

**NatureScot/ Flow Country WHS Steering
Group**

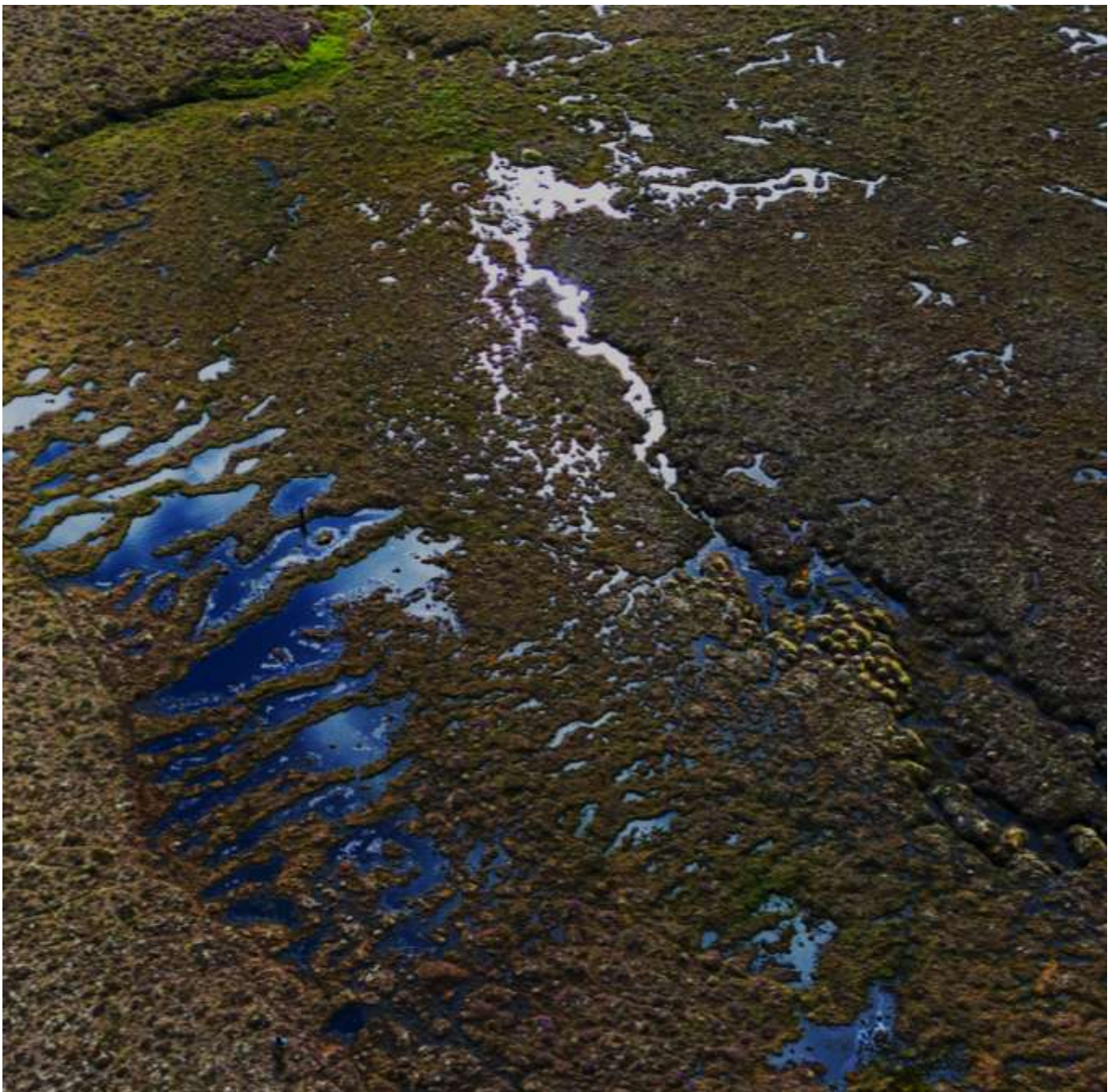
The setting of The Flow Country World Heritage Site

Definition study

Final report

Prepared by LUC

July 2026



NatureScot/ Flow Country WHS Steering Group

The setting of The Flow Country World Heritage Site Definition study

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Chapter 1

Executive summary

Purpose

1.1 This setting study was commissioned to examine what comprises the setting of the Flow Country World Heritage Site, and how the setting can be interpreted by stakeholders.

1.2 The setting study establishes that there is a strong argument for defining the setting of The Flow Country. Management of the World Heritage Site (WHS) must address change which may affect its Outstanding Universal Value (OUV). This applies to change happening both within and outside its boundaries. Management proposals therefore need to address the setting of the WHS – the area outside and surrounding it.

1.3 Setting is not an entity in its own right, or a separate consideration from the inscription itself. It is simply a way of recognising the contribution that the surroundings of a Site make to the qualities that make it special, and allowing that contribution to be considered in planning and management processes.

1.4 The planning policy context in which management of the Site will take place requires protection of the WHS and its setting, principally through NPF4 2023, Policy 4, Natural Places: ensuring that “*Natural places are protected and restored*” and “*Natural assets are managed in a sustainable way that maintains and grows their essential benefits and services*”; and Policy 7L: “*Development proposals affecting a World Heritage Site or its setting will only be supported where their Outstanding Universal Value is protected and preserved*”.

1.5 Defining setting enables the NPF4 WHS setting clause to be applied in a rational, evidenced way to ensure the Site is appropriately protected. It is essential to enable developers, decision-makers and stakeholders to hold rational, informed debate and come to reliable, evidence-based conclusions.

Setting in relation to Outstanding Universal Value

1.6 Change in the setting of a WHS is only relevant when it specifically affects OUV. This report sets out what the concept of setting means in relation to the natural criteria of OUV for which The Flow Country is inscribed. The World Heritage Convention requires the ‘presentation’ and ‘appreciation’ of cultural and natural heritage (Articles 4 and 27). The setting of a WHS therefore fulfils two purposes – protecting key aspects

of a Site's OUV from change arising outside its boundary; and facilitating or enhancing appreciation of the Site.

1.7 These two purposes lead to a two-fold definition of setting - functional and experiential:

Functional setting

1.8 Functional aspects of setting are those which directly support the functioning of the Site and its protection. Functional setting is the primary consideration because the Site is inscribed under natural criteria of OUV only, and the receptors of change are the attributes of OUV, directly.

1.9 Functional setting means the environmental context in which change can affect the ecological health and resilience of the WHS. These effects could be positive or negative. It encompasses those areas outside the boundary that are needed to maintain the ecological functioning and integrity of the inscribed area, based on interactions between hydrological, biological and climatic processes.

1.10 Functional setting identifies the parts of the WHS's surroundings which carry or embody the attributes of OUV ('receptors'). These are grouped into broad categories of receptor type: local climate and environmental conditions; water sources and hydrological units; ecosystems and communities of species; land use and land management practices. Data on these receptor types is analysed, and considered against the types of change which could affect them, to determine how change in the setting may affect OUV.

Experiential setting

1.11 Experiential aspects of setting are those which relate to the way people experience, understand, or appreciate the Site. Experiential setting encompasses the parts of the WHS's surroundings where change may affect the presentation and appreciation of the WHS's qualities which derive from its OUV.

1.12 Experiential setting is an important consideration, though secondary to functional, because the Site is not inscribed under cultural criteria. It is only relevant in the specific instances when the ways in which people appreciate the WHS derive directly from its attributes of OUV and the proposed change can affect that appreciation.

1.13 The human experience of the WHS is through a series of qualities, which include the sensory characteristics and associations by which humans respond to the attributes of OUV. These qualities include the Site's scale and continuousness; the interaction with and appreciation of its species; transient aspects such as light, weather and seasonal variations; the variety of its landscape patterning; and its time-depth, cultural and historical associations.

1.14 Existing land types which are shared or intersect with the WHS provide a proxy for understanding where these qualities can be experienced. These include land use/ landcover data and designations based on landscape and historic character types which relate to the peatland. The final step in defining experiential setting is considering where, and which groups, of people can experience the qualities that derive from OUV – such as local residents, visitors or travellers – and how change of various types could affect their experience and appreciation of OUV.

Mapping and application of setting

1.15 The process of investigating and defining setting has concluded that a mapped setting with a defined, spatial extent is neither useful nor desirable. Mapping can be used to illustrate the concept of setting and its application, but the definition itself relies on understanding and expressing how different types of change can interact with the many and complex setting receptors, and whether that change can affect OUV or its presentation and appreciation.

1.16 This report explores how the concept of setting can be applied when considering the potential effects of change on the WHS. This is achieved by applying the steps of the World Heritage Impact Assessment guidance, to determine whether a proposed change in the setting of the Site will affect OUV or the presentation and appreciation of the qualities deriving from OUV, whether that effect is positive or negative, and to what level, so it can be given proportionate weight in the planning balance.

Further steps

1.17 Consideration is then given to further steps which may be required or desirable to address issues and questions arising from the setting study which are beyond its scope, including addressing data gaps, potential further refinement of the understanding of setting in some areas and whether tailored guidance on some issues would be beneficial for owners, developers and decision-makers.

Chapter 2

Defining setting

“Our vision is that World Heritage Status for the Flow Country will ensure that its world-class blanket bog, associated biodiversity and carbon storage ability is protected and enhanced, that it is an unparalleled and accessible natural resource for education and well-being, and that the status is beneficial both for our vibrant communities and our visitors.”

Flow Country World Heritage Site Management Plan
(Post-Inscription Draft May 2026)

Purpose of the setting study

2.1 UNESCO (the United Nations Educational, Scientific and Cultural Organization) sets criteria for the selection of World Heritage Sites (WHS). These criteria are applicable globally, irrespective of any local designation systems. The importance of a World Heritage Site is expressed in terms of its Outstanding Universal Value (OUV). To qualify for World Heritage Site status, a site must embody Outstanding Universal Value in one or more categories of natural or cultural heritage value. It must also demonstrate Integrity – a measure of the wholeness and intactness of that heritage and its attributes.¹

2.2 UNESCO’s international definition of Outstanding Universal Value is taken into account for each individual World Heritage Site through its country’s national legislation and its planning and environmental consents systems.

2.3 UNESCO requires the tools and processes through which a site’s Outstanding Universal Value will be protected to be set out in a Management Plan. UNESCO guidance notes that an effective management system depends on the type, characteristics and needs of the property and its cultural and natural context.²

2.4 The Flow Country World Heritage Site Management Plan (FCWHSMP) recognises that what makes The Flow Country special could be affected by change happening both

¹ World Heritage Operational Guidelines, II.E.87-89

² Operational Guidelines for the Implementation of the World Heritage Convention (WHC.23/01 2023), para. 110

within and outside its boundaries. Management proposals for The Flow Country therefore need to address the setting of the World Heritage Site – the area outside and surrounding it.

2.5 The Management Plan recognises that planning policy, *“affords protection to the parts of the boundary without statutory environmental designation, and the area outside of the World Heritage Site that may have an impact on the site itself; known as the setting. The conclusion is that existing protection arrangements for the World Heritage Site are strong and appropriate for the designation.”* (FCWHSMP p.8).

2.6 In Scotland, the National Planning Framework 4 (NPF4, 2023) sets out national planning policy. Policy 7(l) requires that “development proposals affecting a World Heritage Site **or its setting** will only be supported where their Outstanding Universal Value is protected and preserved” (LUC emphasis).

2.7 NPF4 Policy 4 (Natural places) is also of critical importance to managing the WHS, particularly through the statutory designations which cover large parts of the Site.

2.8 Annex F of NPF4 notes that WHS are internationally important and that the impact of proposed development upon their outstanding universal value, authenticity and integrity, and setting, are a material consideration in determining planning applications.

2.9 There is a view that Policy 7 does not apply to natural sites, such as The Flow Country WHS, because its title covers ‘Historic assets and places’. However, it must be remembered that at the time of drafting NPF4, The Flow Country WHS was not at an advanced stage of preparation for inscription, and no other solely natural heritage WHS exist in Scotland.

