



**REPORT ON THE JOINT WHC/ICOMOS/IUCN
MISSION TO NGORONGORO CONSERVATION
AREA, REPUBLIC OF TANZANIA
10TH -13TH APRIL 2012**

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ACRONYMS

AI	Artificial Insemination
CR	Cultural Recommendation
DoA	Department of Antiquities
EIA	Environmental Impact Assessment
EUR	Euro
GMP	General Management Plan
GR	General Recommendation
ICOMOS	International Council on Monuments and Sites
IUCN	International Union for the Conservation of Nature
LAU	Limits of Acceptable Use
MoU	Memorandum of Understanding
NCAA	Ngorongoro Conservation Area (Authority)
NR	Natural Recommendation
OUV	Outstanding Universal Value
RMM	Reactive Monitoring Mission
SEF	Serengeti Ecosystem Forum
SoOUV	Statement of Outstanding Universal Value
TANAPA	Tanzania National Parks
TZS	Tanzania Shilling
UNESCO	United Nations Educational Scientific and Cultural Organisation
WHC	World Heritage Centre

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- the management of the Ngorongoro Conservation Area, in particular Mr Bruno Kawasange (Director of Conservation, Community Development and Ecological Monitoring), Mr Amiyo T. Amiyo (Manager of Conservation service), and Mr John Pareso (Site manager of Olduvai Gorge, Naseru rock and Laetoli footprint)
- the UNESCO Office in Dar es Salaam, in particular Ms Vibeke Jensen (UNESCO Representative) who joined the mission and significantly contributed ;
- the members of the Maasai communities including the Pastoral Council

EXECUTIVE SUMMARY AND LIST OF RECOMMENDATIONS

RECOMMENDATIONS

In accordance with **Decision 35 COM 7B.36**, adopted by the World Heritage Committee at its 35th session (UNESCO, 2011), the State Party of Tanzania invited a joint World Heritage Centre/ICOMOS/IUCN reactive monitoring mission to Ngorongoro Conservation Area between 10th -13th of April 2012. The purpose of the mission was to assess progress made by the State Party in the implementation of the World Heritage Committee's decisions and recommendations made by previous missions including progress made towards the development of an overall tourism strategy, to evaluate on-going and proposed development projects, and to discuss the management and conservation of the property with all key stakeholders, in accordance with Decision 35 COM 7B.36. The mission makes the following recommendations to the State Party;

General Recommendations

- (GR1): The State Party should respect paragraph 172 of the Operational Guidelines, and forward - as a matter of standard procedure - copies of all relevant development proposals and their associated Heritage and Environmental Impact Assessments to the World Heritage Centre in a timely manner.*
- (GR2): The NCAA should provide the World Heritage Centre and the Advisory Bodies with copies of all management related plans and regulatory instruments, preferably at the draft stage so there is still time to offer comments on their final content prior to approval and adoption.*
- (GR3): A comprehensive monitoring system to track progress in the implementation of the General Management Plan should be introduced as soon as possible and the resultant progress reports shared with the World Heritage Centre.*

Cultural Recommendations

- (CR1): The State Party considers finalising the MoU between the NCAA and DoA before the 36th Session of the World Heritage Committee (St. Petersburg, 2012), and ensure implementation thereof starts immediately, and in particular prioritise the establishment of the Heritage Department as part of the formal structures of the NCAA with adequate financial and technical resources.*
- (CR2): State Party considers prioritising and providing resources to the Cultural Heritage Department to allow for a holistic assessment of all past, current and future strategies (and as per decisions and recommendations of the World Heritage Committee) for the effective management of cultural resources within NCAA towards creating a complimentary addendum to the existing GMP (2011-16) while waiting for the next cycle of the GMP review.*

- (CR3) *NCAA should prioritise the establishment of the Heritage Department at optimal levels, and in particular the engagement of a well-qualified and experienced practitioner in order to ensure that implementation of cultural heritage conservation and management commences as soon as possible.*
- (CR4): *Collect previously published information on the exact location of known paleo-anthropological resources (e.g. site maps) and prior excavations conducted at all major localities in the NCA to create a GIS database. Such a database can be expanded if necessary as on-going research in the NCA continues and yields results. An up-to-date GIS database could be facilitated by demanding all research teams (in terms of proposed research guidelines) to report the results of their surveys and excavations to the NCAA and the Antiquities Division*
- (CR5): *Clearly identify the boundaries of sites that have already been gazetted, such as the Nasera Rock Shelter, Olduvai Gorge, etc.*
- (CR6): *Consider joining the satellite monitoring programme, as a management tool to immediately/rapidly detect any developments or negative impacts on the property.*
- (CR7): *The State Party considers enforcing the existing Guidelines on research and conservation within the NCA.*
- (CR8): *The State Party considers prioritising the development of conservation plans for all paleo-anthropological localities by allocating adequate financial and human resources to the Cultural Heritage Department to be established as part of NCAA's new structure.*
- (CR9): *The State Party considers consulting the World Heritage Committee on further developmental plans at Laetoli Footprints pending the submission of an official State Party Report on the re-excavation and re-burial with clear recommendations for consideration by the World Heritage Committee.*
- (CR10): *The State Party further considers accelerating the process of establishing and convening the International Technical Committee Meeting on Laetoli which could assist in finalising the official State Party report.*
- (CR11): *Noting the progress and consistence that the State Party has demonstrated in implementing the World Heritage Committee decisions and recommendations, especially in 2010 and 2011, the Mission recommends that the World Heritage Committee considers requesting the State Party to invite a Joint WHC/ICOMOS/IUCN reactive monitoring mission in 2014, which results should be considered at the 38th Session of the Committee.*

Natural Recommendations

- (NR1): *The NCAA should commission a full EIA of the proposed new borrow-pit on the crater floor, and share this with the World Heritage Centre.*
- (NR2) *The NCAA should construct a demonstration stretch of road using the method and materials under consideration for upgrading the crater floor road network, and advise the World Heritage Centre when this is ready for inspection.*
- (NR3) *The NCAA should carefully evaluate the options for improving the road from Naabi Hill to Seronera, in close cooperation with TANAPA, taking into consideration all potentially damaging environmental impacts, before a decision to tarmac the road is taken.*
- (NR4): *The NCAA should commission an independent study on the nature and extent of overgrazing (on the short grass plains in particular), on the basis of which it should revise its monitoring programme as required, and formulate an appropriate management response, including through the development of a comprehensive grazing management strategy.*
- (NR5) *The NCAA is encouraged to continue its efforts to arrange for the voluntary relocation of residents, by increasing the incentive to relocate.*
- (NR6) *The NCAA should provide to the World Heritage Centre a fully detailed and costed proposal for the “RAMAT” livestock development initiative with accompanying EIA as soon as possible, including an assessment of the feasibility of locating this project outside the property.*
- (NR7) *The NCAA should strengthen its efforts to ensure that family planning services continue to be available and promoted.*
- (NR8): *The NCAA, while commended for its success in controlling invasive species, should increase its efforts to monitor closely the distribution and abundance of invasive plant species (Parthenium in particular), and put in place a clear invasive species control strategy in consultation with IUCN.*
- (NR9): *It is recommended that the NCAA makes a renewed effort through its Ujirani Mwema meetings to explain to the people that the Authority’s strategies to reduce the size and improve the quality of domestic herds are very much in the pastoralists’ own long term interests also.*
- (NR10): *The NCAA and the resident communities are commended for the protection afforded to the migratory wildebeest, Black Rhino and all other species whether endangered or not, but in view of the present upsurge in poaching elsewhere in Africa are urged to not relax their vigilance.*

1 BACKGROUND TO THE MISSION

1.1 Location and Statement of Outstanding Universal Value for the site

Ngorongoro Conservation Area (NCA) is located in northern Tanzania, in Arusha Region, sharing part of the Serengeti plains to the north-west and bordering the towns of Arusha and Moshi, and Mount Kilimanjaro to the east. The NCA covers an area of 8 292km² and ranges in altitude from 1 020m to 3 587m above sea level. The exact location is Longitude 35° 30' E: Latitude 3° 15' S.

