stage 1 screening assessment. Any LSE that are identified during the Stage 1 screening assessment will be carried forward for further consideration in a Stage 2 appropriate assessment.

Appendices

Appendix 1 – Oxfordshire HRA Risk-zones



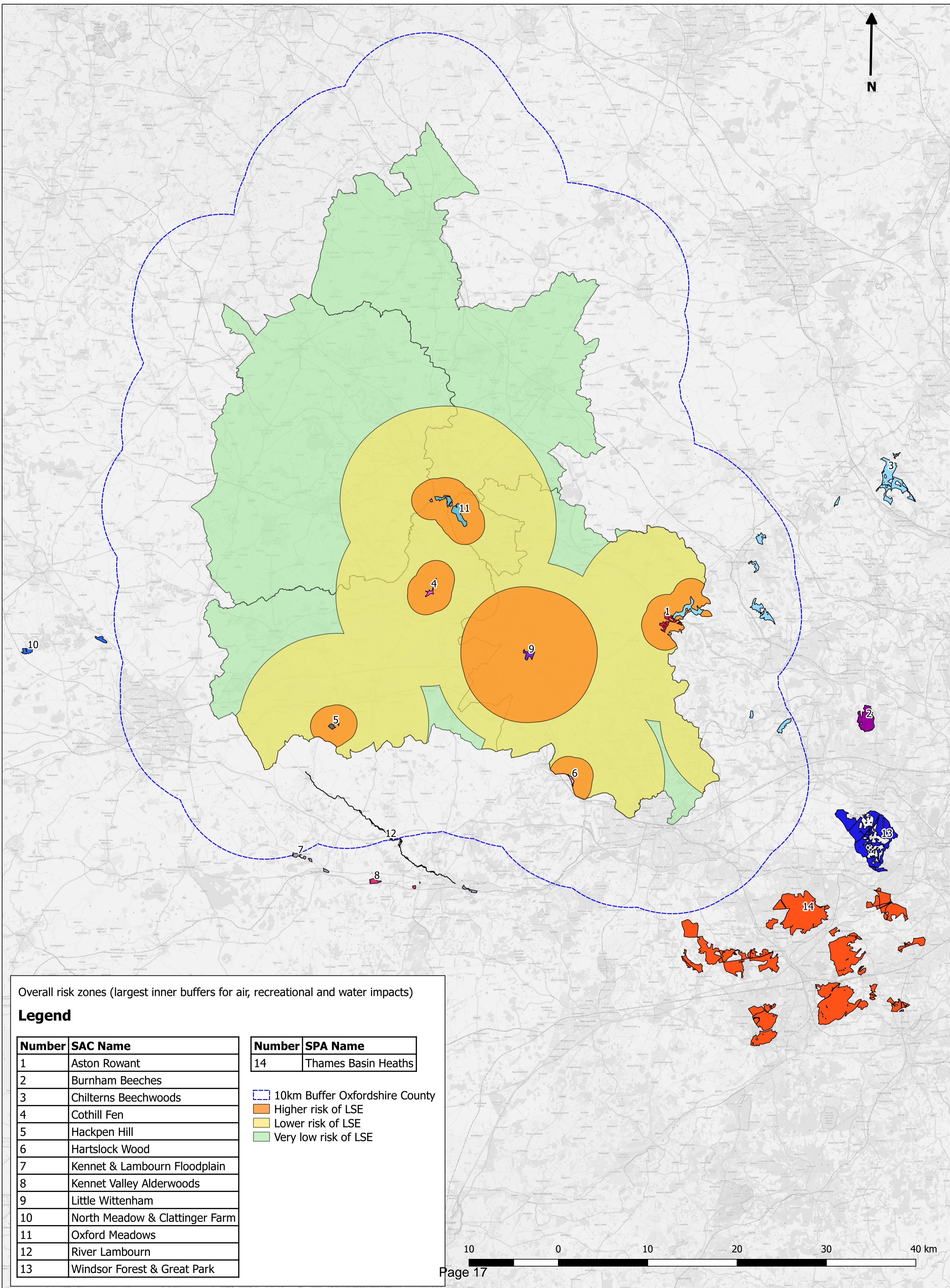
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Overall risk zones (largest inner buffers for air, recreational and water impacts)

Legend

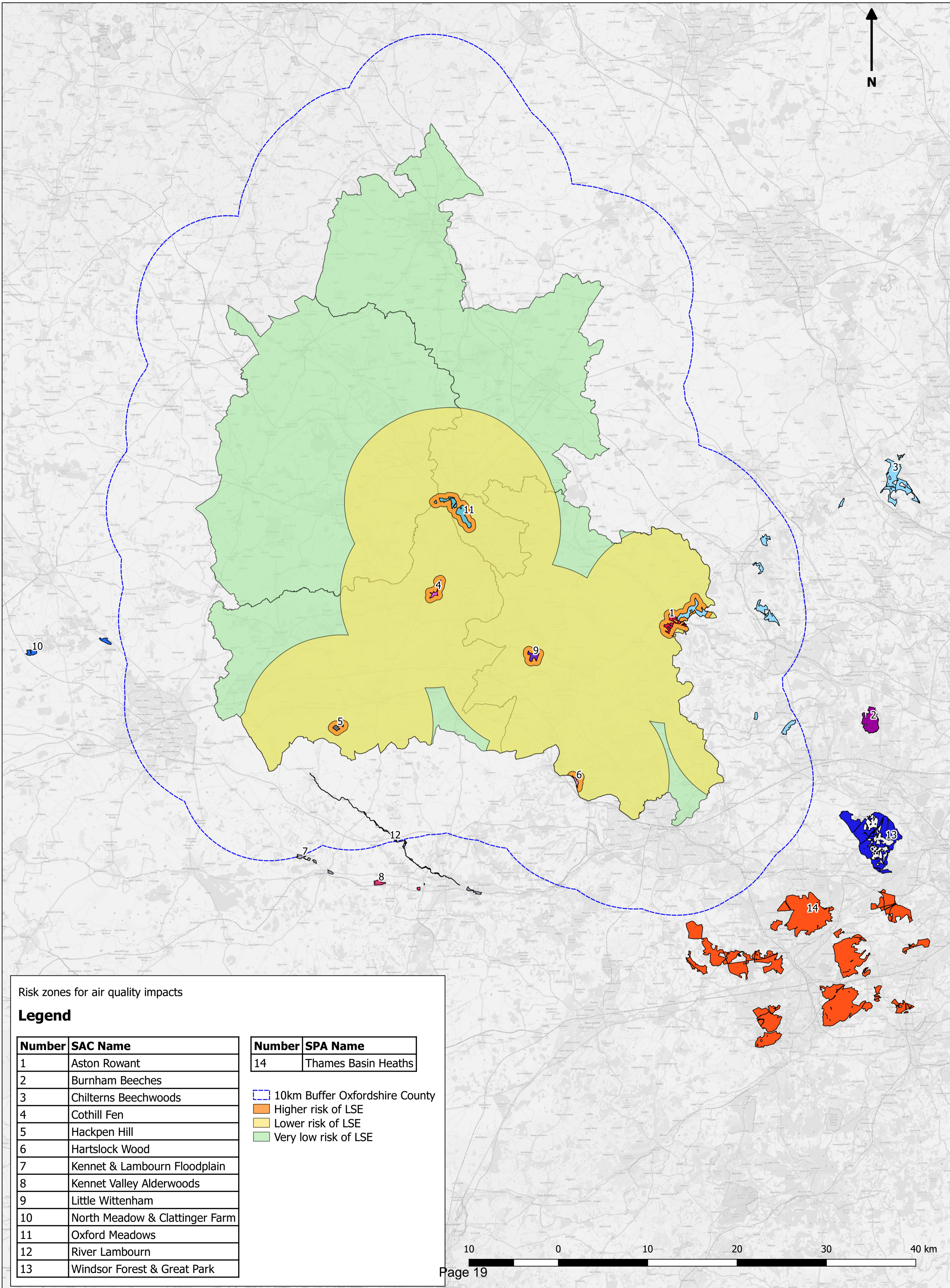
Number	SAC Name
1	Aston Rowant
2	Burnham Beeches
3	Chilterns Beechwoods
4	Cothill Fen
5	Hackpen Hill
6	Hartslock Wood
7	Kennet & Lambourn Floodplain
8	Kennet Valley Alderwoods
9	Little Wittenham
10	North Meadow & Clattinger Farm
11	Oxford Meadows
12	River Lambourn
13	Windsor Forest & Great Park

Number	SPA Name
14	Thames Basin Heaths

- 10km Buffer Oxfordshire County
- Higher risk of LSE
- Lower risk of LSE
- Very low risk of LSE



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Risk zones for air quality impacts

Legend

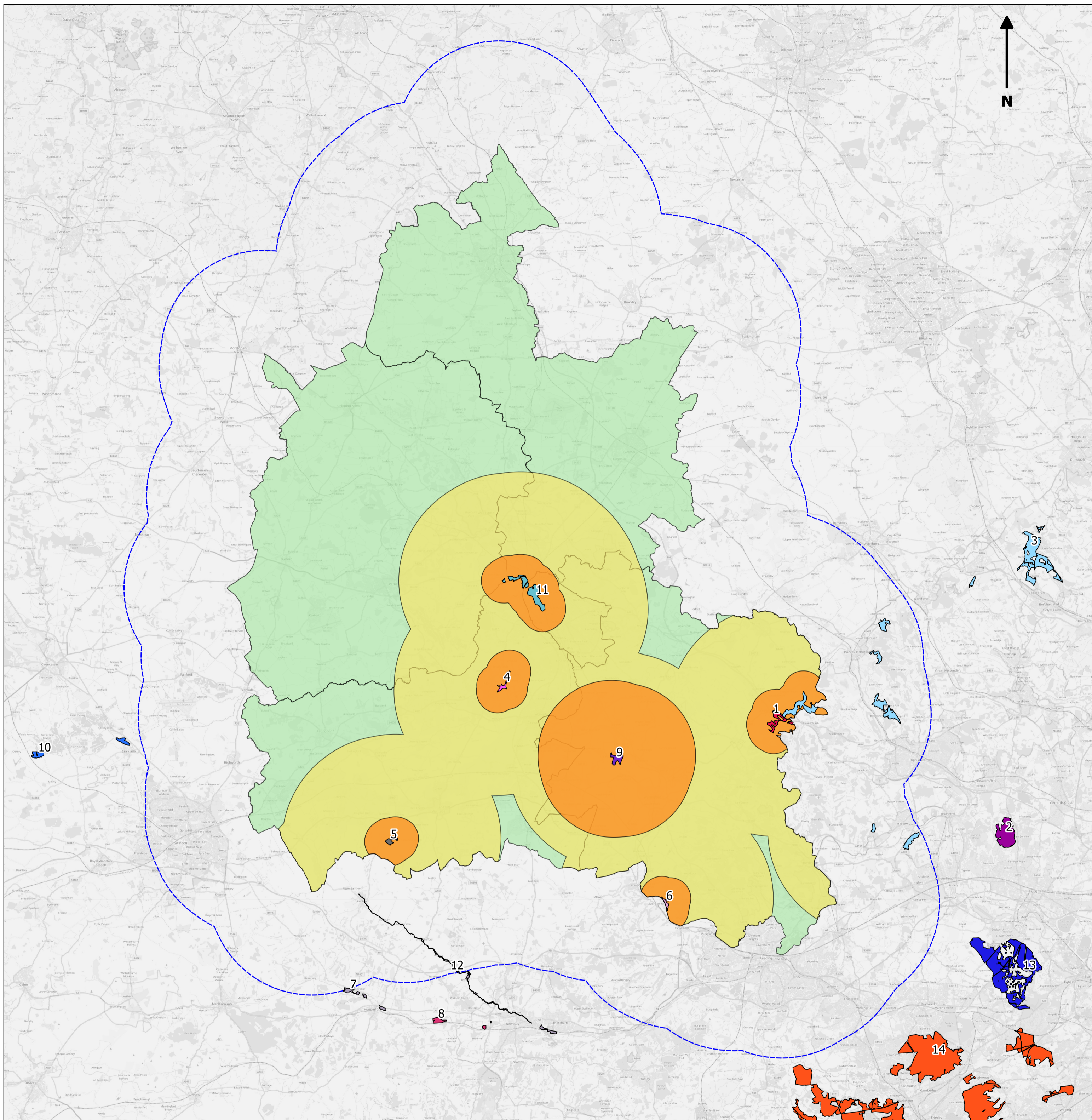
Number	SAC Name
1	Aston Rowant
2	Burnham Beeches
3	Chilterns Beechwoods
4	Cothill Fen
5	Hackpen Hill
6	Hartslock Wood
7	Kennet & Lambourn Floodplain
8	Kennet Valley Alderwoods
9	Little Wittenham
10	North Meadow & Clattinger Farm
11	Oxford Meadows
12	River Lambourn
13	Windsor Forest & Great Park

Number	SPA Name
14	Thames Basin Heaths

- 10km Buffer Oxfordshire County
- Higher risk of LSE
- Lower risk of LSE
- Very low risk of LSE



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Risk zones for recreational impacts

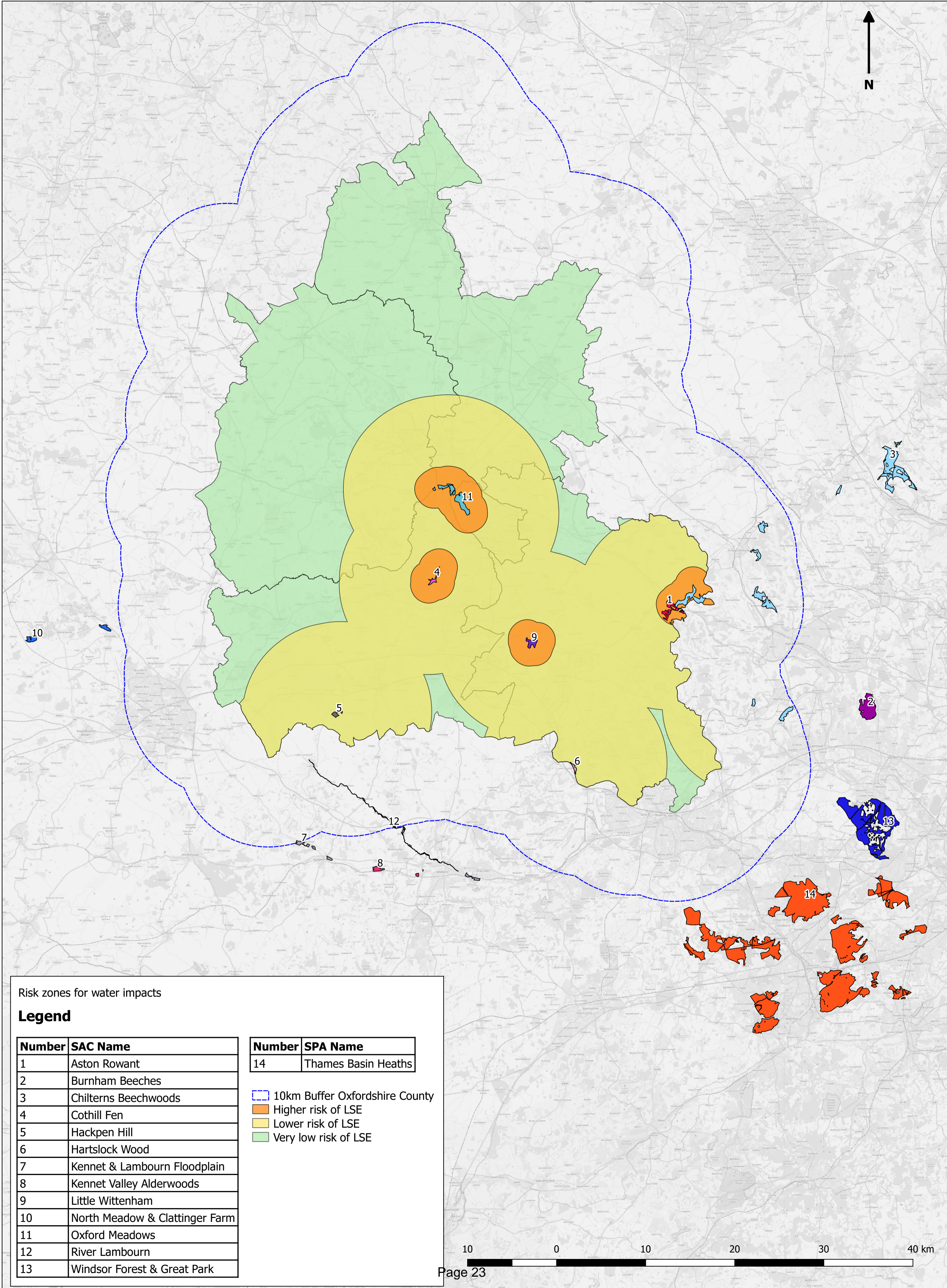
Legend

Number	SAC Name
1	Aston Rowant
2	Burnham Beeches
3	Chilterns Beechwoods
4	Cothill Fen
5	Hackpen Hill
6	Hartslock Wood
7	Kennet & Lambourn Floodplain
8	Kennet Valley Alderwoods
9	Little Wittenham
10	North Meadow & Clattinger Farm
11	Oxford Meadows
12	River Lambourn
13	Windsor Forest & Great Park

Number	SPA Name
14	Thames Basin Heaths

- 10km Buffer Oxfordshire County
- Higher risk of LSE
- Lower risk of LSE
- Very low risk of LSE

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Risk zones for water impacts

Legend

Number	SAC Name
1	Aston Rowant
2	Burnham Beeches
3	Chilterns Beechwoods
4	Cothill Fen
5	Hackpen Hill
6	Hartslock Wood
7	Kennet & Lambourn Floodplain
8	Kennet Valley Alderwoods
9	Little Wittenham
10	North Meadow & Clattinger Farm
11	Oxford Meadows
12	River Lambourn
13	Windsor Forest & Great Park

Number	SPA Name
14	Thames Basin Heaths

- 10km Buffer Oxfordshire County
- Higher risk of LSE
- Lower risk of LSE
- Very low risk of LSE

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Oxfordshire Plan 2050 Habitats Regulations Assessment:

High-level risk assessment of spatial options

Report for Oxfordshire Plan Team

Customer:

Oxfordshire Plan Team

Customer reference:

CN01607

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Date:

24 June 2021

Ricardo Energy & Environment reference:

Ref: ED12445100-Task 2- Issue Number 1

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Appendices

Appendix 1	Mapped comparison of spatial options with distance-based risk zones
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1 Introduction

1.a. Ricardo Energy and Environment has been commissioned by Oxford City Council, acting on behalf of a partnership of the five Oxfordshire city and district authorities¹, to undertake a Habitats Regulations Assessment (HRA) of how the emerging Oxfordshire Plan 2050 (“the Plan”) might affect designated European sites.

1.b. As part of the ongoing work to support the Oxfordshire city and district authorities in identifying and addressing potential risks from the Plan to European sites, Ricardo previously carried out a pre-screening exercise in 2019 to identify and map, at a high level, broad geographical areas that may pose potential risks to European sites from future development. The distance-based risk zones developed in this initial study² can be used to help identify broad locations for future strategic development whilst avoiding, where possible, locations at higher risk of requiring detailed assessment and mitigation under the HRA process, due to the potential impacts on European sites.

1.c. The current study builds on the previous work² by using the distance-based risk zones (refined where appropriate) to carry out a high-level HRA risk assessment of the spatial options. Five high-level spatial options for the Plan have been identified, as listed below. The final spatial strategy in the draft Plan may be a mix of some or all of the spatial options.

- Option 1: Focus on opportunities at larger settlements & planned growth locations
- Option 2: Focus on Oxford-led growth
- Option 3: Focus on opportunities in sustainable transport corridors & at strategic transport hubs
- Option 4: Focus on strengthening business locations
- Option 5: Focus on supporting rural communities

1.d. In this report, each spatial option is considered against the distance-based risk zones in order to identify potential risks and potential opportunities for mitigation. The analysis has been undertaken by a comparison of the GIS layers for each spatial option overlaid with the GIS layers developed for the distance-based risk zones. At this stage, rather than trying to provide detailed formal HRA Screening, the priority is to identify which options, if any, are likely to have significant effects on a European site, and identify, where possible, potential mitigation strategies. Spatial options for which a Likely Significant Effect (LSE) has been identified at this early stage, can still progress to a short-list of feasible options if effective mitigation (that would potentially enable a conclusion of no adverse effect on site integrity) appears feasible, at least at this early stage.

1.e. Whilst this work does not constitute a formal part of the HRA process, it is an initial step in helping to ensure that appropriate consideration and protection is afforded to European sites throughout the plan-making process.