2.10 The inscription process required the State Party to demonstrate that existing legal and policy protections would be sufficient to manage the OUV of the Site. The nomination documents included a commitment to protection including through appropriate consideration of boundaries, setting and the planning framework, including all policies involving reference to world heritage, natural heritage and biodiversity.

2.11 One recent Ministerial decision (Kirkton Wind Farm, January 2026) discusses the relevance of NPF4 policy coverage to The Flow Country WHS. In issuing that decision, Scottish Ministers found that Policy 4 should be considered to apply to The Flow Country as a natural place, while Policy 7’s coverage of historic places is not of direct relevance to The Flow Country WHS. However, despite the precise structure and content of NPF4, *“irrespective of what planning policies say, the proposed Development’s impacts on the FCWHS are a significant material consideration”*. Setting is not discussed

in the Kirkton decision as the proposed development lies within the WHS boundary.

2.12 A key purpose of defining setting is therefore to assist those in assessment and decision-making roles interpret and apply the requirements of legislation and policy.

What is ‘setting’?

2.13 Setting, broadly, is the area surrounding any asset within which change is capable of affecting the qualities which make the asset unique or special.

2.14 The concept of ‘setting’ is crucial for understanding and managing the impacts of external factors on the WHS. It is needed to understand the implications of any proposed developments or changes in land use, practices or policies, and it will help inform decisions to ensure that the characteristics that define the Site are maintained and, where appropriate, enhanced through managing development and through encouragement and focusing of enhancement projects.

2.15 Relating to WHSs, *“setting may relate to the property’s topography, natural and built environment, and other elements such as infrastructure, land use patterns, spatial organization, and visual relationships. It may also include related social and cultural practices, economic processes and other intangible dimensions of heritage such as perceptions and associations.”*³

2.16 Crucially, *“management of the wider setting is related to its role in supporting the Outstanding Universal Value.”*⁴ These references to setting in the Operational Guidelines relate to all properties without differentiating between those inscribed for cultural or natural heritage values.

2.17 Setting is not an entity or a prescription in its own right, or a separate consideration from the inscription itself. It is simply a way of recognising the contribution that the surroundings of a Site make to the qualities that make it special, and allowing that contribution to be considered in planning and management processes.

2.18 Managing World Heritage Sites, including their setting, is inherently challenging and requires a fine balance to ensure inscribed places continue to have a viable life and future, while protecting what makes them special and of universal value.

Defining setting

2.19 The World Heritage Convention⁵ places a duty on State Parties to ensure:

³ Ibid., para.112

⁴ Ibid., para. 112

⁵ UNESCO 1972, Convention Concerning the Protection of the World Cultural and Natural Heritage

- “the identification, protection, conservation, presentation and transmission to future generations of the cultural and natural heritage” (Article 4), and requires that they
- “shall endeavor [sic] by all appropriate means, and in particular by educational and information programmes, to strengthen appreciation and respect by their peoples of the cultural and natural heritage” (Article 27).

2.20 UNESCO guidance suggests that the setting of a World Heritage Site should include the immediate setting of the property, important views and other areas or attributes that are functionally important as a support to the property and its protection.

2.21 It also states that where the setting may assist in the appreciation of the Outstanding Universal Value, but does not contribute to the Outstanding Universal Value, then it is desirable that it be incorporated in a buffer zone or otherwise protected.

2.22 Defining the setting of a World Heritage Site can therefore fulfil two purposes – protecting key aspects of a site’s Outstanding Universal Value from change arising outside its boundary; and facilitating or enhancing appreciation of the site. These two purposes provide the basis for defining the setting of the Flow Country World Heritage Site.

2.23 Setting can be considered in terms of function and experience:

Functional – aspects of setting which directly support the functioning of the Site and its protection.

Experiential – aspects of setting which relate to the way people experience, understand, or appreciate the Site.

2.24 The Outstanding Universal Value of The Flow Country World Heritage Site (WHS) relates to ecosystem processes (criterion ix). It was not nominated for its cultural or historical values (criteria i to vi), nor its natural beauty (criterion vii). Although originally also proposed under criterion x (covering the most significant habitats for conservation of biological diversity), only criterion ix was applied in the inscription of the Site in July 2024.

2.25 The criteria are then further refined into a series of attributes which explain in detail why The Flow Country meets these criteria for inscription:

Table 2.1: Criteria and Attributes of Flow Country OUV

Criterion	Attribute
ix: outstanding example representing significant on-going ecological and	a) most extensive near continuous example of natural, actively

Criterion	Attribute
biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals	accumulating, blanket bog ecosystem found globally
	b) climatic, topographic gradients and geological diversity: bog macroform diversity
	c) archive it stores (4 th dimension)
	d) natural laboratory – ongoing scientific and educational use
	e) carbon sequestration and storage
	f) water filtration and the impact on the water quality of associated riverine habitats

2.26 The functional aspects of setting are therefore of primary importance in protecting Outstanding Universal Value because they directly affect the core reasons for the Site’s inscription.

2.27 However, the experiential aspects of setting are an important consideration in management because so many of the ways in which people understand and interact with The Flow Country are through these aspects. Articles 4 and 27 of the World Heritage Convention, quoted above, explicitly recognise the importance of the experience and appreciation of the asset.

2.28 Although the definition of Outstanding Universal Value for The Flow Country does not include cultural values, the World Heritage Site’s Outstanding Universal Value has evolved through, and will continue to be affected by, the interaction of cultural and natural factors. Identifying these factors therefore helps us to understand its attributes in their wider context, and to recognise any issues and opportunities for the sound management of the site.

2.29 The setting of The Flow Country World Heritage Site is defined by identifying:

- the interaction of cultural and natural factors, insofar as they relate specifically to OUV and its component attributes;
- how these factors translate into functional and experiential setting;
- the key characteristics of that setting.

2.30 These steps are then considered through a process to determine whether change in the surroundings of the WHS affects OUV or its appreciation. In this report, the nature of change is considered in a broad sense, identifying types or categories of change. The report then addresses how change would be considered at a more detailed, case-by-case level, when required for management or decision-making processes.

To define or not to define setting?

2.31 Effects occurring as a result of change outside the WHS boundary could be dealt with solely through existing planning mechanisms and guidance. Inspection of recent major planning decisions in the surroundings of the WHS provide an approximate parallel for this scenario. A sample of these decisions was assessed, and an overview and commentary provided on the findings, presented at **Appendix A**. This assessment was carried out as a hypothetical scenario, reflecting on how these cases might have progressed had the WHS been in place at the time of decision-making. It should be read as one opinion on these cases.

2.32 Issues identified in these cases which would translate directly to setting considerations suggest that it would be extremely valuable to provide clarity on how to interpret the NPF4 WHS setting clause in this context.

2.33 For example, these cases highlight that really clear thinking is required on whether a particular proposal or development site can affect the experiential aspects of setting derived from OUV. Having the means by which to respond to the NPF4 WHS setting clause in a rational, evidenced way is crucial to ensure sustainable development is not impeded by the perception of the WHS as a constraint, which is not reflected in reality.

2.34 As a result, it is clear that there is risk involved in not addressing the concept of setting as it relates specifically to The Flow Country WHS. If setting is not addressed or described at all, some may take the view that it does not matter what happens outside the boundaries. Or, if no guidance is provided to help apply NPF4, wide variations or gaps in approach may result.

2.35 Both of these scenarios open the WHS to unconsidered, unplanned risk to OUV and leave key decisions for developers, landowners, stakeholders and decision-makers open to excessive uncertainty. This would potentially create more of an obstacle to sustainable development than the alternative, 'do nothing/ do not define setting' scenario, because (perhaps unfounded) perceptions of potential for

harm would weigh too strongly in debate, creating inconsistency and without an agreed approach to resolution.

2.36 UNESCO Guidance for Wind Energy Projects in a World Heritage Context⁶ addresses precisely this issue. Its recommendations and related case studies support the view that setting needs to be considered specifically in relation to the particular attributes of any given WHS, because change affecting it only matters when it specifically affects OUV or its appreciation. This is essential to enable developers, decision-makers and stakeholders to hold rational, informed debate and come to reliable, evidence-based conclusions which focus strictly on change to OUV.

Setting vs. buffer zone

2.37 A buffer zone is an area surrounding a WHS which has complementary legal and/or customary restrictions placed on its use and development to give an added layer of protection to the property, such as through an additional planning policy in the local development plan. It is usually an area with a firmly-defined spatial extent, within which additional policies or management measures apply, reflecting that zone's particular importance to the OUV of the Site.

2.38 In the case of The Flow Country WHS, a buffer zone is not considered necessary (FCWHSMP p.39). Buffer zones have no basis in Scottish law, so would not add more protection than is already in place. They have not been considered appropriate for natural sites in Scottish national planning policy given the protection accorded to and provided by existing nature designations (SSSI/SPA/SAC/Ramsar).

2.39 Setting is a broader, and looser, concept than a buffer zone. Setting is not a fixed, permanent entity and can change as the asset, its values and understanding evolves. This change in the understanding of setting is likely to be very gradual, based on the evolution of understanding of the principles underlying it. Setting need not have a defined boundary or extent, but is instead defined by the factors which operate outside its boundaries which can interact with OUV.

Defining 'setting' in the context of natural World Heritage Sites

2.40 The concept of 'setting' is prevalent and well understood for cultural heritage. A definition of setting in the Scottish legislative context is included in National Planning Framework 4 and, specifically for cultural heritage, in Historic Environment Scotland (HES) guidance.⁷ However, a definition of setting for natural heritage is not well established.

⁶ World Heritage Centre - Wind Energy (unesco.org) [accessed 02/05/24]

⁷ Including in HES 2016, Managing Change in the Historic Environment: World Heritage

Functional setting

2.41 Considering the specifically natural criteria of OUV, functional setting means the environmental context in which change can affect the ecological health and resilience of a World Heritage Site. This influence can be through ecological and geomorphological processes, such as water and nutrient cycles, animal migration paths, and plant pollination networks, which are dynamic and do not recognize man-made boundaries.

2.42 Environmental impacts such as noise, pollution, and light intrusion from the setting can negatively affect wildlife behaviour and habitat quality. Conversely, positive changes within the setting, like restoration projects or sustainable land management practices, can enhance the Site's ecological connectivity and resilience.

2.43 The setting of the WHS is dynamic because the attributes of the site are dynamic. The peatland and the flora that form some of its attributes are, to an extent, static, but are interdependent with the water, nutrients and biodiversity that cycle through, and live in and on it. The concept of setting must also reflect evolving ecological knowledge, conservation priorities, and societal values toward natural heritage. It may include areas with variable ecological contribution to the conservation area, acknowledging that some parts may currently have neutral or even negative effects due to human activity or natural processes, but have potential to have a positive effect on OUV through enhancement.

2.44 This explains why a fixed, spatially-defined buffer zone is not desirable or appropriate to protect the attributes of OUV of The Flow Country WHS. The range and variability over which change could affect the attributes of OUV mean that any assessment process must be based on an approach which defines principles rather than attempting to set ranges for intensity or magnitude, which will inevitably omit or misrepresent most likely types of change, or the specific circumstances in which change would happen.

2.45 The functional setting is therefore an integral part of conservation management, contributing to the protection and enhancement of natural heritage assets through a holistic approach that considers both direct and indirect influences on the Site's ecological and conservation values. A setting can be generally defined as those areas outside the boundary that are needed to maintain the ecological functioning and integrity of the inscribed area, based on interactions between climatic, hydrological and biological processes.

2.46 The receptors of change in functional setting are the attributes of OUV, directly. For this reason, functional matters are the primary consideration in assessment of the effects of change in the setting of the Site, because it is inscribed for natural criteria of OUV only. Functional effects to OUV could

fall within a wide range of magnitude, up to and including severe harm to or destruction of OUV. Equally, major benefits to OUV could derive from change in the setting.

