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IUCN World Heritage Evaluations 2024

IUCN Evaluations of nominations of natural and mixed
properties to the World Heritage List



IUCN REPORT FOR THE WORLD HERITAGE COMMITTEE, 46TH SESSION, NEW DELHI, INDIA, 21-31 JULY 2024

Cover photo: Lençóis Maranhenses National Park, Brazil
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IUCN Evaluations of Nominations of Natural and Mixed Properties to the World Heritage List

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DISCLAIMER

The designation of geographical entities in this book, and the presentation of the material, do not imply the expression of any opinion whatsoever on the part of IUCN concerning the legal status of any country, territory, or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries.

EXECUTIVE SUMMARY TABLE OF IUCN EVALUATIONS TO THE WORLD HERITAGE COMMITTEE

				OUTSTANDING UNIVERSAL VALUE															
State Party	Name of the property (ID number)	Note		Meets one or more natural criteria					Meets conditions of integrity					Meets protection and management requirements				Further mission required	IUCN Recommendation
				Criterion (vii)	Criterion (viii)	Criterion (ix)	Criterion (x)		Integrity	Boundaries	Threats addressed	Justification of serial approach		Protection status	Management	Bufferzone/ Protection in surrounding area			
				77	77	77	77		78, 87-95	99-102	78, 98	137		78, 1324	78, 108-118, 1324, 135	103-107			
China	Badain Jaran Desert – Towers of Sand and Lakes			yes	yes	-	-		yes	yes	yes	-		yes	yes	yes		no	I
China	Migratory Bird Sanctuaries along the Coast of Yellow Sea-Bohai Gulf of China (Phase II)	extension		-	-	-	part		part	part	part	yes		part	part	part		no	I (for 10 opts.)
Bosnia and Herzegovina	Vjetrenica Cave, Ravno			no	-	-	part		yes	yes	yes	-		part	part	yes		no	R
United Kingdom of Great Britain and Northern Ireland	The Flow Country			-	-	yes	no		yes	yes	yes	yes		yes	yes	yes		no	I
Brazil	Lençóis Maranhenses National Park			yes	yes	-	-		yes	yes	yes	-		yes	yes	yes		no	I
Ethiopia	Melka Kunture and Balchit Archeological and Paleontological Site	Mixed site		-	no	-	-		no	no	yes	yes		part	part	no		no	N
France	Te Henua Enata - The Marquesas Islands	Mixed site		yes	-	yes	yes		yes	yes	yes	yes		yes	yes	yes		no	I

KEYS

yes	met
part	partially met
no	not met
—	not applicable
I	inscribe / approve
N	non inscribe / approve
R	refer
D	defer
cpts.	nominated component parts

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IUCN FIELD EVALUATORS

Site	Name
Vjetrenica Cave, Ravno	Zsuzsa Tolnay
Lençóis Maranhenses National Park	Paula Bueno, Raphael Glemet
Badain Jaran Desert – Towers of Sand and Lakes	Kyung-Sik Woo
Migratory Bird Sanctuaries along the Coast of Yellow Sea-Bohai Gulf of China (Phase II)	Amran Hamzah, Tilman Jaeger
Melka Kunture and Balchit Archeological and Paleontological Site	Daniel Tormey
Te Henua Enata - The Marquesas Islands	Elena Osipova
The Flow Country	Tobias Salathé, Radhika Murti

It should be noted that the IUCN field evaluators are part of a broader evaluation approach detailed in the introduction of this report.

THE IUCN RED LIST OF THREATENED SPECIES

Throughout the report we have indicated the conservation status of each species as recorded in the *IUCN Red List of Threatened Species* at the time of the evaluation, where available; for more information please visit <http://www.iucnredlist.org>.

Keys to abbreviations:

CR: Critically Endangered

EN: Endangered

VU: Vulnerable

NT: Near threatened

LC: Least Concern

NE: Not Evaluated

THE WORLD HERITAGE CONVENTION

IUCN TECHNICAL EVALUATION REPORT OF WORLD HERITAGE NOMINATIONS

MAY 2024

1. INTRODUCTION

This technical evaluation report of natural and mixed properties nominated for inclusion on the World Heritage List has been conducted by IUCN (International Union for Conservation of Nature) through its World Heritage specialists within the World Heritage Team in IUCN's Centre for Conservation Action. The staff members of this Team coordinate IUCN's input to the World Heritage Convention in close cooperation with the IUCN Protected and Conserved Areas Team and other teams of IUCN both at headquarters and in the regions. The work is undertaken in close cooperation with IUCN's World Commission on Protected Areas (WCPA), the world's leading expert network of protected area managers and specialists, with the IUCN Species Survival Commission (SSC) and other IUCN Commissions, as well as the many members and partners of IUCN.

IUCN's evaluations are conducted according to the *Operational Guidelines for the Implementation of the World Heritage Convention* that the World Heritage Committee has agreed, and which are the essential framework for the application of the evaluation process. This framework was updated and revised in 2015, and a revised process documented in Annex 6 of the *Operational Guidelines*, following discussion by the World Heritage Committee. In carrying out its function under the World Heritage Convention, IUCN has been guided by four principles:

- (i) ensuring the highest standards of quality control, institutional memory and consistency in relation to technical evaluation, monitoring and other associated activities;
- (ii) increasing the diversity of specialist networks of IUCN, especially WCPA, but also other relevant IUCN Commissions and specialist partner networks;
- (iii) working in support of the UNESCO World Heritage Centre and States Parties to examine how IUCN can creatively and effectively support the World Heritage Convention and individual properties as "flagships" for conservation; and
- (iv) increasing the level of effective partnership between IUCN and the World Heritage Centre, ICOMOS and ICCROM.

Members of the expert network of WCPA carry out the majority of technical evaluation missions, supported by other specialists where appropriate. The WCPA is a network of over 2,500 protected area managers and specialists from 140 countries. In addition, the World Heritage Team calls on relevant experts from IUCN's

other six Commissions (Species Survival, Environmental Law, Education and Communication, Ecosystem Management, and Environmental, Economic and Social Policy, Climate Crisis); from international earth science unions, non-governmental organizations and scientific contacts in universities and other international agencies. This highlights the considerable "added value" from investing in the use of the extensive networks of IUCN and partner institutions.

The networks involved in the IUCN evaluation process allow for the increasing involvement of regional natural heritage experts and broaden the capacity of IUCN with regard to its work under the World Heritage Convention. Reports from field missions and comments from a large number of external reviewers are comprehensively examined by the IUCN World Heritage Panel, as key inputs to each evaluation. The final technical evaluation reports, which are presented in this document, represent the corporate position of IUCN on World Heritage evaluations. IUCN has also placed emphasis on providing input and support to ICOMOS in relation to those cultural landscapes which have important natural values.

IUCN has continued to extend its cooperation with ICOMOS, including coordination in relation to the evaluation of mixed sites and cultural landscapes. IUCN and ICOMOS have also enhanced the coordination of their panel processes as requested by the World Heritage Committee.

IUCN has endeavoured wherever possible to work in the spirit of the Upstream Process to optimize dialogue opportunities with nominating States Parties.

2. EVALUATION PROCESS

In carrying out the technical evaluation of nominations, IUCN is guided by the *Operational Guidelines*, specifically Annex 6, which spells out the evaluation process. The evaluation process is carried out over the period of one year, from the receipt of nominations at IUCN in March and the submission of the IUCN evaluation report to the World Heritage Centre in April / May of the following year. The process involves the following steps:

1. **External Review.** The nomination is sent to independent experts knowledgeable about the nominated property or its natural values, including members of WCPA, other IUCN specialist Commissions and scientific networks or NGOs working in the region. IUCN received almost 100 external reviews in relation to the properties examined in 2023 / 2024.
 2. **Field Mission.** Missions involving one, or wherever possible two IUCN experts, evaluate the nominated property on the ground and discuss the nomination with the relevant national and local authorities, local communities, NGOs and other stakeholders. IUCN endeavours, where possible, to ensure mission experts have knowledge and experience in the relevant region. Missions usually take place between July and October. In the case of mixed properties and certain cultural landscapes, missions are jointly implemented with ICOMOS.
 3. **IUCN World Heritage Panel Review.** The Panel intensively reviews the nomination dossiers, field mission reports, comments from external reviewers and other relevant reference material, and provides its technical advice to IUCN on recommendations for each nomination. A final report is prepared and forwarded to the World Heritage Centre in May for distribution to the members of the World Heritage Committee.
 4. **Comparative Analysis.** IUCN commissions UN Environment World Conservation Monitoring Centre (UNEP-WCMC) to carry out a global comparative analysis for all properties nominated under the biodiversity criteria (ix) and (x) to a standard and publicly available IUCN / UNEP-WCMC methodology. Following inscription, datasheets are compiled with UNEP-WCMC.
 5. **Communities.** IUCN has enhanced its evaluation processes through the implementation of a series of measures to evaluate stakeholder and rights-holder engagement during the nomination process (see below for further details).
 6. **Final Recommendations.** IUCN presents, with the support of images and maps, the results and recommendations of its evaluation process to the World Heritage Committee at its annual session, and responds to any questions. The World Heritage Committee makes the final decision on whether to inscribe, refer, defer or not to inscribe the nominated property on the World Heritage List.
- **Before the field mission.** IUCN sends the State Party, usually directly to the person organizing the mission in the host country, a briefing on the mission, in many cases raising specific questions and issues that should be discussed during the mission. This allows the State Party to prepare properly in advance;
 - **Directly after the field mission.** Based on discussions during the field mission, IUCN may send an official letter requesting supplementary information before the IUCN World Heritage Panel meets, to ensure that the Panel has all the information necessary to make a recommendation on the nomination; and
 - **After the first meeting of the IUCN World Heritage Panel (November/December).** IUCN continues its practice of ongoing communication with the nominating State/s Party/ies following its Panel meeting. In line with Annex 6 of the *Operational Guidelines*, this communication comprises an interim report to the States Parties on the status of the evaluation, sent by the end of January. If the Panel finds that some questions are still unanswered, or further issues need to be clarified, this letter may request supplementary information by a specific deadline. That deadline must be adhered to strictly in order to allow IUCN to complete its evaluation. In view of the importance of the requests for supplementary information, IUCN seeks to complete these letters well before the requested deadline of 31st January. In the present cycle, all letters were sent between 14 and 21 December 2023. It should be noted that in a number of cases, the Panel may not have additional questions, but nevertheless dialogue is invited in all cases.

It is expected that supplementary information will be in response to specific questions or issues and should not include completely revised nominations or substantial amounts of new information. It should be emphasized that whilst exchanges between field evaluators and the States Parties during the mission may provide valuable feedback, they do not substitute the formal requests for supplementary information outlined above. IUCN has continued to promote additional dialogue with States Parties on the conclusion of its panel process, to allow for discussion of issues that have been identified and to allow more time to prepare discussions at the World Heritage Committee. This has involved face to face meetings in Paris, and in IUCN Headquarter in Switzerland, and conference calls.

It should be noted that IUCN has increasingly sought, over many years, to develop and maintain a dialogue with the State Party throughout the evaluation process to allow the State Party every opportunity to supply all the necessary information and to clarify any questions or issues that may arise. IUCN is available to respond to questions at any time, however, there are three occasions on which IUCN may formally request further information from the State Party. These are:

In the technical evaluation of nominated properties, global biogeographic classification systems, such as Udvardy's biogeographic provinces, and the Terrestrial Ecoregion of the World (similarly, freshwater and marine ecoregions of the world in respective environments), are used to identify and assess comparable properties at the global level. These methods make comparisons of natural properties more objective and provide a practical means of assessing

similarity and contrasts at the global level. At the same time, World Heritage properties are expected to contain special features, habitats and faunistic or floristic peculiarities that can also be compared on a broader biome basis. It is stressed that these systems are used as a basis for comparison only and do not imply that World Heritage properties are to be selected based on these systems alone. In addition, global conservation priority-setting schemes such as Key Biodiversity Areas (KBAs) (www.keybiodiversityareas.org), including Important Bird Areas, Alliance for Zero Extinction sites, and systems such as WWF's Global 200 Priority Ecoregions, Conservation International's Biodiversity Hotspots and High Biodiversity Wilderness Areas, Birdlife International's Endemic Bird Areas, and IUCN/WWF Centres of Plant Diversity, provide useful guidance. IUCN in partnership with UN Environment WCMC continues to explore the use of new comparative analyses. The decisive principle is that World Heritage properties are only exceptional areas of Outstanding Universal Value.

The evaluation process is also aided by the publication of a series of reference volumes and thematic studies. In early 2012, a resource manual on the preparation of World Heritage nominations was published under joint lead authorship of IUCN and ICOMOS, and has provided further details on best practices, including the key resources that are available to support nominations. IUCN's range of thematic studies and key references that advise priorities on the World Heritage List are available at the following web address: <https://www.iucn.org/theme/world-heritage/resources>.

In regard to communities, IUCN members adopted a specific resolution on these matters at the IUCN World Conservation Congress in 2012, which remains current, and this resolution (*WCC-2012-Res-047-EN Implementation of the United Nations Declaration on the Rights of Indigenous Peoples in the context of the UNESCO World Heritage Convention*) is available at the following address: <https://portals.iucn.org/library/resrec/search>. IUCN has continued to implement a range of improved practices within its evaluation process in response to these reviews and reflections, which are focused on the inclusion of a specific section headed "Communities" within each evaluation report, to ensure transparency and consistency of IUCN's advice to the World Heritage Committee on this important issue. These measures include a standard screening form for all evaluation missions, additional consultation with networks specialised in this field, and an expert advisor supporting the IUCN World Heritage Panel.

In 2013, IUCN updated its format for field evaluation reports to include specific questions on communities and to clarify a range of questions and expectations on feedback from evaluators to ensure consistency of reports from field missions. This material is all publicly available at the following web address: <https://www.iucn.org/theme/world-heritage/our-work/advisor-world-heritage/nominations>.

IUCN has also been actively supporting processes under the mandate of the Open-ended Working Group

(Decision 45 COM 11). IUCN welcomes this constructive dialogue to evolve the Convention and considers the work of the Open-ended Working Group provides a good model for possible continued dialogue towards effective new procedures for the evaluation process. IUCN has also actively contributed to the nomination reform process and the introduction of Preliminary Assessments, with the first cycle being underway.

IUCN notes that reform of the evaluation process is constrained fundamentally by the current calendar, and that many of the expectations of States Parties regarding increases in dialogue and transparency require more time to be provided for the evaluation, especially for nominations that are found to not meet requirements of the *Operational Guidelines*. Given the interlinkages between various processes, IUCN considers it essential that a fully integrated package of reforms is agreed as a central priority, and continued reflection on options and additional resources will be required to enable it to be effective, equitable to States Parties, and appropriate in supporting a balanced and representative World Heritage List.

3. THE IUCN WORLD HERITAGE PANEL

Purpose: The Panel advises IUCN on its work on World Heritage, particularly in relation to the evaluation of World Heritage nominations. The Panel normally meets face to face once a year for a week in November/December. Provisional recommendations are made at this meeting of the Panel and reviewed at a second meeting or conference call the following March. Additionally, the Panel operates by email and/or conference call, as required.

Functions: A core role of the Panel is to provide a technical peer review process for the consideration of nominations, leading to the formal adoption of advice to IUCN on the recommendations it should make to the World Heritage Committee. In doing this, the Panel critically examines each available nomination document, the field mission report, any supplementary information from States Parties, the UNEP-WCMC Comparative Analysis, comments from external reviewers, including from IUGS, and other material. This material is then used to help prepare IUCN's advice, including IUCN recommendations relating to inscription under specified criteria, to the World Heritage Committee (and, in the case of some cultural landscapes, advice to ICOMOS). The Panel may also advise IUCN on other matters concerning World Heritage, including the State of Conservation of World Heritage properties and on policy matters relating to the Convention. Though it takes account of the policy context of IUCN's work under the Convention, its primary role is to deliver independent, high quality scientific and technical advice to IUCN, which has the final responsibility for corporate recommendations made to the World Heritage Committee. Panel members agree to a code of conduct, which ensures ethical behaviour and avoids any conflict of interest.

Membership: Membership of the Panel is at the invitation of the IUCN Director General (or Deputy Director General under delegated authority) through the Head of the World Heritage Team. The members of the Panel comprise IUCN staff with responsibility for IUCN's World Heritage work, other relevant IUCN staff, Commission members and external experts selected for their high level of experience with the World Heritage Convention. IUCN strives to ensure diversity within its Panel to reflect the necessary experience, skills and global perspectives to undertake its advisory work. The membership of the Panel comprises:

- Head of the World Heritage Team (Chair – non-voting)
- Senior Programme Coordinator World Heritage, IUCN World Heritage Team (Non-voting)
- At least one and a maximum of two staff of the IUCN Protected and Conserved Areas Team
- The IUCN World Commission on Protected Areas (WCPA) Vice Chair for World Heritage
- A representative of the IUCN Species Survival Commission (SSC) appointed on recommendation of the SSC Chair
- Up to seven technical advisors, invited by IUCN based on global calls for expressions of interest and serving in a personal capacity, with recognised leading expertise and knowledge relevant to IUCN's work on World Heritage, including particular thematic and/or regional perspectives
- One position for a specialist in geological heritage.

Since 2016, IUCN has applied a fixed term for Panel members (four years, renewable once) in line with the Ad Hoc Working Group recommendation, and an application process to fill vacancies for technical advisors when they arise.

The Panel's preparations and its meetings are facilitated through the work of the World Heritage Programme Officer, Nominations and Strategy. Information on the members of the IUCN World Heritage Panel, together with its Terms of Reference (TOR) and the formats for IUCN documentation related to the evaluation process is posted online at the following link: <https://www.iucn.org/theme/world-heritage/our-work/advisor-world-heritage/iucn-world-heritage-panel>.

A senior manager in IUCN is delegated by the Director General to provide oversight at senior level on World Heritage, including with the responsibility to ensure that the Panel functions within its TOR and mandate. This senior manager is not a member of the Panel, but is briefed during the Panel meeting on the Panel's conclusions. The Panel meeting may also be attended by other IUCN staff, Commission members (including the WCPA Chair) and external experts for specific items at the invitation of the Panel Chair.

4. EVALUATION REPORTS

Each technical evaluation report presents a concise summary of the nominated property, a comparison with other similar properties, a review of protection, management and integrity issues and concludes with

the assessment of the applicability of the criteria and a clear recommendation to the World Heritage Committee. IUCN also submits separately to the World Heritage Centre its recommendation in the form of a draft decision, and a draft Statement of Outstanding Universal Value for all properties it recommends for inscription. In addition, IUCN carries out field missions and/or external reviews for cultural landscapes containing important natural values, and provides its comments to ICOMOS. This report contains a short summary of these comments on each cultural landscape nomination reviewed.

5. NOMINATIONS EXAMINED IN 2023/2024

Nomination dossiers and minor boundary modifications examined by IUCN in the 2023/2024 cycle included:

- 5 natural property nominations
- 2 mixed site nominations (the evaluation of 2 further mixed site nominations pending from previous cycles had to be postponed again);
- 5 cultural landscape nominations; all 5 were commented on by IUCN based on internal and external desktop reviews

6. COLLABORATION WITH INTERNATIONAL EARTH SCIENCE UNIONS

IUCN implements its consideration of earth science values within the World Heritage Convention through global thematic studies on Geological Heritage published in 2005 and 2021. In addition, collaboration agreements with IUGS and the International Association of Geomorphologists (IAG) focus on strengthening the evaluation process by providing access to the global networks of earth scientists coordinated through IUGS and IAG. IUCN would like to record its gratitude to IUGS and IAG for their willingness to provide support to IUCN in fulfilling its advisory role to the World Heritage Convention.

IUCN wishes to highlight the contribution of IUGS (International Union for Geological Sciences) in the framework of a renewed and enhanced collaboration. IUGS specialists provided volunteered desk reviews to the IUCN World Heritage Panel in regard to criteria (vii) and (viii). In the present cycle, IUGS also provided the Panel with a synthesis report of their desk reviews, including peer-reviewed recommendations. IUCN wishes to extend its gratitude to IUGS and all experts having contributed to the present 2023/2024 evaluation cycle.

7. RECOMMENDATIONS TO THE WORLD HERITAGE COMMITTEE

In the 2023/2024 cycle, IUCN has sought to ensure that States Parties have the opportunity to provide all the necessary information on their nominated properties through the process outlined in section 2 above. As per the provisions of the *Operational Guidelines*, and Decision 30 COM 13 of the World Heritage Committee

(Vilnius, 2006), IUCN has not taken into consideration or included any information submitted by States Parties after 28 February 2023, as evidenced by the postmark. IUCN has previously noted a number of points for improvement in the evaluation process, and especially to clarify the timelines involved.

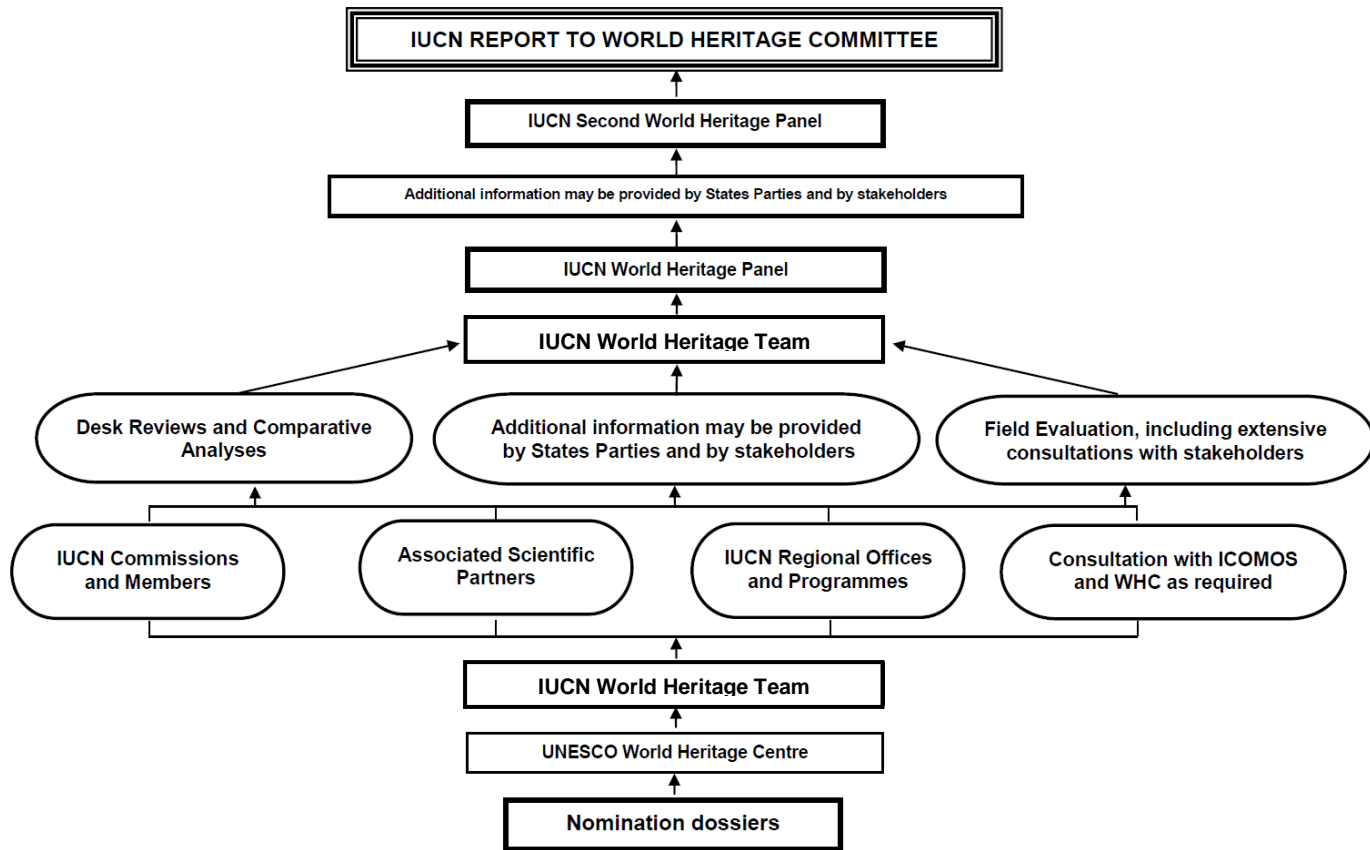
The finalisation of this IUCN evaluation report took place following the required calendar for evaluations, and was finalised on 8 May 2024. At the time of finalisation, the dates of the 46th Session of the World Heritage Committee had been announced. The reports in this evaluation book shall be examined in the upcoming session of the Committee (New Delhi, India, 21-31 July 2024) and were finalised based on the statutory deadline of 28 February 2024 for information supplied by the State Party, and thus all information that has been considered dates at the latest from the time of the second and final IUCN World Heritage Panel, held in March 2024.

8. ACKNOWLEDGEMENTS

As in previous years, this report is a group product to which a large number of people have contributed. Acknowledgements for advice received are due to the external evaluators and reviewers, many of them from IUCN's members, Commissions and Networks, and numerous IUCN staff at Headquarters and in IUCN's Regional and Country Offices as well as translators. Many others contributed inputs during field missions. This support is acknowledged with deep gratitude.

IUCN would also like to extend its thanks to all States Parties for the excellent collaboration and support provided to enable a timely and complete evaluation process.

Figure 1: IUCN Evaluation Process



A. NATURAL PROPERTIES

A1. NEW NOMINATIONS OF NATURAL PROPERTIES

ASIA / PACIFIC

BADAIN JARAN DESERT – TOWERS OF SAND AND LAKES

CHINA



Badain Jaran Desert © IUCN / Kyung-Sik Woo

WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

BADAIN JARAN DESERT – TOWERS OF SAND AND LAKES (CHINA) – ID N° 1638

IUCN RECOMMENDATION TO WORLD HERITAGE COMMITTEE: To inscribe the nominated property (consisting of the nominated component part Badain Jaran Megadunes) under criteria (vii) and (viii)

Key paragraphs of Operational Guidelines:

Paragraph 77: Nominated property meets World Heritage criteria.

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

1. DOCUMENTATION

a) Date nomination received by IUCN: February 2020

b) Additional information officially requested from and provided by the State Party: 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 regarding threats to the nominated property, the current protection regime for the nominated property, including the planned designation as national park and regarding the justification of the boundaries of the nominated component parts of the Badain Jaran Megadunes. The supplementary information was provided by the State Party on 21 February 2024.

c) Additional literature consulted: IUCN's evaluation consulted a wide array of relevant reference material for the geology, geomorphology, protection and management as well as the comparative values of the nominated property. References included: Chen J. S., Li, L., Wang J. Y., Barry, D. A. (2004) Groundwater maintains dune landscape. *Nature*, 432, p.459–460; Goudie, A.; Goudie, A. & Viles, H.A. (2021). The distribution and nature of star dunes: A global analysis. *Aeolian Research*, 50, 10.1016/j.aeolia.2021.100685; IUCN (2011) World Heritage Desert Landscapes: Potential Priorities for the Recognition of Desert Landscapes and Geomorphological Sites on the World Heritage List. 44p; IUCN (2021) Geological World Heritage, A revised global framework for the application of criterion (viii) of the World Heritage Convention. 118p; Jiang, G. *et al.* (2021). Hydrological Evolution of a Lake Recharged by Groundwater in the Badain Jaran Desert Over the Past 140 years. *Frontiers in Earth Science*, Doi: 10.3389/feart.2021.721724; Liu, S. W., Lai, Z. P., Wang, Y. X. (2016) Growing pattern of megadunes in the Badain Jaran Desert in China revealed by luminescence ages. *Quaternary International*, 410, p.111–118; Miao, Y. F., Herrmann, M., Wu, F., Yan, X., Yang, S. (2012) What controlled Mid-Late Miocene long-term aridification in Central Asia? – Global cooling or Tibetan Plateau uplift: A review. *Earth-Science Reviews*. 112(3-4), p.155-172; Walker, A. S., Olsen

and Bagen, J. W. (1987) The Badain Jaran desert: remote sensing investigations. *Geographical Journal*, v.153(2), p.205-210; Wang, L., Wang, Z., Liu, M., Shen, J., Nie, Z., 2023. The temperature and precipitation change and its impact on lakes in Badain Jaran Desert over the last 60 years. *Geological Bulletin of China*, 42, 7, 1218-1227; Wang, N. A, Ning, K., Li, Z. L. (2016) Holocene high lake-levels and pan-lake period on Badain Jaran Desert. *Science China Earth Sciences*, 59(8), p.1633-1641; Wang, Z. *et al.* (2021). Groundwater characteristics and climate and ecological evolution in the Badain Jaran Desert in the southwest Mongolian Plateau. *China Geology*, 3, 421–432. doi:10.31035/cg2021056; Yan M. C., Wang G. Q., Li, B. S. (2001) Formation and growth of high megadunes in Badain Jaran Desert. *Acta Geographica Sinica*, v.56(1), p.83-91; Wu, B., Wu, J., Liu, J., Wu, Y. (2016). Evaluation with Travel Photos on the Natural Beauty of the Badain Jaran Desert. *Journal of Desert Research*, 36, 2, 522-532; Zhang T. C., Sun, H. (2011) Phylogeographic structure of *Terminalia franchetii* (Combretaceae) in southwest China and its implications for drainage geological history. *Journal of Plant Research*, v.124, p.63-73.

d) Consultations: 10 desk reviews received. The mission was able to meet with the National Forestry and Grassland Administration, local officials from the Inner Mongolia Autonomous Region, Alxa League, and Alxa Right Banner, experts, mayors, local communities, and local businesses.

e) Field Visit: Kyung-Sik Woo, 5 to 12 June 2023

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

2. SUMMARY OF NATURAL VALUES

Badain Jaran Desert - Towers of Sand and Lakes is nominated under criteria (vii) and (viii). The nominated property extends on an area of 726,291.41 ha and comprises mega-dune systems, intersected with interdunal lakes. A buffer zone of 891,114.36 ha surrounds the nominated property. It is situated in the Western section of the Alashan Plateau, encircled by the Yabrai, Heli, Beida, Hongshi, Malagai, Alateng and Zongnai mountain ranges.

The Badain Jaran Desert is a meeting point for three sandy regions of China and is the third largest desert and the second largest drifting desert in the country. The nominated area is located in the southern part of the desert and showcases a diverse array of desert landscapes, including oases, inter-dunal lakes, shifting sand dunes, mega-dunes, and other aeolian features such as erosion formations and ripple effects. The dune types found in the nominated property include barchans, barchanoid chains, mega-dunes and star dunes. Noteworthy features include the world's tallest, stabilised sand mega-dune (relative relief of 460 m), the largest expanse of so-called singing sands (describing the resonance caused e.g. by wind moving dry and loose sand), and wind-eroded landforms, among others. The varied landscape also results in a high level of habitat diversity, and hence a high level of biodiversity.

The nominated property, as initially nominated, comprised four component parts (see section 5.1). The largest of the four nominated component parts and the one the State Party retained, Badain Jaran Megadunes, hosts the tallest mega-dunes and the inter-dunal lakes. It extends to the eastern rim of the desert, displaying the transition from eroding granite hills to stony gobi foothills and small dune chains leading to larger dunes towards the centre. Additionally, three significantly smaller serial component parts, Haisenchulu, Eribugai Gorge, and Mandela Mountain, were included in the initial nomination to highlight features such as tafonis (i.e. rounded and smooth-edged openings in rock surfaces), yardangs (i.e. sharp, irregular sand ridges formed by wind erosion), sandstone gorges, and historic petroglyphs (on petroglyphs, see also section 5.2). Finally, the nominated property is presented as an important site for the study of the paleoenvironment and desert evolution, thanks to the dense network of lakes which record environmental change. Further to IUCN's progress report of 14 December 2023, the States Party confirmed in supplementary information by letter of 21 February 2024 that only the nominated component part of the Badain Jaran Megadunes are retained in the nomination, with slightly revised boundaries (see section 5.1).

3. COMPARISONS WITH OTHER AREAS

The nomination dossier provides a comparative analysis that covers most of the planet's desert landforms and landscapes. It compares the nominated property not only with other World Heritage properties but also with sites on Tentative Lists, and sites in Asian arid regions. Under given geological, geographic, and climatological conditions, the nominated property appears to display highly significant hyper-arid desert landforms and landscapes under temperate climate, with outstanding geoheritage values.

The nominated property was already highlighted in IUCN's 2011 thematic study on desert landscapes as representing a selection of the most significant desert landscapes and geomorphological sites that are

currently not included on the World Heritage List. The 2021 IUCN thematic study on the application of criterion (viii) noted that the nominated property belongs to one of the evident geographical gaps (Central and East Asia) in current listings. The nominated property also represents desert lakes and playas (i.e. flat and dry desert basins), which are recognised as lacking appropriate recognition on the World Heritage List. In addition, the nominated property is seen as holding potential of filling a gap for evidencing historic climatic change.

Regarding criterion (vii), IUCN notes that the nominated property displays spectacular ongoing geological and geomorphic features of desert landscapes and landforms which may well be unparalleled. The nominated property's aesthetic values are characterized by the dense distribution of stabilized and parallel to subparallel mega-dunes as well as by the associated unique collection of inter-dunal lakes with various salinities and colours, which are rich in desert fauna, flora, and microbial communities. The aesthetic appeal of the nominated property also results from unusual vegetation on the dune surface in some places and a wide variety of desert landforms, such as smaller, crescent-shaped and pyramidal dunes and various types of soils under a hyper-arid, temperate climate. Whilst the property is not nominated under biodiversity criteria, it deserves to be noted that the various conditions of the inter-dunal lakes with different salinities also give rise to important biodiversity values. Microbial communities are the reason for the unexpected colouring of the lake landscape, adding to the aesthetic appeal of the nominated property. The nominated property also overlaps with the range of the Critically Endangered Wild Camel (*Camelus ferus*) and the Endangered 腾格里蛙 (Yellow River Frog, *Pelophylax tenggerensis*) and Saker Falcon (*Falco cherrug*). Further notable species include the Vulnerable Goitered Gazelle (*Gazella subgutturosa*) and Asian Houbara (*Chlamydotis macqueenii*) as well as desert-adapted vegetation, rare and endemic plants

Regarding criterion (viii), the Badain Jaran Desert provides an outstanding example of the ongoing evolution of desert landscapes and landforms under a temperate hyper-arid climate. It records and displays a great variety of desert geomorphic and aeolian features, including a continuously upward-grown, stabilized mega-dunes and associated inter-dunal lakes. The dunes are considered to be among the tallest in the world, and are different in form compared to the notable features found in the Namib Sand Sea World Heritage property. The 144 inter-dunal lakes are exceptional and contribute to the high degree of geodiversity and exhibit a unique surface process resulting from the following factors: tectonically induced basin topography; two-directional seasonal strong winds; high moisture contents in the vadose zone (i.e. the zone of underground water above the water table); and past climate change from humid to arid during the Holocene. There are both freshwater and saline lakes, which results in a wide range of lake biochemistry depending on the hydraulic setting of the region as well as from lake sediments. In addition, the

nominated property represents regional and global tectonic and geomorphic evolution as well as hydro-geological changes associated with past climatic history.

External desk reviewers supported both the application of criteria (vii) and (viii). The review base considers that the nominated property holds outstanding aesthetic values under criterion (vii), which are characterized by the dense distribution of stabilized, linear, and parallel mega-dunes interspersed with countless inter-dunal lakes. Under criterion (viii), the nominated property is distinguished from other World Heritage properties by the stability of its linear mega-dunes and abundance of inter-dunal lakes. The nominated property holds the world's densest assemblage of stabilized mega-dunes, including the tallest sand dunes in the world and the highest concentration of inter-dunal lakes.

In conclusion, IUCN considers that the nominated property presents a strong case for global significance, both under criterion (vii) and under criterion (viii). In addition, the reader is also referred to section 5.2 regarding ICOMOS' views on the cultural heritage of the nominated property and to section 5.1 regarding the initial proposal of the nominated property as a serial site.

4. INTEGRITY, PROTECTION AND MANAGEMENT

4.1. Protection

This section discusses the protection of the nominated property on the basis of revised and clarified boundaries in supplementary information, provided by the State Party. Further details are also provided in section 5.1. The nominated property is publicly owned and subject to several layers of legal protection, including buffer zones. These layers include the designation as UNESCO Global Geopark, National Geopark, and regional designations as Scenic Site and Nature Reserve, paired with corresponding national and local laws and regulations, such as the Regulations on Scenic and Historic Areas, Regulations on Nature Reserve, and the Regulations of the Inner Mongolia Autonomous Region on Environmental Protection.

The Alxa Desert National Geopark of Inner Mongolia covers the central section of the nominated property whilst the Badain Jaran Desert Scenic Site of Inner Mongolia covers its Northern section. Both protected areas fall under IUCN Protected Area Category V. The Badain Jaran Desert Lake Nature Reserve of Inner Mongolia, falling under IUCN Protected Area Category Ia, protects the majority of the nominated area. The Badain Jaran Nature Reserve of Inner Mongolia serves as additional layer of protection at autonomous region level. This Reserve also covers a large part of the buffer zone. The protection of the remaining part of the buffer zone is ensured by the recently introduced "ecological red line" regulation. This regulation provides an additional layer of protection to protected areas against potentially damaging developments.

Finally, the nominated property will be granted another layer of protection in case of inscription based on a site-specific law at the level of the autonomous region as well as national regulations for management of World Heritage properties. In addition, IUCN notes that the State Party intends to designate the nominated property as national park, which is a newly introduced designation.

Based on the revised nomination as presented in supplementary information, IUCN considers that the nominated property is adequately protected

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

4.2 Boundaries

This section discusses the boundaries of the nominated property on the basis of the revised and clarified maps provided by the State Party in supplementary information. The revision of the boundaries responds to the Preliminary Report of the IUCN World Heritage Panel, and was also discussed during the field mission. Further details are provided in section 5.1.

The revised boundaries of the nominated property include the main distribution range of mega-dunes, as well as of other types of sand dunes and desert landform features, including pyramidal dunes and crescent-shaped dunes and dune chains, and, importantly, the inter-dunal lakes of different shapes, salinities and colours with the associated flora, fauna, and microbial communities in and around lakes. In particular, the boundaries capture the area with the highest density of mega-dunes with a relative height of more than 200 m. According to the nominated dossier, the boundaries have also been designed in a way to avoid any negative impacts from possible human activities, such as new settlements and industries.

The buffer zone surrounds completely the revised nominated area and includes a very wide area to the east of the nominated property covering a large section of the rim of the desert and of the Yabrai Mountains. On the eastern side, the boundary coincides with the boundary of the Badain Jaran Nature Reserve. The southern boundary of the buffer zone straddles along the road S317, which coincides with the boundary of the Badain Jaran Desert Lake Nature Reserve. The nomination dossier states that the buffer zone covers the transition zone from eroding granite hills to stony foothills. Based on the field visit, the width of the buffer zone appears to be sufficient to effectively protect the aesthetic values and the geoheritage values of the mega-dune field within the nominated property. The area covered by the buffer zone includes important areas for the near-source recharge of the inter-dunal lakes and does not contain any potential sources for pollution. Thus, the buffer zone provides additional protection to the nominated property.

Therefore, IUCN considers that the nominated property is able to maintain continuing evolutionary processes of desert landscape and landform formation with the linked aeolian features. Based on the reconfigured nominated area consisting of one large nominated component part (see section 5.1), IUCN considers that the nominated property encompasses a sufficient representation of the attributes of the proposed OUV within its boundaries. The vast nominated area is large enough to protect the complete set of attributes that convey the proposed Outstanding Universal Value of the nominated property. It is also large enough to ensure the sustained integrity of the desert landscape and landforms within the nominated property.

The envisaged designation of the nominated property as national park may have implications for the future boundaries of the nominated property. Supplementary information by the State Party notes that the area, timelines and regulations are yet to be defined. However, the boundaries of the World Heritage property are expected to inform the identification of the boundaries of the future national park. IUCN welcomes the decision of the State Party to include the nominated property in this future national park. In case the national park boundaries could further enable the improvement of the nominated property's boundaries, IUCN considers that a minor boundary modification request should be submitted by the State Party, in case the nominated property is inscribed on the World Heritage List, so that the boundaries of the nominated property align with the boundaries of the national park.

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

4.3 Management

The nominated property is managed by the National Forest and Grassland Administration and the UNESCO Commission at national level, by the Inner Mongolia Autonomous Region Forestry Department at regional level and at local level by the Alxa League Forestry Bureau and the Alxa Right Banner Badain Jaran Desert World Heritage Nomination Administrative Office. Management coordination for the vast area covered by the nominated property is ensured through a comprehensive Management Plan. The Management Plan for the nominated property details the responsibilities of each management level. The Badain Jaran Desert World Heritage Management Office is responsible for the day-to-day protection and management of the property. The Chinese Academy of Sciences and other research organisations provide technical support to monitoring, research and the protection of the nominated property.

According to the nomination dossier, the Inner Mongolia Autonomous Region People's Government will establish a World Heritage Management Committee to lead on the protection and management of the nominated property and its buffer zone. The Committee will strengthen community participation,

conduct trainings and promote heritage protection and nature conservation. In addition, the nominated property is subject to the Badain Jaran Desert Tourism Area Master Plan (Revised) 2017-2030, which takes into account the zoning defined in the Master Plan of Alxa Desert National Geopark and in the Master Plan of Alxa Desert Global Geopark Badain Jaran Park Tourism (2010-2020).