The World Heritage Committee at its 3rd session (Cairo and Luxor, 1979) inscribed the Ngorongoro Conservation Area under natural criteria (vii) (viii) (ix) (x) due to its global importance for biodiversity conservation as illustrated by the presence of globally threatened species, the density of wildlife inhabiting the area and the annual migration of the wildebeest, zebra, gazelles and other animals into northern plains. At its 34th session (Brasilia, 2010), the World Heritage Committee examined the re-nomination of the property to include cultural criteria, and inscribed the property under criterion (iv), due to its exceptionally long sequence of crucial evidence related to human evolution and human-environment dynamics, collectively extending over a span of almost four million years to the beginning of this era, including physical evidence of the most important benchmarks in human evolutionary development. The criteria (iv, vii, viii and x) are testimonial to the dynamic interaction and co-existence between wildlife and humans, especially with the semi-nomadic Maasai pastoralists practicing traditional livestock grazing in the NCA.

The World Heritage Committee, at its 35th session, adopted a Retrospective Statement of Outstanding Universal Value (SoOUV) for NCA which is hereby summarised as follows: *“The Ngorongoro Conservation Area (809,440ha) spans vast expanses of highland plains, savanna, savanna woodlands and forests, from the plains of the Serengeti National Park in the north-west, to the eastern arm of the Great Rift Valley. The area was established in 1959 as a multiple land use area, with wildlife coexisting with semi-nomadic Maasai pastoralists practising traditional livestock grazing. It includes the spectacular Ngorongoro Crater, the world's largest caldera, and Olduvai Gorge, a 14km long deep ravine. The property has global importance for biodiversity conservation in view of the presence of globally threatened species such as the Black Rhino, the density of wildlife inhabiting the Ngorongoro Crater and surrounding areas throughout the year, and the annual migration of wildebeest, zebra, Thompson's and Grant's gazelles and other ungulates into the northern plains”*. The applicable criteria are;

Criterion (iv): NCA has yielded an exceptionally long sequence of crucial evidence related to human evolution and human-environment dynamics, collectively extending over a span of almost four million years to the early modern era. This evidence includes fossilized footprints at Laetoli, associated with the development of human bipedalism, a sequence of diverse, evolving hominid species within Olduvai gorge, which range from Australopithecus such as Zinjanthropus boisei to the Homo lineage that includes Homo habilis, Homo erectus and Homo sapiens; an early form of Homo sapiens at Lake Ndutu; and,

in the Ngorongoro crater, remains that document the development of stone technology and the transition to the use of iron. The overall landscape of the area is seen to have the potential to reveal much more evidence concerning the rise of anatomically modern humans, modern behaviour and human ecology.

Criterion (vii): The stunning landscape of Ngorongoro Crater combined with its spectacular concentration of wildlife is one of the greatest natural wonders of the planet. Spectacular wildebeest numbers (well over 1 million animals) pass through the property as part of the annual migration of wildebeest across the Serengeti ecosystem and calve in the short grass plains which straddle the Ngorongoro Conservation Area/Serengeti National Park boundary. This constitutes a truly superb natural phenomenon.

Criterion (viii): Ngorongoro crater is the largest unbroken caldera in the world. The crater, together with the Olmoti and Empakaai craters are part of the eastern Rift Valley, whose volcanism dates back to the late Mesozoic / early Tertiary periods and is famous for its geology. The property also includes Laetoli and Olduvai Gorge, which contain an important paleontological record related to human evolution.

Criterion (ix): The variations in climate, landforms and altitude have resulted in several overlapping ecosystems and distinct habitats, with short grass plains, highland catchment forests, savanna woodlands, montane long grass plains and high open moorlands. The property is part of the Serengeti ecosystem, one of the last intact ecosystems in the world which harbours large and spectacular animal migrations.

Criterion (x): Ngorongoro Conservation Area is home to a population of some 25,000 large animals, mostly ungulates, alongside the highest density of mammalian predators in Africa including the densest known population of lion (estimated 68 in 1987). The property harbours a range of endangered species, such as the Black Rhino, Wild hunting dog and Golden Cat and 500 species of birds. It also supports one of the largest animal migrations on earth, including over 1 million wildebeest, 72,000 zebras and c.350,000 Thompson and Grant gazelles.

Integrity

The statement of integrity reflects integrity for natural values at the date of inscription of 1979, and for the cultural value in 2010. In relation to natural values, the grasslands and woodlands of the property support very large animal populations, largely undisturbed by cultivation at the time of inscription. The wide-ranging landscapes of the property were not impacted by development or permanent agriculture at the time of inscription. The integrity of the property is also enhanced by being part of the Serengeti - Mara ecosystem. The property adjoins Serengeti National Park (1,476,300 ha), which is also included on the World Heritage List as a natural property. Connectivity within and between these properties and adjoining landscapes, through functioning wildlife corridors is essential to protect the integrity of animal migrations. No hunting is permitted in Ngorongoro Conservation Area (NCA), but poaching of wildlife is a continuing threat, requiring effective patrolling and enforcement capacity.

Invasive species are a source of on-going concern, requiring continued monitoring and effective action if detected. Tourism pressure is also of concern, including in relation to the potential impacts from increased visitation, new infrastructure, traffic, waste management, and disturbance to wildlife and the potential for introduction of invasive species. The property provides grazing land for semi-nomadic Maasai pastoralists. At the time of inscription an estimated 20,000 Maasai were living in the property, with some 275,000 head of livestock, which was considered within the capacity of the reserve. No permanent agriculture is officially allowed in the property. Further growth of the Maasai population and the number of cattle ideally should remain within the capacity of the property, and increasing sedentarisation, local overgrazing and agricultural encroachment are threats to both the natural and cultural values of the property. There were no inhabitants in Ngorongoro and Empaakai Craters or the forest at the time of inscription in 1979.

The property encompasses not only the known archaeological remains but also areas of high archaeo-anthropological potential where related finds might be made. However the integrity of specific paleo-archaeological attributes and the overall sensitive landscape are to an extent under threat and thus vulnerable due to the lack of enforcement of protection arrangements related to grazing regimes, and from proposed access and tourist related developments at Laetoli and Olduvai Gorge.

Authenticity

In general, the authenticity of the fossil localities is unquestionable; however given the nature of fossil sites, the context for the fossil deposits needs to remain undisturbed (except by natural geological processes). As the nomination dossier does not contain sufficient detailed information on most of the sites to delineate their extended areas or the areas of archaeological sensitivity, or sufficient guarantees in terms of management arrangements to ensure that the sites will remain undisturbed and not threatened by visitor access, construction or grazing cattle, their authenticity is vulnerable.

Protection and management requirements

The primary legislation protecting the property is the Ngorongoro Conservation Area Ordinance of 1959. The property is under the management of the Ngorongoro Conservation Area Authority (NCAA). The Department of Antiquities is responsible for the management and protection of the paleo-anthropological resources within the Ngorongoro Conservation Area. A Memorandum of Understanding to formally establish the relations between the two institutions is in its final stage of preparation and this will pave way for the establishment of the Heritage Department within NCAA structures. Property management is guided by a General Management Plan [2011-16] which was reviewed in 2010/11. Currently, the primary management objectives are to conserve the natural and cultural resources of the property, protect the interests of the Maasai pastoralists, and to promote tourism.

1.2 History of missions to the property

Since its listing as a World Heritage Site based on the natural values (1979), the Ngorongoro Conservation Area has received the following missions; April 1986:

IUCN mission; April-May 2007: World Heritage Centre/IUCN reactive monitoring mission; December 2008: World Heritage Centre /IUCN reactive monitoring mission and the 2011: World Heritage/ICOMOS reactive monitoring following its listing as a mixed property including Cultural values (2010); [25COM VIII.97 (2001), 26COM 21B.22 (2002), 28COM 15B.6 (2004), 29COM 7B.1 (2005), 30COM 7B.2 (2006), 31COM 7B.2 (2007), 33COM 7B.9 (2009) and 34COM 7B.4, 34COM 8B.13 (2010) and 35COM 7B.36 (2011)]. In addition, the property was on the List of World Heritage in Danger from 1984 to 1989.

1.3 Justification of the mission

In accordance with **Decision 35 COM 7B.36**, adopted by the World Heritage Committee at its 35th session (UNESCO, 2011), the State Party of Tanzania invited a joint World Heritage Centre/ICOMOS/IUCN reactive monitoring mission to Ngorongoro Conservation Area from the 10th -13th of April 2012.

