

EUROPE / NORTH AMERICA

THE FLOW COUNTRY

UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND



The Flow Country © IUCN / Tobias Salathé

WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

THE FLOW COUNTRY (UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND) – ID N° 1722

IUCN RECOMMENDATION TO WORLD HERITAGE COMMITTEE: To inscribe the nominated property under natural criterion (ix)

Key paragraphs of Operational Guidelines:

Paragraph 77: Nominated property meets World Heritage criterion (ix) but not (x).

Paragraph 78: Nominated property meets integrity requirements and protection and management requirements.

1. DOCUMENTATION

a) Date nomination received by IUCN: February 2023

b) Additional information officially requested from and provided by the States Parties: Following the session of the IUCN World Heritage Panel, a progress report was sent to the State Party on 14 December 2023. This letter advised on the status of the evaluation process and requested supplementary information, *inter alia*, on the legal protection of the entire nominated property; updated list of all species recorded within the nominated property; and map of areas where wind farms are existing, planned, proposed or not permitted. The supplementary information was provided by the State Party on 23 February 2024.

c) Additional literature consulted: IUCN's evaluation consulted a wide array of relevant reference material for the biology, ecology, protection and management as well as the comparative values of the nominated property. References included: Anderson, R. & Andrews, S. (2023). Criterion X (attribute a[iii] plants): A comparison of Sphagnum diversity in blanket bog landscapes found globally, 5p.; Chico, G. (2022). An update of The Flow Country comparative study. Nottingham: Highlands Council; Downie, I. S., Coulson, J. C., Foster, G. N., & Whitfield, D. P. (1998). Distribution of aquatic macroinvertebrates within peatland pool complexes in the Flow Country, Scotland. *Hydrobiologia*, 377, 95-105; Hanley, N., & Craig, S. (1991). Wilderness development decisions and the Krutilla-Fisher model: the case of Scotland's 'flow country'. *Ecological Economics*, 4(2), 145-164; Hambley, G., Andersen, R., Levy, P., Saunders, M., Cowie, N., Teh, Y. A., & Hill, T. (2019). Net ecosystem exchange from two formerly afforested peatlands undergoing restoration in the Flow Country of northern Scotland. *Mires and Peat*, 23, 1-14; Hughes, R. *et al.* (2023). Criterion X (attribute a[i] birds): The bird assemblage of the Flow Country (Caithness and Sutherland Peatlands), UK: a global comparison across comparable blanket bog landscapes, 3p.; Joosten, H., Szallies, I., & Tegetmeyer, C. (2016). The Flow Country (Scotland) as a blanket bog landscape – A global evaluation. International Mire Conservation Group, Greifswald Mire Centre, 25p.; Lindsay, R. A. *et al.* (1988). The Flow Country. The peatlands of Caithness and Sutherland. JNCC, Peterborough, 146p.; Muller, F. L., & Tankéré-Muller, S. P. (2012). Seasonal variations

in surface water chemistry at disturbed and pristine peatland sites in the Flow Country of northern Scotland. *Science of the total environment*, 435, 351-362; Sénéca, A. & Söderström, L. (2008). Species richness and distribution ranges of European Sphagnum. *Folia Cryptogamica Estonica*, 44, 125-130; Tanneberger, F., *et al.* (2021). Mires in Europe—Regional diversity, condition and protection. *Diversity*, 13(8), 381; Warren, C. (2000). Birds, bogs and forestry' revisited: The significance of the flow country controversy, *Scottish Geographical Journal*, 116(4), 315-337, DOI: 10.1080/00369220018737103; Whinam, J., *et al.*, (2003). Sphagnum in peatlands of Australasia: Their distribution, utilisation and management. *Wetlands Ecology and Management*, 11, 37-49; Wilson, J.D., *et al.* (2014). Modelling edge effects of mature forest plantations on peatland waders informs landscape-scale conservation. *Journal of Applied Ecology*, 51, 204-213.

d) Consultations: 12 desk reviews received. The mission was able to meet with representatives of key government agencies at the administrative levels of the United Kingdom of Great Britain and Northern Ireland, Scotland and the Highland Region, local communities, landowners and property managers, research institutions, associations of specific professions and interest groups, environmental NGOs, and individual residents.

e) Field Visit: Dr Radhika Murti and Dr Tobias Salathé, 28 August – 1 September 2023

f) Date of IUCN approval of this report: May 2024

2. SUMMARY OF NATURAL VALUES

The nominated property comprises seven component parts which span the counties of Caithness and Sutherland in the Highland Region of Scotland. These nominated component parts, totalling 187,026 hectares (ha), encapsulate attributes which have been identified as contributing to the proposed Outstanding Universal Value, including: extensive and diverse blanket bog; the archive of peatland development it stores and its utility in learning and research; carbon storage and sequestration; riverine habitats; and the species associations it holds, including the birds, plants and

genetic diversity it sustains. As of 2022, the nominated property is inhabited by 20 people.