Experiential setting

2.47 Human beings tend to think of a cohesive ecosystem with tangible qualities such as The Flow Country as a 'landscape' – in this context meaning a place (rather than necessarily a defined area of specific 'landscape character'). The qualities of The Flow Country as a landscape cannot be completely separated out from its natural value. These qualities include its visual and other sensory characteristics such as scents and sounds, and its associations with people, events and history. We naturally respond to a landscape, space or place with human emotions, no matter the reasons behind any formal recognition. Change in the surroundings of The Flow Country has the potential to affect our understanding and appreciation of its qualities, which ultimately derive from its natural value. This is recognised in the World Heritage Convention's inclusion of the terms 'presentation' and 'appreciation' in relation to the protection of both cultural and natural heritage (in Articles 4 and 27 of the World Heritage Convention, respectively).

2.48 Defining setting must address the experiential aspects of the place, because issues relating to those aspects will always arise in discussions and decision-making. However, the definition must be realistic and proportionate, and helpful in guiding people on how to take it into account in planning for and managing change.

2.49 Defining experiential setting therefore focuses on identifying which parts of the WHS's surroundings have a relationship with the natural attributes of the WHS and where change may affect people's experience and appreciation of the site's qualities which derive from its OUV.

2.50 This requires a means of understanding and testing the human experience of the identified factors. This experience relies on connectivity between the WHS and the factor interacting with it. In most instances this will be visual connectivity, although occasionally it may also rely on a historical or functional connection (such as historic areas of peat cuttings).

2.51 The receptors of change in experiential setting are human beings, through their experience and appreciation of the qualities of the Site which derive from OUV. Experiential matters are therefore an important, but secondary consideration in assessment of the effects of change in the setting of the Site. It is only relevant in the specific instances when the ways in which people experience the WHS derive directly from its attributes of OUV and the proposed change can affect that experience. Many types of change may have

no effect on the experience and appreciation of OUV, even if they are visible from or in combination with the Site.

2.52 For example, if a proposed development cannot be experienced from, or in combination with, the World Heritage Site, it cannot affect or harm the experience or appreciation of it. Even if visible, if the proposed development does not distract from, or undermine, the experience or appreciation of the attributes of OUV, no harm is caused by it. This would apply to developments considered individually and cumulatively.

Chapter 3

The setting of The Flow Country WHS

Functional setting

Key elements of setting

3.1 The environmental context and conditions surrounding The Flow Country WHS play a pivotal role in protecting the ecological integrity, biodiversity, and natural significance of the blanket bog within the WHS boundary. It includes not only the adjacent lands but also the hydrological units, climate conditions, and environmental and social mechanisms that influence the peatland's health and functions. These influences can be both positive and negative.

3.2 The only parts of the setting where change could meaningfully affect the WHS are those which are susceptible to types of change that could affect the attributes of OUV. This could encompass both positive and negative effects.

3.3 To define functional setting we must identify the parts of the WHS's surroundings which carry or embody these attributes ('receptors'). Existing designations or datasets have been identified which contain, or represent, the attributes of OUV of the WHS. These are grouped into broad categories of receptor type.

3.4 Analysis of these types of data would allow an understanding of the current state of receptors' contribution to OUV, against which the potential effects of change can be assessed.

Functional receptors

Local climate and environmental conditions

3.5 This includes patterns of precipitation, temperature ranges, wind dynamics, and atmospheric purity. The climate parameters dictate the ability of the blanket bog to form and the water level within the peatland, affecting its ability to support specifically adapted plant, and animal communities and to perform essential ecological functions such as carbon storage and flood regulation.

3.6 It also encompasses the potential for wildfire caused by prolonged periods of dryness affecting the surface vegetation, drying it and making it more susceptible to fire damage.

3.7 Although climate conditions cannot be directly managed in the local context, setting must consider these climatic and environmental factors, anticipating changes and implementing

adaptive measures to mitigate potential adverse effects on the blanket bog and maintain its hydrology. This may require monitoring of climate trends, assessing environmental impact from cumulative change and consideration of measures to cushion the blanket bog from the impacts of climate change.

3.8 It is recognised that climate change operates over, and is affected by, factors at the global scale. It is not reasonable to expect local management measures to attempt to tackle these types of global negative effects on the WHS in isolation – this must come from national and international action. However, the protection and enhancement of the WHS would be an important contributor to addressing climate change and would form an important consideration on the positive side of any cost/benefit or planning balance assessment.

3.9 Change to this type of receptor could affect Criterion ix, attributes a, b, c d, e, f (see Table 1.1).

3.10 Baseline data relevant to this type of receptor would cover:

- Climate trends, particularly
 - Precipitation
 - Temperature observations and projections
 - Drought risk analysis

These apply at a coarse scale in relation to the WHS boundary and will tend to affect it as a whole. This theme is therefore more appropriate for broad trend and behaviour analysis than for assessing effects relating to change at a local scale.

Water sources and hydrological units.

3.11 The blanket bog is mainly precipitation-fed and divides into distinct hydrological units reflected in its surface patterning. The bog regulates water flow and acts as a filter. The health of freshwater systems in the surroundings of the WHS is partly dependent on the blanket bog which regulates the flow and quality of water reaching them. The setting is defined by its hydrological and ecological connectivity to the blanket bog, where water flow and nutrient cycling extend beyond its boundaries.

3.12 Change in the setting relating to this theme will encompass many of the opportunities for enhancement of currently degraded blanket bog outside the WHS. For example, assisting identification of similar but poorer quality blanket bog habitat in the surrounding area, where and to what extent it may be suitable for restoration, and by what

method – where it is similar in composition, within the same catchment, contiguous with areas within the boundary, and capable of enhancement.

3.13 Change to this type of receptor could affect Criterion ix, attributes a, b, c, f (see Table 1.1).

3.14 Baseline data relevant to this type of receptor would cover:

- Hydrology
 - Catchments and water courses

Data is available and vital to understand the blanket bog's context. There will be places where the WHS would be sensitive to change taking place in areas of its catchment upstream of the blanket bog, outside its boundaries. However in most instances, water flow downstream, *out of* the boundary, affects the surrounding hydrological systems, rather than the other way around.
 - Water flow patterns

Modelling within and across the WHS boundary needs expert hydrology input, beyond the scope of this setting study.
 - Run-off, drainage, and, by extension:
 - Nutrient filtration and nutrient pollution

These are not currently specifically mapped, but proxy data (such as land use types, peatland survey, peatland condition) could be used as a starting point for further study – e.g. applying the James Hutton Institute soil runoff risk⁸ approach for cultivated land.

Ecosystem areas and species

3.15 The interaction between abiotic components and plant and animal species is what enables the creation and maintenance of a resilient blanket bog ecosystem. Some species characteristic of the blanket bog are highly adapted and specialised, but not all are confined strictly to its physical boundaries. Many species found in or on the blanket bog can and will thrive on shallower, drier, peaty soils. Related habitat types, such as wet and dry heath, rushy and grassy areas, extend into the surroundings of the WHS. Further ecological processes related to the blanket bog, such as dispersal and migration, also take place within these surrounding habitats.

⁸ Illustrated at https://map.environment.gov.scot/Soil_maps/?layer=21# [accessed 29/4/24]

3.16 Change to this type of receptor could affect Criterion ix, attributes a, b, c, d, f (see Table 1.1).

3.17 Baseline data relevant to this type of receptor would cover:

- Distribution of key communities of species; and
- Core habitats within the WHS and supportive habitats in surrounding areas

These could be mapped using blanket bog categories of peatland mapping, plus designated sites containing relevant ecological values.

- Ecological connectivity and corridors

Mapping an understanding of these would require specialist input. This type of data tends to be produced at a fine scale on a reactive, case-by-case basis, responding to potential change.

Land use and land management practices

3.18 Some land uses outside the boundary are inherently linked to the function and health of the blanket bog. Management practices outside the site boundaries have the potential to affect the site's ecological functioning and integrity.

3.19 In the context of the blanket bog, positive influences could include sustainable land management practices that prevent degradation and support ecological processes, such as water and nutrient cycling, and species dispersal and migration. Practices that maintain the hydrological conditions necessary for peatlands to thrive or restoration efforts that repair past damages and enhance resilience are positive contributions to the setting.

3.20 Conversely, there may be land use types and management practices which have potential negative effects to the health of the blanket bog. These might include practices which create risks to OUV from air- or water-borne pollutants, or inappropriate species introduction. Understanding these potential interactions in more detail would help to guide land use change to appropriate locations and influence management plans and practices to avoid or reduce harm and encourage adoption of those which protect or enhance OUV.

3.21 Change to this type of receptor could affect Criterion ix, attributes a, e, f (see Table 1.1).

3.22 Baseline data relevant to this type of receptor would cover:

- Forestry and farming
- Data on land capability, forestry-related species conservation, native woodland; peatland restoration could assist understanding this type of receptor.

- Planning use classes – planning policy and history recording changes of land use requiring planning permission (covering broad use classes such as industrial, business, housing etc)

- Sporting estate management

Management approaches are not currently mapped; more data analysis or a case-by-case approach needed.

Data availability

3.23 Tables B.1 – B.4, Appendix B illustrate the types of data relevant to the four categories of functional setting described above. These lists of data are not comprehensive; they have been used to develop and sense-check the definition of setting and its potential application in impact assessment. In some cases, data types are identified which can be used as a proxy to understand how different types of change outside the boundary may interact with OUV.

3.24 The specifics of any development proposal would require more detailed analysis of the data available, relevant to that particular location/ type of change. Paragraphs 3.39-3.42 on impact assessment provides more detail on the process involved.

3.25 Gaps in data or knowledge and recommended further work to address broad questions in the understanding and definition of setting, beyond the scope of this report, have been flagged at **Further steps**, paragraphs 3.61 on.

Experiential setting

3.26 Experiential setting is concerned with people's experience and appreciation of the qualities of the Site which derive from OUV.

3.27 To define experiential setting we must identify:

1. the experiential qualities of the WHS which derive from its OUV;
2. the parts of the WHS's surroundings which carry or represent these qualities;
3. whether change in those surroundings could alter people's understanding and appreciation of the site's qualities (which could be in either a positive or negative way).

Experiential qualities

3.28 The experiential qualities of the WHS which derive from its OUV (refer to **Table 1.1** for criteria and attributes) are its:

- **Scale and continuousness**
relating to **Criterion ix, attribute a** and to The Flow Country's **integrity**.
- **Interaction with and appreciation of ecosystems and communities of plants and animals**
relating to **Criterion ix, attribute d**
- **Transient aspects** – diurnal and seasonal variations, appreciated alongside weather conditions and patterns, light, skies etc.
relating to **Criterion ix, attribute b**
- **Variety of landscape patterning**
relating to **Criterion ix, attribute b**.
- **Time-depth, cultural and historical associations**
relating to **Criterion ix, attribute c and d**

3.29 These qualities do not have a ready-made spatial definition. To estimate where the qualities may be experienced outside the boundary of the WHS, the following designations or datasets, broadly covering different land types, have been identified and within these, which sub-types are shared or intersect with the WHS. This process helps to understand the distribution of these qualities within and surrounding the WHS, approximating the ways in which people experience OUV.

3.30 Existing landscape designations, benefitting from existing policy protections, may help define where these qualities can be experienced. However, land which is not covered by existing designations may also be susceptible to change which affects the experience and appreciation of OUV.

Land use/ land cover

- Scottish Habitat and Land Cover Map (NatureScot/ Space Intelligence) specifically sub-types shared or intersecting with the WHS boundary, such as:
 - D1 Raised and blanket bogs
 - D2 Valley mires, poor fens and transition mires
 - E3 Seasonally wet and wet grasslands
 - F4 Temperate shrub heathland

Landscape character

- National Scenic Area (Scottish Government)
- Special Landscape Areas (Highland Council)
- Wild Land Areas (Scottish Government)
- Landscape Character Type (NatureScot) specifically sub-types shared or intersecting with the WHS boundary, such as:
 - 134 Sweeping Moorland and Flows
 - 136 Rocky Hills and Moorland
 - 142 Strath – Caithness and Sutherland

Cultural heritage sites and landscapes with peatland connections

- Historic Land Use Assessment (Historic Environment Scotland) specifically sub-types shared or intersecting with the WHS boundary, such as:
 - Crofting townships
 - Rough grazing
 - Plantation
 - Traditional peat cutting
- Historic Environment Record (Highland Council) specifically sub-types shared or intersecting with the WHS boundary, such as records of historical:
 - Transhumance (seasonal, nomadic pastoral activity)
 - Crofting landscapes
 - Abandonment/ clearance

Receptors

3.31 The receptors for change in an experiential sense are human beings. The final step in defining experiential setting is considering where, and which groups, of people can experience the qualities – such as local residents, visitors or

travellers – and how change of various types could affect their experience and appreciation of OUV.

