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OXFORD CITY COUNCIL

The Lye Valley

Technical Advice Note (TAN) 19

September 2026

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Planning guidance in relation to applications affecting the Lye Valley

Glossary

Aquifer – a geological formation of porous sediment and rock saturated with groundwater.

Infiltration – the process by which water on the surface, e.g. from falling rain, seeps into the ground and below the surface via natural pores, cracks and openings. Infiltration can also act as a 'pathway' carrying pollutants from one location to another via the groundwater.

Groundwater – a term for water found underground, which can be stored and/or is moving through pockets and fractures in the various layers of soils, bedrock and other material beneath the surface.

Groundwater recharge – the process by which infiltrating water from above, e.g. during rainfall, moves into the ground to replenish groundwater.

Pollution – the introduction of harmful substances such as chemicals into the environment. Pollutants can enter the environment via different 'pathways' depending on where, when and how it is released.

Run-off – the movement of water across the surface of the land into watercourses and sewer drains. Typically, run-off is higher across impermeable surfaces. Run-off can act as a 'pathway' carrying pollutants from one place to another via the water.

Seepage face – The area where groundwater saturating the ground is exposed to the atmosphere and discharges at the surface, usually where the topography of the land results in slopes/vertical ground faces that intersect with the groundwater table.

Site of Special Scientific Interest (SSSI) – a national nature designation conveyed by Natural England for land where it believes the land's wildlife, geology or landform is of special interest.

Surface water – water found on the surface of the land. It can be located in streams and watercourses but can also appear in more temporary circumstances such as flooding of highways and other areas of land.

Sustainable Drainage Systems (SuDS) – various types of drainage system which typically seek to replicate the natural processes of drainage into the ground in order to manage surface water, helping to mitigate against flooding as well as drainage directly into sewers.

Tufa – a type of sedimentary deposit composed of calcium carbonate, formed in the Lye Valley by evaporation of calcium rich water as it reaches the surface through springs.

1. Introduction

1.1 Located in the east of the city, the Lye Valley is a nationally designated Site of Special Scientific Interest (SSSI), made up of two separate parcels to the north and south (Figure 1.1). The wider area encompassing the SSSI also supports various other local designations including a Local Wildlife Site (LWS), Oxford City Wildlife Sites (OCWSs) and a Local Nature Reserve (LNR); a map of these additional designations is included in Appendix A.

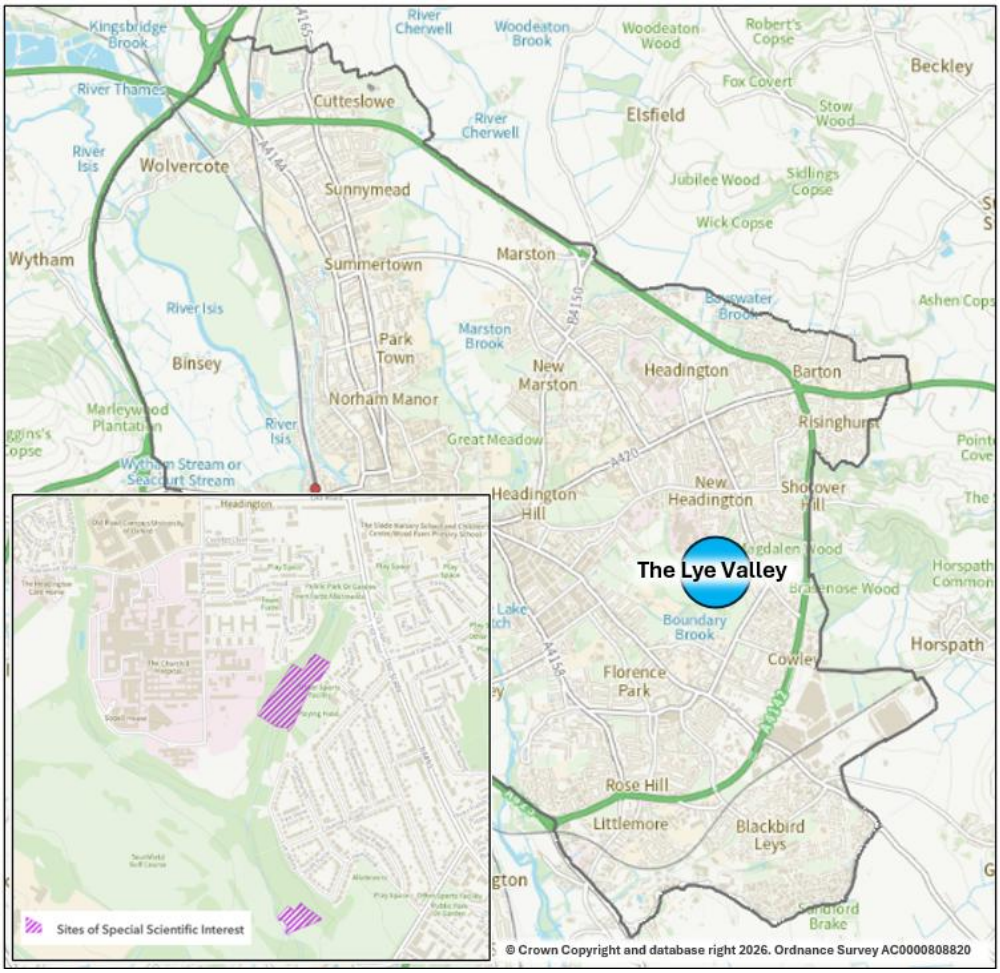


Figure 1.1: The location of the Lye Valley in the city and the two parcels of land that form the SSSI designation.

1.2 The SSSI and the surrounding area is characterised as being one of the best examples of a calcareous valley fen, a nationally rare habitat, in the country. It supports plant and animal species which are thought to have lived there since they colonised the spring areas after the retreat of the last ice age. Due to its setting within the wider urban area of Oxford and the complex hydrogeological conditions which support its functioning, the Lye Valley is particularly sensitive to the impacts of development in its proximity.

1.3 Oxford City Council commissioned JBA Consulting (JBA) to undertake a Hydrogeological Impact Assessment to assess the potential impacts of future development within the catchment of Lye Valley Site of Special Scientific Interest (SSSI) which was published in 2025. The objectives of this assessment were to collate all the available information regarding the hydrogeological setting of the site and evaluate the potential for impacts to occur to the surrounding water environment as a result of possible future residential and/or commercial development. The findings from that study have helped to inform this additional planning guidance.