¹ Cherwell District Council, Oxford City Council, South Oxfordshire District Council, Vale of White Horse District Council and West Oxfordshire District Council

² Ricardo Energy & Environment, 2019. Oxfordshire Plan 2050 Habitats Regulations Assessment: Distance-based risk-zones for Plan development. Issue 3.

2 Methodology

2.1 Study area

2.1.a. As a precautionary approach, all European sites contained partially or wholly within a 20km radius of the Oxfordshire boundary are considered in this study. The designated sites included within a 20km buffer are shown in Figure 2.1, and their qualifying features are summarised in Table 2.1.

2.1.b. The use of a 20km buffer ensures that sites which are located relatively far from the Oxfordshire area, but which might be impacted by development within Oxfordshire due to exceptional impact pathways, are included in subsequent stages of the HRA process. Refer to Section 2.3 for additional information related to exceptional impact pathways.

2.2 Risk zones

2.2.a. The 2019 study² developed two distance-based risk zones (or 'buffers') for each European site: an outer, precautionary buffer (lower risk zone) and an inner buffer (higher risk zone). The buffer distances relate to the level of risk of LSEs being identified at HRA Stage 1 that would trigger the need for a full Appropriate Assessment (HRA Stage 2), and are colour-coded on the maps included with this study based on the following Red-Amber-Green (RAG) traffic light system:

- **RED** areas of the map indicate those areas within the inner buffer (high risk zone) for a European site. There is a higher risk of LSE if development occurs within this zone.
- **AMBER** areas of the map indicate those areas between the inner buffer (high risk zone) and outer, precautionary buffer (lower risk zone). There is a lower risk of LSE if development occurs within this zone.
- **GREEN** areas of the map indicate those areas outside both buffers. There is a very low risk of LSE if development occurs within this zone.

The buffer distances are briefly summarised below, including any updates from the previous study.

2.2.1 Outer, precautionary buffer (lower risk zone)

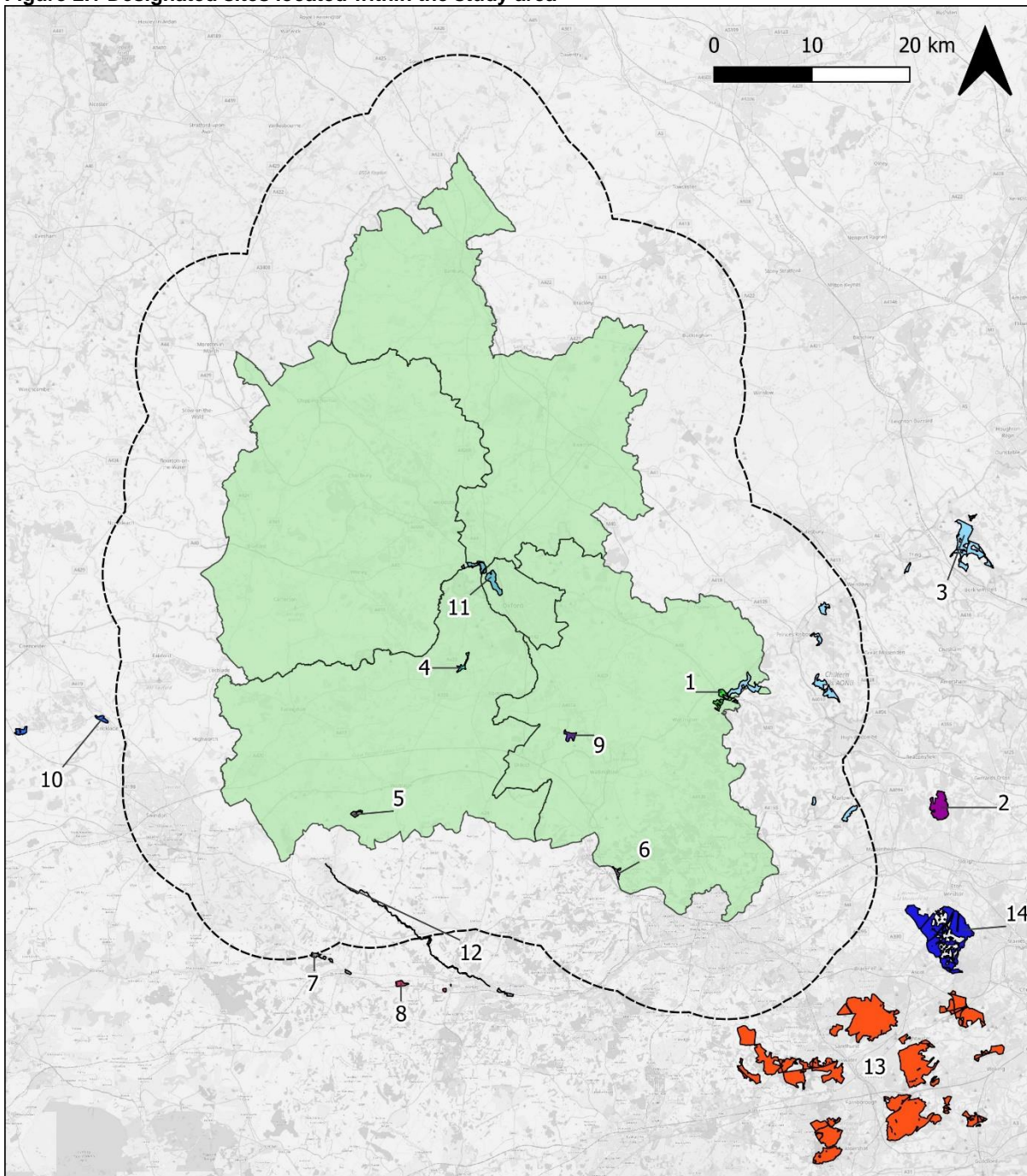
2.2.1.a. The outer, precautionary buffer was set at 10km from the boundary of each European site in the previous study, and this distance is still considered appropriate for the current study. This is a standard distance that Ricardo uses as a screening threshold in the majority of our air quality Habitats Regulations Assessments e.g. those carried out for Thames Water's Draft Water Resource Management Plan (WRMP)³ and Havant Borough Council's Local Plan⁴. This is a commonly applied screening threshold that has been agreed through consultation stages of HRA and typically accepted and used by Natural England for all but truly exceptional impact 'pathways' (e.g. routes for highly mobile species or impacts and functionally-linked off-site supporting habitats).

2.2.1.b. For water related impacts, the 10km outer, precautionary buffer was only applied to the sites which are designated for water dependent features and are therefore sensitive to water impacts, therefore omitting the designated sites that are not sensitive to water related impacts from the water impacts assessment.

³ Thames Water, 2018. Revised draft Water Resources Management Plan 2019, Appendix C – Habitats Regulations Assessment.

⁴ Ricardo Energy & Environment, 2019. Air Quality Regulations Assessment for Havant Borough Local Plan 2036, Report for Havant Borough Council. Issue 3.

Figure 2.1 Designated sites located within the study area



Legend

Designated site locations

Number	Site name
1	Aston Rowant (SAC)
2	Burnham Beeches (SAC)
3	Chilterns Beechwoods (SAC)
4	Cothill Fen (SAC)
5	Hackpen Hill (SAC)
6	Hartslock Wood (SAC)
7	Kennet and Lambourn Floodplain (SAC)

Number	Site name
8	Kennet Valley Alderwoods (SAC)
9	Little Wittenham (SAC)
10	North Meadow & Clattinger Farm (SAC)
11	Oxford Meadows (SAC)
12	River Lambourn (SAC)
13	Thames Basin Heaths (SPA)
14	Windsor Forest & Great Park (SAC)

Very low risk of LSE (>10km)
 10km Buffer Oxfordshire County

Table 2.1: Summary of designated sites included in the study area and their qualifying features

Site	Qualifying feature
Aston Rowant SAC	<ul style="list-style-type: none"> • <i>Juniperus communis</i> formations on heaths or calcareous grasslands • <i>Asperulo-Fagetum</i> beech forests
Burnham Beeches SAC	<ul style="list-style-type: none"> • Atlantic acidophilous beech forests with <i>Ilex</i> and sometimes also <i>Taxus</i> in the shrub layer (<i>Quercion robori-petraeae</i> or <i>Illici-Fagenion</i>)
Chilterns Beechwoods SAC	<ul style="list-style-type: none"> • <i>Asperulo-Fagetum</i> beech forests • Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (*important orchid sites) • Stag beetle <i>Lucanus cervus</i>
Cothill Fen SAC	<ul style="list-style-type: none"> • Alkaline fens • Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>)
Hackpen Hill SAC	<ul style="list-style-type: none"> • Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (*important orchid sites) • Early gentian <i>Gentianella anglica</i>
Hartslock Wood SAC	<ul style="list-style-type: none"> • Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (*important orchid sites) • <i>Taxus baccata</i> woods of the British Isles
Kennet & Lambourn Floodplain SAC	<ul style="list-style-type: none"> • Desmoulin's whorl snail <i>Vertigo moulinsiana</i>
Kennet Valley Alderwoods SAC	<ul style="list-style-type: none"> • Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>)
Little Wittenham SAC	<ul style="list-style-type: none"> • Great crested newt <i>Triturus cristatus</i>
North Meadow & Clattinger Farm SAC	<ul style="list-style-type: none"> • Lowland hay meadows (<i>Alopecurus pratensis</i>, <i>Sanguisorba officinalis</i>)
Oxford Meadows SAC	<ul style="list-style-type: none"> • Lowland hay meadows (<i>Alopecurus pratensis</i>, <i>Sanguisorba officinalis</i>) • Creeping marshwort <i>Apium repens</i>
River Lambourn SAC	<ul style="list-style-type: none"> • Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation • Bullhead <i>Cottus gobio</i> • Brook lamprey <i>Lampetra planeri</i>
Thames Basin Heaths SPA	<ul style="list-style-type: none"> • Nightjar <i>Caprimulgus europaeus</i> • Woodlark <i>Lullula arborea</i> • Dartford warbler <i>Sylvia undata</i>
Windsor Forest & Great Park SAC	<ul style="list-style-type: none"> • Old acidophilous oak woods with <i>Quercus robur</i> on sandy plains • Atlantic acidophilous beech forests with <i>Ilex</i> and sometimes also <i>Taxus</i> in the shrub layer (<i>Quercion robori-petraeae</i> or <i>Illici-Fagenion</i>) • Violet click beetle <i>Limoniscus violaceus</i>

2.2.2 Inner buffer (higher risk zone)

2.2.2.a. The inner buffer can vary depending on the type of impact being considered (e.g. air quality, water levels / abstraction and water quality, or recreational impacts) and the specific sensitivities of the qualifying feature habitats and species associated with each European site.

The inner buffer distance (radius) for each type of impact was selected based on the following considerations:

- For air quality impacts, an inner buffer distance of 500m was selected in the 2019 study and is also considered appropriate for this study. A screening distance of 200m between a road and European site has commonly been used in HRA studies, however a more precautionary distance of 500m was applied here, based on modelling work undertaken by Ricardo for various HRA studies.
- For water impacts, including water levels / abstraction and water quality, two higher risk zones were identified: 1) a 2km inner buffer distance; and 2) 4km along river reaches (following the path of the river) upstream of the European sites as well as 25m on either side of the river. The 2km inner buffer was identified in the previous study and is used here to screen any options that are very close to a European site and are therefore associated with a higher risk for LSE. The 4km river reaches distance is an update to the previous distance-based screening zones and is used to ensure that the risk of pollutants related to construction and development (required for the five spatial options) that could travel downstream into a European site is recognised. 4km of river is generally sufficient enough to dilute construction-based pollutants (e.g. petro-chemicals) and therefore any option within 4km along-river (upstream) is considered to be within the higher risk zone.
- For recreational impacts, an inner buffer of 2km was selected for most European sites based on Natural England's Impact Risk Zones (IRZs)⁵ for residential development. A larger inner buffer distance of 7km was selected for European sites identified as having a higher potential for recreational pressure impacts, specifically Wittenham SAC and Thames Basin Heaths SPA. These inner buffer distances are consistent with the previous study.

2.3 Exceptional impact pathways

2.3.a. For this exercise, at this stage, we have not included a conclusive assessment of exceptional pathways (those beyond 10km from a European site). That is not to say that they could not operate for certain European sites; rather, that to determine whether they do would require significant assessment and detail which is beyond the scope of this high-level risk assessment. At this stage, we have included all European sites within 20km of the Oxfordshire boundary. Any strategic development and policies proposed within the 10-20km zone would be subject to careful consideration at HRA Stage 1 Screening and, if LSE were identified, at Stage 2 Appropriate Assessment. Examples of potential exceptional pathways would be air pollution arising along major transport routes serving the growing population and from large combustion plants, downstream water impacts of nutrient pollution and non-native species transfer and whole catchment impacts to migratory/highly mobile qualifying fish species.

2.3.b. In particular, for air quality impacts from vehicle traffic, the risk of LSE will relate to the distance of designated sites from roads where development is likely to significantly increase traffic volume. The

⁵ The Impact Risk Zones (IRZs) are a GIS tool developed by Natural England to make a rapid initial assessment of the potential risks posed by development proposals to: Sites of Special Scientific Interest (SSSIs), Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Ramsar sites. They define zones around each site which reflect the particular sensitivities of the features for which it is notified and indicate the types of development proposal which could potentially have adverse impacts. See: <https://magic.defra.gov.uk/MagicMap.aspx>.

normal screening distance for air quality impacts has generally been 200m between a road and European site (although recent Ricardo modelling has shown up to 500m may be appropriate).

2.3.c. However, a development could potentially generate significant increases in traffic flows in close proximity to a European site which is many kilometres away. Therefore, major roads are likely to be exceptional impact pathways from developments to European sites, which will need to be examined once traffic modelling is available at the HRA screening stage. Recent consultation with Natural England indicated that examples of sites which fall within 200m of major roads include Oxford Meadows SAC, Aston Rowant SAC and Chiltern Beechwoods SAC. Natural England has also highlighted Burnham Beeches SAC as being susceptible to air quality impacts from distant sources.

2.3.d. For exceptional downstream nutrient impacts from wastewater during the operational phase of development, a more detailed assessment of European sites' sensitivities to increased water-borne nutrients, wastewater treatment infrastructure (locations and effectiveness) and dilution factors will need to be examined when more detail is available at later stages.

3 Results

3.a. Each of the five spatial options, described in Section 1, has been considered in the context of the Red-Amber-Green risk zone mapping described in Section 2.2. This analysis has been undertaken by a comparison of the GIS layers for each spatial option overlaid with the GIS layers developed for the distance-based risk zones.

3.b. In the tables contained within this section, the risks of LSE for each type of impact (air quality impacts, water-related impacts and recreational impacts) have been colour-coded using a Red-Amber-Green (RAG) traffic light rating system as follows:

RED	Indicates that there is overlap between the possible development areas included in the spatial option, and the red distance-based risk zones. There is a higher risk of LSE if development occurs in these areas.
AMBER	Indicates that there is overlap between the possible development areas included in the spatial option, and the amber distance-based risk zones. There is a lower risk of LSE if development occurs within these areas.
GREEN	Indicates that the possible development areas included in the spatial option are all located beyond the outer buffer. There is a very low risk of LSE if development occurs within these areas.

3.1 Air quality impacts

3.1.a. The risk assessment results for air quality impacts are provided in Table 3.1. Table 3.1 includes information about the location and importance of roads located near each designated site, and how these considerations may impact the risk of LSE for each option.

3.1.b. New development areas, including housing and roads, should be located at least 500m from designated site boundaries in order to avoid introducing new pathways for air quality impacts. Where there are roads already located in close proximity to a designated site, early consideration should be given to how the development associated with the Plan may increase the traffic flows on the roads nearest each designated site, using the information about nearby roads included in Table 3.1. It may be possible to avoid or minimise the risk of air quality impacts on designated sites by using strategies such as locating new development farther away from the designated site, and/or by locating new development in areas where good access to public transportation already exists or could be developed so as to lessen the reliance on personal vehicles.

3.1.c. As the Plan spatial strategy develops, transport modelling and air dispersion modelling should be undertaken to provide additional detail on the location and magnitude of LSEs associated with air quality impacts. This will also facilitate the development of specific mitigation measures appropriate for LSEs identified through the modelling. In situations where air quality impacts on a designated site cannot be avoided, potential mitigation strategies may include:

- Reducing emissions from vehicles. This can include measures such as adjusting the speed limits on nearby roads (pollution emissions vary depending on the vehicle speed); introducing or encouraging changes to the vehicle fleet, e.g. by introducing more electric buses or encouraging the use of electric personal vehicles; etc.
- Introducing site management measures. This can include measures such as increasing the buffer area around the designated site and planting these areas with vegetation to intercept air pollution; regularly cutting and removing certain types of vegetation to deplete the soil of excess nitrogen in terrestrial environments; etc.

Table 3.1: Risk assessment results for air quality impacts

Risk assessment results for air quality impacts					
Designated Site	Option 1: Focus on opportunities at larger settlements & planned growth locations	Option 2: Focus on Oxford-led growth	Option 3: Focus on opportunities in sustainable transport corridors & at strategic transport hubs	Option 4: Focus on strengthening business locations	Option 5: Focus on supporting rural communities
Aston Rowant SAC	<p>Reason for RAG rating: Option includes areas within 10km of designated site.</p> <p>Additional considerations: The M40 passes very close to this SAC (within 20m). Transport modelling and air dispersion modelling should be undertaken to determine if development associated with the Plan would significantly increase traffic along the M40 and lead to a LSE.</p>	<p>Reason for RAG rating: Option areas are all over 10km away from designated site.</p> <p>Additional considerations: Same as for Option 1. However, since all of the development areas for Option 2 are located more than 10km from the SAC, there is a lower risk of LSE associated with this option.</p>	<p>Reason for RAG rating: Option includes areas within 10km of designated site.</p> <p>Additional considerations: Same as for Option 1.</p>	<p>Reason for RAG rating: Option includes areas within 10km of designated site.</p> <p>Additional considerations: Same as for Option 1.</p>	<p>Reason for RAG rating: Option includes areas within 500 m of designated site.</p> <p>Additional considerations: Same as for Option 1. Traffic along the M40 may be more of a concern with this option as compared to the other options, depending on the location of new development relative to the SAC and whether the M40 would be heavily used by the residents of the new development(s) for commuting.</p>
Burnham Beeches SAC	<p>Reason for RAG rating: Option areas are all over 10km away from designated site.</p>	<p>Reason for RAG rating: Option areas are all over 10km away from designated site.</p>	<p>Reason for RAG rating: Option areas are all over 10km away from designated site.</p>	<p>Reason for RAG rating: Option areas are all over 10km away from designated site.</p>	<p>Reason for RAG rating: Option areas are all over 10km away from designated site.</p>

Risk assessment results for air quality impacts					
Designated Site	Option 1: Focus on opportunities at larger settlements & planned growth locations	Option 2: Focus on Oxford-led growth	Option 3: Focus on opportunities in sustainable transport corridors & at strategic transport hubs	Option 4: Focus on strengthening business locations	Option 5: Focus on supporting rural communities
	<p>Additional considerations: The A335 passes very close to this SAC (within 50m) and other roads are adjacent to the boundary of the site. Since all the development areas for this option are located more than 10km from the SAC, there is a low risk of LSE. Transport modelling and air dispersion modelling can be undertaken to check that there are no LSE.</p>	<p>Additional considerations: Same as for Option 1.</p>	<p>Additional considerations: Same as for Option 1.</p>	<p>Additional considerations: Same as for Option 1.</p>	<p>Additional considerations: Same as for Option 1.</p>
Chilterns Beechwoods SAC	<p>Reason for RAG rating: Option includes areas within 10km of designated site.</p> <p>Additional considerations: There are major roads located in close proximity to some portions of the</p>	<p>Reason for RAG rating: Option areas are all over 10km away from designated site.</p> <p>Additional considerations: Same as for Option 1. However, since all of the</p>	<p>Reason for RAG rating: Option includes areas within 10km of designated site.</p> <p>Additional considerations: Same as for Option 1.</p>	<p>Reason for RAG rating: Option includes areas within 10km of designated site.</p> <p>Additional considerations: Same as for Option 1.</p>	<p>Reason for RAG rating: Option includes areas within 500 m of designated site.</p> <p>Additional considerations: Same as for Option 1. Traffic emissions may be more of a concern with</p>