The purpose of the mission was to undertake the following tasks (summarised from the Terms of Reference, see Annex I);

1. Assess progress made by the State Party in the implementation of the World Heritage Committee's decisions and recommendations made by the 2007, 2008, and 2011 missions.
2. With regard to natural heritage assess progress made by the State Party in implementing the 2007 and 2008 mission recommendations.
3. With regard to cultural heritage assess progress made on the 2011 mission recommendations.
4. Evaluate the progress made towards the development of an overall tourism strategy.
5. Evaluate on-going and proposed development projects.
6. Meet with all key stakeholders, including representative from indigenous groups, local communities and local NGO's to discuss the management and conservation of the property.

During the mission, meetings were held with the Ngorongoro Conservation Area Authority management team, the Pastoral Council (representing the Maasai communities), Department of Antiquities (DoA) and the Permanent Secretary of the Ministry of Tourism (Dar es Salaam). As part of the field assessments, the mission team visited the Crater, the Olduvai Gorge and associated paleontological sites, the Laetoli site, Nasera Rock art shelter and also traversed some of the roads in order to understand the associated maintenance challenges.

The detailed TORs, mission programme and composition of mission team are attached in *Annex 1*.

2 IDENTIFICATION AND ASSESSMENT OF ISSUES

2.1 Management

Property management is guided by a General Management Plan [2011-16] which was reviewed in 2011. Currently, the primary management objectives are to conserve the natural resources of the property, protect the interests of the Maasai

pastoralists, and to promote tourism. Following the property's inscription on the World Heritage List in consideration of cultural criteria, the management system and the Management Plan need to be broadened to encompass an integrated cultural and natural approach, bringing together ecosystem needs with cultural objectives in order to achieve a sustainable approach to conserving and protecting the Outstanding Universal Value of the property, including the management of grasslands and the archaeological resources, and to promote environmental and cultural awareness. The Plan needs to extend the management of cultural attributes beyond social issues and the resolution of human-wildlife conflicts to the documentation, conservation and management of the cultural resources and the investigation of the potential of the wider landscape in archaeological terms. A Tourism Strategy is now in place for the property.

It is particularly important that NCAA has the capacity and specialist skills to ensure the effectiveness of its multiple-use regime, including knowledge of management of pastoral use in partnership with the Maasai community and other relevant stakeholders. There is also a need for NCAA to ensure that its staff has skills in the management of both natural and cultural heritage to achieve well designed, integrated and effective conservation strategies, including effective planning of tourism, access and infrastructure.

2.2 Factors affecting the property

The mission noted that the attributes which sustain the Outstanding Universal Value for both the cultural and natural components of the property still exist within the NCA. However, as has been noted by previous missions with regard to palaeontological and archaeological resources in particular (2011), their state of conservation continues to be of great concern at key sites such as Olduvai Gorge, Nasera Rock shelter and Laetoli. Most of the sites are progressively affected by a combination of natural and cultural factors. The mission notes that there has been limited implementation of the decisions made by the World Heritage Committee at its 35th session (UNESCO, 2011; 35 COM 7B.36) by the State Party owing to the delayed finalisation of the MoU. The MoU will pave way for the establishment of the Heritage Department to facilitate the implementation of the decisions and recommendations. With the current human resources, as supported by the DoA, it will be difficult to implement the decisions. The revised GMP indeed provides a framework for implementing these decisions. The next section provides the details relating to specific issues and the state of conservation for specific sites whose attributes illustrate the Outstanding Universal Value of the property, which may be equally reflective of all other paleo-anthropological sites in the property.

3 ASSESSMENT OF THE STATE OF CONSERVATION OF THE SITE

3.1 Cultural values

3.1.1 Progress made in operationalisation of the MOU between the Department of Antiquities (DoA) and Ngorongoro Conservation Area Authority (NCAA)

The State Party reported to the mission team that a Memorandum of Understanding (MOU) reported in the 2009, 2010 and 2011 mission reports is now under the final

phase of negotiation between the NCAA and the Department of Antiquities. The MoU being finalised will bring the management of the NCA and the World Heritage property under one management entity with equal focus on both nature and culture, including paving way for the establishment of a Heritage Department under the custody of an appointed Manager who will become part of the NCAA Management Team. The MoU will address the imbalance in the management of natural and cultural values as a multiple land use area. The mission also requested the NCAA to consider establishing a Cultural Heritage Department with an optimal staffing level given that the absence of practitioners with experience and expertise has, regrettably, delayed the implementation of all the World Heritage Committee decisions and recommendations made in 2011. The mission emphasised to the State Party, NCAA and DoA the need to ensure that the MoU is finalised before the 36th Session of the World Heritage Committee (St. Petersburg, 2012). It is also needed that implementation thereof starts immediately, and in particular prioritise the establishment of the Heritage Department as part of the formal structures of the NCAA with adequate financial and technical resources.

3.1.2 NCAA General Management Plan [2011-16]

The mission noted that the revision of the General Management Plan (2006-10) reported in the 2011 mission report has now been completed. The revised GMP (2011-16) now covers both the natural and cultural components within the Ngorongoro Conservation Area. The finalisation of the MoU between the NCAA and DoA will ensure that these components are considered on a balanced platform under the NCAA as the Managing Authority, including allocation of appropriate financial and technical resources.

Though the integration of the natural and cultural attributes is provided for in the GMP comprehensive management framework, NCAA should consider an addendum to the GMP relating to the priorities for cultural heritage management as would be developed by the appointed Cultural Heritage Manager after appointment. This will allow a holistic assessment of all past, current and future strategies, including consideration of the decisions and recommendations made by the World Heritage Committee regarding cultural values. These include developing risk management systems for heritage sites as part of the overall risk management of the property, improving interpretation and presentation strategies compatible to the character and attributes of the place, developing site specific conservation plans, amending the tourism strategy and capacity building for heritage department. However, the addendum should be considered an interim measure while waiting for the review of the GMP at an appropriate or scheduled time considered financially feasible by NCAA or latest by 2016 when the current GMP is due for review.

As recommended in the 2011 mission report, the next revision of the GMP should thus provide an overarching policy for the property, in which sustaining the Outstanding Universal value of the property (as would be informed by a revised Desired Statement of Conservation (DSOC), which was developed in 2011) would be the driving force behind decision making. Engaging in a value-driven and genuine cross-cutting participatory stakeholder process in the future will allow for the identification of common and complimentary management areas, addressing existing deficiencies in the management arrangements (which should create opportunities for other

stakeholders in the management structures of NCAA) and for the definition of location specific management strategies according to their specific values throughout NCA as a multiple land use area.

The State Party should consider prioritising and providing resources to the Cultural Heritage Department to allow for a holistic assessment of all past, current and future strategies (and as per decisions and recommendations of the World Heritage Committee) for the effective management of cultural resources within NCAA towards creating a complimentary addendum to the existing GMP (2011-16) while waiting for the next cycle of the GMP review. This will ensure that the mitigation measures towards sustaining and protecting the OUV as illustrated by the cultural attributes are prioritised alongside natural attributes.

3.1.3 Meet with all key stakeholders, including representatives from indigenous groups, local communities and local NGO's, to discuss the management and conservation of the property and participatory involvement in land-use planning and mechanisms for benefit-sharing;

The issue of local community involvement is common to the conservation and management of both cultural and natural values. Unfortunately time did not permit meetings with a wide range of stakeholders, although the Joint Mission was able to meet with key representatives of the indigenous Maasai community. For a report on this meeting, the reader is referred to section 3.2.15.

3.1.4 The requested details of the specific area and location of the palaeo-anthropological resources, including specific boundaries for Laetoli, Lake Ndutu, Nasera, and the Ngorongoro Burial Mounds and other sensitive archaeological landscapes throughout the property;

The mission noted that this has not been implemented due to the delayed finalisation of the MoU between DoA and NCAA, and even if the MoU was to be finalised, the contracting of the practitioners will take some time owing to the need for compliance with Labour Regulations and Employment code of the NCAA. The mission recommends that State Party prioritise the financial and technical resources for the Heritage Department once it's established.

NCAA should prioritise the establishment of the Heritage Department at optimal levels, and in particular the engagement of a well-qualified and experienced practitioner in order to ensure that implementation of the decisions and recommendations of the World Heritage Committee commences as soon as possible. The World Heritage Centre and ICOMOS expressed their willingness to review the Terms of Reference (TORs) for hiring the Heritage Manager to ensure that a competent and skilled individual is appointed.

