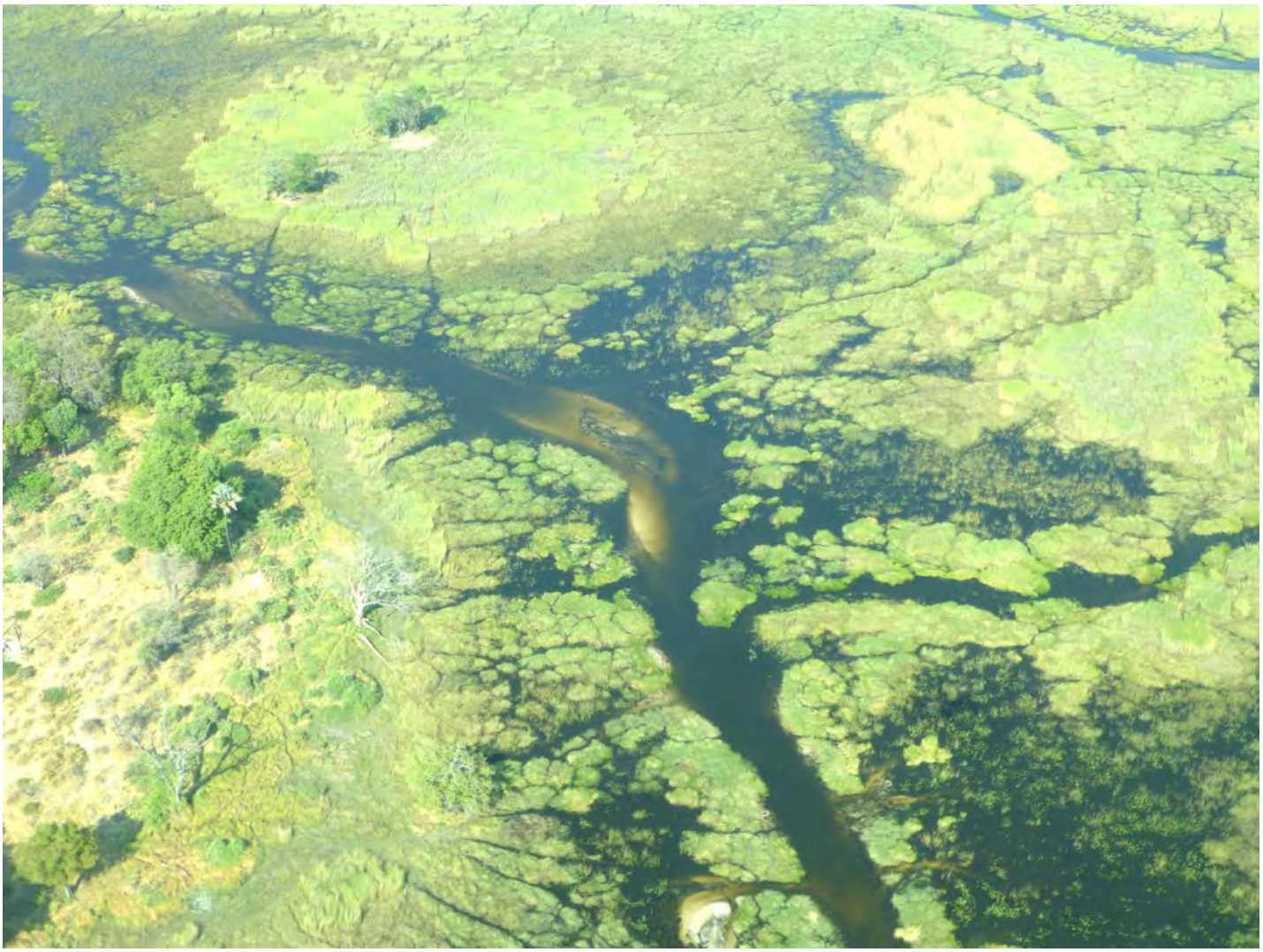
AFRICA

OKAVANGO DELTA

BOTSWANA



WORLD HERITAGE NOMINATION – IUCN TECHNICAL EVALUATION

OKAVANGO DELTA (BOTSWANA) – ID No. 1432

IUCN RECOMMENDATION TO WORLD HERITAGE COMMITTEE: To inscribe the property under natural criteria.

Key paragraphs of Operational Guidelines:
Paragraph 77: Nominated property meets natural World Heritage criteria.
Paragraph 78: Nominated property meets conditions of integrity and protection and management requirements.

1. DOCUMENTATION

a) Date nomination received by IUCN: 20 March 2013

b) Additional information officially requested from and provided by the State Party: Following the technical evaluation mission the State Party was requested to provide supplementary information on 13 December 2013. The State Party responded on 21 February 2014 providing additional information on a range of issues including the support of the tripartite Permanent Okavango River Basin Water Commission (OKACOM) for the nomination; proposed boundary changes; current mining concessions overlapping the nominated property; cultural heritage and indigenous rights issues; management planning arrangements; hunting; veterinary cordon fences and the status of wildlife populations.