The nomination dossier notes that national and local governments have prioritised the protection of the nominated property for a long time. A total of 71 million Yuan (USD 9,808,391) has been invested into the geological resource protection, landscape resource survey, scientific research, environmental remediation and infrastructure of the nominated property during the period of 13th Five-Year Plan. The final figure allocated under the 14th Five-year Plan has not been announced yet at the time of this evaluation. Annual budgets are prepared based on the 5-year allocations and the future financial support to the nominated property confirmed to the field evaluation mission.

The field evaluation mission concluded that the current management regime of the nominated property appears to guarantee its long-term protection. IUCN considers that the nominated property fulfils the management requirements outlined in the Operational Guidelines.

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

4.4 Community

Most of the publicly owned area of the nominated property is uninhabited. There are no towns, roads, agriculture, or mining activities found within the nominated property. However, around 100 herders follow their traditional livelihoods through grazing with camels, goats, and other livestock, and this activity appears to be fully in harmony with the area. The IUCN field evaluation mission noted that the Alxa Right Banner Badain Jaran Desert Application Office communicates with local residents. Local people are also included in the teams in charge of the protection, co-management, monitoring and public education of the nominated property. Based on discussions with local stakeholders, the field evaluation mission had the impression that the stakeholders value living harmoniously with the natural environment and are aware of the nominated area's nature conservation values. The nominated property already has the status of UNESCO Global Geopark, but it is expected by the local authorities that the potential inscription as World Heritage property would provide further benefits to local communities.

The prospect of the nominated property receiving national park status is highly relevant for the potential World Heritage property, and requires appropriate consultation with local communities, including traditional herders. It needs to be ensured that local communities and traditional herders are fully

consulted, involved and in agreement with the national park proposal, ensuring that the herders are able to maintain and continue their traditional activities within the nominated property.

4.5 Threats

The overall level of threats to the nominated property appears to be low. Impacts of current use on the nominated area are negligible as the livelihoods are based on very limited traditional grazing. However, the salinization of the lakes offers potential for salt mining, as evidenced by industrial facilities in Shugui and Yabrai Town. These areas have been excluded from the buffer zone and are monitored to ensure no pollution affects the nominated property. The nomination dossier reports that previous mineral exploration licenses overlapping with the nominated property expired in 2019 and will not be renewed. As a result of the new regulations for ecological red lining (see section 4.1), no mining or extraction licenses may be issued within the nominated property or its buffer zone.

Increased tourism pressure was noted by the IUCN field evaluation mission as the most important potential threat to the nominated property. However, it appears that sustainable eco-tourism is the dominant form of tourism in the nominated property. There are small settlements for local people including tour facilities located around a few lakes, but resource use is not permitted in these areas. At the time of this evaluation, only a small number of tourists visit the nominated property and the buffer zone. These tourists include a small number of adventure hikers as well as tours by car. Due to extreme weather conditions, the shifting desert has a very limited tourist season, generally from June to October, with August and September being the best period. The degree and scale of the tourism activities is therefore very low in relation to the significant size of the nominated property. Even if the number of tourists grows rapidly in the future, the mission did not consider this a serious threat that would be likely to affect the nominated property.

Research suggests that over the past 50 years, the nominated property has been subject to a warming-drying trend, with annual average temperatures rising by 2.5°C. This coincides with shrinking lakes in the hinterland of the Badain Jaran Desert, whereas the vegetation cover was able to withstand these trends and even increase its cover in the period from 2000 to 2016. However, to maintain the integrity of the inter-dunal lakes with regard to criteria (vii) and (viii), sufficient and clean water supply needs to be ensured in the long term, including in the wider area beyond the nominated property and its buffer zone. Whilst direct precipitation appears to recharge groundwater resources effectively – thanks to low drawdown by the sparse vegetation and to the sand layers' strong infiltration capacity and capillary pressure – recent research indicates that precipitation is not the main factor determining lake change. Consequently, the State Party notes in supplementary information that more than 90% of recharge is dependent on

groundwater sources and that stable groundwater recharge is provided from the Heihe River via the Altyn Fault Belt and from the Tibetan Plateau via the Qilian Fault Belt and the Altyn Fault Belt as well as from other near-source recharge from the Beida and Yabrai Mountains. The State Party notes that further research is needed to determine the proportions of the water stemming from these sources. Relatedly, recent research suggested that groundwater recharge through precipitation has poor renewability, and that groundwater was stored in historic periods, fossil water of an age of thousands to tens of thousands of years. Therefore, groundwater should not be over-exploited. This can be ensured through the Regulations on the Protection and Management of Groundwater in the Inner Mongolia Autonomous Region issued in 2022. The Regulation limits groundwater withdrawal amongst others in areas where ecological damage occurred; where ecological damage may be caused; where withdrawals are close to the recoverable amount; as well as in protected areas, including geoparks.

In conclusion, IUCN considers that the nominated property is currently subject to a low level of threat, but that research on the inter-dunal lakes' water sources will need to continue and potentially inform action to ensure adequate water supply. Based on the revised boundaries provided by the State Party in supplementary information, IUCN considers that the nominated property fulfils all requirements of the Operational Guidelines in regard to integrity, protection and management requirements.

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

The nominated property has initially been proposed as a serial site consisting of four different nominated component parts. Whilst the nominated component part of the Badain Jaran Megadunes comprises the vast majority of the nominated area, the three other nominated component parts (Haisenchulu; Eribugai Gorge; Mandela Mt.) are very small in size, equalling less than 1% of the area of the Badain Jaran Megadunes.

a) What is the justification for the serial approach?

The nomination dossier justified the serial approach with the fact that the Badain Jaran Desert is so large that a single area encompassing the area of all four nominated component parts would be impractical to protect and manage and would restrain development opportunities of the entire region. In addition, the Alxa Desert UNESCO Global Geopark includes four different areas to characterize a range of desert features. The sites provide easy access to visitors.

However, the field evaluation mission concluded that the vast nominated component part of the Badain Jaran Megadunes, which covers more than 99% of the nominated area, appears to adequately convey the proposed OUV of the nominated property for desert landscapes and landforms. The other three nominated component parts would only show the examples of surface erosional features that are not globally significant in very small areas, and therefore do not support the proposed OUV of the nominated property. In addition, the majority of external desk reviewers also suggested the exclusion of the nominated component parts of Haisenchulu, Eribugai Gorge and Mandela Mt. as they would not meet the requirements for global significance. The IUCN field evaluation mission also noted that the nominated area of the Badain Jaran Megadunes component part did not fully match the boundaries of the protected areas. Both the initially nominated area and buffer zone to the east were not legally protected in their entirety. In supplementary information, the State Party revised the boundaries of the Badain Jaran Megadunes component part and withdrew the nominated component parts of Haisenchulu, Eribugai Gorge and Mandela Mt.

Nevertheless, further to IUCN's 2011 thematic study on desert landscapes, a future serial extension and renomination of the nominated property could be considered to include the Taklamakan Desert and biodiversity criteria. The Taklamakan Desert is considered one of the world's largest and highest deserts and is known for its remarkable arrays of dune forms, its large bounding alluvial fans, its pluvial lakes, and significant ancient braided channel system. In addition, the potential of loess deposits containing records of paleoclimatic history dating back to 3 million years may be explored, as noted in IUCN's 2021 thematic study on the application of criterion (viii).

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

Whilst the nominated component part of the Badain Jaran Megadunes encompasses an area that fully displays the distribution range and evolution of megadunes interspersed with inter-dunal lakes and other types of sand dunes, the other nominated component parts provide only a small sample of attributes on a minimal area. Haisenchulu hosts a weathered granite surface with numerous tafoni features. Eribugai Gorge is entirely composed of a dry valley which was formed by the former fluvial action. These landforms can be observed in many parts of the world, and do not appear to support the desert landforms conveyed by the nominated property's potential Outstanding Universal Value. Mandela Mt. contains numerous Palaeolithic pictographs on basic dyke rocks. Even though past climate can be inferred from the contents shown, the site would appear to be primarily important for cultural values (see section 5.2).

As the nominated component parts of Haisenchulu, Eribugai Gorge and Mandela Mt. do not appear to represent outstanding desert landforms and features, the IUCN World Heritage Panel considered that the

nominated component part of the Badain Jaran Megadunes sufficiently represents the proposed Outstanding Universal Value of the nominated property. The Panel considered that the nominated component parts of Haisenchulu, Eribugai Gorge and Mandela Mt. would not contribute to the potential Outstanding Universal Value of the nominated property. In supplementary information, the State Party provided an updated map of the nominated property, which excludes the nominated component parts of Haisenchulu, Eribugai Gorge and Mandela Mt.

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

An overall management framework for all four initially nominated component parts is no longer required as the supplementary information revised the boundaries of the nominated property to only include the Badain Jaran Megadunes, because neither the serial approach was justified, nor functional links between the four nominated component parts confirmed. However, it deserves to be noted that all the four initially nominated component parts were comprised in the Alxa Desert UNESCO Global Geopark. Thus, they would have been managed within a single overall management framework through the UNESCO Global Geopark designation.

5.2 Consideration in relation to cultural values

The nomination dossier notes an extensive corpus of rock art. The IUCN field evaluation mission also noted that the initially nominated component part of Mandela Mt. appears to contain significant cultural heritage values as it hosts a remarkable collection of 4,234 prehistoric and historic records on the surface of black diabase dykes. The petroglyphs describe a wide variety of animals inhabiting the region some 6000 to 4000 years ago. The depicted wildlife can no longer be found in Badain Jaran Desert. The rock art therefore testifies to past climatic and environmental change.

IUCN therefore requested ICOMOS to comment on the cultural significance of these artefacts. In response, ICOMOS notes that "the rock art of Inner Mongolia has been well studied and was considered in the ICOMOS publication: ICOMOS Thematic Study of Rock Art in East Asia, 2019. As the ICOMOS Thematic study points out, Inner Mongolia is one of the birthplaces of Chinese civilization. Its steppe culture has left abundant archaeological and historical records that date back to the Paleolithic period. So far more than 30 Paleolithic sites have been discovered, more than 2,000 Neolithic sites and some 7,000 Bronze age sites, reflecting numerous different cultures. By the Warring States period (475-221BCE) and during the Qin (221-207BCE) and Han (202BCE-220CE) dynasties numerous sites were constructed of which some 100 been discovered archaeologically, including Tuchengzi City, with its 500 tombs. Many of these were still inhabited during the Wei, Jin, Southern and Northern Dynasties. In the 11th century CE, Khara Khoto, a trading centre, became the centre of the

Tangut Empire. In a comparatively small area in Inner Mongolia and neighbouring Ningxia province are found the largest number of rock art sites in China. These northern rock-art sites share a cultural unity, and are considered to be the richest and best-documented in the Chinese northern frontier areas (...).

At present, a total of about 11,000 rock art sites with over 60,000 individual images are known in the Yinshan area. Most of the Yinshan sites are found in valleys between the mountains where there are abundant water resources and transportation lines for inter-regional communication between north and south. The so-called Steppe route through this area, a precursor of the Silk Road by perhaps as much as two millennia, and an important route for trade in commodities and minerals also ran from east to west.

The rock art images are almost entirely engraved on granite rocks covered with 'desert glaze'. The differential weathering of the images indicates a long time period for their creation. As well as images of isolated animals, hunting and herding scenes, there are also abstract symbols such as spirals or circular, as well as human faces or masks, and a few human figures, possibly illustrating dancing and the birth of a child.

The Rock Art can be divided into three major historical periods, namely Upper Palaeolithic, Neolithic and Bronze Age, during which the images reflect much wetter, greener and more forested conditions than are found today. There are also some later images from the Han period and from the Tang, Song and Yuan dynasties which include galloping horses, two-humped camels, herdsman, etc. indicating desert conditions similar to today.

In 2013, the Mandela Mountain rock art was listed as an important heritage site under State protection. In 2017, the local government approved the construction of a Rock Art Museum."

In conclusion, ICOMOS noted that "the rock art in the Yinshan Mountains, and the rock art of Inner Mongolia which is the largest corpus in China, and one of the two most important areas in China for rock art, the other being neighbouring Ningxia to which it appears to be linked, is of world importance and deserves protection and conservation." In case rock art sites are still contained within the nominated area also after the revision of the boundaries, ICOMOS recommends that "cultural heritage be incorporated into the current management system by including the expertise of cultural heritage conservation in the site management body and by inviting the cultural heritage protection administration and related right-holders and stakeholders into the decision-making process.

If the full value of these rock art sites is to be defined and sustained, more active management is necessary, as in terms of on-going recording and documentation, as well as continuing research and archaeological investigations. The work so far undertaken on survey, documentation and analysis provides an excellent basis for such work.

ICOMOS recommends that cultural heritage should be included in the current conservation and monitoring activities, and a set of parameters for cultural heritage could be developed and included in the existing conservation and monitoring activities. (...) Community involvement in the decision-making process should be strengthened, while the mechanism for community involvement in the decision-making process is incorporated into the current site management system.

While in terms of numbers and quality, these sites in Inner Mongolia, including those in the nominated natural property, if any, are important, their full significance would depend on analysis of the images and features of the nearby landscape, as well as their relationship to known archaeological sites and overall their archaeological and historical contexts.

Therefore, ICOMOS recommends that the State Party of China considers the feasibility of a serial rock art nomination that could include rock art sites within the Inner Mongolia Autonomous Region, Mandela, Helanshan and Yinshan mountains, and in the Ningxia Autonomous Region. These areas together, contain a range of the most significant Chinese rock art sites from the past 10,000 years. Yinshan mountains, in particular, contains some of the oldest rock art in this region. This could fill a gap nomination as regards the geocultural region at the east end of the Euroasia steppe. ICOMOS remains at the disposal of the State Party to provide advice should it be considered useful."

6. APPLICATION OF CRITERIA

The **Badain Jaran Desert - Towers of Sand and Lakes (China)** have been nominated under natural criteria (vii) and (viii).

Criterion (vii): Superlative natural phenomena or natural beauty or aesthetic importance

Badain Jaran Desert - Towers of Sand and Lakes display spectacular ongoing geological and geomorphic features of desert landscapes and landforms subject to a temperate, hyper-arid climate. These features create exceptional aesthetic values emerging from the dense range of stabilized, linear, and parallel mega-dunes with numerous inter-dunal lakes as well as various types of smaller dunes in-between the mega-dunes. 144 inter-dunal lakes exhibit a myriad of colours, caused by different levels of salinity and microbial communities. With an exceptional expanse of so-called singing sands (describing the resonance caused e.g. by wind moving dry and loose sand), the nominated property also presents a remarkable soundscape. Wind-eroded landforms, oases, ripple effects and the grandeur of the world's tallest sand mega-dunes (relative relief of 460 m) compose a landscape of remarkable natural beauty. The dynamic of shifting sand dunes creates an ever-changing visual environment.

ICUN considers that the nominated property meets this criterion.

Criterion (viii): Earth's history and geological features

The nominated property is located at the junction of three sandy regions of China and provides an outstanding example of the ongoing evolution of desert landscapes and landforms under a temperate and hyper-arid climate. It records and displays an exceptional variety of aeolian features and desert geomorphology, such as linear and parallel, stabilized mega-dunes and associated inter-dunal lakes. The nominated property appears to be a very rare example at global scale that reflects the evolutionary landforms as a combined result of regional tectonism and hydrogeological changes associated with climatic evolution. The nominated property also stands out due to the remarkable stability of its linear mega-dunes and the abundance of inter-dunal lakes. It boasts the densest collection of stabilized mega-dunes globally, encompassing among the tallest sand dunes and the highest concentration of inter-dunal lakes found anywhere on Earth. With 144 inter-dunal lakes and the considerable variety of dune formations, the nominated property hosts a remarkable geodiversity. Both IUCN's 2011 thematic study on desert landscapes and IUCN's 2021 study on the application of criterion (viii) highlighted the nominated property as one of the most significant desert landscapes and geomorphological sites, not currently represented on the World Heritage List.

IUCN considers that the nominated property meets 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 **Badain Jaran Desert - Towers of Sand and Lakes, China**, on the World Heritage List under criteria (vii) and (viii);
3. Adopts the following Statement of Outstanding Universal Value:

Brief synthesis

The property covers an area of 726,291.41 ha, with a buffer zone of 891,114.36 ha. Badain Jaran Desert, located in the Alashan Plateau in the hyper-arid and temperate desert region of northwestern China, is the third largest desert in China and hosts an irreplaceable natural heritage of lake and dune desert features. It stands out with its high density of mega-dunes, including the tallest stabilized sand dunes in the world, a myriad of interdunal lakes, and a range of aeolian landform features. The mega-dunes form an undulating landscape, among which the tallest sand dune achieves a relative height of 460 m. For a sandy

desert and sand sea, Badain Jaran is home to abundant plant life and mostly nocturnal animal life. The lakes are mostly saline and diversely coloured, providing a favourable habitat for thriving worms, molluscs, crustacea and some fish.

Due to its geographical location and geological background, the property is strongly influenced by climate change and the continuing tectonic uplift of the Qinghai-Tibet Plateau. Its desert-forming process is continuing, so that the site and its relics offer insights into long-term climatic changes and desert forming processes. The size and integrity of the site is important in understanding its ongoing evolution.

The property holds outstanding aesthetic values thanks to the significant abundance of mega-dunes, aeolian landscape diversity and to the uniqueness of its lakes.

Criterion (vii)

Badain Jaran Desert - Towers of Sand and Lakes display spectacular ongoing geological and geomorphic features of desert landscapes and landforms subject to a temperate, hyper-arid climate. These features create exceptional aesthetic values emerging from the dense range of stabilized, linear, and parallel mega-dunes with numerous inter-dunal lakes as well as various types of smaller dunes in-between the mega-dunes. 144 inter-dunal lakes exhibit a myriad of colours, caused by different levels of salinity and microbial communities. With an exceptional expanse of so-called singing sands (describing the resonance caused e.g. by wind moving dry and loose sand), the property also presents a remarkable soundscape. Wind-eroded landforms, oases, ripple effects and the grandeur of the world's tallest sand mega-dunes (relative relief of 460 m) compose a landscape of remarkable natural beauty. The dynamic of shifting sand dunes creates an ever-changing visual environment.

Criterion (viii)

The property is located at the junction of three sandy regions of China and provides an outstanding example of the ongoing evolution of desert landscapes and landforms under a temperate and hyper-arid climate. It records and displays an exceptional variety of aeolian features and desert geomorphology, such as linear and parallel, stabilized mega-dunes and associated inter-dunal lakes. The property appears to be a very rare example at global scale that reflects the evolutionary landforms as a combined result of regional tectonism and hydrogeological changes associated with climatic evolution. The property also stands out due to the remarkable stability of its linear mega-dunes and the abundance of inter-dunal lakes. It boasts the densest collection of stabilized mega-dunes globally, encompassing among the tallest sand dunes and the highest concentration of inter-dunal lakes found anywhere on Earth. With 144 inter-dunal lakes and the considerable variety of dune formations, the property hosts a remarkable geodiversity. Both IUCN's 2011 thematic study on desert landscapes and IUCN's 2021 study on the application of criterion (viii) highlighted the property as one of the most significant

desert landscapes and geomorphological sites, not currently represented on the World Heritage List.

Integrity

The property covers the continuous distribution area of mega-dunes and associated inter-dunal lakes, as well as other types of desert features. The vast area is large enough to protect the complete range of the necessary elements that convey the Outstanding Universal Value of the property. The area also covers a significant expanse of the desert ecosystem which is used sustainably. The buffer zone provides additional protection to the property and does not contain any potential pollution sources.

Most of the property is in an uninhabited natural desert state, though a few families of herdsman with some camels, goats, donkeys, and sheep herds inhabit and traditionally use the property in a sustainable way. The property represents a wide and wild area with no paved roads. Towns, factories, and any potential threats are all excluded from the property and buffer zone. Impacts from tourism are controlled and limited to the property's carrying capacity. To ensure the integrity of the inter-dunal lakes, it is essential to ensure that all groundwater sources feeding the lakes are carefully managed and not over-exploited. Further research needs to investigate the groundwater sources and inform potential additional action.

Protection and management requirements

The property is protected through several layers of protective designations. These include one autonomous region-level scenic site and two autonomous region-level nature reserves and designations as UNESCO Global Geopark and as National Geopark. The protection of the property is extended through national nature reserve status for the entire property. In addition, the property is also protected by a range of national, autonomous region-level, and local-level laws and regulations. Local regulations and a management plan have also been developed specifically for the property. The property shall also receive the highest level of legal protection as a national park.

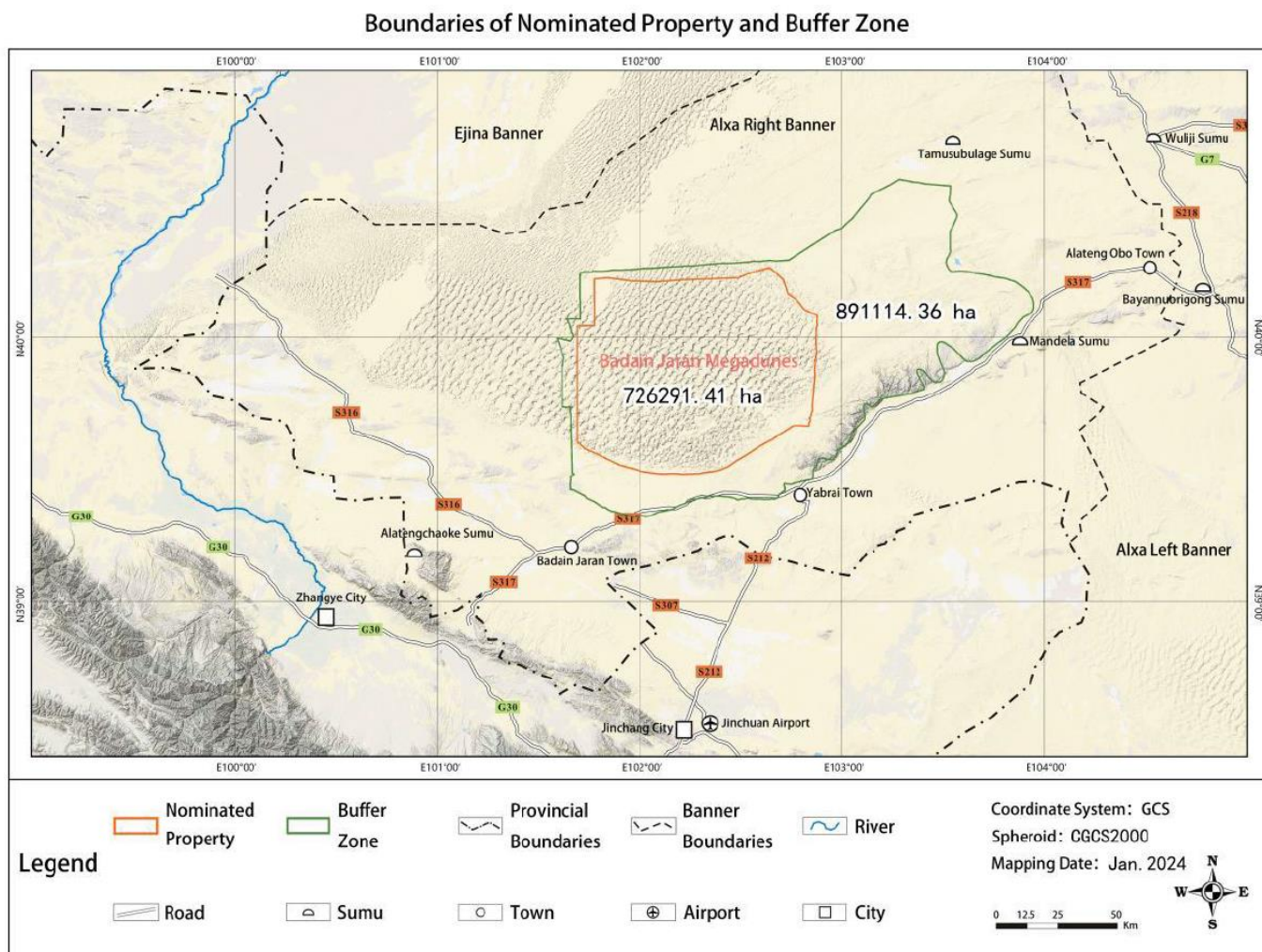
The Inner Mongolia Autonomous Region People's Government establishes a World Heritage

Management Committee to assure coordinated leadership over the protection and management of the property and buffer zone. The management institutions involved in the protection of the property are integrated into of the Badain Jaran Desert World Heritage Management Office, which is responsible for the daily protection and management of the property. Local functional departments, monitoring agencies, the Chinese Academy of Sciences and other research institutes provide technical support, and are specifically responsible for the monitoring, research and protection of the property.

Local regulations and a Management Plan have been developed specifically for the property. The State Party undertakes to strictly protect the property and buffer zone, ensuring the integrity of all the natural values and elements. Specific measures include, firstly, strengthening the monitoring and scientific research on natural values and elements such as sand dunes, lakes and vegetation, and implementing adaptive management. Secondly to establish and improve the monitoring system and database for the property, and carry out targeted protection and control measures. Thirdly, local people will be involved in the team for protection, co-management, monitoring and public education. Fourthly, community participation will be strengthened and, fifthly, the balance between heritage protection and local social and economic sustainable development shall be achieved, including through sustainable eco-tourism whilst strictly control the scale and behaviour of tourists to ensure that the impact of tourism on the natural heritage values remains minimal.

4. Welcomes the decision of the State Party to include the property in a future national park and requests that the State Party submits a minor boundary modification request in case the national park boundaries could further enable the improvement of the property's boundaries, and further requests the State Party to ensure that the local communities, including traditional herders are fully consulted, involved and in agreement with this proposal, and to ensure that such a designation ensures that the herders are able to maintain and continue their traditional activities within the property.

Map 1: Boundaries of the nominated property and buffer zone



ASIA / PACIFIC

MIGRATORY BIRD SANCTUARIES ALONG THE COAST OF YELLOW SEA-BOHAI GULF OF CHINA (PHASE II)

CHINA



Yellow River Delta © IUCN / Tilman Jaeger

WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

MIGRATORY BIRD SANCTUARIES ALONG THE COAST OF YELLOW SEA - BOHAI GULF OF CHINA (PHASE II) (CHINA) – ID N° 1606BIS

IUCN RECOMMENDATION TO WORLD HERITAGE COMMITTEE: To approve the inclusion of 10 new component parts as an extension of the existing property.

Key paragraphs of Operational Guidelines:

Paragraph 77: Nominated property meets World Heritage criteria.

Paragraph 78: Nominated property includes component parts that meet integrity, protection and management requirements (but also component parts that do not.).

Background note: In 2018, China nominated the Migratory Bird Sanctuaries along the Coast of Yellow Sea-Bohai Gulf of China (Phase I) as a serial property consisting of two component parts. IUCN recommended deferral for this nomination (see document WHC/19/43.COM/INF.8B2), but the World Heritage Committee inscribed the property in 2019 based “on the understanding that the State Party is in agreement with the following requests of the Committee, which should be implemented (...) in order to address fully the requirements of the *Operational Guidelines*” (43 COM 8B.3). These requests included, *inter alia*, that “fourteen additional areas identified in the Phase 1 nomination” would fully take “into account ecosystem and habitat diversity of the coastal system, proposed boundaries, values (including species occurrence, abundance and conservation status), threats, integrity, protection and management”; that “the specific presence of the attributes of Outstanding Universal Value within the boundaries of the Phase 2 nomination and their relationship to the inscribed property, including the presence and size of populations of any endemic and threatened species, and of globally significant migratory bird species” is confirmed; and that “evidence of effective coordination of management of the entire serial property including planning for any increasing tourism demand, including the development of appropriately scaled and low impact tourism in the property” is provided. The present (Phase II) extension nomination contains 11 areas consisting of 29 component parts.

1. DOCUMENTATION

a) Date nomination received by IUCN: February 2022

b) Additional information officially requested from and provided by the State Party: 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 regarding the selection, integrity and protection and management of the nominated component parts. The supplementary information was provided by the State Party on 21 February 2024.

c) Additional literature consulted: IUCN's 2019 evaluation consulted a wide array of relevant reference material for the ecology, protection and management as well as the comparative values of the nominated property. Further references of the present evaluation included among others: Bai, Q., *et al.* (2015). Identification of coastal wetlands of international importance for waterbirds: A review of China Coastal Waterbird Surveys 2005-2013. *Avian Research*, 6, 10.1186/s40657-015-0021-2; Chan, Y.-C., Peng, H.-B., Han, Y.-X., Chung, S.-S.-W., Li, J., Zhang, L. & Piersma, T. (2019). Conserving unprotected important coastal habitats in the Yellow Sea: shorebird occurrence, distribution and food resources at Lianyungang. *Global Ecology and Conservation*, 20, e00724. <https://doi.org/10.1016/j.gecco.2019.e00724>; Chan, Y.-C., Tibbitts, T.L., Lok, T., Hassell, C.J., Peng, H.B.,

Ma, Z., Zhang, Z., Piersma, T. (2019). Filling knowledge gaps in a threatened shorebird flyway through satellite tracking. *Journal of Applied Ecology* 56, 10, 2305-2315, <https://doi.org/10.1111/1365-2664.13474>; Choi, C.-Y. *et al.* (2019). Where to draw the line? Using movement data to inform protected area design and conserve mobile species, *Biological Conservation*, 234, 64-71, <https://doi.org/10.1016/j.biocon.2019.03.025>; Harff, J., Zhang, H. 2016. Environmental Processes and the Natural and Anthropogenic Forcing in the Bohai Sea, Eastern Asia: Introduction. *Journal of Coastal Research*, 74, 1, <https://doi.org/10.2112/SI74-fmi>; Hassell, C., Leung, K., Lei, G., Piersma, T. 2022. Shorebird Northward Migration Through Bohai Bay, China. Global Flyway Network. Shorebird Ecological demographic Research and Conservation Initiative. <http://globalflywaynetwork.com.au/bohai-report-2022/>; Henriques, M., Catry, T., Belo, J.R., Piersma, T., Pontes, S., Granadeiro, J.P. (2022). Combining Multispectral and Radar Imagery with Machine Learning Techniques to Map Intertidal Habitats for Migratory Shorebirds. *Remote Sens*, 14, 3260. <https://doi.org/10.3390/rs14143260>; IUCN (2023). *The 2023 IUCN Situation analysis on ecosystems of the Yellow Sea with particular reference to intertidal and associated coastal habitats*. Bangkok, Thailand: IUCN; Lin, C., Jilan Su, J., Xu, B., Tang, Q. (2001). Long-term variations of temperature and salinity of the Bohai Sea and their influence on its ecosystem. *Progress in Oceanography* 49, 1-4, 7-19, [https://doi.org/10.1016/S0079-6611\(01\)00013-1](https://doi.org/10.1016/S0079-6611(01)00013-1); MacKinnon, J., Verkuil, Y.I. & Murray, N. (2012). IUCN

situation analysis on East and Southeast Asian intertidal habitats, with particular reference to the Yellow Sea (including the Bohai Sea). Occasional Paper of the IUCN Species Survival Commission No. 47. IUCN, Gland, Switzerland and Cambridge, UK. ii + 70 pp; Piersma, T., Kok, E.M.A., Hassell, C.J., Peng, H.-B., Verkuil, Y.I., Lei, G., Karagicheva, J., Rakhimberdiev, E., Howey, P.W., Tibbitts, T.L., Chan, Y.-C. (2021). When a typical jumper skips: itineraries and staging habitats used by Red Knots (*Calidris canutus piersmai*) migrating between northwest Australia and the New Siberian Islands. *IBIS*, 163, 4, 1235-1251, <https://doi.org/10.1111/ibi.12964>; Piersma, T., Lok, T., Chen, Y., Hassell, C.J., Yang, H.-Y., Boyle, A., Slaymaker, M., Chan, Y.-C., Melville, D.S., Zhang, Z.-W. Ma, Z. (2016). Simultaneous declines in summer survival of three shorebird species signals a flyway at risk. *Journal of Applied Ecology*, 53, 2, 479-490 (Special Feature: Demography Beyond the Population), <https://doi.org/10.1111/1365-2664.12582>; Tong, M. *et al.* (2022). Gaps in coastal wetlands World Heritage list. *Science*, 376, 1060-1061, DOI:10.1126/science.abq5816; UNEP (2005). Teng, S.K., Yu, H., Tang, Y., Tong, L., Choi, C.I., Kang, D., Liu, H., Chun, Y., Juliano, R.O., Rautalahti-Miettinen, E. & Daler, D. Yellow Sea, *GIWA Regional assessment 34*. University of Kalmar, Kalmar, Sweden; Yang, Z., Li, J., Han, Y., Hassell, C.J., Leung, K.-S.K., Melville, D.S., Yu, Y., Zhang, L. & Choi, C.-Y. (2021) Coastal wetlands in Lianyungang, Jiangsu Province, China: probably the most important site globally for the Asian Dowitcher (*Limnodromus semipalmatus*). *Avian Research*, 12, 38. <https://doi.org/10.1186/s40657-021-00272-7>;

d) Consultations: 9 desk reviews received, in addition to the 11 desk reviews from IUCN's 2019 evaluation. The mission was able to meet with representatives from all levels of government involved, including the National Forestry and Grassland Administration (NFGA) and Academia, including members of the Chinese Academy of Sciences, NGOs from local to international level, as well as community representatives. Additional consultations were held with international experts and IUCN members.

e) Field Visit: Amran Hamzah and Tilman Jaeger, 5 to 15 May 2023

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

2. SUMMARY OF NATURAL VALUES

The present nomination of the Migratory Bird Sanctuaries along the Coast of Yellow Sea-Bohai Gulf of China (Phase II) is proposed as an extension to the existing serial property, which currently consists of two component parts: the Migratory Bird Habitat in the South of Yancheng, Jiangsu and the Migratory Bird Habitat in the North of Yancheng, Jiangsu totalling 188,643 ha. The serial extension would add 29 component parts in 11 areas, totalling 293,384.7 ha with buffer zones totalling 127,128.28 ha. The existing property and the nominated component parts of the extension are situated in the Yellow Sea, which is a

semi-enclosed sea connected to the Bohai Sea and to the East China Sea through a permanent circulation system.

IUCN previously noted that the Yellow Sea and the Bohai Gulf boast enormous tidal mudflats due to the combination of shallow water depth, gentle slopes, wide tidal range, marine currents, and large river systems permanently discharging vast amounts of sediments (Yellow River, Yangtze River, Yalu River, Liao River, Luan River, Hai River among others). The intertidal mudflat system exceeds the scale of the Wadden Sea. For further details on the natural values and characteristics of the Yellow Sea, please see the 2019 IUCN evaluation (see document WHC/19/43.COM/INF.8B2). The existing property does not include any component parts located in the Bohai Gulf, but the present extension nomination contains several component parts (see ID 1606bis-004 to ID 1606bis-011 in table 1) that are located therein, and thus the context of Bohai Gulf is important to understand, in addition to the Phase I nomination.

The Bohai Gulf forms the innermost gulf of the Yellow Sea. It is markedly distinct from the Yellow Sea and therefore often considered to constitute a separate marine region (see e.g. the 2005 Global International Waters Assessment (GIWA) by UNEP). Relative to the Yellow Sea, winters are colder and drier in the Gulf of Bohai, which is influenced by Siberia. Despite major modification and degradation, the river deltas continue to be critically important for bird migration and as a spawning and nursery ground for many fish species. There are three major rivers and watersheds – the Yellow River (Huang He), Liao and the Hai (Hai He) – and three major bays – Liaodong, Bohai and Laizhou. The Yellow River has been discharging into the Bohai Gulf only since 1855 following natural changes of the river course, which created the modern delta encompassing some 550,000 ha. The relatively small Bohai Gulf boasts a disproportionately large share of the overall mudflat system of the wider region. The tidal mudflat area of the Bohai Gulf is almost twice the size of the tidal mudflats of the Yellow Sea in China, and exceeds the entire extent of the mudflat systems in the Democratic People's Republic of Korea and in the Republic of Korea, respectively.

The nominated component parts are of a wide range of sizes (see table 1) and, as initially proposed in the present extension nomination, comprised a total area of 104,741.7 ha with buffer zones totalling 47,072.28 ha. Combined with the existing component parts, this would extend the area of the property to 293,384.70 ha with buffer zones of 127,128.28 ha. In response to the IUCN progress report of 14 December 2023, the State Party revised the boundaries of five nominated component parts in supplementary information submitted on 21 February 2024. The nominated component parts, as revised, now comprise an area of 139,851.85 ha with buffer zones totalling 48,935.98 ha. Combined with the existing component parts, this would extend the area of the property to 328,494.85 ha with buffer zones of 128,991.98 ha.

ID No	Name of the area	Region	District	Nominated Property (ha)	Buffer zone (ha)
1606-001	<i>Migratory Bird Habitat in the South of Yancheng, Jiangsu</i>	<i>Jiangsu Province</i>	<i>Dafeng</i>	144,839	28,271
1606-002	<i>Migratory Bird Habitat in the North of Yancheng, Jiangsu</i>	<i>Jiangsu Province</i>	<i>Tinghu and Dafeng</i>	43,804	51,785
1606bis-003	Migratory Bird Habitat at Chongming Dongtan, Shanghai	Shanghai Municipality	Chongming	7,504.71	11,271.32
1606bis-004	Old Course of Yellow River Estuary	Shandong Province	Hekou	(8,462.14) 14,472.25	(3,698.00) 4,539.62
1606bis-005	North Part of the Yellow River Estuary	Shandong Province	Kenli	(4,358.71) 8,524.79	(2,414.76) 2,427.72
1606bis-006	South Part of the Yellow River Estuary	Shandong Province	Kenli	5,214.62	1,977.12
1606bis-007	Dawenliu	Shandong Province	Kenli	(24,291.79) 44,091.60	(5,645.14) 6,740.28
1606bis-008	Migratory Bird Habitat at Nandagang wetland, Cangzou, Hebei Province	Hebei Province	Nandagang Industrial Park	2,922.92	891.22
1606bis-009	Migratory Bird Habitat at Nanpu Zuidong Wetland, Luannan, Hebei Province	Hebei Province	Luannan County	3,958.30	1,223.51
1606bis-010	Migratory Bird Habitat at Qilihai Lagoon, Qinhuangdao, Hebei Province	Hebei Province	Beidaihe New District	1,050.26	471.12
1606bis-011	Migratory Bird Habitat at Dachaoping of Beidaihe, Qinhuangdao, Hebei Province	Hebei Province	Beidaihe District	97.53	11.11
1606bis-012	Migratory Bird Habitat at Shihenandao of Laolongtou, Qinhuangdao, Hebei Province	Hebei Province	Shanhaiguan	128.25	39.96
1606bis-013	West Part of Liao River Estuary	Liaoning Province	Panshan County	(14,142.24) 22,189.41	(5,084.32) 6,655.35
1606bis-014	East Part of Liao River Estuary	Liaoning Province	Dawa	(14,057.19) 11,144.17	(3,834.36) 2,177.31
1606bis-015	Jiutou Hill	Liaoning Province	Lushunkou	768.20	500.91
1606bis-016	Snake Island	Liaoning Province	Lushunkou	323.95	316.29
1606bis-017	Dayang River	Liaoning Province	Donggang City, Dandong City	8,578.14	4,886.27
1606bis-018	Erdaogou	Liaoning Province	Donggang City, Dandong City	8,666.76	3,895.35
1606bis-019	Fantuozi Islet of Guanglu Island	Liaoning Province	Changhai County, Dalian City	12.13	369.00
1606bis-020	Ertuozi Islet of Gexian Island	Liaoning Province	Changhai County, Dalian City	6.06	17.04
1606bis-021	Dacaotuozi of Guapi Island	Liaoning Province	Changhai County, Dalian City	16.65	159.37
1606bis-022	Xiaocaotuozi of Guapi Island	Liaoning Province	Changhai County, Dalian City	8.42	
1606bis-023	Nandajiao of Guapi Island	Liaoning Province	Changhai County, Dalian City	0.94	
1606bis-024	Wuhushi of Haxian Island	Liaoning Province	Changhai County, Dalian City	8.01	3.99
1606bis-025	Wushi of Dahaozi Island	Liaoning Province	Changhai County, Dalian City	1.45	137.24
1606bis-026	Dabanshi of Dahaozi Island	Liaoning Province	Changhai County, Dalian City	0.15	
1606bis-027	Xicaotuozi of Dachangshan Island	Liaoning Province	Changhai County, Dalian City	129.49	77.54
1606bis-028	Beituozi Islet of Dachangshan Island	Liaoning Province	Changhai County, Dalian City	11.37	10.18
1606bis-029	Bashao Island Lithoherm Belt	Liaoning Province	Changhai County, Dalian City	21.32	137.16
(TOTAL as initially nominated):				(293,384.70)	(127,128.28)
TOTAL as revised:				328,494.85	128,991.98

Table 1: Component parts that are proposed as Phase II extending the Migratory Bird Sanctuaries along the Coast of Yellow Sea-Bohai Gulf of China (Phase I), with existing component parts inscribed in Phase I shown in *italics*. The areas of the nominated component parts have been updated based on the supplementary information submitted by the State Party. The areas as initially nominated are shown in brackets. Sources: Adapted from the nomination dossier and supplementary information submitted by the State Party.

In the nomination dossier, the State Party notes that the existing serial property (Phase I) and the proposed extension (Phase II) provide essential habitat for 45 threatened bird species. The inscribed and proposed component parts are presented as key areas during various stages of their migrations and as important hubs on the East Asian-Australasian Flyway (EAAF). IUCN undertook a situation analysis

3. COMPARISONS WITH OTHER AREAS

IUCN recalls its 2019 evaluation (see document WHC/19/43.COM/INF.8B2) which concluded that the biodiversity that characterises the Yellow Sea region is of global significance in regard to criterion (x): The globally significant values of the intertidal mudflats, marshes and shallow waters of the overall Yellow Sea, and the Bohai Gulf, are well established through the body of scientific literature which exists for this part of the EAAF. The flyway is a Global 200 ecoregion, it is the largest flyway, with the most bird species, and the most threatened flyway in the world, linking bird populations in at least 21 countries. It is also the largest intertidal mudflat system in the world. The Yellow Sea and the Gulf of Bohai are a bottleneck for many millions of migratory waterbirds – more than 10% of the total migration – along the EAAF, providing essential stopover, feeding/refuelling, moulting, wintering, and breeding sites, including for a number of bird species for which the entire global population depends on this region. Therefore, these ecosystems and habitats are critical to the viability of one of the planet's most important bird migratory pathways.