3.1.5 The progress made in developing and adopting formal research guidelines for the collection, reporting, curation, and conservation of archaeological and paleo-anthropological remains that are in compliance with the Antiquities Act and other applicable international standards;

The mission noted effort made by the State Party to have the Commission for Science and Technology (COSTECH) develop the guidelines, but lack of financial resources led to deferring of implementation to 2012/13. But on the other hand, and contrary to the position of the State Party during the 2011 Mission, the DoA submitted Research Guidelines to the mission which were produced in 2008. In essence the Guidelines sets “*the standards and guidelines of practice for those who provide advice, make decisions about or undertake work on heritage sites, including owners, managers and custodians*”. The Guidelines cover the following areas; conservation, research, public involvement, administration and management. Though the guidelines relating to research and conservation are well thought out and set at a general level, it is the implementation thereof that is lacking when one considers the status of the heritage sites within NCA. Of great concern is that these guidelines do not commit researchers to consider the post-research phase of the site, for instance plans for rehabilitation to ensure the fragile volcanic soils of the Olduvai Gorge are stabilised in order to arrest any unintended degradation due to either research or natural processes disturbing the sub-strata.

The State Party should consider enforcing the existing Guidelines on research and conservation within the NCA, and funds permitting review and develop tailor made guidelines for the NCA with the help of the Commission for Science and Technology (COSTECH).

3.1.6 The progress made in the establishment of conservation plans for all paleo-anthropological localities;

The mission noted lack of progress in the development of conservation plans for all paleo-anthropological localities due to the delayed finalisation of the MoU between DoA and NCAA, and lack of capacity with the NCAA and DoA to implement the decision.

In addition to the observations of the 2011 mission, the 2012 mission visited cultural sites and noted the following site specific issues at;

(a) Laeotoli footprint

The mission noted that the re-burial of the trackway was done very well and in consistence with the original layout, including the control trackway site. However the mission noted that, the observations of the 2011 mission on the conservation of the site still prevails, as there has been little intervention owing to the focus on the re-excavation exercise. It was noted that elephants are now drinking water from poorly constructed drainage ways which are now retaining water. This water, apart from attracting elephants, may pose a serious conservation challenge by creating a water-logged spot that may eventually permeate through the burial material or encourage vegetation growth around the trackway. Though this maybe seasonal, the repetitive impact is unknown and therefore urgent preventive conservation should be considered, especially the drainage way to allow water to flow away from the trackway and dealing with vegetation on a regular basis.

In addition to the 2011 recommendations, the State Party should consider implementing urgent preventive conservation strategies at the site to reduce the potential impact of the water accumulating as a result of poorly constructed drainage ways, including dealing with the vegetation growth on and around the trackway.

(b) *Olduvai Gorge; Zinjanthropus site; Any potential plans for the construction at the Zinjanthropus site in Olduvai Gorge;*

The mission noted the conservation status of *Zinjanthropus site* is progressively becoming worse. The excavated walls are progressively eroding and soil accumulating down the valley as reported in the 2011 mission report. Furthermore, as noted in 2011, the site interpretation and presentation is still the same. Regarding the development of the monument at the site, the State Party informed the mission that the plans will be submitted for consideration by the World Heritage Committee. The State Party should urgently consider to

- Stabilize the erosion at the FLK-Zinjanthropus excavation site, and more broadly, at all excavations conducted in Olduvai Gorge and elsewhere within the NCA before any development can be considered for any of the sites. Future research projects must have a component on site stabilisation;
- Mitigate and limit the impacts of livestock at the Olduvai Gorge through a renewed participatory approach in collaboration with the pastoral communities. This could include the construction of watering holes outside the gorge and/or the identification of “safe areas” within the Gorge that are less sensitive to the detrimental impacts of livestock. This requires working together with the Maasai Pastoralist Council (*see also development of the pastoralism strategy*);
- Submit any potential plans for construction at Olduvai Gorge to the World Heritage Centre for consideration and review.

(c) *Ngorongoro Crater Burial Mounds*

As noted by the 2011 mission, the Ngorongoro Crater Burial Mounds are in excellent condition and there are no immediate threats to the site. Information concerning the exact locations of these mounds is still lacking.

The State Party should collect published documentation concerning the number and location of the burial mounds. If sufficient information is not available, the team instead recommends that the NCAA under the supervision of the Cultural Heritage Manager, conduct a detailed mapping survey of the burial mounds as a management tool to ensure their effective management and protection in the future. This work should be conducted in tandem with the mapping and establishment of site boundaries for all identified paleo-anthropological localities in the conservation area.

(d) *Nasera Rock art shelter*

The mission visited Nasera Rock shelter and observed evidence that it is still being used regularly as an enclosure for a herd of Maasai goats. This was also noted in the 2009 WHC/IUCN and 2011 (WHC/ICOMOS)

missions. The observed impacts are still the same as noted in 2011. The rock shelter walls remain covered in graffiti, some of which overlays faded rock art. The mission noted that small trees and shrubs growing at the entrance of the rock shelter have not been removed, though this should be part of the routine preventive conservation programme for the site. The potential root action of these plants remains a threat at the site. The illegal camping still continues to take place at the site with no control of activities visitors might undertake at the place. Interpretation and presentation of the site still lacks.

The State Party should:

1. Ensure the protection of the Nasera Rock shelter from livestock through protective measures compatible with the site as well as engaging the pastoral communities on their use of site as a shelter through the existing forum;
2. Regularly (and using acceptable techniques) mitigate or limit the impacts of vegetation (trees and shrubs) to the archaeological deposits.
3. Provide interpretation at the site and control visitor use, regulate potential camping at the area.

3.1.7 The requested comprehensive report on the partial excavation of the Laetoli footprints undertaken in 2011;

The mission noted the following technical reports submitted by the State Party to ICRROM, ICOMOS prior to the mission, and during the mission to the World Heritage Centre;

(a) The Partial Re-excavation and Re-burial of the Laetoli Footprints [Ms Vanessa Stepanek]

The report provides a detailed diary of the daily activities from the 8th -16th of February 2011. The daily records document every procedure and consideration taken on implementing the activities as directed by the field team. The diary is accompanied with illustrative photographs for each day. The diary allows any independent evaluator to check for best practices during the re-excavation and re-burial.

(b) Laetoli: Homin Footprints Site; Partial re-excavation and re-burial report [Prof. Charles Musiba and Ms Vanessa Stepanek]

The report by Prof. Musiba and Ms Vanessa Stepanek provides a geological and archaeological analysis of the re-excavation activity. It also sets the justification for the whole exercise as re-evaluating the current conditions of the footprint trackway since it was buried with the assistance of the Getty Conservation Institute. The report further details the re-excavation and re-burial procedures and guiding principles.

The report states that the examination of the reopened part of the trackway showed thin fractures which were also observed in some parts of the exposed tuff do pose some serious questions on the integrity of weight bearing

overburden to the footprints tuff as well as issues surrounding water/vapour build-up on the footprints layer.

The report concludes that burying the footprints does not guarantee the integrity of the site due to the following problems: **(a)** exposing the footprints (partial or complete) trail every five to ten years would require a large amount of resources, **(b)** every time the footprints would be exposed further unavoidable damage and weathering will be imprinted on the tuff surface and **(c)** burying the site would deprive its cultural integrity in that it freezes the site in time and space, thus making it obscure as a cultural landscape. Going forward, the report makes the following major recommendations among many others;

1. Construction of a climate controlled museum recommended as the best solution contrary to reburying the footprints because it guarantees a real-time monitoring of the site. It also opens the window to sustainable use of this site to improve the human-living condition.
2. The exposure of the footprints can only be carried out after proper geological and conservation studies are conducted as part of baseline information required to establish the climate controlled museum. So far no detailed geological survey showing the geochemical and geomorphological properties of the sedimentary sequences documented at the site exists.
3. Consideration and implementation, where possible, of all the conservation measures successfully applied to other open footprints sites in other countries should provide guidance for decision making process.
4. Formation of a panel of experts appointed to oversee and monitor the exposure and exhibition of the footprints trail.

(c) Preliminary Report: Photogrammetric documentation [Tommy Noble and Nefra Mathews]

The primary objective of the photogrammetrically activity was to document the condition of the footprint surface as exposed upon excavation and after cleaning. In addition, photogrammetric documentation of the initial condition of the burial material upon arrival at the site, and the subsequent layers upon removal was conducted.