c) Additional literature consulted: Various sources, including MacKinnon, J & K (1986). **Review of the Protected Areas System in the Afrotropical Realm**. UNEP/IUCN. Ross, K (2003). **Okavango. Jewel of the Kalahari**. Cape Town: Struik. Mendelsohn, J.M. et al. (2010). **Okavango Delta: Floods of Life.** Windhoek: Raison. Gifford, J (2013). **Botswana's Wildlife Crisis**. Pp 30-36 Geographical magazine (Royal Geographical Society, London), September 2013. UNEP-WCMC website. UNESCO website. Mendelson, J., and el Obied, S., 2004 **Okavango River: The flow of a lifeline**. Struik, Cape Town. Ellery K, Ellery W (1997) **Plants of the Okavango Delta: a field guide**. Tsaro Publ., 225 pages. Ellery WN, Ellery K, McCarthy TS, Cairncross B, Oelofse R (1989) **A peat fire in the Okavango Delta, Botswana, and its importance as an ecosystem process**. African Journal of Ecology 27: 7-21. Liebenberg, P.J. June (2009) **Technical Report on Irrigation Development in the Namibia Section of the Okavango River Basin**. Sebastian, G. Antoinette. (2008) **Transboundary Water Politics: Conflict, Cooperation, and Shadows of the Past in the Okavango and Orange River Basins of Southern Africa**. Ashton, Peter (2000) **Southern African Water Conflicts: Are They Inevitable Or Preventable**? In: Green Cross International. Water for peace in the Middle East and Southern Africa. Green Cross International, Geneva; pp.94-98. H.L.A. Bartlam-Brooks, M.C. Bonyongo and Stephen Harris (2011). **Will reconnecting ecosystems allow long-distance mammal migrations to resume? A case study of a zebra Equus burchelli migration in Botswana.** Oryx, 45, pp 210-216. JM Bishop, AJ Leslie, S Bourquin, L Badenhorst, C O'Ryan. 2009. **Overexploitation and the declining effective population size of a top predator**. Biological Conservation, Vol 142, Issue 10: 2335-2341. Cushman, S.A., M.J. Chase and C. Griffin. (2010). **Mapping Landscape resistance to identify corridors and barriers for elephant movement in southern Africa.** In S.A. Cushman and F. Huettmann (Ed.), Spatial Complexity, Informatics, and Wildlife Conservation, (pp. 349-367). Springer Japan. Shacks, V.A. (2006) Habitat vulnerability of Nile crocodile nesting sites in the Okavango Delta, Botswana. University of Stellnbosch. MA Thesis. Stankey, G.H.; Cole, D.N.; Lucaas, R.C.; Petersen, M.E.; Frissell, S.S. **The limits of acceptable change (LAC) system for wilderness planning**. General Technical Report – USDA. USDA, Ogden. Forest Service. Ogden (EUA). 1985. 37p. Clausnitzer, V., Koch, R., Dijkstra, K.-D.B., Boudot, J.-P., Kipping, J., Samraoui, B., Samways, M.J., Simaika, J. & Suhling, F. 2012. **Focus on African freshwaters: hotspots of dragonfly diversity and conservation concern**. - Frontiers in Ecology and the Environment (doi:10.1890/110247). Discovery Metals Ltd.16 May, 2013 Profile. Discovery Metals Ltd. 7 June, 2013. Prospecting License Update. Madzuzo, E., HaBarad, J. and F. Matose.2006. **Outcomes of community engagement on community-based natural resource management programmes**. Policy Brief No.22. Program for Land and policy Studies. Magole, L. I. and Magole, L. No Date. The Okavango: Whose Delta is it? Unpublished Paper. Mbaiwa, J.E. 2004. **The Success and Sustainability of Community-Based Natural Resource Management in the Okavango Delta, Botswana**. South African Geographical Journal. 86 (1): 44-53.

d) Consultations: 16 desk reviews received, and additional consultations held with specialist groups of IUCN Species Survival Commission. The mission also met with the Minister, the Permanent Secretary and the Agriculture Deputy Permanent Secretary of the Ministry of Environment, Wildlife and Tourism; the Permanent Secretary of the Ministry of Education and Skills Development; the Deputy Director, International Waters within the Ministry of Minerals, Energy and Water

Resources, and its Department of Mines; the Kalahari Conservation Society; the Hospitality and Tourism Association of Botswana; the Botswana National Commission for UNESCO; the Kwhai Community; TOCaDi representatives; the Moremi Game Reserve Park Manager; and many other stakeholders.

e) Field Visit: Dr Peter Howard and Dr Alan Wheeler, 14-20 October 2013.

f) Date of IUCN approval of this report: March 2014

2. SUMMARY OF NATURAL VALUES

The nominated property, known as the Okavango Delta, is situated in north-western Botswana. It is a vast inland delta created by seismic activity approximately 40,000 years ago and lying near the centre (and at the lowest point) of the extensive sand-filled Kalahari Basin. The delta comprises a fan-shaped plain of alluvial sediments with approximately 600,000 hectares (ha) of permanent swamps and an additional 700,000 to 1.2m ha of seasonally flooded grasslands. Its waters originate in the southern Angolan highlands as two rivers, the Cuito and Cubango, before flowing briefly through Namibia's "Caprivi Strip" (renamed by Namibia in 2013 as the Zambezi Region of Namibia) and entering Botswana. The Okavango is Southern Africa's third largest river, traversing a distance of 1,500 km before it disappears into the Kalahari sands.

The Okavango Delta is one of a very few large inland delta systems without an outlet to the sea, its waters draining instead into the desert sands of the Kalahari Basin. A unique attribute of this system is that the annual flooding event occurs in the dry season, so plants and animals have adapted their life-cycles to synchronize with the floods, as well as the annual rains. The ecological and biological processes that define the Okavango system provide an outstanding and extraordinary example of the complex inter-relatedness, inter-dependence, and interplay of climatic, geo-morphological, hydrological, and biological phenomena. All these processes in combination have resulted in the creation of a unique complex of terrestrial and aquatic habitats, with a correspondingly diverse complement of plant and animal species.

The State Party, in its supplementary information of February 2014, has amended the boundaries of the property which now comprises a nominated area of 2,023,590 ha with a buffer zone of 2,286,630 ha which is outside of the nominated property.