As an extension of an existing property, seeking coherence with the Committee's recommendation to realize a finite serial property, IUCN further recalls that the Committee inscribed the existing property on the understanding that the State Party submits "a single Phase II nomination that includes all the additional components of the proposed serial listing as a whole, in order to reflect the full range of natural wealth and diversity of the ecoregion and to meet integrity requirements" (Committee Decision 43 COM 8B.3). Therefore, IUCN considers that further comparisons with other areas on a global basis are no longer a focus of the evaluation as the basis for recognition of the World Heritage List has been accepted, and the background discussion is already addressed in IUCN's 2019 evaluation (see document WHC/19/43.COM/INF.8B2). Nevertheless, IUCN welcomes that the nomination contains a useful comparative analysis in relation to the focus on migratory birds under criterion (x). In external desk reviews it was noted that some of the nominated component parts may exceed existing World Heritage properties in terms of their importance to congregations of migratory birds with no equivalent coastal sites in other parts of the flyway that hold such important congregations of migratory species. There is a brief reference to the Ongchong Coast in Democratic People's Republic of Korea. The 2021 inscription decision of the Getbol, Korean Tidal Flats World Heritage property (Republic of Korea) under criterion (x) deserves to be considered.

of the Yellow Sea in 2023, which notes that the intertidal wetlands and mudflats are one of the ecological wonders of the world, but also facing considerable degradation with significant development pressure. A human population of 600 million lives in the catchment area of the Yellow Sea

According to the nomination dossier, 562 bird species use the nominated component parts of the present Phase II extension nomination, compared to 415 bird species recorded in the existing component parts of the Phase I nomination. The nominated component parts all host numerous bird species assessed as threatened in the IUCN Red List of Threatened Species. However, the nominated component parts in Changhai County, Dalian City (see ID 1606bis-019 to 1606bis-029 in table 1) are different from the other 16 nominated component parts in that they host only six threatened bird species, which are all represented through the other component parts. Nevertheless, the counts of individuals of four species recorded in the area overlapping with the nominated component parts ID 1606bis-019 to 1606bis-029 are remarkable and the maximum number recorded across the nominated property, though several other nominated areas host significantly more species meeting the 1% population criterion of the Ramsar Convention. For instance, the Yellow River Estuary (represented in the present nomination through the nominated component parts of *Old Course of Yellow River Estuary; North Part of the Yellow River Estuary; South Part of the Yellow River Estuary; Dawenliu*), on its own, supports at least 1% of the flyway level populations of more than 50 species of waterbirds. This is unmatched by any other wetland in the Yellow Sea region, or adjacent coastal areas of Japan, Russian Federation and the Korean Peninsula, and demonstrates the exceptionally high level of irreplaceability of this site. Similarly, the estuaries of the Liaohe and Yalujiang rivers support at least 31 species that have populations exceeding 1% of the flyway level population estimates.

At least 45 species present in the nominated component parts of Phase II are threatened according to the IUCN Red List of Threatened Species. Five of these species are Critically Endangered, whilst 12 are assessed as Endangered and 28 as Vulnerable. Whilst the Spoon-billed Sandpiper (*Calidris pygmaea*, CR), Spotted Greenshank (*Tringa guttifer*, EN), and Red-crowned Crane (*Grus japonensis*, VU) are already represented through Phase I, the Phase II nominated component parts also support many other threatened species, such as waders (Siberian Crane, *Leucogeranus leucogeranus*, CR, Far Eastern Curlew, *Numenius madagascariensis*, EN, Hooded Crane, *Grus monacha*, Chinese Egret, *Egretta eulophotes*, VU), waterfowl (Baer's Pochard, *Aythya baeri*, CR, Scaly-sided Merganser, *Mergus squamatus*, EN, Swan Goose, *Anser cygnoid*, EN), gulls (Relict Gull, *Larus relictus*, VU), and raptors (Steppe Eagle, *Aquila nipalensis*, EN, Saker Falcon, *Falco cherrug*, EN,

Snowy Owl, *Bubo scandiacus*, VU). The nomination also notes there are 26 species of mammals, nine species of amphibians, 14 species of reptiles, 216 species of fish, as well as 165 species of zoobenthos. Importantly, the nominated component parts of Phase II also encompass parts of major estuaries, including the Yellow, Yangtze and Yalu rivers, various types of coastal wetlands and (mostly portions of) small islands.

In conclusion, IUCN considers that the Phase II extension nomination does include many areas that are important for the EEAF and that hold the potential to improve the integrity of the existing Phase I property. However, an important number of mostly smaller nominated component parts do not meet integrity requirements and important sites are missing from the proposed series (see section 4).

4. INTEGRITY, PROTECTION AND MANAGEMENT

4.1. Protection

All nominated component parts and buffer zones are state-owned and protected as National Nature Reserves, Provincial Nature Reserves, Provincial Wetland Park, Scenic Area, National Wetland Park or National Marine Park. Four nominated component parts are designated as Ramsar sites, one is included in a UNESCO Biosphere Reserve. IUCN notes that all nominated component parts are within protected areas with, in principle, legally adequate protection. In desk reviews, it was noted that the new Ecological Red Line policy (see also p. 7) enhances the legal protection of several of the nominated component parts. Through the policy, legal protection can be granted to areas that are covered by the Red Line, but are not necessarily part of a protected area. The nomination dossier also details institutional processes and frameworks that ensure rigorous monitoring. The State Party has implemented additional conservation measures for wetlands aimed at enhancing the protection of coastal wetlands and regulating land reclamation from the sea, including the Notice of the State Council on Strengthening the Protection of Coastal Wetlands and Strictly Controlling Land Reclamation from Sea (G.F. [2018] No.24), the Notice of the General Office of the State Council on Issuing the Scheme of Wetland Protection and Restoration System (G.B.F. [2016] No.89), and the Guiding Opinions on Establishing a Nature Reserve System with National Parks as the Main Component. Through the Wetland Protection Law, the State Party has completely banned reclamation projects and actively pursued the restoration of tidal flat ecosystems in damaged areas, reflecting a very significant policy shift.

In most cases, consumptive natural resource use and development is prohibited within the property. Supplementary information confirms that wind farms and land reclamation in intertidal zones are strictly prohibited in all nominated component parts. Administratively, the coast is shared by the provinces of Shandong, Liaoning, Liaoning, Hebei and the municipality of Tianjin. Besides the many jurisdictions

involved and the wide range of different protected area designations, complexity is reinforced by the fact that protected area boundaries are currently subject to a systematic review of the State Party's entire protected area system. Moreover, the creation of two national parks (Yellow River Delta and Liao River Delta National Parks) is relevant to the nominated component parts of *Old Course of Yellow River Estuary*, *North Part of the Yellow River Estuary*, *South Part of the Yellow River Estuary*, *Dawenliu*, *West Part of Liao River Estuary* and *East Part of Liao River Estuary*. As a result, the boundaries of the selected component parts and their buffer zones are in many cases not aligned with the zonation of the protected areas as designated at national, provincial, or municipal level.

Regarding the review and revision of protected area boundaries currently underway, it was noted that there has been an implementation gap in the past resulting in infrastructure and development within protected areas incompatible with their legal status. The existence of such infrastructure and development within the boundaries of protected areas is a main reason for revising the boundaries. Following current revisions, the protected areas are expected to become smaller in many cases while aiming at more effectively protecting the most important areas for conservation and restoration. The prospect of an added layer of World Heritage protection would strengthen the focus on conservation for the areas under consideration. The inclusion of the Tiaozini area in Phase I (see 2019 IUCN evaluation: WHC/19/43.COM/INF.8B2) is a case in point for the effective role of World Heritage in achieving conservation.

However, in supplementary information, the State Party notes that there are still oil and gas exploration and exploitation permissions in place in a few nominated component parts for historical reasons. Authorized permissions exist in the nominated component parts of the *Migratory Bird Habitat at Nanpu Zuidong Wetland, Luannan, Hebei Province; West Part of Liao River Estuary* and *East Part of Liao River Estuary*. In line with the established position of the World Heritage Committee, i.e. that mineral exploration or exploitation is incompatible with World Heritage status, IUCN considers that these nominated component parts cannot be retained in the proposed series, unless the permissions are unequivocally revoked and any existing exploitation sites fully remediated.

In conclusion, IUCN considers that the nominated property meets protection requirements in principle, but notes that alignment between the proposed boundaries and the zonation of the respective protected areas should be enhanced following the completion of the systematic review of the State Party's entire protected area system – in case of inscription potentially through a minor boundary modification. It is currently not possible to include the nominated component parts of the *Migratory Bird Habitat at Nanpu Zuidong Wetland, Luannan, Hebei Province; West Part of Liao River Estuary* and *East Part of Liao River Estuary* in the proposed series as oil

exploration and exploitation is not compatible with World Heritage status.

IUCN considers that the protection status of the nominated property meets the requirements of the Operational Guidelines, with the exception of the nominated component parts of the *Migratory Bird Habitat at Nanpu Zuidong Wetland, Luannan, Hebei Province; West Part of Liao River Estuary and East Part of Liao River Estuary*.

4.2 Boundaries

Counting a total of 29 proposed component parts of highly varied sizes, the present nomination is very complex. This section therefore discusses the boundaries of the serial nominated property in three parts: Firstly, the selection of component parts and any potentially missing component parts; secondly, the boundaries of the 24 component parts as nominated; and thirdly, the boundaries of five component parts as revised in supplementary information.

1. Selection of nominated component parts

First, in terms of the selection of nominated component parts, IUCN recalls that, initially, the State Party proposed three nomination phases for the series, encompassing 16 component parts, two of which were included in the nomination of Phase I. Ten components were listed as the envisaged Phase II at the time of nominating Phase I. Phase III was presented in the initial dossier as a conclusion of the phased approach according to pending priority-setting, achievement of adequate protection and local approval. In line with IUCN's 2019 evaluation report (see document WHC/19/43.COM/INF.8B2), the Committee requested a single and conclusive Phase II, hence the present extension nomination.

However, IUCN notes that Phase II does not appear to represent an adequate conclusion of the series, a view that is also noted in external desk reviews. Comparing the present Phase II nomination with well-established priority sites and the component parts committed by the State Party in supplementary information of the Phase I nomination, i.e. the stated understanding on which the World Heritage Committee agreed to the inscription of Phase I, IUCN notes that several committed component parts have been removed from the series: Liaoning Dalian Lvshunkou National Scenic Area; Hebei Tangshan Caofeidian Wetland; Jiangsu Rudong Coastal Wetland; and Jiangsu Qidong Yangtze River Estuary North Branch Provincial Nature Reserve. Many of these sites have already been noted as priorities in the 2012 IUCN Situation Analysis and all of these sites are highlighted in the updated 2023 IUCN Situation Analysis as priority sites.

In supplementary information to the 2023 nomination, the State Party considers that these potential component parts either do not meet selection criteria or that they exhibit a poor integrity. According to the State Party, Liaoning Dalian Lvshunkou National Scenic Area was not included as the species using this

site are represented through nominated component parts that are more important. The Jiangsu Qidong Yangtze River Estuary North Branch Provincial Nature Reserve has been removed due to ports, shipbuilding facilities and channels for maritime traffic whilst the nominated component part of the *Migratory Bird Habitat at Chongming Dongtan*, Shanghai serves as substitute. Caofeidian (Hebei) has been excluded and is represented by the nearby *Migratory Bird Habitat at Nanpu Zuidong Wetland, Luannan, Hebei Province* as the birds and wetlands of Caofeidian could be seriously threatened due to existing oil exploitation within the area. IUCN therefore concurs with the State Party that Caofeidian cannot be included in the series in line with the established position of the World Heritage Committee that mineral exploration or exploitation is incompatible with World Heritage status. In conclusion, IUCN considers that the exclusion of Liaoning Dalian Lvshunkou National Scenic Area; Hebei Tangshan Caofeidian Wetland and Jiangsu Qidong Yangtze River Estuary North Branch Provincial Nature Reserve is acceptable as the values of these areas have been adequately substituted by other nominated component parts; thus, Committee decision 43 COM 8B.3 can be considered to be met for these component parts.

Regarding the exclusion of Rudong Coast, the State Party considered in 2023 supplementary information that this potential component part has been excluded due to threats from wind farms and aquaculture and a change in bird presence. However, the area is consistently noted as a priority, including in scientific literature annexed to the nomination dossier. It was firstly noted on the State Party's Tentative List as Rudong-Tiezuisha Coast, Jiangsu, whilst the Phase I nomination dossier listed Jiangsu Rudong Coastal Wetland as representative site on the Rudong Coast and as one of the component parts committed for Phase II. The area stands out as it hosts more than half of the world's population of Spotted Greenshank (*Tringa guttifer*, EN) and Spoon-billed Sandpiper (*Calidris pygmaea*, CR) which stopover and moult at the site. Moreover, in 2019 the State Party noted the Jiangsu Rudong Coastal Wetland as important stopover site for Great Knot (*Calidris tenuirostris*, EN) and Bar-tailed Godwit (*Limosa lapponica*, NT) and as important breeding ground for terns, including the Chinese Crested-Tern (*Thalasseus bernsteini*, CR), with a population of just around 100 individuals. Eight species exceeded the 1% criterion whilst there is literature suggesting 17 species exceeding the threshold. IUCN recommends re-considering Rudong Coast in completing the nomination in light of its location on the flyway and its importance. Without at least an appropriate substitute fulfilling the same function on the flyway Committee decision 43 COM 8B.3 cannot be considered to be met in this respect.

In addition, IUCN notes that Lianyungang Salt Works is consistently noted as a priority site, but has not been considered in Phase I nor in Phase II. Lianyungang was noted on the State Party's Tentative List as a feeding site for migratory waders and as a key migration channel for marine life. Whilst Lianyungang is not mentioned as a possible future component part

in the Phase I dossier, a major review article in one of the world's leading scientific journals states that the site ranks among the top-five across all of China for important waterbird populations and total waterbird abundance. Similarly, the 2023 IUCN Situation Analysis notes the site as the "third most important area on the Chinese coast in terms of the number of waterbird species occurring in internationally important numbers", supporting 1% or more of the EAAF populations of 30 species of waterbird, including several Endangered, Vulnerable and Near-Threatened species. The site is suggested as the most important site globally for the Near-Threatened Asian Dowitcher (*Limnodromus semipalmatus*) as it supports such a high proportion of the Asian Dowitcher's population that loss of this single site could threaten the entire global population with extinction, according to desk reviewers. It is the most important site in the world for this species as more than 90% of the world population stages in the Lianyungang area benefitting from the soft intertidal sediments with high densities of large polychaete worms serving as a vital food resource for the Asian Dowitchers. Scientific literature annexed to the nomination suggests that the site supports 25 % of the total flyway population and the largest known wintering congregation in China of the Eurasian Oystercatcher (*Haematopus ostralegus*, NT) and indicates that 26 species meet the 1% criterion. Furthermore, Lianyungang plays a critical role on the Flyway as the only potential site on the long distance between the existing component part of the *Migratory Bird Habitat in the North of Yancheng, Jiangsu* and the nominated component parts at the Yellow River estuary (*Old Course of Yellow River Estuary; North Part of the Yellow River Estuary; South Part of the Yellow River Estuary; Dawenliu*). Whilst IUCN acknowledges the explanation for non-inclusion provided by the State Party in supplementary information (interventions due to the salt works; lack of support from local communities; 2023 surveys suggesting the site is not a key area for wintering waterbirds in Jiangsu), IUCN strongly recommends reconsidering the possibility of enhancing the property's integrity through the potential nomination of Lianyungang following the completion of the review of protected areas and combined with restoration efforts as well as open community consultations so as to ensure that the EAAF will not lose this vital flyway site completely.

In summary, IUCN notes that there are three potential component parts (Rudong-Tiezuisha Coast, Jiangsu; Jiangsu Rudong Coastal Wetland; Lianyungang Salt Works) that are not included in the present nomination but appear to be important for a complete representation of the nominated property's proposed OUV. One of these sites was already noted in the Phase I nomination dossier as a future component. Rudong and Lianyungang are particularly significant, and consistently suggested in scientific literature and in external desk reviews as critically important priority areas, both emerging as disproportionately valuable and sensitive ones for species survival in the EAAF. Therefore, IUCN considers that the present Phase II extension is insufficient to complete the nomination as previously expected, and thus encourages the

submission of a further and final extension to complete the series, and ensure full conformity with the expectations set out by the World Heritage Committee in Decision 43 COM 8B.3. This further extension could also be informed by the positive experience with the addition of Tiaozini in Phase I, which has been noted by the State Party as one of the best practices of World Heritage site protection and management as this addition would provide valuable experience for the protection of the nominated property.

2. Boundaries of nominated component parts

Secondly, in terms of the boundaries of the 24 nominated component parts whose boundaries were not adjusted in supplementary information, IUCN notes that during the evaluation of Phase I, an overview of Phase II was provided in supplementary information. The overall additional area amounted to 260,330 ha. In fact, this number could have been expected to further increase as the component parts of the initially foreseen Phase III nomination were not included in this figure. Measured against the roughly 100,000 ha nominated with a buffer zone of less than 50,000 ha, it becomes clear that the present Phase II is below 50% of the area originally considered for the extension nomination. This adds to above conclusion that the series remains to be completed, beyond the present extension.

Regarding the size of the nominated component parts, IUCN notes that many nominated component parts systematically exclude key areas, thereby not covering any high tide roosting habitats for birds using tidal mudflats. The 2019 evaluation (see document WHC/19/43.COM/INF.8B2) already stressed the importance of the linkages between the supratidal coast and the intertidal system. Desk reviewers further note that the boundaries do not follow features that would be identifiable on the ground: often the boundary is located several hundred metres offshore from a seawall. The boundaries of the buffer zones are often very narrow with only a few hundreds of metres wide. In this respect, IUCN notes that the proposed boundaries largely diverge from the boundaries of the much wider protected areas as legally defined at national or provincial level. This is also the case for the existing protected area zonation, which is not aligned with the proposed boundaries of most of the nominated component parts and their buffer zones. IUCN further notes that the present boundaries have been drawn ahead of a systematic review of the State Party's entire protected area system (see also section 4.1). Hence, the future revised boundaries of the protected areas are not known at the time of the nomination, a situation that may encourage an excessively conservative approach to boundary setting. Therefore, IUCN considers that, in case of inscription of nominated component parts, a further boundary modification may need to be submitted following this systematic review expanding and aligning the nominated areas with the eventual new protected area boundaries.

The nominated component parts of the *Migratory Bird Habitat at Dachaoping of Beidaihe, Qinhuangdao*,

Hebei Province (97.53 ha) and of the *Migratory Bird Habitat at Shiheandao of Laolongtou, Qinhuangdao, Hebei Province* (128.25 ha) are small in size and situated within heavily urbanised areas. Nevertheless, a more adequate size of these two nominated component parts, providing more significant migratory bird habitat, could be achieved through a significant extension of boundaries further upstream on the Xinhe River and the Shihe River respectively.

In addition, IUCN notes that the present nomination includes some areas that are extremely small in size. For example, the area of the nominated component part of *Dabanshi of Dahaozi Island* amounts to only 0.15 ha (i.e. roughly 20% of a soccer pitch), the nominated component part of *Nandajiao of Guapi Island* only 0.94 ha and numerous others ranging from very modest 1.45 ha to 21.32 ha (nominated component parts of *Wushi of Dahaozi Island*; *Fantuozi Islet of Guanglu Island*; *Ertuozi Islet of Gexian Island*; *Dacaotuozi of Guapi Island*; *Xiaocaotuozi of Guapi Island*; *Wuhushi of Haxian Island*; *Beituozi Islet of Dachangshan Island*; *Bashao Island Lithoherm Belt*). Taken together, these nominated component parts amount to only 86.5 ha. This is less than the next largest nominated component part of the *Migratory Bird Habitat at Dachaoping of Beidaihe, Qinhuangdao, Hebei Province* (97.53 ha) and amounts to only 0.026% of all nominated and existing areas. Whilst slightly larger, the nominated component part of *Xicaotuozi of Dachangshan Island* (129.49 ha) also does not provide a sufficient area needed by migratory birds. In supplementary information, the State Party explains that the delineation is based on islands and reefs that are significant within the Dalian Changshan Islands National Marine Park, the Dalian Changshan Archipelago National Island Forest Park, and the Dalian Changshan Islands Precious Marine Life Nature Reserve.

External desk reviewers highlighted that these very small nominated component parts are of insufficient area to be properly sustained and managed in the long term, and that they could not support globally important congregations of waterbirds. Nominated areas need to be sufficiently large in order to be able to preserve the long-term ecological integrity and value of the nominated property. Furthermore, IUCN considers it important to ensure that the nominated component parts are ecologically connected and not overly fragmented. In this regard, IUCN also recalls Paragraph 137 (c) of the *Operational Guidelines*, which notes that “in order to avoid an excessive fragmentation of component parts, the process of nomination of the property, including the selection of the component parts, should take fully into account the overall manageability and coherence of the nominated property”. As a possible solution, reviewers suggested leveraging the Dalian Changshan Islands National Marine Park to expand the individual nominated component parts (except *Wushi of Dahaozi Island* and *Dabanshi of Dahaozi Island* which are not located in the marine park but would need to be enlarged within the core area of the existing Liaoning Changshai Provincial Nature Reserve of Rare Marine Organisms). In addition, data would need to demonstrate that all

key colonies of Chinese Egret (*Egretta eulophotes*, VU) and other waterbirds in the Changshan archipelago, including Black-faced Spoonbill (*Platalea minor*, EN), are protected within revised boundaries. Supplementary information by the State Party provided only the aggregate species lists already presented in the nomination dossier but did not specify to what extent the species are found inside or outside the nominated component parts.

Thus, IUCN concludes that the following nominated component parts do not meet the integrity requirements of the *Operational Guidelines*, due to their insufficient size and in some cases also due to their lack of ecological integrity: *Migratory Bird Habitat at Dachaoping of Beidaihe, Qinhuangdao, Hebei Province* (97.53 ha); *Migratory Bird Habitat at Shiheandao of Laolongtou, Qinhuangdao, Hebei Province* (128.25 ha); *Dabanshi of Dahaozi Island* (0.15 ha); *Nandajiao of Guapi Island* (0.94 ha); *Wushi of Dahaozi Island* (1.45 ha); *Fantuozi Islet of Guanglu Island* (12.13 ha); *Ertuozi Islet of Gexian Island* (6.06 ha); *Dacaotuozi of Guapi Island* (16.65 ha); *Xiaocaotuozi of Guapi Island* (8.42 ha); *Xicaotuozi of Dachangshan Island* (129.49 ha); *Wuhushi of Haxian Island* (8.01 ha); *Beituozi Islet of Dachangshan Island* (11.37 ha); *Bashao Island Lithoherm Belt* (21.32 ha). It will nonetheless be essential for the integrity of the EEAF and of the nominated property to ensure that the surrounding, larger protected areas effectively protect the larger values of the ecosystem that surround these small nominated component parts.

Nevertheless, IUCN notes that there are two nominated component parts with a boundary design meeting the requirements, as nominated: The *Migratory Bird Habitat at Chongming Dongtan, Shanghai* (7,504.71 ha) contains the majority of critical feeding habitat for shorebirds whilst the buffer zone adds important high tide roosting habitat. The wetland included within the boundaries is mostly a natural wetland with hardly any human impact. Whilst this nominated component part meets the requirements, its integrity could be further enhanced by expanding the nominated area through a minor boundary modification. Similarly, the nominated component part of the *Migratory Bird Habitat at Nandagang wetland, Cangzhou, Hebei Province* (2,922.92 ha) is particularly important for the integrity of the series as it provides habitat to 30 species exceeding flyway thresholds, but could further be improved through an expansion of the area aligned with the surrounding protected area following the systematic review. Any negative impacts from anthropogenic activities, including aquaculture and agriculture, need to be mitigated through careful management and it is recommended to restrict uses in the buffer zone.

Furthermore, the nominated component part of *Snake Island* (323.95 ha) has boundaries that fully encompass the island, which hosts a significant diversity and abundance of landbird migrants and is a bottleneck site for overflying cranes and raptors. The buffer zone of almost 0.5 km in width encircles the nominated area. Located more than seven kilometres away from the mainland, the nominated component

part is sheltered from significant development pressures. Therefore, IUCN considers that *Snake Island* currently meets integrity requirements. In addition, the boundaries align with the Liaoning Snake Island-Laotieshan National Nature Reserve. The mainland part of this Nature Reserve includes the *Jiutou Hill* (768.20 ha) nominated component part, which is similarly important as bottleneck site and covers mostly intact coastal and wooded areas, therefore able to meet integrity requirements. Nevertheless, desk reviewers noted that the boundaries could slightly be expanded to include further key wooded within the National Nature Reserve. Finally, the boundaries of the nominated component parts of *Dayang River* (8,578.14 ha) and *Erdaogou* (8,666.76 ha) represent the most important staging site in the EAAF for the Great Knot (*Calidris tenuirostris*, EN) and the Bar-tailed Godwit (*Limosa lapponica*, NT). The boundaries capture a large area and almost entirely follow the zonation of the Liaoning Yalu River Estuary Coastal Wetland National Nature Reserve.

3. Revised boundaries of nominated component parts

Thirdly, in terms of the boundaries of the five nominated component parts whose boundaries were revised in supplementary information, IUCN notes that the area of all but one of these component parts has been significantly enlarged. For instance, the area of the nominated component parts of *North Part of the Yellow River Estuary* and *Dawenliu* was almost doubled to 8,524.79 ha and 44,091.60 ha respectively. The nominated area of the *Old Course of Yellow River Estuary* has been increased to 14,472.25 ha. Overall, the nominated area was increased by almost 12% (see table 1). Through these boundary adjustments, the nominated component parts in the estuary of the Yellow River have been consolidated. Therefore, the IUCN World Heritage Panel considered that the modified nominated component parts of *Old Course of Yellow River Estuary*, *North Part of the Yellow River Estuary* and *Dawenliu*, along with the nominated component part of *South Part of the Yellow River Estuary* meet boundary requirements. The two nominated component parts in the Liao River have also been enlarged but are subject to concerns described in section 4.1.

In conclusion, IUCN considers that the following ten nominated component parts meet integrity requirements: *Migratory Bird Habitat at Chongming Dongtan, Shanghai* (7,504.71 ha); *Migratory Bird Habitat at Nandagang wetland, Cangzou, Hebei Province* (2,922.92 ha); *Dayang River* (8,578.14 ha); *Erdaogou* (8,666.76 ha); *Jiutou Hill* (768.20 ha); *Snake Island* (323.95 ha); *Old Course of Yellow River Estuary* (14,472.25 ha); *North Part of the Yellow River Estuary* (8,524.79 ha); *Dawenliu* (44,091.60 ha); and *South Part of the Yellow River Estuary* (5,214.62).

IUCN considers that the boundaries of the following ten nominated component parts meet the requirements of the Operational Guidelines: *Migratory Bird Habitat at Chongming Dongtan, Shanghai; Migratory Bird Habitat at Nandagang wetland, Cangzou, Hebei Province;*

Dayang River, Erdaogou, Jiutou Hill, Snake Island, Old Course of Yellow River Estuary, North Part of the Yellow River Estuary, Dawenliu, South Part of the Yellow River Estuary. However, IUCN also considers that the remaining component parts and buffer zones do not meet the requirements of the Operational Guidelines.

4.3 Management

The 2019 IUCN evaluation (see document WHC/19/43.COM/INF.8B2) noted that the management of the serial property should not be considered in isolation as the conservation of migratory species on the EAAF has obvious dimensions for transboundary and interregional cooperation requiring to bridge jurisdictions and sectors. The National Forestry and Grassland Administration (NFGA) holds the overall mandate and responsibility for managing natural World Heritage properties, or at least supervising management. As noted in section 4.1, the nominated component parts of the present extension nomination are composed of many different protected area designations. The field evaluation mission considered that NFGA played this overarching role in the complex nomination effort effectively. The nomination dossier notes that The Union of Natural Reserves within Nominated Migratory Bird Sanctuaries along the Coast Yellow Sea-Bohai Gulf of China promotes the nominated areas and established collaboration across boundaries and departments. There is also a “Protection Area Alliance” for the serial approach. However, rather than establishing an overarching management system prior to nominating, the approach taken defines the desired inscription as the trigger for overarching management. The nomination dossier provides a management plan for the newly nominated component parts that outlines ambitions and goals – but without a detailed analysis of the threats to be addressed – for the establishment of the overarching management system after potential inscription. The mission acknowledged that establishing a functioning coordination mechanism for the overall management across designations and provinces in the short time since the inscription of Phase I would have been difficult. IUCN therefore considers that the envisaged establishment of an overall management system after the potential inscription of Phase II an acceptable approach.

The current management therefore focuses on individual protected areas. There are regulations and conservation and management plans in place for all nominated component parts. At the level of municipalities (Shanghai) and provinces (Shandong, Hebei, Liaoning), leading groups were formed to coordinate the nomination of the respective nominated component parts in the given jurisdiction. While such groups have multiple tasks, the focus appears to have been the nomination. Site level management is the task of 11 direct management organizations. A large number of major conservation and restoration activities is being implemented. Both the central and sub-national governments have been investing in the conservation of the protected areas under

consideration for a long time. In addition to contributions from national and international conservation foundations and organizations, the nomination dossier and supplementary information indicate a sufficient level of funding for the nominated property. Staffing for the management of the nominated component parts appears adequate and monitoring for the individual component parts is in place.

Therefore, IUCN considers that there is sufficient capacity to effectively manage the nominated property, though the very small size of some of the nominated component parts will make effective protection and management unattainable (see above). Management will need to focus on mitigating and reducing the impact of threats (see section 4.5) and regulate activities in the buffer zones of the nominated property.

IUCN considers the management of the nominated property meets the requirements of the *Operational Guidelines*, noting that for some component parts there is not a possibility to secure conservation due to their small size and other constraints discussed elsewhere in the report.

4.4 Community

The 2019 IUCN evaluation (see document WHC/19/43.COM/INF.8B2) noted that World Heritage inscription would likely not result in any change in existing community participation and rights and that access to natural resources would not change in case of inscription. The 2019 evaluation considered efforts should be directed to enhancing community engagement in decision making of the nominated property.

Tidal mudflats are exceptionally productive ecosystems which are in most cases easy to use by local communities. It was repeatedly mentioned to the mission that netting birds and collecting bird eggs used to be part of local livelihood systems. However, with the exception of the nominated component part of the *Migratory Bird Habitat at Nanpu Zuidong Wetland, Luannan, Hebei Province*, traditional use and management of tidal mudflats no longer play an important role as the wider area is focused on industrial use and tourism and research in protected areas. There are no local tenure rights in the nominated component parts.

The nomination notes that the nominated areas are not inhabited, with the exception of eight residents living in the nominated component part of *Dayang River*. With two exceptions, the same holds true for the proposed buffer zones: 1,894 residents live in the buffer zone of *Jiutou Hill* and 460 residents live in the buffer zone of *Dayang River*. According to the nomination dossier, management organizations liaise with residents and encourage community involvement. Tourism, protected area management, restoration, fisheries, and aquaculture arguably provide local income and employment. Based on the information available to IUCN, there do not appear to be any consultation or

rights issues concerning the nominated areas. In supplementary information, the State Party indicates that some potential additional areas have not been included as this has not been supported by local communities. The potential completion of Phase II should therefore be preceded by an open consultation process in line with the provisions of the *Operational Guidelines*. Furthermore, continued and increased engagement of communities in the governance and management of the series should be promoted.

4.5 Threats

From the outset, IUCN notes that all nominated component parts have been affected by major coastal development, including intense urban, industrial, and agricultural development at an unprecedented rate (see IUCN's 2019 evaluation WHC/19/43.COM/INF.8B2 and the 2023 IUCN Situation analysis). Only the nominated component part of *Snake Island* stands out with a high degree of naturalness. The nomination dossier acknowledges numerous threats, including habitat loss through large-scale land reclamation, human-driven ecosystem transformation, large ports, marine traffic, upstream dam construction, invasive alien species (IAS), off-shore wind development, climate change, etc. There continue to be vast areas dominated by invasive alien *Spartina alterniflora* (i.e. non-native cordgrass), offering an example of direct threats to inscribed and nominated areas despite ambitious eradication plans and efforts. Therefore, much of the challenge needs to be understood and framed as a restoration effort, as already noted in IUCN's 2019 evaluation.

The Bohai region in particular is very densely populated and intensely developed, especially on the coastline and is considered one of the main centres of the State Party's economic development, both historically and particularly over the last decades. Some of the largest ports in the world are found along the coast under consideration. The very high ecological importance of the property coincides with multiple and major stressors, including from offshore oil and gas development, land reclamation, heavy and chemical industry, overfishing and exploitation of seafood resources, massive aquaculture and mariculture, industrial agriculture, sand mining, industrial river pollution, city sewage and heavy maritime traffic. Salt-making has been shaping parts of the coast for a very long time impacting natural wetlands while often providing valuable human-made habitat for birds and many other organisms. Tourism development is a more recent development. It is also important to understand that land reclamation often destroys tidal mudflats while at times unintentionally creating others elsewhere. The intertidal system undergoes permanent and major change induced by a mix of natural and anthropogenic drivers. This leaves the coast of the Bohai Gulf with a very low degree of naturalness following millennia of intense use, rapidly accelerating over the last decades. While comparable to the wider Yellow Sea, the pressure on the Gulf of Bohai appears to be, if anything, even higher.

As a result of these threats, 81% of monitored bird species in the region are now in decline. The 2023 IUCN Situation analysis of the Yellow Sea notes in particular that of “34 populations of globally threatened and near threatened bird species, 14 (41%) are declining, only 5 are increasing and the rest are stable or uncertain.” The analysis also notes that “a minimum of 27 globally threatened and near threatened waterbird species known to depend on the intertidal wetlands that occur regularly in internationally important concentrations in the Yellow Sea, 22 are now considered to be in decline.” In this context, it is vitally important for the EAAF and species survival to ensure that the few remaining viable habitats are protected and that areas are restored where this is still possible. This might stabilize the ecosystem functions continuing to enable a key hub on the EAAF. In this regard, IUCN noted in its 2019 evaluation that the integrity can be considered marginal from an ecosystem perspective, but possibly acceptable from the narrow perspective of critical importance for bird migration.

IUCN notes that three nominated component parts include permitted oil exploration and exploitation (see section 4.1). Supplementary information confirms that oil exploitation and exploration is permitted in the nominated component parts of *West Part of Liao River Estuary* and *East Part of Liao River Estuary*. Supplementary information also notes existing oil exploitation as serious threat to the birds and wetlands (see section 4.2 for the discussion on Caofeidian). In line with the position of the World Heritage Committee that mineral exploration or exploitation is incompatible with World Heritage status, IUCN considers that these nominated component parts cannot be retained in the series, unless the licenses are revoked and any existing sites fully remediated.

The nominated component part of the *Migratory Bird Habitat at Qilihai Lagoon, Qinhuangdao, Hebei Province*, is heavily affected by aquaculture, which is partially included within the nominated area. The area of Qilihai Lagoon significantly decreased from 7.95 km² to 4.26 km² as a consequence of aquaculture. Whilst there are significant restoration efforts, which have already resulted in an increased number of geese, cranes, ducks, shorebirds and gulls, recent poisoning incidents affecting threatened bird species suggest that the negative effect of aquaculture is still a serious concern. Further restoration efforts may be required and the size of the nominated component part could be significantly enlarged within the existing protected area. The buffer zone may also need to be extended due to intensive land use in the surrounding areas. Therefore, IUCN recommends revising the nominated component part and include it in a new nomination to complete the series based on further restoration action.

In summary, the nominated property is subject to extreme pressure. The nominated component parts are likely to be under even more pressure if the protected areas of which they are part are reduced as a result of the systematic review of the State Party's entire protected area system. Whilst a management

plan for the nominated component parts is provided in the nomination dossier, IUCN notes that an overall management system for the serial property is not yet fully in place. A full and consolidated management plan integrating Phase I and Phase II, with detailed budgets for conservation and restoration action is therefore a high priority and should also incorporate tourism planning within the limits of the nominated property's carrying capacity.

In summary, IUCN considers that the integrity, protection and management of many individual components is adequate: *Migratory Bird Habitat at Chongming Dongtan, Shanghai; Old Course of Yellow River Estuary; North Part of the Yellow River Estuary; South Part of the Yellow River Estuary; Dawenliu; Migratory Bird Habitat at Nandagang wetland, Cangzhou, Hebei Province; Jiutou Hill; Snake Island; Dayang River; Erdaogou*. However, IUCN also considers that the integrity requirements of the *Operational Guidelines* are not met by of the following nominated component parts: *Migratory Bird Habitat at Qilihai Lagoon, Qinhuangdao, Hebei Province; Migratory Bird Habitat at Dachaoping of Beidaihe, Qinhuangdao, Hebei Province; Migratory Bird Habitat at Shihenandao of Laolongtou, Qinhuangdao, Hebei Province; Fantuozi Islet of Guanglu Island; Ertuozi Islet of Gexian Island; Dacatuozi of Guapi Island; Xiaocaotuozi of Guapi Island; Nandajiao of Guapi Island; Wuhushi of Haxian Island; Wushi of Dahaozi Island; Dabanshi of Dahaozi Island; Xicaotuozi of Dachangshan Island; Beituozi Islet of Dachangshan Island; Bashao Island Lithoherm Belt; Migratory Bird Habitat at Nanpu Zuidong Wetland, Luannan, Hebei Province; West Part of Liao River Estuary; East Part of Liao River Estuary*. The detailed consideration of the different component parts is set out below and in the preceding sections.

5. ADDITIONAL COMMENTS

5.1 Consideration in relation to serial properties

a) What is the justification for the serial approach?

The Yellow Sea (see 2023 IUCN Situation analysis) is characterized by significantly developed coasts with only semi-natural remnants and restoration areas. Coastal connectivity is severely reduced by infrastructure and major loss and degradation of natural habitats. The once vast coastal wetlands supporting huge herbivore populations with predator-prey dynamics have largely vanished. The migratory birds seem to be able to cope with the many barriers. Thus, the nomination's focus on migratory birds and their key habitats leaves little other choice than to select dispersed areas, which are conservation priorities. In line with its 2019 evaluation, IUCN considers that the intertidal mudflat system no longer exists as an uninterrupted system so that a serial approach is the only practical option to protect critical natural habitat and functions across what is one integrated ecosystem. The extension of the existing property is necessary to fully justify the serial approach.

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

While coastal connectivity has been compromised by massive development, the connectivity for the EAAF remains functional for the time being, despite obstacles such as the many onshore and offshore wind farms. The functional links between the nominated component parts is established through the migration on the EAAF and supported by protected areas that are large enough to serve as stopover, feeding/refuelling, moulting, wintering, and breeding sites.

However, as noted above (see sections 4.2 and 5.1(b)), there are nominated component parts that could be consolidated, and functional linkage improved through revised boundaries. In this regard, IUCN notes that there are nine nominated component parts located within the same protected area: *Fantuozi Islet of Guanglu Island*; *Ertuozi Islet of Gexian Island*; *Dacaotuozi of Guapi Island*; *Xiaocaotuozi of Guapi Island*; *Nandajiao of Guapi Island*; *Wuhushi of Haxian Island*; *Xicaotuozi of Dachangshan Island*; *Beituozi Islet of Dachangshan Island*; and *Bashao Island Lithoherm Belt*. The Dalian Changshan Islands National Marine Park encompasses all these nominated component parts which only cover a fraction of the area of the Marine Park. As the data provided in the dossier and the supplementary information is not specific to each of the nine nominated component parts, but only provided as aggregate number for all of them, it is not possible to discern that these nominated component parts adequately cover the distribution range of the migratory birds. Given their extremely small size – the nine nominated component parts totalling only 214.39 ha, i.e. 0.065% of the nominated property's area (see also section 4.2) –, they are not only lacking integrity in themselves, but they are also not adding to the integrity of the nominated property as a whole. IUCN therefore considers that the serial approach is not justified for these nominated component parts and recommends that the boundaries of the nominated areas are revised to cover the entire, or at least significant sections, of the existing protected area as it is also the case for all other nominated component parts.

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

As noted in section 4.3, the nominated component parts are subject to varying protected area designations. NFGA is responsible for the management of natural World Heritage properties and the nomination includes a management plan describing goals for the time after potential inscription. The Union of Natural Reserves within the Nominated Migratory Bird Sanctuaries along the Coast Yellow Sea-Bohai Gulf of China has promoted collaboration across boundaries and departments for the nominated areas. A "Protection Area Alliance" has also been

established for the serial approach. However, the overarching management system is expected to be put in place only after potential inscription. The mission recognized the difficulty of establishing a coordination mechanism for overall management across designations and provinces shortly after Phase I inscription. Therefore, it considered the proposed establishment of an overall management system after potential Phase II inscription an acceptable approach. In addition, IUCN notes that besides coastal wetland conservation initiatives and EAAF efforts, the Phase II nomination appears to serve as major effort to foster a coherent approach. This is a promising basis for the envisaged management framework.