1.1 Scope of this guidance and who it is aimed at

1.4 This Technical Advice Note (TAN) is aimed at applicants proposing development which may have the potential to have an adverse effect on the SSSI, i.e. proposing development on sites that are located within one or more of the impact risk zones identified for the Lye Valley as are discussed in this TAN.

1.5 The TAN is intended to help identify what impacts could arise from a development depending on where it is located and what is proposed. It sets out the specific assessments that will need to be undertaken to inform an application, including the necessary information that will need to be provided to allow the Council to be satisfied that development can take place in accordance with the policies of the Local Plan and the National Planning Policy Framework (NPPF).

1.6 Whilst the focus of the TAN is primarily on the SSSI designation, similar considerations will apply in relation to addressing potential impacts of development on other local designations (e.g. Local Wildlife Site, Oxford City Wildlife Site, Local Nature Reserve), thus this guidance should assist in meeting requirements around protecting these other areas in and around the Lye Valley.

1.7 The TAN is structured into several sections. The first half of the document (sections 2-4) aims to provide a high-level overview of the area and its key sensitivities and is expanded upon in greater detail in the main Lye Valley Hydrogeological Impact Assessment report. The second half of the TAN sets out specific guidance for what you need to submit as part of your application. The general structure of this document is as follows:

- **Section 2** - outlines the key planning policy context protecting the Lye Valley SSSI as set out in the adopted Oxford Local Plan 2036 and in national planning policy.
- **Section 3** – gives an overview of the Lye Valley, including the particular processes which have helped shape the area and outlines the SSSI's key sensitivities to change.
- **Section 4** – outlines the main ways that development can negatively impact the Lye Valley by changing the various processes which underpin the functioning of the area.
- **Section 5** – sets out guidance for what will be expected of an application. It is broken down into sub-sections which are intended to help applicants understand what they are expected to investigate and demonstrate through an application.

1.2 Where can you go for more advice?

1.7 As a first step, it is always advisable to seek pre-application advice from the Council's planning department. Through this service, we can advise you on the key issues that you need to consider when you are designing your scheme, and can provide you with specific advice on drainage impacts on the Lye Valley, if requested. This advice can be valuable for any scale of application, from householder applications to larger applications with more complex site considerations (such as those that would typically be classed as minor or major development).

2. Policy context

2.1 The National Planning Policy Framework (Policy N6, 2026 edition) sets out that development proposals affecting a Site of Special Scientific Interest (SSSI) should only be supported in particular circumstances. It means that unless the benefits of the development clearly outweigh both the likely impact on the features of special scientific interest, and any broader impact on the national network of SSSIs, then proposals should only be supported if:

There would be no adverse effect (either individually or in combination with other developments) on the site's features of special scientific interest.

2.2 Additionally, the National Planning Policy Framework strongly protects lowland fens that are found within the area, which are classified as irreplaceable habitats.

2.3 The requirements for protection of the SSSI are expanded upon in the adopted Local Plan 2036 through policy G2 (Protection of biodiversity and geo-diversity); as well as policy RE4 (Sustainable and foul drainage, surface and groundwater flow). Policy G2 sets out that:

Planning permission will not be granted for any development that would have an adverse impact on sites of national or international importance (the SAC and SSSIs), and development will not be permitted on these sites, save where related to and required for the maintenance or enhancement of the site's importance for biodiversity or geodiversity.

2.4 Meanwhile, policy RE4 sets out that:

Within the surface and groundwater catchment area for the Lye Valley SSSI development will only be permitted if it includes SuDS and where an assessment can demonstrate that there will be no adverse impact on the surface and groundwater flow to the Lye Valley SSSI.

2.5 These strong policy protections for the area require that applications for development proposed within the catchment area for the Lye Valley are accompanied by sufficient information to allow the Council to be satisfied that the development will not have an adverse effect on the Lye Valley SSSI.

2.6 Additionally, it should be noted that the area is part of the protected Green Infrastructure network under policy G1, and there are other local ecological site designations in the wider vicinity of the SSSI, including Local Wildlife Site, Oxford City Wildlife Site, and Local Nature Reserve designations. These spaces are also protected through the Local Plan's policy G2.

The Council is currently in the process of bringing forward its new Local Plan: The **Oxford Local Plan 2045**. This will replace the policies of the Local Plan 2036, and the Lye Valley will continue to be protected through its new policy framework. This Technical Advice Note will be updated upon the Local Plan's adoption to reflect the changes. It will continue to act as an important resource to help applicants in how they approach the design of their schemes to mitigate impacts on the Lye Valley.

3. An overview of the Lye Valley catchment area and its main sensitivities to change

3.1 The Lye Valley SSSI and the various flora and fauna it supports is characterised by a complex hydrogeological profile which behaves in various ways. As part of the Lye Valley Hydrogeological Impact Assessment report, JBA devised a conceptual model to help visualise this, as set out in Figure 3.1.