	Nominated component part	Area (ha)	Buffer zone (ha)
1	A'Mhoine-Hope-Loyal	42,438	-
2	Fiag	8,450	-
3	West Halladale	41,735	-
4	Skinsdale	11,387	-
5	East Halladale	75,536	-
6	Mansary & Shielton	5,989	-
7	Oliclett	1,491	-
Total:		187,026	-

Table 1: Area of nominated property.

The Flow Country of northern Scotland is the name given, since the 1970s, to the most extensive and varied expanse of treeless blanket mire in the United Kingdom. A blanket bog, or blanket mire, is an area of peatland in which high rainfall and low evapotranspiration allow peat to develop over large expanses. It covers a 400,000 ha ice-scoured plain forming the northernmost part of the Scottish mainland. Much of the area is underlain by Old Red Sandstone and Moine schists with some felsic igneous intrusions, but the whole is overlain by glacial till which is generally highly leached and base-poor, though it becomes markedly calcareous in eastern Caithness where seabed material was deposited by the east-west movement of the last glaciation. The plain is gently inclined from northeast to southwest rising from sea level to 350 m and is interrupted in a few places by isolated higher hills, creating a dramatic landscape of bogs, rivers, lochs (lakes) and mountains.

The plain is almost entirely blanketed by a mantle of peat, which in places reaches depths of more than eight metres. It is traversed by seven main roads, mostly single-track with passing places. The range of climatic conditions and landforms found across the nominated property together give rise to distinctive forms of blanket mire habitat characterised by varied plant communities and surface patterns, including hundreds of intricate pool systems, or *dubh lochans* (small black lakes, in Scottish Gaelic). From the vast mires, water flows into lochs and rivers running east towards the North Sea or north into the Atlantic Ocean.

With respect to criterion (ix), The Flow Country is presented as the most extensive, near-continuous, high quality and near-natural blanket bog landscape found globally. The active processes of blanket bog formation have continued for 9,000 years, and the diversity of blanket bog features is not found anywhere else on Earth. The blanket bog also provides an important record of its formation, preserved as pollen and plant fossils, and telling a story of its past flora, fauna, palaeoecology and human influence.

Peatland stores more carbon per surface area than any other carbon sink on land. The ongoing processes of blanket bog formation in The Flow Country illustrate carbon sequestration on a large scale. The role of the nominated property as a nature-based solution is very important.

With respect to criterion (x), the nomination document highlights the biodiversity found in The Flow Country as exceptional within a blanket bog landscape. The biological associations would be unlike any other found globally, due to the geographical position of The Flow Country and its habitat diversity. According to the nomination file, the nominated property supports a distinctive assemblage of bird species, including important breeding populations. Many species breed in the blanket bog landscape, particularly ground nesting birds. For example, Eurasian Golden Plover (*Pluvialis apricaria*, LC), Common Greenshank (*Tringa nebularia*, LC), Red-throated Loon (*Gavia stellata*, LC), Common Scoter (*Melanitta nigra*, LC), Dunlin (*Calidris alpina*, LC), Wood Sandpiper (*Tringa glareola*, LC), and Eurasian Wigeon (*Mareca Penelope*, LC). Several breeding pairs of birds of prey nest in the rock crags, knolls and hills of the nominated property, including White-tailed Sea-eagle (*Haliaeetus albicilla*, LC), Golden Eagle (*Aquila chrysaetos*, LC), Common Kestrel (*Falco tinnunculus*, LC), Peregrine Falcon (*Falco peregrinus*, LC), and Osprey (*Pandion haliaetus*, LC), among others.

There are several mammal species present in the nominated property, including the Red Deer (*Cervus elaphus*, LC), European Roe Deer (*Capreolus capreolus*, LC), Eurasian Otter (*Lutra lutra*, NT), Eurasian Water Vole (*Arvicola amphibius*, LC), and Eurasian Pygmy Shrew (*Sorex minutus*, LC). Amphibian and reptile species present include European Common Frog (*Rana temporaria*, LC), Palmate Newt (*Lissotriton helveticus*, LC), Viviparous Lizard (*Zootoca vivipara*, LC), Adder (*Vipera berus*, LC), Slow Worm (*Anguis fragilis*, LC) and Common Toad (*Bufo bufo*, LC). Freshwater species present in the nominated property include small salmonid fish, such as Brown Trout (*Salmo trutta*, LC) and Arctic Char (*Salvelinus alpinus*, LC), in the lochs, and one of the few remaining strong British populations of the Freshwater Pearl Mussel (*Margaritifera margaritifera*; EN). The European Eel (*Anguilla Anguilla*, CR) and Atlantic Salmon (*Salmo salar*, NT) are two migratory fish species that are also found in the area.