The Okavango Delta is a natural oasis in which the perennial cycle of flooding activity continually maintains and shapes the ecosystem. It includes extensive areas of perennial swamps, ever-changing river channels, lagoons and seasonal pans as well as islands, seasonally flooded grasslands, riverine forests and dry deciduous woodlands. Within this complex mosaic of wetlands and other habitats live substantial populations of Africa's charismatic large mammals such as Elephant, Buffalo, Rhinoceros, Lion, Leopard, Wild Dog and Cheetah. Species lists indicate a total of 130 species of mammals within the property as well as 482 birds, 64 reptiles, 33 amphibians, 90 freshwater fish, 155 butterflies, 94 dragon and damsel flies, 22 mollusks and 1068 plant species. These lists include significant numbers of rare and endangered species. Although the Okavango Delta has few endemic species, it is notable for the size of the populations of key species and the opportunity to maintain the complex ecological interactions that can only be sustained in the long term within a naturally-functioning system of this size.

The Okavango Delta system provides vital ecosystem services, and is an important source of fresh water in an otherwise arid region. The Okavango Delta System is also one of the largest Ramsar sites, designated in 1996. The Delta supports the livelihoods of approximately 130,000 local people, most of who depend on its resources for building materials, food and medicines. A significant proportion of the local community also derives employment through a thriving eco-tourism industry and its associated services.

3. COMPARISONS WITH OTHER AREAS

The Okavango Delta has been nominated under natural criteria (vii), (ix) and (x). The nomination dossier includes a comparative analysis which notes the unique qualities of the Okavango Delta and the challenge of finding directly comparable sites. Nevertheless the nominated property is compared against six several similar wetland systems in South America, Europe, Asia and Africa. Comparisons have been made against the Pantanal, the world's largest wetland spanning the three countries of Brazil, Paraguay and Bolivia; Llanos in Venezuela; the Danube Delta Biosphere Reserve shared between Romania and Ukraine; the Mesopotamia Marshes in Iraq; and the Niger Delta in Mali and Sudd Wetlands in Sudan both on the African continent. The comparative analysis is succinct but well argued in terms of the distinctive nature of the Okavango Delta when compared with other wetland systems. Several other integrity, threats, protection and management considerations have also been highlighted to distinguish the nominated property from other sites. The analysis concludes that the nominated property stands out globally in terms of its aesthetics, natural processes and phenomena. The analysis further argues Okavango's distinctiveness based on its higher species concentrations and habitat diversity within a large, well protected system.

Additional comparative analysis which supplements that of the nomination has been undertaken by UNEP-WCMC and IUCN. This notes that the nominated property, as one of the world's largest Ramsar sites, is hydrologically unique and is the only mega inland delta in sub-Saharan Africa. The area is subject to large fluctuations in flooded area, and the floodplains form

critical habitats for many species of birds and other wildlife at the southern limits of their distribution in the region.

With respect to criterion (ix) the Okavango Delta and associated flooded grasslands and savannah habitats are widely recognized as some of the most important biological sites in Africa. Although the Okavango Delta does not represent ecosystems or communities that are currently not represented on the World Heritage List, its ecosystems are globally very significant. Whilst the nominated property's species diversity and rates of endemism are not exceptional for southern Africa, its habitat density and biological productivity (revealed by its high biomass of large mammals), are unique. There is only one other wetland World Heritage site found in Southern Africa, iSimangaliso Wetland Park in South Africa, but it belongs to a different biome and ecoregion, and is almost seven times smaller than the Okavango Delta.

Regarding criterion (x), the Okavango Delta has an exceptional diversity of plant, bird and mammal species, including viable populations of large mammal species, some of them globally threatened such as the Black Rhinoceros, African Wild Dog, Cheetah, Lion, African Elephant, and Hippopotamus. Its species composition reflects the biogeography of the region, with a high diversity of large ungulates. It is also an Important Bird Area (IBA) which has a greater range of habitats than any other wetland in the region.

The comparison further notes that the Okavango Delta has been identified in a 2011 study as one of sixteen key gaps in Africa. Furthermore, the flooded grasslands and savannas biome has been mentioned as a gap in representation of World Heritage sites, and the nominated property overlaps with protected areas which are highly irreplaceable, emphasizing its global importance to species conservation. Okavango has been identified as a priority natural site for over 30 years: it was identified as an Outstanding Natural Site in IUCN's 1982 World Heritage gaps study. It has also featured as an area with significant wetland values which may merit consideration for World Heritage nomination within IUCN's Wetland Thematic Study of 1997.

With respect to criterion (vii) the nominated property compares well globally as a place of outstanding natural beauty which exemplifies many natural phenomena. The Okavango Delta is a large low gradient alluvial fan or 'Inland Delta' (half the size of Belgium) in the lower reaches of the 1,500 km long Okavango River. It is Africa's largest endorheic delta, and the continent's third largest alluvial fan after the Nile and Niger Deltas. The perennial flooding activity continually maintains and shapes the delta system, sustaining extensive areas of permanent swamps and seasonally flooded grasslands. The biota has uniquely adapted its growth and reproductive behaviour to be timed with the arrival of flood-water in the dry, winter season. The inland delta is a natural oasis that lies in the centre of a flat, semi-arid landscape of Kalahari Desert sands. The Okavango Delta is an outstanding example of the complex inter-relatedness and inter-dependence of climatic, geo-morphological, hydrological, and biological processes. Major processes include flood inundation; channel switching; breeding, growth and migration processes; nutrient cycling; floodplain termitaria, colonization and plant succession.