3.32 Consideration of whether change affects the experience of OUV must therefore address the relationship between the land which carries the qualities deriving from OUV with the groups of people able to experience or appreciate that land. For example, **Table 2.1**, overleaf, illustrates some examples of groups of people who may be receptors of change to experiential setting.

3.33 Additional refinement of these examples, in relation to the land types carrying the qualities above, would be useful to more firmly define where areas of experiential setting would be of particular sensitivity, and, conversely, areas where change would be unlikely to be able to affect the experience and appreciation of OUV. This is discussed further at **Further steps**, paragraphs 3.61 on.

Relationship between functional and experiential setting

3.34 As explained in Chapter 2, functional setting is the primary consideration for change happening outside the boundaries of The Flow Country WHS because it is inscribed for natural criteria of OUV only. Experiential setting is an important, but secondary, consideration because it is only relevant in the specific instances when the ways in which people experience the WHS derive directly from its attributes of OUV and the proposed change can affect that experience.

3.35 **Table C.1, Appendix C** illustrates the connections between the attributes of OUV and the functional and experiential setting receptors relevant to them.

Levels of detail in definitions of setting

3.36 It is acknowledged that the discussion of experiential setting above appears less detailed than that of the functional setting. This is to be expected – the definitions of the two aspects of setting are not equivalent or symmetrical in content and detail, because their derivation is very different.

3.37 Functional setting necessarily requires a great deal of detailed evidence to consider the implications of interactions in the environmental surroundings of the WHS which may directly affect the attributes of OUV. Experiential setting, on the other hand, is concerned with human experience of the WHS and therefore applies at a much more general level, and at a broad, landscape scale.

3.38 The consideration of experiential setting effects is also largely dependent on understanding the nature of the change proposed. At the early stage of assessment covered in this report therefore, setting can only be defined in a broad sense, and would be refined as more detailed information on change (such as development scheme information) became available.

Table 3.1: Experiential setting - receptors

Receptor group	Impact of change in visual/ landscape setting	Sensitive to...
Land managers, forestry workers, infrastructure workers	Limited impact – perceptions shaped by their working relationship with the landscape.	Restrictions on operations
Residents and communities	Possible sense of encroachment on core areas of bog – level of concern influenced by cultural relationship with peatland.	Loss of bog habitat
Tourism, recreation, hospitality businesses	Possible concerns about change impacting tourism and recreation.	Indirect effects
Visitors – scientific / education	Landscape and visual impacts on key access (walking and cycling) corridors Focus on change affecting areas of similar habitat around the WHS or impacting functional aspects of setting.	Loss of bog habitat Changes in visual setting Functional setting changes
Visitors – outdoor recreation	Landscape and visual impacts on key access (walking and cycling) corridors and viewpoints – affecting views over WHS or surrounding areas of similar and contiguous character.	Changes in visual setting Changes in landscape, cultural character
Visitors – tourism	Landscape and visual impacts on key transport routes (road and rail) – affecting views over WHS or surrounding areas of similar and contiguous character.	Changes in visual setting Changes in landscape, cultural character
Travellers on road and rail corridors	Landscape and visual impacts on key transport routes (road and rail) – affecting views over WHS or surrounding areas of similar and contiguous character.	Changes in visual setting Changes in landscape character

Next steps – identifying meaningful change

3.39 Not all receptors, or areas within them, will be equally sensitive to change which could affect the WHS. Many types of change in the surroundings of the WHS are unlikely to affect its OUV at all.

3.40 ICCROM, IUCN, ICOMOS provide Guidance and Toolkit for Impact Assessments in a World Heritage Context (2022). Highland Council has applied this guidance to create a toolkit for impact assessment tailored to the specific attributes of OUV for The Flow Country WHS.⁹ The toolkit can be applied regardless of whether the change proposed occurs within or outwith the WHS boundary. The setting discussion above can help frame consideration of whether change outside the boundary is meaningful or not – i.e. whether it affects OUV.

3.41 The steps required to determine this are:

1. Where is the change proposed to take place in relation to the WHS boundary?
2. What is the nature of the change?
3. What types of receptors are affected?
4. How does the change affect
 - the attributes of OUV, or
 - the qualities which are derived from OUV?
5. Are those qualities already affected by existing change? (i.e. are there cumulative effects to consider)
6. Is the effect significant, i.e. does it matter for OUV, or for its presentation and appreciation?

3.42 This setting definition study provides information to help answer the questions in steps 3 and 4. Impact assessment of a specific proposal can use this at screening stage, to set scoping expectations, identify the need for additional research and to frame detailed evaluation. Overall, these steps will assist in confirming whether the proposal will affect OUV or the qualities deriving from OUV, whether that effect is positive or negative, and to what level, so it can be given proportionate weight in the planning balance.

3.43 The following maps and discussion have been provided as an example of how to apply the definition and steps.

3.44 IMPORTANT: These maps do not define setting. They illustrate ways in which the concept of setting can be applied to help understand the potential impact upon OUV of change happening outside the boundaries of the WHS.

3.45 These maps are indicative only. Site-specific, detailed analysis would be required, informed by professional interpretation and judgement, to form an evidence-based view on whether, and to what extent, a specific proposal for change would affect OUV or its appreciation.

Functional setting illustration

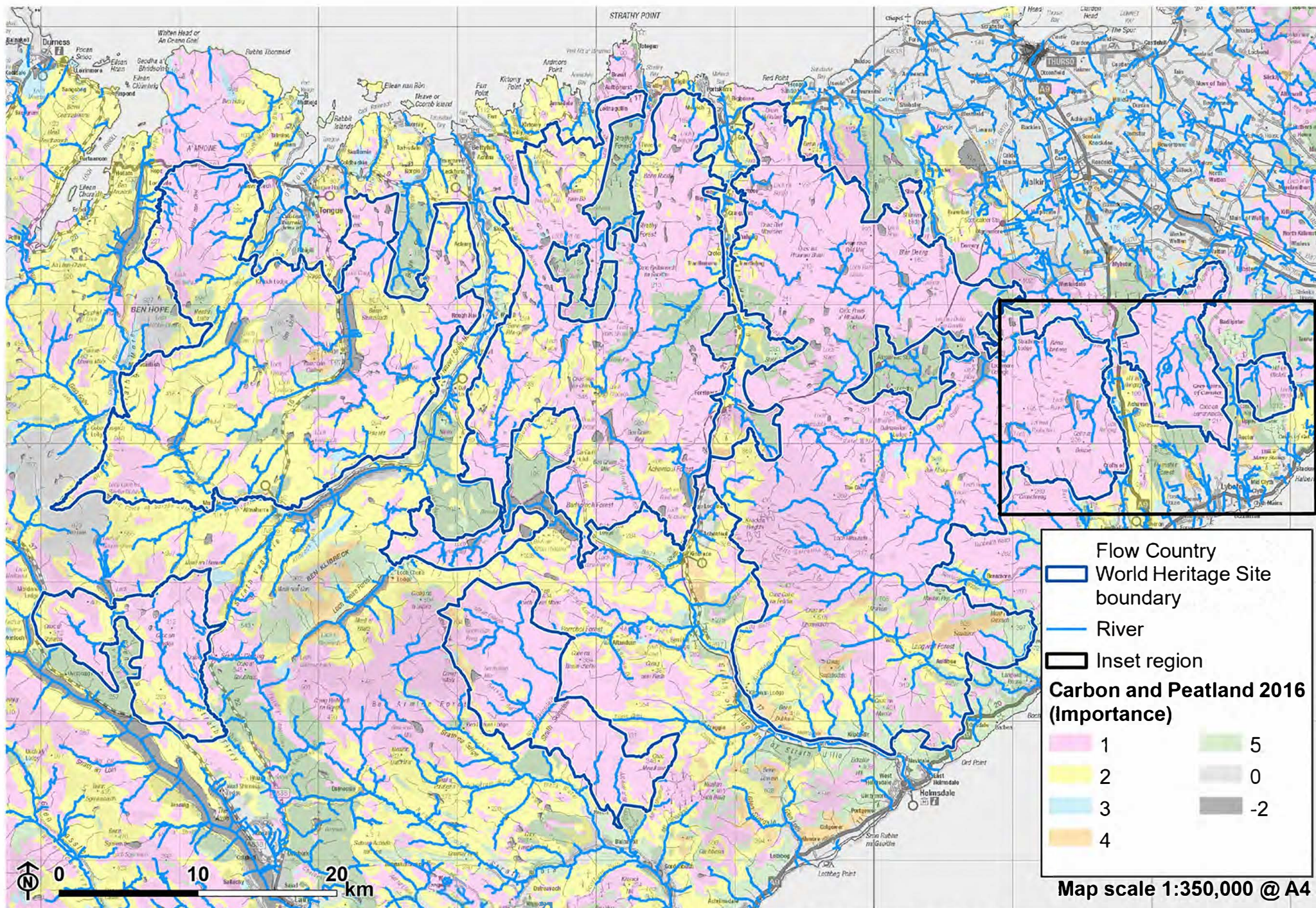
3.46 The following series of four maps illustrates two examples of categories of functional receptors: water sources and hydrological units, and ecosystem areas. A selection of receptor datasets for each category is illustrated, at the scale of the whole WHS and with an inset example area.

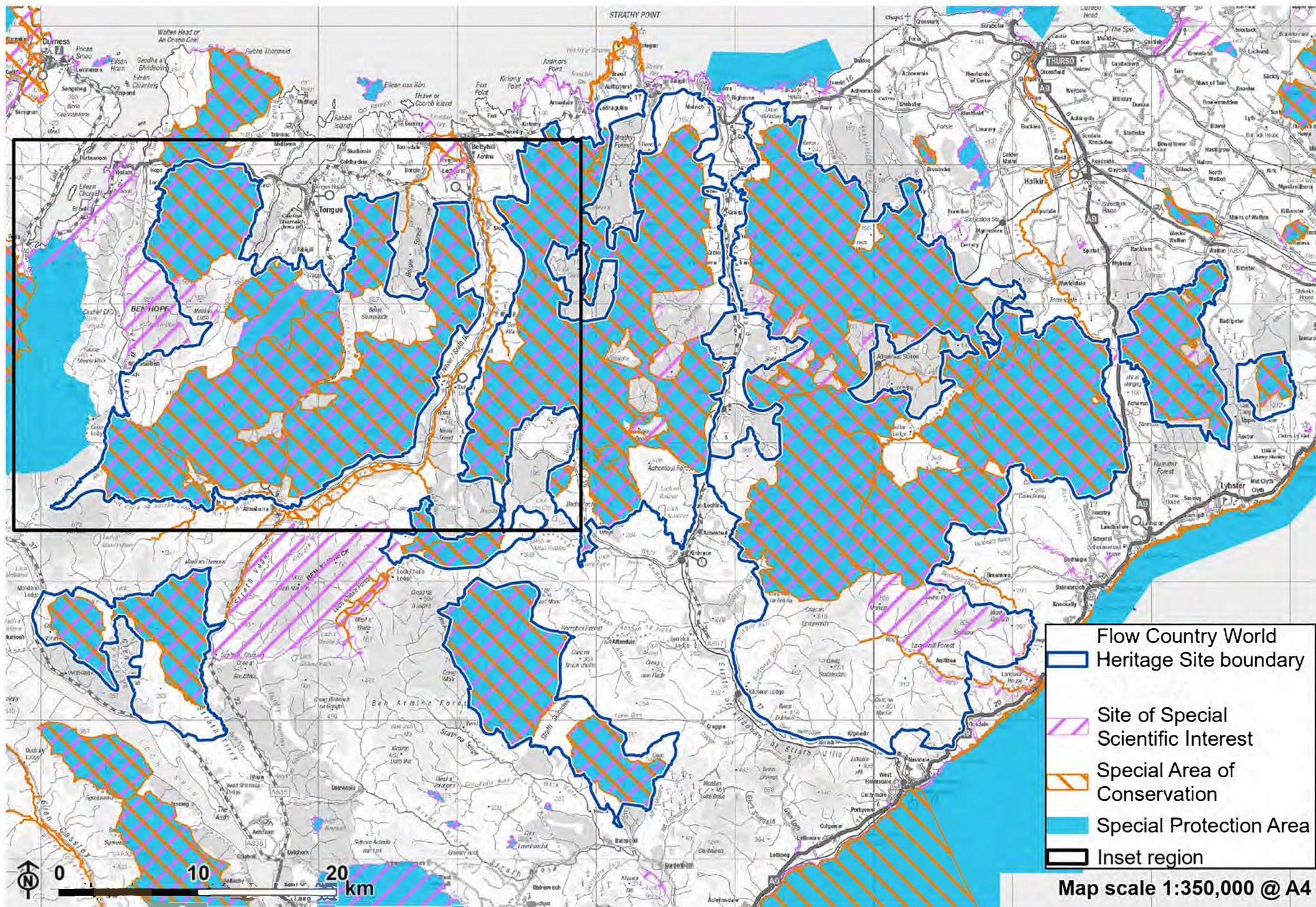
3.47 These examples would form a starting point for considering the relationship between the location of a particular proposal for change with:

- the boundaries of the WHS
- the extent and distribution of habitat designations/ protections relevant to the WHS's ecosystems and communities of plants and animals
- water flow patterns and associated nutrient cycling through the blanket bog

3.48 Further relevant information could then be identified to work through the impact assessment steps summarised at paragraph 3.41.

⁹ Available at
<https://www.highland.gov.uk/flowcountrywhsplanning>





Experiential setting illustration

3.49 To explore how the surroundings of the WHS could be experienced, the first step was to create a zone of theoretical visibility (ZTV) of The Flow Country WHS, shown overleaf.

3.50 This maps the visibility of the WHS. A grid of points at 1000m intervals was applied across a bare earth terrain model of the WHS. Data for existing woodland areas, assuming a growth height of 15m, was used to create a vegetation-screened digital surface model. The resulting visibility of each point in the grid was then mapped from a viewing height 2m above ground level, to approximate the human viewer's perspective.¹⁰

3.51 The number of grid points visible from any particular location is then shown using a colour ramp. This is graded as follows:

- ≤10% of points visible (blue tone)
- 10%-50% of points visible (yellow tone)
- 51%-100% of points visible (purple tone)

3.52 The banding of this grading has been selected to help understand that visibility is generally low – 10% or fewer points visible. The areas with higher percentages of visibility are, logically, the high points of the Site. Areas of zero visibility within the Site occur because of the vegetation screening and the 1000m grain of the grid, which causes some small areas to have no points visible from them.

3.53 It is important to note that visibility, indicated by the ZTV, is only relevant to experiential setting.

3.54 Having created the ZTV, the next step is to understand how change in the surroundings of the Site could affect OUV. The only parts of the setting where change could meaningfully affect the presentation and appreciation of the qualities which derive from OUV are those which:

- can be experienced in tandem with it, and
- are susceptible to types of change that could alter the understanding and appreciation of the site's qualities which derive from its OUV.

3.55 Following the ZTV, the series of five maps illustrates one example of land types which carry some of the qualities which derive from OUV: landscape character designations.

3.56 In these, the ZTV is shown alongside examples of landscape character designations (the National Scenic Area and Special Landscape Areas) to provide an indication of where change in the surroundings of the WHS could be experienced in a location with visibility of the WHS.

3.57 This example would form a starting point for considering the relationship between the location of a particular proposal for change and:

- the boundaries of the WHS
- the extent and distribution of relevant land types which carry the qualities of OUV
- whether the qualities can be experienced at that location
- whether the proposed change would interfere with the presentation and appreciation of OUV

3.58 This would also help to focus in on whether specific areas, particularly any which are outside the current designations and the WHS, would be particularly sensitive to change, and whether that change could affect the qualities derived from OUV.

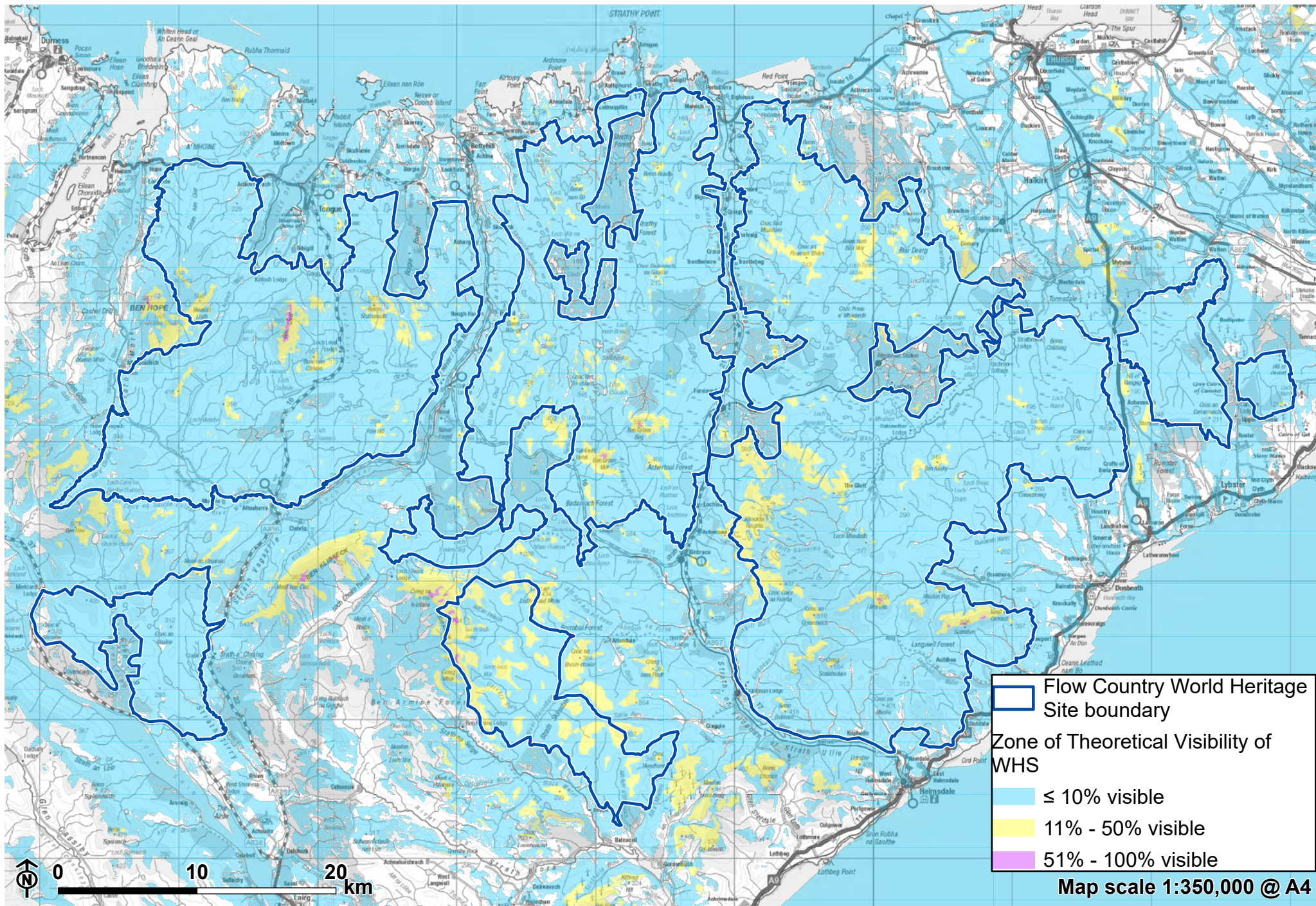
3.59 Further relevant information could then be identified to work through the impact assessment steps summarised at paragraph 3.41.

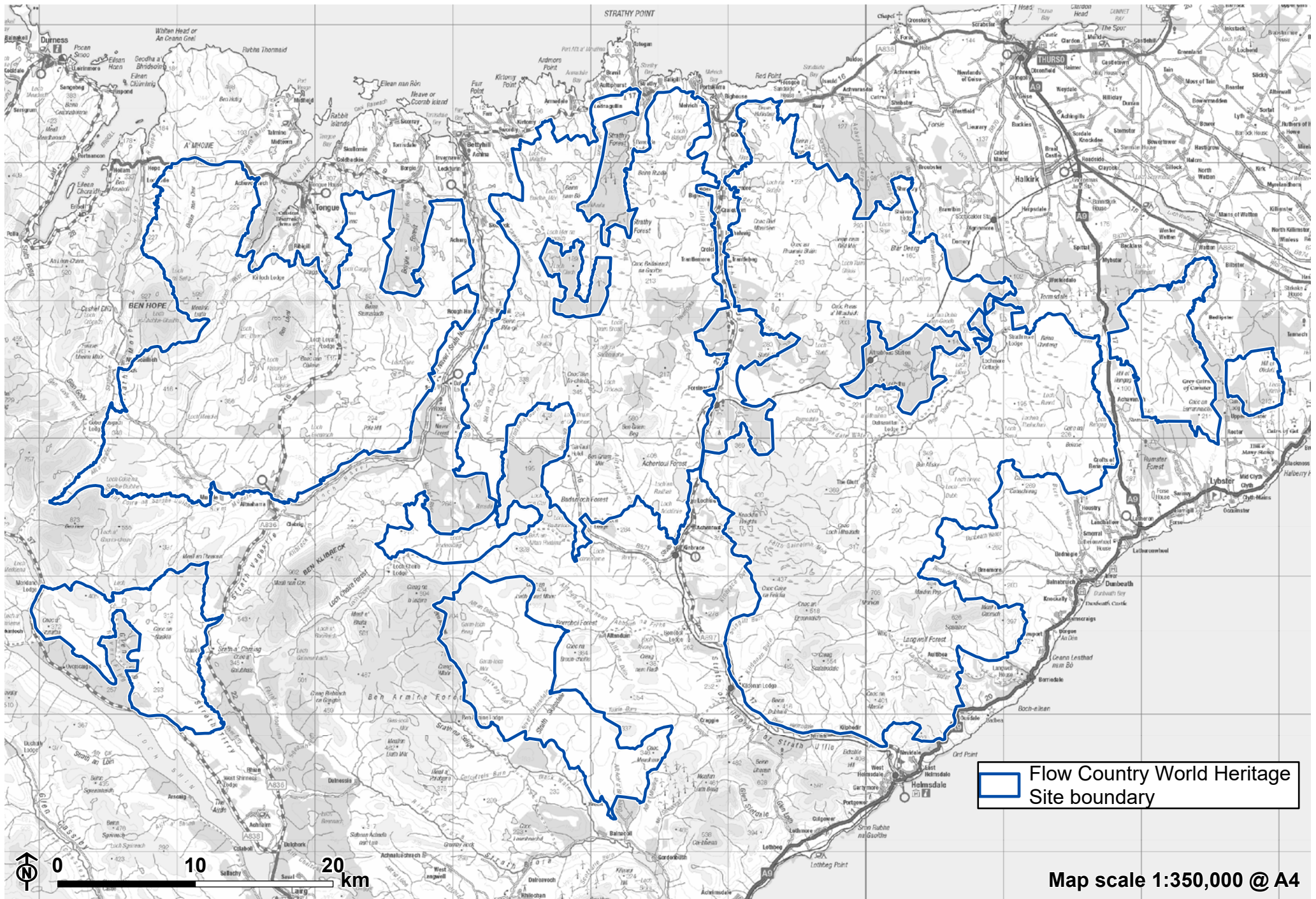
3.60 The ZTV created for the illustrative example is fairly simple, at a coarse scale (a 1000m grid covering the whole WHS) and with a relatively simple gradation of visibility applied, to create a suitable level of detail for the purposes of this study. Variations of this approach, at a more refined level of detail, or taking into account additional factors such as the locations of receptors (such as those in Table 3.1 and combined with data research as above), could usefully be tailored to understand a range of issues, discussed further at **Further steps**, paragraphs 3.61 on, below.