3. COMPARISONS WITH OTHER AREAS

The global comparative analysis presented in the nomination compares, firstly, current World Heritage properties and Tentative List sites with the nominated property and, secondly, the extent and quality of blanket bogs globally, including total area, percentage of degradation, peat depth, pool systems and habitat continuity. This analysis is based on an independent desk study by the International Mire Conservation Group in 2016 and was updated by Nottingham Trent University in 2022. The update is an innovative desk study focusing on ex-situ analyses of satellite images, taking as a starting point the experts' views from the 2016 study concluding that "The Flow Country can (...) justly be called a 'primus inter pares' of the blanket bog landscapes worldwide." The assessment of potential and confirmed blanket bog landscapes found only five that were larger than Flow Country in terms of gross size. For two of these, blanket bog occurrence was not

confirmed; a further two were strongly degraded; and the fifth had a very different peat-forming flora. When only the area of non-degraded landscape was considered, only one confirmed blanket peat landscape (Peninsula Mitre) scored higher than Flow Country in terms of size. However, Peninsula Mitre also has a very different peat-forming flora. The two comparative analyses are complementary and summarize the currently available knowledge in a comprehensive, accurate and complete way. The global significance of the Flow Country blanket bog landscape is based on its large extent, its undisturbed nature in large parts, and its particular biodiversity assembly with specific communities composed of Atlantic, boreal and arctic taxa.

However, the comparative study and its summary focus on the values and attributes covered by criterion (ix). The listing of the attributes of the nominated property with respect to criterion (x) provides only a brief summary regarding birds, plants, including peat mosses, and genetic diversity as a consequence of the relative isolation of the Flow Country from the Western-Paleartic landmass.

IUCN, in collaboration with UN Environment WCMC, has also undertaken supplementary comparative analysis, focusing on criteria (ix) and (x), which confirms that the nominated property presents an extensive, actively accumulating landscape of blanket bog, considered significant at global level under criterion (ix). Furthermore, the nominated property overlaps with one biogeographical province, two terrestrial ecoregions and a biorealm not currently represented on the World Heritage List, as well as a freshwater ecoregion only represented by one property. Within the nominated property, the area is characterised by varied vegetation assemblages across a gradient from east to west. Distinctive forms of blanket bog have evolved, including elements of damaged bog, transitional bog, and fen communities.

Desk reviewers highlighted the significance of the nominated property's blanket bogs as very rare habitats globally, hardly found in any other World Heritage properties. Accordingly, the nomination dossier notes that there is only one property, which lists blanket bog as an element: Tasmanian Wilderness Area (Australia). There are only 31 properties within areas of potential blanket bog formation. Of the properties with peatlands in Europe (Colchic Rainforests and Wetlands, in Georgia, and Virgin Komi Forests, in Russian Federation), blanket bogs are reported to be isolated and rare.

Regarding criterion (x), WCMC noted that The Flow Country supports a specialist biodiversity of blanket bog ecosystems. However, the assemblage of species is typical of arctic and temperate climates. The nominated property seems to show relatively low levels of biodiversity regarding plant and bird diversity based on the information provided in the nomination file, compared to other World Heritage properties and Tentative List sites with peatlands found in the same Palearctic Temperate Broadleaf and Mixed Forests biorealm. Importantly, the nominated property holds

between 29 and 34 species of *Sphagnum* moss, which plays a critical role in the formation of peat, and provides refuge for many breeding bird species. Sphagnum mosses and the peat they form are themselves home to complex assemblages of unique microorganisms adapted to survive in the low oxygen, cold temperature, acidity, and oligotrophy conditions of bog systems, adding to the biodiversity value of peatland habitats. However, these ecological processes could in IUCN's view be sufficiently reflected under criterion (ix).