Risk assessment results for air quality impacts					
Designated Site	Option 1: Focus on opportunities at larger settlements & planned growth locations	Option 2: Focus on Oxford-led growth	Option 3: Focus on opportunities in sustainable transport corridors & at strategic transport hubs	Option 4: Focus on strengthening business locations	Option 5: Focus on supporting rural communities
	SAC, such as the A40 (passes through the SAC), the A4040 (adjacent to the SAC) and the A4010 (adjacent to the SAC). Transport modelling and air dispersion modelling should be undertaken to determine if development associated with the Plan would significantly increase traffic along these routes and lead to a LSE.	development areas for Option 2 are located more than 10km from the SAC, there is a lower risk of LSE associated with this option.			this option as compared to the other options, depending on the location of new development relative to the SAC and whether the roads located near the SAC would be heavily used by the residents of the new development(s) for commuting.
Cothill Fen SAC	<p>Reason for RAG rating: Option includes areas within 10km of designated site.</p> <p>Additional considerations: There are several roads located adjacent to the SAC: Lashford Ln, Besselsleigh Rd, and</p>	<p>Reason for RAG rating: Option includes areas within 10km of designated site.</p> <p>Additional considerations: Same as for Option 1.</p>	<p>Reason for RAG rating: Option includes areas within 500 m of designated site.</p> <p>Additional considerations: Generally, the same as for Option 1. Due to the overlap between possible development areas for</p>	<p>Reason for RAG rating: Option includes areas within 500 m of designated site.</p> <p>Additional considerations: Generally, the same as for Option 1. Due to the close proximity between possible development</p>	<p>Reason for RAG rating: Option includes areas within 500 m of designated site.</p> <p>Additional considerations: Generally, the same as for Option 1. Due to the overlap between possible development</p>

Risk assessment results for air quality impacts					
Designated Site	Option 1: Focus on opportunities at larger settlements & planned growth locations	Option 2: Focus on Oxford-led growth	Option 3: Focus on opportunities in sustainable transport corridors & at strategic transport hubs	Option 4: Focus on strengthening business locations	Option 5: Focus on supporting rural communities
	Cothill Rd. Early consideration should be given to the different areas for development associated with this option, in terms of whether they are likely to lead to a significant increase in traffic flows on the roads adjacent to the SAC. Transport modelling and air dispersion modelling should be undertaken to check for LSE.		this option and the SAC, particular consideration should be given early on in the process to minimise increases in traffic flow on the roads adjacent to the SAC.	areas for this option and the SAC, particular consideration should be given early on in the process to minimise increases in traffic flow on the roads adjacent to the SAC.	areas for this option and the SAC, particular consideration should be given early on in the process to minimise increases in traffic flow on the roads adjacent to the SAC.
Hackpen Hill SAC	<p>Reason for RAG rating: Option includes areas within 10km of designated site.</p> <p>Additional considerations: The closest road is the B4001, located approximately 300m from the boundary of the SAC.</p>	<p>Reason for RAG rating: Option areas are all over 10km away from designated site.</p> <p>Additional considerations: Same as for Option 1. However, since all of the development areas for</p>	<p>Reason for RAG rating: Option includes areas within 10km of designated site.</p> <p>Additional considerations: Same as for Option 1.</p>	<p>Reason for RAG rating: Option includes areas within 10km of designated site.</p> <p>Additional considerations: Same as for Option 1.</p>	<p>Reason for RAG rating: Option includes areas within 10km of designated site.</p> <p>Additional considerations: Same as for Option 1.</p>

Risk assessment results for air quality impacts					
Designated Site	Option 1: Focus on opportunities at larger settlements & planned growth locations	Option 2: Focus on Oxford-led growth	Option 3: Focus on opportunities in sustainable transport corridors & at strategic transport hubs	Option 4: Focus on strengthening business locations	Option 5: Focus on supporting rural communities
	Transport modelling and air dispersion modelling should be undertaken to determine if development associated with the Plan would significantly increase traffic along the B4001 and lead to a LSE.	Option 2 are located more than 10km from the SAC, there is a lower risk of LSE associated with this option.			
Hartslock Wood SAC	<p>Reason for RAG rating: Option includes areas within 10km of designated site.</p> <p>Additional considerations: The A329 is located within 500m of this SAC. Transport modelling and air dispersion modelling should be undertaken to determine if development associated with the Plan would significantly increase traffic along the A329 and lead to a LSE.</p>	<p>Reason for RAG rating: Option areas are all over 10km away from designated site.</p> <p>Additional considerations: Same as for Option 1. However, since all of the development areas for Option 2 are located more than 10km from the SAC, there is a lower risk of LSE associated with this option.</p>	<p>Reason for RAG rating: Option includes areas within 500 m of designated site.</p> <p>Additional considerations: Generally, the same as for Option 1. Due to the overlap between possible development areas for this option and the SAC, particular consideration should be given early on in the process to minimise increases in traffic flow on the roads nearest to the SAC.</p>	<p>Reason for RAG rating: Option includes areas within 10km of designated site.</p> <p>Additional considerations: Same as for Option 1.</p>	<p>Reason for RAG rating: Option includes areas within 10km of designated site.</p> <p>Additional considerations: Same as for Option 1.</p>

Risk assessment results for air quality impacts					
Designated Site	Option 1: Focus on opportunities at larger settlements & planned growth locations	Option 2: Focus on Oxford-led growth	Option 3: Focus on opportunities in sustainable transport corridors & at strategic transport hubs	Option 4: Focus on strengthening business locations	Option 5: Focus on supporting rural communities
Kennet & Lambourn Floodplain SAC	<p>Reason for RAG rating: Option areas are all over 10km away from designated site.</p> <p>Additional considerations: The A34 is a major road and is adjacent to a portion of the SAC. Other roads are also adjacent to the SAC, such as the B4192, Littlecote Ln, and Bath Rd. Since all the development areas for this option are located more than 10km from the SAC, there is generally a low risk of LSE. The A34 may represent an exceptional impact pathway for this SAC. Transport modelling and air dispersion modelling should be undertaken to check for LSE.</p>	<p>Reason for RAG rating: Option areas are all over 10km away from designated site.</p> <p>Additional considerations: Same as for Option 1.</p>	<p>Reason for RAG rating: Option areas are all over 10km away from designated site.</p> <p>Additional considerations: Same as for Option 1.</p>	<p>Reason for RAG rating: Option areas are all over 10km away from designated site.</p> <p>Additional considerations: Same as for Option 1.</p>	<p>Reason for RAG rating: Option areas are all over 10km away from designated site.</p> <p>Additional considerations: Same as for Option 1.</p>

Risk assessment results for air quality impacts					
Designated Site	Option 1: Focus on opportunities at larger settlements & planned growth locations	Option 2: Focus on Oxford-led growth	Option 3: Focus on opportunities in sustainable transport corridors & at strategic transport hubs	Option 4: Focus on strengthening business locations	Option 5: Focus on supporting rural communities
Kennet Valley Alderwoods SAC	<p>Reason for RAG rating: Option areas are all over 10km away from designated site.</p> <p>Additional considerations: The A34 is a major road and is located within 500m of a portion of the SAC. The A34 may represent an exceptional impact pathway for this SAC. However, due to the large distances between the SAC and the option development areas (>10km) and between the SAC and the A34 (approximately 400m), there is a very low risk of LSE.</p>	<p>Reason for RAG rating: Option areas are all over 10km away from designated site.</p> <p>Additional considerations: Same as for Option 1.</p>	<p>Reason for RAG rating: Option areas are all over 10km away from designated site.</p> <p>Additional considerations: Same as for Option 1.</p>	<p>Reason for RAG rating: Option areas are all over 10km away from designated site.</p> <p>Additional considerations: Same as for Option 1.</p>	<p>Reason for RAG rating: Option areas are all over 10km away from designated site.</p> <p>Additional considerations: Same as for Option 1.</p>
Little Wittenham SAC	<p>Reason for RAG rating: Option includes areas within 10km of designated site, which would typically</p>	<p>Reason for RAG rating: Option includes areas within 10km of</p>	<p>Reason for RAG rating: Option includes areas within 500 m of designated site, which</p>	<p>Reason for RAG rating: Option includes areas within 500 m of designated site, which</p>	<p>Reason for RAG rating: Option includes areas within 500 m of designated site, which</p>

Risk assessment results for air quality impacts					
Designated Site	Option 1: Focus on opportunities at larger settlements & planned growth locations	Option 2: Focus on Oxford-led growth	Option 3: Focus on opportunities in sustainable transport corridors & at strategic transport hubs	Option 4: Focus on strengthening business locations	Option 5: Focus on supporting rural communities
	<p>correspond to an Amber rating. However, a Green rating has been assigned based on the additional considerations below.</p> <p>Additional considerations: There is a very minor road located adjacent to the SAC, and there are no major roads located within 500m of the SAC. As long as no new roads are built within 500m of the SAC, there is a very low risk of LSE for this option.</p>	<p>designated site, which would typically correspond to an Amber rating. However, a Green rating has been assigned based on the additional considerations below.</p> <p>Additional considerations: Same as for Option 1.</p>	<p>would typically correspond to a Red rating. However, a Green rating has been assigned based on the additional considerations below.</p> <p>Additional considerations: Generally, the same as for Option 1. As long as no new development (roads, houses, etc.) is built within 500m of the SAC, there is a very low risk of LSE for this option.</p>	<p>would typically correspond to a Red rating. However, a Green rating has been assigned based on the additional considerations below.</p> <p>Additional considerations: Generally, the same as for Option 1. As long as no new development (roads, houses, etc.) is built within 500m of the SAC, there is a very low risk of LSE for this option.</p>	<p>would typically correspond to a Red rating. However, a Green rating has been assigned based on the additional considerations below.</p> <p>Additional considerations: Generally, the same as for Option 1. As long as no new development (roads, houses, etc.) is built within 500m of the SAC, there is a very low risk of LSE for this option.</p>
North Meadow & Clattinger Farm SAC	<p>Reason for RAG rating: Option areas are all over 10km away from designated site.</p> <p>Additional considerations:</p>	<p>Reason for RAG rating: Option areas are all over 10km away from designated site.</p> <p>Additional considerations:</p>	<p>Reason for RAG rating: Option areas are all over 10km away from designated site.</p> <p>Additional considerations: Same as for Option 1.</p>	<p>Reason for RAG rating: Option areas are all over 10km away from designated site.</p> <p>Additional considerations: Same as for Option 1.</p>	<p>Reason for RAG rating: Option areas are all over 10km away from designated site.</p> <p>Additional considerations: Same as for Option 1.</p>

Risk assessment results for air quality impacts					
Designated Site	Option 1: Focus on opportunities at larger settlements & planned growth locations	Option 2: Focus on Oxford-led growth	Option 3: Focus on opportunities in sustainable transport corridors & at strategic transport hubs	Option 4: Focus on strengthening business locations	Option 5: Focus on supporting rural communities
	The A419 is located within 100m of the SAC and may represent an exceptional impact pathway for this SAC. Transport modelling and air dispersion modelling can be undertaken to check for LSE.	Same as for Option 1.			
Oxford Meadows SAC	<p>Reason for RAG rating: Option includes areas within 500 m of designated site.</p> <p>Additional considerations: The A34 and A40 are major roads that are located adjacent to the SAC. Particular consideration should be given early on in the process to minimise increases in traffic flow on the roads nearest to the SAC. Transport modelling</p>	<p>Reason for RAG rating: Option includes areas within 500 m of designated site.</p> <p>Additional considerations: Same as for Option 1.</p>	<p>Reason for RAG rating: Option includes areas within 500 m of designated site.</p> <p>Additional considerations: Same as for Option 1.</p>	<p>Reason for RAG rating: Option includes areas within 500 m of designated site.</p> <p>Additional considerations: Same as for Option 1.</p>	<p>Reason for RAG rating: Option includes areas within 500 m of designated site.</p> <p>Additional considerations: Same as for Option 1.</p>

Risk assessment results for air quality impacts					
Designated Site	Option 1: Focus on opportunities at larger settlements & planned growth locations	Option 2: Focus on Oxford-led growth	Option 3: Focus on opportunities in sustainable transport corridors & at strategic transport hubs	Option 4: Focus on strengthening business locations	Option 5: Focus on supporting rural communities
	and air dispersion modelling should be undertaken to check for LSE.				
River Lambourn SAC	<p>Reason for RAG rating: Option areas are all over 10km away from designated site.</p> <p>Additional considerations: Several major roads intersect the SAC, such as the M4, the A34 and the A339. These may represent exceptional impact pathways. Transport modelling and air dispersion modelling can be undertaken to check for LSE.</p>	<p>Reason for RAG rating: Option areas are all over 10km away from designated site.</p> <p>Additional considerations: Same as for Option 1.</p>	<p>Reason for RAG rating: Option includes areas within 10km of designated site.</p> <p>Additional considerations: Same as for Option 1.</p>	<p>Reason for RAG rating: Option includes areas within 10km of designated site.</p> <p>Additional considerations: Same as for Option 1.</p>	<p>Reason for RAG rating: Option includes areas within 10km of designated site.</p> <p>Additional considerations: Same as for Option 1.</p>
Thames Basin Heaths SPA	<p>Reason for RAG rating: Option areas are all over 10km away from designated site.</p>	<p>Reason for RAG rating: Option areas are all over 10km away from designated site.</p>	<p>Reason for RAG rating: Option areas are all over 10km away from designated site.</p>	<p>Reason for RAG rating: Option areas are all over 10km away from designated site.</p>	<p>Reason for RAG rating: Option areas are all over 10km away from designated site.</p>

Risk assessment results for air quality impacts					
Designated Site	Option 1: Focus on opportunities at larger settlements & planned growth locations	Option 2: Focus on Oxford-led growth	Option 3: Focus on opportunities in sustainable transport corridors & at strategic transport hubs	Option 4: Focus on strengthening business locations	Option 5: Focus on supporting rural communities
	<p>Additional considerations: Several major roads are adjacent to the SPA, such as the M3, the A3 and the A332. These may represent exceptional impact pathways. Transport modelling and air dispersion modelling can be undertaken to check for LSE.</p>	<p>Additional considerations: Same as for Option 1.</p>	<p>Additional considerations: Same as for Option 1.</p>	<p>Additional considerations: Same as for Option 1.</p>	<p>Additional considerations: Same as for Option 1.</p>
Windsor Forest & Great Park SAC	<p>Reason for RAG rating: Option includes areas within 10km of designated site.</p> <p>Additional considerations: There are several roads located adjacent to the SAC, such as the A332 and the B3022. Due to the large distances between the SAC and the option development areas</p>	<p>Reason for RAG rating: Option areas are all over 10km away from designated site.</p> <p>Additional considerations: Same as for Option 1.</p>	<p>Reason for RAG rating: Option areas are all over 10km away from designated site.</p> <p>Additional considerations: Same as for Option 1.</p>	<p>Reason for RAG rating: Option areas are all over 10km away from designated site.</p> <p>Additional considerations: Same as for Option 1.</p>	<p>Reason for RAG rating: Option areas are all over 10km away from designated site.</p> <p>Additional considerations: Same as for Option 1.</p>

Risk assessment results for air quality impacts					
Designated Site	Option 1: Focus on opportunities at larger settlements & planned growth locations	Option 2: Focus on Oxford-led growth	Option 3: Focus on opportunities in sustainable transport corridors & at strategic transport hubs	Option 4: Focus on strengthening business locations	Option 5: Focus on supporting rural communities
	(>10km) there is a very low risk of LSE.				

3.2 Water impacts

3.2.a. The risk assessment results for water-related impacts are provided in Table 3.2. Where potential LSE have been identified, Table 3.2 indicates the specific type of potential water-related impact and includes potential mitigation strategies.

Table 3.2: Risk assessment results for water impacts, including water levels / abstraction and water quality

Risk assessment results for water impacts					
Designated Site	Option 1: Focus on opportunities at larger settlements & planned growth locations	Option 2: Focus on Oxford-led growth	Option 3: Focus on opportunities in sustainable transport corridors & at strategic transport hubs	Option 4: Focus on strengthening business locations	Option 5: Focus on supporting rural communities
Aston Rowant SAC	<i>SAC not sensitive to water-related impacts.</i>	<i>SAC not sensitive to water-related impacts.</i>	<i>SAC not sensitive to water-related impacts.</i>	<i>SAC not sensitive to water-related impacts.</i>	<i>SAC not sensitive to water-related impacts.</i>
Burnham Beeches SAC	Reason for RAG rating: Option areas are all over 10km away from designated site.	Reason for RAG rating: Option areas are all over 10km away from designated site.	Reason for RAG rating: Option areas are all over 10km away from designated site.	Reason for RAG rating: Option areas are all over 10km away from designated site.	Reason for RAG rating: Option areas are all over 10km away from designated site.
Chilterns Beechwoods SAC	Reason for RAG rating: Option includes areas further than 2km from SAC but within 10km of SAC. No LSE foreseen on the SAC as option areas are downstream of the SAC.	Reason for RAG rating: Option areas are all over 10km away from designated site.	Reason for RAG rating: Option includes areas further than 2km from SAC but within 10km of SAC. No LSE foreseen on the SAC as option areas are downstream of the SAC.	Reason for RAG rating: Option includes areas further than 2km from SAC but within 10km of SAC. No LSE foreseen on the SAC as option areas are downstream of the SAC.	Reason for RAG rating: Option includes areas within 2km of the SAC. Potential impact: Option is downstream of the surface water bodies feeding the SAC and therefore could potentially have no LSE on the SAC related to surface water. Potential construction pollution and groundwater impacts

Risk assessment results for water impacts					
Designated Site	Option 1: Focus on opportunities at larger settlements & planned growth locations	Option 2: Focus on Oxford-led growth	Option 3: Focus on opportunities in sustainable transport corridors & at strategic transport hubs	Option 4: Focus on strengthening business locations	Option 5: Focus on supporting rural communities
					<p>should still be considered due to the option including areas that are close (within 2km) of the SAC.</p> <p>Potential mitigation: Ensure minimal runoff from potential developments and transport routes – create buffers around transport routes. Best practice construction measures to include pollution prevention techniques.</p>
Cothill Fen SAC	<p>Reason for RAG rating: Option includes areas within 2km of the SAC.</p> <p>Potential impact: Potential for water quality degradation of Sandford Brook (which flows through the SAC) caused by construction pollution</p>	<p>Reason for RAG rating: Option includes areas within 2km of the SAC.</p> <p>Potential impact: Option is downstream of the surface water bodies feeding the SAC and therefore could</p>	<p>Reason for RAG rating: Option includes areas directly in contact with the SAC, including areas covering the whole SAC area and Sandford Brook.</p> <p>Potential impact: Potential for water quality degradation of Sandford</p>	<p>Reason for RAG rating: Option includes areas within 2km of the SAC.</p> <p>Potential impact: Option is 30m downstream of the surface water bodies feeding the SAC and therefore could potentially</p>	<p>Reason for RAG rating: Option directly covers the whole of the SAC and majority of the 2km surrounding buffer.</p> <p>Potential impact: Potential for water quality degradation of Sandford Brook (which flows</p>

Risk assessment results for water impacts					
Designated Site	Option 1: Focus on opportunities at larger settlements & planned growth locations	Option 2: Focus on Oxford-led growth	Option 3: Focus on opportunities in sustainable transport corridors & at strategic transport hubs	Option 4: Focus on strengthening business locations	Option 5: Focus on supporting rural communities
	<p>runoff from transport routes.</p> <p>Potential mitigation: Ensure minimal runoff from potential developments and transport routes – create buffers around transport routes. Best practice construction measures to include pollution prevention techniques.</p> <p>To prevent environmentally damaging abstraction levels and possible follow-on LSE, appropriate abstraction licensing should be put in place.</p>	<p>potentially have no LSE on the SAC related to surface water. Potential construction pollution and groundwater impacts should still be considered due to the option including areas that are close (within 2km) of the SAC.</p> <p>Potential mitigation: Ensure minimal runoff from potential developments and transport routes – create buffers around transport routes. Best practice construction measures to include pollution prevention techniques.</p>	<p>Brook (contributes to River Thames) caused by construction pollution runoff from transport routes.</p> <p>More information needed on options but potential increased abstraction from Sandford Brook to accommodate for new developments could reduce flows downstream and impact the amount of flow at the SAC. More information would be required on location, volume, duration, seasonality and frequency of abstraction and discharges.</p> <p>Potential mitigation: Avoid developing near or upstream of SAC, ensure minimal runoff from potential developments</p>	<p>have no LSE on the SAC related to surface water. Potential construction pollution and groundwater impacts should still be considered due to the option including areas that are close (within 2km) of the SAC.</p> <p>Abstraction/discharge impacts as discussed to the left for Option 3.</p> <p>Potential mitigation: Ensure minimal runoff from potential developments and transport routes – create buffers around transport routes. Best practice construction measures to include pollution prevention techniques.</p>	<p>through the SAC) caused by construction pollution runoff from transport routes.</p> <p>Abstraction/discharge impacts as for Option 3.</p> <p>Potential mitigation: Ensure minimal runoff from potential developments and transport routes – create buffers around transport routes. Best practice construction measures to include pollution prevention techniques.</p> <p>Abstraction/discharge mitigation as discussed to the left for Option 3.</p>