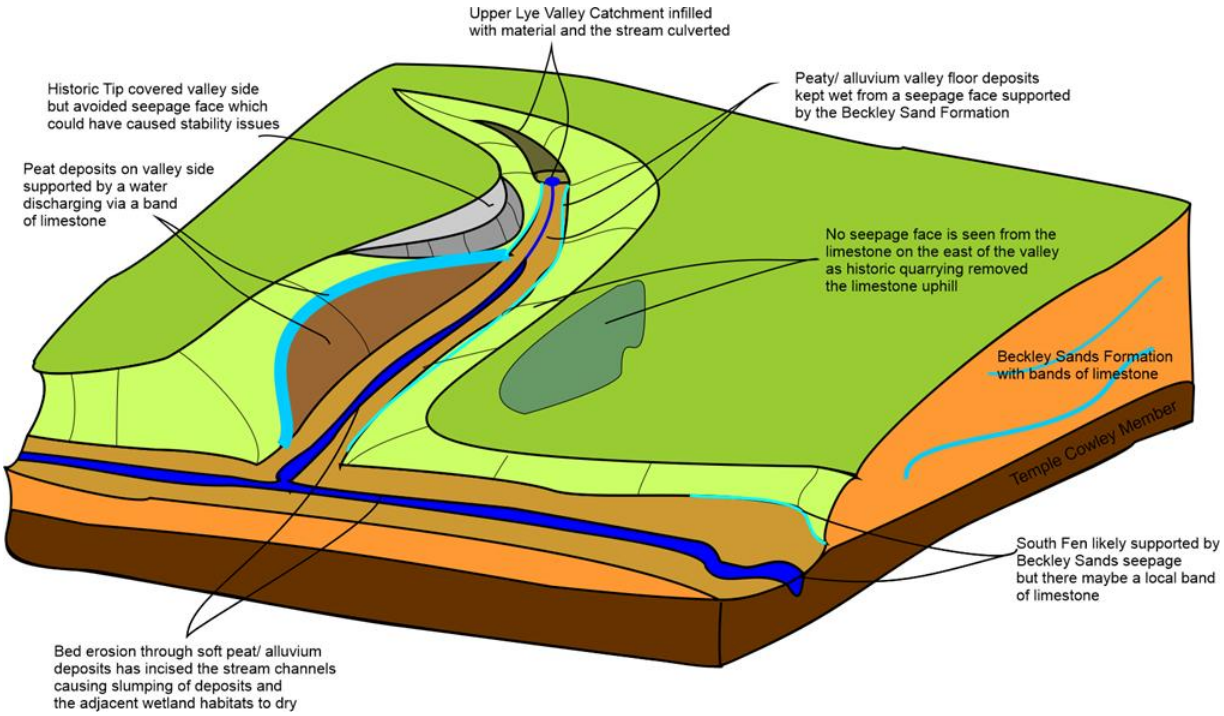


Figure 3.1: Hydrogeological conceptual model for the Lye Valley South SSSI (Lye Valley SSSI Hydrogeological Impact Assessment report, JBA, 2025)

3.2 The characteristics of the area are influenced by a variety of processes and features which have shaped the Lye Valley over time. Whilst these are discussed in greater detail in the main Lye Valley Hydrogeological Impact Assessment, some key points to be aware of are as follows:

The habitats and features of the SSSI rely on particular groundwater mechanisms:

The valley cuts partially below the water table, with groundwater discharging at seepage faces in places part way up the slopes of the valley. This helps to keep the ground wet throughout the year supporting a range of ecology, as well as peat accumulation. The presence of limestone bands within the bedrock further contributes to this process and supports tufa spring formation.

The regional water table is maintained by rainwater infiltrating into the ground within the wider catchment. This helps to 'recharge' the underlying aquifer and maintain groundwater levels which, in turn, supports these seepage faces. Infiltration can be interrupted or prevented where natural surface cover is 'sealed off' by urbanisation. Infiltration can also act as a pathway for pollutants to reach the SSSI.

Watercourses running through the SSSI are interconnected with the wider urban drainage network:

Two watercourses flow through the area, the Lye Brook and Boundary Brook. The tops of these watercourses are discharge points for the surface water sewer system serving the wider urban area.

Flows of water discharging from the sewer network are influenced by increases in surface water run off from the wider area into the sewer network. The quality of the water being discharged can be influenced by pollutants that are washed in via that run off. Flow rates can also be increased as more water drains into the sewers from upstream.

The Lye Valley is an area of flood risk, exacerbated by activities in the wider catchment:

The low lying nature of the environment, with its valley typography, and the presence of water courses connected to the wider sewer network, means that flood risk is elevated in the area.

Flooding acts as a pathway which can bring potential pollutants from the wider catchment into the SSSI when habitats become inundated. Flooding can be exacerbated by land use change in the wider catchment resulting in greater surface run off into sewers, as well as broader climate change.

A complex geology underlies the Lye Valley; the characteristics of different types of bedrock influence various processes which can positively or negatively support its features:

Below ground, the Lye Valley is underlain by different types of bedrock with varying characteristics. Water permeates more slowly through the more extensive Beckley Sand Member geology, however, this is cut through by bands and lenses of limestone which has a higher water permeability as well as other influences on chemistry.

The limestone bands support seepage faces that keep the slopes of the valley wet and contribute to the chemical processes which produce ecologically valuable tufa springs. However, the limestone is an easier pathway for contaminants to reach the SSSI as there's less time for them to be removed (e.g. via denitrification), compared to the lower permeability Beckley Sand Member.

Superficial deposits that have accumulated over time atop the bedrock play multiple roles in supporting features in the Lye Valley also:

Superficial deposits in the area vary, with the valley floor being underlain by soft peats and clay deposits. Part of the western valley side of Lye Valley is also covered by a lobe of peat.

The overlaying soil zone is intrinsic to the process creating tufa springs, acidifying infiltrating water before it reaches limestone bands. Superficial deposits have various other benefits including as carbon stores; slowing surface water; and supporting various habitats. Watercourses flowing through the area have incised through the soft valley floor superficial deposits which can cause drainage impacts and slumping.

4. What risks does new development have for the functioning of the SSSI?

4.1 New development can lead to a variety of impacts depending on what is proposed

4.1 There are a variety of ways that the SSSI and its habitats can be impacted through the development process, these typically flow from the sensitives discussed in section 3. Particular design choices arising from the way that development comes forward on a site can have various impacts for the wider area, including the SSSI, as outlined in the figure below:

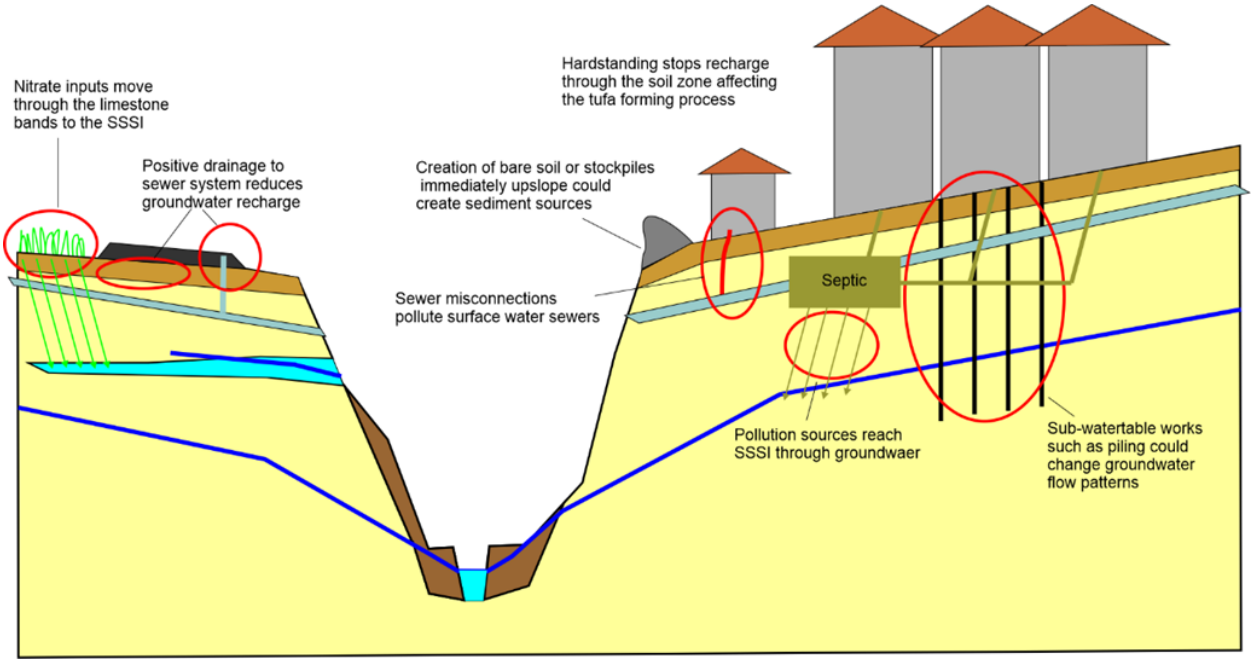


Figure 4.1: various impacts that could arise from new development in the Lye Valley area (Lye Valley SSSI Hydrogeological Impact Assessment report, JBA, 2025).

4.2 The following Table 4.1 sets out the key impacts that proposals need to consider and appropriately respond to through any application.

Table 4.1: Potential impacts arising from new development in the Lye Valley catchment area and how these can negatively impact the SSSI.

Potential impact from new development	How can this impact negatively affect the Lye Valley SSSI and broader habitats and features?
Direct run-off generated from a development site	The SSSI lies in a valley. Direct run-off from construction processes on sites on, or close to, the immediate surrounding slopes of the Lye Valley could generate pollutants which can reach the SSSI. This could also be a risk from activities once a site is in operation.

Changing the quality of the water entering the local sewer network	Pollutants such as nutrients, or chemicals entering into the sewer network upstream either during construction (e.g. oil/fuel from machinery), or once the development is in operation (e.g. nutrients from use of fertilizers) can make their way to the SSSI via discharges from the sewers into the watercourses.
Changing the quantity of the water entering the local sewer network	Development can prompt increases in the flow rate of the SSSI's watercourses due to increasing the quantity of water entering the sewer network upstream. This impact can come from reducing natural surface cover on a site, leading to increased surface run off, as well as by designing drainage schemes to discharge directly into the surface water drainage network. Increased flows would exacerbate the issues with the incision of the channel through the soft valley floor wetland deposits in the SSSI. They can also exacerbate flood risk.
Changing the quality of groundwater, particularly where there is a pathway to the limestone bands.	As with surface water, development can lead to pollutants reaching groundwater due to infiltration to the ground, which can then reach the SSSI. The risk is heightened where these infiltrating pollutants can reach the limestone bands as they act as a relatively fast pathway for them to reach the SSSI. For example, monitoring identifies elevated nitrate levels from the limestone bands. Again, pollutants can be introduced to groundwater during construction or as a result of activities during the development's lifetime.
Changing groundwater chemistry linked with tufa springs	Where development impacts the soil zone (e.g. stripping soils, or sealing them away), it can interrupt processes that support tufa springs. For example, the tufa formation process is reliant on carbon dioxide being dissolved into water as it passes through the soil zone after it has infiltrated into the ground from above. The carbon dioxide makes the water more acidic (by forming carbonic acid) allowing more calcium carbonate to be dissolved from the limestone bands when the water reaches them.
Changing quantities of groundwater recharge	Urbanisation can reduce the quantity of water recharging the water table. There are particular sensitivities in the areas closest to the SSSI, particularly where works would impact the limestone bands and change quantities of water recharging to them, as these support the high-level seepage face and tufa springs (as explained above). More broadly across the catchment, changes in recharge would affect the regional water table level and could also affect the regional groundwater flow through the Beckley Sand Member, though this risk will reduce with distance.
Changing the flows of groundwater discharging from the site	Subterranean works such as excavations, dewatering, piling and creation of basements, can result in changes to the way groundwater physically moves and reaches the Lye Valley once it has infiltrated from the surface. Similar to the above, the risk of impact is heightened in closer proximity to the SSSI, including where this would impact the limestone bands and the way that water flows through them.

4.2 The risk of having an impact is not the same everywhere in the Lye Valley catchment

4.3 The various risks such as those identified in Table 4.1 typically have a **different spatial extent over which they could occur**. This is because the geological and hydrological processes are not the same everywhere**.** This means that **impacts may only be of a significant concern to an application if the proposed development is located in certain areas** within the Lye Valley catchment.

4.4 For each potential impact on the Lye Valley, the Lye Valley Hydrogeological Impact Assessment report identified particular Impact Risk Zones that outlined the spatial extent over which the risk is considered to be most acute. Within these zones, the Council will expect to see that the relevant impacts from new development have been considered as part of an application.

4.5 The different Impact Risk Zones are highlighted in Figure 4.2, and can be viewed more clearly on the **online interactive mapping,** but can be summarised as follows:

1. **The Direct Run-off Area** – where, due to the topography of the land as it declines into the SSSI, sediments and other pollutants can wash into the SSSI due to activity higher up the slopes.
2. **The Precautionary and Direct Groundwater Supply Area** – where groundwater flows directly towards the Lye Valley (this incorporates a precautionary 100m buffer to encompass an area of uncertainty at the outer edges). Changes to flows/recharge here could influence where groundwater discharges, and connections to particular springs.
3. **The Direct Surface Water Flooding Catchment Area** – where surface water flooding can directly connect to the Lye Valley and introduce pollutants via flood water flowing in.
4. **The Modified Surface Water Catchment Area** – where surface water run-off can reach the Lye Valley SSSI via streams and the surface water sewer network serving the wider urban area. Changes here could influence flow rates of the watercourses and the quality of water discharging via the sewer network into them.
5. **The Aquifer Recharge Area** – the area of the wider aquifer, with boundaries informed by natural groundwater divides, where changes to the quantity and quality of infiltration can influence the regional water table supporting the Lye Valley.