As no full comparative analysis of the values and attributes specifically linked to criterion (x) was originally provided, IUCN requested additional information from the State Party to supplement the comparative analysis under criterion (x). In the supplementary information, the State Party provided additional scientific analysis and comparisons for birds and plants, including detailed species lists, in support of criterion (x). Whilst the high-quality analysis is appreciated, the IUCN World Heritage Panel noted that species numbers are not exceptionally high and include only a few threatened species, among them the Endangered Freshwater Pearl Mussel (*Margaritifera margaritifera*), which has much larger populations in Scandinavia and Russia. Threatened bird species are mostly migratory species rarely using the nominated property whilst the threatened invertebrate species and threatened fish, such as the Critically Endangered European Eel (*Anguilla anguilla*), are very widespread. Whilst the Otter (*Lutra lutra*) is Near-Threatened, the only threatened mammal species present in the nominated property (European Rabbit, *Oryctolagus cuniculus*) is invasive in the United Kingdom. The eleven bird species triggering the IBA status of the site are all listed as Least Concern on the IUCN Red List and they only meet regional IBA criteria rather than global ones. Overall, the number of threatened species appears to be low compared to other boreal areas, such as the Varanger Peninsula, Dovrefjell-Sundalsfjella (Norway), Lemmenjoki-Hammastunturi-Pulju (Finland) or the basins of the Schuchya and Khadytayakha rivers (Russia). In addition, the Panel notes that The Flow Country's biodiversity is only compared with other blanket bog areas around the globe and not with wider boreal communities.

In conclusion, IUCN considers that the nominated property demonstrates global significance under criterion (ix). The nomination is exemplary in articulating attributes of OUV under this criterion. With respect to criterion (x), the nominated property does not appear to be globally significant, though the species assemblages contribute to integrity under criterion (ix).

4. INTEGRITY, PROTECTION AND MANAGEMENT

4.1. Protection

The legal protection of the nominated property is composed of protected area designations and through the Scottish planning system. Approximately 73 percent of the nominated property is afforded statutory protection through environmental designations, including Sites of Special Scientific Interest (36 sites);

Special Areas of Conservation (5); Special Protection Areas (1) and National Scenic Areas (1). The boundary includes a Ramsar site, overlapping with the SAC/SPA. Despite these designations, the nomination posits that protection of the entire nominated property is achieved through the Scottish planning system, which is also ensuring protection of the remaining 27 percent of the nominated property that is not covered by the protected area designations.

Foremost is National Planning Framework 4 (NPF4), which was adopted by Scottish Ministers in February 2023 and is legally binding. It states in Policy 7I): “Development proposals affecting a World Heritage Site or its setting will only be supported where their Outstanding Universal Value is protected and preserved”. This provision ensures an appropriate protection status for the nominated property, if inscribed, as it allows only for non-impactive development, but clearly recognises the Outstanding Universal Value (OUV) of the nominated property, including its authenticity and integrity. In addition, the attributes of the proposed OUV are clearly laid out in the nomination document, which would provide a strong basis for determining any negative impacts on OUV that would consequently be prevented through the legally binding planning policy.

According to supplementary information from the State Party, NPF4 protection applies to 100 percent of the nominated area. The existing designations on 73 percent of the nominated property also have relevant planning policy in NPF4, and will further bolster protection beyond designation. They sit under the wider Policy 4a) which states that “Development proposals which by virtue of type, location or scale will have an unacceptable impact on the natural environment, will not be supported.” Specifically, Policy 4b) states that “Development proposals that are likely to have a significant effect on an existing or proposed European site (Special Area of Conservation or Special Protection Areas) and are not directly connected with or necessary to their conservation management are required to be subject to an “appropriate assessment” of the implications for the conservation objectives.”

In conclusion, IUCN considers that the proposed OUV of the nominated property would be legally protected across the entire nominated area.

IUCN considers that the protection status of the nominated property meets the requirements of the Operational Guidelines.

4.2 Boundaries

The nominated property is composed of seven separate but proximal component parts, rather than spanning over a single unit area (see Map 1). Many of the nominated component parts contain enclaves and are characterized by stepped boundaries. This is the result of a comprehensive consultation process involving the relevant stakeholder groups (landowners, small scale farmers [crofters], energy and timber producers, water managers, public authorities, tourist businesses,

residents). The consultation process led to the conclusion to exclude those areas not contributing to OUV and most vulnerable to future development pressures. Such areas are marginal and degraded blanket bog areas, land earmarked for transformative developments (wind farms, tourist and transport infrastructure, timber plantations and re-forestation), as well as drained lands with long-established agricultural uses in the valley bottoms (intensive grazing, haymaking, cultures).

The nominated property does include a few small areas that are currently degraded blanket bog areas with plans or existing results of restoration activities (blocking of drainage ditches, removal of forest plantations, reducing of grazing pressure by domestic sheep and wild herbivores) and expressed willingness to undertake further projects. These currently degraded areas are expected to be fully rehabilitated in the near future, and thus again becoming a functional part of the blanket bog ecosystem. These areas provide an important local buffer zone between remaining core blanket bog areas and more heavily modified parts of the landscape outside of the nominated boundaries.