The natural habitats of the nominated area are diverse and include permanent and seasonal rivers and lagoons, permanent swamps, seasonal and occasionally flooded grasslands, riparian forest, dry deciduous woodlands, and island communities. Each of these habitats has a distinct species composition of plants and animals comprising all the major classes of aquatic organisms, reptiles, birds and mammals. The Delta provides a refuge to globally significant numbers of rare and endangered large mammals, including White and Black Rhinoceros, Wild Dog, Lion and Cheetah. As noted above it is an IBA, harbouring 24 species of globally threatened birds, including among others, 6 species of Vulture, Southern Ground-Hornbill, Wattled Crane and the Slaty Egret. Thirty-three species of water birds occur in the Okavango Delta in numbers that exceed 0.5% of their global or regional population.

The comparative analyses outlined above reach similar conclusions that affirm the biodiversity values of the nominated property as meeting natural criteria (vii), (ix) and (x). This conclusion is backed by the almost unanimous views of a significant number of expert reviewers who provided input to IUCN on this evaluation.

4. INTEGRITY, PROTECTION AND MANAGEMENT

4.1. Protection

The nomination dossier provided little detail in respect of the legislation pertaining to conservation management of the area. However, the State Party in supplementary information has elaborated on the protective regimes in place across a range of protected area types which make up the nominated property. The Okavango Delta comprises a mosaic of protected lands including the Moremi Game Reserve, Wildlife Management Areas (WMAs) and gazetted settlements which fall within WMAs. About 40% of the property is protected within the Moremi Game Reserve, and the remainder is composed of WMAs and Controlled Hunting Areas (CHAs) managed by community trusts or private tourism concession-holders. The supplementary information confirms the protection afforded to Game Reserves and WMAs. CHAs exist within WMAs and are managed by community based organizations for hunting. The revised property boundaries (see below) comprise a core area of one Game Reserve, one CHA and 18 WMAs.

Legal protection is afforded through Botswana's Wildlife Conservation and National Parks Act, 1992 and an associated Wildlife Conservation Policy. The Tribal Land

Act of 1968 also applies to the property and the whole of the nominated area (and the buffer zone) is communally-owned Tribal Land under the control of the Tawana Land Board. The Board leases a number of concession areas to safari operators and communities for photographic tourism. Legislated objectives of management relate to preservation of natural resources and scenic amenity, promotion of tourism and wildlife utilization and management. There is a proposed ban on hunting within the nominated property imposed due to concerns regarding declining wildlife populations.

It is evident that a complex system of legislation, policy and different protected land tenures apply to the property and accommodate conservation and sustainable community uses. IUCN were informed of the Permanent Secretary of the Ministry of the Government's intention to upgrade the legal status of Moremi Game Reserve to National Park, and would encourage the State Party to consider National Park status for all, or most of, the nominated area.

IUCN has concerns regarding the complexity of protection measures and considers that protection could be further strengthened across the whole property; however, on balance, IUCN considers that the protection status meets the requirements of the Operational Guidelines.

4.2 Boundaries

The State Party in its supplementary information advised of amendments which increased the nominated area of the property by 22.6% and reduced the buffer zone by 34.4%. The main changes to the nominated area are the addition of protected areas in the east and northeast. The buffer zone has been narrowed in the west and southwest where it has been set back from developed areas. The stated rationale for these changes relate to attributes which were excluded from the original nomination, inappropriate original inclusions and to avoid potential conflict with mining concessions. Following these revisions, it appears the majority of the delta and its associated flooded grasslands are included in the nominated area, which at 2,023,590 ha would be one of Africa's largest World Heritage sites. The main elements, species and processes characteristic of the delta could be sustained within this area. However, it must be recognized that the property's Outstanding Universal Value will only be maintained if the inflowing river and its tributaries in Angola and Namibia are kept in a natural state without abstraction of water, building of dams and/or the development of agricultural irrigation schemes. Furthermore, it should be recognized that much of the mega-fauna migrates to areas beyond the boundaries of the property and is consequently vulnerable to hunting and/or any change of status in the buffer zone and beyond.

Five distinct management regimes apply to zones within the nominated area. Moremi Game Reserve occupies about 40% of the area and lies approximately in the centre of the property, surrounded by WMAs and CHAs. Thus the protected area design principles of having a totally protected core surrounded by zones designated for multiple uses are applicable in this case.

Botswana's livestock industry has for decades depended upon the separation of wildlife and designated livestock grazing lands through the use of high multi-strand veterinary cordon fences intended as a total barrier to the movement of large wild mammals into livestock areas for the prevention of disease transmission. Most of the nominated area is designated a 'livestock free zone', and the southern boundary of the core area is defined by the line of one such veterinary fence. This not only serves to prevent livestock straying into the Delta, but also prevents the traditional migration and dispersal of large wild mammals to the south. The waters of the Okavango overflow the delta periodically via the Selinda Spillway and other channels connecting to Chobe National Park, the Makgadikgadi Pans and Lake Ngami; these channels serve as important migration corridors for elephants and other mega-fauna. Although the nominated area is constrained to some extent by veterinary fences, there is still sufficient ecological connectivity for all long-distance migration routes to be sustained. A significant regional conservation initiative (the Kavango Zambezi Transfrontier Conservation Initiative, KAZA) is underway to link key protected areas (and especially migration routes for one third of Africa's elephants) between protected areas across the 'four corners' border area of Botswana, Namibia, Zambia and Zimbabwe. The link between Okavango and Chobe National Park is a key element of this initiative.

IUCN welcomes the revised boundaries including an enlarged nominated area and redesigned buffer zone and considers that the boundaries of the nominated property meet the requirements of the Operational Guidelines.