The Photogrammetry team observed that the contours and the terrain surface generated for the Footprint Tuff, the casts at the Visitors Center, and the cast at National the Museum of Tanzania in Dar es Salaam, have visible differences. The most noticeable are: reduction in morphometric detail within the Hominid footprints as seen in the Footprint Tuff versus the greater detail seen in the casts, the centre of the surface of both casts was domed with respect to the corollary area of the Footprint Tuff, which is flatter. The report also noted that roots and apparent insect tunnelling were present in the layer of sand directly on top of the Footprint Tuff. Due to lack of access to original (1978 Leakey's photogrammetry data and 1996 GCI photogrammetry data), no qualitative/quantitative analyses were conducted to determine spatial changes. The major recommendations are;

- The ultimate solution to dealing with these factors would be the removal of the burial material, proper contouring of the surrounding terrain to divert moisture, and adequate covering of the surface in the form of a climate controlled building.
- Should such a building be erected it recommends that an overhead camera suspension system or some type of infrastructure be created so

that photogrammetric documentation may be routinely conducted for the purpose of detailed monitoring of the Footprint Tuff.

(d) *Report on the partial re-excavation of the Laetoli hominid trackway, Site G [The Getty Conservation Institute]*

The Getty Conservation Institute (GCI) participated in the re-excavation in order to (i) examine the condition of the exposed tracks and check the efficacy of the various technical strategies that had been put in place to preserve the trackway, and prevent site erosion and root penetration into the burial mould; and to (ii) offer a measured approach to the construction of a museum over the tracks by pointing to the risks and challenges to the sustainability of such an undertaking.

Re-exposure showed that though there have been progressive changes to the hominid prints, the opened part of the trackway did not have significant macroscopically evident damage to the morphology of the footprints. Fine cracks occurred in the floor of some of the prints. Tree roots had circumvented the root-inhibiting geotextiles in the burial mound. But most of these changes can be traced back to 1995 and in some cases to 1979. The GCI considers that root elimination and moisture reduction through comprehensive site drainage, both at the surface and subsurface levels, is essential for the future preservation of the trackway.

The GCI recommends only 3 options for the future of the Laetoli Site G trackway. These are: (i) sheltering the exposed site and opening it to visitation; (ii) Removal of the trackway or individual prints to a museum, and (iii) Continued reburial of the trackway, or a combination of these 3 options. GCI recognises that each of these has advantages and disadvantages and associated risks. The overriding objective for the future of Laetoli trackway must be preservation. The GCI emphasises that whatever treatment or decision is taken should serve this purpose first and foremost.

(e) *Laetoli Hominid Trackway Report on the Photogrammetric Re-survey and Laser Scanning of a Section of the Trackway in February 2011 [Heinz Rütther]*

This report describes the photogrammetric and laser scan survey of the re-excavated section of the hominid trackway in Laetoli in February 2011. The survey was designed to allow comparison with a previous survey of the trackway carried out by the author in 1995. The objective of the re-survey was to establish, by comparison, if the tuff surfaces of the footprints had suffered any deformations since the reburial in 1995.

The results showed a high agreement between the laser scans and photogrammetric data captured in 2011. As these two survey processes are entirely independent of each other, the results can be accepted as entirely objective and the excellent agreement between the data can serve as quality control, confirming that the footprint point clouds were captured with an external accuracy of approximately 0.3 to 0.4 mm. Standard deviations which are internal precision measures, and typically optimistic, show an individual point accuracy of 0.1 to 0.2 mm. The accuracy for the full trackway survey was in the order of 1 mm.

The analysis showed that the excellent agreement between the 1995 and 2011 DTMs can be considered quality control for both surveys; as such a high level of agreement cannot be coincidental. Secondly, the morphology of the

footprints shows no changes detectable within the accuracy limits of the survey techniques used. Also the shape of the trackway is unchanged and no deformations occurred. This can be concluded as the differences show a normal distribution behaviour which is typical for random observation errors. Footprint G2/3- 28 is an exception and shows a difference of more than 3 mm in two places. In this case the 2011 surface is above the 1995 surface. This is because the footprint was not cleaned to the same level as the other prints due to dampness of the fill from rain, rather than indicating a disturbance of the surface. There are no systematic differences between the two point clouds of the entire exposed trackway area and there is no evidence of a depression or bulging of any part of the re-excavated trackway. The surface has remained stable over the years.

Mission analysis of the reports

The mission noted and raised the following issues with the State Party;

- (a) The conflicting technical recommendations of the invited institutions and individuals who participated in the re-excavation and re-burial activity as concluded in the respective reports. The major and conflicting technical recommendations are centred on whether (i) the current burial is serving the purpose from a conservation perspective, (ii) the trackway should be opened as a conservation strategy or remains buried, but with increased conservation controls (especially on the bio-factors), and (iii) whether a state of art museum should be constructed or not as part of the conservation strategy and for public consumption.
- (b) The technical reports submitted are from institutions and individuals that were invited to participate in the activity and do not necessarily represent the confirmed **official** position of the State Party either emanating from an analysis of these respective reports or as informed by other considerations by the State Party. An official State Party report would bring forward a clear position on the envisaged conservation strategy for the Laetoli trackway after the re-excavation and re-burial for consideration by the World Heritage Committee.
- (c) Though a recommendation was made to establish an International Committee on Laetoli, limited progress has been made by the State Party (already in a discussion with ICCROM). The establishment of the International Scientific Committee on Laetoli remains critical as this may assist in finding a sustainable conservation strategy for the trackway.
- (d) Noted and commended the initiative by the State Party in forming the National Technical and Steering Committees on Laetoli footprints. The mission also noted that the National Technical Committee has already started undertaking study tours of similar sites in Korea and China in order to understand how trackways are being managed for conservation purposes. Similar study tours will continue in the near future. Built into this initiative are capacity building plans for purposes of improving the management the footprints.

- (e) The State Party should take all precautionary measures to ensure that the Laetoli footprint trackway is conserved in a manner that best ensures their protection and retains the elements that sustain the Outstanding Universal value of the property.
- (f) Any potential plans concerning their conservation, including the potential construction of facilities, should be submitted to the World Heritage Centre and the Advisory Bodies for consideration and review as per paragraph 172 of the Operational Guidelines for the Implementation of the World Heritage Convention before any commitment is made to implementation.

The mission considers that the State Party should consult the World Heritage Centre, ICCROM and ICOMOS on further developmental plans at Laetoli Footprints pending the submission of an official State Party Report with clear recommendations on Laetoli for consideration by the World Heritage Committee. This follows the submission of the various conflicting technical reports to the State Party by the participating institutions and individuals. Parallel to this, the State Party considers accelerating the process of establishing and convening the International Technical Committee Meeting on Laetoli towards the submission of such a report. The World Heritage Centre expressed its willingness to assist the State Party for the convening of the International Technical Committee on Laetoli. The decision on the conservation of the site has bearing on the Outstanding Universal Value of the site. In addition, the mission recommends that the State Party considers implementing urgent preventive conservation strategies at the site to reduce the potential impact of the water accumulating as a result of poorly constructed drainage ways, including dealing with the vegetation growth on and around the trackway.

3.2 Natural values

In its Decision 35 COM 7B.36, which mandated the Joint Reactive Monitoring Mission reported here, the World Heritage Committee urged the State Party “*to implement all the recommendations of the 2007 and 2008 monitoring missions to address the multiple threats affecting the natural values of the property*”, the chief amongst which are also noted and considered in the Decision.

The mission found not only that significant progress has been made in several key areas, but also that some of the recommendations not yet acted on need to be reconsidered. The mission therefore considers that the World Heritage Committee should henceforth refer only to the recommendations presented in this mission report, rather than to the 2007 and 2008 recommendations.

In order to enable a line to be drawn under the earlier recommendations, a detailed commentary on each is presented below in the same order they were presented in the Conclusions and Recommendations section of the WHC/IUCN mission report of December 2008.

3.2.1 The voluntary relocation of people

The fundamental concern being addressed is “the growing resident population”. The former mission(s) recommended “*accelerating the process of voluntary relocation of immigrant populations, lodge staff and NCAA staff to areas outside of the NCA*”.

This recommendation mixes up two separate issues. The first is the relocation of pastoralists, which probably can only be done on a voluntary basis, and the second is the relocation of staff, which can be compulsory. The commentary below addresses only the former issue, as the latter was picked up again under a separate, more focussed, recommendation (see 3.2.10 below).