5.2 Consideration in relation to transnational dimension

With three States Parties located along the coasts of the Yellow Sea, there is an obvious transboundary dimension. There are many efforts to support transboundary conservation, including by IUCN. The recent inscription of Getbol, Korean Tidal Flats (Republic of Korea) is relevant in this regard. In its 2019 evaluation (see document WHC/19/43.COM/INF.8B2), IUCN has called for bridging jurisdictions and sectors with a vision of an eventual trans-national approach. Consequently, the World Heritage Committee has encouraged "all related States Parties in the Flyway to cooperate with each other, in relation to the potential for future transboundary serial nominations, and/or extensions, that more fully reflect the habitat needs and patterns of use of migratory birds along the East Asian Australasian Flyway" (Decision 43 COM 8B.3). In Decision 44 COM 8B.6, inscribing Getbol, Korean Tidal Flats (Republic of Korea), the Committee echoed this encouraging the State Party "to further strengthen collaboration with other concerned States Parties to improve the conservation of critical habitats within the Eastern Asian-Australasian Flyway in relation to potential future transnational serial nominations, and/or extensions and, in particular, to coordinate with the State Party of China in relation to the anticipated Phase II nomination for Migratory Bird Sanctuaries along the Coast of Yellow Sea-Bohai Gulf of China, potentially through the 2007 Korea-China Agreement on the Protection of Migratory Birds". IUCN continues to stand ready to support such initiatives.

5.3 Naming of the serial nomination

IUCN considers that the serial property should be named **Migratory Bird Sanctuaries along the Coast of Yellow Sea-Bohai Gulf of China**, thus not retaining in the name either "Phase I" or "Phase 2", but noting that a further phase of the nomination is required.

6. APPLICATION OF CRITERIA

The **Migratory Bird Sanctuaries along the Coast of Yellow Sea-Bohai Gulf of China (Phase II) (China)** has been nominated under natural criterion (x).

Criterion (x): Biodiversity and threatened species

The nominated contains a range of component parts that do provide critical habitat for a large number of mostly migratory bird species, several of which critically depend on the coastal-marine ecosystem under consideration. Phase II undoubtedly includes areas that add significant value to the existing World Heritage property, currently consisting of only two component parts, and therefore holds the potential of enhancing the integrity of the existing property. The following ten nominated component parts of this extension improve the integrity of the existing property whilst exhibiting acceptable levels of intactness within the specific context of the wider Yellow Sea region and acceptable levels of protection and management:

- *Migratory Bird Habitat at Chongming Dongtan, Shanghai*
- *Old Course of Yellow River Estuary*
- *North Part of the Yellow River Estuary*
- *South Part of the Yellow River Estuary*
- *Dawenliu*
- *Migratory Bird Habitat at Nandagang wetland, Cangzhou, Hebei Province*
- *Jiutou Hill*
- *Snake Island*
- *Dayang River*
- *Erdaogou*

The area initially nominated (293,384.70 ha) was increased to 328,494.85 ha by the State Party through the revision of several nominated component parts in supplementary information. The area IUCN recommends for inscription amounts to 289,710.94 ha with buffer zones totalling 117,502.10 ha (127,128.28 ha initially nominated, 128,991.98 ha as revised by the State Party). There remains potential to further enlarge the areas of above-mentioned ten component parts following conclusion of the review of the State Party's protected areas, if necessary, through the submission of a minor boundary modification.

IUCN considers that these ten nominated component parts meet this criterion.

The following 14 further component parts exhibit more significant issues related to integrity and/or protection and management and require a change in boundaries to enlarge the proposed component parts so as to align to the maximum extent possible with existing protected area boundary core zones, and to clarify the presence of key species within the nominated component parts. This requires a more fundamental reconsideration in relation to the possibility to meet criterion (x):

- *Migratory Bird Habitat at Qilihai Lagoon, Qinhuangdao, Hebei Province;*
- *Migratory Bird Habitat at Dachaping of Beidaihe, Qinhuangdao, Hebei Province;*
- *Migratory Bird Habitat at Shihenandao of Laolongtou, Qinhuangdao, Hebei Province;*
- *Fantuozi Islet of Guanglu Island;*
- *Ertuozi Islet of Gexian Island;*

- *Dacaotuozi of Guapi Island;*
- *Xiaocaotuozi of Guapi Island;*
- *Nandajiao of Guapi Island;*
- *Wuhushi of Haxian Island;*
- *Wushi of Dahaozi Island;*
- *Dabanshi of Dahaozi Island;*
- *Xicaotuozi of Dachangshan Island;*
- *Beituozi Islet of Dachangshan Island;*
- *Bashao Island Lithoherm Belt;*

Decision 43 COM 8B.3 of the World Heritage Committee requested that the State Party confirm the presence of the attributes of Outstanding Universal Value within the boundaries of the Phase II nomination, clearly demonstrate that the integrity of all natural attributes contributing to the property's Outstanding Universal Value can be conserved within each of the component parts, and ensure that there are no unacceptable negative effects of development on the attributes of conservation significance in each of the component parts of the nominated property. In this respect, IUCN notes that a number of nominated component parts are extremely small and/or are composed by a number of very small sub-components, with narrow and sometimes incomplete buffer zones, often exclude roosting habitat, and are often close to development projects and/or existing infrastructure, all of which will likely make it challenging to maintain integrity going forward. IUCN notes that the supplementary information requested with respect to species lists in the Phase II nomination does not provide new information regarding the attributes of Outstanding Universal Value found within the nominated areas, and IUCN was not able to confirm that key species are indeed found within the boundaries of the nominated component parts rather than in their buffer zones or further outside.

Furthermore, the nomination includes component parts that clearly do not meet protection requirements in respect to criterion (x), as these sites are open to oil exploration, and raise additional integrity and boundary concerns, and these areas are therefore are not recommended for inclusion in the serial property until such conflicting uses have been eliminated:

- *Migratory Bird Habitat at Nanpu Zuidong Wetland, Luannan, Hebei Province;*
- *West Part of Liao River Estuary*
- *East Part of Liao River Estuary*

Finally, IUCN considers that further component parts, not included in the present Phase II nomination, would need to be included to complete the series. While the exclusion of some sites was clearly explained in the supplementary information provided by the State Party, a number of critically important sites identified in the Phase I nomination dossier and in the State Party's Tentative List for future nomination were not included in the Phase II nomination. These include the Jiangsu Rudong Coastal Wetland, Rudong-Tiezuisha Coast, and Lianyungang Salt Works. While the supplementary information provided by the State Party addresses these sites, indicating a number of concerns with these nominated component parts ranging from integrity issues to concerns from local communities, these

areas have been consistently identified as high priorities in the scientific literature, and by experts consulted during IUCN's evaluation process. Thus, IUCN's view is that these potential areas should be included in another extension nomination to ensure completeness of the overall series. It would also be possible for such a further phase to consider if some of the areas that are not suitable for inclusion in the present extension could be significantly revised and extended to meet integrity and protection and management requirements.

On the basis of such a final extension nomination to complete Phase II, the possibility of renominating the entire property under criterion (ix) could be reconsidered as the 2019 IUCN evaluation (see document WHC/19/43.COM/INF.8B2) suggested that the full range of the components of the proposed series as a whole has the potential to meet criterion (ix).

In view of the complexity of the nomination, a summary table is provided as Annex I of this report to aid understanding of IUCN recommendations.

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. Recalling decision **43 COM 8B.3** of the Committee,

3. Approves the extension of the **Migratory Bird Sanctuaries along the Coast of Yellow Sea-Bohai Gulf of China (Phase I), China**, to become the **Migratory Bird Sanctuaries along the Coast of Yellow Sea-Bohai Gulf of China, China**, on the World Heritage List on the basis of **criterion (x)** through the addition of the following nominated component parts included in the present (Phase II) nomination:

- *Migratory Bird Habitat at Chongming Dongtan, Shanghai;*
- *Old Course of Yellow River Estuary;*
- *North Part of the Yellow River Estuary;*
- *South Part of the Yellow River Estuary;*
- *Dawenliu;*
- *Migratory Bird Habitat at Nandagang wetland, Cangzou, Hebei Province;*
- *Jiutou Hill;*
- *Snake Island;*
- *Dayang River;*
- *Erdaogou;*

4. Adopts the following Statement of Outstanding Universal Value for the property as a whole including the newly approved component parts outlined above:

Brief synthesis

The Migratory Bird Sanctuaries along the Coast of the Yellow Sea-Bohai Gulf of China, inscribed through Phase I (2019) and Phase II (2024) of a serial nomination process, are situated in the largest intertidal wetland system in the world and one of the most biologically diverse. The property is located in the Yellow Sea Ecoregion, and supports crucial habitats for birds migrating along the East Asian-Australasian Flyway, its wetlands serving a unique ecological function as indispensable stopover and staging sites during northward/southward migration. The Yellow Sea and the Gulf of Bohai are a bottleneck for many millions of migratory waterbirds – more than 10% of the total migration along the East Asian-Australasian Flyway. The property is thus an irreplaceable and indispensable hub for birds migrating along the East Asian-Australasian Flyway, which spans not only China, Democratic People's Republic of Korea and the Republic of Korea, within the Yellow Sea, but also some 22 countries across two hemispheres from the Arctic to South-East Asia and Australasia. The global importance of the wider coastal area is evidenced by several Ramsar sites, some of which fully or partially overlap with component parts of the property. Thus, this property is a globally significant example of the shared natural heritage embodied in migratory birds.

The twelve component parts of the property are located along the Yellow Sea coast of China, including the Bohai Gulf, with a total area of 289,710.94 ha, and a buffer zone of 117,502.10 ha. The Getbol, Korean Tidal Flats World Heritage property (Republic of Korea) further strengthens the protection of the Flyway. In light of the fact that human activity has transformed many of the region's tidal wetlands, there is a need for effective measures to halt major threats and restore key migratory bird habitats, and for further national and transnational serial nominations, and/or extensions to strengthen the integrity of the property.

Criterion (x)

The Migratory Bird Sanctuaries along the Coast of Yellow Sea-Bohai Gulf of China support more than 400 species of birds. The property's tidal flats are of exceptional importance for the conservation of the world's migratory birds, supporting internationally significant numbers of migratory bird species, including globally threatened species. The component parts of the Migratory Bird Habitat in the South of Yancheng, Jiangsu and the Migratory Bird Habitat in the North of Yancheng, Jiangsu alone are significant for more than 10% of the East Asian-Australasian Flyway populations and provide critical habitat for two of the world's rarest migratory birds – the Spoon-billed Sandpiper and the Nordmann's Greenshank, which depend on the tidal flats for their continued survival. The wetlands within the Migratory Bird Sanctuaries along the Coast of Yellow Sea Bohai Gulf of China serve a unique ecological function as indispensable stopover and staging sites that provide necessary food resources, ensuring fat replenishment and storage for subsequent flights during northward/southward migration. Without these important hubs, the successful migration, breeding, and population maintenance of birds in the flyway could not be

maintained. In addition to providing stopover habitat for migratory birds, the nominated component parts also include wintering areas and breeding areas for at least 45 threatened bird species including shorebirds, waterfowl, and raptors.

The property's tidal flats also provide important migratory habitat for the threatened Black-faced Spoonbill, Oriental Stork, Red-crowned Crane and Great Knot; the Chinese Egret, Dalmatian Pelican, Swan Goose, Relict Gull and Saunders's Gull. The property also supports further migratory bird species, including the Red Knot, Asian Dowitcher, Black-tailed Godwit, Eurasian Curlew, Reed Parrotbill, Curlew Sandpiper, Greater Sand Plover, Lesser Sand Plover and Ruddy Turnstone. Other migratory birds that utilise the property include the Eurasian Oystercatcher, Pied Avocet, Grey Plover, Kentish plover, Far Eastern Curlew, Broad-billed Sandpiper, Red-necked Stint, Sanderling, Dunlin, Terek Sandpiper, and Common Tern. The property also hosts large numbers of zoobenthos and fish species as well as important mammal, amphibian and reptile species, all part of the coastal ecosystems the migratory birds depend on.

Integrity

The property as a whole makes an indispensable contribution to the viability of the East Asian-Australasian Flyway, one of the world's most important flyways and arguably the one most at risk and fragile. The twelve component parts of the property include clear boundaries for adequate protection of birds when they are on-site. It is, however, important to understand that the birds depend on wider coastal habitats such as reed beds and groves and hence protection and restoration efforts in these areas are equally important. The property comprises large tracts of mudflats, beaches, and other key stopover habitats for migrating birds. The intertidal mudflats, marshes and shallow waters are exceptionally productive and provide spawning and nursery habitat for many fish and crustacean species. In particular, the intertidal mudflats attract a high diversity and enormous number of resident and migratory birds. The intertidal mudflats, which have shaped the crucial habitat for migratory birds, are fed by large rivers (including the Yellow River, Yangtze River, Yalu River, Liao River, Luan River and Hai River) that provide the crucial underpinnings of this system as they continuously discharge sediments into the Yellow Sea and Bohai Gulf, accumulating to form a series of different habitat types all critical for various migratory birds.

The 2024 inscription of ten additional component parts in the Phase II extension has enhanced the integrity of the Phase I property inscribed in 2019, added over 100,000 hectares of migratory bird habitat. Nevertheless, there are further important areas that would deserve to be included in the existing series to fully meet integrity requirements and to fully implement Decision 43 COM 8B.3 of the World Heritage Committee, which first inscribed the property in 2019. This decision was taken by the Committee on the understanding that the State Party would submit a nomination that includes all the additional components of the proposed serial listing as a whole, in order to

reflect the full range of natural wealth and diversity of the ecoregion and to meet integrity requirements, supported by a comprehensive and detailed overview and analysis of priority conservation areas in the Yellow Sea and Bohai Gulf, including the fourteen additional areas identified in the original Phase I nomination, fully taking into account ecosystem and habitat diversity of the coastal system, proposed boundaries, values (including species occurrence, abundance and conservation status), threats, integrity, protection and management.

The entire coastline lies within a densely populated and intensively used part of China that has been subject to very substantial anthropogenic modification and impact over a long period. While human activity has transformed vast tracts of the coast and tidal wetlands, policies that promote a more ecologically sustainable society are emerging to halt the transformation of the remaining natural areas and to even reverse trends by restoring key migratory bird habitats. To add complexity, however, many of the underlying factors of change, such as pollution, oil exploration and exploitation, marine traffic, the modification of major rivers and their sediment loads, wind energy and infrastructure on land and in the sea, stem from outside the property including the coast and near-shore waters.

Protection and Management Requirements

The component parts of the property are state-owned and fully protected by law. Ecological Red Lines are also conducive to their conservation and effective management. These management and conservation policies provide the necessary mechanisms for maintaining intact ecosystems and biological processes within the property. Furthermore, it is essential that the buffer zones in areas adjacent to the component parts provide an added layer of protection against wider threats.

In light of the major past transformation of, and profound impacts on the coastal and intertidal ecosystems and ongoing high pressures and threats, protection measures need to be strengthened and expanded, including through the planned designation of two national parks, but also through the avoidance and mitigation of threats from outside the boundaries of the property. In this respect, China has established a series of wetland conservation policies, including the Notice of the State Council on Strengthening the Protection of Coastal Wetlands and Strictly Controlling Land Reclamation from Sea (G.F. [2018] No.24), the Notice of the General Office of the State Council on Issuing the Scheme of Wetland Protection and Restoration System (G.B.F. [2016]No.89), and the Guiding Opinions on Establishing a Nature Reserve System with National Parks as the Main Component. The Wetland Protection Law China has completely prohibited reclamation projects and actively advanced the restoration of tidal flat ecosystems in some damaged areas, representing a change from "seeking resources from nature" to "living in harmony with nature". Under the conservation and management plan of each component part, local residents are permitted

to continue traditional environmentally sustainable marine fishing, aquaculture and farming activities in the component parts.

The local governments of Shanghai, Shandong, Hebei and Liaoning have approved the establishment of leading groups and offices for the World Heritage inscription, and assigned full-time personnel for the conservation and management of the property's component parts and buffer zones. For each component part, specific management organizations and protection teams have been established, and detailed management regulations and measures have been enacted. Tourism will be concentrated in limited designated areas, and local residents are encouraged to engage in the conservation and publicity of the component parts and protected areas. Most tourism use is physically separated from the protected areas and limited to visitor centres, and tourism should be appropriately scaled and low impact. Future planning and management for each of the component parts of the property needs to ensure that there are no negative effects of development on biodiversity and threatened species, including any negative effects of tourism, wind turbines, pollution (including from noise), land reclamation, and infrastructure development. Specific strategies and action are required to ensure conservation of areas above the tidal areas and to restore degraded wider systems that are important to support the core habitat within the property.

Spanning beyond China's borders, the intertidal wetlands of the Yellow Sea-Bohai Gulf support crucial habitats for birds migrating along the East Asian-Australasian Flyway. Beyond the national level, there is further and related World Heritage potential, which deserves to be considered as the involved countries intensify efforts towards a harmonized conservation and management strategy of the most valuable regional stepping stones of the East Asian-Australasian Flyway. Effective conservation and management of the East Asian-Australasian Flyway will require international cooperation involving all the States Parties along the flyway. The initial efforts of the three States Parties in the central hub of the flyway (China, Democratic Peoples Republic of Korea and Republic of Korea) are encouraging and should be continued and expanded, including under the World Heritage Convention and other international initiatives.

5. Takes note of the following component parts in the present nomination, which are not recommended for inclusion in the serial property at the present time:

- *Migratory Bird Habitat at Qilihai Lagoon, Qinhuangdao, Hebei Province;*
- *Migratory Bird Habitat at Dachaoping of Beidaihe, Qinhuangdao, Hebei Province;*
- *Migratory Bird Habitat at Shihenandao of Laolongtou, Qinhuangdao, Hebei Province;*
- *Fantuozi Islet of Guanglu Island;*
- *Ertuozi Islet of Gexian Island;*
- *Dacaotuozi of Guapi Island;*
- *Xiaocaotuozi of Guapi Island;*
- *Nandajiao of Guapi Island;*
- *Wuhushi of Haxian Island;*

- *Wushi of Dahaozi Island;*
- *Dabanshi of Dahaozi Island;*
- *Xicaotuozi of Dachangshan Island;*
- *Beituozi Islet of Dachangshan Island;*
- *Bashao Island Lithoherm Belt;*

and recommends the State Party before considering potential resubmission of these component parts in any future nomination to expand the boundaries of the nominated component parts so as to meet integrity, protection and management requirements, and to align them appropriately with existing protected area boundary core zones, whilst demonstrating the presence of key species within the boundaries of the nominated component parts;

6. Also takes note of the following component parts in the present nomination, which are not recommended for inclusion in the serial property at the present time in line with the established position of the World Heritage Committee that mineral exploration or exploitation is incompatible with World Heritage status:

- *Migratory Bird Habitat at Nanpu Zuidong Wetland, Luannan, Hebei Province;*
- *West Part of Liao River Estuary;*
- *East Part of Liao River Estuary;*

and recommends the State Party before considering potential resubmission of these component parts in any future nomination to unequivocally revoke permits for hydrocarbon exploration and exploitation, and to expand the boundaries of the nominated component parts to meet integrity, protection and management requirements, and to align them appropriately with existing protected area boundary core zones;

7. Strongly encourages the State Party to fully implement Committee Decision **43 COM 8B.3** and to complete the series by nominating a further phase of the nomination, to include the Jiangsu Rudong Coastal Wetland, Rudong-Tiezuisha Coast, and Lianyungang Salt Works, all of which have been recognised to be of exceptional importance to the East Asian Australasian Migratory Flyway, as well as appropriately reconfigured component parts referred to above, which meet the necessary integrity and protection and management requirements of the *Operational Guidelines*;

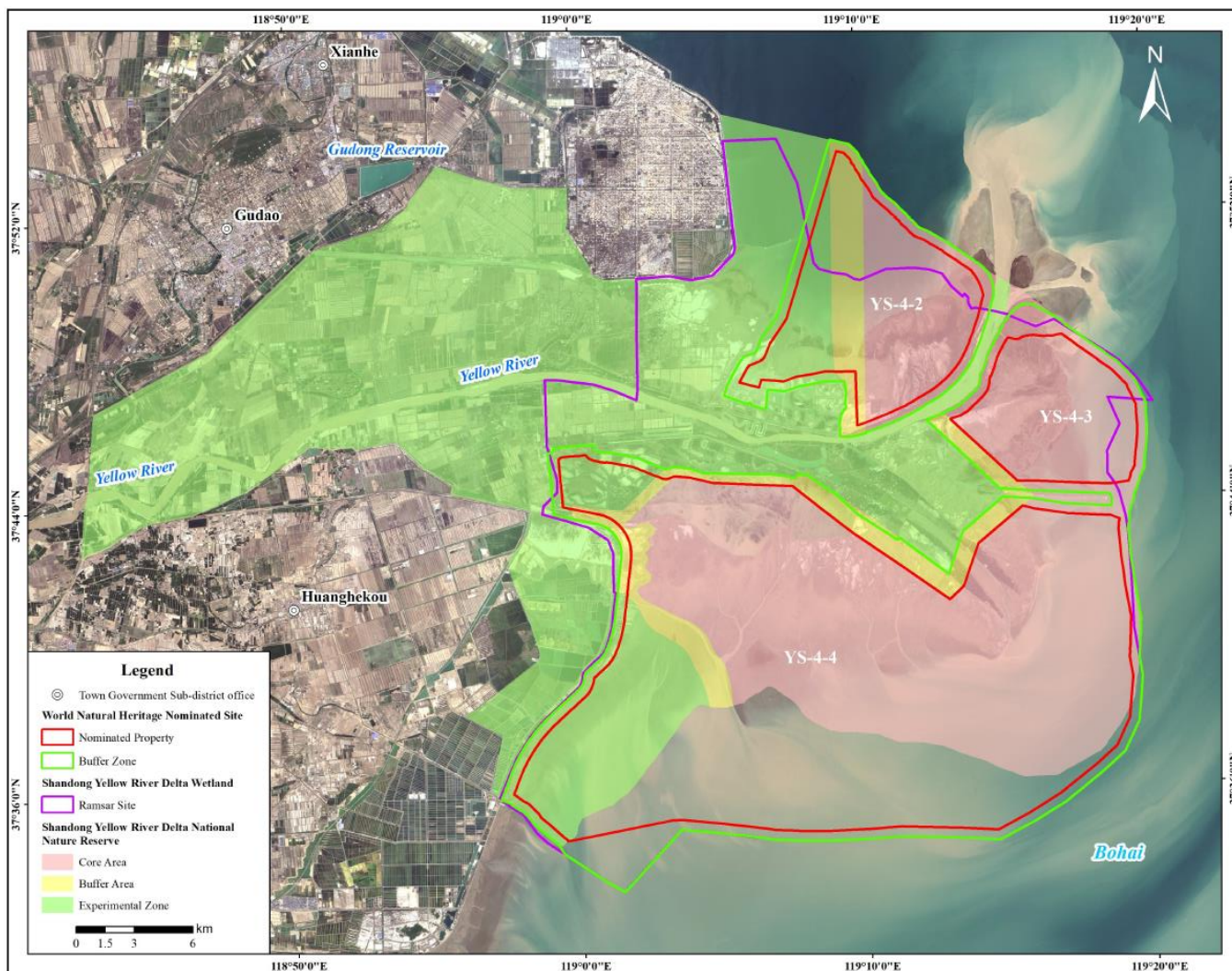
8. Requests the State Party to establish the overarching management system integrating all of the inscribed component parts as soon as practicable and to ensure that this plan includes a strategy for sustainable tourism and reinforced measures to address threats from invasive alien species, agricultural run-off, industrial and urban developments, as well as effective disaster risk reduction measures for those component parts in the vicinity of hydrocarbon exploration and exploitation;

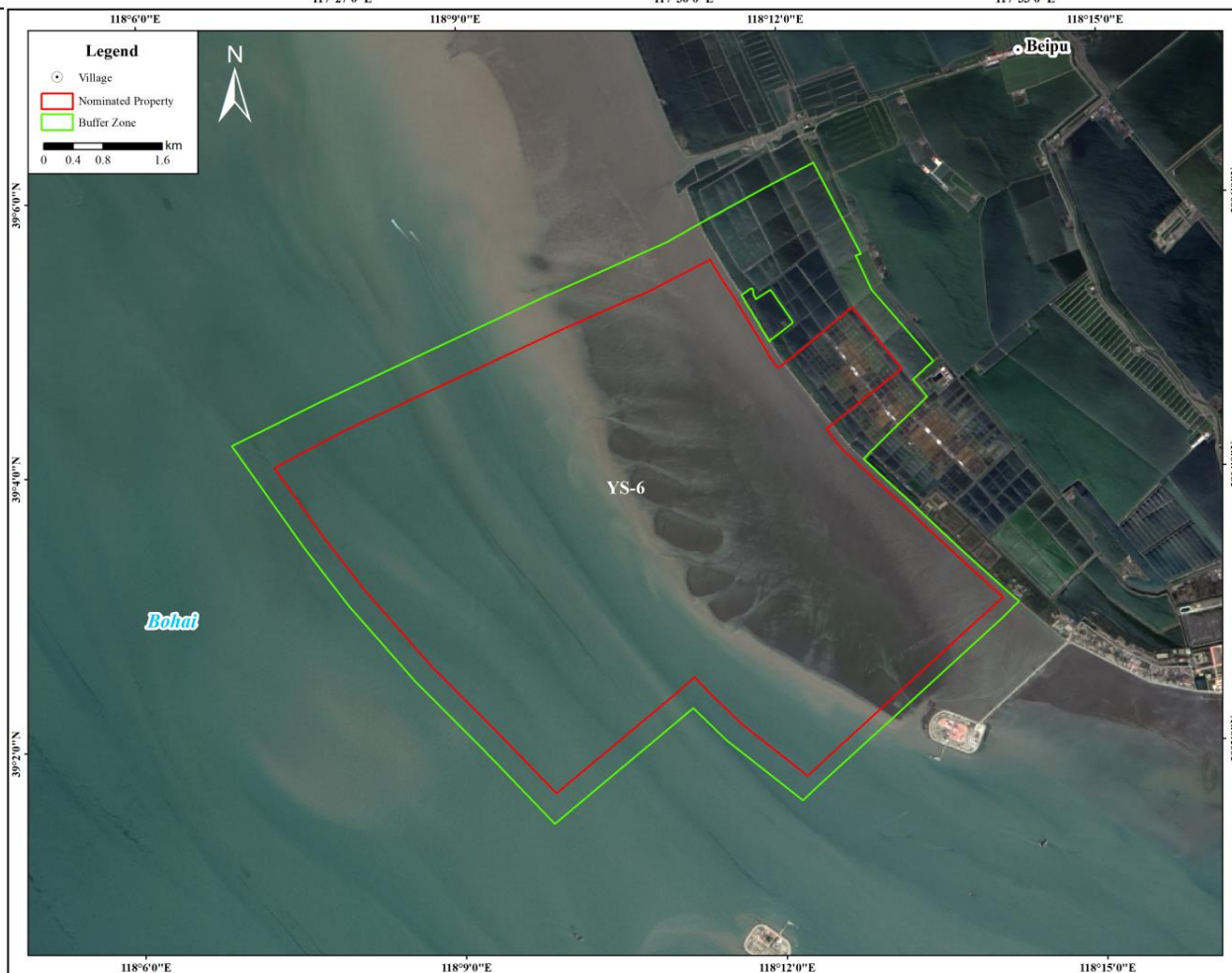
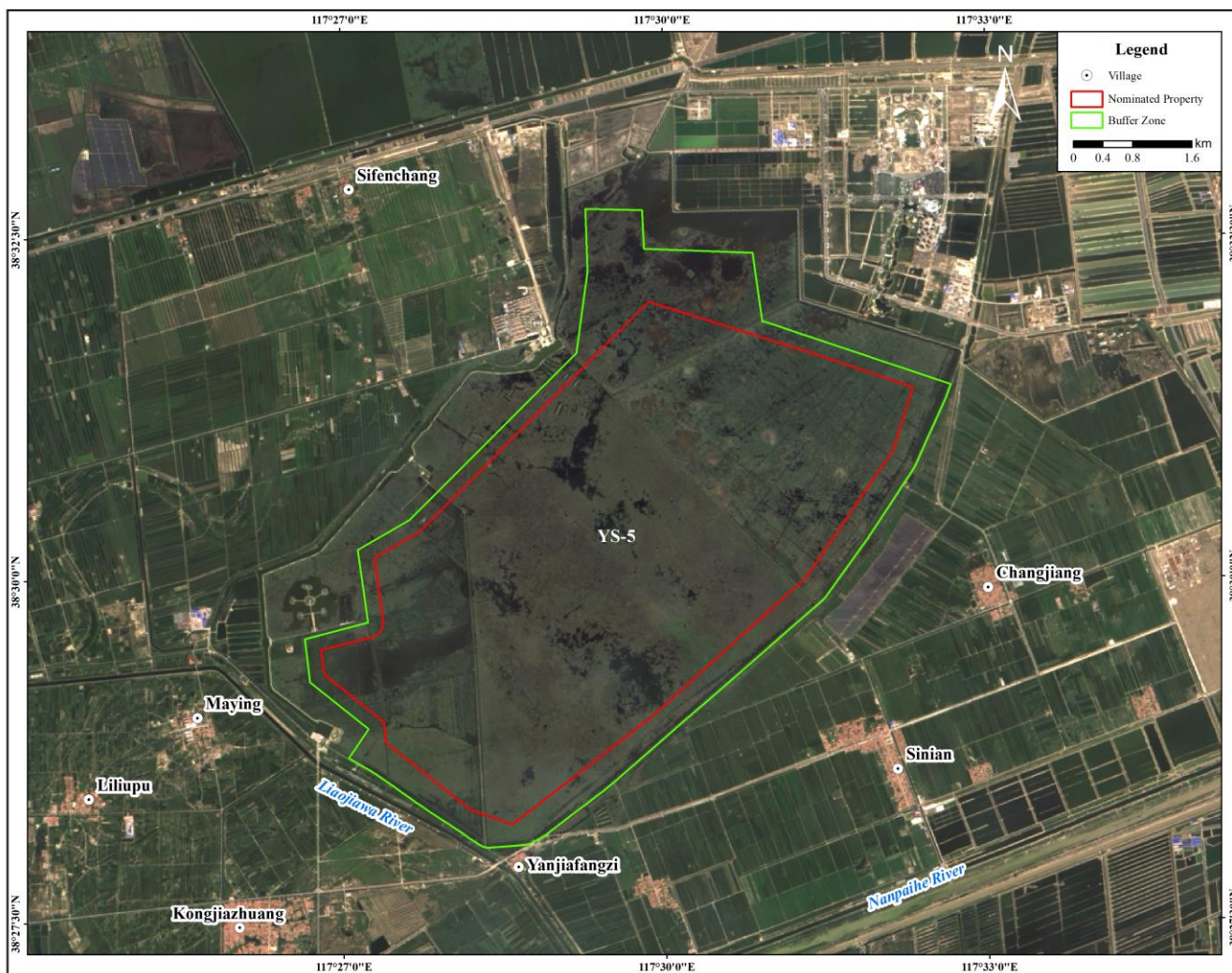
9. Encourages the State Party to expand the boundaries of relevant inscribed component parts aligning them with the boundaries of existing protected areas to the maximum extent possible following the completion of the State Party's current systematic

review of its entire protected area system being undertaken, including enlarging and consolidating buffer zones where feasible, so as to enhance

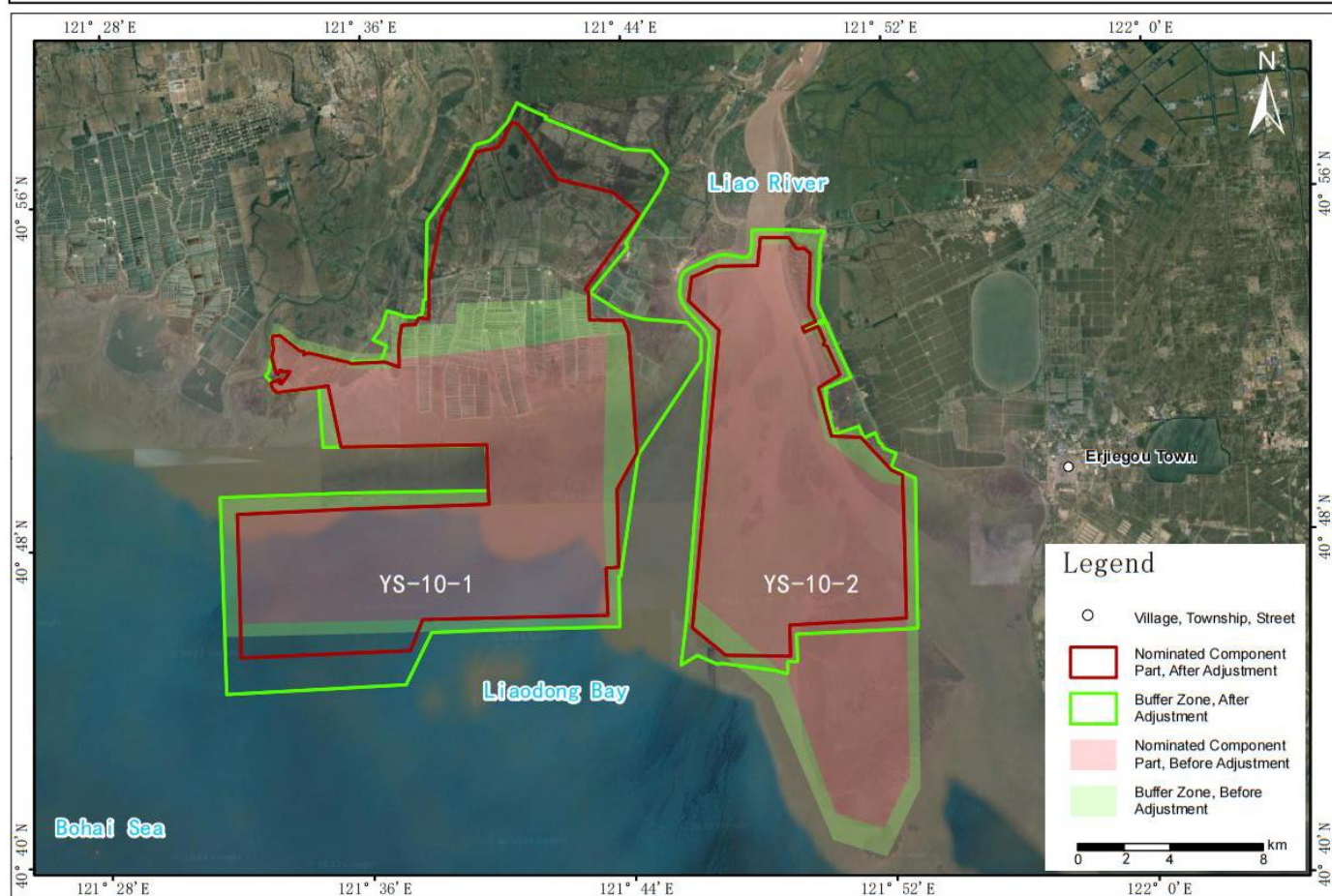
coverage of migratory bird habitats, through the possible submission of a boundary modification.

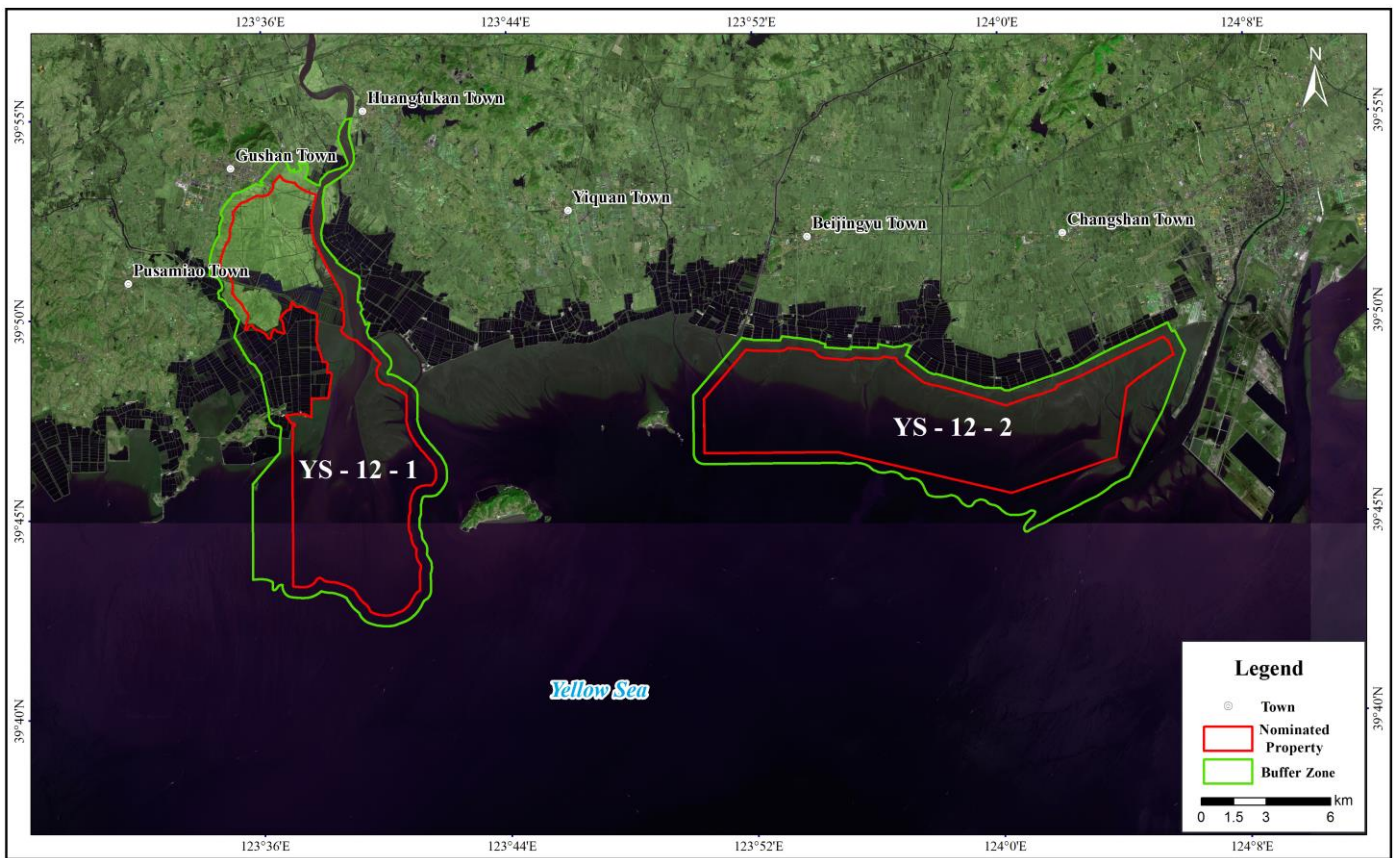
Maps 1-11: Boundaries of the nominated property and buffer zones (Source: nomination dossier and supplementary information)