4.3 Management

Management responsibilities across the nominated property are shared by the Department of Wildlife and National Parks (DWNP) in the Ministry of Environment, Wildlife and Tourism and the Tawana Land Board. The management framework is considered adequate, with a number of inter-related management plans in place, including the Okavango Delta Management Plan (2008-14), Moremi Game Reserve Management Plan and Ngamiland Integrated Land Use Plan (2009). The completion of a single property wide management plan would harmonize planning across the Delta and ensure a more cohesive approach across the various protected land tenures.

Anti-poaching activities and wildlife management are carried out by a very limited number of patrol staff at Moremi Game Reserve and by a number of other government, community and private sector operations. Overall, on-the-ground management of wildlife appears weak, lacking necessary resources, and is somewhat

ad-hoc. Within Moremi Game Reserve the IUCN mission observed some of the management challenges facing the authorities such as off-road driving, building maintenance and *Salvinia* control. The mission was informed of the general lack of capacity (material resources, vehicles, staff and funding) to fully implement the management plan.

Areas under lease to community trusts benefit from a good system of community-based natural resource management (CBNRM) Technical Advisory Committees (TACs). These TACs participate in the district-level Ngamiland CBNRM Forum, and benefit from the existence of a National CBNRM Forum and Policy. The community-based TACs advise communities on concessions, help resolve disputes, help with management plans and provide other services.

Although basic provision is in place, there are shortfalls in the capacity of management in the property. The nomination dossier notes that most funding comes from government and there is a shortage of resources for the management of the site. The various government departments involved in the site receive the equivalent of approximately 1m USD annually at district level (for all their district-wide activities, only a portion of which involves Okavango). The DWNP submits all revenue from Moremi Game Reserve and other income derived from land royalties, tourism and private concessions to the national treasury, so there is as yet no direct revenue retention scheme for re-investment in the property. With such a substantial 'high-end' tourism industry operating in the Delta it seems very feasible to design and implement a suitable mechanism to re-invest a portion of revenues in the management and conservation of the property, but this is not yet in place.

IUCN considers the nominated property meets the management requirements of the Operational Guidelines whilst noting the need to address a range of other protection and management issues.

4.4 Community

The State Party has confirmed there are 530 residents in three settlements within the revised nominated property and that none of them are of San or Basarwa origin. Cultural heritage and use rights are legally provided for through the Okavango Delta Management Plan and a Community Based Natural Resource Management Policy both dated 2007. Similar guarantees apply to the communities living within the buffer zone. Traditional uses and access to culturally significant places is facilitated.

Governance is extremely complex, involving multiple stakeholders and no single authority. The nominated area falls under a variety of quite distinct management regimes with different governance structures for the constituent Game Reserve, WMAs and CHAs. Most of the government departments involved fall under the Ministry of Environment, Wildlife and Tourism, so the Permanent Secretary of the Ministry plays a key coordinating role. At local level the Department of Environmental Affairs coordinates management, but there is no clear line management responsibility between government agencies and there is a need to involve community, NGO and private sector stakeholders in management decision making for the property.

The thorough local community consultation process involved in developing the nomination has brought out community issues that will need to be addressed by the organizations representing the affected communities and the Botswana Government. This process appears to have opened up channels of communication between Government Departments and communities, which has had a positive impact on local community awareness and attitudes to the nomination. This communication needs to continue using the existing structures that are in place linking communities and the Botswana Government.

Communities benefit greatly from the Delta at present, with parts of the property under direct management of community trusts, and other areas providing tourism-related direct employment. World Heritage status may lead to an increase in tourism and tourism-related employment. There is no indication in the nomination dossier of any intention to change the rights of access to livelihood materials such as fish, thatching and building materials etc, but the loss of hunting revenue to community trusts will have a negative impact in the short term, at least until a successful transition to non-consumptive (tourism-based) use has been effected. IUCN received representations from some San indigenous groups concerned about forced evictions should the property become a World Heritage site. The State Party provided assurances that the rights of indigenous peoples would continue to be respected, however it was not explicit on the question of evictions. IUCN considers that the World Heritage Committee should reconfirm the importance of the rights of indigenous communities being recognized and respected, and that forced evictions of indigenous peoples from the nominated property would be unacceptable.

4.5 Threats

Populations of large animals in the Okavango Delta have fluctuated over recent years. Census data provided for 2012 and other data reinforces the reported variability in population trends. For example elephant numbers have been increasing whilst other species are reported as exhibiting significant declines. Data is variable, subject to different survey techniques and surveys are somewhat uncoordinated as they are undertaken by different institutions. This all contributes to an unclear picture of the Okavango Delta's wildlife. The State Party reports that DWNP have initiated efforts to establish a Management Oriented Monitoring System which needs to monitor wildlife trends in a comprehensive and integrated manner, thereby tracking the conservation

status of key species across the entire property. IUCN note that more work is needed to fully implement this system. Causes of decline are attributed to seasonal variability, poaching (for example of giraffe for meat) and veterinary cordon fencing used to manage animal sanitation and control the spread of disease between wildlife and domestic stock. Veterinary fences have clearly constrained traditional migration and dispersal routes for large mammals. Fences to the north and east have been removed or abandoned in recent years allowing some restoration of migration routes in these areas, notably towards Makgadikgadi Pans. A major fence remains to the south which defines the core area's southern boundary and is increasingly subject to breaches; also, there seems to be doubt over whether the funds and political will exist to maintain it.

As part of the development of this nomination dossier, close negotiations have taken place with the Permanent Okavango River Basin Water Commission (OKACOM). This tripartite Commission exists to ensure co-operation in the sustainable use of the waters of the Okavango Basin from their source in the southern Angolan highlands, through Namibia's "Caprivi region" into Botswana. The State Party has provided a copy of the OKACOM letter of endorsement dated 17 February 2014 which formalizes the commitment of Angola and Namibia to support the nomination. This is positive but it does not eliminate the threat of upstream water abstraction, dam construction or development of irrigated agricultural schemes. It does however provide a point of reference for any future negotiations over water use by other states. OKACOM represents an opportunity to ensure that any diminution of the natural values and ecological integrity of the Delta is moderated and agreed through a formal process.