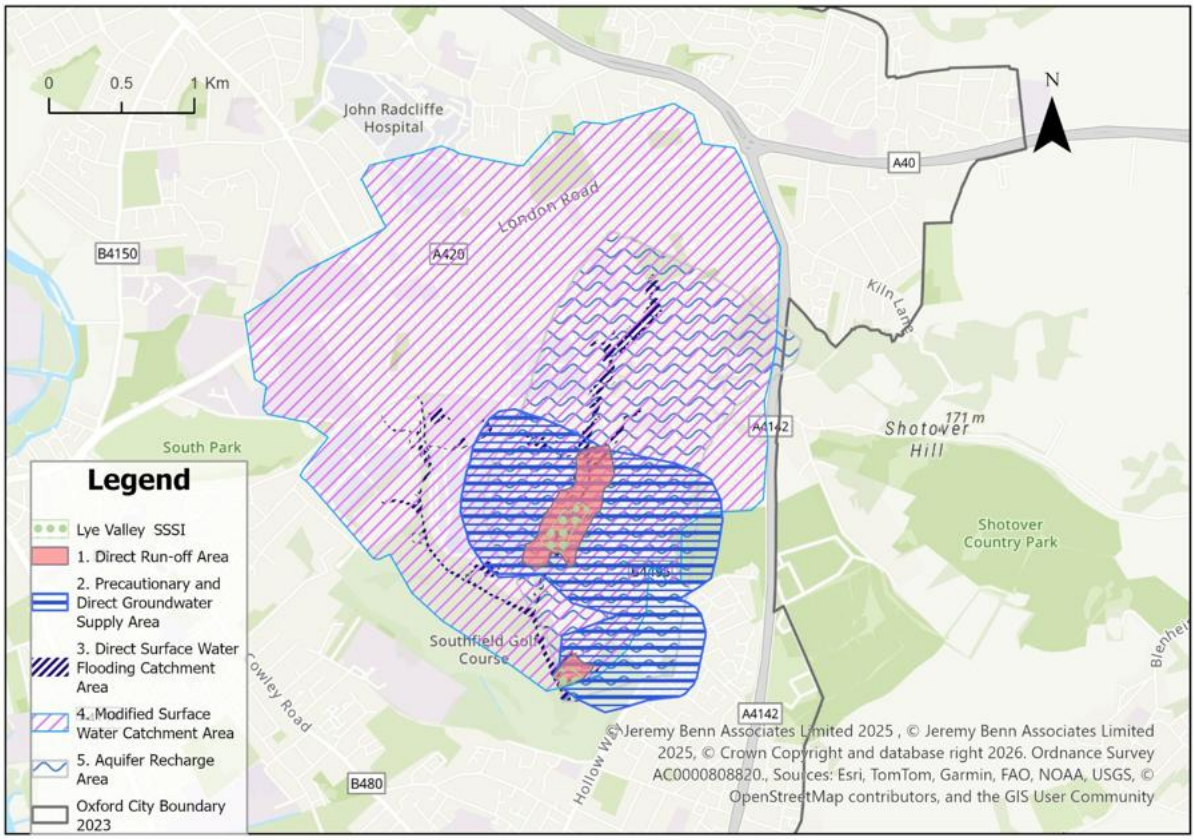


Figure 4.2: The various impact risk zones informing the specific planning application requirements set out in this guidance.

5. Guidance for development proposals within the Lye Valley catchment area

5.1. What is the Council looking for from your application in relation to the Lye Valley SSSI?

5.1 The Council, as Local Planning Authority, will need to be satisfied that your development will not have an adverse effect on the Lye Valley SSSI. As the Lye Valley is sensitive to differing impacts from new development depending on what is proposed and where (Section 4), applicants may need to approach their application and supporting evidence in differing ways.

5.2 The types of supporting evidence that may be required as part of an application are discussed in **Section 5.2**. What documentation is required will be determined based upon two considerations:

What is the scale of your proposal and does it meet the criteria of small-scale development?

Refer to **Section 5.3**

AND

Where in the Lye Valley catchment, and in which impact risk zone(s), is your site located?

Refer to **Section 5.4**

5.3 Depending on the above, you will need to show that your proposal passes certain tests which relate to the various ways your development might adversely impact the SSSI. These tests are also outlined in **Section 5.4**.

5.4 General design guidance, including avoidance/mitigation measures to help meet the tests, is set out in **Section 5.5**. You may wish to utilise the suggestions there when designing your scheme and where they are relevant to your application and reference these in your supporting documentation.

5.2. Types of evidence you may be asked to submit alongside your application

5.5 To demonstrate your proposal meets the relevant tests for the area where your development would be located, you may need to rely on different types of evidence depending on which impacts your development could potentially have on the SSSI.

5.6 Where applicable, you should ensure that:

- Assessments have been undertaken by professionals with sufficient expertise including relevant qualifications and experience and the assessment should be clear about who has

undertaken the work (e.g. professionally qualified geologists with a specialism in hydrogeology if necessary).

- Assessments are focused on an appropriate study area around the application site – you may need to consider a wider area than just the red line boundary of the site.
- Assessments demonstrate sufficient desk-based assessment, considering relevant information, including this TAN and the main Lye Valley Hydrogeological Impact Assessment report to inform context.
- Assessments are supported with appropriate ground-truthing via site visits and site-specific testing where necessary – e.g. boreholes and samples – particularly in locations where there may be uncertainty from desk-based work alone.
- Assessments are clear on where assumptions have been made and where uncertainty remains and set out how this has been mitigated where possible.

5.7 The following table identifies the different types of documentation that you may require:

Table 5.1: Types of evidence that may need to be submitted with your application.

Type of evidence	Description
Construction Environmental Management Plan (CEMP)	The Construction Environmental Management Plan (CEMP) outlines the proposed approach to implementing a development and managing construction works. It would usually contain details of on-site procedures and processes, sequencing of the build programme, proposed construction methodology and proposals on traffic and environmental management measures (such as controls on dust and other pollutants that could impact the environment). In the case of application sites within the Lye Valley catchment, the CEMP must have particular regard to the requirements to safeguard the Lye Valley habitats. CEMPs are similar to Construction Management Plans (CMPs), which can also be required to satisfy certain planning requirements, but have more of a focus on the avoidance/mitigation of environmental impacts from construction.
Drainage Strategy/ Drainage Impact Assessment	This is a technical assessment which looks at the potential drainage issues arising from a development as well as identifying a suitable strategy for how surface water will be stored and discharged from the site without exacerbating surface water flooding elsewhere. Drainage strategies are often a requirement in meeting other planning requirements, but in the case of application sites within the Lye Valley catchment, it will need to address drainage with particular regard to ensuring that the scheme will not adversely affect the quantity or quality of water reaching the Lye Valley.
Hydrogeological Impact Assessment	This is a more specialised technical assessment which looks at the potential impacts from a proposed development on groundwater resources in the area as well as the impact of groundwater on the development.