¹⁰ ZTV technical information:

The ZTV indicates the theoretical visibility of the World Heritage Site from a viewing height 2m above ground level. Visibility was calculated based upon a 1000m spaced point grid assigned bare earth terrain height across the site. The terrain model is based on OS Terrain 50 height data (50m grid, obtained from Ordnance Survey in July 2020).

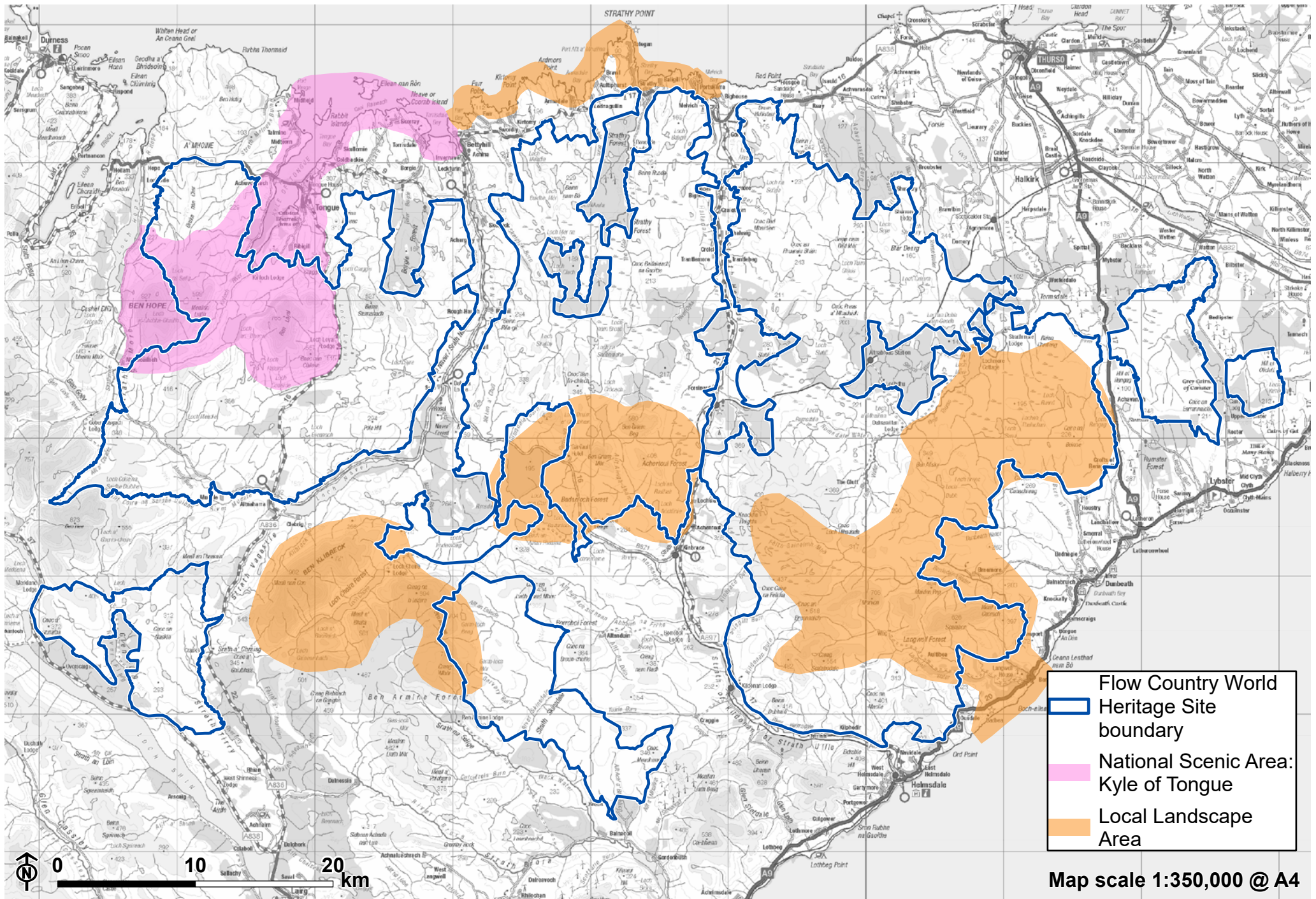
Existing woodland data from the Forestry Commission NFI 2022 dataset, with an assumed height of 15m, was used to create a vegetation screened digital surface model. Earth curvature and atmospheric refraction have been taken into account. The ZTV was calculated using ArcGIS Pro 3.2.1 software.

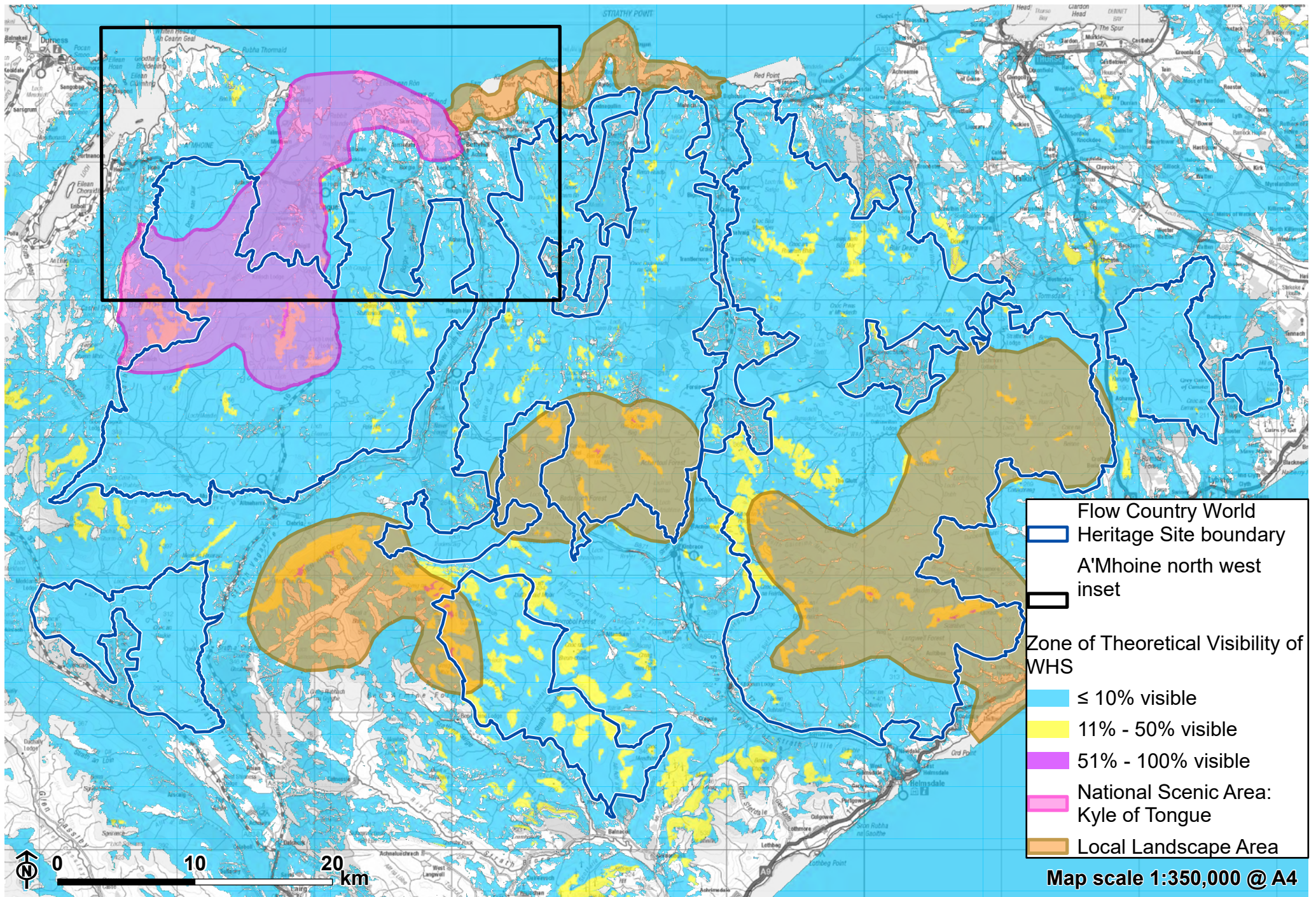


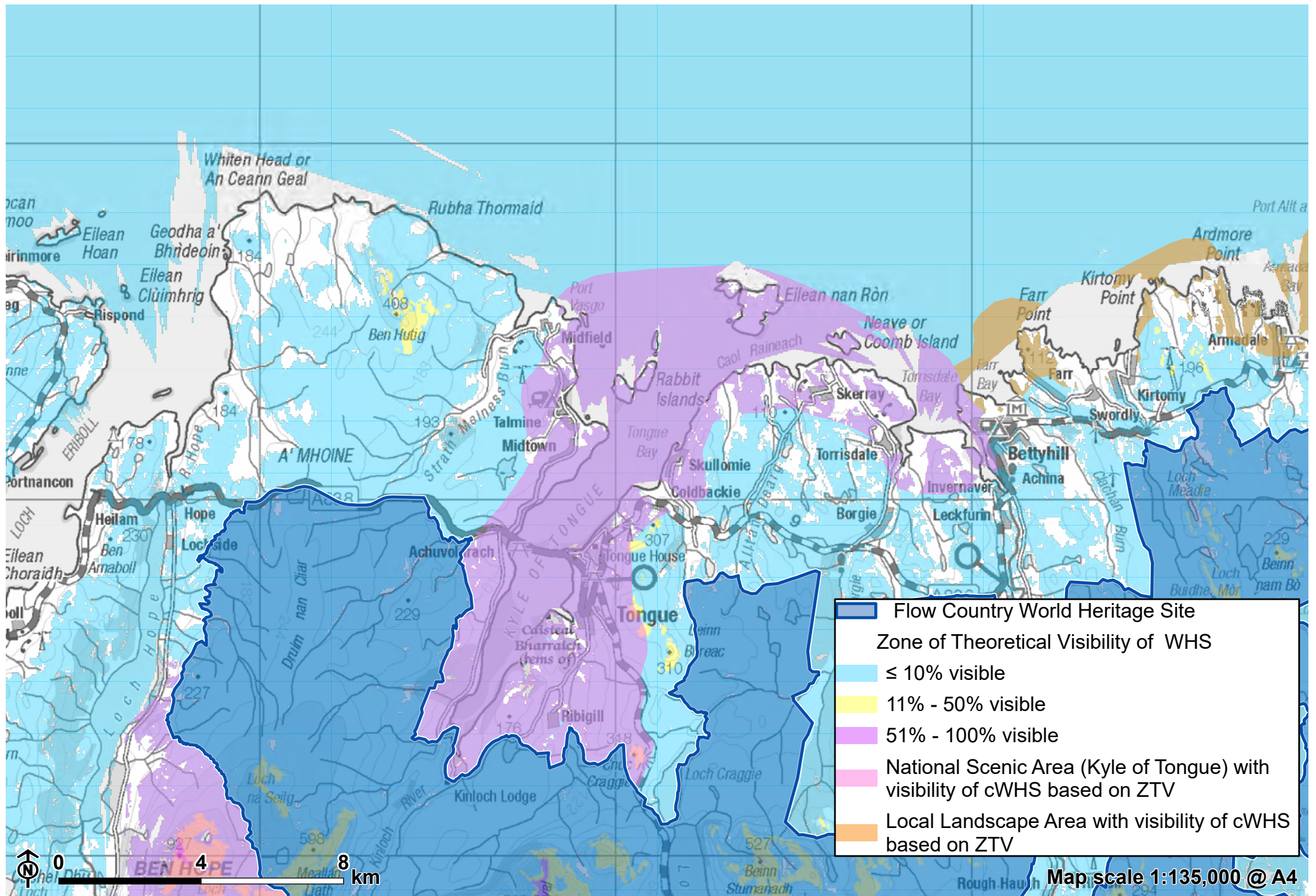


Flow Country World Heritage
Site boundary

Map scale 1:350,000 @ A4







Further steps

3.61 The scope of this setting study has been to investigate the setting of The Flow Country. This is a complex subject and has inevitably raised additional questions or the potential for further detail or research which are beyond its initial remit. The following issues were raised through the process of creating this report, which may benefit from further research.