Tourism in the Delta is necessarily a low-impact, low-volume business, since there are no permanent roads into the area and everything has to be flown into small-scale tented camps and similar establishments within the area. There will be a need to enhance the regulation and mitigation of environmental impacts of tourism (e.g. pollution, noise, bank erosion, off-roading), but these are not yet a significant threat. There are currently only 2,129 beds in an area of 16,500km^2, and sound policies and procedures to regulate tourism are in place.

Mining presents one of the more significant potential threats to the Delta as a number of concessions overlap the nominated area and buffer zone. Additional information provided by the State Party shows that a number of mining prospecting licenses (41 in total) are located within and surrounding the property covering base metal, precious stones, petroleum and radioactive materials. Of these, 11 licenses overlap with either the nominated property and/or buffer zone; however only one is wholly in the nominated area and will expire in March 2015. Only three other licenses remain active in the nominated property/buffer zone and these expire in September 2014. Nevertheless there are 12 active licenses in the buffer zone including a petroleum license active until September 2016. The six radioactive licenses in the buffer zone have all expired. Positive written assurances have been given by the Ministry of Minerals, Energy and Water Resources that the overlapping prospecting licenses will be permanently extinguished and not renewed on their expiry in 2014 or early 2015. The State Party also confirms that no new mining licenses will be issued within the property. In order to comply with the requirements of the World Heritage Convention that extractive industry is incompatible with World Heritage Site status, it will be vital that these commitments are fully implemented and that no prospecting or mining activity whatsoever takes place within the nominated property. Similar assurances have not been given for mining in the buffer zone. In conclusion it is clear that mining does represent a potential threat to the nominated property, particularly within the adjoining buffer zone and given the potential for long range mining impacts via the complex hydrological systems. It is not clear to what degree mining is occurring or proposed in neighbouring Namibia and Angola which are upstream from the nominated property.

A variety of other threats is described in the nomination dossier including those of invasive alien vegetation, possible spraying for renewed tsetse fly control, climate change, pollution, fire and earthquakes. There are no other significant past developments affecting the integrity of the property

In conclusion, despite concerns regarding potential threats and various aspects of the property's management, IUCN considers that the nominated property meets the conditions of integrity as outlined in the Operational Guidelines.

5. ADDITIONAL COMMENTS

None.

6. APPLICATION OF CRITERIA

Okavango Delta has been nominated under natural criteria (vii), (ix) and (x).

Criterion (vii): Superlative natural phenomena or natural beauty or aesthetic importance
Permanent crystal clear waters and dissolved nutrients transform the otherwise dry Kalahari Desert habitat into a scenic landscape of exceptional and rare beauty, and sustain an ecosystem of remarkable habitat and species diversity, thereby maintaining its ecological resilience and amazing natural phenomena. The annual flood-tide, which pulses through the wetland system every year, revitalizes ecosystems and is a critical life-force during the peak of the Botswana's dry season (June/July). The Okavango Delta displays an extraordinary juxtaposition of a vibrant wetland in an arid landscape and the

miraculous transformation of huge sandy, dry and brown depressions by winter season floods triggers spectacular wildlife displays: large herds of African Elephant, Buffalo, Red Lechwe, Zebra and other large animals splashing, playing, and drinking the clear waters of the Okavango having survived the dry autumn season or their weeks' long migration across the Kalahari Desert.

IUCN considers that the nominated property meets this criterion.

Criterion (ix): Ecosystems/communities and ecological/biological processes
The Okavango Delta is an outstanding example of the complex, inter-dependence and interplay of climatic, geo-morphological, hydrological, and biological processes. The continuous transformation of geomorphic features such as islands, channels, river banks, flood plains, oxbow lakes and lagoons in turn influences the abiotic and biotic dynamics of the Delta including dryland grasslands and woodland habitats. The property exhibits a number of exemplary ecological processes related to flood inundation, channelization, nutrient cycling and the associated biological processes of breeding, growth, migration, colonization and plant succession. These ecological processes provide a scientific benchmark to compare similar and human impacted systems elsewhere and give insight into the geological evolution of such wetland systems.

IUCN considers that the nominated property meets this criterion.

Criterion (x): Biodiversity and threatened species
The Delta's diversity of sub-Saharan plants and animals is comparable with the species diversity elsewhere on the continent. However, the Okavango Delta also sustains robust populations of some of the world's most endangered large mammals such as Cheetah, White and Black Rhinoceros, Wild Dog and Lion, all adapted to living in this wetland system. The Delta's habitats are species rich with 1061 plants (belonging to 134 families and 530 genera), 89 fish, 64 reptiles, 482 species of birds and 130 species of mammals. The natural habitats of the nominated area are diverse and include permanent and seasonal rivers and lagoons, permanent swamps, seasonal and occasionally flooded grasslands, riparian forest, dry deciduous woodlands, and island communities. Each of these habitats has a distinct species composition comprising all the major classes of aquatic organisms, reptiles, birds and mammals. The Okavango Delta is further recognized as an Important Bird Area, harbouring 24 species of globally threatened birds, including among others, 6 species of Vulture, the Southern Ground-Hornbill, Wattled Crane and Slaty Egret. Thirty-three species of water birds occur in the Okavango Delta in numbers that exceed 0.5% of their global or regional population. Finally Botswana supports the world's largest population of Elephants, numbering around 130,000, for which the Okavango Delta is the core area for this species' survival.