5.3. Requirements for small-scale development in the catchment area

5.8 Applications within the Lye Valley catchment area that meet any of the following criteria, will be considered as 'small-scale development'. These criteria are as follows:

- The proposal does not increase the footprint size of buildings (e.g. alterations to external appearance; change of use to HMO).
    - Note, if any of the works are combined with other works that result in changes to footprint of the building, then those other works must also be checked against the rest of the criteria for 'small-scale' as set out below.
- The proposal is for householder development: for example, sheds, garages, games rooms etc. within the curtilage of the existing dwelling, in addition to physical extensions to the existing dwelling itself, unless, these works would involve:
    - creation of a separate dwelling within the curtilage of the existing dwelling (e.g. subdivision of houses into flats), or any other development with a purpose that is not ancillary to the enjoyment of the dwelling, and *thus no longer meeting the definition of householder development*; or
    - loss of existing permeable land (due to the potential impacts on run-off and infiltration), and which will need to be evidenced by photographs of the proposed development area; or
    - significant below-ground works that have the potential to change downstream groundwater flow patterns to the SSSI (e.g. basements).

5.9 Small-scale development is not considered likely to have an adverse impact on the SSSI where it occurs within the wider area of the catchment referred to as the 'small-scale development screening zone', which is illustrated in Figure 5.1 (this zone can be viewed in the web-based mapping here: **online interactive mapping**).

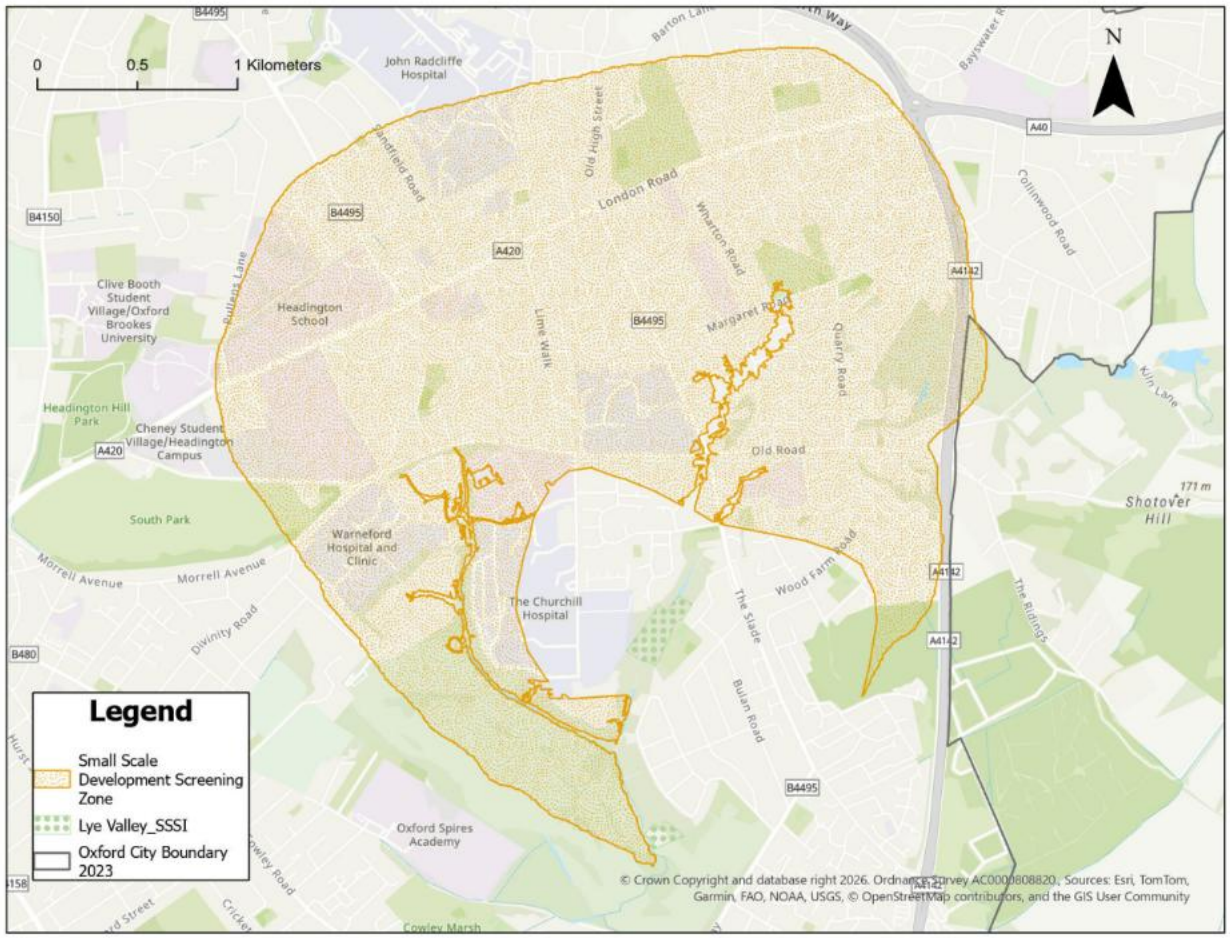


Figure 5.1: Small-scale development screening zone (highlighted in orange)

5.10 In the locations within the catchment area that are not highlighted as part of the screening zone in Figure 5.1, small-scale development has the potential to have adverse effects on the Lye Valley SSSI. Additional evidence will therefore need to be provided for these proposals as part of the application process, though in some cases this will be reduced compared with larger applications. This additional evidence is discussed in the next section.

5.4. Requirements for development not screened out from further investigation

5.11 If your proposal does not meet the criteria for small-scale development as outlined in Section 5.3 OR is small-scale but not located in the small-scale development screening zone in Figure 5.1 above, it is considered that it could have an adverse effect on the SSSI. Table 5.2 sets out the requirements that will therefore apply to your application, including any scaled back requirements for small scale development where applicable.