Thus, the proposed boundaries contain those parts of The Flow Country blanket bog landscape still in the most natural condition and including areas adjacent to the blanket bog ecosystem that are functionally important as hydrological units and provide protection to the nominated property’s values, plus areas that are under restoration, or with an agreed potential to be restored towards the reinstatement of functional blanket bog ecosystems.

The nomination does not include a buffer zone. The position of the Scottish Government is that a World Heritage natural site buffer zone is not a statutory designation and would not provide any specific legal protection. The use of an additional layer of environmental designation unfamiliar to the public (buffer zone) is considered adding a level of confusion to the local population in respect of their interaction with the nominated property. Therefore, the Scottish Government discourages the use of buffer zones around natural World Heritage properties. Instead, existing European legal designations and national and local planning policies provide protection for areas outside their boundaries where any action might impact upon the designated features within the boundary (European designations were made whilst the State Party was part of the European Union and the level of protection has been retained.). Additional, non-statutory designations overlap or are adjacent to the proposed boundaries, including Wild Land Areas, Local Landscape Areas, and an Important Plant Area. The buffer function is therefore provided within legal and planning frameworks without delimiting a World Heritage buffer area.

IUCN considers that the boundaries of the nominated property and buffer zones meet the requirements of the Operational Guidelines.

4.3 Management

The proposed World Heritage property has many different landowners using it mostly in traditional ways. The main categories include owner-managed large private estates for agriculture, outdoor activities (hunting, angling, hiking) and conservation (65% of the surface), owner occupied or tenanted small scale agriculture with some grazing on common lands (19%), NGO owner-managed for conservation (12%), and state and private commercial forestry land (4%). Landowners have different priorities and objectives. However, existing protected area designations, regional planning strategies and national policy, alongside traditional land management practices, have resulted in an ongoing cooperation and dialogue between land managers, local authorities, and government agencies, supported by the recent World Heritage consultation process.

A management plan has been prepared, which outlines the approach to be taken to organise the management of the nominated property. If inscribed, a Flow Country Partnership will comprise of the state and private organizations, continuing the collaboration that has already been established through the process of preparing the present nomination. The Partnership is to be coordinated by a World Heritage Site Management Team of experts established to work with stakeholders facilitating and coordinating the work on the nominated property that is compatible with and can enhance its OUV. The Flow Country has a comprehensive system of monitoring in place, carried out since the 1970s in the area protected as 'Caithness and Sutherland Peatlands' under European Union Directives. This monitoring scheme can be extended to cover the entire area of the nominated property.

Therefore, IUCN considers that there is a management system in place that is tested and functioning.

IUCN considers the management of the nominated property meets the requirements of the *Operational Guidelines*.

4.4 Community

The population density in the wider area of the nominated property is very low and concentrated along the coastal areas. This is partly due to the distribution of cultivatable land and partly the result of historical reasons, including evictions in the 18th and 19th century (the so-called "Highland Clearances").

The consultation process and preparation period for the nomination comprised a full-time project coordinator of the Highland Council, who is supported by staff from other agencies and consultancies. If inscribed, the stated intention is to consolidate the role of coordinator and the resources available for the Flow Country Team. Based on the information received and specialist review on participatory processes, IUCN notes that the consultation process in and around the nominated property appears to have been inclusive with a high level of stakeholder engagement. The stakeholders consulted included local communities and authorities,

civil society organizations, government departments and agencies, landowners, farmers and crofters, forestry industry and scientific experts.

The nomination dossier states that the culture of the region has developed with an intimate relationship to the blanket bogs and is implicitly regarded as an important part of the nominated property and its wider setting. It refers to Scotland's Culture Strategy adopted by Parliament in 2020 and the Scotland Outlook 2030 adopted by the Scottish Tourism Alliance. One major theme of the management plan addresses peatlands as a living landscape, according to Articles 4 and 5 of the World Heritage Convention.

4.5 Threats

Current threats include global climate change that will drive the essential climate for blanket bog development from one of cool summers and mild winters with rainfall throughout the year to one with hotter drier summers and warmer wetter winters, with more extreme weather events. The most likely problematic impact of this change is the drying out of the bogs through drier periods and the commensurate reduction in bog growth which will in turn increase carbon emissions, increase the risk of wildfires, and reduce the abundance of typical bog species, notably breeding migratory birds reaching their southernmost distribution limit in the Flow Country and could move further north. The strong management of the potential World Heritage property may mitigate such effects to some extent and provides above all a powerful tool in promoting best practice in peatland management globally.