Risk assessment results for water impacts					
Designated Site	Option 1: Focus on opportunities at larger settlements & planned growth locations	Option 2: Focus on Oxford-led growth	Option 3: Focus on opportunities in sustainable transport corridors & at strategic transport hubs	Option 4: Focus on strengthening business locations	Option 5: Focus on supporting rural communities
			<p>and transport routes – create buffers around transport routes. Best practice construction measures to include pollution prevention techniques.</p> <p>To prevent environmentally damaging abstraction levels and possible follow-on LSE, appropriate abstraction licensing should be put in place.</p>	Abstraction/discharge mitigation as discussed to the left for Option 3.	
Hackpen Hill SAC	<i>SAC not sensitive to water-related impacts.</i>	<i>SAC not sensitive to water-related impacts.</i>	<i>SAC not sensitive to water-related impacts.</i>	<i>SAC not sensitive to water-related impacts.</i>	<i>SAC not sensitive to water-related impacts.</i>
Hartslock Wood SAC	<i>SAC not sensitive to water-related impacts.</i>	<i>SAC not sensitive to water-related impacts.</i>	<i>SAC not sensitive to water-related impacts.</i>	<i>SAC not sensitive to water-related impacts.</i>	<i>SAC not sensitive to water-related impacts.</i>
Kennet & Lambourn Floodplain SAC	<p>Reason for RAG rating: SAC is more than 10km outside of Oxfordshire.</p> <p>No LSE foreseen on SAC as option is not within a</p>	<p>Reason for RAG rating: SAC is more than 10km outside of Oxfordshire.</p>	<p>Reason for RAG rating: SAC is more than 10km outside of Oxfordshire.</p> <p>No LSE foreseen on SAC as option is not within a</p>	<p>Reason for RAG rating: Option is more than 10km SAC is more than 10km outside of Oxfordshire.</p>	<p>Reason for RAG rating: SAC is more than 10km outside of Oxfordshire.</p> <p>No LSE foreseen on SAC as option is not</p>

Risk assessment results for water impacts					
Designated Site	Option 1: Focus on opportunities at larger settlements & planned growth locations	Option 2: Focus on Oxford-led growth	Option 3: Focus on opportunities in sustainable transport corridors & at strategic transport hubs	Option 4: Focus on strengthening business locations	Option 5: Focus on supporting rural communities
	close enough range to make an impact.	No LSE foreseen on SAC as option is not within a close enough range to make an impact.	close enough range to make an impact.	No LSE foreseen on SAC as option is not within a close enough range to make an impact.	within a close enough range to make an impact.
Kennet Valley Alderwoods SAC	Reason for RAG rating: SAC is more than 10km outside of Oxfordshire. No LSE foreseen on SAC as option is not within a close enough range to make an impact.	Reason for RAG rating: SAC is more than 10km outside of Oxfordshire. No LSE foreseen on SAC as option is not within a close enough range to make an impact.	Reason for RAG rating: SAC is more than 10km outside of Oxfordshire. No LSE foreseen on SAC as option is not within a close enough range to make an impact.	Reason for RAG rating: SAC is more than 10km outside of Oxfordshire. No LSE foreseen on SAC as option is not within a close enough range to make an impact.	Reason for RAG rating: SAC is more than 10km outside of Oxfordshire. No LSE foreseen on SAC as option is not within a close enough range to make an impact.
	Reason for RAG rating: Option is within the 2km buffer of the SAC and intersects the surface water body feeding the SAC within 4km (upstream) of the SAC. Potential impact: Potential water quality degradation caused by construction pollution	Reason for RAG rating: Option is within the 10km buffer of the SAC – potential impacts on water levels/abstraction - more information on discharge/abstraction required. Potential impact:	Reason for RAG rating: Option covers majority of the SAC area and intersects the surface water body feeding the SAC within 4km (upstream) of the SAC. Potential impact: Both water quality degradation potential and increased abstraction	Reason for RAG rating: Option covers half of the SAC area and intersects the surface water body feeding the SAC within 4km (upstream) of the SAC. Potential impact: Both water quality degradation potential and increased abstraction	Reason for RAG rating: Option covers approximately half of the 2km buffer surrounding the SAC and intersects the surface water body feeding the SAC within 4km (upstream) of the SAC. Potential impact:

Risk assessment results for water impacts					
Designated Site	Option 1: Focus on opportunities at larger settlements & planned growth locations	Option 2: Focus on Oxford-led growth	Option 3: Focus on opportunities in sustainable transport corridors & at strategic transport hubs	Option 4: Focus on strengthening business locations	Option 5: Focus on supporting rural communities
	<p>runoff from transport routes.</p> <p>Potential mitigation: Ensure minimal runoff from potential developments and transport routes – create buffers around transport routes. Best practice construction measure to include pollution prevention techniques.</p>	<p>No LSE on water quality from option as it is more than 4km upstream and will not result in construction-based water quality degradation.</p> <p>More information needed on options but potential increased abstraction from River Thames to accommodate for new developments could reduce flows downstream and impact the amount of flow at the SAC. More information would be required on location, volume, duration, seasonality and frequency of abstraction and discharges.</p> <p>Potential mitigation:</p>	<p>potential from River Thames as discussed for options 1 and 2.</p> <p>Potential mitigation: As discussed to the left for Option 1 and 2.</p>	<p>potential from River Thames as discussed for options 1 and 2.</p> <p>Potential mitigation: As discussed to the left for Option 1 and 2.</p>	<p>Both water quality degradation potential and increased abstraction potential from River Thames as discussed for options 1 and 2.</p> <p>Potential mitigation: As discussed to the left for Option 1 and 2.</p>

Risk assessment results for water impacts					
Designated Site	Option 1: Focus on opportunities at larger settlements & planned growth locations	Option 2: Focus on Oxford-led growth	Option 3: Focus on opportunities in sustainable transport corridors & at strategic transport hubs	Option 4: Focus on strengthening business locations	Option 5: Focus on supporting rural communities
		To prevent environmentally damaging abstraction levels and possible follow-on LSE, appropriate abstraction licensing should be put in place.			
North Meadow & Clattinger Farm SAC	Reason for RAG rating: SAC is more than 10km outside of Oxfordshire. No LSE foreseen on SAC as option is not within a close enough range to make an impact.	Reason for RAG rating: SAC is more than 10km outside of Oxfordshire. No LSE foreseen on SAC as option is not within a close enough range to make an impact.	Reason for RAG rating: SAC is more than 10km outside of Oxfordshire. No LSE foreseen on SAC as option is not within a close enough range to make an impact.	Reason for RAG rating: SAC is more than 10km outside of Oxfordshire. No LSE foreseen on SAC as option is not within a close enough range to make an impact.	Reason for RAG rating: SAC is more than 10km outside of Oxfordshire. No LSE foreseen on SAC as option is not within a close enough range to make an impact.
Oxford Meadows SAC	Reason for RAG rating: Option covers large portion of the SAC area and intersects the surface water body feeding the SAC within 4km (upstream) of the SAC.	Reason for RAG rating: Option covers majority of the SAC and intersects the surface water body feeding the SAC.	Reason for RAG rating: Option covers all of the SAC area and intersects the surface water body feeding the SAC within 4km (upstream) of the SAC.	Reason for RAG rating: Option covers large portion of the SAC area and intersects the surface water body feeding the SAC within 4km (upstream) of the SAC.	Reason for RAG rating: Option covers approximately half of the SAC area and intersects the surface water body feeding the SAC within

Risk assessment results for water impacts					
Designated Site	Option 1: Focus on opportunities at larger settlements & planned growth locations	Option 2: Focus on Oxford-led growth	Option 3: Focus on opportunities in sustainable transport corridors & at strategic transport hubs	Option 4: Focus on strengthening business locations	Option 5: Focus on supporting rural communities
	<p>Potential impact: Water quality degradation potential from runoff from construction sites/new developments and transport links. More information needed on options but potential increased abstraction potential from River Thames, Seacourt Stream, Oxford Canal, River Evenlode to accommodate for new developments may lead to decreased river levels and flow rates. More information would be required on location, volume, duration, seasonality and frequency of abstraction and discharges.</p> <p>Potential mitigation:</p>	<p>SAC within 4km (upstream) of the SAC.</p> <p>Potential impact: Same as for option 1.</p> <p>Potential mitigation: Same as for option 1.</p>	<p>Potential impact: Same as for option 1.</p> <p>Potential mitigation: Same as for option 1.</p>	<p>Potential impact: Same as for option 1.</p> <p>Potential mitigation: Same as for option 1.</p>	<p>4km (upstream) of the SAC.</p> <p>Potential impact: Same as for option 1.</p> <p>Potential mitigation: Same as for option 1.</p>

Risk assessment results for water impacts					
Designated Site	Option 1: Focus on opportunities at larger settlements & planned growth locations	Option 2: Focus on Oxford-led growth	Option 3: Focus on opportunities in sustainable transport corridors & at strategic transport hubs	Option 4: Focus on strengthening business locations	Option 5: Focus on supporting rural communities
	<p>Avoid development within and upstream of SAC. Create buffers around development areas to ensure run-off rates from development are maintained at green field rates and that development does not significantly alter groundwater flows, in line with the potential mitigation in the adopted Cherwell Local Plan (Policy ESD9)⁶. Best practice construction measures to include pollution prevention techniques.</p> <p>To prevent environmentally damaging abstraction levels and</p>				

⁶ Cherwell District Council, 2015, The Cherwell Local Plan 2011 – 2031, <https://www.cherwell.gov.uk/downloads/download/45/adopted-cherwell-local-plan-2011-2031-part-1-incorporating-policy-bicester-13-re-adopted-on-19-december-2016>

Risk assessment results for water impacts					
Designated Site	Option 1: Focus on opportunities at larger settlements & planned growth locations	Option 2: Focus on Oxford-led growth	Option 3: Focus on opportunities in sustainable transport corridors & at strategic transport hubs	Option 4: Focus on strengthening business locations	Option 5: Focus on supporting rural communities
	possible follow-on LSE, appropriate abstraction licensing should be put in place.				
River Lambourn SAC	Reason for RAG rating: SAC is outside of Oxfordshire and is not downstream of any of the areas for this option.	Reason for RAG rating: SAC is outside of Oxfordshire and is not downstream of any of the areas for this option.	Reason for RAG rating: SAC is outside of Oxfordshire and is not downstream of any of the areas for this option.	Reason for RAG rating: SAC is outside of Oxfordshire and is not downstream of any of the areas for this option.	Reason for RAG rating: SAC is outside of Oxfordshire and is not downstream of any of the areas for this option.
Thames Basin Heaths SPA	Reason for RAG rating: SPA is more than 10km outside of Oxfordshire. No LSE foreseen on SPA as option is not within a close enough range to make an impact.	Reason for RAG rating: SPA is more than 10km outside of Oxfordshire. No LSE foreseen on SPA as option is not within a close enough range to make an impact.	Reason for RAG rating: SPA is more than 10km outside of Oxfordshire. No LSE foreseen on SPA as option is not within a close enough range to make an impact.	Reason for RAG rating: SPA is more than 10km outside of Oxfordshire. No LSE foreseen on SPA as option is not within a close enough range to make an impact.	Reason for RAG rating: SPA is more than 10km outside of Oxfordshire. No LSE foreseen on SPA as option is not within a close enough range to make an impact.
Windsor Forest & Great Park SAC	Reason for RAG rating: SAC is more than 10km outside of Oxfordshire. No LSE foreseen on SAC as option is not within a	Reason for RAG rating: SAC is more than 10km outside of Oxfordshire.	Reason for RAG rating: SAC is more than 10km outside of Oxfordshire. No LSE foreseen on SAC as option is not within a	Reason for RAG rating: SAC is more than 10km outside of Oxfordshire. No LSE foreseen on SAC as option is not within a	Reason for RAG rating: SAC is more than 10km outside of Oxfordshire. No LSE foreseen on SAC as option is not

Risk assessment results for water impacts					
Designated Site	Option 1: Focus on opportunities at larger settlements & planned growth locations	Option 2: Focus on Oxford-led growth	Option 3: Focus on opportunities in sustainable transport corridors & at strategic transport hubs	Option 4: Focus on strengthening business locations	Option 5: Focus on supporting rural communities
	close enough range to make an impact	No LSE foreseen on SAC as option is not within a close enough range to make an impact	close enough range to make an impact range to make an impact	close enough range to make an impact	within a close enough range to make an impact

3.3 Recreational impacts

3.3.a. The risk assessment results for recreational impacts are provided in Table 3.3. Where potential LSE have been identified, Table 3.3 also includes potential mitigation strategies.

Table 3.3: Risk assessment results for recreational impacts

Risk assessment results for recreational impacts					
Designated Site	Option 1: Focus on opportunities at larger settlements & planned growth locations	Option 2: Focus on Oxford-led growth	Option 3: Focus on opportunities in sustainable transport corridors & at strategic transport hubs	Option 4: Focus on strengthening business locations	Option 5: Focus on supporting rural communities
Aston Rowant SAC	<p>Reason for RAG rating: Option includes areas within 10km of designated site.</p> <p>Potential mitigation: Identification of a Suitable Alternative Natural Greenspace (SANG) to provide recreation opportunities.</p>	<p>Reason for RAG rating: Option areas are all over 10km away from designated site.</p>	<p>Reason for RAG rating: Option includes areas within 10km of designated site.</p> <p>Potential mitigation: Identification of a Suitable Alternative Natural Greenspace (SANG) to provide recreation opportunities.</p>	<p>Reason for RAG rating: Option includes areas within 10km of designated site.</p> <p>Potential mitigation: Identification of a Suitable Alternative Natural Greenspace (SANG) to provide recreation opportunities.</p>	<p>Reason for RAG rating: Option includes areas within 2km of designated site.</p> <p>Potential mitigation: Identification of a Suitable Alternative Natural Greenspace (SANG) to provide recreation opportunities.</p> <p>Development of a Strategic Access Management and Monitoring strategy for the affected site, funded through a per-dwelling tariff.</p>

Risk assessment results for recreational impacts					
Designated Site	Option 1: Focus on opportunities at larger settlements & planned growth locations	Option 2: Focus on Oxford-led growth	Option 3: Focus on opportunities in sustainable transport corridors & at strategic transport hubs	Option 4: Focus on strengthening business locations	Option 5: Focus on supporting rural communities
Burnham Beeches SAC	Reason for RAG rating: Option areas are all over 10km away from designated site.	Reason for RAG rating: Option areas are all over 10km away from designated site.	Reason for RAG rating: Option areas are all over 10km away from designated site.	Reason for RAG rating: Option areas are all over 10km away from designated site.	Reason for RAG rating: Option areas are all over 10km away from designated site.
Chilterns Beechwoods SAC	Reason for RAG rating: Option includes areas within 10km of designated site. Potential mitigation: Identification of a Suitable Alternative Natural Greenspace (SANG) to provide recreation opportunities.	Reason for RAG rating: Option areas are all over 10km away from designated site.	Reason for RAG rating: Option includes areas within 10km of designated site. Potential mitigation: Identification of a Suitable Alternative Natural Greenspace (SANG) to provide recreation opportunities.	Reason for RAG rating: Option includes areas within 10km of designated site. Potential mitigation: Identification of a Suitable Alternative Natural Greenspace (SANG) to provide recreation opportunities.	Reason for RAG rating: Option includes areas within 2km of designated site. Potential mitigation: Identification of a Suitable Alternative Natural Greenspace (SANG) to provide recreation opportunities. Development of a Strategic Access Management and Monitoring strategy for the affected site, funded through a per-dwelling tariff.
Cothill Fen SAC	Reason for RAG rating:	Reason for RAG rating:	Reason for RAG rating:	Reason for RAG rating:	Reason for RAG rating:

Risk assessment results for recreational impacts					
Designated Site	Option 1: Focus on opportunities at larger settlements & planned growth locations	Option 2: Focus on Oxford-led growth	Option 3: Focus on opportunities in sustainable transport corridors & at strategic transport hubs	Option 4: Focus on strengthening business locations	Option 5: Focus on supporting rural communities
	<p>Option includes areas within 2km of designated site.</p> <p>Potential mitigation: Development to be located where it avoids all areas of the SAC.</p> <p>Identification of a Suitable Alternative Natural Greenspace (SANG) to provide recreation opportunities.</p> <p>Development of a Strategic Access Management and Monitoring strategy for the affected site, funded through a per-dwelling tariff.</p>	<p>Option includes areas within 2km of designated site.</p> <p>Potential mitigation: Identification of a Suitable Alternative Natural Greenspace (SANG) to provide recreation opportunities.</p> <p>Development of a Strategic Access Management and Monitoring strategy for the affected site, funded through a per-dwelling tariff.</p>	<p>Option includes areas within 2km of designated site (contains the SAC).</p> <p>Potential mitigation: Development to be located where it avoids all areas of the SAC.</p> <p>Identification of a Suitable Alternative Natural Greenspace (SANG) to provide recreation opportunities.</p> <p>Development of a Strategic Access Management and Monitoring strategy for the affected site, funded through a per-dwelling tariff.</p>	<p>Option includes areas within 2km of designated site.</p> <p>Potential mitigation: Identification of a Suitable Alternative Natural Greenspace (SANG) to provide recreation opportunities.</p> <p>Development of a Strategic Access Management and Monitoring strategy for the affected site, funded through a per-dwelling tariff.</p>	<p>Option includes areas within 2km of designated site (overlaps with SAC).</p> <p>Potential mitigation: Development to be located where it avoids all areas of the SAC.</p> <p>Identification of a Suitable Alternative Natural Greenspace (SANG) to provide recreation opportunities.</p> <p>Development of a Strategic Access Management and Monitoring strategy for the affected site, funded through a per-dwelling tariff.</p>
Hackpen Hill SAC	<p>Reason for RAG rating: Option includes areas within 10km of designated site.</p>	<p>Reason for RAG rating:</p>	<p>Reason for RAG rating: Option includes areas within 10km of designated site.</p>	<p>Reason for RAG rating: Option includes areas within 10km of designated site.</p>	<p>Reason for RAG rating:</p>

Risk assessment results for recreational impacts					
Designated Site	Option 1: Focus on opportunities at larger settlements & planned growth locations	Option 2: Focus on Oxford-led growth	Option 3: Focus on opportunities in sustainable transport corridors & at strategic transport hubs	Option 4: Focus on strengthening business locations	Option 5: Focus on supporting rural communities
	<p>Potential mitigation: Identification of a Suitable Alternative Natural Greenspace (SANG) to provide recreation opportunities.</p>	<p>Option areas are all over 10km away from designated site.</p>	<p>Potential mitigation: Identification of a Suitable Alternative Natural Greenspace (SANG) to provide recreation opportunities.</p>	<p>Potential mitigation: Identification of a Suitable Alternative Natural Greenspace (SANG) to provide recreation opportunities.</p>	<p>Option includes areas within 2km of designated site.</p> <p>Potential mitigation: Identification of a Suitable Alternative Natural Greenspace (SANG) to provide recreation opportunities.</p> <p>Development of a Strategic Access Management and Monitoring strategy for the affected site, funded through a per-dwelling tariff.</p>
Hartslock Wood SAC	<p>Reason for RAG rating: Option includes areas within 10km of designated site.</p> <p>Potential mitigation: Identification of a Suitable Alternative Natural Greenspace (SANG) to</p>	<p>Reason for RAG rating: Option areas are all over 10km away from designated site.</p>	<p>Reason for RAG rating: Option includes areas within 2km of designated site (contains the SAC).</p> <p>Potential mitigation: Development to be located where it avoids all areas of the SAC.</p>	<p>Reason for RAG rating: Option includes areas within 10km of designated site.</p> <p>Potential mitigation: Identification of a Suitable Alternative Natural Greenspace (SANG) to</p>	<p>Reason for RAG rating: Option areas are all over 10km away from designated site.</p>

Risk assessment results for recreational impacts					
Designated Site	Option 1: Focus on opportunities at larger settlements & planned growth locations	Option 2: Focus on Oxford-led growth	Option 3: Focus on opportunities in sustainable transport corridors & at strategic transport hubs	Option 4: Focus on strengthening business locations	Option 5: Focus on supporting rural communities
	provide recreation opportunities.		Identification of a Suitable Alternative Natural Greenspace (SANG) to provide recreation opportunities. Development of a Strategic Access Management and Monitoring strategy for the affected site, funded through a per-dwelling tariff.	provide recreation opportunities.	
Kennet & Lambourn Floodplain SAC	Reason for RAG rating: Option areas are all over 10km away from designated site.	Reason for RAG rating: Option areas are all over 10km away from designated site.	Reason for RAG rating: Option areas are all over 10km away from designated site.	Reason for RAG rating: Option areas are all over 10km away from designated site.	Reason for RAG rating: Option areas are all over 10km away from designated site.
Kennet Valley Alderwoods SAC	Reason for RAG rating: Option areas are all over 10km away from designated site.	Reason for RAG rating: Option areas are all over 10km away from designated site.	Reason for RAG rating: Option areas are all over 10km away from designated site.	Reason for RAG rating: Option areas are all over 10km away from designated site.	Reason for RAG rating: Option areas are all over 10km away from designated site.
Little Wittenham SAC	Reason for RAG rating:	Reason for RAG rating:	Reason for RAG rating:	Reason for RAG rating:	Reason for RAG rating:

Risk assessment results for recreational impacts					
Designated Site	Option 1: Focus on opportunities at larger settlements & planned growth locations	Option 2: Focus on Oxford-led growth	Option 3: Focus on opportunities in sustainable transport corridors & at strategic transport hubs	Option 4: Focus on strengthening business locations	Option 5: Focus on supporting rural communities
	<p>Option includes areas within 7km of designated site.</p> <p>Potential mitigation: Identification of a Suitable Alternative Natural Greenspace (SANG) to provide recreation opportunities.</p> <p>Development of a Strategic Access Management and Monitoring strategy for the affected site, funded through a per-dwelling tariff.</p>	<p>Option includes areas within 7km of designated site.</p> <p>Potential mitigation: Identification of a Suitable Alternative Natural Greenspace (SANG) to provide recreation opportunities.</p> <p>Development of a Strategic Access Management and Monitoring strategy for the affected site, funded through a per-dwelling tariff.</p>	<p>Option includes areas within 7km of designated site (overlaps with SAC).</p> <p>Potential mitigation: Development to be located where it avoids all areas of the SAC.</p> <p>Identification of a Suitable Alternative Natural Greenspace (SANG) to provide recreation opportunities.</p> <p>Development of a Strategic Access Management and Monitoring strategy for the affected site, funded through a per-dwelling tariff.</p>	<p>Option includes areas within 7km of designated site (overlaps with SAC).</p> <p>Potential mitigation: Development to be located where it avoids all areas of the SAC.</p> <p>Identification of a Suitable Alternative Natural Greenspace (SANG) to provide recreation opportunities.</p> <p>Development of a Strategic Access Management and Monitoring strategy for the affected site, funded through a per-dwelling tariff.</p>	<p>Option includes areas within 7km of designated site (overlaps with SAC).</p> <p>Potential mitigation: Development to be located where it avoids all areas of the SAC.</p> <p>Identification of a Suitable Alternative Natural Greenspace (SANG) to provide recreation opportunities.</p> <p>Development of a Strategic Access Management and Monitoring strategy for the affected site, funded through a per-dwelling tariff.</p>

Risk assessment results for recreational impacts					
Designated Site	Option 1: Focus on opportunities at larger settlements & planned growth locations	Option 2: Focus on Oxford-led growth	Option 3: Focus on opportunities in sustainable transport corridors & at strategic transport hubs	Option 4: Focus on strengthening business locations	Option 5: Focus on supporting rural communities
North Meadow & Clattinger Farm SAC	Reason for RAG rating: Option areas are all over 10km away from designated site.	Reason for RAG rating: Option areas are all over 10km away from designated site.	Reason for RAG rating: Option areas are all over 10km away from designated site.	Reason for RAG rating: Option areas are all over 10km away from designated site.	Reason for RAG rating: Option areas are all over 10km away from designated site.
Oxford Meadows SAC	<p>Reason for RAG rating: Option includes areas within 7km of designated site (overlaps with SAC).</p> <p>Potential mitigation: Development to be located where it avoids all areas of the SAC.</p> <p>Identification of a Suitable Alternative Natural Greenspace (SANG) to provide recreation opportunities.</p> <p>Development of a Strategic Access Management and Monitoring strategy for the affected site, funded</p>	<p>Reason for RAG rating: Option includes areas within 2km of designated site.</p> <p>Although all five spatial options have a Red rating, Option 2 (Oxford-led growth) presents the highest risk to this SAC as all of the growth would be concentrated in areas close to this SAC.</p> <p>Potential mitigation: Identification of a Suitable Alternative Natural Greenspace (SANG) to provide recreation opportunities.</p>	<p>Reason for RAG rating: Option includes areas within 7km of designated site (overlaps with SAC).</p> <p>Potential mitigation: Development to be located where it avoids all areas of the SAC.</p> <p>Identification of a Suitable Alternative Natural Greenspace (SANG) to provide recreation opportunities.</p> <p>Development of a Strategic Access Management and Monitoring strategy for the affected site, funded</p>	<p>Reason for RAG rating: Option includes areas within 7km of designated site (overlaps with SAC).</p> <p>Potential mitigation: Development to be located where it avoids all areas of the SAC.</p> <p>Identification of a Suitable Alternative Natural Greenspace (SANG) to provide recreation opportunities.</p> <p>Development of a Strategic Access Management and Monitoring strategy for the affected site, funded</p>	<p>Reason for RAG rating: Option includes areas within 7km of designated site (overlaps with SAC).</p> <p>Potential mitigation: Development to be located where it avoids all areas of the SAC.</p> <p>Identification of a Suitable Alternative Natural Greenspace (SANG) to provide recreation opportunities.</p> <p>Development of a Strategic Access Management and Monitoring strategy for</p>

Risk assessment results for recreational impacts					
Designated Site	Option 1: Focus on opportunities at larger settlements & planned growth locations	Option 2: Focus on Oxford-led growth	Option 3: Focus on opportunities in sustainable transport corridors & at strategic transport hubs	Option 4: Focus on strengthening business locations	Option 5: Focus on supporting rural communities
	through a per-dwelling tariff.	Development of a Strategic Access Management and Monitoring strategy for the affected site, funded through a per-dwelling tariff.	through a per-dwelling tariff.	through a per-dwelling tariff.	the affected site, funded through a per-dwelling tariff.
River Lambourn SAC	Reason for RAG rating: Option areas are all over 10km away from designated site.	Reason for RAG rating: Option areas are all over 10km away from designated site.	Reason for RAG rating: Option includes areas within 10km of designated site. Potential mitigation: Identification of a Suitable Alternative Natural Greenspace (SANG) to provide recreation opportunities.	Reason for RAG rating: Option includes areas within 10km of designated site. Potential mitigation: Identification of a Suitable Alternative Natural Greenspace (SANG) to provide recreation opportunities.	Reason for RAG rating: Option includes areas within 10km of designated site. Potential mitigation: Identification of a Suitable Alternative Natural Greenspace (SANG) to provide recreation opportunities.
Thames Basin Heaths SPA	Reason for RAG rating: Option areas are all over 10km away from designated site.	Reason for RAG rating: Option areas are all over 10km away from designated site.	Reason for RAG rating: Option areas are all over 10km away from designated site.	Reason for RAG rating: Option areas are all over 10km away from designated site.	Reason for RAG rating: Option areas are all over 10km away from designated site.

Risk assessment results for recreational impacts					
Designated Site	Option 1: Focus on opportunities at larger settlements & planned growth locations	Option 2: Focus on Oxford-led growth	Option 3: Focus on opportunities in sustainable transport corridors & at strategic transport hubs	Option 4: Focus on strengthening business locations	Option 5: Focus on supporting rural communities
Windsor Forest & Great Park SAC	Reason for RAG rating: Option areas are all over 10km away from designated site.	Reason for RAG rating: Option areas are all over 10km away from designated site.	Reason for RAG rating: Option areas are all over 10km away from designated site.	Reason for RAG rating: Option areas are all over 10km away from designated site.	Reason for RAG rating: Option areas are all over 10km away from designated site.

4 Summary

4.a. Table 4.1 summarises the findings of this high-level risk assessment for the five spatial options considered in this assessment, with a visual presentation of all of the RAG ratings associated with potential LSEs for air quality impacts, water impacts and recreational impacts. There are risks for LSEs (Red and Amber ratings) associated with each of the five spatial options, and potential mitigation strategies have been identified as part of this assessment. None of the spatial options have been ruled out at this stage.

4.b. The following designated sites have a very low risk of LSE (Green rating) arising from air quality impacts, water impacts and recreational impacts, across all of the spatial options considered in this assessment:

- Burnham Beeches SAC
- Kennet & Lambourn Floodplain SAC
- Kennet Valley Alderwoods SAC
- North Meadow & Clattinger Farm SAC
- Thames Basin Heaths SPA
- Windsor Forest & Great Park SAC

4.c. The following designated sites have a higher risk of LSE (Red rating), for at least one type of impact, across all of the spatial options considered in this assessment:

- Cothill Fen SAC
- Little Wittenham SAC
- Oxford Meadows SAC

4.d. When considering the overall results presented in Table 4.1, it is important not to interpret the number of Red or Amber ratings associated with each option as an absolute indication of which is the best spatial option overall. For example, Option 2 (Focus on Oxford-led growth) has the lowest number of Red ratings. This option has a very low risk of LSEs for designated sites that are located away from the city of Oxford. However, since all of the growth and development would be concentrated in a fairly small area, in and around the city of Oxford, it is likely that this option would also concentrate the LSEs over a fairly small area as well. This may make it more difficult to develop effective mitigation to fully offset the LSEs.

4.e. On the other hand, Option 5 (Focus on supporting rural communities) has the highest number of Red ratings, and this is primarily a reflection of the large area encompassed by Option 5. Option 5 could be further developed with some additional constraints, such as locating development at a minimum distance away from designated sites, in order to lower the number of LSEs associated with this option.

4.f. In summary, rather than directly determining which is the overall best spatial option, the results of this high-level assessment serve to highlight where LSEs are associated with each spatial option, such that the LSEs can be considered and addressed early in the planning process.

Table 4.1: Summary of RAG ratings for all options and all impacts

Site	Option 1: Focus on opportunities at larger settlements & planned growth locations			Option 2: Focus on Oxford-led growth			Option 3: Focus on opportunities in sustainable transport corridors & at strategic transport hubs			Option 4: Focus on strengthening business locations			Option 5: Focus on supporting rural communities		
	Air	Water	Rec.	Air	Water	Rec.	Air	Water	Rec.	Air	Water	Rec.	Air	Water	Rec.
Aston Rowant SAC	Yellow	Green	Yellow	Green	Green	Green	Yellow	Green	Yellow	Yellow	Green	Yellow	Red	Green	Red
Burnham Beeches SAC	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Chilterns Beechwoods SAC	Yellow	Green	Yellow	Green	Green	Green	Yellow	Green	Yellow	Yellow	Green	Yellow	Red	Red	Red
Cothill Fen SAC	Yellow	Red	Red	Yellow	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red
Hackpen Hill SAC	Yellow	Green	Yellow	Green	Green	Green	Yellow	Green	Yellow	Yellow	Green	Yellow	Yellow	Green	Red
Hartslock Wood SAC	Yellow	Green	Yellow	Green	Green	Green	Red	Green	Red	Yellow	Green	Yellow	Yellow	Green	Green
Kennet & Lambourn Floodplain SAC	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Kennet Valley Alderwoods SAC	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green

Site	Option 1: Focus on opportunities at larger settlements & planned growth locations			Option 2: Focus on Oxford-led growth			Option 3: Focus on opportunities in sustainable transport corridors & at strategic transport hubs			Option 4: Focus on strengthening business locations			Option 5: Focus on supporting rural communities		
	Air	Water	Rec.	Air	Water	Rec.	Air	Water	Rec.	Air	Water	Rec.	Air	Water	Rec.
Little Wittenham SAC	Green	Red	Red	Green	Yellow	Red	Green	Red	Red	Green	Red	Red	Green	Red	Red
North Meadow & Clattinger Farm SAC	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Oxford Meadows SAC	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red	Red
River Lambourn SAC	Green	Green	Green	Green	Green	Green	Yellow	Green	Yellow	Yellow	Green	Yellow	Yellow	Green	Yellow
Thames Basin Heaths SPA	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green
Windsor Forest & Great Park SAC	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green	Green

5 Next steps

5.a. The results of this high-level risk assessment of spatial options can be used by the Oxfordshire city and district authorities to further develop the Plan spatial strategy and prepare their draft Plan for formal HRA consideration in due course.

5.b. It may be useful to seek Natural England's views on this report before using it for spatial planning.

5.c. Where potential risks have been identified, these should not be interpreted as indicating that the associated development will necessarily damage the integrity of European sites or undermine their conservation objectives. Rather, the identification of potential risks serves only to highlight the possibility of strategic development needing a greater level of assessment under the Habitats Regulations, and potentially, a greater level of associated mitigation to overcome any adverse effects. The basic principle here is that the first consideration in the 'mitigation hierarchy' should be to avoid impacts wherever possible. The high-level risk assessment described in this report is intended to facilitate such avoidance.

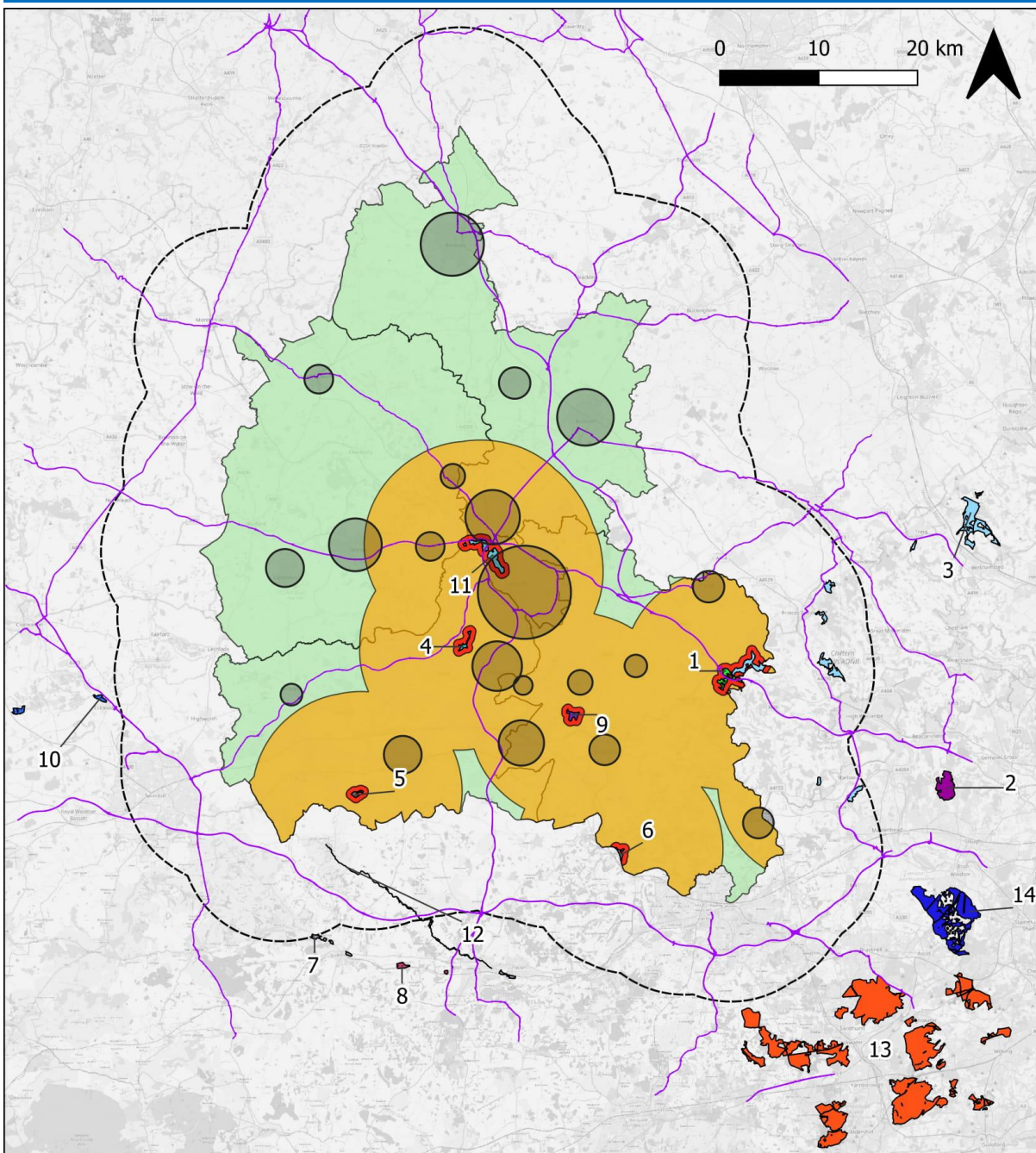
5.d. The mitigation hierarchy is:

- Avoidance of adverse impacts where possible;
- Mitigation for impacts that cannot be avoided, which would include:
 - Minimising (or reducing) what cannot be avoided;
 - Remedying (or restoring) what cannot be reduced; and (as a last resort)
- Compensating for what cannot be avoided or mitigated.

5.e. After a draft Oxfordshire Plan 2050 has been prepared, subsequent stages of the HRA process will be undertaken. The HRA Stage 1 screening assessment will consider and assess likely significant effects arising from the Oxfordshire Plan 2050, both alone and in combination with other plans and projects. In-combination impacts are likely to include air quality impacts arising from increased vehicle traffic associated with the strategic plans developed by neighbouring local authorities, as well as recreational impacts for those designated sites located near the Oxfordshire border. A search for relevant plans and projects to consider for the in-combination assessment will be carried out during the Stage 1 screening assessment. Any LSE that are identified during the Stage 1 screening assessment will be carried forward for further consideration in HRA Stage 2: appropriate assessment.

Appendices

Appendix 1 – Mapped comparison of spatial options with distance-based risk zones



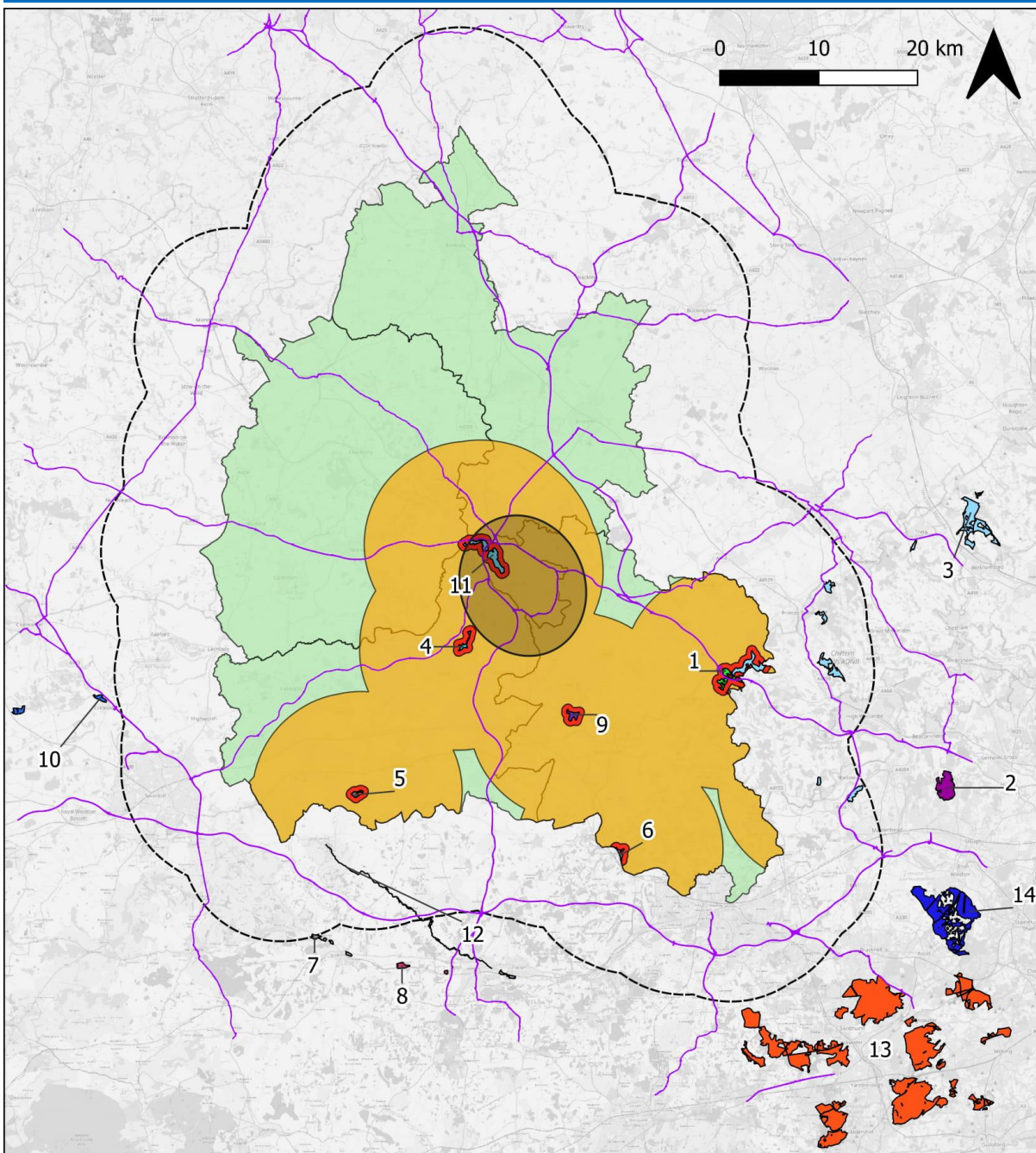
Legend

Risk zones for air quality impacts - Option 1 - Focus on opportunities at larger settlements & planned growth locations