5.12 The process to understand what you need to demonstrate through your application should be guided by what is set out in Table 5.2, and will generally be as follows:

Determine which of the Lye Valley Impact Risk Zones your proposal is located within (there may be more than one). The Impact Risk Zones are listed in **column 1** of Table 5.2.

- Note: an image of the Impact Risk Zone is included for reference, however, the **online interactive mapping** of these zones will allow closer examination.

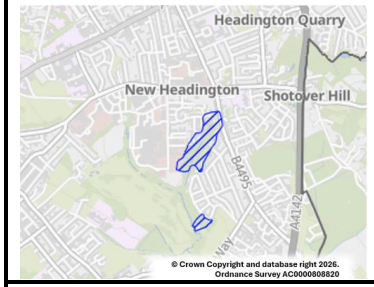
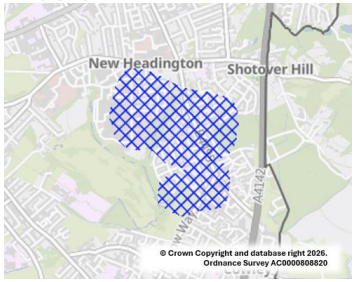
Review the listed tests for each applicable Impact Risk Zone that applies to your development site. These are the tests your application will need to evidence have been met to ensure no adverse effect on the SSSI. The tests are set out in **column 2** of Table 5.2.

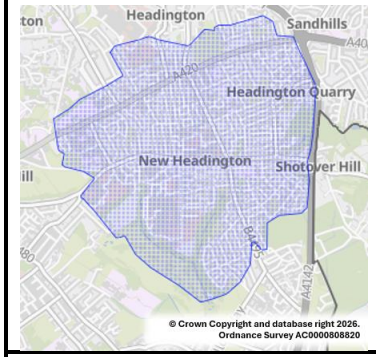
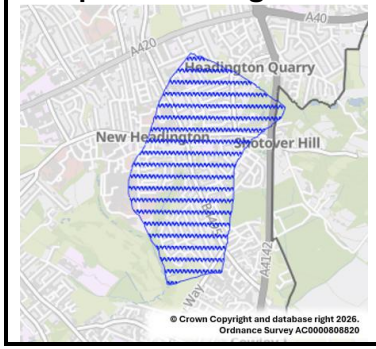
Prepare and submit the relevant supporting documentation with your application to demonstrate how the tests have been approached and passed. Required evidence is listed in column 3 of Table 5.2. Note that:

- If your application is classed as small-scale development, then it may be subject to alternative requirements. Where alternative requirements apply, these are identified in column 3.
- Where multiple tests apply to your development, such as where it is located within more than one impact risk zone, the same evidence may be needed to demonstrate these tests – e.g. a drainage strategy is of relevance to tests 3.a, 3.b, 4.a, 4.b, and 5.a.

5.13 *Remember that specific advice can be provided on how your proposal should investigate drainage impacts on the Lye Valley, including how to apply these tests where applicable, as part of the Council's pre-application advice service, if requested.*

Table 5.2: Relevant tests and supporting documentation required in each assessment area

Assessment Areas	Tests that your proposal needs to meet	Documentation required to evidence meeting the requirements of the test(s)
1. Direct Run-off Area 	**1.a.** No deterioration in surface water run-off quality.	This test should be demonstrated via submission of a **Construction Environmental Management Plan** which includes specific mitigation of impacts on the Lye Valley SSSI.
2. Precautionary and Direct Groundwater Supply Area 	**2.a.** No change in groundwater flow patterns (e.g. caused by basements and sheet piling operations), <u>and</u> **2.b.** No change in groundwater quality – which can be addressed using the SUDs method.	These tests should be demonstrated via submission of a **Hydrogeological Impact Assessment** with a specific assessment of impacts on the Lye Valley SSSI. *Proposals that meet the criteria for <u>small-scale development</u> only need to submit a Hydrogeological Impact Assessment if any of the following apply:* • *The proposal includes infiltration SuDS for water other than roof water;* • *The proposal includes conversion of land to landscaping;* • *Foul sewerage will not be connected to the foul sewer network;* • *Any other sources of contamination are proposed, such as storage or utilities facilities.*
3. Direct Surface Water Flooding Catchment Area 	**3.a.** No deterioration in surface water run-off quality, <u>and</u> **3.b.** No change in surface water flooding patterns on the SSSI.	These tests should be demonstrated via a **Drainage Strategy** and **Construction Environmental Management Plan**. *Proposals that meet criteria for <u>small-scale development</u> can demonstrate this via a **Construction Environmental Management Plan** only (unless a Drainage Strategy is necessitated by other policy requirements).*

Assessment Areas	Tests that your proposal needs to meet	Documentation required to evidence meeting the requirements of the test(s)
4. Modified Surface Water Catchment Area 	**4.a.** No increase in run-off rates peak discharges to the surface water drainage network or run-off to streams. Preferably a reduction should be secured, and **4.b.** No change in water quality entering the drainage network.	If the proposal is proposing to connect to surface water sewer or watercourse, these tests should be demonstrated via submission of a **Drainage Strategy** with a specific assessment of impacts on the Lye Valley SSSI. *Proposals that meet the criteria of small-scale development are excluded from these tests where they fall within the screening zone (see section 5.3 of the TAN / Figure 5.1).*
5. Aquifer Recharge Area 	**5.a.** No change in recharge rates to the aquifer (I.e. Drainage schemes should allow all typical rainfall to be infiltrated to ground outside of storm events).	This test should be demonstrated via submission of a **Drainage Strategy** with a specific assessment of impacts on the Lye Valley SSSI. *Proposals that meet the criteria of small-scale development are excluded from these tests where they fall within the screening zone (see section 5.3 of the TAN / Figure 5.1).*

5.5. Design guidance for addressing potential impacts on the Lye Valley

5.13 In order to pass the tests in Table 5.2 for any applicable Impact Risk Zones your proposal is located within, the Council will require that your application and supporting evidence demonstrate that any potential adverse effects arising from your proposed development are avoided, or if necessary, mitigated through careful design choices.

5.14 Various design measures may be appropriate depending on which of the Impact Risk Zone tests in Table 5.2 are of relevance and whether they relate to surface water or groundwater mechanisms. Ensuring that you have strategically designed and implemented a high-quality Sustainable Drainage Strategy (SuDS) into your proposal, following the SuDS management train and other best practice guidance, will be particularly valuable for dealing with many of the applicable tests for the Lye Valley area.