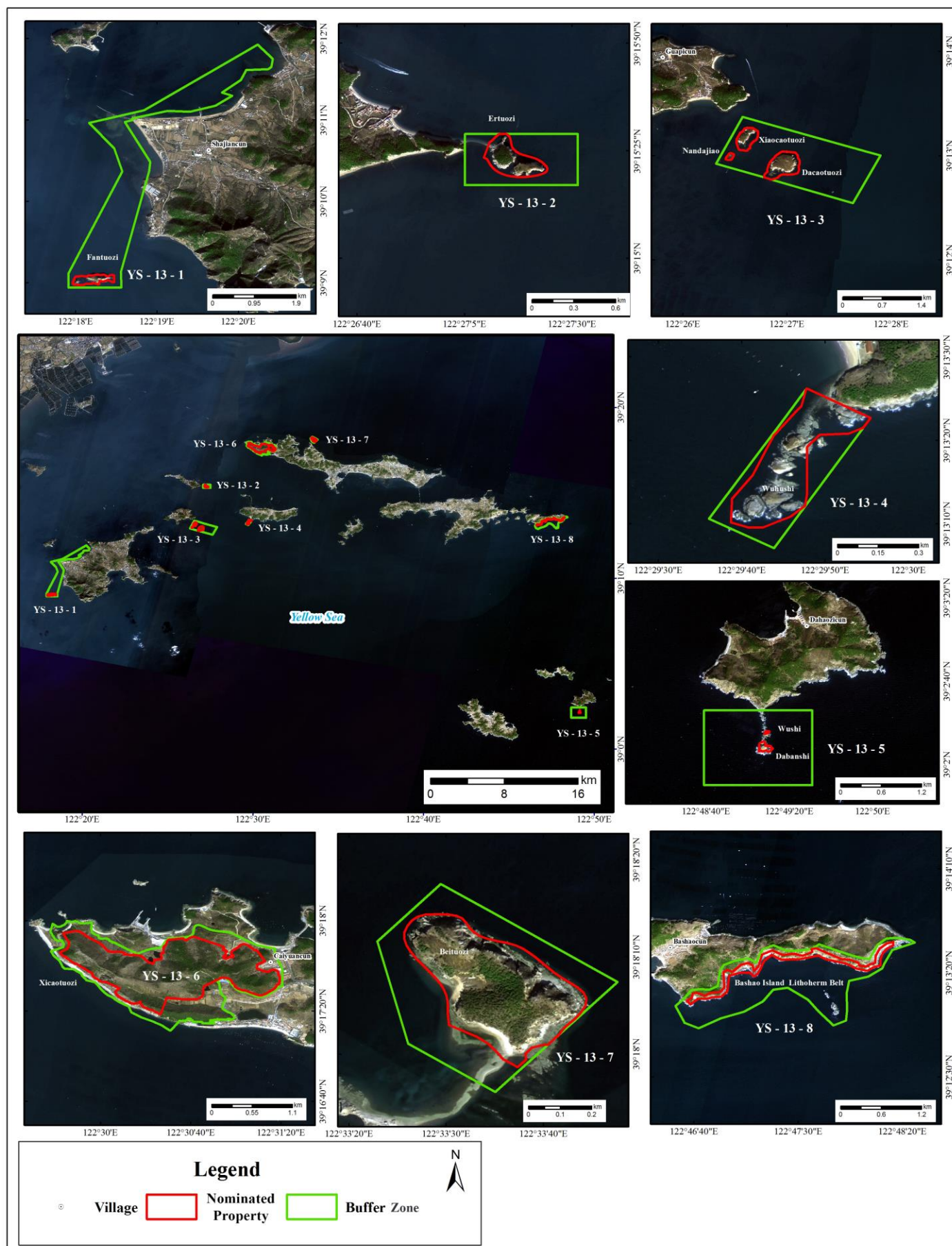












Annex I – Summary of IUCN recommendations

ID No	Name of the area	Nominated Property (ha)	Buffer zone (ha)	Summary of key issues	Summary of principal IUCN Recommendations
1606-001	Migratory Bird Habitat in the South of Yancheng, Jiangsu	144,839	28,271		(inscribed in 2019)
1606-002	Migratory Bird Habitat in the North of Yancheng, Jiangsu	43,804	51,785		(inscribed in 2019)
1606bis-003	Migratory Bird Habitat at Chongming Dongtan, Shanghai	7,504.71	11,271.32	Nominated component part contains majority of relevant and intact habitat; buffer zone should further be optimised.	Approve (meets WH requirements) Recommended to consider MBM enlarging and enhancing effectiveness of buffer zone.
1606bis-004	Old Course of Yellow River Estuary	(8,462.14) 14,472.25	(3,698.00) 4,539.62	Nominated component part enlarged to adequate size; boundaries should further be optimised.	Approve (meets WH requirements) Recommended to reinforce measures to (a) address any potential oil leakages from nearby hydrocarbon platforms and pipelines and (b) continue eradicating <i>Spartina</i> .
1606bis-005	North Part of the Yellow River Estuary	(4,358.71) 8,524.79	(2,414.76) 2,427.72	Two of three adjacent nominated component parts enlarged so that adequate coverage is achieved.	
1606bis-006	South Part of the Yellow River Estuary	5,214.62	1,977.12		
1606bis-007	Dawenliu	(24,291.79) 44,091.60	(5,645.14) 6,740.28		
1606bis-008	Migratory Bird Habitat at Nandagang wetland, Cangzou, Hebei Province	2,922.92	891.22	Nominated component part contains majority of relevant and intact habitat; boundaries should further be optimised	Approve (meets WH requirements) Recommended to submit MBM and ensure use in buffer zone restricted and reclamation of intertidal areas prohibited.
1606bis-009	Migratory Bird Habitat at Nanpu Zuidong Wetland, Luannan, Hebei Province	3,958.30	1,223.51	Oil exploration / exploitation incompatible with World Heritage status; buffer zone should further be optimised	Revise (does not meet WH requirements) Recommended to unequivocally revoke hydrocarbon permits and to subsequently optimise the buffer zone.
1606bis-010	Migratory Bird Habitat at Qilihai Lagoon, Qinhuangdao, Hebei Province	1,050.26	471.12	Values affected by aquaculture; buffer zone should further be optimised	Revise (does not meet WH requirements) Recommended to reinforce pollution management of surrounding aquaculture. Buffer zone may need to be extended due to intensive, surrounding land use.
1606bis-011	Migratory Bird Habitat at Dachaoqing of Beidaihe, Qinhuangdao, Hebei Province	97.53	11.11	Small size in urbanised context; need to enhance integrity through the inclusion of already protected upstream areas	Revise (does not meet WH requirements) Recommended to expand boundaries to include upstream areas.
1606bis-012	Migratory Bird Habitat at Shihenandao of Laolongtou, Qinhuangdao, Hebei Province	128.25	39.96		
1606bis-013	West Part of Liao River Estuary	(14,142.24) 22,189.41	(5,084.32) 6,655.35	Oil exploration / exploitation incompatible with World Heritage status; boundaries should include more land above high-tide line for roosting shorebirds and any impacts from aquaculture addressed.	Revise (does not meet WH requirements) Recommended to unequivocally revoke hydrocarbon permits.
1606bis-014	East Part of Liao River Estuary	(14,057.19) 11,144.17	(3,834.36) 2,177.31		

1606bis-015	Jiutou Hill	768.20	500.91	Mostly intact habitat; boundaries should be optimised by including further key wooded areas within Liaoning Snake Island-Laotieshan National Nature Reserve.	Approve (meets WH requirements) Recommended to submit further MBM to include key wooded areas within Liaoning Snake Island-Laotieshan National Nature Reserve.	
1606bis-016	Snake Island	323.95	316.29	Small size, but in remote marine context; Habitat intact and adequately covered.	Approve (meets WH requirements) No recommendation	
1606bis-017	Dayang River	8,578.14	4,886.27	Large area covering key habitat largely in line with zonation of Liaoning Yalu River Estuary Coastal Wetland National Nature Reserve.	Approve (meets WH requirements) Recommended to ensure connectivity between the both component parts, including through a potential MBM to include more land above high-tide line for roosting shorebirds and through measures limiting impacts from shellfish farming on mudflats.	
1606bis-018	Erdaogou	8,666.76	3,895.35			
1606bis-019	Fantuozi Islet of Guanglu Island	12.13	369.00	Nominated area too small to represent and protect attributes of OUV	Revise (does not meet WH requirements) Recommended to merge and extend the nominated component parts into one component part, or at least significantly expand the nominated component parts, on the basis of the existing National Marine Park. This could include Shicheng islands with key breeding populations.	
1606bis-020	Ertuozi Islet of Gexian Island	6.06	17.04			
1606bis-021	Dacaotuozi of Guapi Island	16.65	159.37			
1606bis-022	Xiaocaotuozi of Guapi Island	8.42				
1606bis-023	Nandajiao of Guapi Island	0.94				
1606bis-024	Wuhushi of Haxian Island	8.01	3.99		Revise (does not meet WH requirements) Recommended to merge and extend the nominated component parts into one significantly larger component part.	
1606bis-025	Wushi of Dahaozi Island	1.45	137.24			
1606bis-026	Dabanshi of Dahaozi Island	0.15				
1606bis-027	Xicaotuozi of Dachangshan Island	129.49	77.54			Revise (does not meet WH requirements) Recommended to merge the nominated component parts into one component part, or at least significantly expand the nominated component parts, on the basis of the existing National Marine Park.
1606bis-028	Beituozi Islet of Dachangshan Island	11.37	10.18			
1606bis-029	Bashao Island Lithoherm Belt	21.32	137.16			
		289,710.94	117,502.10	Total already inscribed and total recommended for approval		
		38,783.91	11,489.88	Total recommended for revision		

Table 2: Component parts that are proposed as Phase II extending the Migratory Bird Sanctuaries along the Coast of Yellow Sea-Bohai Gulf of China (Phase I), with key issues identified and key recommendations by IUCN. The areas of the nominated component parts have been updated based on the supplementary information submitted by the State Party. The areas as initially nominated are shown in parentheses. As noted in the evaluation report, there are also further areas that should be considered to complete the series, notably **Jiangsu Rudong Coastal Wetland, Rudong-Tiezuisha Coast, and Lianyungang Salt Works**. Abbreviations: WH (World Heritage); MBM (Minor Boundary Modification).

EUROPE / NORTH AMERICA

VJETRENICA CAVE, RAVNO

BOSNIA AND HERZEGOVINA



Vjetrenica Cave, Ravno © IUCN / Zsuzsa Tolnay

WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

VJETRENICA CAVE, RAVNO (BOSNIA AND HERZEGOVINA) – ID N° 1673

IUCN RECOMMENDATION TO WORLD HERITAGE COMMITTEE: To refer the nomination under natural criterion (x).

Key paragraphs of Operational Guidelines:

Paragraph 77: Nominated property does not meet World Heritage criterion (vii) but has the potential to meet criterion (x).

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

Background note: The World Heritage Committee's attention is drawn to Decision 35 COM 12C in which the Committee took note of the selection of 10 pilot projects considering nominations before their preparation (Upstream Process), including a pilot project on the Dinaric Karst Serial Nomination (Albania, Bosnia and Herzegovina, Croatia, Italy, Montenegro, Serbia and Slovenia). The progress report to the Committee on the Upstream Process of 2018 (WHC-15/39.COM/9A), related to Decision 39 COM 9A, noted that despite a good start there had been no indication of progress reported from States Parties regarding the Dinaric Karst Serial Nomination since the 38th session of the Committee. The States Parties have requested to phase out the Dinaric Karst Serial Nomination as one of the Upstream Process pilots. Whilst criterion (viii) would have been the likely focus of a potential Dinaric Karst nomination, further to the 2008 study of IUCN on World Heritage Caves and Karst, IUCN notes that the present nomination has not been proposed under this criterion.

1. DOCUMENTATION

a) Date nomination received by IUCN: March 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 on the exact area of the nominated property and its buffer zone; the protection regime provided by the Protected landscape Vjetrenica-Popovo polje, maps, information on stakeholders, ownership and inhabitants within the nominated property and its buffer zone, including consultation processes, as well as an update on the threats affecting the nominated property; and the current and planned funding and staffing for the nominated property.

c) Additional literature consulted: IUCN's evaluation consulted relevant reference materials for the geology, biology, ecology, protection and management as well as the comparative values of the nominated property. References used in this evaluation included: Baković, N., Pipan, T., Baković, R., Ozimec, R., Rubinić, J., & Matonićkin Kepčija, R. (2022). Algae and cyanobacteria in the aphotic habitats of Veternica Cave (Medvednica Mt., Croatia) and selected caves of the Dinaric karst (South-Eastern Europe). *International Journal of Speleology*, 51(3), 3; Culver, D.C., Deharveng, L., Pipan, T., & Bedos, A. (2021). An Overview of Subterranean Biodiversity Hotspots.

Diversity, 13, 487. <https://doi.org/10.3390/d13100487>; Culver, D. C. & Pipan, T. (2019). Geography of Subterranean Biodiversity. In *The Biology of Caves and Other Subterranean Habitats*, 2nd edn, Biology of Habitats Series, <https://doi.org/10.1093/oso/9780198820765.003.0008>; Culver, D. C., & Pipan, T. (2018). Insects in caves. In *Insect Biodiversity: Science and Society*, 123-152; Culver, D.C. & Sket, B. (2000). Hotspots of Subterranean Biodiversity in Caves and Wells. *Journal of Cave and Karst Studies*, 62(1); DeliĆ, T., Pipan, T., Ozimec, R., Culver, D. C., & Zgamažster, M. (2023). The Subterranean Species of the Vjetrenica Cave System in Bosnia and Herzegovina. *Diversity*, 15(8), pp. 912; Dumnicka, E., Pipan, T., & Culver, D. C. (2020). Habitats and diversity of subterranean macroscopic freshwater invertebrates: Main gaps and future trends. *Water*, 12(8), 2170; Footitt, R.G., Adler, P.H., Eds., Culver, D.C. (2016). Karst environment. *Zeitschrift für Geomorphologie*, 60, Suppl. 2, 103-117. IUCN (2021). Classical Karst. Slovenia. In *IUCN World Heritage Evaluations 2020*, Vol. II, WHC/21/44.COM/INF.8B2; Pipan, T., Deharveng, L., & Culver, D. C. (2020). Hotspots of subterranean biodiversity. *Diversity*, 12(5), 209; Lučić, I. (2019). Vjetrenica Cave, Bosnia and Herzegovina. In *Encyclopaedia of Caves* pp. 1110- 1117. Academic Press; Ozimec, R., & Lučić, I. (2009). The Vjetrenica cave (Bosnia & Herzegovina)—one of the world's most prominent biodiversity hotspots for cave-dwelling fauna. *Subterranean biology*, 7, pp. 17-24; Ozimec, R. (2021). Vjetrenica: centar špiljske bioraznolikosti Dinarida. Javno puđuzeće Vjetrenica. Ravno; Redžić, S. (ed.) (2007). Evaluacija stanja biodiverzitet

ekosustava kraških polja na području Federacije BiH kao doprinos tematskim programima rada Konvencije o biološkoj raznolikosti u skladu sa Targets 2010. NVO EKO BiH – Društvo za zaštitu i unapređenje životne sredine, *Sarajevo*, pp. 1-223; Zagmajster, M.; Polak, S.; Fišer, C. (2021). Postojna Planina Cave System in Slovenia, a hotspot of subterranean biodiversity and a cradle of speleobiology. *Diversity*, 13, 271.

d) Consultations: 11 desk reviews received. The field evaluation met representatives from a wide range of stakeholders and rightsholders, including: Vjetrenica Public Company Ltd. Ravno, the Mayor of Ravno, officials from the municipality, hunting association, NGOs, public utility services and small businesses, owners, and scientists.

e) Field Visit: Ms. Zsuzsa Tolnay, from 22-25 August 2023.

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

2. SUMMARY OF NATURAL VALUES

The nominated property “Vjetrenica Cave, Ravno” is located in the South Dinaric Karst, which is a mountain range stretching from Popovo Polje to the Adriatic Sea. Vjetrenica Cave and the surrounding area constitute the nominated property, with a total surface area of 413.97 ha, surrounded by a buffer zone of 4,623.60 ha. Both the nominated property and its buffer zone are part of the municipality of Ravno in the Herzegovina-Neretva Canton.

With a length of 7,324 m, the Vjetrenica Cave is one of the longest caves in Bosnia and Herzegovina. It has been known since antiquity as the Roman naturalist Pliny the Elder makes a reference to the cave in his *Historia Naturalis*. It is also reported to boast one of the richest cave faunas worldwide. The nominated property is part of the Trebišnjica river system, and includes separate watercourses, as well as a number of smaller, periodical streams and underground lakes. Its entrance is located 300 m east of the centre of the village of Zavala. Bio-speleological research in Vjetrenica Cave discovered a hygropetric habitat in a cave for the first time (i.e. a habitat composed of a thin layer of water covering a rock surface).

The property is nominated under criteria (vii) and (x). Regarding criterion (vii), the cave system of Vjetrenica and its surroundings is presented as a well-conserved manifestation of karst topography that boasts a wide range of natural features. Most passages in Vjetrenica Cave are wide and high along their entire length across four levels: Main Level, Upper Level, Lower Level and Vertical Level. The Main Level is semi-horizontal and the longest passage in the cave, running from the cave entrance almost to the furthestmost point of the cave while the Upper Level consists of five passages which are up to 120 m above the Main Level. The Lower Level is approximately 10 to 30 m below Main Level. The Vertical Level, is reported to consist of deep pits that lead from the surface to the cave, and allow strong winds up to 8.5m

per second in the cave system. The cave also harbours several smaller streams and water pools, the largest of which is the Great Lake (*Veliko jezero*), some 180 m in length. Several sizeable chambers are almost entirely filled with rock blocks, slabs, in the form of piles tens of metres high.

Regarding criterion (x), the Vjetrenica Cave hosts a total of 231 recorded taxa, according to the nomination dossier, including 14 fungi, 35 protist and 180 animals, with 96 cave-dwelling taxa. More than half of the species recorded are endemic to the Popovo polje, whilst further species are known to only inhabit Vjetrenica Cave. Vjetrenica Cave hosts 36 Crustaceans, 11 gastropods, 11 Insects, nine Arachnids and eight Myriapods, among other species. Vjetrenica (together with Lukavac spring and Bjelušica Cave, which are part of the same cave system) is a type locality for 28 taxa. Three taxa are monotypic (i.e. part of a taxonomic group that has only one subordinate taxon): *Zavalka (Narentiana vjetrenicae*, EN, a gastropod species), *Troglomysis vjetrenicensis* (a crustacean species) and *Nauticiella stygivaga* (a beetle species). According to the nomination dossier, the nominated property is inhabited by more than 49 troglobites (i.e. species strictly bound to underground habitats) and 56 stygobites (i.e. species living in underground water). The nominated property's biodiversity is understood to be an example of the phenomenon of local radiation, evidenced by the existence of nine species of the genus *Niphargus*.

In addition, the nominated property also holds important fossils, including from a leopard and a cave bear, which are considered as the best preserved and most complete skeleton of its kind globally. These remains are a testament to a period spanning from 29,000 to 37,000 years. Furthermore, Vjetrenica Cave is also noted as an important archaeological site.

3. COMPARISONS WITH OTHER AREAS

The nomination contends that the beauty of the cave has been noted since ancient times. The comparative analysis provided in the nomination document presents seven parameters under which the nominated property is regarded as significant in relation to (vii). However, a systematic comparison with other sites following these parameters is not included. Furthermore, IUCN notes that none of these parameters relate to criterion (vii) as they only include aspects that relate to criterion (x) (species diversity) and to criterion (viii) (karst features), even though the property is not nominated under the latter. Whilst the nominated property is not nominated under criterion (viii), the field evaluation mission and several expert reviewers noted the potential the nominated property holds as potential component part of a serial transnational nomination representing the Dinaric Karst.

Based on the inputs from external desk reviewers and the field evaluation mission, IUCN notes that there does not appear to be a strong case in relation to the natural beauty of the nominated property or in relation

to superlative natural phenomena. There are other cave sites on the World Heritage List that are more remarkable than the nominated property in this regard. For instance, Mammoth Cave National Park contains the longest cave system in the world with huge and stunning chambers, vertical shafts, stalagmites and stalactites. Expert reviewers noted that the claim of the cave form being outstanding is not justified as there are many breakdown caves with streams found in many places around the world. In fact, the features described are typical of many hundreds of caves globally, which would however make the nominated property's faunistic diversity presented under criterion (x) even more remarkable.

With respect to criterion (x), the nomination dossier presents a comparative analysis based on biodiversity data. The caves selected for the comparison host either more than 25 stigobionts or more than 25 troglobionts. Based on this comparison, the species numbers of the nominated property clearly stand out for both parameters. However, research on Subterranean Biodiversity Hotspots published after the preparation of the nomination reported higher species numbers in the Postojna Planina Cave System. Subsequently, further research also corrected species numbers for Vjetrenica Cave recording a total of 85 troglobionts, which is by far the highest number reported globally and resulting in a total species count that clearly surpasses the Postojna Planina Cave System. Nevertheless, whilst there appears to be a stronger case for Vjetrenica Cave based on current research, IUCN considers that the nomination of Postojna Planina Cave System as well as further cave sites in the Dinaric Karst could possibly be explored within the framework of an extension and renomination of the World Heritage property of the Škocjan Caves (Slovenia). This has also been noted in IUCN's 2020 evaluation of the Classical Karst.

Vjetrenica Cave not only holds one of the richest, if not the richest cave fauna in the world, it also includes the richest subterranean amphipod community worldwide. Moreover, the nominated property has been recognised as one of the world's most important biodiversity hotspots for cave-dwelling fauna. The nominated property also harbours gastropods with a high variability in size and ecology out of which all but one are endemic to either Popovo Polje or the southeastern Dinaric Karst.

IUCN, in collaboration with UNEP-WCMC, has undertaken supplementary comparative analysis, based on spatial analyses and literature review. The WCMC Comparative Analysis concludes that the biodiversity of the nominated property appears to be of global significance due to its exceptional subterranean biodiversity. Despite its small size and scope for further study, the nominated property hosts a very high diversity of plant and animal species compared to similar cave and karst sites found in a temperate climate. Vjetrenica Cave is also considered an exceptional example of single-genus diversity. For instance, there are nine species of the subterranean amphipod genus *Niphargus* found at the nominated property, which might be the highest example of

subterranean single-genus diversity of any location in the world. The nominated property shows similar levels of plant, mammal, bird and fish species diversity as significantly larger sites included in WCMC's comparative analysis.

In terms of endemism, IUCN and WCMC note a high level of both floral and faunal endemism in the nominated area. In particular, up to 78% of the stygofauna are endemic to the Dinaric region, according to the nomination dossier. One endemic subterranean faunal species of particular interest is *Marifugia cavatica*, the only subterranean tubeworm in the world. According to the nomination file, many of the 14 endemic faunal species are restricted to the small area around the nominated property. Additionally, several of these species are tertiary and pre-tertiary relict species, meaning that many of these endemic species are living fossils as their closest relatives went extinct. The nominated property is also reported to host 21 plant species that are endemic to the Balkans.

Furthermore, the nominated property hosts a number of vertebrate species assessed as globally threatened. There is at least one threatened mammal – Balkan snow vole (*Dinaromys bogdanovi*, VU) –, at least one threatened bird – Red-footed falcon (*Falco vespertinus*; VU) –, and one threatened amphibian – Olm (*Proteus anguinus*, VU). The Olm is an aquatic salamander that is restricted to subterranean aquatic habitats within the Dinaric Karst and the largest animal of the subterranean habitats of the Dinaric Karst. Moreover, there are four species of birds, one species of reptile, two species of fish (Neretva cub, *Squalius svallize*, VU, and Southern Dalmatian Minnow, *Delminichthys ghetaldii*, VU), and three species of molluscs, all of which are globally threatened (*Congerius kuseri*, VU, *Lanzaia vjetrenicae*, VU, and *Zavalka, Narentiana vjetrenica*, EN). According to the nomination file, around 40% of all known stygofauna of Mollusca inhabit the Dinaric region. There are likely only between four and nine sub-populations of *Lanzaia vjetrenicae* globally.

In addition, it deserves to be noted that a total of 484 species of flora have been recorded in the above-ground part of the wider area around Vjetrenica Cave, including endemic species. Nine fish species and 248 invertebrate species are reported in the wider Vjetrenica - Popovo polje area.

In conclusion, IUCN considers that the nominated property does not demonstrate global significance under criterion (vii) whilst it could potentially be considered under criterion (viii) if proposed as part of a wider series representing the Dinaric Karst. In IUCN's view, the nominated property, alone, demonstrates a strong case for global significance under criterion (x).

4. INTEGRITY, PROTECTION AND MANAGEMENT

4.1. Protection

The nominated property and its buffer zone are subject to a multi-layer governance, including federal, cantonal

and municipal levels. A range of different ministries hold responsibilities for the protection of the nominated property: Bosnia and Herzegovina Ministry of Foreign Trade and Economic Relations, Federal ministry of environment and tourism to the Federal Ministry of Agriculture, Water Management and Forestry of the Federation of Bosnia and Herzegovina, Ministry of Construction and Spatial Planning of the Herzegovina-Neretva Canton and the Ministry of Trade, Tourism and Environmental Protection of the Herzegovina-Neretva Canton. In addition to government bodies, there is a wide range of relevant stakeholders including small tourism businesses, the local hunting association, and local community organizations. The Vjetrenica Public Company Ltd. Ravno serves as the managing body for the nominated property coordinating decision-making and implementation of management actions. This overall complex governance structure for the nominated property requires a high degree of coordination efforts. Thus, it is important that sufficient capacity in terms of funding and staffing is provided to the nominated property.

The surface area of Vjetrenica Cave is protected as a Strict Nature Reserve in mostly municipal ownership. The nominated property and its buffer zone are embedded in the Protected landscape Vjetrenica-Popovo polje, an IUCN Category V Protected Landscape declared in 2021. The protection of Vjetrenica Cave has a long history going back to 1952 when it was firstly declared a natural monument (Decision of the Institute for the Protection of Cultural Monuments and Natural Rarities of the People's Republic of Bosnia and Herzegovina, No. 979/52 of 25 December 1952). Subsequently, the 1981-2000 Spatial Plan of Bosnia and Herzegovina ensured protection of the wider area as a special natural landscape (Official Gazette of the Federation Bosnia and Herzegovina, No. 2/06). From 2003 onwards, the nominated property was provided with additional protection under the 2003 Law on Nature Protection, in line with Directives of the European Union. Finally, based on further scientific findings on the Vjetrenica cave system and its wider area, the Protected landscape Vjetrenica-Popovo polje was declared in accordance with the Law on Nature Protection of the Herzegovina-Neretva Canton (Official Gazette of the Herzegovina-Neretva Canton No. 12/17). This designation provides another layer of formal legal protection in line with the Federal Law on Nature Protection of Bosnia and Herzegovina.

In supplementary information, the State Party provided the Law designating the Vjetrenica Cave Area with a part of the Popovo Polje as Protected Landscape Vjetrenica-Popovo Polje. This designation covers the key values of the nominated property and defines the zonation of the protected area and which activities are prohibited where, in order to conserve these values. However, these zones have not been mapped and designated yet according to supplementary information. In addition, IUCN notes the importance of careful watershed management to ensure water supply and water quality will be maintained in the long-term, and this is crucial to protection of the potential OUV under criterion (x). This is also reinforced by recent

science suggesting for instance that due to changes in water regimes, the Olm population may be more vulnerable to changes in the hydrological regime and quality than previously thought. Historically, the regulation of Trebišnjica river in the mid of the last century has already had a negative impact on at least two threatened fish species (Neretva chub, *Squalius svallize*; VU), and southern Dalmatian minnow (*Delminichthys ghetaldii*; VU), which were more abundant in the area before the Trebišnjica river was regulated.

These examples illustrate the importance of a stringent protection of the upstream areas of Vjetrenica Cave. As the cave biodiversity depends on the inflow and quality of groundwater, IUCN considers that this element is key in defining the zonation in the upstream areas of the nominated property. However, supplementary information did not include the requested further information on the nominated property's watershed.

Therefore, IUCN considers that the nominated property's protection regime has the potential to provide an appropriate level of protection to the potential OUV of the nominated property; however, the zonation of Protected landscape Vjetrenica-Popovo polje would need to be finalised and clearly mapped out. IUCN recommends to incorporate, to the extent possible, the catchment area of Vjetrenica Cave and to ensure that the inflow into Vjetrenica Cave and water quality is guaranteed in the long term. In conclusion, IUCN considers that the nominated property partially meets protection requirements.

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

4.2 Boundaries

The area of Vjetrenica Cave projected to the surface amounts to 22.87 ha, which is embedded within the larger area of the nominated property of 413.97 ha. Whilst the nominated property as a whole is small, the boundaries comprise the remarkable biodiversity making it one of the most faunistically rich caves in the world. Nevertheless, it is noted that the wider karst landscape also harbours further significant and similar values and unexplored cavities so that an extension may possibly be envisaged in future, depending on the results of further research.

The buffer zone is surrounds the nominated area, covering an area totalling 4,623.60 ha. The boundaries of the buffer zone largely follow the topography of the landscape and in the eastern section along the border to the Srpska Republic. The boundary design of the nominated area and its buffer zone adequately represent and fully include the surface area below which the main cave features and habitats of Vjetrenica cave are found, whilst ensuring that a generous area beyond the horizontal extent of the cave is included within the nominated area, which is

already providing a buffering function to the attributes of potential OUV.

Supplementary information confirms coherence between the cave area, the nominated property and the Law designating the Protected landscape Vjetrenica-Popovo polje. However, the zoning regime applying to the areas within and beyond the buffer zone is not fully clear yet as several zones still remain to be mapped out according to the supplementary information (see also section 4.1). Whilst the approximate watershed of Vjetrenica Cave has not been indicated in the supplementary information, the buffer zone appears to cover a significant portion of the cave's catchment (see also sections 4.1 and 4.3). However, it is important to bear in mind that determining watersheds is highly complex in karst areas.

Overall, IUCN considers that the current boundary design appears to meet the requirements of the *Operational Guidelines* in relation to criterion (x), whilst noting that there may be potential for further (including possibly serial) extensions (see also section 5).

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

4.3 Management

The management of the nominated property is guided by a management plan that was adopted by the government of the Herzegovina Neretva Canton and the Municipality of Ravno in 2021 and remains valid until 2031. The plan caps visitation to Vjetrenica Cave at 240 visitors per day and guides the work of the Vjetrenica Public Company Ltd. Ravno in managing the nominated property. The management plan has been harmonized with the Law designating the Protected landscape Vjetrenica-Popovo polje and with the Spatial Plan of the Municipality of Ravno. The procedure for preparing the Spatial Plan of the Herzegovina-Neretva Canton was initiated back in 2008; however, the document has not been formally adopted by the Assembly of the Canton yet, which is expected to happen in the course of 2024. IUCN considers that this spatial plan would address the conservation needs of the wider protected landscape and the nominated property and its buffer zone; however, IUCN notes that this mechanism is not in place at the time of the completion of the present evaluation.

Based on the information available, IUCN notes that Vjetrenica Public Company Ltd. Ravno, in charge of site management, is provided with limited capacity to ensure the management of the nominated property. Only seven permanent and three seasonal staff are available to respond to the high degree of coordination required (see section 4.1) whilst ensuring the day-to-day management of the nominated property, which is anticipated to face increased visitation as result of a potential inscription as World Heritage property. The nomination dossier also notes that the current level of

staffing is very limited to ensure an effective management and protection the fragile cave ecosystem and the successful implementation of all foreseen management action. This is exacerbated by the fact that the management plan does not detail how the coordination and responsibility of each relevant entity will be achieved. Furthermore, there is a need to complement the focus on tourism management with enhanced management for nature conservation, including biodiversity monitoring, to inform adequate management action within the nominated property, its buffer zone and the wider area. In terms of funding, supplementary information details the share of funding support provided by various institutions sharing the responsibility; however, no information is provided on the actual amounts of funding provided at the time of this evaluation or on the funding committed to ensure an adequate management of the nominated property in the long-term.

Therefore, IUCN considers that the management requirements are not fully met at the time of the present evaluation, and recommends that the State Party increases staffing and details out current and long-term funding for the effective management of the nominated property, whilst ensuring that the adopted spatial plan will indeed support the management of the nominated property and its buffer zone. IUCN encourages the State Party to further enhance exchange and cooperation with other cave and karst sites across the region, including World Heritage properties containing karst features.

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

4.4 Community

Based on the nomination dossier and the field evaluation mission, IUCN notes that a wide range of local stakeholders appear to have been involved in the process of preparing the nomination for Vjetrenica Cave, Ravno for more than two decades. The nomination states that the initiative to nominate Vjetrenica Cave to the World Heritage List emerged from an initiative by local communities, which later gained support from scientists. Whilst it is reported that there is a strong consensus across the local, cantonal, and federal levels, IUCN notes that the nomination does not provide documented evidence as to how the consultation process enabled this consensus to be reached, especially after 2013 in relation to the population inhabiting the nominated property. Small-scale tourism has already benefited from the promotion of the area through the nomination process. Vjetrenica Cave also plays an important role for the local identity. The nomination dossier also confirms that the nomination of the property has not affected any existing tenure rights. In supplementary information, the State Party confirms that the nominated area is not inhabited whilst the buffer zone is home to 678 people, however the last census is dating back to 2013.

4.5 Threats

As noted in the preceding sections, the attributes of the potential OUV of the nominated property are fragile, and prone to impacts from upstream sections. Changes in water regimes and quality can negatively affect the abundance of important cave-dwelling species. Therefore, it is important to ensure careful analysis and mitigation of factors affecting the hydrological regime and water quality at the scale of the catchment of Vjetrenica Cave.

Nevertheless, based on the information provided in the nomination document and supplementary information, IUCN notes that, currently, the nominated property is not facing any significant threats that would be likely to impact the natural values of the nominated property. Nevertheless, IUCN notes that there is a need for a high level of vigilance regarding potential threats from increased visitation, associated pollution, and any impactful development projects, including further interventions affecting the hydrological regime of the nominated property. According to monitoring results reported in the nomination, tourism has thus far not negatively affected the cave biodiversity. Potential pollution from new weekend homes and tourist facilities require careful attention to ensure septic tanks can absorb all wastewater as long as gaps remain in the sewage treatment infrastructure. Similarly, careful attention to waste management is required in the absence of a waste control system, an issue which is also evidenced by some illegal landfills noted in the nomination dossier.

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

5. ADDITIONAL COMMENTS

5.1 Potential serial nomination in the Dinaric Karst

Although criterion (viii) has not been proposed in the present nomination, the field evaluation mission and several expert reviewers suggested that the nominated property may also hold the potential to serve as a component part in a serial transboundary extension nomination under criterion (viii). However, as this evaluation suggests a referral of the nominated property under criterion (x), IUCN recommends the State Party to firstly focus on implementing the actions recommended in the sections above and the draft decision below, and to provide the required evidence of their implementation as supplementary information within the three-year timeframe of the referral procedure. As a second step, following potential inscription under criterion (x), a transnational serial extension under criterion (viii) could potentially be considered. In this regard, IUCN also recalls its 2020 evaluation of the Classical Karst (Slovenia), found in document WHC/21/44COM/INF.8B2 and to the Committee's Decision 35 COM 12C concerning an upstream pilot project on a Dinaric Karst Serial Nomination (Albania, Bosnia and Herzegovina,

Croatia, Italy, Montenegro, Serbia and Slovenia). Whilst the progress report to the Committee on this Upstream Process (WHC-15/39.COM/9A), related to Decision 39 COM 9A, noted that the States Parties have requested to phase out the Dinaric Karst Serial Nomination as one of the Upstream Process pilots, there may be scope to explore the possibility of an extension to comprise further biodiverse caves in the Dinaric Karst, including through an extension and renomination under criterion (x) of the Škocjan Caves World Heritage property.

6. APPLICATION OF CRITERIA

The **Vjetrenica Cave, Ravno (Bosnia and Herzegovina)** has been nominated under natural criteria (vii) and (x).

Criterion (vii): Superlative natural phenomena or natural beauty or aesthetic importance

The nomination dossier highlights the historical recognition of Vjetrenica Cave's beauty but does not provide a systematic comparative analysis under this criterion. Expert reviewers noted that the features of Vjetrenica Cave are common to many other cave sites around the globe whilst several World Heritage properties include caves recognised under criterion (vii), which boast significantly larger and more geologically diverse cave systems. Whilst the aesthetic values of Vjetrenica Cave deserve to be protected, IUCN notes that there does not appear to be any evidence that these stand out from other caves at global level. The features described are typical of many hundreds of caves globally. Therefore, IUCN concludes that criterion (vii) is not met.

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

Criterion (x): Natural Habitat for in situ-conservation of biological diversity

The nominated property stands out with its remarkable cave biodiversity and endemism. Vjetrenica Cave is considered one of world's most important biodiversity hotspots for cave-dwelling fauna. There are 85 troglobitic taxa and 56 stygobites, which is unparalleled globally. A total of 231 taxa of subterranean biodiversity has been recorded, including 14 fungi and 35 protist species. Vjetrenica Cave also stands out as an exceptional example of single-genus diversity – the nine species of the subterranean amphipod genus *Niphargus*, which may represent the highest subterranean single-genus diversity of any location in the world.

The exceptional endemism of the nominated property is illustrated by its stygofauna, of which 78% are only found in the Dinaric region. The only subterranean tubeworm in the world (*Marifugia cavatica*) dwells in Vjetrenica Cave. In addition, several of the species found in Vjetrenica Cave are tertiary and pre-tertiary

relict species, which can be considered living fossils, whose closest living relatives went extinct a long time ago. The nominated property is also reported to host 21 plant species that are endemic to the Balkans.

Therefore, IUCN considers that the nominated property holds a very strong potential to meet criterion (x), provided the remaining concerns regarding protection and management necessary are addressed.

IUCN considers that the nominated property has the potential to 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. Refers the nomination of **Vjetrenica Cave, Ravno, Bosnia and Herzegovina**, back to the State Party,

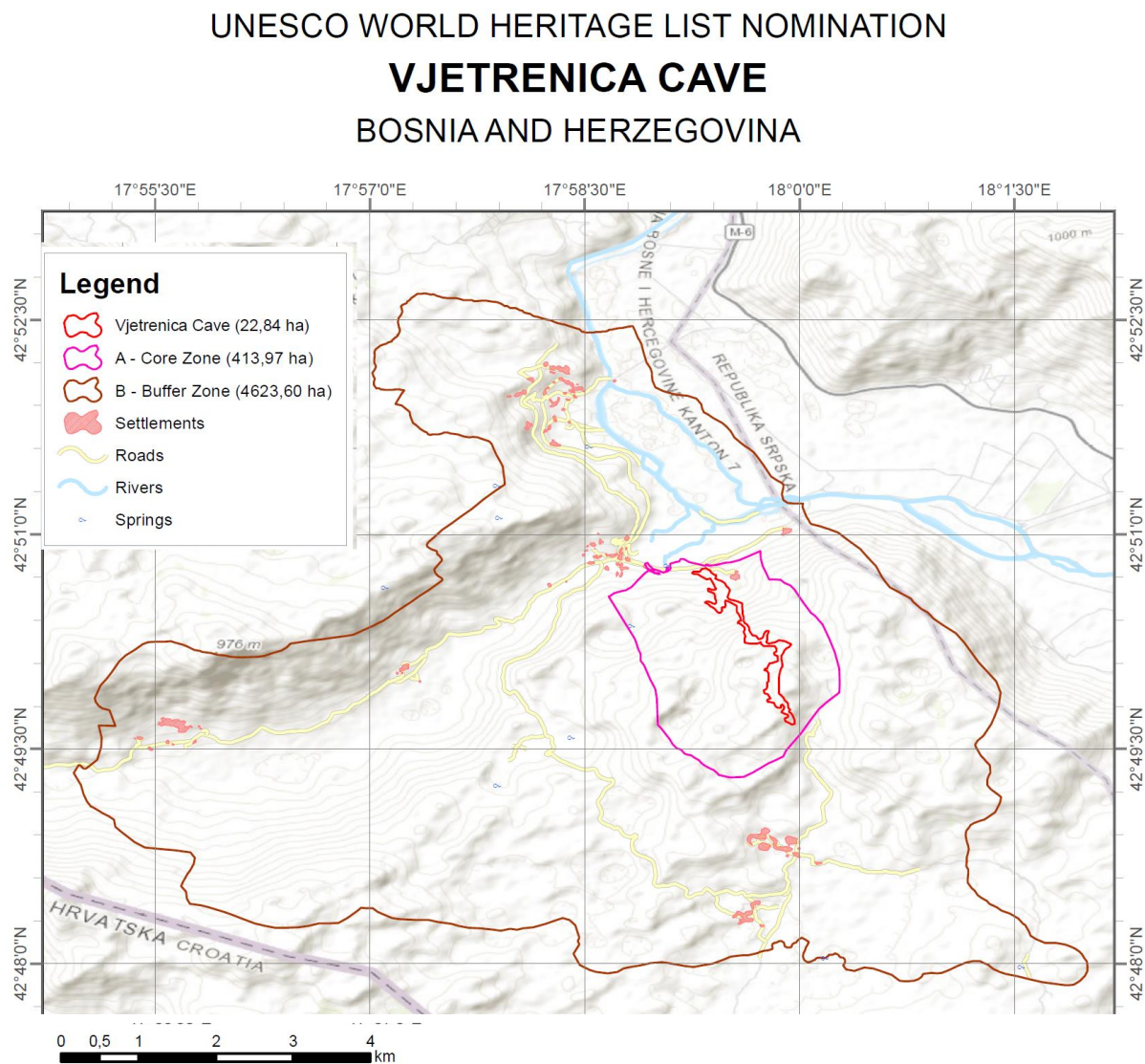
taking note of the potential of the nominated property to meet criterion (x), in order to allow the State Party to

- a) Complete, clearly map out and adopt the zonation of the Protected landscape Vjetrenica-Popovo polje, and demonstrate in supplementary information that sufficient water quality and water inflow into the Vjetrenica cave system will be guaranteed in the long term,
- b) Increase funding and staffing for the management of the nominated property, and provide supplementary information to demonstrate that sufficient funding and staffing is provided for the implementation of the management plan and for the protection and management of the nominated property in the long term;

3. Recommends the State Party to:

- a) Explore to what extent it could be possible to envisage in future a potential serial transnational extension to enable a complete representation of the Dinaric Karst, including in relation to criteria (viii) and (x),
- b) Provide in the supplementary information maps detailing the zonation of Protected landscape Vjetrenica-Popovo polje.

Map 1: Boundaries of the nominated property and buffer zone (Source: nomination dossier)



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[ii] 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; S  neca, A. & S  derstr  m, 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 Salath  , 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-Palearctic 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.