Number	Site name
1	Aston Rowant (SAC)
2	Burnham Beeches (SAC)
3	Chilterns Beechwoods (SAC)
4	Cothill Fen (SAC)
5	Hackpen Hill (SAC)
6	Hartslock Wood (SAC)
7	Kennet and Lambourn Floodplain (SAC)

Number	Site name
8	Kennet Valley Alderwoods (SAC)
9	Little Wittenham (SAC)
10	North Meadow & Clattinger Farm (SAC)
11	Oxford Meadows (SAC)
12	River Lambourn (SAC)
13	Thames Basin Heaths (SPA)
14	Windsor Forest & Great Park (SAC)

- Option 1
- Primary roads links
- Risk Zone Buffers
 - Higher risk of LSE (2km or 7km)
 - Lower risk of LSE (10km)
 - Very low risk of LSE (>10km)
- 10km Buffer Oxfordshire County



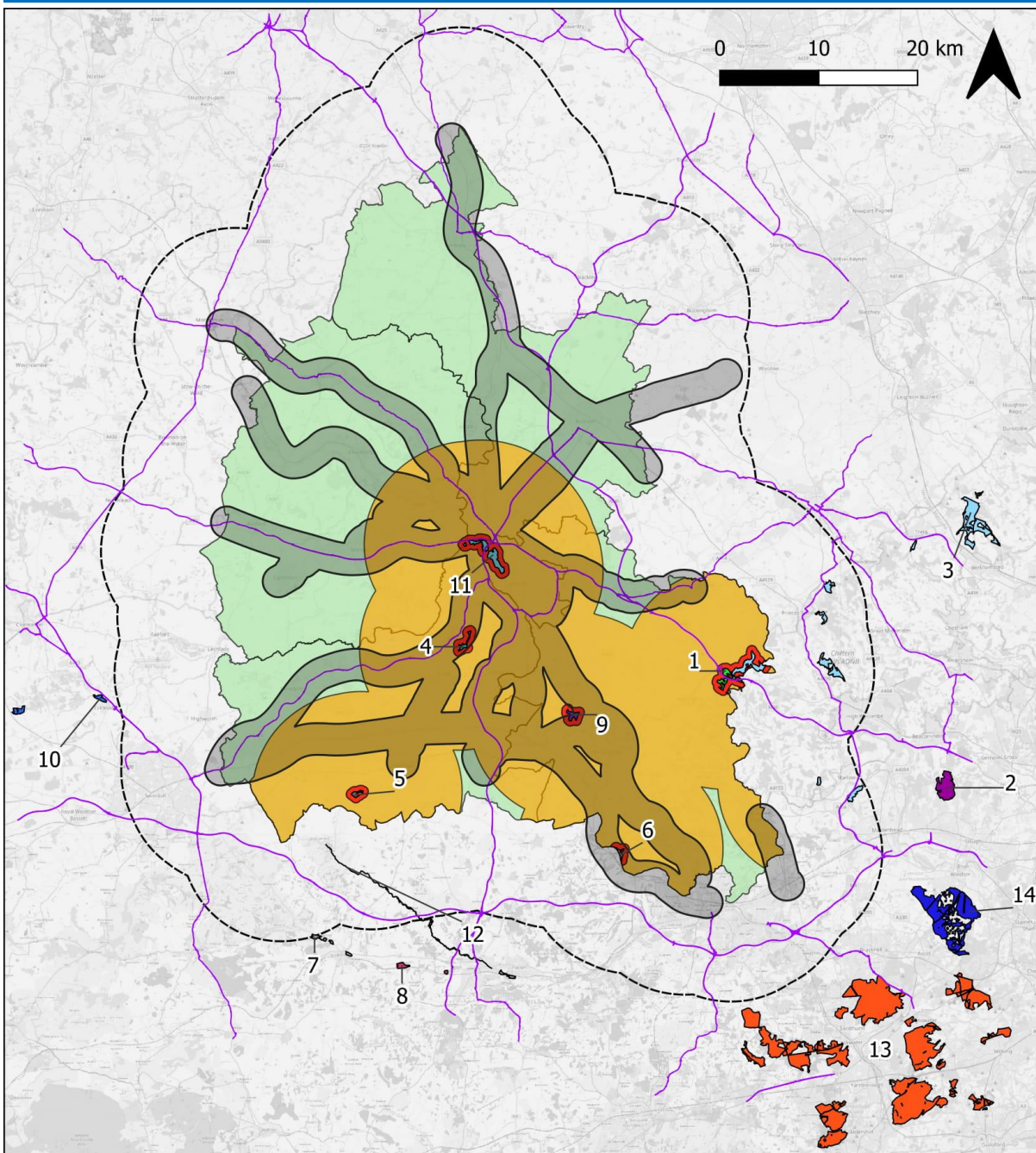
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Risk zones for air quality impacts - Option 2 - Focus on Oxford-led growth

Number	Site name
1	Aston Rowant (SAC)
2	Burnham Beeches (SAC)
3	Chilterns Beechwoods (SAC)
4	Cothill Fen (SAC)
5	Hackpen Hill (SAC)
6	Hartslock Wood (SAC)
7	Kennet and Lambourn Floodplain (SAC)

Number	Site name
8	Kennet Valley Alderwoods (SAC)
9	Little Wittenham (SAC)
10	North Meadow & Clattinger Farm (SAC)
11	Oxford Meadows (SAC)
12	River Lambourn (SAC)
13	Thames Basin Heaths (SPA)
14	Windsor Forest & Great Park (SAC)

- Option 2
- Primary roads links
- Risk Zone Buffers
 - Higher risk of LSE (2km or 7km)
 - Lower risk of LSE (10km)
 - Very low risk of LSE (>10km)
- 10km Buffer Oxfordshire County



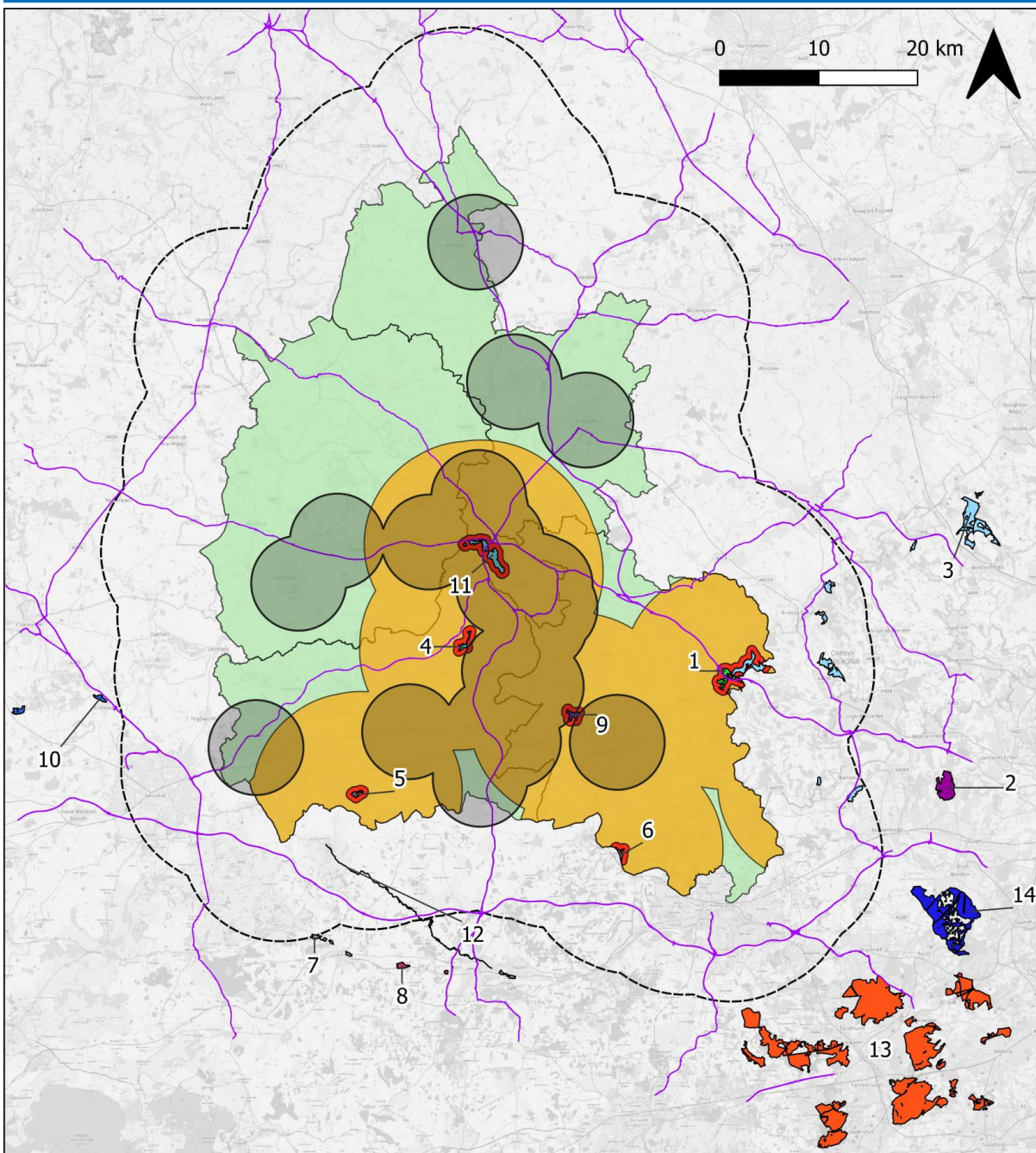
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Risk zones for air quality impacts - Option 3 - Focus on opportunities in sustainable transport corridors & at strategic transport hubs

Number	Site name
1	Aston Rowant (SAC)
2	Burnham Beeches (SAC)
3	Chilterns Beechwoods (SAC)
4	Cothill Fen (SAC)
5	Hackpen Hill (SAC)
6	Hartslock Wood (SAC)
7	Kennet and Lambourn Floodplain (SAC)

Number	Site name
8	Kennet Valley Alderwoods (SAC)
9	Little Wittenham (SAC)
10	North Meadow & Clattinger Farm (SAC)
11	Oxford Meadows (SAC)
12	River Lambourn (SAC)
13	Thames Basin Heaths (SPA)
14	Windsor Forest & Great Park (SAC)

- Option 3
- Primary roads links
- Risk Zone Buffers**
- Higher risk of LSE (2km or 7km)
- Lower risk of LSE (10km)
- Very low risk of LSE (>10km)
- 10km Buffer Oxfordshire County



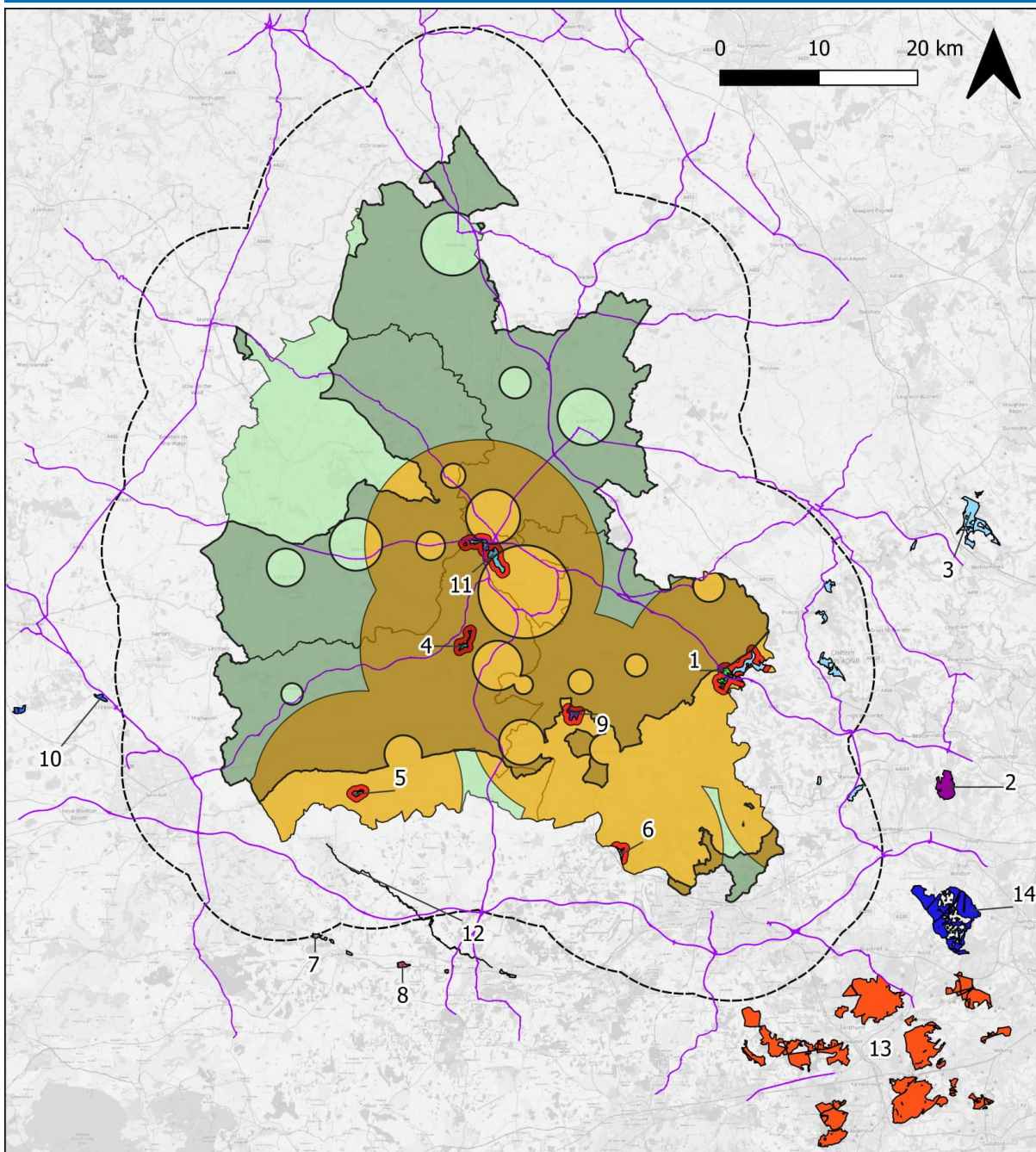
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Risk zones for air quality impacts - Option 4 - Focus on strengthening business locations

Number	Site name
1	Aston Rowant (SAC)
2	Burnham Beeches (SAC)
3	Chilterns Beechwoods (SAC)
4	Cothill Fen (SAC)
5	Hackpen Hill (SAC)
6	Hartslock Wood (SAC)
7	Kennet and Lambourn Floodplain (SAC)

Number	Site name
8	Kennet Valley Alderwoods (SAC)
9	Little Wittenham (SAC)
10	North Meadow & Clattinger Farm (SAC)
11	Oxford Meadows (SAC)
12	River Lambourn (SAC)
13	Thames Basin Heaths (SPA)
14	Windsor Forest & Great Park (SAC)

- Option 4
- Primary roads links
- Risk Zone Buffers**
- Higher risk of LSE (2km or 7km)
- Lower risk of LSE (10km)
- Very low risk of LSE (>10km)
- 10km Buffer Oxfordshire County



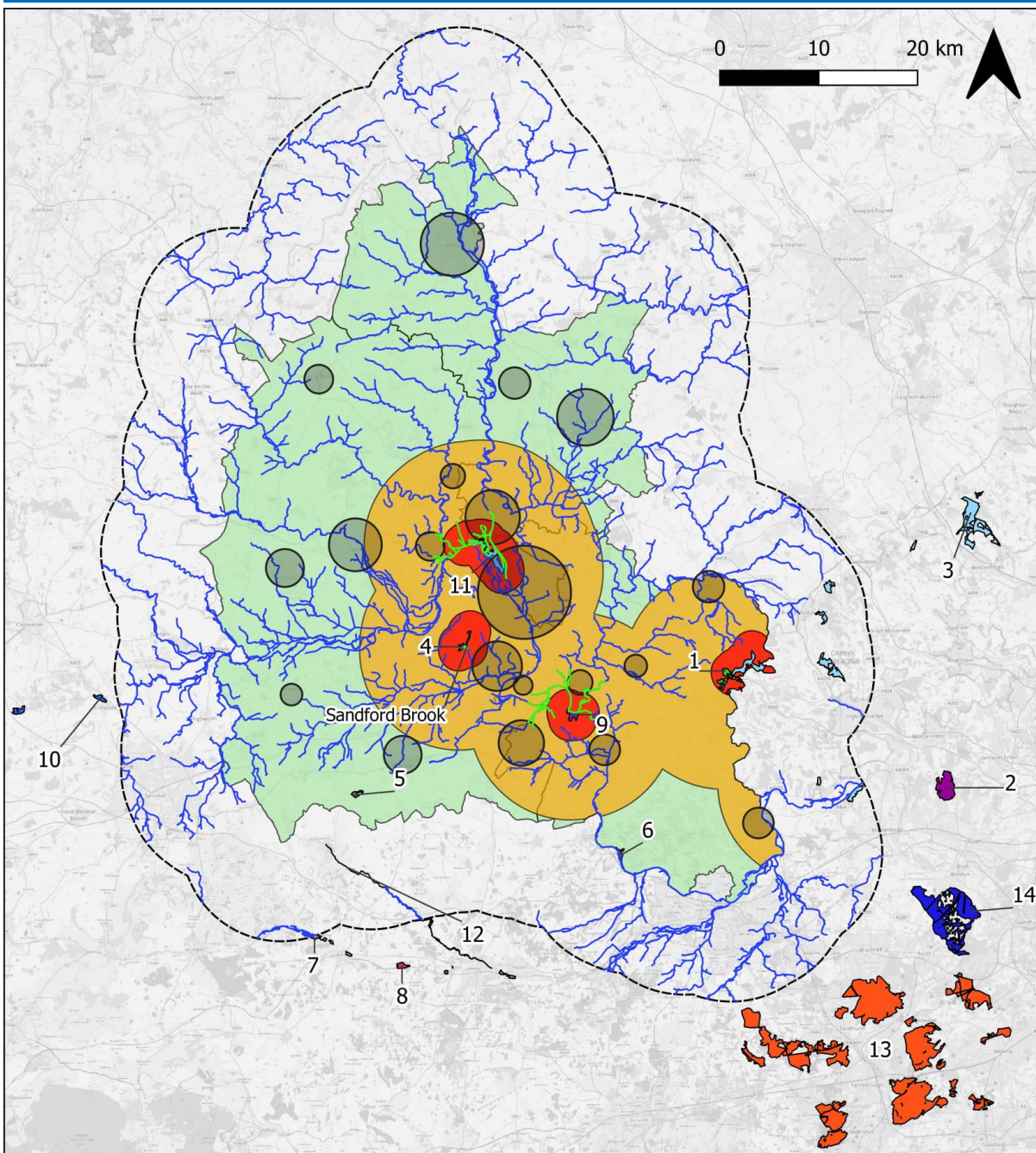
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Risk zones for air quality impacts - Option 5 - Focus on supporting rural communities

Number	Site name
1	Aston Rowant (SAC)
2	Burnham Beeches (SAC)
3	Chilterns Beechwoods (SAC)
4	Cothill Fen (SAC)
5	Hackpen Hill (SAC)
6	Hartslock Wood (SAC)
7	Kennet and Lambourn Floodplain (SAC)

Number	Site name
8	Kennet Valley Alderwoods (SAC)
9	Little Wittenham (SAC)
10	North Meadow & Clattinger Farm (SAC)
11	Oxford Meadows (SAC)
12	River Lambourn (SAC)
13	Thames Basin Heaths (SPA)
14	Windsor Forest & Great Park (SAC)

- Option 5
- Primary roads links
- Risk Zone Buffers
 - Higher risk of LSE (2km or 7km)
 - Lower risk of LSE (10km)
 - Very low risk of LSE (>10km)
- 10km Buffer Oxfordshire County