IUCN considers that the nominated property meets this criterion.

7. RECOMMENDATIONS

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

The World Heritage Committee,

1. Having examined Documents WHC-14/38.COM/8B and WHC-14/38.COM/INF.8B2;

2. Inscribes the **Okavango Delta (Botswana)** on the World Heritage List under natural criteria (vii), (ix) and (x).

3. Adopts the following Statement of Outstanding Universal Value:

Brief synthesis
The Okavango Delta is a large low gradient alluvial fan or 'Inland Delta' located in north-western Botswana. The area includes permanent swamps which cover approximately 600,000 ha along with up to 1.2m ha of seasonally flooded grassland. The inscribed World Heritage property encompasses an area of 2,023,590 ha with a buffer zone of 2,286,630 ha. The Okavango Delta is one of a very few large inland delta systems without an outlet to the sea, known as an endorheic delta, its waters drain instead into the desert sands of the Kalahari Basin. It is Africa's third largest alluvial fan and the continent's largest endorheic delta. Furthermore it is in a near pristine state being a largely untransformed wetland system. The biota has uniquely adapted their growth and reproductive behaviour, particularly the flooded grassland biota, to be timed with the arrival of floodwater in the dry, winter season of Botswana.

The geology of the area, a part of the African Rift Valley System, has resulted in the 'capture' of the Okavango River that has formed the Delta and its extensive waterways, swamps, flooded grasslands and floodplains. The Okavango River, at 1,500kms, is the third largest in southern Africa. The Delta's dynamic geomorphological history has a major effect on the hydrology, determining water flow direction, inundation and dehydration of large areas within the Delta system. The site is an outstanding example of the interplay between climatic, geomorphological, hydrological, and biological processes that drive and shape the system and of the manner in which the Okavango Delta's plants and animals have adapted their lifecycles to the annual cycle of rains and flooding. Subsurface precipitation of calcite and amorphous silica is an important process in creating islands and habitat gradients that support diverse terrestrial and aquatic biota within a wide range of ecological niches.

Criteria

Criterion (vii)

Permanent crystal clear waters and dissolved nutrients transform the otherwise dry Kalahari Desert habitat into a scenic landscape of exceptional and rare beauty, and sustain an ecosystem of remarkable habitat and species diversity, thereby maintaining its ecological resilience and amazing natural phenomena. The annual flood-tide, which pulses through the wetland system every year, revitalizes ecosystems and is a critical life-force during the peak of the Botswana's dry season (June/July). The Okavango Delta World Heritage property displays an extraordinary juxtaposition of a vibrant wetland in an arid landscape and the miraculous transformation of huge sandy, dry and brown depressions by winter season floods triggers spectacular wildlife displays: large herds of African Elephant, Buffalo, Red Lechwe, Zebra and other large animals splashing, playing, and drinking the clear waters of the Okavango having survived the dry autumn season or their weeks' long migration across the Kalahari Desert.

Criterion (ix)

The Okavango Delta World Heritage property is an outstanding example of the complexity, inter-dependence and interplay of climatic, geo-morphological, hydrological, and biological processes. The continuous transformation of geomorphic features such as islands, channels, river banks, flood plains, oxbow lakes and lagoons in turn influences the abiotic and biotic dynamics of the Delta including dryland grasslands and woodland habitats. The property exemplifies a number of ecological processes related to flood inundation, channelization, nutrient cycling and the associated biological processes of breeding, growth, migration, colonization and plant succession. These ecological processes provide a scientific benchmark to compare similar and human-impacted systems elsewhere and give insight into the long-term evolution of such wetland systems.

Criterion (x)

The Okavango Delta World Heritage property sustains robust populations of some of the world's most endangered large mammals such as Cheetah, white and black Rhinoceros, Wild Dog and Lion, all adapted to living in this wetland system. The Delta's habitats are species rich with 1061 plants (belonging to 134 families and 530 genera), 89 fish, 64 reptiles, 482 species of birds and 130 species of mammals. The natural habitats of the nominated area are diverse and include permanent and seasonal rivers and lagoons, permanent swamps, seasonal and occasionally flooded grasslands, riparian forest, dry deciduous woodlands, and island communities. Each of these habitats has a distinct species composition comprising all the major classes of aquatic organisms, reptiles, birds and mammals. The Okavango Delta is further recognized as an Important Bird Area, harbouring 24 species of globally threatened birds, including among others, six species of Vulture, the Southern Ground-Hornbill, Wattled Crane and Slaty Egret. Thirty-three species of water birds occur in the Okavango Delta in numbers that exceed 0.5% of their global or regional population. Finally Botswana supports the world's largest population of elephants, numbering around 130,000: the Okavango Delta is the core area for this species' survival.

Integrity

The property covers most of the Delta, encompassing a vast area of over 2m ha of substantially undisturbed wetlands and seasonally flooded grasslands. It is of sufficient size to represent all of the delta's main biophysical processes and features and support its communities of plant and animal species. Because of its vast size and difficult access the delta has never been subject to significant development and it remains in an almost pristine condition. Tourism to the inner Delta is limited to small, temporary tented camps with access by air. Facilities are carefully monitored for compliance with environmental standards and have minimal ecological impact. Most importantly, the source of the Okavango Delta's waters in Angola and Namibia remain unaffected by any upstream dams or significant water abstraction and the three riparian states have established a protocol under the Permanent Okavango River Basin Water Commission (OKACOM) for the sustainable management of the entire river system. OKACOM has formally supported the inscription of the Okavango Delta on the World Heritage List. It is imperative that upstream environmental water flows remain unimpeded and that over abstraction of water, the building of dams and the development of agricultural irrigation systems do not impact on the sensitive hydrology of the property.