The management plan lists seven potentially significant local threats, including plantation of woodlands, livestock and game management, wildfires and burning for land-management, drainage, and windfarms as well as major developments (potential hydroelectric schemes and satellite launch station). In the landscape surrounding the nominated property, agricultural and tourist land-uses are more intensive than within the boundaries. However, these land-uses are limited because of the low density of the resident population, the remoteness of the Flow Country at the far northern end of Scotland's mainland, and the limited number and size of access roads to the blanket bog landscape. Local residents live mainly in the surroundings of the blanket bog landscape and use land inside the nominated property only for sheep grazing on communal slopes, for deer stalking and for some hiking. The latter is limited due to the small number of existing paths and tracks, and the high soil water level in the blanket bog ecosystem requiring special equipment to penetrate bog areas.

Parts of the nominated property still suffer negative effects from past land-management decisions. However, discussions and meetings with stakeholders during the IUCN field evaluation mission have shown that national and local policies and people's understanding of the importance of the blanket bog ecosystem and its biodiversity are evolving in the direction of a healthier and sustainable Flow Country

landscape. The planned governance for the nominated property considers that collaboration between the private and public sectors and the population is crucial to reduce current threats and mitigate negative effects.

Some stakeholders hope that a World Heritage property would bring more visitors and tourist revenues to the area and the local economies. Facilities such as tourist accommodation and essential services are mostly situated in the area surrounding the nominated property. A recent “NC 500” marketing campaign for a motor touring route around the north coast of Scotland has increased the number of visitors. Should visitation increase, existing tourist facilities will need to be upgraded and possibly expanded.

A single-track railway line and single-track roads cross the blanket bog landscape. Adding modest additional infrastructure (parking spaces, toilets, discovery trails) along these routes might not harm the blanket bog ecosystem if carefully planned. With increased visitor numbers, additional waste collections and access ranger patrols may become necessary. However, visitor numbers inside the blanket bogs are unlikely to increase exponentially, given the difficulty of access to the waterlogged land beyond existing hiking trails.

In the vicinity of the nominated property, a large number of wind turbines have been constructed, approved or are under construction. More wind turbines have been proposed, including some within the boundaries of the nominated property. Wind farm construction threatens the attributes of OUV under criterion (ix) as peatlands can be degraded by supporting infrastructure and vehicular traffic in construction, maintenance, and decommissioning. Furthermore, wind turbines may pose a threat to avian species, which are an integral component of the ecosystem. In the context of the current policy to develop a carbon neutral economy, further development plans for wind farms may prove a particular challenge.

According to supplementary information provided, the two proposed developments within the proposed boundary have been objected to by the Highland Council, the regional planning authority. The Scottish Planning Policy states that World Heritage properties and other protected areas should have significant protection from harming developments. IUCN considers that any approval of wind turbines within the boundaries of the nominated property would constitute a clear threat to the OUV. Wind turbines outside the nominated property, but within its vicinity, need to be carefully evaluated in terms of their potential effects on migrating, wintering, and breeding birds, and more broadly on the attributes of the proposed OUV under criterion (ix). Any proposed developments that may impact on the potential OUV of the nominated property are assessed for their potential impacts, in line with the *Guidance and Toolkit for Impact Assessments in a World Heritage Context*, prior to making any decision that would be difficult to reverse.

Overall, IUCN considers that the current threat level is low, whilst careful attention needs to be drawn to any further development of wind farms. However, the

nominated property is subject to a robust protection and management regime, which responds to the proposed OUV.

In summary, IUCN considers that the integrity requirements and protection and management requirements of the *Operational Guidelines* are met.

5. ADDITIONAL COMMENTS

5.1 Consideration in relation to serial properties

a) What is the justification for the serial approach?

The seven nominated component parts are located in close proximity to each other. The serial approach is the result of a comprehensive consultation process with relevant stakeholders (see section 4.4). Whilst the overall integrity of the blanket bogs is remarkable, there are several areas that have been subject to land conversion incising the bogs. The converted areas are used for agriculture, wind farms, or plantation forestry. Degraded peat in the excluded area has no clear pathway to restoration.

b) Are the separate component parts of the nominated property functionally linked in relation to the requirements of the *Operational Guidelines*?

Although it is technically a serial nominated property, the macro-scale differences between the seven nominated component parts are subtle over East-West and North-South gradients. When developing the boundaries, the entire c.400,000 ha of the wider Flow Country was initially considered. The nominated component parts were selected on the basis that they were in a condition that would meet integrity requirements and sustain OUV. Overall, the seven nominated component parts provide a full representation of the bog ecosystem.

c) Is there an effective overall management framework for all the component parts of the nominated property?