3.62 The aim of these would be to better understand the setting implications of specific proposals for change, or types of change. This would assist owners, developers, stakeholders and decision-makers in understanding and communicating where change is genuinely significant for OUV, and to give practical advice for feasibility studies, appropriate siting and design of development, particularly of substantial scale or impact.

Receptor data

3.63 Tables B.1-B4 identify a number of data gaps or proxy datasets. Addressing some of these gaps would assist in providing a fuller understanding of functional setting interactions, particularly in the land use and land management receptor category.

3.64 Some of these data gaps would need to be addressed by the developer or applicant to support the development of any detailed, site-specific proposals for change. Additional data, gathered through survey, research and analysis, may be required reflecting that proposal's particular implications, to an appropriate level of detail for the assessment regime required.

3.65 Other gaps could be addressed by statutory bodies or the local authority, particularly where they would support production of strategic guidance, discussed further below. Further work could be done to identify and prioritise data or research needs, and which public bodies would be best-placed to address them.

Sensitivity of setting

3.66 The approach, tools and data examined through this report at a relatively high level of detail could usefully be refined or expanded to understand a range of issues:

- Distribution of and ability to experience OUV through the qualities of experiential setting, particularly in those areas not covered by existing designations.
- Whether any parts of the setting are particularly sensitive or, conversely, where development is unlikely to be able to affect OUV.
 - This could be through additional tools or guidance to assist management and decision-making, such as refinement of the ZTV; combining with receptor locations such as roads, the railway, settlements, to

identify areas requiring a particular approach or guidance.

- Whether tailored guidance would be beneficial for owners, developers and decision-makers to assist in feasibility, siting and design of substantial development.

3.67 Again, some of these issues could be addressed by statutory bodies or the local authority, to support the effective management of the WHS and to provide certainty at appropriate points in the development of proposals for change. Guidance could in turn define what information applicants would be responsible for providing to support particular proposals.

Appendix A

Development assessment 2024

Date of assessment and post-inscription note

This assessment of a selection of planning decisions around The Flow Country was carried out in March 2024. It refers throughout to the candidate World Heritage Site ('cWHS') as this reflects the pre-inscription position and assumptions on which the assessment was made.

Purpose of assessment

This development assessment reflects on the question of whether effects occurring as a result of change outside the cWHS boundary could be dealt with solely through existing planning mechanisms and guidance. A sample of recent major planning decisions in the surroundings of the cWHS was assessed. The commentary picks out the key issues relevant to cWHS setting identified for each development and reflects on what impact, if any, the presence of the WHS may have had on these decisions. This has been considered as a hypothetical scenario, reflecting on how these cases might have progressed had the WHS been in place at the time of decision-making. It should be read as one opinion on these instances.

Strathy South (2016 - approved)

ECU Ref: EC00003113, Highland Council Planning Ref: 07/00263/S36SU and associated application documents

A wind farm containing 39 wind turbines, with a hub height of 83m, tip height of up to 135m

Comments from report of handling and statutory consultees

- There would be 'harmful impacts to the Caithness and Sutherland Peatlands Special Protection Area in relation to red-throated diver and greenshank' (SNH¹¹)
- 'Unacceptable harm to greenshank, hen harrier, red-throated diver, and wood sandpiper; adverse effects on the integrity of the adjacent Caithness and Sutherland Peatlands Special Protection Area, Ramsar site, and underlying SSSIs'. Of note were the 'permanent legacy of turbine base, roads, hard-standings and damaged peatland hydrology (even after decommissioning) undermining the potential inscription of The Flow Country as a UNESCO World Heritage Site.' (RSPB Scotland)
- 'Supports the position of Scottish Natural Heritage and considers that application to be contrary to policies 57 and 67 of the Highland-wide Local Development Plan.' (Highland Council)

Commentary

Although The Flow Country WHS has not been inscribed, it was discussed at length, though only in regards to functional effects.

The application site falls outwith the Caithness and Sutherland Peatlands SAC, SPA and Ramsar designations (and the 39 separate Sites of Scientific Interest that underpin these). The site has been damaged by commercial forestry and is not part of The Flow Country that stands out as exceptional.

The application site is completely outside the area likely to be judged as having outstanding universal value and integrity, such that it could be considered for inclusion with the boundary of a candidate WHS. Therefore, there would be no physical overlap between any future WHS and the proposed development.

¹¹ The name of the consultee at the time of the planning report was Scottish Natural Heritage, SNH, now known as NatureScot. SNH is, however, still its legal name.

The proposed development was supported by national policies which promote the development of onshore wind farms in appropriate locations, and is consistent with the provisions of the Highland-wide Local Development Plan, supplementary guidance and national guidance. Any adverse environmental effects of the proposal were considered to be satisfactorily mitigated by the provisions within the proposed conditions, or are otherwise acceptable as part of the balancing exercise, and that there were no other material considerations which would justify refusing consent for the project.

This case highlights the focus on functional over experiential. SNH, RSPB and HC in their responses effectively considered the functional setting of the SPA and other designations which are relevant to the proposed attributes of OUV, albeit without using that term. No issues relevant to experiential setting were identified or discussed. The potential ecological/hydrological harm identified was considered to be outweighed in the planning balance by the benefits of the scheme.

This solely functional approach may not be viewed as sufficient once the WHS is established and its setting becomes a material consideration in NPF4. This applies to proposals of this type viewed individually and cumulatively (such as in this example, as forming part of the 'Strathy Wall' group of developments).

Dalchork Substation (2019 - approved)

Highland Council Planning Ref: 19/00374/FUL

The erection and operation of a 132kV substation

Commentary

This case involved discussion of landscape and visual effects – i.e. potential for experiential setting effects – but there was no consideration explicitly in relation to the proposed WHS.

A building of this scale in a semi-rural location will result in some visual impact, and that due to the overall proportions of the building the magnitude of change will be particularly perceptible from some locations. It is noted that the site selection process has been carefully considered by the applicant so as to take advantage of the landform, and the bowl-like contours within the site to minimise visual impact as far as practicable. At c.10.7km south-east of the cWHS, it is therefore unlikely that Dalchork substation would affect the appreciation of the Site's OUV.

However, experiential setting considerations for similar developments are likely to be more relevant or prominent where sites are located closer to the proposed WHS boundary, and more so if in prominent locations. Associated Overhead Lines (OHLs) in the direction of the site may be of more immediate relevance to the WHS than the substation itself.

Highland has been successful in attracting inward investment in renewables, enabled in part by a matching level of investment in the improvement of the grid transmission system. This success has led to the Highlands having a good understanding of this type of project and this Council having appropriate policies and guidance to assist in its assessment and to effectively manage their implementation on the ground. For example, the use of Construction and Environmental Management Documents ('CEMD'), a particular approach to assist with the implementation / management of such large scale projects with a focus on environmental protection.

There may be a concern based on perception that WHS status could impact the level of renewable investment the Highland Council area experiences and the resulting generation it contributes in this part of the region. This underlines the importance of being really clear about when proposals are visible from/ in combination with the cWHS, this only matters in decision-making invoking the NPF4 WHS setting clause when the experiential aspects of setting derived from OUV are directly affected.

Sutherland Space Port (2020 – approved)

Highland Council Planning Ref: 20/00616/FUL

Construction of vertical launch space port with launch operations control centre etc.

Comments from report of handling and statutory consultees

- SEPA requested a condition to: 'ensure the foundations for the Launch Operations Control Centre and the rail track are piled foundations.' (SEPA)
- 'lack of information related to visitor management in relation to the impact on European designated sites. The applicant subsequently provided SNH with a document clarifying how the visitor management strategy could be implemented. Following that document being provided SNH consider that there would be no likely significant effect on the integrity of the European designated sites subject to mitigation be secured as a condition and the mitigation being strictly implemented.' (SNH)

Commentary

This case would be complex and controversial, whether the WHS were in place or not. Consideration was given to multiple issues relevant to functional setting within the application. Proposed mitigation and the likely benefits meant the scheme was considered acceptable overall in the planning balance.

Issues were not raised relevant to experiential setting, but the proximity of the NSA Kyle of Tongue and wild land considerations mean that the question of whether the proposed development would be capable of affecting the experience and appreciation of OUV if the WHS were in place. In this case, the level of intervisibility of the development site with the cWHS; or the potential for temporary, short-term visibility during launches would need to be assessed, and in turn whether these effects could interfere with the experience and appreciation of OUV, and to what degree. It highlights the key point that really clear thinking is required on whether a particular proposal/ site is capable of affecting the experiential aspects of setting derived from OUV.

Creag Riabhach (2014 – approved)

ECU Ref: EC00002078, Highland Council Planning Ref: 14/00004/S36

A windfarm containing 22 wind turbines

- 'The physical attributes of these WLA's [Wild Land Areas], and the perceptual responses evoked by them, are very sensitive to the scale of development proposed. The effects of the proposal will extend over a very large area, well into the centre of the Ben Hee WLA to the west. Effects to the east within the Ben Klibreck WLA do not extend so far but include impacts on well-used routes access routes and the summit of the popular Munro Ben Klibreck.' (SNH)
- 'Although climbers of the many hilltops in Sutherland are experiencing cumulative effect of onshore wind energy projects there is no evidence to suggest that the development would adversely impact on climbing or walking activity.' (Highland Council)
- 'Many of the key viewpoints are largely protected or unaffected including large parts of the SLA. On balance, the development from a landscape and visual impact perspective is acceptable.' (Lord Boyd Of Duncansby)

Commentary

The experiential element is most clearly identified in this case, both with regards to the S36 decision but also the subsequent hearing of a petition to undo the S36 decision. The degree of visibility from designated landscapes was a key factor in the S36 decision.

Ministers here recognised that as wild land areas are very sensitive to any form of development, a substantial development of this nature would always be likely to, and this case was considered to, give rise to effects on the qualities of the wild land areas which are regarded as significant. Not all significant impacts on a wild land area however are of the same nature or extent.

Ministers reached a view that the renewable energy and economic benefits of this development outweigh the impacts on the Ben Hee and Ben Kilbreck WLAs in the circumstances of this case, having particular regard to the location of the development at the very edge of the Ben Hee WLA and largely outwith the boundaries of both WLAs. Consideration was also given to impacts to the SAC and regarding peat management.

Negative effects to both experiential and functional elements of the landscape were therefore relevant in this case. Considering the proximity of the cWHS, it appears likely that the existence of an inscribed WHS would have created an additional, potentially challenging consideration.

Hope Lodge Main Building (2016 – approved)

Highland Council Planning Ref: 16/03455/LBC

Restoration and extension of B-Listed sporting lodge including formation of additional low-level wing

Commentary

This is a significant extension to the existing building, which at ground-level adds approximately 75% to the current floorplate. The design of the proposal sought to minimise the visual and physical impacts upon the building. It was therefore deemed acceptable, on balance.

Compared with other case studies in this assessment, this proposal is very small-scale, but illustrates a type of development which is dependent upon the appeal of the area. The presence of the WHS would be likely to add to this appeal. There is therefore a perception of some tension between developments which are dependent upon The Flow Country, including its functional and experiential setting, and others which might threaten the cWHS and its setting.