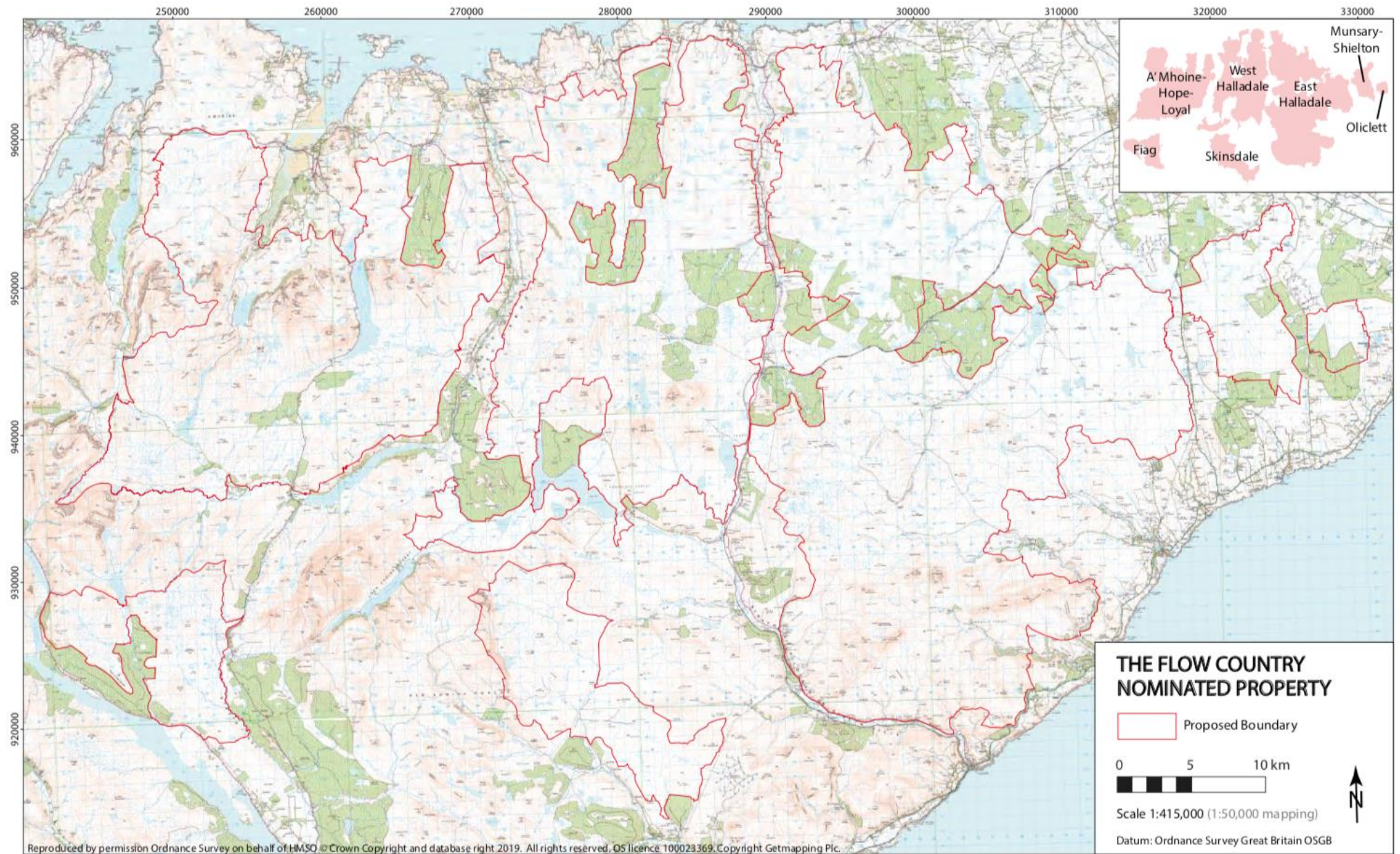
Management of the nominated property's OUV is guided by a single clear Management Plan, developed by the Flow Country Partnership in collaboration with key stakeholders such as landowners and managers, government agencies, local communities and scientific experts. Management requirements include bog 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

LATIN AMERICA / CARRIBBEAN

LENÇÓIS MARANHENSES NATIONAL PARK

BRAZIL



Lençóis Maranhenses National Park © IUCN / Raphael Glemet

WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

LENÇÓIS MARANHENSES NATIONAL PARK (BRAZIL) – ID N° 1611

IUCN RECOMMENDATION TO WORLD HERITAGE COMMITTEE: To inscribe the nominated property under natural criteria (vii) and (viii)

Key paragraphs of Operational Guidelines:

Paragraph 77: Nominated property meets World Heritage criteria.

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 State Party: 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 on the definitions adopted in Brazil of Indigenous communities and traditional communities as understood in the nomination document, including an explanation on any differences between these two definitions; details on the areas used by local and traditional communities (and any relationships with communities that identify as Indigenous peoples); and, if relevant, considering the above two points, confirmation with appropriate documentation that Free, Prior and Informed Consent (FPIC) is in place for any matters where the nomination could affect Indigenous communities. The supplementary information was provided by the State Party on 26 February 2024.

c) Additional literature consulted: IUCN's evaluation consulted a wide array of relevant reference material for the geomorphology, biology, ecology, protection and management as well as the comparative values of the nominated property. Comprehensive reference lists were compiled within IUCN's evaluations which are available as referenced above. Further references included: Amaral, Y.T., dos Santos, E.M., Ribeiro, M.C., & Barreto, L. (2019). Landscape structural analysis of the Lençóis Maranhenses National Park: implications for conservation. *Journal for Nature Conservation*, 125725. doi:10.1016/j.jnc.2019.125725; Andrade de Paula, M., Filho Souza, B., Neto Shiraishi, J., Souza Vieira, U.D., Dias Roseane, G., Mendes Patrícia, D., Ristau Garcia, N., Cabral Ribeiro, D.D., Santos Silva, C.V. & Pereira Sousa, M. (2019). Informação Técnica - Análise Técnica do Projeto de Lei do Senado (PLS) No 465-2018 que altera os limites do Parque Nacional dos Lençóis Maranhenses. Universidade Federal do Maranhão Centro de Ciências Humanas Programa de Pós-graduação em Ciências Sociais Grupo de Estudos Rurais e Urbanos; Dos Santos Souza, J.H. and dos Santos Furtado, N. (2015). The Lençóis Maranhenses: A paradise of dunes and ponds. *World Geomorphological*

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d) Consultations: A total of 18 desk reviews received, including four reviews from IUGS. The field mission was able to meet with the Park Council – a participation arrangement between the management of Lençóis Maranhenses National Park (LMNP) and several actors living in the nominated property, which include representatives from federal and state authorities (e.g. the Ministry of Environment, the national park service – Instituto Chico Mendes - ICMBio, the governor's office), as well as from a variety of stakeholders at the main municipalities, service providers, fishermen and craftsmen, universities, local NGOs and traditional owners; a number of meetings were also conducted with municipality and state government authorities (e.g. tourism, environment, cultural and communications secretariats), in addition to conversations with different groups and individuals from the economic sector linked to the nominated property.

e) Field Visit: Paula Bueno and Raphael Glemet, 21 to 25 August 2023

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

2. SUMMARY OF NATURAL VALUES

The Lençóis Maranhenses National Park (LMNP hereinafter) is located in northeastern Brazil, on the east coast of Maranhão. The nominated property has an area of 156,562 ha, of which about 90,000 ha are composed of an extensive white coastal dune field with temporary and permanent lagoons. The climate at LMNP is tropical and semi-humid with a rainy season in the first half of the year, during which lagoons are

formed by rainfall, raising the water table, and forming mostly temporary lagoons between the dunes.

The dunes originate from marine sediments, which, combined with winds, formed dune fields along the Quaternary. They are separated from the coastline by a broad deflation plain ranging from 600 m to 2000 m in width. The sand deposited by tides on the beach is gradually eroded by the wind, shaping small barchans with heights ranging from 50 cm to one metre near the shoreline, reaching heights of up to 30 m as they migrate inland, downwind and atop dunes from previous generations.

The LMNP is in a transition zone between three Brazilian biomes: *Cerrado*, *Caatinga*, and *Amazon*. The vegetation found in the nominated property and its buffer zones comprises pioneer formations of *Restingas* (i.e. shrubby areas of coastal broadleaf forests), mangroves, and alluvial communities that, together with marine and freshwater environments, are fundamental for conserving species diversity. Whilst the nominated property includes important biodiversity values, the nomination considers – further to independent World Heritage expert advice – that these values are likely not outstanding at the global level, whereas the property's aesthetic and geological/geomorphological values would be globally significant under criteria (vii) and (viii).

The nomination notes an 80 km coastline, with beaches followed by plains, where the inward movement of the prevailing winds allow dunes to take the form of long chains of barchans, filled in the rainy season to create temporary lagoons of various colours, shapes, sizes and depths. The nominated property presents its best scenery when the lagoons reach their maximum volume, creating rare beauty, and attracting domestic and international visitors. Under criterion (vii), the nomination dossier therefore highlights the exceptional landscape of the LMNP, showcasing a remarkable blend of dune formations and diverse lagoons. These features are interconnected, with barchan dunes forming extensive chains stretching over 75 km and extending more than 20 km inland.

Under criterion (viii), the nomination dossier highlights coastal dynamics that shape the sediments overlaying the Barreirinhas Basin as a result of the interaction between climate, coastal drifts, tidal regime and river currents. Through the influence of wind, these sediments are transported to form a vast expanse of both stable and shifting dunes, recognized as the largest in South America. This phenomenon is presented as remarkable evidence of the evolutionary progression of coastal dunes throughout the Quaternary period.

The buffer zone of the nominated property covers an area of 268,231 ha, surrounding the nominated property both along the coast and inland. The terrestrial part of the buffer zone is essentially formed of *Caatinga* (i.e. semi-arid shrubland and thorn forest) and *Cerrado*-type (i.e. tropical savannah) vegetation, which ensure an ecological buffering of the core ecosystems of the LMNP from urbanised areas.

3. COMPARISONS WITH OTHER AREAS

The comparative analysis presented in the nomination dossier compared the LMNP with similar sites at a global scale, whether or not they are included on the World Heritage List and considering areas containing dune fields and lagoons. The analysis identifies commonalities in features or aesthetics but then demonstrates differences in terms of biotic and abiotic factors, emphasizing the uniqueness of the nominated property. The analysis compares the LMNP with the following sites: Air and Ténéré Natural Reserves (Niger), El Pinacate and Gran Desierto de Altar Biosphere Reserve (Mexico/USA) and the Altar Great Desert (USA), Namib Sand Sea (Namibia), Lakes of Ounianga (Chad) and the Badain Jaran Desert (China). Main findings from these comparisons rely on the unique combination that occurs in the nominated property, involving annual rainfall of up to 2,000 mm that raises the water table and fills the various temporary and perennial lakes that form in the dunes sequentially, with exceptional beauty (criterion vii), in contrast to other sites where the dunes of similar width contain lagoons formed by either sea or river waters and not rainwater. Moreover, the geomorphological processes of transgressions and marine regressions are presented as one of the most significant records of dune fields developed along the Quaternary, with global significance to understand the past few millennia geoenvironmental change (criterion viii).

Expert desk reviewers consider that the nominated property is undoubtedly outstanding for criterion (vii), representing a superlative natural phenomenon and site of exceptional aesthetic beauty. Scientific literature suggests the creation and constant modification of dune chains and lagoons as an exceptional natural phenomenon based on a rare balance of sand, rain, wind, river, and vegetation. The vast stretches of white sand dunes, combined with green and blue ponds, *Restingas*, beaches, tropical rivers, and lush mangroves, create stunning and contrasting vistas. The highly dynamic nature of the landscape is an important factor in support of criterion (vii). The temporary interdunal lakes are formed in the rainy season and then disappear during the dry season causing a continuous change of the landscape as the lakes reappear in different places and with different contours in the rainy season of the following year as a result of dune mobility with migration rates from 4-25 m per year. The lake bottoms are covered by a soft brown or green sheet of algae and cyanobacteria. This results in ever-changing vistas and combination of shapes and colours. The IUCN field evaluation mission highlighted that the nominated property is of outstanding beauty that is hard to compare to any other places in the world, a view unanimously shared by external desk reviewers.

Regarding criterion (viii), most expert reviewers consider that the value of the nominated property is globally outstanding. Nevertheless, some reviewers called for a more in-depth description of geological and geomorphological features and comparative analysis for criterion (viii) whilst noting the potential of the nominated property to demonstrate global significance

under criterion (viii). Further to the information obtained from the field evaluation mission, additional desk review and literature, the IUCN World Heritage Panel was satisfied with the justification for criterion (viii). Scientific literature suggests that the nominated property represents one of the largest coastal dune areas formed in the Quaternary. The nominated property is remarkable within the context of the complex set of climatic, oceanographic, and geomorphological elements of the Brazilian coast. With no inlet or outlet, the lagoons are exclusively fed by rainwater amidst very clean sand. In turn, the fluctuation of the water table controls the morphology of dunes (rather than the seasonal change in wind strength).

Noting the nominated property as representing an intact section of the interface of a tropical coastal area where the old continent meets with a passive oceanic margin, desk reviewers highlighted the nominated property as a spectacular Quaternary geology site with global significance that preserve sites potentially key to understand the past few millennia of geoenvironmental change. Desk reviewers also noted that the claim for criterion (viii) is closely interlinked with the claim for criterion (vii). Furthermore, the nominated property was noted as the only site on Earth with this type of dune and lagoon formation, with freshwater lagoons interspersed with sand dunes. Similar sites differ from the nominated property mostly in the amount of precipitation and the different climatic conditions. The area is formed by unique local geological, geomorphological, pedological, climatic and biological attributes. Desk reviewers considered that there are many coastal areas with dunes globally, many of which are deserts, but none of which would exhibit such extensive morphological dynamics in such a spectacular way. LMNP was noted as exceptional area for the evolution of geomorphological processes influenced by unique climatic and geological conditions that give rise to unique flora and fauna. The non-vegetated, fluvial-aeolian landscape of the nominated property is also important to understand pre-vegetation fluvial landscapes using the nominated area as present time analogue.

In conclusion, IUCN considers that the nominated property is globally significant under criterion (vii). Whilst the comparative analysis could have included further geologically similar, yet scarce locations, the nominated property appears to be globally significant under criterion (viii).

4. INTEGRITY, PROTECTION AND MANAGEMENT

4.1. Protection

The entire nominated property is protected as a national park, legally established in 1981, under IUCN Management Category II and under the administration of the federal protected area agency (ICMbio), linked to the Ministry of Environment and Climate Change. It is part of the National System of Protected Areas (SNUC) and belongs to a regime of integral protection.

The objective of this regime is the conservation of nature, with only the indirect use of natural resources.

In addition to the SNUC regulations, the Native Vegetation Protection Law defines protected areas in rural areas that need to be maintained with their natural and protected vegetation cover. The Law establishes protective measures for environmentally sensitive areas, such as riverbanks, springs, hilltops, and vegetation. Furthermore, the nominated property is surrounded by the so-called Permanent Protection Areas and Legal Reserves, which are particularly relevant for the *Cerrado* where every rural property or settlement project has to maintain native vegetation in 30% of its area, serving as buffer zones to provide an additional layer of protection to the nominated property's attributes. At local levels, the nominated property is also protected by municipal legislation related to infrastructure, land-use planning and public use, especially in Barreirinhas, including environmental licensing. Decision-making on LMNP's resources and on the regulation of activities, including subsistence agriculture and aquaculture, crafts, solar power, etc. is ensured through participatory mechanisms, such as through the LMNP Council and the newly introduced Terms of Commitment (see section 4.4).

66% of the buffer zone is managed as protected areas for sustainable use, whereas most of the marine section of the buffer zone is not a formal protected area. However, measures to ensure connectivity and additional protection are mostly needed on the terrestrial part of the nominated property, where the attributes of the proposed OUV can be found. The marine areas are regulated through the Ecological Economic Coastal Zoning (ZEEC) and the National Coastal Management Plan (NCMP). The ZEEC establishes environmental goals and guidelines in marine spatial planning and supports monitoring, licensing, inspection, and environmental management. The NCMP is designed to regulate and protect the use of existing resources on the Brazilian coast. In view of potential future impacts, for instance from tourism (see section 4.5), IUCN recommends that the protection status of the entire marine part of the buffer zone is strengthened.

IUCN notes that the nominated property benefits from a strong and multi-layered protection regime that goes beyond the nominated property itself and beyond the areas where the main attributes of the proposed OUV are found. Therefore, IUCN considers that the nominated property is adequately protected, but recommends that the protection of the marine part of the buffer zone should be further strengthened through the designation of a marine protected area.

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

4.2 Boundaries

The nominated property boundaries cover an area of 156,562 ha and encompass almost entirely the

Lençóis areas (90,000 ha of dune fields and temporary and permanent lakes) except for some dunes which have moved outside the boundaries in Santo Amaro after the designation of the national park. These areas have however been designated under municipal protection regimes to ensure coherence in protection. The LMNP boundaries also include some non-dune ecosystems important to the integrity of the nominated property, including parts of rivers, coasts, mangroves, and *Caatingas*. The interplay between these elements and the dune system are part of the processes constituting the OUV. These areas also play a conservation and buffering role for the attributes of the proposed OUV already within the nominated property. The nominated property therefore benefits from a boundary design that ensures its integrity.

In addition, the buffer zone covers an area of 268,231 ha fully surrounding the entire nominated property. The terrestrial part of the buffer zone is mostly covered by *Caatinga* and *Cerrado*-type vegetation, which ensure an ecological buffer effect between the ecosystems of the LMNP and more urbanised areas. The Permanent Protection Areas and Legal Reserves outside the nominated property play a fundamental role for the protection of the buffer zone and beyond. The marine section of the buffer zone provides an additional layer of protection straddling along the coast with a mostly uniform width of around 10 km. The nominated property therefore benefits from a complete buffer zone that can provide an additional layer of protection.

In conclusion, IUCN considers that the boundaries of the nominated property and buffer zone meet the requirements of the *Operational Guidelines*, as the national park includes all attributes of the proposed OUV and together with the proposed buffer zone effectively ensure their protection.

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

4.3 Management

The current management plan of the LMNP was developed in 2003 and has been updated in 2022. It includes 15 objectives and a zonation comprising four zones: Firstly, the 'Primitive Zone' is mainly dedicated to preservation of natural values and scientific research. Secondly, the 'Extensive Use Zone' intends to conserve natural values with minimal human impact. These first two zones cover the vast majority of LMNP's area. Thirdly, the 'Intensive Use Zone' comprises two separate areas for the visitor centres and other facilities. Lastly, the 'Special Use Zone' is dedicated to the LMNP administration, maintenance, and services. These latter two zones cover a very small proportion of LMNP

The updates to the management plan were based on the results of management effectiveness assessments under the State Party's Management Analysis and Monitoring System (SAMGe). According to these assessments, LMNP has continually increased its

performance over the past years. The management plan aligns with municipal, state, and federal plans and guidelines, such as the National Coastal Management Plan and the Municipal Land Use and Zoning Law. While it is within ICMBio's mandate to implement the management plan, it receives support from the governor's office and the three mayors' offices.

Law enforcement related to access, vehicle permits, and authorised activities within the nominated property is central to management priorities. The LMNP is well equipped with all-terrain vehicles, four-wheel drives, and a helicopter from the regional coordination section of ICMBio. However, IUCN notes there are staffing shortages within the nominated property, limiting their capacity to respond to various demands from the community, with a number of requests going beyond the ICMBio mandate. Current staff and resources are primarily assigned to administrative or surveillance work, with limited capacity to monitor biodiversity values. However, new permanent positions are being allocated, and additional support personnel on fixed-term contracts are being hired so the situation is expected to improve, with anticipated staff increase from 17 to 24 in addition to short-term contractors.

The overall strategy for the use of the nominated property is presented in the Public Use Plan, essentially a programmatic, technical document that covers management strategies, guidelines, and priorities to stimulate public use, guide management, improve experiences, and diversify visiting opportunities in the LMNP. The strategy presented in the Public Use Plan includes better signage of the official paths to be followed, better signage of the boundaries of the nominated property and the buffer zone, recruitment of additional staff to strengthen law enforcement and possible cooperation between the three levels of government on enforcement and patrolling. This Plan already considers necessary provisions to a comprehensive regulation of the tourism activity within and outside the nominated property, though it can be reinforced by determining the nominated property's carrying capacity, the development of a tourism management plan, including a monitoring plan.

To enhance coordination between the different levels of governance, ICMBio and the Ministry of Environment and Climate Change expressed their will to the field evaluation mission to work on an improved governance mechanism and partnership between the federal, state and municipal level. This partnership would aim at supporting the complementary use of resources to enhance enforcement, among other priorities. While this expression of interest demonstrates political will for the long-term management of the nominated property and its buffer zone, a formal tripartite agreement is not yet in place at the time of this evaluation.

Overall, IUCN considers that the management of the nominated property meets the requirements of the *Operational Guidelines*, as the management is currently able to ensure the integrity of the nominated property. Nevertheless, monitoring, enforcement and

governance should be strengthened in step with the increasing tourism demand (section 4.5). Whilst the marine part of the buffer zone is subject to the NCMP and ZEEC, IUCN also recommends strengthening the protection and management regime for the marine part of the buffer zone to ensure any potential threats from offshore and from tourism can be effectively addressed in future. This should include an analysis of the nominated property's carrying capacity that is to be based on the attributes of OUV and the biodiversity values of the property as well as the development of a tourism management plan based on the carrying capacity.

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

4.4 Community

In supplementary information, the State Party noted that there are currently 4,154 people living within the boundaries of LMNP, including traditional communities. According to supplementary information provided by the State Party, there are no communities self-identifying as Indigenous peoples living within the nominated property. Traditional communities are recognised by law and have been present in the territory before the LMNP was designated. They depend on the LMNP for their livelihoods, including for local agriculture, fishing and cattle raising. Tourism has also brought a significant livelihood opportunity, and several households now own homestays and restaurants. The National Park officially recognises these uses, and "Terms of Commitment" have been signed between the ICMBio and the communities. However, the identification and recognition of the traditional communities is still at an early stage.

Inhabitants of the nominated area hold tenure rights and participatory schemes have been established to organise the land use whilst conserving biodiversity. These mechanisms include the LMNP Council, which is operational since 2014 and which is mainly composed of landowners, along with the local businesses, fishers, local NGOs, tourist service providers and handcrafters. The recently established "Terms of Commitment" intend to facilitate a system that relates needs and sustainable activities carried-out by local inhabitants within the boundaries of the nominated property, based on a use baseline developed by the ICMBio through surveys. They acknowledge that the communities precede the creation of the national park and serve as a management and governance instrument and mediation tool for conflicts, signed between the Instituto Chico Mendes and traditional communities residing in conserved areas, aiming to guarantee traditional communities' socioeconomic and cultural interests and the conservation of biodiversity. Furthermore, the "Terms of Commitment" regulate infrastructure development, traditional and historical fisheries, cattle, and poultry raising, waste management and tourism activities.

All stakeholders and communities met during the field evaluation mission appeared to be aware and supportive of the nomination process. Whilst stakeholders voiced some concerns related to for instance the need for stronger enforcement, there appears to be a strong consensus that the World Heritage nomination would bring recognition to the LMNP and benefits to the communities.

4.5 Threats

The nomination dossier provides an analysis of threats affecting the nominated property, including their trends and extent within the nominated area, and estimates of their impacts. The most important threats identified are tourism, waste disposal and threats from outside the nominated property. Regarding threats from outside the nominated property and its wider setting, IUCN notes the impacts of the offshore oil spill from 2019, which has affected over 2,000 km of the Brazilian coast. Besides the environmental impacts, this has particularly affected coastal communities and their fisheries activities. Oil exploration activities in the *Foz de Barreirinhas* are hence a concern. Therefore, IUCN considers that the coastal-marine part of the nominated property needs a broader governance approach beyond the nominated property itself, including within the national and transnational coastal regulations to address potential issues arising from offshore oil exploration and exploitation.

Whilst the IUCN field evaluation mission noted tourism as the main threat, the nominated property is currently in an excellent state of conservation with only a limited impact from tourism. LMNP itself is difficult to access, which contributes to its preservation. The nominated property is only accessible through guided tours by car provided by tour agencies, limiting the potential impacts. The field evaluation mission noted that all municipal, state, and federal governments allocate legal and financial resources to ensure activities are well regulated and monitored. The Maranhão governor's office has an entire department with specialised professionals undertaking several planning and visitation activities and do provide important support to the nominated property's needs.

Tourism also plays an important role for the local economy, a relevant factor in promoting social engagement and conserving the values of the nominated property, promoted by the Public Use Plan itself. In the view of the mission, tourism should also be recognised as a potential conservation tool that provides livelihood opportunities to the local population and that enables further engagement of communities in the management of the nominated property. Visitation density is low to moderate overall in the nominated property, and is high only in a few specific locations of particular interest due to their scenic beauty (e.g. Lagoa Bonita and Lagoa Azul). Despite the efforts observed by the mission to properly handle waste, localised plastic pollution was evident, especially in the buffer zone. Thus, waste management will have to be a management priority, especially if the number of tourists increases.

Increasing tourism demand has led to the construction of a bridge in Barreirinhas to facilitate access to the LMNP. ICMBio requested legal action to stop this construction as the Environmental Impact Assessment (EIA) contained gaps. After the revision of the EIA and the provision of guarantees by the developer, the bridge construction was authorized and resumed. The IUCN field evaluation mission considers that the bridge could be used as an asset for the management as it will concentrate visitor access to one entry point and facilitate enforcement, provided that access is carefully controlled as recommended by the national authorities in the review of the EIA. Increasing tourism could also lead to an increase in illegal activities, including access by unauthorized private vehicles. This issue currently remains limited but will probably require enhanced capacity for enforcement in the nominated property. There is also an increasing demand for windsurfing on the margins of the LMNP in the coastal area of Atins prompting the construction of hotels, guesthouses, and tourism-related infrastructure, with implications for possible illegal construction on a fringe area bordering the nominated property, as evidenced during the mission. Whilst this issue is currently limited in scope, the ICMBio is exploring measures to control this potential threat and anticipate future issues.

In conclusion, IUCN notes that the responsible authorities are aware of and taking action to address the challenges facing management of the nominated property. IUCN considers that the nominated property is currently adequately protected and managed and subject to a boundary design that can ensure the integrity of the nominated property. Whilst the marine part of the buffer zone is subject to the National Coastal Management Plan and Ecological Economic Coastal Zoning (ZEEC), IUCN recommends strengthening the protection and management regime for the marine part of the buffer zone to ensure any potential threats from offshore can be addressed in future.

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

5. ADDITIONAL COMMENTS

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6. APPLICATION OF CRITERIA

The **Lençóis Maranhenses National Park (Brazil)** has been nominated under natural criteria (vii) and (viii).

Criterion (vii): Superlative natural phenomena or natural beauty or aesthetic importance

The nomination dossier highlights the series of dune formations interspersed with both temporary and perennial lagoons, creating an unparalleled environment of exceptional beauty. These dune chains, known as barchan dunes, stretch up to 75 km

in winding patterns and extend over 20 km inland. The vast areas of white sandy dunes, complemented by the presence of green and blue ponds, coastal broadleaf forests, beaches, tropical rivers, and flourishing mangrove ecosystems, form a breathtaking and diverse landscape of striking contrast. The landscape resembles a desert but holds high volumes of water as rainfall fills these dune formations with water from the rising water table during the first half of the year, forming temporary lagoons of various shapes, sizes, and depths. The interplay between wind and rainfall in this region creates a highly dynamic, fast changing dune landscape, which adds to the value for aesthetic appreciation changing every season and every year. Whilst large sand dune systems exist elsewhere, the setting in tropical climatic conditions of a complex dune field with a lacustrine and coastal environment makes the nominated property an unparalleled natural phenomenon.

IUCN considers that the nominated property meets this criterion.

Criterion (viii): Earth's history and geological features

The nominated property is shaped by sediments overlaying the Barreirinhas Basin, shaped by coastal dynamics and the interaction between climate, coastal drifts, tidal regime and river currents. Through the influence of wind, these sediments are transported to form a vast expanse of both stable and shifting dunes, recognized as the largest in South America. This phenomenon stands as remarkable evidence of the evolutionary progression of coastal dunes throughout the Quaternary period. The lagoons within the nominated area are solely replenished by rainwater and are surrounded by pristine sandy terrain. Moreover, the nominated property's non-vegetated, fluvial-aeolian landscape provides valuable insights into pre-vegetation fluvial environments, using the area as a modern-day analogue to illustrate fluvial processes of the past. The nominated property is an extraordinary site for observing the evolution of geomorphological processes, influenced by unique climatic and geological factors that support a distinct flora and fauna.

IUCN considers that the nominated property meets 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 **Lençóis Maranhenses National Park, Brazil**, on the World Heritage List under criteria (vii) and (viii);

3. Adopts the following Statement of Outstanding Universal Value of the property:

Brief synthesis

Consisting of large and extensive dunes, Lençóis Maranhenses National Park (LMNP) resembles a desert. However, located in northeastern Brazil, on the east coast of Maranhão, the property is subject to a semi-humid climate with a rainy season providing large volumes of water and resulting in the formation of temporary inter-dunal lagoons. The property comprises an area of 156,562 ha, of which about 90,000 ha are composed of an extensive dune field with temporary and permanent lagoons, bordering deflation plains as source area for the dunes along the 80 km coastline. The mostly unidirectional wind shapes barchan dunes up to 75 km in length. The property presents its most stunning scenery, when the lagoons reach their maximum water levels during the rainy season, exhibiting a wide range of different colours, shapes, sizes, and depths. The origin of the dune field is related to sedimentation from marine transgressions and regressions, which combined with the wind action allowed the formation of dune fields along the Quaternary. The property is located in the Barreirinhas Basin in a transition zone between three Brazilian biomes: Cerrado, Caatinga and Amazon. The park's vegetation is composed of pioneer formations of Restinga, mangroves and alluvial communities that, together with marine and freshwater environments, are fundamental for the conservation of species diversity.

Criterion (vii)

The LMNP is part of an incomparable landscape. It is formed by successive dune chains interspersed with temporary and perennial lagoons. Along the park's 80 km of coastline, there is a beach between 600m and 2km. The sand deposited by tides on the beach is gradually eroded by the wind, shaping small barchans with heights ranging from 50 cm to one metre near the shoreline, reaching heights of up to 30 m as they migrate inland, downwind and atop dunes from previous generations. The barchan dunes form winding chains up to 75 km long and move over 20 km inland. During the rainy season, temporary lakes form between the dunes, only to vanish in the dry season, leading to a constant transformation of the landscape. With dune mobility at migration rates ranging from 4 to 25 meters per year, these lakes reemerge in new locations with altered shapes in the subsequent rainy season. The lakebeds are coated with a layer of brown or green algae and cyanobacteria, contributing to the ever-changing scenery and variety of shapes and colours, composing a landscape of unique beauty rarely found anywhere else in the world.

Criterion (viii)

The sediments in the Barreirinhas Basin are subject to aeolian processes forming a field of fixed and mobile dunes, considered the largest in South America. This process is considered one of the best and largest examples of the development of coastal dunes along the Quaternary, and the only site worldwide with such extensive development of dynamic dunes and lagoons. The dunes form long chains of barchans arranged in

the same direction and increasing in size as they advance inland. Temporary ponds are formed by the rise of the water table during the rainy season. The property stands out within the complex interplay of climatic, oceanographic, and geomorphological elements along the Brazilian coast, featuring unique dune and lagoon formations fed exclusively by rainwater. These features, shaped by coastal dynamics and various environmental interactions, serve as remarkable evidence of the evolutionary progression of coastal dunes over millennia, including insights into pre-vegetation fluvial landscapes, serving as a present-day analogue for understanding past fluvial processes. The geomorphological processes create pristine and nascent habitats for a diverse and specialised and pioneer flora and fauna.

Integrity

With an area of 156,562 ha, the property encompasses 90,000 ha of dune fields with beautiful chains of barchans interspersed with temporary and perennial lagoons, exclusively fed by rainwater. More than 40,000 ha are covered by Restinga vegetation, which along with mangroves, lagoons, rivers, marine areas and other ecosystems supports species diversity and interact with geomorphological processes. The area is therefore large enough to guarantee the representation of elements and processes that constitute the property's Outstanding Universal Value.

The dunes are separated from the coastline by a broad deflation plain ranging from 600 m to 2000 m in width. The sand deposited by tides on the beach is gradually eroded by the wind, shaping small barchans with heights ranging from 50 cm to one metre near the shoreline, reaching heights of up to 30 m as they migrate inland, downwind and atop dunes from previous generations. The dunes migrate with a speed of up to 25 m per year. During the rainy season, lagoons emerge amidst very clean sand. With no inlet or outlet, they are exclusively fed by rainwater. The fluctuation of the water table controls the morphology of the dunes.

The property is fully surrounded by a buffer zone of 268,231 ha, both along the coast and inland, creating an ecological buffer between the natural ecosystems and urbanised areas.

Protection and management

The property is protected through the designation as Lençóis Maranhenses National Park (LMNP) with an area of 156,562 ha. This legally protected area is recognised since 1981 by legal decree and administered by the national protected areas authority, ICMBio, and comprises the National System of Protected Areas (SNUC), as the main territorial management instrument aimed at environmental

protection and biodiversity conservation. The network of protected areas within and beyond the property also interacts with other levels of environmental protection and management at the state and municipal levels, as well as other legal instruments that intend to protect important ecosystems beyond protected areas boundaries.

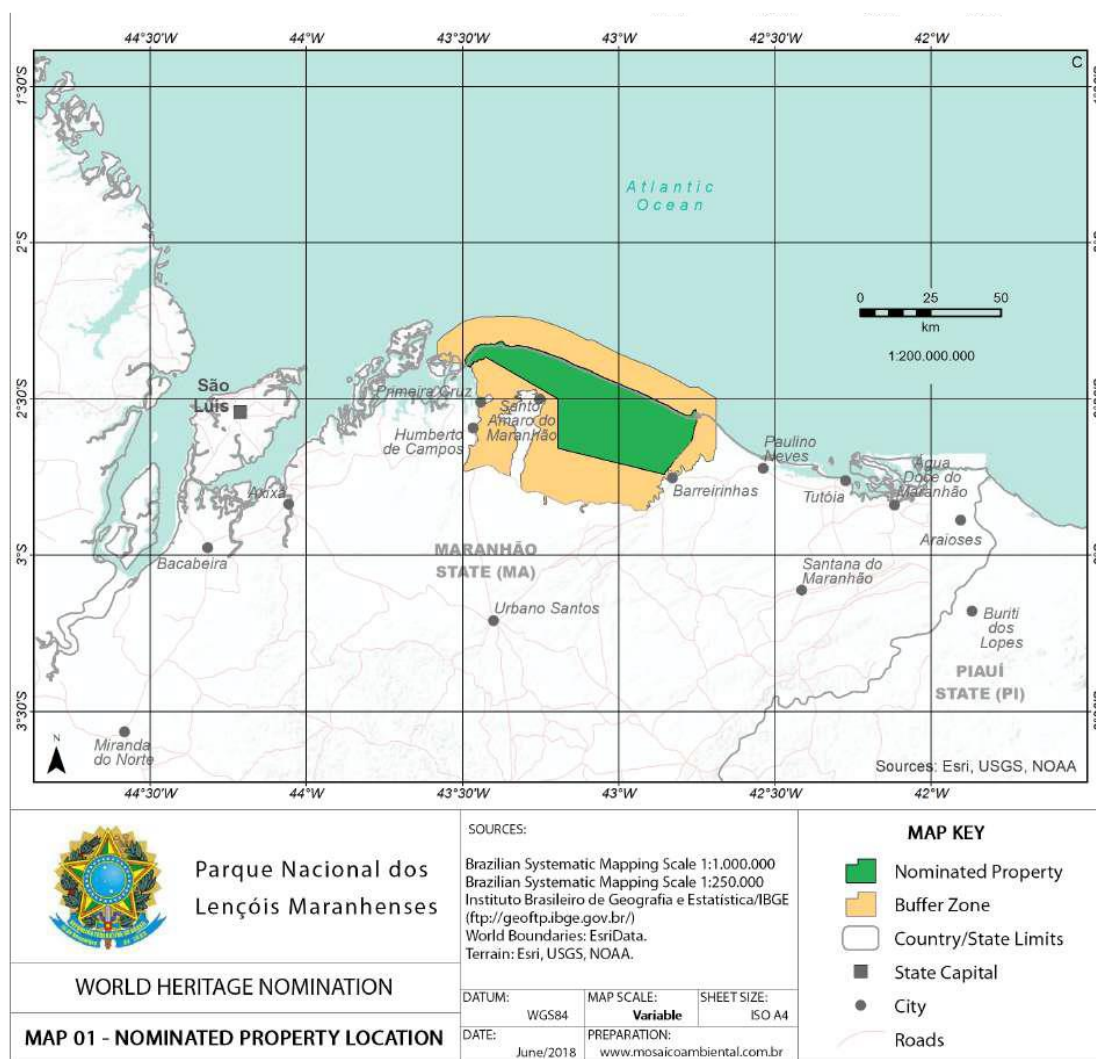
In addition, it is part of the National System of Protected Areas (SNUC), belonging to the integral protection group, where natural resources can only be used indirectly. It has well defined boundaries and buffer zones with their respective regulation instruments, being the Management Plan and Public Use Plan. Management effectiveness evaluations are conducted regularly, and results publicly addressed. Monitoring, enforcement, and governance needs to be commensurate with the level of action needed to respond to pressures from tourism.

Governance and participatory approaches are secured both for multi-level governmental decision-making as well as users of the property, through at least two instances: the LMNP Council and the Regional Governance Instance Lençóis-Delta. At the time of inscription, more than 4,000 people are living within the boundaries of LMNP. Local and traditional communities need to be equitably involved and their rights observed. The National Park officially recognises the communities through "Terms of Commitment", intending to respond to needs and sustainable activities carried-out by local inhabitants within the boundaries of the property. The identification and recognition of the traditional communities was still at an early stage at the time of inscription and will need to be strengthened.

The marine part of the buffer zone is subject to the National Coastal Management Plan and Ecological Economic Coastal Zoning (ZEEC). To ensure the protection of the property against threats from offshore, a strengthened protection and management regime for the marine part of the buffer zone will be required in future.

4. Requests the State Party to

- a) develop a tourism management plan, determined by the property's carrying capacity that is to be based on the attributes of OUV and the biodiversity values of the property,
- b) further strengthen the protection and management of the marine section of the buffer zone, for instance through the designation of a marine protected area,
- c) Continue to further increase staffing and funding for the protection and management of the property, especially to implement the aforementioned actions and including strengthened biodiversity monitoring.

Map 1: Location of the nominated property

B. MIXED PROPERTIES

B1. NEW NOMINATIONS OF MIXED PROPERTIES

AFRICA

MELKA KUNTURE AND BALCHIT ARCHEOLOGICAL AND PALEONTOLOGICAL SITE

ETHIOPIA



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WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

MELKA KUNTURE AND BALCHIT ARCHAEOLOGICAL AND PALEONTOLOGICAL SITE (ETHIOPIA) – ID N° 13 REV

IUCN RECOMMENDATION TO WORLD HERITAGE COMMITTEE: To not inscribe the nominated property under criterion (viii).

Key paragraphs of Operational Guidelines:

Paragraph 77: Nominated property does not meet World Heritage criterion (viii).

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

Background note: The site was first nominated by Ethiopia in 1978. This was the 13th nomination to the World Heritage List. The 1978 ICOMOS recommendation was to defer consideration of the nomination until the State Party supplied an overall inventory of intentions for presenting nominations. In 1978 and 1979 ICOMOS also found that the eight nominations from Ethiopia (including Melka Kunture) had either inadequate documentation or lacked a sufficiently persuasive case for Outstanding Universal Value (OUV). The site was further deferred in 1980 and 1981, again because Ethiopia had not provided a tentative list of properties they intended to nominate.

1. DOCUMENTATION

a) Date nomination received by IUCN: February 2023

b) Additional information officially requested from and provided by the States Parties: No additional information was requested following the session of the IUCN World Heritage Panel. The State Party provided supplementary information to ICOMOS on 22 February 2024.

c) Additional literature consulted: IUCN's evaluation consulted a wide array of relevant reference material for the geology, protection and management as well as the comparative values of the nominated property. Further references included: Altamura, F., R. Melis, M. Mussi (2017). A middle Pleistocene hippo tracksite at Gombore II-2 (Melka Kunture). *Palaeogeography, Palaeoclimatology, Palaeoecology*. Vol. 470, pp. 122-131; Altamura, F., L. Di Bianco, M. Mussi (2023). When a rural community defines itself through an archeological site: the case of Melka Kunture (Ethiopia). *Journal of Mediterranean Earth Sciences*; Casadevall, T, D. Tormey, J. Roberts (2019). *World Heritage Volcanoes: Classification, gap analysis, and recommendations for future listings*. Gland, Switzerland: IUCN. viii + 68pp; Crofts, R., Gordon, J.E., Brilha, J., Gray, M., Gunn, J., Larwood, J., Santucci, V.L., Tormey, D., and Worboys, G.L. (2020). *Guidelines for geoconservation in protected and conserved areas*. Best Practice Protected Area Guidelines Series No. 31. Gland, Switzerland: IUCN; Mc Keever, P.J. and Narbonne, G.M. (2021). *Geological World Heritage: a revised global framework for the application of criterion (viii) of the World Heritage Convention*. Gland, Switzerland: IUCN; Maerker, M, S. Calogero, R. Melis, and M. Mussi

(2014). Assessment of present day geomorphological dynamics to decipher landscape evolution around the Paleolithic sites of Melka Kunture, Ethiopia. EGU 2014-14805; Mitchell, N. with contributions from Leitão, L., Migon, P. and Denyer, S. (2013). Study on the Application of Criterion (vii): Considering superlative natural phenomena and exceptional natural beauty within the World Heritage Convention. Gland, Switzerland: IUCN. 113pp; Pioli, L., R. Melis, and M. Mussi (2023). Volcaniclastic sedimentation in a closed, marginal rift basin? The case of the Melka Kunture area. *Geol. Soc. London*, vol 520; Wells, R. (1996). *Earth's Geological History: A Conceptual Framework for Assessment of World Heritage Fossil Site Nominations*. Gland, Switzerland: IUCN.

d) Consultations: 15 desk reviews received. This included reviews from specialists of the International Union of Geological Sciences (IUGS) as well as synthesis provided by IUGS. Desk reviews also included specialist reviews from people with experience in indigenous rights as well as from the IUCN WCPA Governance Thematic Group. The field mission was able to conduct individual meetings with Vice Governor of Oromia Province; Minister of Tourism; and Ethiopian Heritage Center. Approximately 30 stakeholders actively participated in an on-site meeting with representatives including local residents; local, district, and regional government; tourism; archaeological researcher leaders for the site; pastoralists.

e) Field Visit: Daniel Tormey (IUCN) and Edward Matenga (ICOMOS), 26 to 31 October 2023

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

2. SUMMARY OF NATURAL VALUES

The nominated property of Melka Kunture and Balchit Archeological and Paleontological Site includes a large group of archaeological sites within six component parts. It is located in the Upper Awash River valley of Ethiopia, in the highlands above the main Ethiopian Rift at about 2,000 m above sea level, and about 60 km south of Addis Ababa, near the village of Awash Melka. The complex geological and archeological record from the nominated component parts holds lithic (i.e. relating to stone tools) industry types, made from a variety of volcanic raw materials over a very long period of time. The nominated property also includes paleo-botanical evidence, and fossil fauna (primarily hippo). Hominin remains were discovered in place during archeological investigations of the lithic tool industry. This is different from most such discoveries where the remains are found during controlled surface collections. Pleistocene fossil footprints of hominins, hippo and birds between 1.2 and 0.7 million years have also been discovered. The total area of the serial nominated property across all six component parts is 55.51 ha with a single buffer zone of 9637.88 ha.