All nominated component parts are subject to the same regulatory, planning and management framework. The management plan and the management body cover all nominated component parts and ensure overall coordination and management.

6. APPLICATION OF CRITERIA

The Flow Country (United Kingdom of Great Britain and Northern Ireland) has been nominated under natural criteria (ix) and (x).

Criterion (ix): Ecosystems/communities and ecological/biological processes

The Flow Country is considered the most extensive and diverse example of an actively accumulating blanket bog landscape found globally. Distinctive forms of blanket bog have evolved, exhibiting a diverse mosaic

of mire and vegetation types with their associated species assemblages, including the full range of habitats from pools to drier hummock microsites including elements of damaged bog, transitional bog, and fen communities. In large parts undisturbed, specific communities composed of Atlantic, boreal and arctic taxa depend on the integrity of the bog ecosystem.

The Flow Country is a type reference for a rare and threatened ecosystem not yet appropriately represented on the World Heritage List. The nominated property overlaps with one biogeographical province, two terrestrial ecoregions and one biorealm not currently represented on the World Heritage List and would thus also fill a gap on the List in this regards. In addition, the nominated property's ongoing ecological processes gain even greater significance today for their role in sequestering carbon.

IUCN considers that the nominated property meets this criterion.

Criterion (x): Biodiversity and threatened species

The nomination highlights the distinct bird community, bryophyte assemblage, and ecological integrity under criterion (x). Comparisons in the nomination were limited to other blanket bogs and not to wider boreal communities. Species numbers do not appear to be exceptionally high. There are only a few globally threatened species and the threatened bird species are rarely migrating through the nominated property, the threatened mammal is invasive to the United Kingdom, and threatened fish and invertebrate species have wide ranges. *Sphagnum* species numbers are not exceptionally high compared to other areas in Scandinavia. However, the species assemblages cited frequently in the documentation, particularly the blanket bog vegetation and bird assemblages from an integral part of the ecosystem and ecological processes under criterion (ix).

IUCN considers that the nominated property does not meet this criterion.

7. RECOMMENDATIONS

IUCN recommends that the World Heritage Committee adopts the following draft decision:

The World Heritage Committee,

1. Having examined Documents WHC/24/46.COM/8B and WHC/24/46.COM/INF.8B2,
2. Inscribes **The Flow Country, United Kingdom of Great Britain and Northern Ireland**, on the World Heritage List under criterion (ix);
3. Adopts the following Statement of Outstanding Universal Value:

Brief synthesis

The Flow Country is considered the most outstanding example of a blanket bog ecosystem in the world. This blanket peat and its intricate network of pools, hummocks and ridges stretches across nearly 190,000 ha of the northern mainland Scotland, with the boundary comprising seven separate but proximal areas. The peat has been accumulating for the past 9,000 years and displays a remarkable range of features resulting from the climatic, altitudinal, geological and geomorphological gradients found across the region. Peatlands play an important role in storing carbon, and The Flow Country has an extensive record of peatland accumulation, with peat thicknesses which reach over eight metres. Ongoing peat-forming ecological processes continue to sequester carbon on a very large scale.

The Flow Country blanket bog also provides a diversity of habitats, combined with the patchwork of connected farming and coastal landscape elements within the wider setting. The area supports a distinctive assemblage of birds, with a combination of arctic-alpine and temperate and continental species.

Protection for The Flow Country is provided through international and national designations, and national, and local planning law and policy, and there is scope for future expansion of the property through restoration of adjacent degraded blanket bog. The area is also considered to be the type-locality for description of blanket bog and so represents a significant research and educational resource.

Criterion (ix)

Since the glaciers receded from Scotland, climatic conditions in combination with the underlying geology, the resultant topography, and the biogeography have led to the formation of a vast and diverse blanket bog landscape that stretches across the north of Scotland. The persistent precipitation-fed waterlogging of the soil has led to an expanse of peat bog that blankets the landscape, including hills, slopes and hollows, and forming a globally rare and significant peatland ecosystem and associated species assemblage. The property represents the most extensive, near-continuous, high quality and near-natural blanket bog landscape found globally. The active processes of blanket bog formation have continued for 9,000 years, and the diversity of blanket bog features is not found anywhere else on Earth.

The blanket bog also provides a highly significant record of its formation, preserved as pollen and plant fossils, and telling a story of its past flora, fauna, palaeoecology and human influence. This is important for the understanding of the future evolution of this and other blanket bogs globally. Moreover, the processes of blanket bog formation provide a significant example of carbon sequestration on a large scale.