Certainly, the number of “non-staff” within the NCA continues to grow, as documented in section 2.3.1 of the NCA’s current General Management Plan (GMP) for 2006-2016 (published in 2010). The most recent census was in 2007, which returned an estimated population of 64,000. The mission was told that the NCAA believes that the population has since grown at a rate of 3.5% p.a., in which case it would now stand at between 76,000 and 79,000. Although no quantitative data are cited, the GMP states that over the same period the number of livestock has remained comparatively stable, meaning per capita holdings have dropped significantly. However two formal censuses are imminent, the first as part of the next National Census, and the second an internal NCAA exercise scheduled for August 2012. The latter will involve the total enumeration of people and livestock on a boma-by-boma basis.

With regard to the relocation of pastoralists, the NCAA has previously referred to “resident” and “immigrant” components of the population and previous mission reports identified the latter as the obvious priority target for relocation. This approach assumes that the two groups are easy to distinguish, whereas both traditional cultural attitudes and national settlement policies make this difficult in practice. Realistically therefore, the relocation of residents can probably only take place on a voluntary basis, in which case it is always going to be difficult to guarantee an “acceleration” in resettlement.

With this in mind, the State Party therefore is to be commended for having effected the voluntarily resettlement to date of a total of 156 households comprising 553 people and their livestock to Jema Oldonyosambu, a 13,152 acre site outside the NCA. Nevertheless it should also be acknowledged that this number remains very low compared to the number of residents in the property, and NCAA is encouraged to continue to further increase their efforts.

The first group to be resettled here was of 140 households in 2006, but the number of volunteers increased following the 2009 imposition of a total ban on cultivation within the NCA. The facilities provided at this site by NCAA at a total cost of TZS 1.1 billion include:

- Transport of persons and belongings
- A communal farm (107 acres)
- Primary school for 535 pupils (classrooms, dormitories and teachers’ accommodation)
- Dispensary (13 rooms, nurses’ and doctor’s accommodation)
- Police Post (5 rooms, staff accommodation)
- Water supply (piped supply from source 5km distant; 5,000 litre storage)

In response to increasing interest in relocation, the NCAA in collaboration with District and Arusha Regional Authorities is trying to obtain more land elsewhere for people who want to shift voluntarily out of the NCA. Given that the pastoralist population does indeed continue to grow, this is only to be encouraged.

3.2.2 A pastoralism strategy based on carrying capacity

The nominal threat being addressed is the continuing negative impact of the growing resident populations of people and associated livestock on the property's Outstanding Universal Value. The former mission(s) considered that the overall management response to this issue “*has to be based on a scientific assessment of the carrying capacity of NCA*”, and therefore recommended that a “*scientific carrying capacity study*” be carried out.

Clearly the expectation was that this study would confirm that the current livestock population is above carrying capacity, that habitats must therefore be undergoing degradation, and so provide the justification for a suite of mitigation measures that have come to be referred to in WHC/IUCN mission reports as a “pastoralism strategy”.

Whilst the logic of taking such an approach is sound, it has had the unfortunate and unhelpful side effect of heightening tension between management and pastoralists, by keeping the possibility of involuntary relocation alive in people's minds (see also 3.2.15). Whilst the latter has never been explicitly articulated, it has always been obvious to the pastoralists that the strategy emerging from any such study would necessarily include measures to bring livestock numbers within carrying capacity. The only known previous study of carrying capacity is the one referred to in the WHC/IUCN 2008 mission report, which estimated the Area's total carrying capacity for large herbivores to be 254,000 Tropical Livestock Units (TLUs). Based on the available wildlife data and an assessed need of 8 TLUs per individual, the carrying capacity of the NCA was estimated at 25,000 pastoralists. The inescapable conclusion - and the pastoralists' very real fear - is that, based on a probable population today of at least 75,000, some 50,000 people together with their livestock might somehow have to be “removed” from the system to restore ecological sustainability.

Unless and until it is undertaken, there is no way of knowing if a new study of carrying capacity would reveal either a more or a less threatening situation, whether viewed from an ecological or humanitarian perspective. An important conclusion of the present review is that it does not matter either way because a re-analysis suggests there is no real justification for such a study, for the following reasons.

Firstly, the “benefits” of such a study are illusory and could never outweigh its costs in terms of time, money and heightened tension between management and Maasai. The basic concept is deceptively simple. Calculate the annual primary productivity of the habitats available to pastoralists (the supply), subtract an estimate of what will be removed by wildlife (the pre-existing demand), and divide what is left by the needs of the average cow, goat and sheep. In reality however, modelling the carrying capacity of any ecologically heterogeneous area utilised by a multi-species assembly of resource-competitors is notoriously complex, and only as good as the data and assumptions fed into the model.

These would include assumptions for example about rainfall, the productivity of different vegetation types, and the numbers of wildlife that compete with livestock, all of which can and do vary across the NCA both spatially and temporally, with varying degrees of predictability. Ultimately, similar assumptions are required also about the numbers and ratios of cattle and/or small stock required to support a given number of pastoralists, assuming they are totally dependent thereon for their subsistence.

In short, it would be possible to model any number of alternative scenarios by applying different values to certain key variables, such as those related to:

- rainfall (should one use average rainfall, or that associated with drought years?)
- productivity (does one model browse production/demand as well as grass production/demand?)
- wildlife (what is the average number of wildebeest-days one should assume are spent in the different parts of the NCA used by pastoralists? What does a wildebeest-day “cost” in terms of production consumed (grass and/or browse)? Similar assumptions would also be needed for all the other migratory and/or resident species such as zebra, gazelle, buffalo, hartebeest etc etc)
- people (what do they need for subsistence in terms of cattle, small stock or some combination thereof? What are the resource demands of differently composed “subsistence herds”? Can one assume all Maasai aspire to a consistent, preferred solution?)

Consequently the pastoralists would have plentiful grounds for challenging any model indicating their herds are already well over carrying capacity, just as conservationists would have plentiful grounds for challenging any model that showed the reverse. In other words the exercise could be to all intents and purposes redundant.

Secondly, it has long been assumed that the number of livestock almost certainly exceeds the carrying capacity of the areas set aside for pastoralism (although understandably most Maasai choose to be in denial about it). Apart from the earlier scientific attempt to study this referred to earlier, other significant lines of evidence also point in this direction including high cattle mortality in periods of extreme resource limitation (e.g. dry seasons and droughts), increasingly widespread loss of grassland to unpalatable grass species, forbs and shrubs known to be associated with overgrazing, and an increasing proportion small stock over cattle.

Because this situation has long been recognised (by management at least), the NCAA already has an overall pastoralism strategy in place to address it.

This is presently comprised of actions in relation to the following:

Reducing the number of people and livestock

Not surprisingly, this part of the strategy is politically sensitive. Given the recent and ongoing decline in per capita livestock holdings, a reduction in the number of people assumes as much if not greater importance than a reduction in livestock. However for reasons already noted (3.2.1), the relocation of people out of the NCA can only take place voluntarily, and certainly *bona fide* residents need have no fear of the sort of large scale, forcible eviction that would be needed to bring the pastoral system below carrying capacity (whether notional or actual). The mission notes that family planning services are available from all clinics within the NCA (and have been for some time), but until recently the NCAA relied on an NGO to support this service. This NGO pulled out two years ago and since then the service has not been well sustained. It is recommended that the NCAA, in collaboration with relevant partners, strengthen its efforts to ensure that all clinics continue to have family planning services and supplies available for the residents within the property.

The forced relocation of residents would run contrary to both the spirit and the letter of the law under which the NCA was created, so the State and all other stakeholders – including the World Heritage Committee – must accept that the

grand experiment in balancing the needs of pastoral humans and wildlife in the same ecosystem must continue without resort to draconian measures, even if this means accepting even quite wide and unwelcome fluctuations around the equilibrium range conditions being strived for. The challenge will be to try and ensure none of the ensuing negative changes become irreversible.

Increasing livestock productivity

The logic here is that the higher the quality of cattle the pastoralists keep, the smaller the number needed for subsistence, and the lower their overall demand on the ecosystem. This means implementing various ways of increasing livestock productivity. This includes all types of veterinary intervention, because the drop in per capita livestock holdings noted elsewhere is believed to be due to a high incidence of tick-borne and other wildlife-related diseases.