The entire nominated property is preserved in volcanoclastic deposits developed in the slowly subsiding depression where the paleo-Awash River had established its course. The volcanoclastic deposits are complex, but overall the fluvial basin within which the nominated property is located was formed by a substantial lava dam on the Awash River, at the bridge near Awash Melka. Upstream of this natural dam, the conditions favoured deposition in the basin which thus prevented the archaeological remains from being fully eroded. Through time, parts of the paleo-landscape were subject to repeated erosion and deposition, blanketed both by alluvial deposits, and by volcanic deposits produced by the nearby volcanoes. Recent erosion by the current Awash River tributaries forms gullies within the nominated property which reveal the history of lithic technology at the site. The volcanic ignimbrites – i.e. volcanic rock of hardened tuff (volcanic ash) – and airfall layers allow dating by radiometric methods, thus providing good age constraints to the rate of lithic technology development.

Archaeological excavations have allowed the investigation of the prehistoric cultural heritage and recovery and documentation of related scientific information. More than 80 archaeological layers have been identified during 50 years of archaeological research; 30 of them have been extensively excavated over surfaces ranging from 50 m² to 250 m². Tens of thousands of lithic tools, faunal and some human remains (including *Homo erectus* and archaic *Homo sapiens*) have been discovered. Much further evidence is preserved in an area of more than 10,000 ha, and is available for future research. The archaeological deposits of Melka Kunture are a unique archive of human evolution, spanning over more than 1.7 million years, from Oldowan (i.e. the oldest known stone tool industry) layers, to a very long and complex sequence of Acheulean (i.e. stone tool industry marked by hand

axes) layers, to Middle Stone Age and eventually by Late Stone Age layers. Throughout this sequence, a diversified range of lithic raw materials of volcanic origin were available for working into tools by humans: each had different properties and qualities, all were carefully tested and, when found suitable, eventually exploited. Accordingly, Melka Kunture can be seen as a laboratory for human evolution, where the requisites for trial-and-error procedures were naturally available, and parallel the interpreted growth of cognitive capabilities in humans. The nominated property does show the interplay, over time, of early humans with their environment, within the ecosystems where they lived, documented in a sequence where episodic volcanic events have preserved a series of palaeolandscapes that each include direct and indirect fossil evidence.

3. COMPARISONS WITH OTHER AREAS

Melka Kunture and Balchit Archeological and Paleontological Site has been nominated under criteria (iii), (iv) and (v), which will be assessed by ICOMOS, as well as under criterion (viii). With respect to criterion (viii), IUCN notes that the State Party did not conduct a distinct Global Comparative Analysis. The analysis in the nomination focused only on the cultural criteria, and only considered a few African sites. The geological values described in the dossier are approached in different ways across the document: they included analysis on the basis of paleontology, volcanology/sedimentology, and the interplay between the geology and the cultural criteria. IUCN bases the following analysis on the nomination dossier, IUCN Thematic Reports, the field evaluation mission and desk reviewer input, including specialist input from IUGS.

With respect to paleontology, the preponderance of fossil remains are of hippos. It is an unresolved question why there is a spike in the occurrence of hippos at this location. There are trackways with hippo, bird and hominin tracks. Neither this time period, nor the fossil evidence of the nominated property are identified as priorities in the 1996 IUCN Paleontology Thematic Report. The 2021 IUCN thematic study on Geological World Heritage speaks to sites with mixed hominin and other fossils but makes no recommendations in general or specifically that these sites are underrepresented or should clearly be considered for World Heritage listing. The study notes some overlap with criterion (iii) to “bear a unique or at least exceptional testimony to a cultural tradition or to a civilisation which is living or which has disappeared” for properties containing early hominid fossils. Several hominid fossil World Heritage properties have been inscribed on the World Heritage List under criterion (iii) only, whereas others have also been recognized under criterion (viii). However, the recognition of hominid fossil properties under criterion (viii) is linked to geological features that are clearly outstanding at global level. For instance, the Ngorongoro Conservation Area (United Republic of Tanzania) has

been inscribed under criterion (viii) for containing the largest unbroken caldera in the world whilst noting the paleontological record related to human evolution, which is however predominantly recognized under criterion (iv). The hominid record at Willandra Lakes Region (Australia) is inscribed under criterion (iii) but its geology is inscribed under criterion (viii) recognizing giant marsupial fossils. IUCN therefore concludes that there is not a basis for application of criterion (viii) for non-hominin fossils in this case, and that the hominin fossil remains would be considered in relation to the possible application of cultural criteria. Nevertheless, the presence of non-hominin species enhances the understanding of how the hominins were using and exploiting the living resources around them, as well as a deeper understanding of the living part of the ecosystem within which they lived.

With respect to volcanology and sedimentology, the 2019 IUCN Volcano Thematic Report does identify the Ethiopian volcano Erta Ale as potential gap on the World Heritage List, but not the older volcanoes and volcanic deposits in the Ethiopian Highlands. Although the nominated area represents the earlier stages of the development of the currently active Main Ethiopian Rift in the lowlands, it is not a regional or internationally significant representative. The interplay of volcanology and sedimentology in the nominated property includes the formation of a lava dam across the Awash River forming the basin within which the deposition and erosion occurred that led to the preservation of the archaeological and palaeontological remains, but this feature is not of itself sufficient to justify the application of criterion (viii).

With respect to the interplay between the geology and the cultural criteria, IUCN reviewers viewed this as the main value of the geological features at the nominated property: The geology formed the basin within which the fauna gathered, and provided the means to preserve the lithic and hominin remains. The interplay between volcanology and sedimentology periodically exposed and reburied areas, providing valuable time constraints and records of the paleoecology of the area. The current gully erosion exposes the remains. During the time of occupation and lithic technology development, the obsidian (i.e. volcanic glass formed by rapidly cooling lava) and other volcanic rocks were the source material that attracted early hominins, and the abundance of raw material led this to being the cultural site present today. The geology is an integral part of this cultural site, however, this interplay is common among sites of this type; by their nature human evolution archaeological sites are part “cultural” and part geology, as noted in the 2021 IUCN study on Geological World Heritage cited above. In the view of IUCN, these geological values would be able to be addressed in the nominated property’s value statement, either as a Cultural Landscape or as a cultural site, provided – of course – that potential to demonstrate OUV is confirmed under cultural criteria. The detailed study of this complex interplay between the volcanoes and the rivers makes this a well-studied example with recent peer-reviewed publications.

However, considered purely as geological features, the significance of the complex interplay of volcanic and sedimentologic aspects of the nominated property is not globally significant, but rather of national level conservation importance. IUCN also notes that some reviewers suggested potential for consideration of the nominated property as a UNESCO Global Geopark.

In summary, IUCN considers that the geological characteristics of the nominated property, whilst important in supporting the archaeological values nominated under cultural criteria, do not justify the application of criterion (viii) as they are of national importance and not globally significant. The nominated property is typical of early human archaeological sites and does not represent a stand-alone case for criterion (viii).

4. INTEGRITY, PROTECTION AND MANAGEMENT

4.1. Protection

IUCN’s evaluation of the protection regime is primarily based on the protection of geological values that are linked to the cultural values. The most direct legal protection for the nominated property is the Regulation to Establish Melka Kunture and Balchit prehistoric Site Administration and Preservation Office, declared in Regulation No. 159/2013. This regulation makes the Oromia Regional State, and in particular the Oromia Region Bureau of Culture and Tourism, as the legally responsible governing body. This specific regulation to the nominated property operates within a larger framework of federal projective legislation, including: The Federal constitution for protection of culture and the natural endowment; The Cultural Policy: for conservation of cultural properties and natural heritage; Proclamation for Research and Conservation of Cultural Heritage; Tourism Policy; Environmental Policy.

In addition, the Oromia National Regional State has constitutional protections for heritage and nature, as well as the authority provided by the Regulation to Establish Melka Kunture and Balchit Prehistoric Site, to be the administrative body with responsibility and authority for heritage protection. In practice since 2013 when the specific regulation for Melka Kunture was enacted, the level of awareness and protection seems to have become established, based on observations by the field evaluation mission. The most tangible evidence of this recognition is the action to address water contaminated with industrial pollutants from Addis Ababa within the nominated property: the identification came from the local level to Oromia level. Action was required at the federal level to require pollution controls at the industrial area, and was taken. Also, under the auspices of the Regulation to Establish Melka Kunture and Balchit prehistoric Site Administration and Preservation Office, the several items identified in the management plan were commenced. Based on conversations with the State Party in the field, the potential World Heritage listing is viewed as the required trigger for increased levels of monetary and human resource numbers to be

designated for the property. During the mission's meetings with government agencies including the Vice Governorship of Oromia, there is commitment for both adequate funding to implement the plan, and immediate hiring to at least double the current number of full-time staff for the site (currently at 4 people).

The nominated property has an established regulatory framework, focused on the Regulation to Establish Melka Kunture and Balchit Prehistoric Site, establishing the Oromia National Regional State to be the administrative body with responsibility and authority for heritage protection. This authority has been successfully applied at the property. The Management Plan would be effective if suitably staffed.

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

4.2 Boundaries

Whilst the boundaries of the nominated component parts were developed in conjunction with the long-term archaeological field investigations, they also encompass the geological conservation values. During the field evaluation, there was discussion with the State Party regarding focus within the relatively large serial component parts to provide focus on the key areas of conservation concern within each component part. This would be consistent with the 2020 IUCN WCPA Best Practice Guide for Geoheritage of defining geo-sites within the larger boundary of the protected area. Each geo-site would have resource-specific conservation focus, while the overall protected area would address site-wide protection.

Buffer zone boundaries were in flux at the time of the evaluation mission. The nomination dossier identified four GPS-located points that were to form a buffer zone. However, owing to the size of the proposed buffer zone and the ongoing pastoral activity in the area, the State Party determined during the mission that it would not be feasible to maintain the buffer zone and that the areas of particular conservation priorities needed a more focused approach than the currently established boundaries allow for. That is, the boundaries of the buffer zone as drawn are so large as to lose the sense of the key sites within them and the need for specific conservation efforts there. As IUCN determined that criterion (viii) is not applicable, then this question of an improved buffer zone should be considered by ICOMOS.

IUCN considers that the boundaries of the nominated property would be sufficient to address geological conservation values if a more focused approach was taken, but that the buffer zones are currently inappropriate. Thus the boundaries of the nominated property do not meet the requirements of the Operational Guidelines at the present time, in relation to criterion (viii).

4.3 Management

The regulatory framework covering the nominated property provides the Oromia Regional Government with full authority to manage and act. It was understood during the field evaluation that this equated to full ownership, however the current pastoral users of the nominated property who live nearby also claim the area, which is also confirmed in the nomination dossier. A site manager hired by the Oromia Culture and Tourism Bureau would be appointed to work with relevant stakeholders and the local communities to manage the nominated property. The site management is responsible for the day-to-day management, monitoring and reporting and coordination of all activities, guided by the Management Plan.

The Management Plan clearly details stakeholder outreach and the management framework. The final management authority is the Oromia Regional Government, specifically the Bureau of Culture and Tourism. The Management Plan includes a broad range of stakeholder input, based on a clear understanding of the threats and needs, and provides methods to address these threats and needs. However, the nomination dossier noted that the current scale and skill levels of staffing and resources for the nominated property is limited, which was also reiterated during the field evaluation mission whilst strengthened support to the implementation of the Management Plan was envisaged by the State Party. The management of the nominated property is constrained by a relative low level of conservation funding, with only four staff whilst most of the field monitoring is implemented by archaeologists that are only present seasonally. During the IUCN field mission's meetings with government agencies including the Vice Governorship of Oromia, a clear commitment for both adequate funding to implement the plan, and immediate hiring to at least double the current number of full-time staff for the site was noted. This increase would likely be sufficient to address the likely increase in use if the nominated property is inscribed, however ICOMOS should consider the capacities related to cultural heritage.

Regarding visitation, IUCN notes the currently very limited levels of visitation suggesting that the levels of management and protection are adequate to the level of tourism pressure for the time being. If tourism does develop, it is likely to be via guided arrangements because of the remoteness of the sites. As such, monitoring and tracking could be further enhanced by enlisting the guides as an extension of the ranger staff.

The most important threat currently affecting the geological values of the nominated property emerges from illegal gravel and sand mining, particularly at a key outcrop adjacent to the river at the Simbiro site. During the mission, commitments were indicated by the State Party to remedy the situation. Under the auspices of the Regulation to Establish Melka Kunture

and Balchit prehistoric Site Administration and Preservation Office and associated regulatory framework, the State Party committed during the mission to halting the illegal sand/gravel mining at Simbiro, and to take additional protective measures at the key areas of value within the larger protected area boundary to minimize the potential for conflicts or damage from the current levels of use which include low-intensity pastoral use, grain planting and harvest, and limited visitation.

IUCN considers the management of the nominated property does not meet the requirements of the Operational Guidelines, but takes note of the intentions to strengthen current levels of capacity to one that would meet the requirements, in relation to natural heritage.

4.4 Community

The nomination document notes the Oromo people as Indigenous Peoples living around the nominated property. Stakeholder participation and the inclusion of the communities are regarded as essential for enabling a shared responsibility for the nominated property, both in the nomination document and in the Management Plan. However, the nomination does not mention Free, Prior and Informed Consent (FPIC), whilst indicating that the process of preparing the nomination was finalized through a validation workshop. Existing legislation and the Management Plan provide for tenure rights, rights to information, consultation, and consent. The nomination was fully supported by stakeholders and local populations who participated in the stakeholder meetings during the field evaluation mission. The mission included an emphasis on determining if FPIC by the Indigenous Peoples had been provided, within the limits of the short visit. The field evaluation mission noted that there was a strong identity with the cultural heritage of the nominated property, in part because of the visible presence of the long-term archaeological work on the site, including the use of the local population for support, which is also suggested in recent research. Inscription on the World Heritage List was presented by the State Party as a means to enhancing the livelihood of the local population by increasing visitation. As IUCN determined that criterion (viii) was not applicable, the further questions on these matters would be considered by ICOMOS.

4.5 Threats

Whilst the Management Plan enumerates a wide range of threats in a SWOT analysis, the level of threats for geo-conservation values appears to be low. The most important threat currently affecting the geological values of the nominated property emerges from illegal gravel and sand mining. One active sand mine is adjacent to the river at the Simbiro site, and sediment deposits are found in the river as a result of this activity. The field evaluation mission inspected the

effect to the natural fluvial geomorphology, which indicates that, at this time, the primary concern would be enhanced deposition. However, if the activity were to continue, a condition of enhanced erosion could occur, which would threaten to undermine the key lithic technology site. During the mission, commitments were made by the State Party to remedy the situation.

The nature of the nominated property also includes the potential for change due to two major processes: The first one is the process of erosion and deposition that will affect these sites in the future. This process is part of the value of the nominated property, because it represents how the sites were preserved more or less intact, and how they were subsequently eroded to expose them today. These processes are also preserved in the site boundaries. In this respect, IUCN notes that the full watersheds are not included as either site boundary or buffer zone, but the local watersheds do form the current site boundaries. The second source of change is the process of research by excavation and other methods that has created the nominated property as it is today.

The nominated property is in part adjacent to the growing village of Awash Melka. As the village grows there is the potential for an increase of impacts on the nominated property, and a need for services to manage waste and pollution, and to avoid improperly designed surface runoff which could lead to greater amounts of erosion within the nominated property. There is ongoing pastoral activity in the area of the nominated property. This includes low-intensity grazing by goats and cows, and some planting of grain crops. These uses do not represent a threat to the geological values of the nominated property.

In conclusion, IUCN notes that the nominated property's protection and management regime predominantly addresses cultural values, but not attributes that could be considered under criterion (viii). At the level of the geological values of national importance, the nominated property partially meets the requirements to ensure their protection and management within the currently proposed boundaries, in light of the limited level of threats for geological values.

In summary, IUCN considers that the integrity requirements and protection and management requirements of the Operational Guidelines are not met, but takes note of the intentions to strengthen current levels of capacity to one that would meet the requirements.

5. ADDITIONAL COMMENTS

5.1 Interaction of geological and cultural attributes

Although it is IUCN's opinion that the site does not demonstrate OUV for criterion (viii) because the paleontological and volcanic attributes of the site are of

national importance only, IUCN emphasizes that this does not mean that geology is unimportant to the potential OUV of this nominated property as it formed the basin within which the fauna gathered, and provided the means to preserve the lithic and hominin remains. The interplay between volcanology and sedimentology periodically exposed and reburied areas, providing valuable time constraints and records of the paleoecology of the area. The current gully erosion exposes the remains. During the time of occupation and lithic tool technology development, the obsidian and other volcanic rocks were the source material that attracted early hominids, and the abundance of raw material led this to being the outstanding cultural site we have today. The geology of the site is central to the understanding of the cultural values of the nominated property. The State Party included “cultural landscape” as an element of the nomination, and based on the information provided in the nomination most of the discussion of geology under criterion (viii) could be modified to express the importance of the geology to the potential World Heritage property.

5.2 Consideration in relation to serial properties

a) What is the justification for the serial approach?

The basis for the proposed OUV under criteria (iii), (iv), and (v) is the archaeological sites and not the geosites. Neither the basis for criterion (viii) in a stand-alone sense, nor a serial or non-serial approach to protecting geological attributes in a stand-alone sense, are considered by the nomination dossier. The different component parts of the nominated property are located within a landscape exhibiting varied land uses, with much of this larger area not providing the integrity and legal protection that would allow inclusion in a World Heritage property, and thus a contiguous property is not feasible. The serial approach provides delineation to protect the proposed OUV, while allowing the current land use to continue.

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

Whilst the six nominated component parts may be functionally linked (see ICOMOS evaluation) in demonstrating criteria (iii), (iv) and (v), there is no functional linkage between the component parts evidenced by the nomination regarding criterion (viii).

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

The nominated component parts of the serial nomination are in geographic proximity and have similar values that require management and protection. All nominated component parts are included in the overall management strategy that has been drafted. The strategy takes into account all the

relevant stakeholders, including the regional administration of Oromia and the national, district, and local representatives. The strategy elaborates on the current management structure that is based on the existing archaeological resource and Oromia-led protections. The Management Plan will take effect upon inscription.

6. APPLICATION OF CRITERIA

The **Melka Kunture and Balchit Archaeological and Paleontological Site (Ethiopia)** has been nominated under criterion (viii), together with the cultural criteria (iii), (iv) and (v) which will be evaluated by ICOMOS.

Criterion (viii): Earth’s history and geological features

The geological values outlined in the nomination encompassed palaeontology, volcanology / sedimentology, and the interconnectedness between geology and cultural heritage. Notably, the dossier lacks a comprehensive global comparative analysis under criterion (viii). Although the area represents the earlier stages of the development of the currently active Main Ethiopian Rift in the lowlands, it is not regional or internationally significant regarding purely geological heritage, and the geological conservation values are significant at the national level. The presence of non-hominin fossil species nevertheless supports the understanding of how the hominins were using and exploiting the living resources around them, as well a deeper understanding of the living part of the ecosystem within which they lived. Whilst the nominated property’s geological history is an important context for its cultural values, the interplay between the geology and the cultural values is ubiquitous among sites of this type.

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

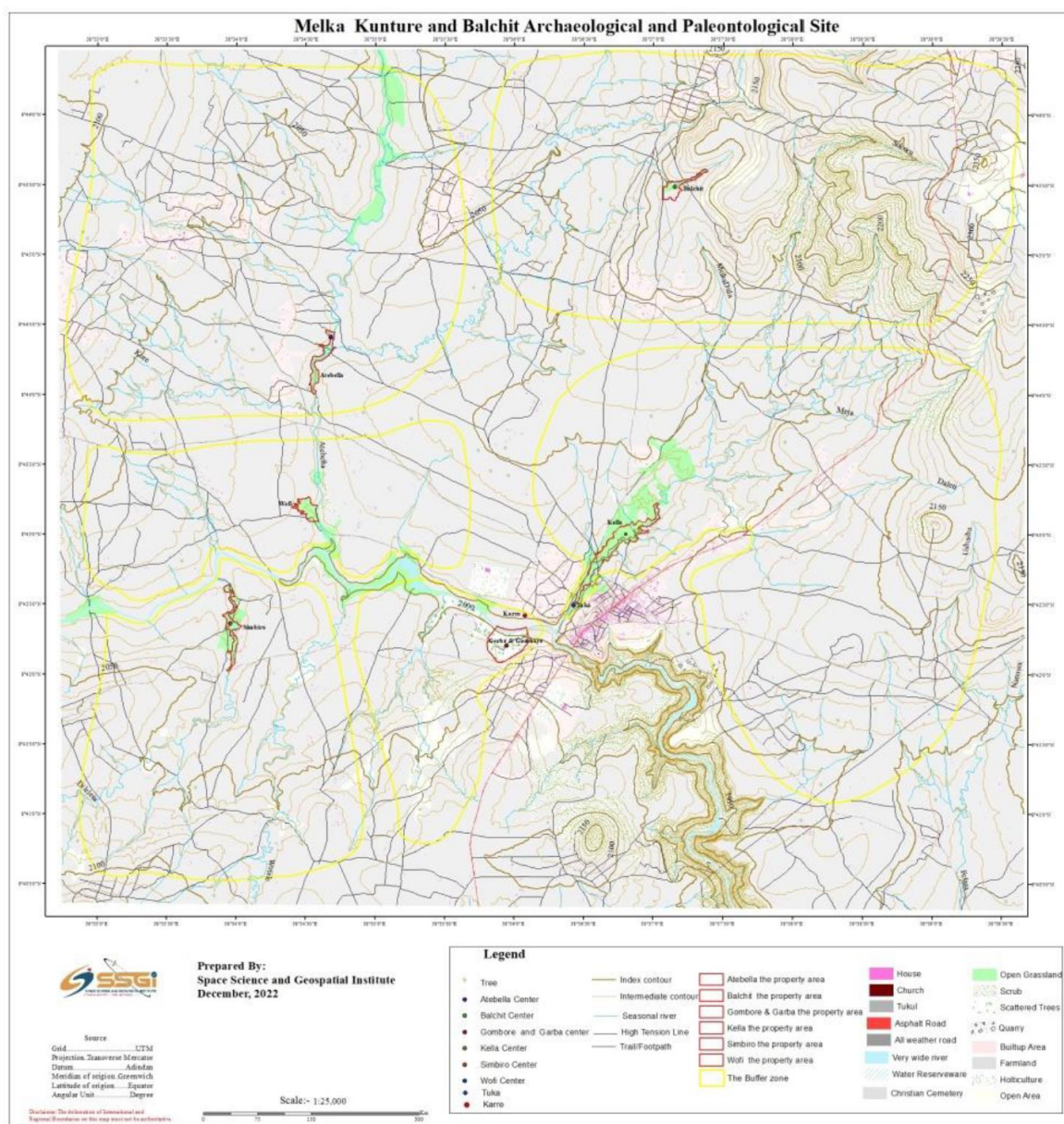
7. RECOMMENDATIONS

IUCN recommends that the World Heritage Committee adopts the following draft decision, noting that this will be harmonised as appropriate with the recommendations of ICOMOS regarding their evaluation of this mixed site nomination under cultural criteria and included in the working document WHC/24/45.COM/8B:

The World Heritage Committee,

1. Having examined Documents WHC/24/46.COM/8B and WHC/24/46.COM/INF.8B2,

2. Does not inscribe the **Melka Kunture and Balchit Archaeological and Paleontological Site, Ethiopia**, on the World Heritage List under criterion (viii).

Map 1: Location of the nominated property

EUROPE / NORTH AMERICA

TE HENUA ENATA - THE MARQUESAS ISLANDS

FRANCE



WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

TE HENUA ENATA – THE MARQUESAS ISLANDS (FRANCE) – ID N° 1707

IUCN RECOMMENDATION TO WORLD HERITAGE COMMITTEE: To inscribe the nominated property under natural criteria (vii), (ix) and (x).

Key paragraphs of Operational Guidelines:

Paragraph 77: Nominated property meets natural World Heritage criteria (vii), (ix) and (x).

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

1. DOCUMENTATION

a) Date nomination received by IUCN: February 2020

b) Additional information officially requested from and provided by the State Party: Following the session of the IUCN World Heritage Panel, a progress report was sent to the State Party on 20 December 2023, jointly with ICOMOS. This letter advised on the status of the evaluation process and requested supplementary information regarding the protection and planning regime and potential future extensions. The supplementary information was provided by the State Party on 26 February 2024.

c) Additional literature consulted: IUCN's evaluation consulted a wide array of relevant reference material for the geology, geomorphology, protection and management as well as the comparative values of the nominated property. References included: Abdulla, A., Obura, D., Bertzky, B. & Shi, Y. (2013). *Marine Natural Heritage and the World Heritage List: Interpretation of World Heritage criteria in marine systems, analysis of biogeographic representation of sites, and a roadmap for addressing gaps*. IUCN, Gland, Switzerland. xii + 52pp; CEPF (2007). *Ecosystem Profile: Polynesia-Micronesia Biodiversity Hotspot. Critical Ecosystem Partnership Fund (CEPF)*. Available at: <https://www.sprep.org/attachments/47.pdf>; Delrieu-Trottin, E., Williams, J.T., Bacchet, P., Kulbicki, M., Mourier, J., Galzin, R., Lison de Loma, T., Mou-Tham, G., Siu, G. & Planes, S. (2015). *Shore fishes of the Marquesas Islands, an updated checklist with new records and a new percentage of endemic species*. *Check List*, 11, 5; Florence, J., & Lorence, D.H. (1997). *Introduction to the flora and vegetation of the Marquesas Islands*. *Allertonia*, 7(4), pp. 226-237; Gouni, A., Teikiteetini, M., Sulpice, R., Teatiu, L. (2005). *Suivi des populations de Carpophages des Marquises, *Ducula galeata*, aux îles des Marquises*. *Société d'Ornithologie de Polynésie, Papeete*. 20 pp.; IUCN (2004). *The World Heritage List: Future priorities for a credible and complete list of natural and mixed sites. A Strategy Paper prepared by IUCN, April 2004*. Available at: <https://portals.iucn.org/library/sites/library/files/documents/Rep-2004-026.pdf>; Kashiwagi, T., Marshall, A., Bennett, M. & Ovenden, J. (2011). *Habitat segregation*

and mosaic sympatry of the two species of manta ray in the Indian and Pacific Oceans: *Manta alfredi* and *M. birostris*. *Marine Biodiversity Records*, 4, 10.1017/S1755267211000479; Kormos C.F., Badman T., Jaeger T., Bertzky B., van Merm R., Osipova E., Shi Y. & Larsen P.B. (2017). *World Heritage, Wilderness and Large Landscapes and Seascapes*. Gland, Switzerland: IUCN; Magin, C. & Chape, S. (2004). *Review of the World Heritage Network: Biogeography, Habitats and Biodiversity*. UNEP World Conservation Monitoring Centre and IUCN – The World Conservation Union, available at: <https://portals.iucn.org/library/sites/library/files/documents/Rep-2004-015-2.pdf>; Meyer, J.-Y. (1996). *L'île de Mohotani (Motane): état de la biodiversité et principales menaces. Contribution à la biodiversité de Polynésie française N°3. Délégation à l'Environnement, Tahiti*; Syngé, H. (1991). *Which Oceanic Islands merit World Heritage Status? A short feasibility study for IUCN – The World Conservation Union*. Available at: <https://portals.iucn.org/library/efiles/documents/Rep-1991-102.pdf>; Thibault, J.-C. (1992). *Eiao, nécessité absolue d'une réhabilitation de l'île*. *Courr. Nat.* 133: 16-21; Thibault, J.-C. & Cibois, A. (2017). *Birds of Eastern Polynesia. A biogeographic Atlas*. *Barcelona: Lynx Edicions*; WWF/TNC, 2019. *Freshwater ecoregions: Marquesas Islands*. Available at: <https://www.feow.org/ecoregions/details/826>. Accessed Nov 2023; Ziembicki, M., Raust, P. (2003). *Status, distribution and Conservation of the Ultramarine lorikeet (*Vini ultramarina*) in the Marquesas Islands, French Polynesia*. *Société d'Ornithologie de Polynésie, Papeete*. 33 pp.

d) Consultations: 9 desk reviews received. The mission was able to meet with representatives of the Ministry of Culture and Ministry of Ecological Transition, the Vice-President of French Polynesia, representatives of the Environment Department (DIREN), Culture and Heritage Department (DCP) and other agencies. The mission also met *hakaiki* (mayors) and representatives of local councils, representatives of local communities, NGOs and technical experts involved in the preparation of the nomination.

e) Field Visit: Elena Osipova (IUCN) (19 to 28 October 2023) and Ian Lilley (ICOMOS)

f) Date of IUCN approval of this report: May 2024**2. SUMMARY OF NATURAL VALUES**

Te Henua Enata – The Marquesas Islands nomination is found in the Marquesas Islands of French Polynesia, in the southern Pacific Ocean. The archipelago of oceanic, volcanic islands consists of six inhabited islands and numerous islets. Situated in the Pacific Ocean and in the heart of the Polynesian Triangle, the archipelago is one of the most isolated in the world. The islands are characterised by calderas formed through volcanic eruptions and collapse, steep ridges, cliffs and mountains rising up to 1,200 m.

The nominated property of Te Henua Enata – The Marquesas Islands comprises seven nominated component parts located across all of the main islands and some islets (*motu*) of the Marquesas Islands – the northernmost of the five groups of islands comprising French Polynesia. The nominated property includes both marine and terrestrial parts. The terrestrial sections of each nominated component part follow the high ridge line of each island's main caldera, or highest peaks (Ua Pou), and extend to the coastal watersheds. In the case of uninhabited Hatu Tu and Fatu Uku, the entire island is included. The property is nominated as a mixed site, under cultural criteria (iii), (iv), (vi) and under natural criteria (vii), (ix) and (x). The natural values related to criteria (ix) and (x) are based on a wide array of habitats and high levels of endemism both in the terrestrial and marine environments. This includes species that are endemic not only to the archipelago, but also to specific islands and even specific peaks. This is linked to the isolation of the Marquesas Islands. The few species that have crossed the vast ocean and colonised the islands have evolved into many unique species. The marine environment holds one of the highest fish biomasses in the world and has an undisturbed character with preserved trophic chains. It differs from other island groups of Polynesia for the absence of barrier reefs surrounding the islands resulting from complex geological and oceanographic processes.

Nominated component part	Nominated Property (ha)	Buffer zone (ha)
Ensemble mixte de Eiao-Hatu Tu	46,356	-
Ensemble mixte de Nuku Hiva	76,227	5,297
Ensemble mixte de Ua Pou	40,929	485
Aire marine côtière de Ua Huka	34,516	-
Ensemble mixte de Hiva Oa-Tahuata	97,865	952
Ensemble mixte de Fatu Uku	12,225	-
Ensemble mixte de Fatu Iva	37,631	107
Total	345,749	6,841

Table 1: Area of nominated property and buffer zone.

The natural values related to criterion (vii) are based on landscape features comprising sharp ridges, peaks and very steep cliffs. The landscapes features also vary between the islands, with the impressive peaks of

Ua Pou and maritime cliffs of Fatu Hiva rising from the ocean. The State Party also proposed under criterion (vii) several features related to either concentration or behaviour of marine animals. These include the unusual presence in the coastal areas of Melon-headed Wales (*Peponocephala electra*, LC), often in large groups, and mixed congregations of different emblematic marine species, including Spinner Dolphins (*Stenella longirostris*, LC), and Reef Manta Ray (*Mobula alfredi*, VU) and Oceanic Manta Ray (*Mobula birostris*, EN), with the microsympatry (i.e. record of co-occurrence observed at the same site) of the two species considered almost unique in the world.

3. COMPARISONS WITH OTHER AREAS

The nomination dossier provides an in-depth comparative analysis based on a clear definition of natural values and attributes (see ICOMOS' evaluation report regarding the comparative analysis under cultural criteria). Whilst the nomination document presents a synthesis of the comparative analysis, the annex of the nomination dossier includes a detailed assessment of the nominated property's comparative values as well as a detailed description as to what each nominated component parts contributes to the natural values of the serial nominated property. A rigorous comparative framework has been developed providing clear indicators for each criterion.

The State Party also notes IUCN's 2004 evaluation of Pitons Management Area in Saint Lucia, which noted the potential of the Marquesas Islands for their aesthetic values. To compare for instance the attribute of high-altitude summits and ridges under criterion (vii), the nomination identifies an altitude of 400 m as baseline since this is the lowest altitude of the nominated property's summits and ridges. Subsequently, the nomination screened globally World Heritage properties and other volcanic islands not on the World Heritage List, concluding that the Marquesas Islands are among the 20 most "vertical" islands in the world. The impression of brutal verticality emerges from the height of the peaks and ridges in relation to the small terrestrial area from which they rise above the ocean.

Regarding biodiversity criteria, the comparative analysis in the nomination dossier provides an exhaustive overview of conservation priority settings for both terrestrial and marine biodiversity, including IUCN thematic studies. The Marquesas Islands were already suggested for World Heritage listing back in 1991 for their exceptional endemic flora and endemic bird species. The UNEP-WCMC World Heritage datasheets were used to inform the comparative analysis and the IUCN/UN Environment WCMC (UNEP-WCMC) methodology for comparative analyses were applied.

IUCN, in collaboration with UNEP-WCMC, has also undertaken supplementary comparative analysis, focusing on criteria (ix) and (x). The WCMC analysis indicates that the biodiversity that characterises the nominated property appears to be of global

significance, based on the spatial analyses and literature review, with regards to both criteria (ix) and (x). Regarding criterion (ix), the nominated property represents one of the world's last remaining marine wilderness areas. It is found in a geographical area with little representation on the World Heritage List.

The nominated property overlaps with broad-scale global conservation priorities, including a Centre of Plant Diversity, Endemic Bird Area, terrestrial and marine priority ecoregions, that are not yet represented on the World Heritage List. The Marquesas marine province is a nearshore “gap province” (i.e. an underrepresented biogeographic province) and one of 28 nearshore and continental biogeographical provinces without marine World Heritage properties. It is also found in the Polynesia-Micronesia biodiversity hotspot. The islands are extremely rugged in relief and have a diverse landscape, including continuums of vegetation from the coastline to the island peaks, and areas of tropical montane cloud forests. The vegetation is influenced by the isolated position of the archipelago, and the age, size, and elevation of the islands. The coastal waters of the nominated property differ from the rest of French Polynesia and other Pacific tropical landscapes. Notably, the islands are not surrounded by lagoons, and sea temperatures are variable resulting in minimal coral cover and high production of phyto- and zooplankton. The Marquesas Islands freshwater ecoregion includes perennial rivers, such as the Hakau, Taipiva, and Hatiheu on Nuka Hiva, and many intermittent streams in the wet season. The freshwater ecoregion was defined based on distinctive endemic or near-endemic fish species. More than 40% of the fish species are endemic to the ecoregion, all of which are gobiids (i.e. fish of shallow marine, brackish and riverine habitats).

UNEP-WCMC notes that the nominated property shows only average levels of species diversity, regarding plant, mammal, and bird diversity, when compared to other World Heritage properties and other relevant sites found in the same Polynesia-Micronesia hotspot. However, for their size, the percentage of endemism is high in comparison to older archipelagos, whereas the nominated property supports high species endemism due to its extremely isolated position. For instance, it ranks third in the Indo-Pacific region for endemism of coral reef fishes. Of the indigenous vascular flora present on the islands, 42% of species have been recorded as endemic.

Furthermore, the nominated property hosts numerous globally threatened species, including several plant, shark and ray, bird, crustacean, and fish species. The nominated property overlaps with two Important Bird Areas and Key Biodiversity Areas that are not currently represented on the World Heritage List. The nominated property also ranks amongst the top 0.045% most irreplaceable protected areas in the world for mammal, bird and amphibian conservation, especially for bird species (top 0.011%), including threatened species. It has also been highlighted in several thematic studies as a marine wilderness area and a nearshore gap province with no existing World Heritage property, and as a possible site with

outstanding biodiversity and cultural values in Oceania (see ICOMOS' evaluation for cultural values). For instance, the IUCN thematic study on Wilderness and Large Landscapes and Seascapes highlights the Marquesas Islands as a marine wilderness area with no existing World Heritage property. Thematic studies on marine World Heritage list the Marquesas marine province as a nearshore gap province without marine World Heritage properties. The Marquesas Islands are also mentioned amongst possible World Heritage properties with outstanding biodiversity.

The property is one of the few known breeding sites globally for 21 species of seabirds, including *tēiko* (Bulwer's petrel, *Bulweria bulwerii*, LC), *kōputu* (Phoenix Petrel, *Pterodroma alba*, VU), *pītai* (Polynesian Storm-petrel, *Nesofregetta fuliginosa*, EN), and *taa tara* (Grey-backed Tern, *Onychoprion lunatus*, LC), some of them globally threatened. Two species are endemic to single islands: *ōmaō keekee* (Fatu Hiva Monarch, *Pomarea whitneyi*; CR) on Fatu Hiva Island and *pahi* (Marquesas Kingfisher (*Todiramphus godeffroyi*; CR) on Tahuata Island. The *ūpe* (Nakuhiva Imperial-pigeon, *Ducula galeata*; EN) is endemic to two islands, Nuku Hiva and Ua Huka, and the *kōtuē* (Marquesas Ground-dove, *Pampusana rubescens*; EN) is endemic to two islets and has on occasion fallen below 250 individuals. Seven species of plants are assessed as globally threatened on the IUCN Red List of Threatened Species, seven of which are endemic to Marquesas: *kohai* (*Achyranthes marchionica*, CR), *Melicope fatuhivensis* (CR), *tuēiao* (Tu'eiao, *Rauvolfia nukuhivensis*, CR), *fautea*, (*Lebronnecia kokioides*, EN), *Abutilon sachetianum* (CR), *Pipturus schaeferi* (EN), and *puāhi* (*Santalum insulare* var. *marchionense*, VU). Out of 47 species and sub-species of terrestrial and freshwater molluscs, 36 to 39 are endemic to the islands. Eight species of freshwater fish and crustaceans are also endemic to the islands. There are 21 globally threatened shark and ray species reported in the waters of the Marquesas Islands.

In conclusion, IUCN considers that the nominated property presents a strong case for global significance under proposed criteria (vii), (ix) and (x). The inscription of the nominated property would fill a longstanding biogeographical gap on the World Heritage List.

4. INTEGRITY, PROTECTION AND MANAGEMENT

4.1. Protection

The nominated area is protected through a complex combination of protected areas and environmental regulations, including through spatial planning policy and law. For natural values, these include the Environment Code of French Polynesia, which provides for the protection of critical species throughout their distribution range. These listed species include 164 species of plants and 39 species of birds as well as marine species, including marine turtles, manta rays, whales and dolphins. All marine waters of French Polynesia are also designated as

sanctuary for marine mammals and sharks (established through a Decree by the Council of Ministers in 2002). Industrial fishing is prohibited within the marine waters of the nominated property.

The spatial plans, created under the national French Polynesian Planning Code, represent overarching planning documents that regulate all activities throughout the islands, supporting the protection of the nominated property. However, following potential inscription, the protection regime will be further consolidated through an archipelago-wide General Development Plan (PGA), which will officially incorporate the nominated property and its buffer zones as specific zones with corresponding regulations. This process is already underway at the time of this evaluation and is expected to be concluded by the end of 2025.

The field evaluation mission noted the high level of awareness and commitment to the protection of the nominated property and welcomed the development of the integrated PGA as this will consolidate the protection regime for the whole nominated property and its buffer zones. This would also ensure that the protection of the nominated property is fully integrated in planning processes concerning all activities and developments on the islands, which is lacking in many other World Heritage properties. The overarching PGA will also facilitate coherent protection and management across the serial nominated property with regards to both cultural and natural values.

In supplementary information, the State Party provides an additional important commitment to designate additional protected areas through the Environment Code along with additional archaeological sites under the Heritage Code (*arrêté* n°134/CM of 9 February 2024). The same decree also makes reference to a possible designation of marine areas up to three nautical miles.

In conclusion, IUCN notes that the nominated property currently meets protection requirements. However, it will be important to ensure that the new General Development Plan (PGA) fully incorporates the boundaries and buffer zones of the nominated property, as indicated in supplementary information, and to ensure that the spatial planning regime fully supports the protection of these areas.

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 marine components and terrestrial components, in many cases ensuring a summit-to-sea continuity. The marine areas have a uniform approach to their boundaries, which are drawn three nautical miles from the coast. For the terrestrial parts, the boundaries of each of the nominated component parts have been proposed based on a number of principles, mainly aimed at

including the areas with the most important landscape features supporting criterion (vii), and the most intact natural vegetation in support of criteria (ix) and (x). In addition, the boundaries of the mixed nominated property are designed to represent both the cultural and natural values. As a result, the terrestrial boundaries are complex and varied across the different nominated component parts.