*The property holds between 29 and 34 peat forming species of *Sphagnum* moss, which are themselves home to complex assemblages of unique microorganisms adapted to survive in the low oxygen, cold temperature, acidity, and oligotrophy conditions of*

bog systems, adding to the biodiversity value of peatland habitats, and which also provide refuge for many breeding bird species. The property hosts a particular biodiversity assembly with specific communities composed of Atlantic, boreal and arctic taxa.

Integrity

The Flow Country property comprises seven discrete but adjacent areas totalling nearly 190,000 hectares, which encompasses a large expanse of actively accumulating blanket bog ecosystem. The overwhelming majority of the blanket bog within the property boundary is in near-natural condition. The remainder includes areas of blanket bog that are undergoing restoration, and areas that are expected to be restored in the near future.

The nominated property is of sufficient size to contain all of the elements of Outstanding Universal Value needed to demonstrate the ecological and biological processes, and the biodiversity that comprises this globally significant ecosystem. These include the blanket bog itself, the wider peatland landscape complex in which it lies and the finer elements, including pool systems, diverse surface patterning, fens, and the range of flora and fauna that all of these systems support. The climatic, altitudinal, geological and geomorphological gradients that occur across the Flow Country all contribute to ensuring that the variety of features that make up blanket bogs are represented. Furthermore, the boundaries of the nominated property are largely defined on the basis of the hydrological elements that comprise the blanket bog, and therefore ensure ecosystem integrity and coherence.

Areas of the property have suffered from poor historical management decisions such as drainage and woodland creation, but the boundary has been chosen to include only those areas of deep peat which are in good condition or have the ability to return to a near-natural state within the next 10-25 years. It is expected that in time, it will be possible to integrate some of the bog in the wider Flow Country into the property. The construction of wind turbines represents a more recent threat to the property through supporting infrastructure and through negative impacts on the avian fauna, which constitutes an integral part of the blanket bog ecosystem.

Protection and management requirements

The property is legally protected in its entirety based on its OUV. Around 73 percent of the area within the proposed property boundary has the highest level of statutory protection that domestic law can provide: SSSIs, SACs (for habitats), SPAs (for birds) and a Ramsar Site (for wetlands). These laws provide specific protection for the elements of OUV as set out in the property's attributes, notably including the processes for the maintenance and formation of blanket bog, and the associated flora and fauna.

Further to statutory environmental protection, peatlands, particularly those containing deep peat greater than 50 centimetres, are protected through the

planning system for Scotland, both at national and local level. There are specific planning policies at national level in relation to both World Heritage properties and areas of peatland that afford effective protection from development proposals that might impact upon OUV. Moreover, where the boundary is not coincident with existing environmental designations, protection will be ensured by national and local planning policy.

The property has no buffer zone. However, areas important for the protection of OUV outside of the boundary are protected through a combination of national and local planning policy, and the wider protection of features afforded by the existing European-level environmental designations. In addition, the integrity of the property is ensured thanks to its large size and the inclusion of areas that provide a buffering function within the property boundaries.

Management of the nominated property's OUV is guided by a single clear Management Plan, developed by the Flow Country Partnership in collaboration with key stakeholders such as landowners and managers, government agencies, local communities and scientific experts. Management requirements include bog restoration, monitoring of and responding to any potential developments in the vicinity of the property, including the construction of wind turbines. Potential threats include woodland restocking and natural regeneration, water management and drainage, intensive agriculture, wind farms, inappropriate deer management, burning and climate change. A key requirement for the management of this property lies in continued strong and adequately resourced coordination and partnership arrangements focused on the World Heritage property and its OUV;

4. Strongly encourages the State Party to further strengthen the protection of the nominated property and its wider setting through the expansion of or through additional statutory protection designations;

5. Requests the State Party not to approve any wind turbines that are proposed to be constructed within the property and to ensure that any proposed developments in proximity of the nominated property that may impact on its Outstanding Universal Value (OUV) are assessed for their potential impacts, in line with the *Guidance and Toolkit for Impact Assessments in a World Heritage Context*, prior to making any decision that would be difficult to reverse;

6. Also requests that the State Party submit to the World Heritage Centre a report providing an update on the status of proposed wind farms within the boundaries and in the vicinity of the property, and further describing how the property will be protected from future energy development proposals that could pose a serious threat to the Outstanding Universal Value, by 1 December 2025;

7. Commends the State Party for the high-quality nomination dossier and supporting documentation, including the detailed articulation of attributes of the Outstanding Universal Value under criterion (ix).

Map 1: Location of the nominated property