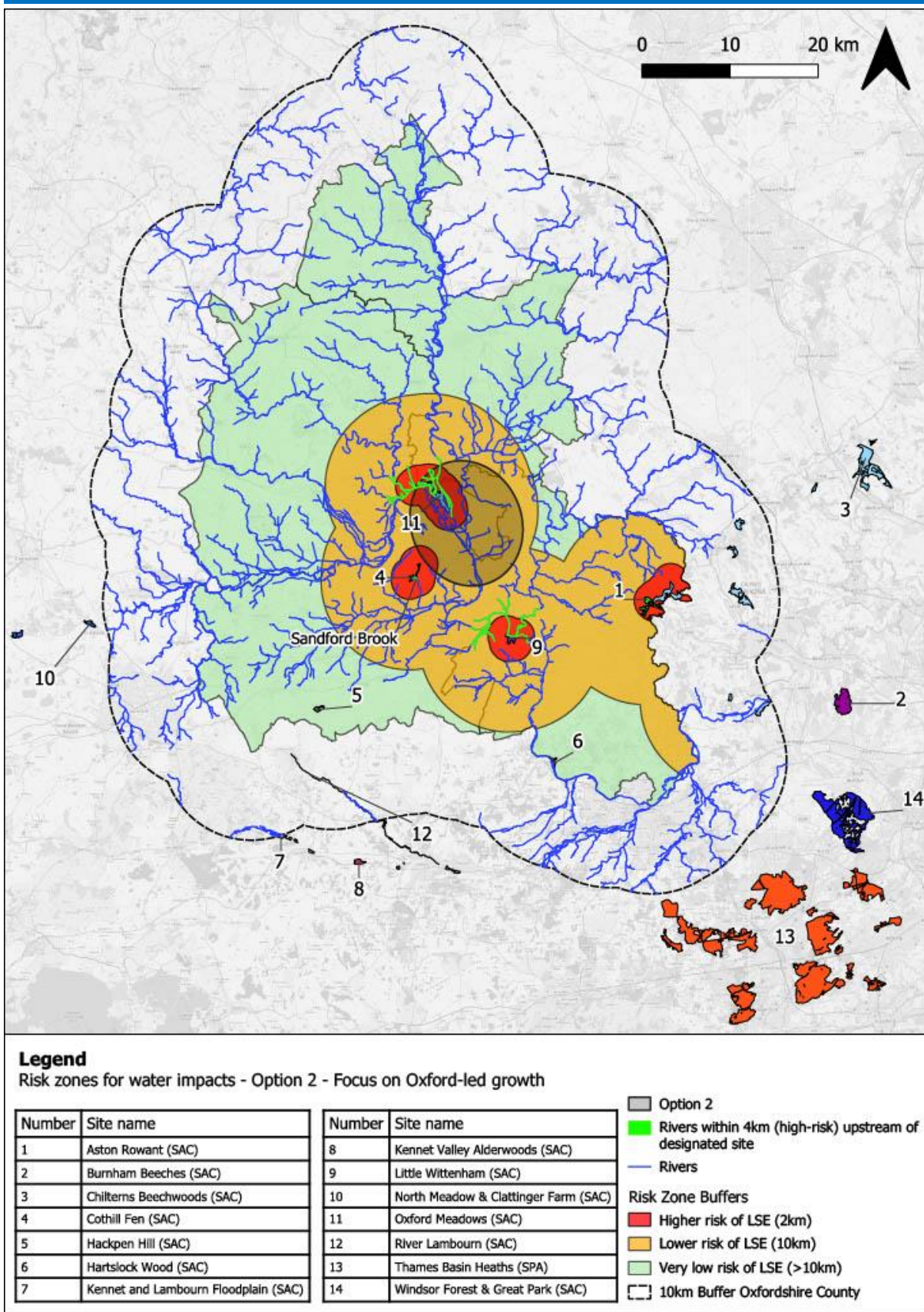
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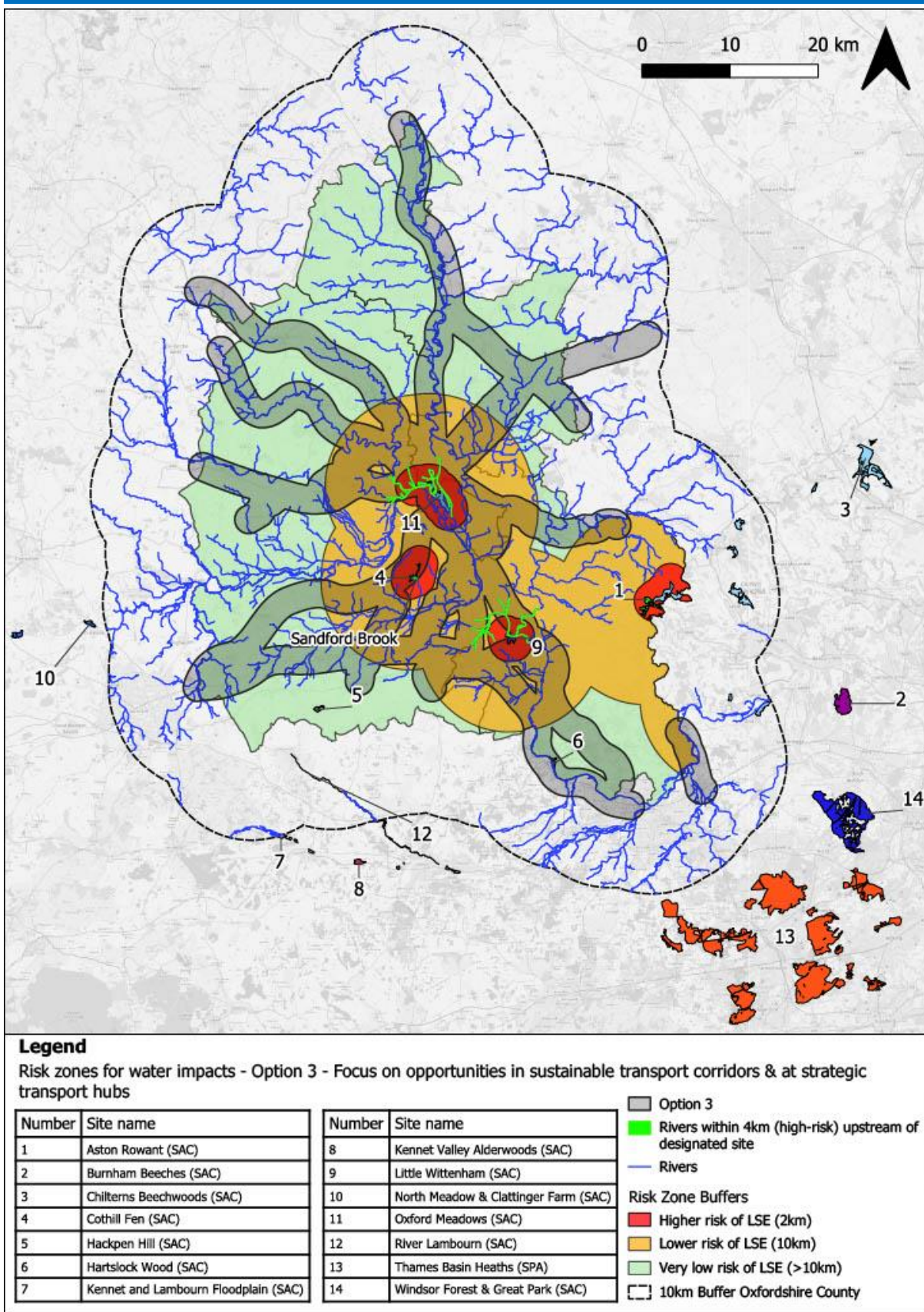
Risk zones for water impacts - Option 1 - Focus on opportunities at larger settlements & planned growth locations

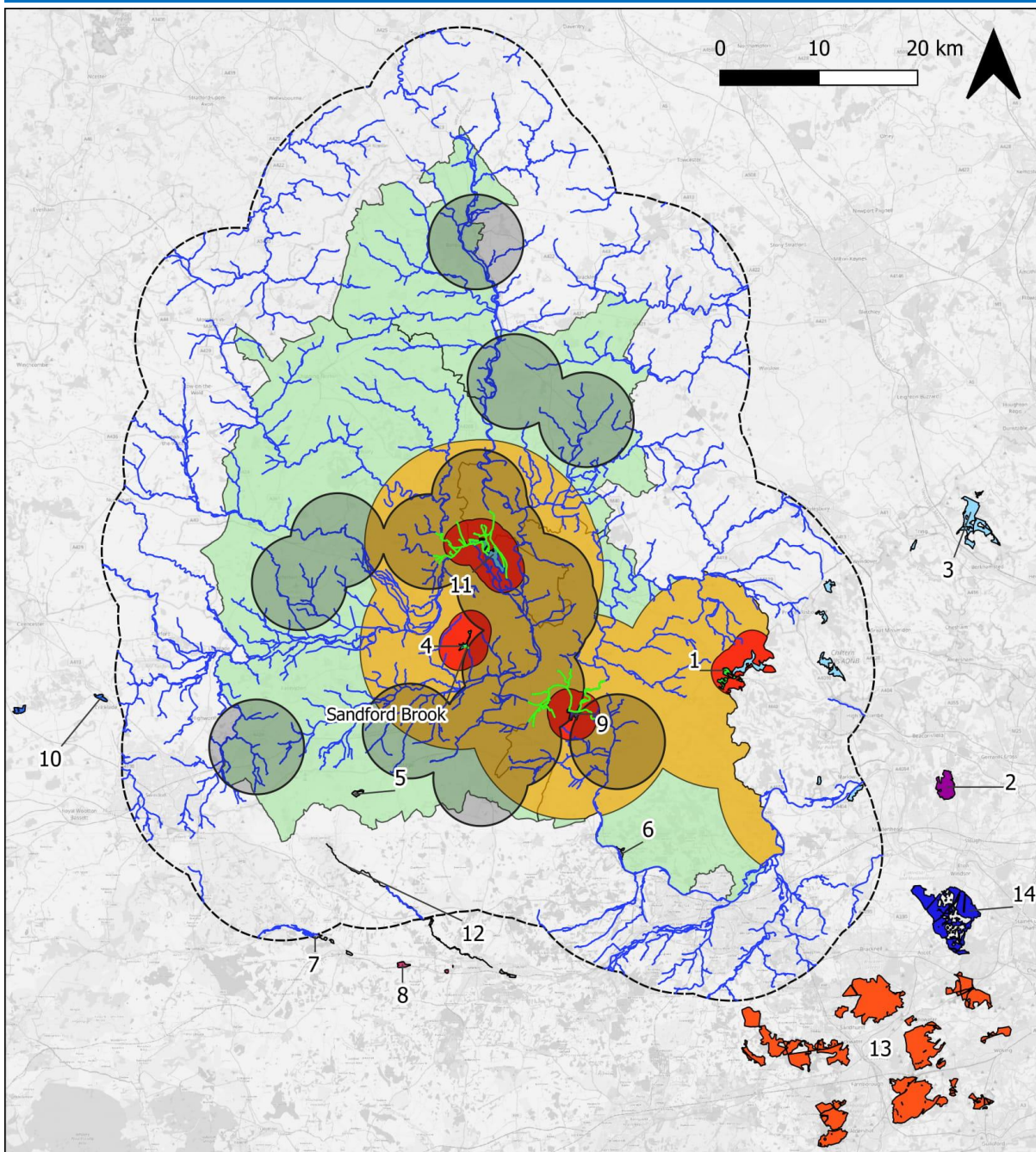
Number	Site name
1	Aston Rowant (SAC)
2	Burnham Beeches (SAC)
3	Chilterns Beechwoods (SAC)
4	Cothill Fen (SAC)
5	Hackpen Hill (SAC)
6	Hartslock Wood (SAC)
7	Kennet and Lambourn Floodplain (SAC)

Number	Site name
8	Kennet Valley Alderwoods (SAC)
9	Little Wittenham (SAC)
10	North Meadow & Clattinger Farm (SAC)
11	Oxford Meadows (SAC)
12	River Lambourn (SAC)
13	Thames Basin Heaths (SPA)
14	Windsor Forest & Great Park (SAC)

- Option 1
- Rivers within 4km (high-risk) upstream of designated site
- Rivers
- Risk Zone Buffers**
- Higher risk of LSE (2km)
- Lower risk of LSE (10km)
- Very low risk of LSE (>10km)
- 10km Buffer Oxfordshire County







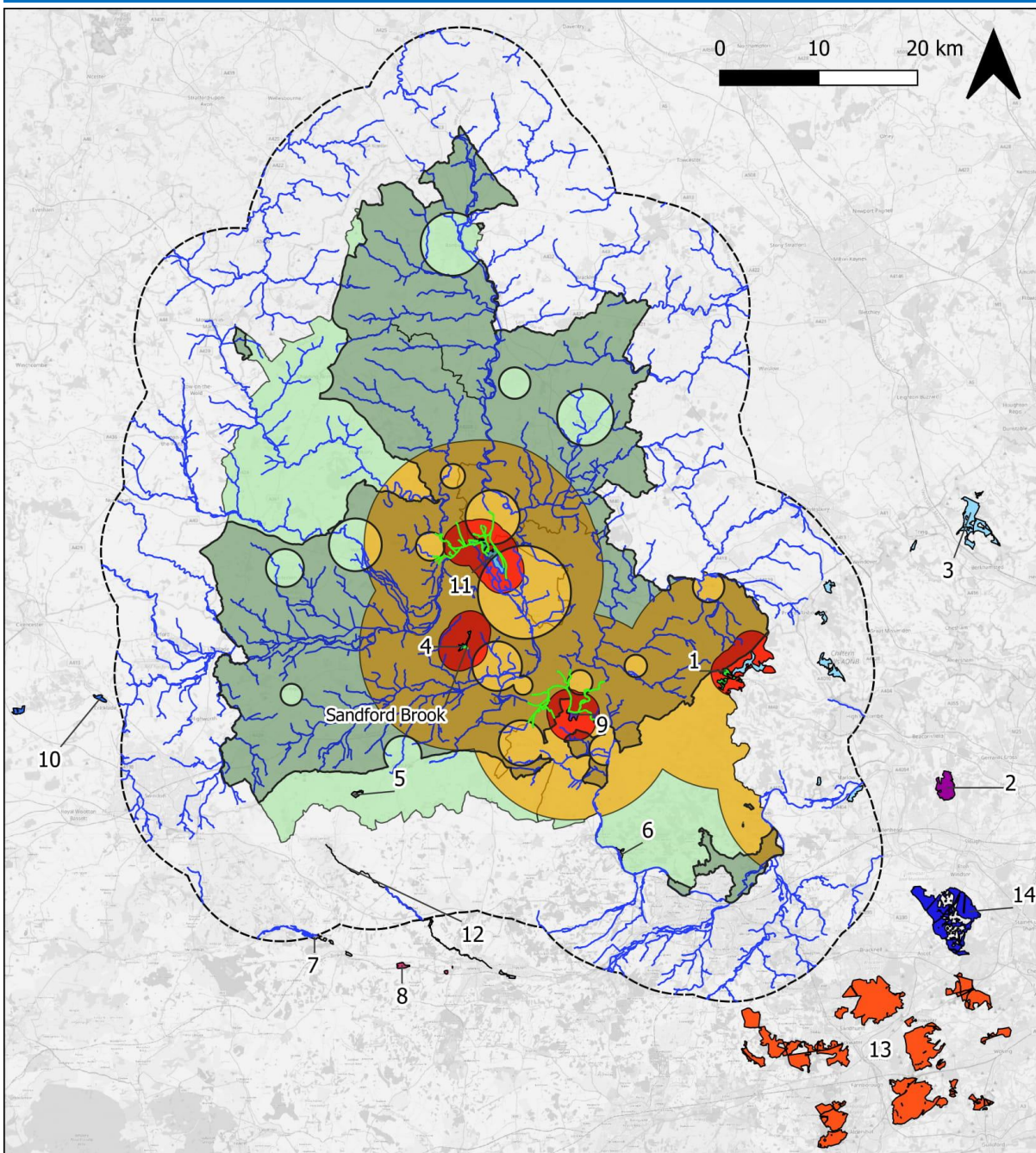
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Risk zones for water impacts - Option 4 - Focus on strengthening business locations

Number	Site name
1	Aston Rowant (SAC)
2	Burnham Beeches (SAC)
3	Chilterns Beechwoods (SAC)
4	Cothill Fen (SAC)
5	Hackpen Hill (SAC)
6	Hartslock Wood (SAC)
7	Kennet and Lambourn Floodplain (SAC)

Number	Site name
8	Kennet Valley Alderwoods (SAC)
9	Little Wittenham (SAC)
10	North Meadow & Clattinger Farm (SAC)
11	Oxford Meadows (SAC)
12	River Lambourn (SAC)
13	Thames Basin Heaths (SPA)
14	Windsor Forest & Great Park (SAC)

- Option 4
- Rivers within 4km (high-risk) upstream of designated site
- Rivers
- Risk Zone Buffers**
- Higher risk of LSE (2km)
- Lower risk of LSE (10km)
- Very low risk of LSE (>10km)
- 10km Buffer Oxfordshire County



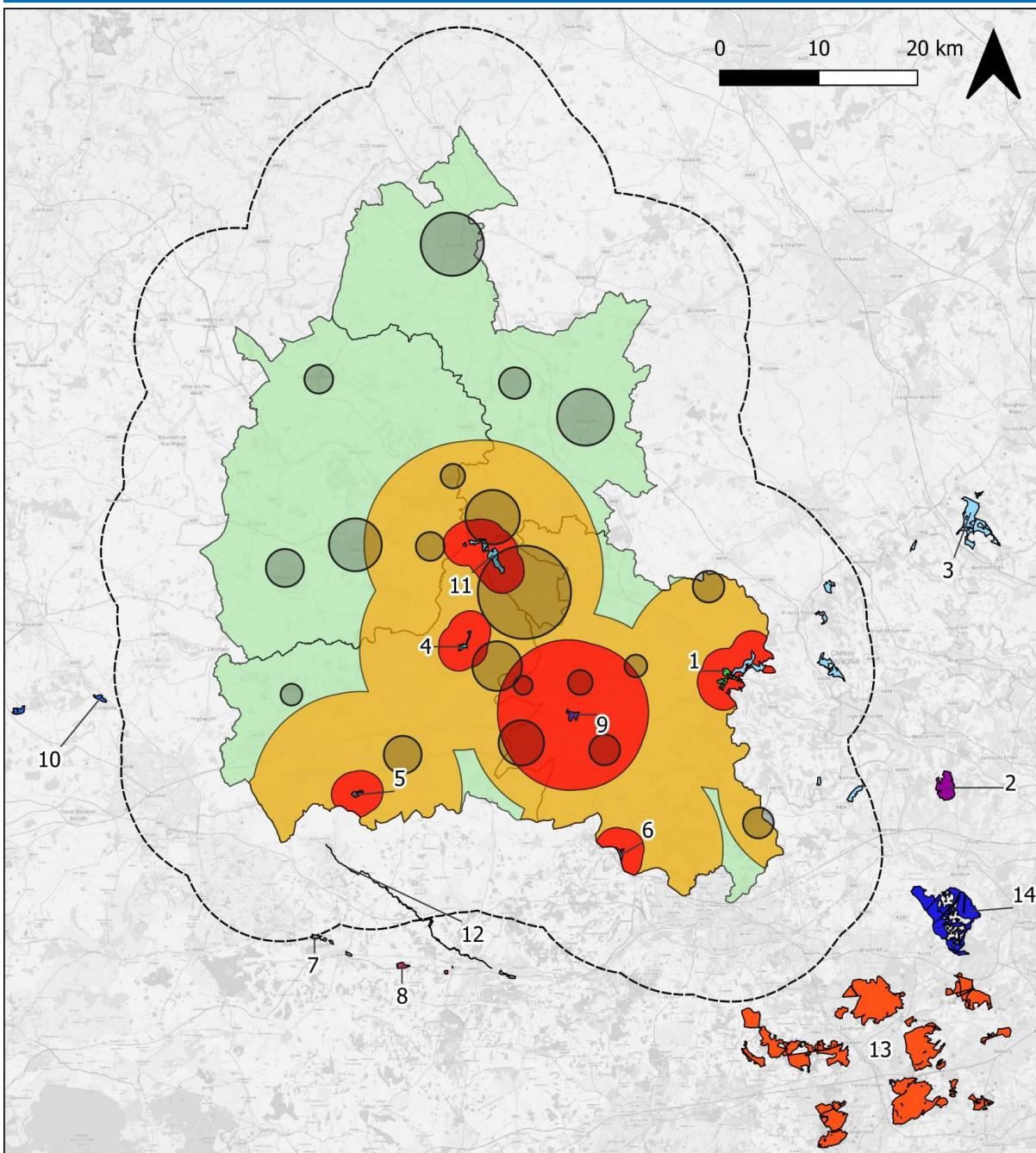
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Risk zones for water impacts - Option 5 - Focus on supporting rural communities