However, it should be noted that the final proposal is also a result of a comprehensive participatory process involving both technical experts and local communities. Over the years, this allowed for the identification of not only the most important areas for natural and cultural values, but also of the delineation that would be implementable from the point of view of land ownership, cadastral registration and of future management. This nomination therefore represents a strong bottom-up approach that aimed at jointly identifying the best possible boundaries for the nominated property.

The exclusion of terrestrial areas from the island of Ua Huka is explained by the lower plant diversity. Whilst Ua Huka also stands out in terms of the level of endemism of terrestrial bird species, including threatened species, in the overview prepared by the State Party as part of the comparative analysis, the lower altitudes of Ua Huka imply conditions unfavourable for the formation of cloud forests. In addition, there are no important cultural areas and/or objects that are not already represented on the other islands.

The overall approach to the boundaries has successfully attained the representation of a complete continuum of landscape and seascape as well as areas of cultural value (see ICOMOS evaluation) combined with the existing protected areas and the wider protection regime. In this respect, it should also be noted that the nominated property is subject to only very limited development pressures and resource use (see section 4.5).

Buffer zones are only proposed for the terrestrial areas, as pressures on the marine environment are limited, partly thanks to the remote location of the nominated property. The nomination dossier argues that the distance of three nautical miles encompasses the most important marine habitats, as well as areas where emblematic species concentrate, such as Manta Rays and dolphins. The marine boundary also largely represents the geological border as it includes the slope of the volcanic plateau. In addition, all the *motu* within the marine boundaries are included in the nominated property for their importance as breeding areas for marine birds.

Regarding the terrestrial areas, no buffer zone is proposed on the uninhabited islands of Eiao, Hatutu and Fatu Huku, as they are included in their entirety within the nominated property. On Nuku Hiva, Hiva Oa, Tahuata and Fatu Hiva, the buffer zones have been proposed in areas adjacent to the nominated property where there is a need to address pressures, such as from residential areas and plantations. The buffer

zones have therefore been designed based on the identification of threats (see section 4.5).

Overall, IUCN considers that the boundaries of the nominated component parts and the terrestrial buffer zones meet the requirements of the Operational Guidelines. IUCN welcomes the participatory process that enabled a robust boundary design for the nominated property.

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

4.3 Management

A long-term management plan has been developed for the nominated property for the period from 2024 to 2039. The mission understood that the management plan has been approved and will enter into force in 2024 upon examination of the nomination by the World Heritage Committee. The management plan is based on the proposed Statement of Outstanding Universal Value and the identified values and attributes. It includes a clear action plan based on four strategic objectives: Improving the knowledge and conservation of natural and cultural heritage; developing a tourism policy that is compatible with the natural and cultural heritage; Connecting all stakeholders through the management of the joint property; and promoting a participatory governance. These strategic objectives are broken down to 11 operational objectives and 24 actions, each underpinned by activities with measurable results. Each activity includes a timeline and responsibilities for their implementation. The field evaluation mission considered that for natural values, some aspects will continue to require significant capacity and ongoing management. This is particularly the case for the control of invasive species, which is identified as a high priority in the management plan. Possible additional eradication campaigns in the future may need to be considered. In addition, IUCN considers, further to section 4.1, that the General Development Plan should be informed by the nominated property's management plan.

The management committee, led jointly by the Minister for Culture, the Environment, and Marine Resources of French Polynesia and the President of the Community of Mayors of the Marquesas Islands (CODIM), is responsible for overseeing the shared governance of the nominated component parts and buffer zones. Daily management is ensured by the Environment Department (DIREN) and the Culture and Heritage Department (DCP). A coordination unit has been created and a coordinator specifically for the nominated property has been appointed. This coordinator is employed by the Community of Mayors of the Marquesas Islands (CODIM) – a coordination structure for the Marquesas Islands, thus also ensuring coordination across the six islands that are hosting the nominated component parts. The unit coordinates the implementation of the Management Plan. This includes the management programme for the control and management of invasive species. It is also planned to

create a position within the government of French Polynesia for a coordinator who would be the counterpart of the coordinator at the Marquesas Islands. The management agencies of French Polynesia hold the main competencies regarding the environment and cultural heritage, among others. Further relevant agencies of French Polynesia include the Directorate of Marine Resources (DRM) and the Directorate of Agriculture (DAG).

The nominated property includes both public (54.26%) and private (45.74%) lands. Private land ownership is particularly widespread in the valleys where most of the cultural values of the nominated property are concentrated. In many cases, private landowners have already been involved in the management for a long time. There is strong support from private landowners for the nomination as far as the mission could observe. All marine areas of the nominated property are part of the marine public domain of French Polynesia, which also includes 50 metres of coastline. Similarly, rivers are also part of the public domain. In the buffer zones, 71.4% of land is public. Privately owned lands are mainly concentrated in the settlements proposed to be included in the buffer zones.

The monitoring is based on the definition of values and attributes with clear indicators and responsibilities. IUCN notes that ICOMOS suggests revising the monitoring programme to strengthen the reflection of the interconnections between the cultural and natural values of the nominated property. IUCN agrees with ICOMOS that the interlinkage of cultural and natural values is fundamental to the management of the nominated property. In principle, the nomination represents a commendable effort in integrating both natural and cultural values as well as related integrity, protection and management within a coherent boundary design. To effectively ensure that this approach will be continued and further reinforced following a potential inscription of the nominated property, IUCN joins ICOMOS in recommending that the capacity of the coordination unit should be further strengthened in acting as the central institution for managing the serial nominated property, and in facilitating the collaboration between the different institutions with responsibilities in the management of the nominated property.

Overall, IUCN considers that the nominated property meets management requirements and that it is subject to a rigorous and complete management plan based on the proposed OUV. IUCN recommends further strengthening the capacity of the coordination unit following the potential inscription on the World Heritage List.

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

4.4 Community

Historically, the *Ēnata* built their settlements primarily in the deeply incised valleys. In spite of the severe

consequences of European colonisation (almost 95% of the *Ēnata* perished following the introduction of diseases, alcohol, muskets, etc.), traditional knowledge and worldviews survived and provide insights into the life of the *Ēnata*, including their relationship with the environment. The application of a system of *tapu* (restrictions) traditionally regulates access to certain areas and resources. In supplementary information, the State Party provides details about the *kahui* (traditional community-based management of natural resources). IUCN encourages State Party to strengthen the role of the *kahui* and related customary practices within the management system.

Nowadays most inhabitants live in small villages and in two small towns of Atuona, Hiva Oa, and of Taiohae, Nuku Hiva. IUCN notes that the nomination itself appears to be the result of several years of participatory work and engagement of local stakeholders in the development of the proposal. In all six municipalities, associations have been established specifically for World Heritage and consultations continue along with outreach campaigns. The governance of the nominated property is representative of the situation in the Marquesas Islands in general, with very strong local involvement in different areas. Engagement of all six inhabited islands is ensured through the involvement of each of the *hakaiki* (mayors) in the CODIM. The *hakaiki* have very close relationships with the local inhabitants. One concern that was raised by local people was whether World Heritage listing would affect tenure rights. In response, it was confirmed by the Vice-President of French Polynesia that tenure rights will remain unaffected. It is expected that local communities will continue to be actively involved in the management of the nominated property.

Desk reviewers specialised in human rights-based approaches noted that the nomination process appears to have been very inclusive and that a remarkable effort has been made to inform inhabitants of the islands and to involve them in the process of preparing the nomination document. Stakeholder engagement included, *inter alia*, a communication audit prior to local communication actions on World Heritage, in order to provide the most comprehensive information in a way that is best suited to Marquesan behavioural codes. Subsequently, in the first phase, the entire Marquesan population was informed about the stakes involved in a potential World Heritage listing. In the second phase, the majority of the population was involved in the nomination project, including through participatory workshops to develop the management plan of the nominated property. Internal meetings within the communities were also encouraged. Participatory consultation workshops open to all community members identified issues and designed actions. Special emphasis is placed upon the importance of youth and their engagement as the heirs of the nominated property. Based on the information available, reviewers considered that this engagement process has been very comprehensive and has provided ample opportunity to all rightsholders and stakeholders to engage in the process and found

exemplary the planned future involvement of local rightsholders and stakeholders in the management of the nominated property.

4.5 Threats

From the outset, it is important to note that the natural values of the nominated property are highly fragile. Due to the restricted ranges and specific adaptations, many species are particularly vulnerable to threats and disturbance. Some species are even limited to single islands, peaks, or valleys. Therefore, the island ecosystems are also highly vulnerable to invasive species. For instance, populations of the Critically Endangered and endemic molluscs of *Samoana bellula*, *Samoana decussatula* and Pilsbry's Tree Snail (*Samoana pilsbryi*) have been impacted by the carnivorous snail *Euglandina rosea*, which was introduced in the early 1900s. Once plentiful, *Samoana bellula* is now only found on the highest peaks, and Pilsbry's Tree Snail is thought to be possibly extinct.

Both the nomination document and the management plan assess threats with commendable attention to detail, specifying threats on each island and in relation to each attribute of the proposed OUV. This informs management action to address these threats. However, the integrity of the marine ecosystem hinges on global-scale factors. Climate change affects the nominated property through sea level rise and droughts. Industrial fishing elsewhere affects many marine species in the nominated property. For instance, the Critically Endangered Scalloped Hammerhead (*Sphyrna lewini*, CR) and Oceanic Whitetip Shark (*Carcharhinus longimanus*, CR) are both large species occurring globally in warm-temperate and tropical seas and are caught intentionally and as bycatch. Consequently, they have shown steep declines in population numbers. The Vulnerable Sperm Whale (*Physeter macrocephalus*) is geographically widespread, with a large population, but threatened by large-scale commercial whaling. Fishing regulations prevent any significant pressures in the marine parts of the nominated property whilst providing for small-scale fishing to the benefit of local communities.

The most important direct threat to the natural values of the nominated property are invasive alien species (IAS) and the presence of feral animals (goats, cattle, horses, pigs, cats), including some agricultural activities. IUCN notes that ICOMOS considers IAS also as a threat to the nominated property's cultural values. IAS include both plant and animal species, some introduced already by the first Polynesian settlers whilst others are more recent introductions. Species of *falcata*, *miconia* and *acacia* as well as the Japanese tulip tree threaten the integrity of the thus far well preserved but vulnerable plant formations of the nominated property. The impacts of these IAS have been particularly dramatic for the avifauna of the Marquesas, similar to almost every other island in the Pacific, with some species of endemic birds becoming extinct in the past. One of the endemic species still present in the nominated property – the *òmaò keekee*

(Fatu Hiva monarch, *Pomarea whitneyi*, CR) – is currently assessed as Critically Endangered having undergone a severe decline of 97-99% of the population in the last 20 years following the arrival of the House Rat (*Rattus rattus*, LC) to the island of Fatu Hiva, whilst feral cats also played a role in the decline. The current population is estimated at as few as 18 individuals. The mission considered that there may still be the possibility of species survival thanks to intensive programmes undertaken by the Ornithological Society of Polynesia (SOP MANU) in collaboration with international partners, including the initiation of a captive breeding programme.

As noted above, the context of the nominated property is different from the situation in many other parts of the world where development and resource extraction pressures are considerably higher. Large-scale development projects are unlikely in the future due to remoteness and strong regulations on all three levels of governance (France; French Polynesia; Marquesas Islands). From what the mission could observe, there also appears to be no known considerations of potential mineral resources extraction. French Polynesia has recently introduced a moratorium on deep-sea mining. Tourism currently plays a minor role with annual visitor counts of only around 10,000 people.

In conclusion, IUCN highlights that the nominated property, including its boundaries, has been designed through a bottom-up approach involving significant consultations and enabling the identification of areas that not only adequately represent but also protect the proposed OUV. The proposed OUV determines the management of the nominated property and threats are carefully assessed and addressed in the Management Plan. Therefore, IUCN considers that the boundaries and the protection and management regime of the nominated property meets the requirements of the *Operational Guidelines*.

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 serial approach is justified as the nominated property seeks to represent an archipelago that extends over several hundred kilometres. The terrestrial areas proposed on each of the selected islands present different compositions of vegetation types and endemic species of plants and birds. This approach allows the integration of the most representative and best-preserved areas of the different types of ecosystems, particularly cloud and mesophile forests, across the islands. The landscape features supporting criterion (vii) also vary significantly between the islands as a result of the specific volcanic

history of each of them, but jointly they convey the outstanding natural beauty of the Marquesas Islands.

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

Each of the separate nominated component parts contribute to the proposed OUV, particularly with regards to the areas representing different vegetation types and including habitats of endemic plant species and terrestrial birds. The *motu* also add important breeding grounds of seabirds. They are therefore linked in a way that accurately represents the biodiversity of the Marquesas islands. Marine species migrating between the nominated marine parts and beyond provide further functional links.

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

The overall management framework is represented by the coordination through the CODIM, the management plan for the serial nominated property and the creation of the new PGA that will incorporate the entire nominated property and its buffer zones. Similarly, the coordination unit covers the entire nominated serial property. Therefore, the overall management framework is included into the most important overall planning and management frameworks for the whole of the Marquesas Islands.

6. APPLICATION OF CRITERIA

The **Te Henua Enata – The Marquesas Islands (France)** has been nominated under natural criteria (vii) and (ix) and (x).

Criterion (vii): Superlative natural phenomena or natural beauty or aesthetic importance

The nominated property results from the volcanic past of the Marquesas Islands, which are marked by sharp ridges, impressive peaks and cliffs that rise abruptly more than 1000m above the ocean. The nomination dossier demonstrates that the Marquesas Islands are among the most “vertical” islands in the world creating an impression of brutal verticality. The lush vegetation combined with the diversity of the landforms and jagged coastlines create island landscapes unparalleled in these tropical latitudes. The relief is in direct contact with the open ocean, providing natural promontories for observing the spectacle of wildlife: Dolphins gather in shoals of several hundred individuals at the foot of the cliffs, combined with the simultaneous presence of two species of rays: Reef Manta Ray and Oceanic Manta Ray whose microsympatry (i.e. record of co-occurrence observed at the same dive site) is highly unusual and almost unique in the world. Together, they form a majestic picture of a wild and spectacular nature.

IUCN considers that the nominated property meets this criterion.

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

The nominated property represents the only isolated archipelago in the middle of the equatorial Pacific. Thus, the Marquesas serve as an oasis of marine life in the immense Pacific Ocean. The nomination highlights that the property is isolated from the major ocean currents by the counter-current of the Marquesas. The Marquesas holds one of the highest fish biomasses in the world, averaging 3.30 T/ha and up to 20 T/ha. Marquesan waters are home to exceptional endemism in relation to the surface area of the property for coastal fish (13.7%) and molluscs (10%), i.e. 3,400 km². The Marquesan coastal communities are a major centre of endemism in the Indo-Pacific and worldwide, along with Hawaii, Easter Island and the Red Sea. Recognised as one of the world's last marine wilderness areas, Marquesan waters offer some of the best-preserved coastal ecosystems on the planet. On land, the property retains two complete continuums of vegetation from the summits to the coast and brings together four sets of tropical cloud forests.

IUCN considers that the nominated property meets this criterion.

Criterion (x): Biodiversity and threatened species

The nominated property combines marine and terrestrial ecosystems that are rare for their level of conservation and their irreplaceability. The nomination highlights the isolation of the young volcanic islands of the Marquesas archipelago, which has resulted in a rare and diverse flora, with more than half of the 305 plant species in the property being irreplaceable. Endemism is mainly found in the dry and semi-dry coastal forests and in the hygrophilous and rainforests. The cloud forests that cover the crests and peaks of the islands of Nuku Hiva, Ua Pou, Tahuata and Fatu Iva are home to more than 70% of the species endemic to a peak, an island or the archipelago. For instance, the clear majority of terrestrial and freshwater molluscs are endemic to the islands. The archipelago is home to one of the most diverse seabird assemblages in the tropical waters of the South Pacific. It is one of the few known breeding sites in the world for 21 species of seabirds and 13 species and subspecies of land birds are endemic to the archipelago. Fatu Iva and Tahuata are respectively home to an endangered endemic species, *òmaò keekee* (around 30 individuals), and the *pahi* (less than 300 individuals estimated in 2017). The property hosts many threatened species, such as *pītai*, *ùpe* and the *kōtuè*. The coastal marine ecosystem is home to 40 emblematic species, including 16 marine mammals, 26 rays and sharks, and 1 endangered marine turtle, all concentrated around the 12 islands that make up the archipelago and many of which are globally threatened. More than 40% of the fish species are

endemic to the ecoregion, all of which dwell in shallow marine, brackish and riverine habitats.

IUCN considers that the nominated property meets this criterion.

7. RECOMMENDATIONS

IUCN recommends that the World Heritage Committee adopts the following draft decision, noting that this will be harmonised as appropriate with the draft recommendations of ICOMOS regarding their evaluation of this mixed site nomination under the cultural criteria and included in the working document WHC/24/46.COM/8B.

The World Heritage Committee,

1. Having examined Documents WHC/24/46.COM/8B and WHC/24/46.COM/INF.8B2,

2. Inscribes **Te Henua Enata – The Marquesas Islands, France**, on the World Heritage List under criteria (vii), (ix) and (x);

3. Adopts the following Statement of Outstanding Universal Value:

Brief synthesis

The serial property is a hotspot for terrestrial and marine biodiversity in the Pacific. The archipelago systematically ranks first or second for its endemism of vascular flora, terrestrial and marine avifauna, terrestrial and marine molluscs and freshwater fish, spread across a wide diversity of natural habitats ranging from coastal formations to ridge-top maquis that can exceed 1,000 m in altitude. Lacking the reefs usually found in this type of oceanic island in the eastern Pacific, Marquesan waters are an exceptional example of a tropical archipelago ecosystem with very high primary productivity. Exceptional for the endemism of coastal fish and marine molluscs, the waters of the Marquesas archipelago have been identified as the wildest coastal marine province in the world. They are among the world's main sites with the highest coastal biomass, dominated by top predators. The marine ecosystem is virtually free from human exploitation. The archipelago also offers a great diversity of emblematic marine species (rays and dolphins) and nesting seabirds. Biological and ecological processes have hardly been disturbed, making the Marquesas Islands a remarkable model of the evolution of species in an oceanic island environment.

Criterion (vii)

Resulting from their volcanic past, the Marquesas Islands are marked by sharp ridges, impressive peaks and cliffs that rise abruptly more than 1000m above the ocean. The Marquesas Islands are among the most "vertical" islands in the world. The lush vegetation combined with the diversity of the landforms and jagged coastlines create island landscapes unparalleled in these tropical latitudes. The relief is in direct contact with the open ocean, providing natural

promontories for observing the spectacle of wildlife: Dolphins gather in shoals of several hundred individuals at the foot of the cliffs, combined with the simultaneous presence of two species of rays: Reef Manta Ray and Oceanic Manta Ray whose microsympatry (i.e. record of co-occurrence observed at the same dive site) is highly unusual and almost unique in the world. Together, they form a majestic picture of a wild and spectacular nature.

Criterion (ix)

As the only isolated archipelago in the middle of the equatorial Pacific, the Marquesas are an oasis of marine life in the immense Pacific Ocean. The property is isolated from the major ocean currents by the counter-current of the Marquesas. The Marquesas holds one of the highest fish biomasses in the world, averaging 3.30 T/ha and up to 20 T/ha. Marquesan waters are home to exceptional endemism in relation to the surface area of the property for coastal fish (13.7%) and molluscs (10%), i.e. 3,400 km². The Marquesan coastal communities are a major centre of endemism in the Indo-Pacific and worldwide, along with Hawaii, Easter Island and the Red Sea. Recognised as one of the world's last marine wilderness areas, Marquesan waters offer some of the best-preserved coastal ecosystems on the planet. On land, the property retains two complete continuums of vegetation from the summits to the coast and brings together four sets of tropical cloud forests.

Criterion (x)

The property combines marine and terrestrial ecosystems that are rare for their level of conservation and their irreplaceability. The isolation of the young volcanic islands of the Marquesas archipelago has resulted in a rare and diverse flora, with more than half of the 305 plant species in the property being irreplaceable. Endemism is mainly found in the dry and semi-dry coastal forests and in the hygrophilous and rainforests. The cloud forests that cover the crests and peaks of the islands of Nuku Hiva, Ua Pou, Tahuata and Fatu Iva are home to more than 70% of the species endemic to a peak, an island or the archipelago. For instance, the clear majority of terrestrial and freshwater molluscs are endemic to the islands. The archipelago is home to one of the most diverse seabird assemblages in the tropical waters of the South Pacific. It is one of the few known breeding sites in the world for 21 species of seabirds and 13 species and subspecies of land birds are endemic to the archipelago. Fatu Iva and Tahuata are respectively home to an endangered endemic species, òmaò keekee (around 30 individuals), and the pahi (less than 300 individuals estimated in 2017). The property hosts many threatened species, such as pītai, ūpe and the kōtuē. The coastal marine ecosystem is home to 40 emblematic species, including 16 marine mammals, 26 rays and sharks, and 1 endangered marine turtle, all concentrated around the 12 islands that make up the archipelago and many of which are globally threatened. More than 40% of the fish species are endemic to the ecoregion, all of which dwell in shallow marine, brackish and riverine habitats.

Integrity

The archipelago's islands and seascapes are mostly intact and host only a small human population concentrated on the coastline. Up to 88% of plant diversity of the archipelago is represented within the property. 100% of the diversity of marine avifauna, i.e. 21 breeding species, and 78% of the diversity of terrestrial avifauna are also represented within the property. All the catchment areas and main rivers are included in the property, with 91% of freshwater fish and crustacean species represented. The plant formations are well preserved but very sensitive to biological invasions. Species of falcata, miconia and acacia as well as the Japanese tulip tree are the main plant species threatening the integrity of the property. Farming activities, with the wandering of animals and the outbreak of uncontrolled fires, constitute a pressure at medium altitude that needs to be controlled locally. The Marquesan ecosystems are the least disturbed between 800 and 1200 m altitude.

The property protects all the coastal waters used for the life cycle of seabirds, coastal fish, molluscs and crustaceans, as well as 43 emblematic marine species that live in or visit these waters. Identified as the wildest coastal marine province in the world, Marquesan waters have a remarkable integrity of the trophic chain, with a remarkable biomass of coastal fish and an exceptional proportion of large predators. The effects of climate change on the distribution, life traits and life cycles of the species are as yet unpredictable. The property includes the entire length of the four richest rivers in the archipelago, as well as two complete continuums of vegetation, with a view to maintaining the essential functions for the life cycle of the species and facilitating their adaptation.

Protection and management requirements

Special regulatory requirements for the property and the buffer zone will be incorporated into the PGA in line with the commitment of the six Marquesas communes grouped together in the Community of Mayors of the Marquesas Islands (CODIM) and the French Polynesian authorities. Sites classified under the Environment Code include two category V Protected Landscapes (Hohoi Bay on Ua Pou and Hanavave Bay on Fatu Iva) and two category IV Habitat and Species Management Areas (Eiao and Hatu Tu). All of Polynesia's waters are a sanctuary for marine mammals and all shark species. Industrial fishing is banned within the property. Species protection prohibits the removal of species from their natural environment and the alteration of their natural habitat. It covers 164 plant species, 39 bird species, all marine mammals, sharks, rays and sea turtles, as well as certain terrestrial and marine molluscs. Fishing, agriculture and biosecurity also benefit from regulatory protection measures, in particular the reduction or even ban on pesticides and reinforced action against invasive alien species.

The strategy to combat invasive species is a common priority for the conservation of the cultural and natural values of the property. This includes measures to prevent their introduction and spread, early detection and eradication. The environmental assessment of projects should include an analysis of the potential

impact on the integrity and authenticity of the property. In the agricultural areas adjacent to the property, management will aim to improve sound agricultural practices, limit and contain fire outbreaks and restrict the areas accessible to feral animals. The development requirements and conservation measures may be reinforced on the basis of the inventory of emblematic viewpoints and archaeological sites, entrances to the property and visitor reception areas.

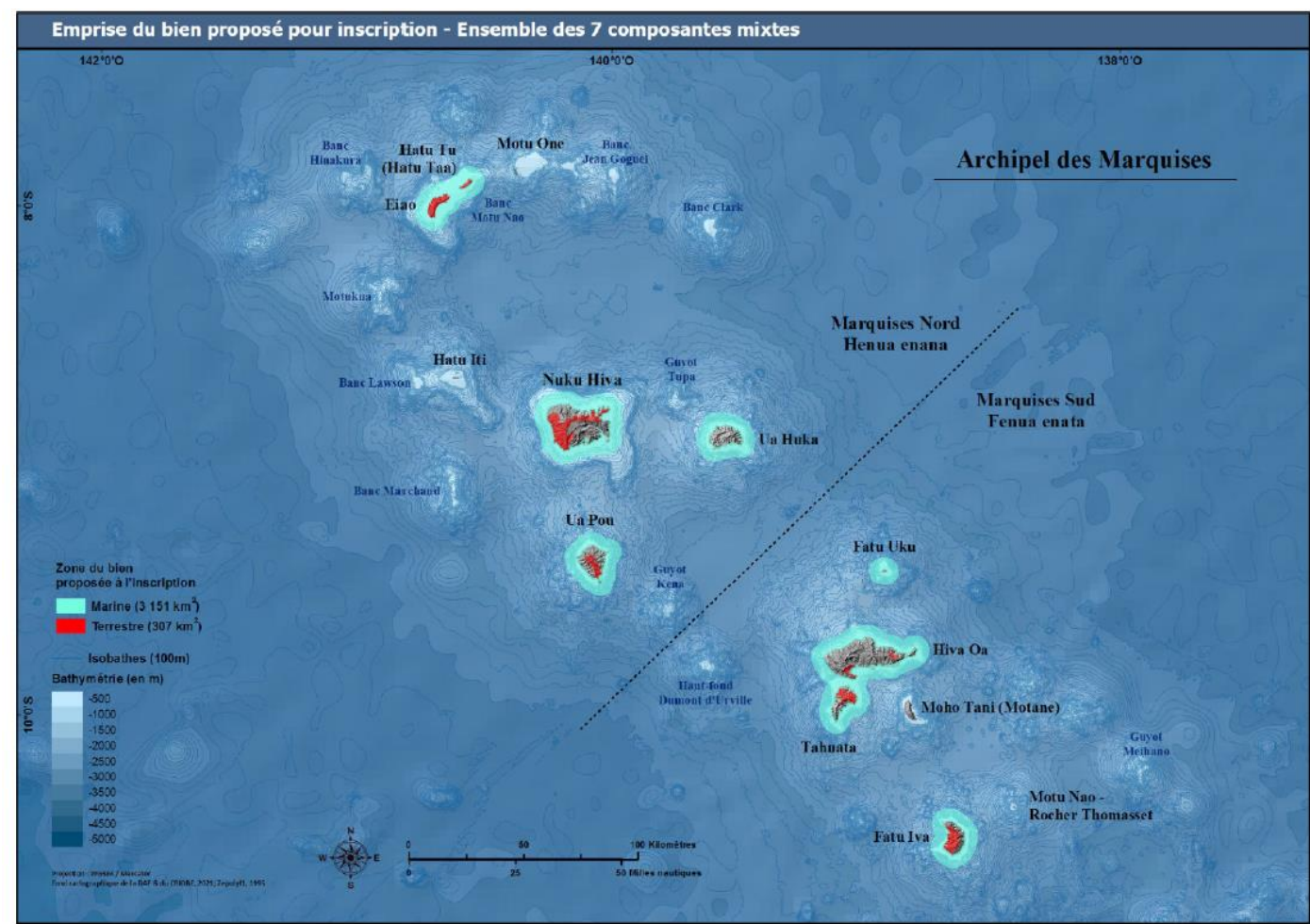
Local management of the property is based on the creation of a World Heritage association in each of the archipelago's six communes, enabling the involvement of local residents, associations and professionals. Alongside the work carried out by the local technical services, these associations are involved in implementing the operational part of the management plan, the strategic guidelines which are defined by the management committee co-chaired by the Minister for

Culture, the Environment and Marine Resources of French Polynesia and the President of CODIM. Management is co-led by the ministry, CODIM and the six World Heritage associations through a coordination unit. Participatory governance of the property is essential to ensure that the management plan is anchored locally and to capitalise on the effectiveness of customary practices.

4. Recommends the State Party, regarding natural values, to:

- a) Consider further strengthening action against invasive alien species, including through further funding,
- b) Consider in future the potential extension of the marine boundaries of the property to enhance coverage and protection of marine habitats.

Map 1: Location of the nominated component parts



C. CULTURAL PROPERTIES

C1. NEW NOMINATIONS OF CULTURAL PROPERTIES

ARAB STATES

THE CULTURAL LANDSCAPE OF AL-FAW ARCHAEOLOGICAL AREA

SAUDI ARABIA



Al-Faw Archaeological Area © ICOMOS / Muati Salim Said Almuuti

WORLD HERITAGE NOMINATION – IUCN COMMENTS TO ICOMOS

THE CULTURAL LANDSCAPE OF AL-FAW ARCHAEOLOGICAL AREA (KINGDOM OF SAUDI ARABIA)

IUCN provides the following comments based on a review of the nomination by the IUCN World Heritage Panel and the views of five external desk reviewers. The nominated property is nominated under criteria (ii), (iv) and (v) and covers an area of 4,847.73 ha with a buffer zone of 27,548.3 ha. The nomination dossier notes that 40% of the nominated property overlaps with 'Uruq Bani Ma'arid, which covers a total area of 1,276,500 ha and which has been inscribed on the World Heritage List in 2023 under criteria (vii) and (ix) further to IUCN's inscription recommendation. 15% of the nominated property's buffer zone also overlap with 'Uruq Bani Ma'arid. 'Uruq Bani Ma'arid is considered to be amongst the 0.3% of the most irreplaceable protected areas in the world, mainly due to the presence of the reintroduced Arabian Oryx (*Oryx leucoryx*, VU). Besides the Arabian Oryx, the property has been the site of successful reintroduction of two further globally threatened antelope species: Arabian Sand Gazelle (*Gazella marica*, VU), and Arabian Gazelle (*Gazella arabica*, VU). 'Uruq Bani Ma'arid is also considered an Important Plant Area (IPA).

The nominated property is listed as a National Heritage Site and protected by the Law of Antiquities, Museums, and Urban Heritage of the Kingdom of Saudi Arabia. In addition, the regulations established to protect the nature conservation values of the 'Uruq Bani Ma'arid Protected Area also support the protection of the nominated property's cultural values, according to the nomination dossier. The responsibility for the management of the nominated property is shared between the Heritage Commission of the Ministry of Culture and the National Centre for Wildlife. A Joint Working Group between both authorities has been established to develop a joint management framework for 'Uruq Bani Ma'arid and the nominated property (see also IUCN's 2023 evaluation). IUCN welcomes the integrated protection and management approach taken for both properties.

ASIA / PACIFIC

THE PHU PHRABAT HISTORICAL PARK

THAILAND



Phu Phrabat Historical Park © ICOMOS / John Peterson

WORLD HERITAGE NOMINATION – IUCN COMMENTS TO ICOMOS

THE PHU PHRABAT HISTORICAL PARK (THAILAND)

IUCN provides the following comments to ICOMOS based on a review of the nomination by the IUCN World Heritage Panel and the views of two external desk reviewers. The serial nominated property consists of two associated cultural heritage sites, the Phu Phrabat Historical Park which covers 575.98 ha with a buffer zone of 568.08 ha, and the Sīma Cultural Site at Wat Phra Phuthabat Buaban covering 9.98 ha with a buffer zone of 30.72 ha. The total area of the nominated property is 585.96 ha with a buffer zone of 598.80 ha. The property is nominated under criteria (iii) and (v).

At 360 metres above sea level, the nominated property is embedded in a mixed and deciduous dipterocarp forest along a steep slope. Outside the forest, there are agricultural lands and residential areas. The Phu Phrabat Historical Park is situated in the Pha Khuea Nam National Reserved Forest on the Phu Pan Mountain Range whilst the Sīma Cultural Site at Wat Phra Phuthabat Buaban is located approximately eight kilometres further to the south. Both nominated component parts and their buffer zones are protected under the Act of National Reserved Forest of 1964.

IUCN notes that although this property is nominated as a cultural landscape, the nomination dossier contains only limited information on its nature conservation values and on how the interactions of people and nature over time have created the nominated cultural landscape. The nominated property appears to overlap with one of the three components of Nam Yung Nam Som National Park (IUCN Protected Area Category II). Many important and threatened species have in the past been reported to be present in the national park, especially plant species such as *Hopea sp.*, *Dipterocarpus sp.*, the Critically Endangered Tamalan, *Dalbergia oliveri*, the Endangered *Azelia xylocarpa* and Burma Padauk, *Pterocarpus macrocarpus*, as well as the Near-threatened *Dipterocarpus tuberculatus*. The Vulnerable Asiatic Black Bear, *Ursus thibetanus*, and Sambar, *Rusa unicolor*, have also been reported and as threatened by poaching.

In contrast, the nomination dossier contends there are no threats to the nominated property. As a result, the conservation plans included in the dossier are mostly limited to cleaning, rubbish collecting, weed removal and tree pruning in the vicinity of the monuments. Maps indicate that some of this area is managed for forest conservation, but the management regime is not laid out. Consequently, IUCN recommends that a comprehensive conservation plan should be developed that would include the entire nominated property and its natural values. IUCN recommends that ICOMOS invites the State Party to provide further information on any threats to the natural values of the nominated property, the status of biodiversity, including threatened species both within the nominated area and the surrounding landscape. IUCN would be happy to provide further input on any questions from ICOMOS regarding these matters.

EUROPE / NORTH AMERICA

LEVADAS DA MADEIRA

PORTUGAL



Levada das 25 Fontes © SRAAC / Virgílio Gomes

WORLD HERITAGE NOMINATION – IUCN COMMENTS TO ICOMOS

LEVADAS DA MADEIRA (PORTUGAL)

IUCN provides the following comments to ICOMOS based on a review of the nomination by the IUCN World Heritage Panel and the views of two external desk reviewers. Nominated under criteria (iv) and (v), the nominated property stretches along the Levadas, irrigation channels crossing the mountainous areas of Madeira Island. It totals an area of 25.2 ha with a buffer zone of 7,584.5 ha.

According to the nomination dossier, the Levadas da Madeira represent an outstanding technological ensemble of one of the most multifunctional networks of water transport channels in the world, as a material witness, not only of the history of the human settlement of the island, but also its adaptation to the needs in modern times. IUCN notes that the nominated property is fully embedded in Madeira Natural Park and largely overlaps with the existing World Heritage property of Laurisilva of Madeira, inscribed in 1999 under criteria (ix) and (x). The latter site is well known for its largely undisturbed laurel forests, which play a key role in the island's hydrological balance. It is also known to maintain numerous endemic species, including many plants and invertebrates as well as three endemic birds and two endemic bats. A total of 167 of these species have been assessed as Threatened (i.e. either Critically Endangered, Endangered or Vulnerable) on the IUCN Red List of Threatened Species.

Whilst the nomination dossier highlights the biodiversity values of the nominated property, it also draws particular attention to the threats to biodiversity caused by invasive alien species. IUCN notes scientific research considering the Levadas as major routes for introduction and spread of invasive alien species and the Levadas' water diversion as impacting on the natural instream flow regimes and ecosystem integrity, a problem that may be exacerbated with the expected increase of drought periods under climate change. Furthermore, IUCN notes that vegetation cleaning and management along Levadas represents another threat to endemic plant species. Desktop reviewers also highlighted the potential threat from increased visitation as tourists use the Levadas as hiking trails.

A crucial point regarding this nomination is that the nominated property overlaps by 70% with an already inscribed World Heritage property (Laurisilva of Madeira, inscribed in 1999, and listed under criterion (ix) and (x)) and thus this nomination may significantly affect the OUV of the existing property. Any possible negative effects on the existing property need to be addressed in the management of the nominated property, and the nomination as a cultural landscape does not take into account this reality. Thus if ICOMOS considers there is a potential for OUV under criteria (iv) and (v), IUCN would recommend that the State Party be recommended to pursue this as a mixed property, i.e. via a renomination of the Laurisilva of Madeira, containing an integrated management plan that would address any possible negative impacts on the OUV under all relevant criteria. IUCN does not consider that two separate and highly overlapping sites listed would be a good outcome for the World Heritage List, as this would create significant complications regarding protection and management, and the procedures of the Convention.

Furthermore, it is recommended to enhance monitoring of invasive alien species along the Levadas and to explore measures to respond to climate change, especially in regard to the biodiversity of the nominated property. Finally, IUCN recommends ensuring management of the number of visitors using the Levadas as hiking trails to ensure they remain within the ecological carrying capacity of the existing property. IUCN would be happy to provide further input on any questions from ICOMOS regarding these matters.

EUROPE / NORTH AMERICA

TESTAMENT OF KENOZERO LAKE

RUSSIAN FEDERATION



Levusozero Lake © ICOMOS / Natalya Turekulova

WORLD HERITAGE NOMINATION – IUCN COMMENTS TO ICOMOS TESTAMENT OF KENOZERO LAKE (RUSSIAN FEDERATION)

IUCN provides the following comments based on a review of the nomination by the IUCN World Heritage Panel and the views of two external desk reviewers. The nominated property is proposed under criteria (i), (iii), (v) and (vi) and covers an area of 71,030.91 ha with a buffer zone of 68,989.40 ha. It is situated in the middle subzone of the taiga, at the crossroads of Fennoscandia and the Russian Plain within the watershed of the White and Baltic Seas. Located within Kenozero National Park, the nominated property hosts high species richness which are noted in the nomination document, including 640 plant species, over 200 species of fungi, 29 fish species, 50 mammal species and 260 bird species. The high number of waterfowl and the importance of Kenozero Lake for migratory birds led to its recognition as Important Bird Area. 79 species of flora and fauna are listed in the Red Books at federal, Republic- and Oblast-levels. The nomination highlights the traditional use of the cultural landscape by the local community and the combination of the undisturbed nature with traditional peasantry culture, both characterizing the nominated property.

The nomination notes that the management body addresses both the conservation of the natural and cultural heritage of the nominated property. Kenozero National Park contains three different management zones: the cultural landscape protection zone, the recreational zone and the protected zone. The protected zone focuses on nature conservation values but is the smallest of the three zones straddling along the Eastern boundary of the national park. Whilst IUCN welcomes the protection of the nominated property's nature conservation values, IUCN notes that expert reviewers recommended considering the expansion of the protected zones to enhance connectivity. Reviewers also recommended considering a stronger emphasis on the linkages between the cultural and natural values of the nominated property.

EUROPE / NORTH AMERICA

BAČ CULTURAL LANDSCAPE

SERBIA



Bač Cultural Landscape © ICOMOS / Rusudan Mirzikashvili

WORLD HERITAGE NOMINATION – IUCN COMMENTS TO ICOMOS

BAČ CULTURAL LANDSCAPE (SERBIA)

IUCN provides the following comments to ICOMOS based on a review of the nomination by the IUCN World Heritage Panel and the views of four external desk reviewers. The nominated property is proposed as a cultural landscape under criteria (ii), (iii) and (v). It encompasses a total area of 46,027.82 ha with no buffer zone, and is located on the outskirts of the Pannonian Basin and delimited by the Danube (including its previous course). According to the nomination dossier, the nominated property illustrates the continuity of settlements, on terraced territory, characterized by an abundance of water and fertile land.

The nominated property overlaps with the southern part of the Backo Podunavlje UNESCO Biosphere Reserve, which recognises the area as being part of one of the largest floodplains along the middle section of the Danube. At the contact zone between the South Eastern European and Central European forest zones, it exhibits varied landscapes and habitats that evolved under centuries-long human influence. The protected area of Karađorđevo serves as one of the Biosphere Reserve's core zones within the nominated area. Karađorđevo is recognised as Key Biodiversity Area boasting floodplain vegetation of marshy forests of autochthonous oaks, willows and poplars interspersed with swamps, ponds and canals, and home to the White-tailed Sea-eagle, *Haliaeetus albicilla* (Least Concern at global level, but Endangered according to the Mediterranean assessment of the IUCN Red List of Threatened Species) and Goosander, *Mergus merganser* (Least Concern at global and regional levels). Finally, the nominated property also overlaps with two Natura 2000 sites straddling along the Danube: Dunav-Vukovar and Podunavlje I Donje Podravlje. Dunav-Vukovar is recognised as important site for the Near-threatened Eurasian Otter, *Lutra lutra*, Large Copper, *Lycaena dispar*, and Scharlachkäfer, *Cucujus cinnaberinus*. Podunavlje I Donje Podravlje is an important migration and wintering site for waterbirds, including Geese with 15,000 individuals on average and *Anatidae* such as the Northern Pintail, *Anas acuta*, assessed as Vulnerable at European level. The floodplain complex is also home to the Near-threatened Bechstein's bat (*Myotis bechsteinii*). The activities that would have high effects on these riverine Natura 2000 sites include abandonment or lack of mowing, agricultural intensification, flooding modifications, canalisation, and water deviation as well as forest management and use.

Therefore, it will be important to ensure that the management of the nominated area is fully aligned with the protection of above-mentioned biodiversity values. IUCN recommends ICOMOS to consider this point in its evaluation supporting the State Party in ensuring that interventions with impacts on the hydrological regime and riverine ecosystems of the protected areas would be avoided. In this regard, it is positive that the nomination highlights the biodiversity values found within the nominated area. The nature conservation values have in IUCN's view already been appropriately recognised at national, European and international levels through the designation as protected areas, Natura 2000 sites and as UNESCO Biosphere Reserve. IUCN would be pleased to provide further input on the biodiversity values, should ICOMOS have any questions on these matters.



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