5.15 Some additional considerations are outlined in the boxes below. The boxes address the most common types of adverse impact that a proposed development may give rise to and are as follows:

- Impacts on water quality – both in relation to surface water as well as groundwater;
- Impacts on water quantity – including rates of surface water run off from the site, as well as rates of groundwater recharge;
- Impacts on subterranean flows of groundwater due to below ground works.

5.16 Each box flags which tests in the previous section (Table 5.2) the principles could help to respond to, as well as which types of supporting documentation the Council would look to see these principles addressed within as part of your application. The particular principles that will be most suitable for your proposal will depend on the particular context of the site and your application. The lists are not intended to be exhaustive, and some principles may not be of relevance depending on what is proposed on the site.

Box 1: Principles for mitigating impacts on the Lye Valley SSSI in relation to protection of the quality of surface water as well as groundwater

Ensuring no reduction in the quality of surface water or groundwater and avoiding contamination of the SSSI via runoff or infiltration as a result of your development.
Relevance to Table 5.2 tests: Those which relate to impacts on water quality, including tests: 1.a/2.b/3.a/4.b
Supporting documentation: Typically addressed through submission of a **Construction Environmental Management Plan** (which looks at how construction impacts could impact wider environment), and/or a **Hydrogeological Impact Assessment** (in relation to groundwater impacts from proposed below ground works).
Principles the Council will look for you to address in your supporting documentation (where relevant): • Incorporate strategies to manage the runoff of sediments such as:

    - Carefully selecting the location of materials storage to avoid locations where stockpiles could be washed into sewer networks or directly into streams.
    - Ensuring barriers/buffers where materials are being processed and stored to ensure these are not washed into sewer networks or directly into streams.
    - Avoiding stripping of topsoils and vegetation to avoid exposing silts and other material which can be directly washed off the site wherever possible as well as incorporating other sustainable soil management activities.
    - Controlling the production of dust and other emissions during the construction process.
    - Consider time of year where feasible, wetter months and times of heavy rainfall can increase risks of run-off and mobilising additional pollutants from the site.
- In relation to groundwater, ensure a thorough understanding of ground conditions on the site through an appropriately detailed hydrogeological assessment, including permeability of ground conditions and existing infiltration pathways as well as the flows of groundwater that may exist through and around the site.
- Assess the potential for pollution from the development during the construction and operation phases. The EA define two main sources of pollution to groundwater which are point source, which comes mostly from spills, leaks and discharges at a single point or over a small area, as well as diffuse pollution, which is the most widespread cause of groundwater pollution and often results from cumulative impacts of small, undefined pollution events and general environmental pollution spread over the catchment area.
- Adapt surface water drainage strategies to accommodate particular ground sensitivities. For example, it may not be appropriate to utilise certain types of SUDS like those that rely on infiltration directly to the ground in certain situations.
- Restrict the use of harmful/hazardous substances wherever possible, and where their use is necessary, have appropriate strategies in place to store, process and deal with spills rapidly. Various hazardous substances need to be considered, including but not limited to: pesticides, oils, fuels, solvents, arsenic, mercury and chromium VI.
- Manage waste appropriately on the site, including a strategy for storage and subsequent removal to avoid this becoming a source of pollution into the nearby environment. Consider the benefits of additional control measures like fencing and barriers that can catch escaped litter before it leaves site.
- Consider the potential for flood risk during/after heavy rainfall conditions, including all relevant sources of flooding, particularly surface water, groundwater, from the sewer networks as well as from watercourses. Flooding can potentially mobilise pollutants and interfere with any storage measures, subsequently carrying them away from the site via various pathways.

Box 2: Principles for mitigating impacts on the Lye Valley SSSI in relation to changes in quantities of surface water run-off and/or groundwater recharge.

Ensuring no increase in quantity of surface water runoff and/or no decrease in groundwater recharge as a result of your development.
Relevance to Table 5.2 tests: Those which relate to impacts on the quantities of surface water run off and/or changes in recharge to the wider aquifer, including tests: 3.b/4.a/5.a

Supporting documentation:
Typically addressed through submission of a **Drainage Strategy** (in relation to surface water drainage) and/or a **Hydrogeological Impact Assessment** (in relation to groundwater impacts from proposed below ground works).

Principles the Council will look for you to address in your supporting documentation (where relevant):

- Primarily, drainage schemes should allow all typical rainfall to be infiltrated to ground outside of storm events.
- The addition of hard, impermeable surfaces through the development process can increase the runoff rate of water from the site which would otherwise have largely been stored by the natural surfaces prior, therefore use of hardstanding should be limited wherever possible.
- In the Modified Surface Water Catchment area, particularly the Aquifer Recharge area, use of infiltration SUDS that seek to replicate greenfield runoff rates for the site should be prioritised with the objective of ensuring no increase in surface water runoff as a minimum, and ideally a decrease post-construction. Examples might include infiltration basins, soakaways, permeable pavements, raingardens.
- In the Direct Groundwater Supply Area, and potentially the precautionary buffer zone around it, use of infiltration SUDS should be informed by a hydrogeological assessment that demonstrates that groundwater quality will not be compromised.
- Where infiltration SUDS are found not to be appropriate, surface water flows should be attenuated by other methods focusing on storage first including use of green roofs.
- Opportunities to naturalise other areas around the site, such as de-paving, could be explored where these are within the control of the applicant.

Box 3: Principles for mitigating impacts on the Lye Valley SSSI in relation to changes in groundwater flows.

Ensuring no changes in groundwater flows affecting the SSSI as a result of your development

Relevance to Table 5.2 tests:
Mainly of relevance to test 2.a which looks at impacts on groundwater flows.

Supporting documentation:
Typically addressed through submission of a **Hydrogeological Impact Assessment** (in relation to groundwater impacts from proposed below ground works).

Principles the Council will look for you to address in your supporting documentation (where relevant):

- In the Direct Groundwater Supply areas particularly, subterranean works such as piling, creation of basements and other deep foundations should not be undertaken unless these are supported by sufficient hydrogeological studies that can demonstrate no negative impact on flows.
- Works that interrupt or remove limestone banding should be avoided as these are an important function supporting the unique chemistry which drives tufa formation.

- Where there are foundations already present on the site, impacts may be reduced, so consider whether any new development can repurpose these without implementing additional works.

Appendix A – Other ecological designations in the Lye Valley area