Number	Site name
1	Aston Rowant (SAC)
2	Burnham Beeches (SAC)
3	Chilterns Beechwoods (SAC)
4	Cothill Fen (SAC)
5	Hackpen Hill (SAC)
6	Hartslock Wood (SAC)
7	Kennet and Lambourn Floodplain (SAC)

Number	Site name
8	Kennet Valley Alderwoods (SAC)
9	Little Wittenham (SAC)
10	North Meadow & Clattinger Farm (SAC)
11	Oxford Meadows (SAC)
12	River Lambourn (SAC)
13	Thames Basin Heaths (SPA)
14	Windsor Forest & Great Park (SAC)

- Option 5
- Rivers within 4km (high-risk) upstream of designated site
- Rivers
- Risk Zone Buffers**
- Higher risk of LSE (2km)
- Lower risk of LSE (10km)
- Very low risk of LSE (>10km)
- 10km Buffer Oxfordshire County



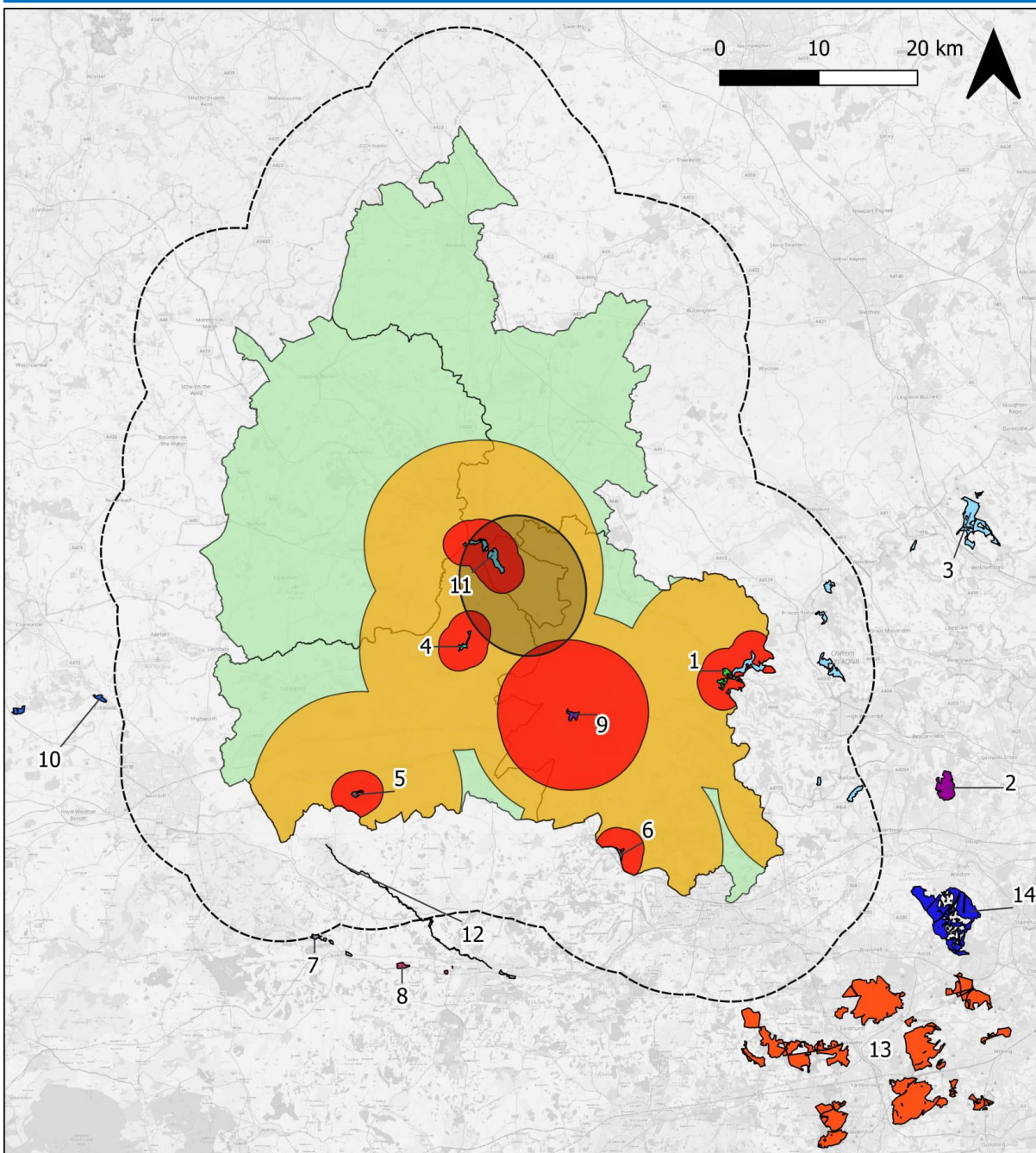
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Risk zones for recreational impacts - Option 1 - Focus on opportunities at larger settlements & planned growth locations

Number	Site name
1	Aston Rowant (SAC)
2	Burnham Beeches (SAC)
3	Chilterns Beechwoods (SAC)
4	Cothill Fen (SAC)
5	Hackpen Hill (SAC)
6	Hartslock Wood (SAC)
7	Kennet and Lambourn Floodplain (SAC)

Number	Site name
8	Kennet Valley Alderwoods (SAC)
9	Little Wittenham (SAC)
10	North Meadow & Clattinger Farm (SAC)
11	Oxford Meadows (SAC)
12	River Lambourn (SAC)
13	Thames Basin Heaths (SPA)
14	Windsor Forest & Great Park (SAC)

- Option 1
- Risk Zone Buffers
 - Higher risk of LSE (2km or 7km)
 - Lower risk of LSE (10km)
 - Very low risk of LSE (>10km)
- 10km Buffer Oxfordshire County



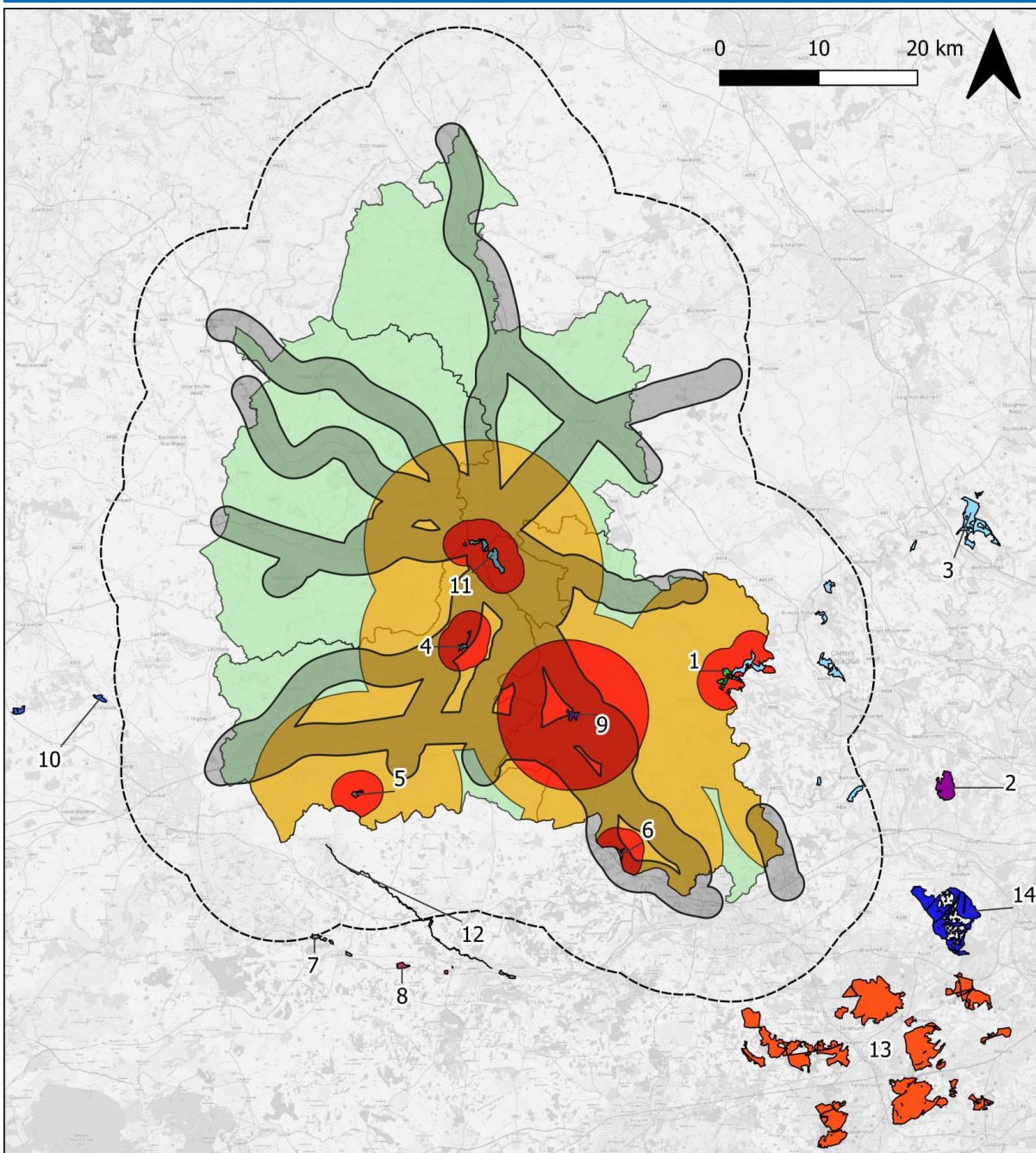
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Risk zones for recreational impacts - Option 2 - Focus on Oxford-led growth

Number	Site name
1	Aston Rowant (SAC)
2	Burnham Beeches (SAC)
3	Chilterns Beechwoods (SAC)
4	Cothill Fen (SAC)
5	Hackpen Hill (SAC)
6	Hartslock Wood (SAC)
7	Kennet and Lambourn Floodplain (SAC)

Number	Site name
8	Kennet Valley Alderwoods (SAC)
9	Little Wittenham (SAC)
10	North Meadow & Clattinger Farm (SAC)
11	Oxford Meadows (SAC)
12	River Lambourn (SAC)
13	Thames Basin Heaths (SPA)
14	Windsor Forest & Great Park (SAC)

- Option 2
- Risk Zone Buffers
 - Higher risk of LSE (2km or 7km)
 - Lower risk of LSE (10km)
 - Very low risk of LSE (>10km)
- 10km Buffer Oxfordshire County



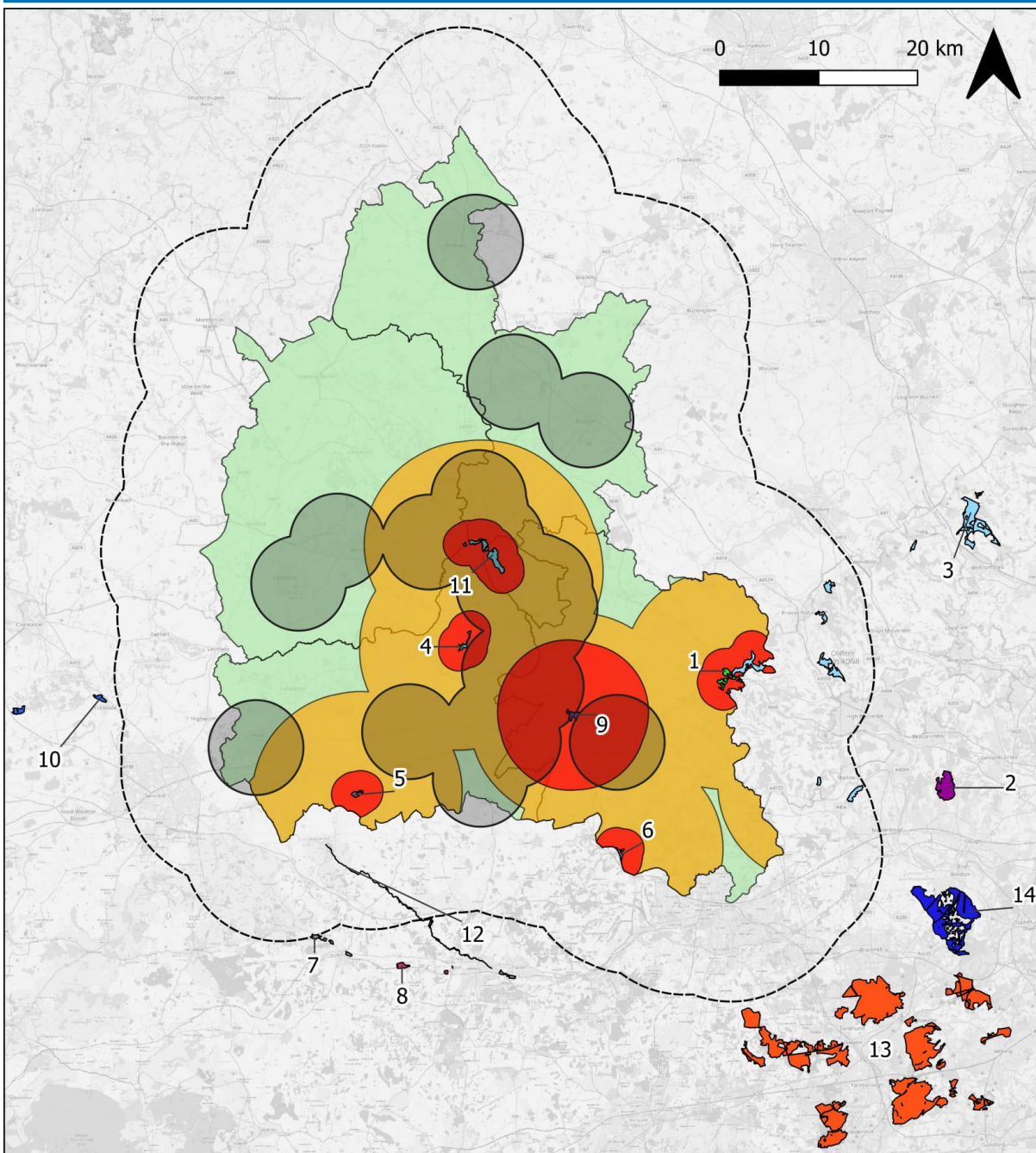
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Risk zones for recreational impacts - Option 3 - Focus on opportunities in sustainable transport corridors & at strategic transport hubs

Number	Site name
1	Aston Rowant (SAC)
2	Burnham Beeches (SAC)
3	Chilterns Beechwoods (SAC)
4	Cothill Fen (SAC)
5	Hackpen Hill (SAC)
6	Hartslock Wood (SAC)
7	Kennet and Lambourn Floodplain (SAC)

Number	Site name
8	Kennet Valley Alderwoods (SAC)
9	Little Wittenham (SAC)
10	North Meadow & Clattinger Farm (SAC)
11	Oxford Meadows (SAC)
12	River Lambourn (SAC)
13	Thames Basin Heaths (SPA)
14	Windsor Forest & Great Park (SAC)

- Option 3
- Risk Zone Buffers
 - Higher risk of LSE (2km or 7km)
 - Lower risk of LSE (10km)
 - Very low risk of LSE (>10km)
- 10km Buffer Oxfordshire County



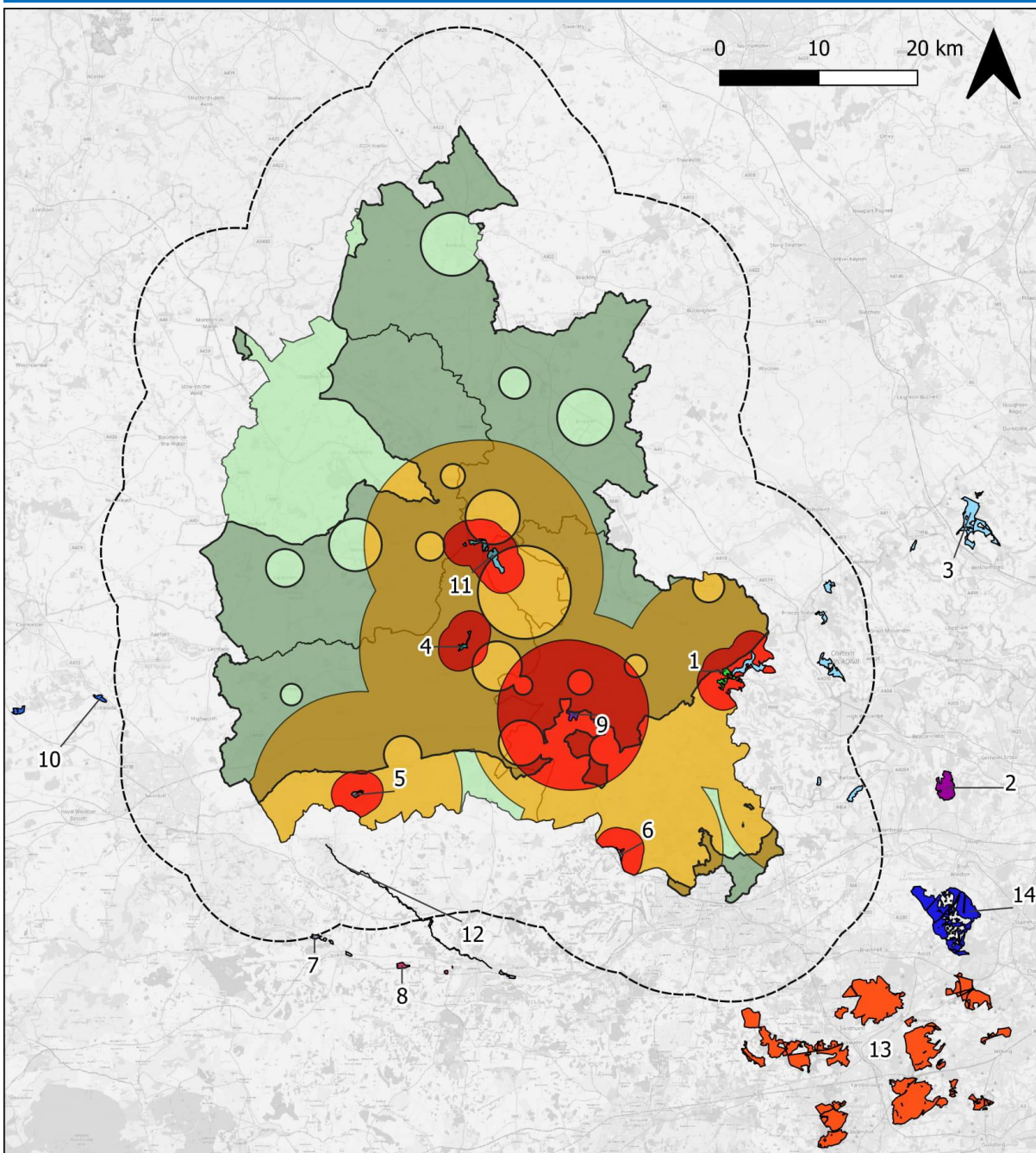
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Risk zones for recreational impacts - Option 4 - Focus on strengthening business locations

Number	Site name
1	Aston Rowant (SAC)
2	Burnham Beeches (SAC)
3	Chilterns Beechwoods (SAC)
4	Cothill Fen (SAC)
5	Hackpen Hill (SAC)
6	Hartslock Wood (SAC)
7	Kennet and Lambourn Floodplain (SAC)

Number	Site name
8	Kennet Valley Alderwoods (SAC)
9	Little Wittenham (SAC)
10	North Meadow & Clattinger Farm (SAC)
11	Oxford Meadows (SAC)
12	River Lambourn (SAC)
13	Thames Basin Heaths (SPA)
14	Windsor Forest & Great Park (SAC)

- Option 4
- Risk Zone Buffers**
- Higher risk of LSE (2km or 7km)
- Lower risk of LSE (10km)
- Very low risk of LSE (>10km)
- 10km Buffer Oxfordshire County



Legend

Risk zones for recreational impacts - Option 5 - Focus on supporting rural communities

Number	Site name
1	Aston Rowant (SAC)
2	Burnham Beeches (SAC)
3	Chilterns Beechwoods (SAC)
4	Cothill Fen (SAC)
5	Hackpen Hill (SAC)
6	Hartslock Wood (SAC)
7	Kennet and Lambourn Floodplain (SAC)

Number	Site name
8	Kennet Valley Alderwoods (SAC)
9	Little Wittenham (SAC)
10	North Meadow & Clattinger Farm (SAC)
11	Oxford Meadows (SAC)
12	River Lambourn (SAC)
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- Option 5
- Risk Zone Buffers**
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