Concerns have been noted regarding fluctuating populations of large animals. Elephant numbers have been increasing whilst other species are reported as exhibiting significant declines. Data is variable, subject to different survey techniques and uncoordinated surveys undertaken by different institutions all contribute to an unclear picture of the Okavango Delta's wildlife. Authorities have initiated efforts to establish a comprehensive and integrated wildlife monitoring system that can accurately track population size and trends for the entire property, however ongoing work is needed to realise this. Causes of decline are attributed to seasonal variability, poaching (for example of giraffe for meat) and veterinary cordon fencing used to manage animal sanitation and control the spread of disease between wildlife and domestic stock.

Mining activities including prospecting will not be permitted within the property. Furthermore, potential impacts from mining including concessions in the buffer zone and outside the buffer zone need to be carefully monitored and managed to avoid direct and indirect impacts to the property, including water pollution. The State Party should also work with State Parties upstream from the Delta to monitor any potential impacts, including from potential diamond mining in Angola, which could impact water flow or water quality in the Delta.

Protection and management requirements

The Okavango Delta comprises a mosaic of protected lands. About 40% of the property is protected within the Moremi Game Reserve, and the remainder is composed of 18 Wildlife Management Areas and a Controlled Hunting Areas managed by community trusts or private tourism concession-holders. Legal protection is afforded through Botswana's Wildlife Conservation and National Parks Act, 1992 and an associated Wildlife Conservation Policy. The Tribal Land Act of 1968 also applies to the property and the whole of the nominated area (and the buffer zone) is communally-owned Tribal Land under the control of the Tawana Land Board.

As noted above the underlying causes of wildlife population declines are not clear, but an imposed hunting ban will further strengthen conservation measures in the property. The State Party is encouraged to develop a coordinated and systematic wildlife monitoring programme to establish population baselines for key species and to track trends. Veterinary cordon fences are known to cause significant disruption to wildlife at individual, population and species levels. Most of the property's core and buffer zones are free of veterinary cordon fencing and the location of site's boundaries was guided by these considerations. However, the Southern Buffalo Fence defines the southern boundary of the World Heritage property and whilst damage has compromised its effectiveness in disease control, it acts as a locally known demarcation to stop cattle grazing within the property. The Northern Buffalo Fence, also within the alignment of the property buffer zone, is known to disrupt connectivity in particular for the region's Roan and Sable Antelope populations. Veterinary fencing is recognised as a sensitive, multi-dimensional issue. The State Party is encouraged to continue efforts to rationalize fencing, removing it when its effectiveness for disease control has become questionable or where more holistic approaches to animal sanitation and disease control are possible.

Ongoing vigilance is critical to ensure mining developments do not adversely impact the property. Past mining prospecting licences have been extinguished, and will not be renewed or extended. No extractive activity is undertaken in the property, and no new licenses will be issued within the property. The State Party should implement rigorous environmental impact assessment procedures for mining activities outside the property but which have the potential to negatively impact on its Outstanding Universal Value, to avoid such impacts.

The Delta has been inhabited for centuries by small numbers of indigenous people, living a hunter-gatherer existence with different groups adapting their cultural identity and lifestyle to the exploitation of particular resources (e.g. fishing or hunting). This form of low-level subsistence use has had no significant impact on the ecological integrity of the area, and today mixed settlements of indigenous peoples and later immigrants to the area are located around the fringes of the delta, mostly outside the boundaries of the property. Continued special attention is needed to reinforce the recognition of the cultural heritage of indigenous inhabitants of the Delta region. Ongoing efforts should focus upon sensitively accommodating traditional subsistence uses and access rights consistent with the protection of the property's Outstanding Universal Value. Efforts should centre on ensuring that indigenous peoples living in the property are included in all communication about the World Heritage status of the property and its implications, that their views are respected and integrated into management planning and implementation, and that they have access to benefits stemming from tourism.

The State Party is encouraged to address a range of other protection and management issues to improve integrity. These include enhanced governance mechanisms to empower stakeholders in the management of the property; the development of a property specific management plan which harmonizes with planning in the wider landscape; ensuring adequate staffing and funding to build the capacity of the Department of Wildlife and National Parks; and programmes to strengthen the control and elimination of invasive alien species from the property.

4. Commends the efforts and achievements of the State Party and its neighboring countries for adopting significant measures serving the long term conservation and protection of the property.

5. Requests the State Party to:

a) continue efforts to develop, in partnership with Universities, NGOs and wildlife experts, a coordinated and systematic wildlife monitoring programme to establish population baselines for key species and to track long term trends;
b) continue efforts to rationalize veterinary cordon fencing, removing it when its effectiveness for disease control has become questionable or where more holistic approaches to animal sanitation and disease control are possible;
c) ensure no extractive industry activity is permitted in the property, and permanently extinguish all the few remaining mineral prospecting concessions, which are scheduled to expire in 2014, without awarding any timeframe extensions and not issue any new concessions within the property;
d) carefully monitor and manage mining in areas outside of the property so as to avoid any adverse impacts to the property;
e) expand and strengthen programmes which accommodate traditional resource use for livelihoods, user access rights, cultural rights and access to opportunities to participate in the tourism sector, in keeping with the property's Outstanding Universal Value; and

f) continue efforts to address a range of other protection and management issues including governance, stakeholder empowerment, management planning, management capacity and control of alien invasive species.

6. Further requests the State Party to submit, by **1 February 2016,** a report, including a 1-page executive summary, on the state of conservation of the property, including confirmation of progress on the issues and actions noted above to ensure effective protection and management of the property, for examination by the World Heritage Committee at its 40th session in 2016.

Map 1: Nominated property location

Map 2: Nominated property and buffer zone