The NCAA continues as it has for many years to provide free veterinary services, vaccination, dips etc. for all residents. At the same time it is encouraging the Maasai to adopt new modes of livestock husbandry and marketing. In an effort to upgrade the local zebu race of cattle, the NCAA has both used Artificial Insemination and provided 70 prime bulls now distributed amongst all the villages for cross-breeding purposes. In addition, community leaders and local government extension officers have been taken on study tours to areas where cattle are ranched in fenced areas, and their meat and milk processed and marketed commercially. This includes a trip to the Ankole Cattle areas of Uganda (in late October 2009), as well as to other more progressive areas of Tanzanian Maasailand where such approaches have already been successfully adopted (e.g. Longido, Simanjiro).

The end result is the NCAA's determination to fund a community-based project known as "RAMAT" (meaning "conservation"), which basically will develop a demonstration farm to which the community will contribute 1,000 head of cattle to be partially raised in fenced areas, and whose milk and meat are to be marketed commercially. Details regarding the site and exactly what the NCAA plans to do where, when and at what cost remain unclear, because the document provided to the mission that was expected to provide this information proved to be more of a generic feasibility assessment prepared by one Michel Duplat who visited the NCA in June 2010. This was followed in October-December 2011 by awareness meetings regarding the project concept which were conducted in all 17 villages.

The estimated cost of all the elements in Duplat's proposed scheme, which is probably over-ambitious in a specific NCA context, is around EUR 2.5 million. One component of serious concern to the mission, is the intention "*to request for permission from the authorities to cultivate*" various food supplements to aid fattening and meat quality, such as "tritral" wheat, barley, lucerne and peas. Given the anticipated need for "permission", the intention presumably is to cultivate within the NCA. Since this would run counter to the ban on cultivation (as well as the President's and Parliament's endorsement of the same), the best strategy is to assume permission will not be forthcoming and adjust plans accordingly, including the possible acquisition of land suitable for this purpose outside the property.

It is understood that the NCAA's eventual contribution is likely to include fencing and buildings, including a dairy, an abattoir etc., but a definitive NCAA-owned proposal is now awaited. Involving as it does substantial infrastructural elements, the mission initially was concerned that the State Party had not provided more detail when declaring its intent to carry out this project in conformity with paragraph 172 of the *Operational Guidelines*. This is largely explained by the continuing lack of a well-developed proposal, and this should be addressed prior to the project's implementation. Provided that the NCAA's own in-house EIA procedures are followed, including an assessment of its feasibility outside the property, the RAMAT project could be a significant move towards reducing grazing pressure within the property. If successful and then more widely replicated, the approach should not only relieve pressure on NCA rangelands, but also strengthen the pastoralists' household economies by improving performance of the livestock component. The mission encourages NCAA to consider implementing this project outside the property, as a way to provide incentive to NCA residents to relocate.

Maximising resource availability

In a general effort to make all parts of the NCA's so-called Development Zone equally accessible to the pastoralists and their cattle, and more specifically to compensate for restricted access to the Crater itself, the NCAA recently has provided strategically distributed artificial salt licks, new water sources and new cattle dips. Included here are 9 out of 14 planned dams (at a cost of TZS 542.5 million); 7 cattle dips (TZS 119.7 million); water troughs (TZS 35.7 million); and a windmill-driven piped supply from a crater floor spring to a previously "dry" area above the rim (TZS 39.2 million).

In summary, the mission team recommends that a study of carrying capacity should no longer be envisaged as it is impracticable, unnecessary and could lead to serious conflict with the Maasai pastoralist groups. However, recognizing that the grazing pressure on the ecosystem needs to be brought back in balance with its carrying capacity, it is recommended that the NCAA commission an independent study on the nature and extent of overgrazing, data which is still lacking. Such a study should provide the basis of a revision of the NCAA's ecological monitoring programme as required, as well as for the formulation of an appropriate management response, through the development of a comprehensive grazing management strategy.

3.2.3 The management of vehicle congestion in the Crater

Being addressed here are perceived threats to the value of the NCA's tourism product, and which might also impact negatively on the natural values of the property's most outstanding natural feature. In other words this is a geographically focused aspect of what has come to be referred to in WHC/IUCN mission reports as an overall "tourism strategy".

The former mission(s) stressed the importance that "*all 8 recommendations of the EIA on traffic congestion in the crater are implemented urgently*". Action with regard to each of these recommendations is reviewed below:

(i) Increasing the passenger capacity of vehicles

The original recommendation was to ensure that all vehicles entering the Crater have a 12-seat capacity. The NCAA has not found it practicable to impose such a restriction.

However as a consequence of applying a high standard access fee to all vehicles irrespective of their seating capacity (see v below), most operators have doubled the capacity of their former 4-seaters by stretching the chassis. In this way the access cost per passenger is reduced.

This must have had the effect of reducing the number of vehicles that would otherwise have sought entry, but the effect may have been cancelled out by steadily rising demand. The mission was unable in the time available to obtain Crater-specific data on vehicle entries, but one can assume these must have continued to rise in proportion with total visitor numbers to the NCA as a whole (see Table 1).

Table 1: Total number of tourists in the last 5 years (both non-resident and resident)

Year	Total Tourists
2007	462,050
2008	507,559
2009	441,966
2010	523,646
2011	588,606

(ii) Reducing the length of Crater tours

The original recommendation was to reduce the length of Crater tours from the current full day to a half day, and to monitor the time spent within the crater by using time-punching machines at entry and exit. To date none of this has been done, although under the Limits of Acceptable Use (LAU) applicable to the Crater Zone under the current GMP, entry permits are to be valid for 6 hours only.

(iii) Limiting the number of vehicles

The original recommendations were to limit vehicles to 100 in one day, and maintain a distance of 3km between vehicles. Neither prescription has been applied, not least because the latter is patently unworkable. The former is provided for in the current GMP, where the LAUs applicable to the Crater Zone state that there should be less than 50 vehicles at any one time, however the enforcement of this restriction remains inadequate.

The 2008 WHC/IUCN mission expressed strong reservations about a proposal to increase the number of tracks in the crater in order to increase the number of vehicles that can be allowed in. The NCAA's road engineers denied any such intention, and stated the plan is only to rehabilitate, and in no way extend, the existing road network (see iv below).

(iv) Cementing the main ascent and descent roads

In addition to cementing the ascent/descent roads, the original recommendations included the upgrading of certain other roads on the crater floor. After a review of options and an EIA, the NCAA decided to issue a tender for the initial paving of the ascent road only with concrete briquettes. While the contract has yet to be awarded, the mission supports this initiative as a sensible response to the serious sustainability problems facing the NCAA's road maintenance programme which centre on an increasingly acute lack of quality murram (see section 3.2.7 for a fuller discussion).

Thus it is that the NCAA has only been able to upgrade the main roads on the crater floor. It would like to do them all (a total of 150 km), because upgrading the full network will help spread vehicle density more evenly and reduce the incentive for off-road driving. However since the NCAA cannot afford to do this using murram sourced from outside the Crater, it is left with only two options.

The first is to open a new borrow-pit within the crater (seen as a short to medium term solution), and the second is to develop and apply a new surfacing technique for the roads on the crater floor using broken rocks sourced from the crater walls and bound with cement (seen as a potentially sustainable, long term solution). The mission was asked what the World Heritage Committee's position might be on each of these alternatives. The mission cannot speak for the Committee, but given the reality and gravity of the situation would advise that it is now necessary to compromise on the hitherto hard and idealistic line taken with respect to human modifications considered detrimental to the natural environment.

Essentially, the mission is in the opinion that the most important differences between a paved and an unpaved road in terms of environmental impact relate to speed considerations (which are amenable to counter-measures) and aesthetic impact, but it is debatable whether such a subjective matter could ever be said to really threaten the area's OUV. It is true that criterion vii - which applies to the NCA - is grounded in considerations of aesthetics and natural beauty, but it is highly unlikely that visitors will fixate on the road and never raise their heads to look around. In that case the subjective impression of the crater's beauty will hardly be affected, certainly not the extent of justifying opposition to either of the NCAA's proposals. That said, the mission feels it must stop short of full endorsement pending:

- the receipt of a full EIA report on the proposed new borrow-pit, including full details as to whereabouts it would be located, confirmation that it is out of sight or far from the most heavily visited parts, and the feasibility of its eventual rehabilitation
- the building of a short, say 100-200m, demonstration stretch of road using the proposed new rock and cement paving technique, that can then be fully understood and evaluated by all stakeholders from both an engineering and aesthetic perspective.