The potential generation/harnessing of additional tourism activity as a result of the inscription of WHS as a new aspect to the draw of the area, is an interesting point. Given that this proposal was not judged to have significant negative impacts on the listed building itself, it is perhaps unlikely that the presence of the WHS would have posed a serious constraint though it may have been considered from an experiential standpoint. It seems unlikely that any individual development such as this would cause significant adverse effects sufficient to undermine the inscription. The cumulative effect of multiple such developments would, however, need to be considered. This underlines that the means by which to respond to the NPF4 WHS setting clause in a rational, evidenced way is crucial to ensure sustainable development is not impeded by the perception of the WHS as a constraint, which is not reflected in reality.

Coul Links (2017 – refused)

Highland Council Planning Ref: 17/04601/FUL

An 18-hole golf course, with erection of a clubhouse

Commentary

This example is located a substantial distance (c. 20km at its closest point) south of the proposed WHS and impacts on OUV would probably only be a highly marginal consideration were the cWHS in place, given this relationship. This case has been included as an example to consider whether, if similar proposals arose sited closer to the cWHS boundary, the presence of the WHS might make a difference to the decision.

The reporters concluded that the proposed golf course development has the potential to have a significant adverse impact on multiple ecological receptors including dune heath and dune slack habitats, lichens, wintering and breeding birds and invertebrate assemblages. Economic development arguments were presented as a substantial part of the planning consideration, on the opposing side of the planning balance to environmental issues. Given that the primary environmental concerns pertained to the functional elements of the site and its surroundings, it appears likely that the presence of the cWHS would add weight to the environment side of the balance if the location made these relevant.

Appendix B

Functional setting receptor data

Functional setting receptor data

Tables B.1 – B.4 below illustrate the types of data relevant to the four categories of functional setting described in Chapter 3. These lists of data are not comprehensive; they have been used to develop and sense-check the definition of setting and its potential application in impact assessment. In some cases data types are identified which can be used as a proxy to understand how different types of change outside the boundary may interact with OUV.

The specifics of any development proposal would require more detailed analysis of the data available, relevant to that particular location or type of change.

Table B.1: Functional setting receptor category: Local climate and environmental conditions

Sub-category	Dataset	Proxy data	Comments
Climate trends	Climate Data Portal (12km resolution) ■ Annual precipitation observations 1991-2020 ■ Annual temperature observations 1991-2020 ■ Annual precipitation projections 2050-2079 RCP8.5 high emissions scenario ■ Annual average temperature change (change relative to a 1981-2000 baseline) for range of scenarios		The available datasets from the Met Office climate portal are very coarse resolution (12km grid), and do not show that much variation across The Flow Country.
Drought risk			NatureScot drought risk analysis report (2021) – underlying data may be available.
Environmental impact zones		Agricultural and built up land from Landcover 2022 Scotland (SpaceIntelligence/ NatureScot)	Relevant agricultural and urban land types to highlight areas that may contribute to air/ temp/ microclimate/ water quality issues

Table B.2: Functional setting receptor category: Water sources and hydrological units

Sub-category	Dataset	Proxy data	Comments
Water flow patterns		OS Open rivers	There is no 'out of the box' dataset to show water flow patterns (such as via SEPA,

Sub-category	Dataset	Proxy data	Comments
			Marine Scotland, UKCEH) – this would require hydrology specialist to model these patterns. River system/ watercourse/catchment data would assist in understanding this receptor because the WHS would be sensitive to change taking place in areas of catchment upstream of the blanket bog.
Catchment areas	SEPA main river catchments		As above.
Run-off areas	<u>James Hutton Institute soil runoff risk</u> – however only covers the cultivated land in Scotland (does not cover Flow Country)	Agricultural land classes: Arable land and market gardens Bare field from 'Landcover 2022 Scotland' (SpaceIntelligence/ NatureScot)	There does not seem to be a soil run-off risk map covering the study area – agricultural land could be used as a proxy.
Sources of nutrient pollution		Agricultural land classes: Arable land and market gardens Bare field Built-up Commercial forestry - Highly artificial coniferous plantations from 'Landcover 2022 Scotland' (SpaceIntelligence/ NatureScot)	Sources of nutrient pollution are not available as a dataset, instead use proxy to show where land use might be source of nutrient pollution.
Areas of natural nutrient filtration		Grasslands categories from from 'Landcover 2022 Scotland' (SpaceIntelligence/NatureScot)	Could map land use categories that can act as a natural nutrient filtration, such as grassland.
Drainage	<u>Peatland Action Peat condition</u> (NatureScot)		Consolidated datasets of peat depth measurement and condition collected during surveys (2013-2023). The condition information indicates if the peatland is drained; drained: artificial or drained: hagg/gully.

Table B.3: Functional setting receptor category: Ecosystem areas and species

Sub-category	Dataset	Proxy data	Comments
Distribution of key species, including core habitats within the peatland and supportive habitats in the surrounding landscape	Blanket bog categories of peatland mapping.	Designated sites with ecological values	Species distribution datasets are not easily accessible, alternative is to use peatland habitats and designated sites that have ecological values
Ecological connectivity and corridors			Relevant datasets not readily available for The Flow Country area. This would require specialist input (modelling).

Table B.4: Functional setting receptor category: Land use and land management practices

Sub-category	Dataset	Proxy data	Comments
Sustainable farming		<u>National scale land capability for agriculture</u>	Land capability for agriculture dataset to map land capable of uses sympathetic/ complementary to the blanket bog such as improved grassland / rough grazings.
Sustainable forestry	Scottish Forestry Open Data: ■ FGS SMF Species Conservation ■ FGS SMF Native Woodlands		The FGS SMF dataset identifies areas approved for species conservation and native woodlands under FGS.
Community-led conservation practices			Needs further research
Sporting estate management practices		Sporting estates locations/ extents	Needs further research to establish density/ distribution of different estate management practices relevant to the blanket bog.
Peatland restoration	<u>Peatland Action Completed restoration footprints (NatureScot)</u>		Completed restoration projects' footprints in PeatlandAction provides the geographic extent of peatland restoration projects that have been completed.

Appendix C

Relationship between functional and experiential setting

Relationship between functional and experiential setting

Functional setting is the primary consideration for change happening outside the boundaries of The Flow Country WHS because it is inscribed for natural criteria of OUV only. Experiential setting is an important, but secondary, consideration because it is only relevant in the specific instances when the ways in which people experience the WHS derive directly from its attributes of OUV and the proposed change can affect that experience.

Table C.1 illustrates the connections between the attributes of OUV and the functional and experiential setting receptors relevant to them.

Table C.1: Relationship of WHS criteria, attributes and receptors

Criterion	Attribute	Functional setting		Experiential setting		
		Category of receptor which carries that attribute	Designations/ datasets within that receptor category (refs. to Appendix B tables)	Quality derived from attribute	Category of land type which carries that attribute	Designations/ datasets within that category
ix: outstanding example representing significant on-going ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals	a) most extensive near continuous example of natural, actively accumulating, blanket bog ecosystem found globally	Local climate and environmental conditions	Table B.1	Scale and continuousness	Landscape character	National Scenic Area (Scottish Government) Special Landscape Areas (Highland Council) Wild Land Areas (Scottish Government) Landscape Character Type (NatureScot), specifically sub-types shared or intersecting with the WHS boundary, such as: — 134 Sweeping Moorland and Flows — 136 Rocky Hills and Moorland — 142 Strath – Caithness and Sutherland
		Water sources and hydrological units	Table B.2			
		Ecosystem areas and species	Table B.3			
		Land use and land management	Table B.4			

Criterion	Attribute	Functional setting		Experiential setting		
		Category of receptor which carries that attribute	Designations/ datasets within that receptor category (refs. to Appendix B tables)	Quality derived from attribute	Category of land type which carries that attribute	Designations/ datasets within that category
	b) climatic, topographic gradients and geological diversity: bog macroform diversity	Local climate and environmental conditions	Table B.1	Transient aspects Variety of landscape patterning	Land use/ land cover	Scottish Habitat and Land Cover Map (NatureScot/Space Intelligence), specifically sub-types shared or intersecting with the WHS boundary, such as: — D1 Raised and blanket bogs — D2 Valley mires, poor fens and transition mires — E3 Seasonally wet and wet grasslands — F4 Temperate shrub heathland
		Water sources and hydrological units	Table B.2			
		Ecosystem areas and species	Table B.3		Landscape character	National Scenic Area (Scottish Government) Special Landscape Areas (Highland Council) Wild Land Areas (Scottish Government) Landscape Character Type (NatureScot), specifically sub-types shared or intersecting with the WHS boundary, such as:

Criterion	Attribute	Functional setting		Experiential setting		
		Category of receptor which carries that attribute	Designations/ datasets within that receptor category (refs. to Appendix B tables)	Quality derived from attribute	Category of land type which carries that attribute	Designations/ datasets within that category
						– 134 Sweeping Moorland and Flows – 136 Rocky Hills and Moorland – 142 Strath – Caithness and Sutherland
	c) archive it stores (4 th dimension)	Local climate and environmental conditions	Table B.1	Time-depth, cultural and historical associations	Cultural heritage sites and landscapes with peatland connections	Historic Land Use Assessment (Historic Environment Scotland), specifically sub-types shared or intersecting with the WHS boundary, such as: – Crofting townships – Rough grazing – Plantation – Traditional peat cutting Historic Environment Record (Highland Council), specifically sub-types shared or intersecting with the WHS boundary, such as records of historical: – Transhumance (seasonal, nomadic pastoral activity)
		Water sources and hydrological units	Table B.2			
		Ecosystem areas and species	Table B.3			

Criterion	Attribute	Functional setting		Experiential setting		
		Category of receptor which carries that attribute	Designations/ datasets within that receptor category (refs. to Appendix B tables)	Quality derived from attribute	Category of land type which carries that attribute	Designations/ datasets within that category
						— Crofting landscapes — Abandonment/ clearance
	d) natural laboratory – ongoing scientific and educational use	Local climate and environmental conditions	Table B.1	Interaction with and appreciation of species Time-depth, cultural and historical associations	Land use/ land cover	Scottish Habitat and Land Cover Map (NatureScot/Space Intelligence), specifically sub-types shared or intersecting with the WHS boundary, such as: — D1 Raised and blanket bogs — D2 Valley mires, poor fens and transition mires — E3 Seasonally wet and wet grasslands — F4 Temperate shrub heathland
		Ecosystem areas and species	Table B.3		Landscape character	National Scenic Area (Scottish Government) Special Landscape Areas (Highland Council) Wild Land Areas (Scottish Government) Landscape Character Type (NatureScot), specifically

Criterion	Attribute	Functional setting		Experiential setting		
		Category of receptor which carries that attribute	Designations/ datasets within that receptor category (refs. to Appendix B tables)	Quality derived from attribute	Category of land type which carries that attribute	Designations/ datasets within that category
					Cultural heritage sites and landscapes with peatland connections	sub-types shared or intersecting with the WHS boundary, such as: 134 Sweeping Moorland and Flows 136 Rocky Hills and Moorland 142 Strath – Caithness and Sutherland Historic Land Use Assessment (Historic Environment Scotland), specifically sub-types shared or intersecting with the WHS boundary, such as: - Crofting townships - Rough grazing - Plantation - Traditional peat cutting Historic Environment Record (Highland Council), specifically sub-types shared or intersecting with

Criterion	Attribute	Functional setting		Experiential setting		
		Category of receptor which carries that attribute	Designations/ datasets within that receptor category (refs. to Appendix B tables)	Quality derived from attribute	Category of land type which carries that attribute	Designations/ datasets within that category
						the WHS boundary, such as records of historical: – Transhumance (seasonal, nomadic pastoral activity) – Crofting landscapes – Abandonment/ clearance
	e) carbon sequestration and storage	Local climate and environmental conditions	Table B.1	This Attribute is unlikely to be readily appreciated through experiential qualities – perceptible time-depth covered under Attribute (c)	-	-
		Land use and land management	Table B.4			
	f) water filtration and the impact on the water quality of associated riverine habitats	Local climate and environmental conditions	Table B.1	This Attribute is unlikely to be readily appreciated through experiential qualities – perceptible water flow and research roles covered under Attributes (b) and (d)	-	-
		Water sources and hydrological units	Table B.2			
		Ecosystem areas and species	Table B.3			
		Land use and land management	Table B.4			