(v) Increasing access fees

Beyond advocating an increase, no specific recommendation was made. However, in 2007 the NCAA did double the crater entry fee to US\$200.00 per vehicle, and this remains the case today. As noted in (i) above this had the effect of increasing the capacity of vehicles entering, which in turn presumably reduced numbers also. However, the Authority is now considering a further hike to counteract the rising demand generated by a continuing increase in visitor numbers.

(vi) Controlling traffic behaviour

The original recommendations were to initiate a "Code of Conduct", covering speed limits (25-30 kph, to be enforced by speed cameras), off-road driving, distances between vehicles etc. Except for the latter, which for reasons of visitor satisfaction and practicality there has been no attempt to control, action has been taken on all these

issues. There is an established speed limit in the crater of 25 kph (and 50 kph elsewhere), and the NCAA does use speed-guns to help enforce this. Manned observation points distributed around the rim report speeding vehicles, or those driving off-road, to the patrol vehicle that circulates the crater floor at all times. Transgressors are fined, and repeat offenders may be banned from the Area. These rules are printed on the back of the entry tickets.

(vii) Considering joint venture options

Originally, the NCAA was encouraged to consider options for developing ventures where it would operate crater tours jointly with tour operators. Despite advertising for potential partners, there was no response.

(viii) Developing alternative attractions

The original recommendation was to develop alternatives to the current use of the main Crater, including the promotion of wildlife viewing in other areas (Olmoti and Empakai Craters), as well as the development of nature trails within the conservation area.

The NCAA has embraced this approach fully, with such measures featuring prominently in the current GMP's Tourism Management Programme, and in the Tourism Marketing Strategic Plan for 2011-2015. Indeed it is their determination to diversify the tourism product that allowed management to feel justified, for the time being at least, in not enforcing the GMP's prescriptions with regard to numbers of vehicles and time spent in the Crater. Notable achievements to date include

- the rehabilitation in 2008 of the 80km stretch of road between the viewpoint on the main crater rim and Empakai, and which has been maintained in a motorable condition ever since.
- The development of walking safaris along planned routes, guided by indigenous Ngorongoro Maasai. A number of length options exist from part of a day, to several days. As required for the latter, over-night campsites have been developed.

3.2.4 The further development of tourist lodges

A proliferation of tourist accommodation is perceived as a threat to the value of the NCA's tourism product and, as far as the Crater rim is concerned, would undoubtedly impact negatively on the natural values of the property's most outstanding scenic feature. In addition, concerns are raised over the water supply to these lodges, as well as the bed capacity which is directly linked to the tourist load in the crater. These concerns are another aspect of an overall "tourism strategy".

The 2008 mission noted that while a freeze on lodge developments on the Crater rim had been implemented, the earlier recommendation that this should be extended throughout the NCA had not been followed. It conceded however, that some limited development of overnight accommodation was needed as part of the planned diversification of the tourism product, provided this be done in the context of an overall tourism strategy for the property, and subject to due attention to potential environmental impacts.

At the time this position was taken, the NCAA as yet had no coherent “tourism strategy”. However, the current version of the GMP published in 2010, includes a well-developed Tourism Management Programme that provides, as part of a strategy “to provide alternative attractions to enhance visitors’ experience”, for the identification and allocation of sites for permanent tented camps at Esirwa, Masek, Nainokanoka, Naibatat and Olbalal and a lodge at Empakai Crater, all of which, it is clearly stated, are to be subject to EIA.

Consequently, the mission feels that for the time being, the further development of tourist lodges and accommodation should no longer be considered a threat to the Area’s OUV, but that the World Heritage Committee should nevertheless be kept informed about such developments in accordance with paragraph 172 of the *Operational Guidelines*.

3.2.5 A tourism strategy

The previous mission(s) considered that the development of a proactive tourism strategy was urgently required in light of the “numerous” tourism management issues the property was facing, including the issues of traffic congestion in the crater (3.2.3) as well as the issue of new lodge developments (3.2.4). It was further recommended that this strategy be developed for the entire Serengeti ecosystem in conjunction with TANAPA and other stakeholders.

As noted above, the NCAA’s GMP has an active Tourism Management Programme that covers all the main issues of former concern, and a Tourism Marketing Strategy for 2011-2015 is also in place. The GMP also provides under its Natural Resources Management Programme, for an Integrated Landscape Conservation Plan to be prepared and implemented through a Tarangire-Manyara-Ngorongoro-Serengeti-Mara Forum. Thus the former missions’ concerns are being well attended to.

3.2.6 Environmental audits of lodges

The 2008 mission recommended that environmental audits of all lodges and tented camps within the property be completed by the end of 2009, the main objective being to ensure their use of water and power is made as economical as possible. The present mission had insufficient time to look into the detail, but was told that 3 of the 6 facilities involved had yet to complete their audit. It is not known to what extent the 3 completed audits have resulted in specific measures being taken to further mitigate their environmental impacts, or economise on water usage etc. Either way, the GMP’s Tourism Management Programme includes a strategy to “develop standards and monitor quality of services and facilities”. All things considered, it is not felt that the operations of the existing lodges constitute a threat to the Area’s OUV.

3.2.7 Improvements to the road network

The previous mission(s) recommended improvements to the NCA’s entire 550 km road network to discourage off-road driving, facilitate efforts to diversify the tourism product, and open access to isolated villages and places of interest that are infrequently visited at present.

The fact is that the NCAA faces a serious challenge in maintaining even the existing road network, let alone an expanded one. This is due to an increasingly acute lack of quality murram (gravel), all sources within the NCA itself having been exhausted or very nearly so. The only new source within the NCA is 50km distant from the HQ

area, and holds inferior material that can only last a few months before it has to be replaced. Sources outside the NCA are even more distant, meaning greatly increased transport costs which are compounded by the fact that externally sourced materials have to be paid for, they are not free. Added to all this is the risk of bringing in invasive species whose control would also have significant cost implications.

A particular headache is maintenance of the main road between the entrance gate at Lodua, and the Serengeti National Park (Naabi Hill). This 83km stretch is essentially a public road and carries a substantial load of through traffic, including buses and trucks, on a daily basis. Accordingly it has to be maintained to very high specifications at all times, engendering a very high cost in terms of the man-hours, materials, equipment and finance needed. Consequently, the NCAA has long wished to “harden” this road, ideally with a tarmac surface, and this features in the current GMP’s Tourism Management Programme.

The mission notes that the 2010 joint World Heritage Centre / IUCN reactive monitoring mission to Serengeti National Park made recommendations regarding the upgrading of this road. It considers that in line with these recommendations, an expert study – an EIA and a technical feasibility study – should be carried out to assess all impacts of the different options, including alternative road surfaces to tarmac, before a decision is taken. This study should be implemented jointly between NCAA and TANAPA. Speed and collision considerations are an obvious concern raised also by the previous missions. It can be noted in passing that speeding is anyway an issue in regard to the existing high standard dirt road, and the NCAA already actively enforces a 50kph limit with speed-guns.

3.2.8 Invasive plant species

The presence of a number of alien invasives in the NCA has been noted in previous mission reports, including Red Water Fern (*Azolla filiculoides*); Mexican Poppy (*Argemone mexicana*); Mauritius Thorn (*Datura stramonium*); and most recently *Parthenium hysterophorus*.

The report provided to the 35th session of the Committee in document WHC-11/35.COM/7B stated that biological control of *Azolla* was proving problematic and efforts to remove it from the Crater unsuccessful. The present mission was informed that the Crater is now free of the weed: certainly none was visible from a vehicle driving around the crater floor. Indeed it was claimed that *Argemone* and *Datura* have also been brought under control, but progress with the eradication of wattle and eucalyptus species was not discussed.

Furthermore an awareness campaign has been conducted by NCAA in all villages to aid detection and eradication, meaning the local communities are now sensitised to the issue and trained to recognise all the species of concern. A reward system is in place for school pupils who collect and submit found specimens to the Authority.

The mission commends these achievements but at the same time warns against any relaxation of vigilance. Obviously the Authority must continue to monitor the situation in order to detect any new outbreaks of apparently eliminated species, as well as the spread of others such as the very dangerous *Parthenium*, the incidence of which is said still to be low enough not to be the cause of immediate concern. Once it gains a foothold however, this aggressive and toxic weed has the potential to harm people and

animals, as well as drastically reduce the productivity of rangelands on a grand scale, and so represents a real threat to wildlife, livestock and people. The only effective chemical control method for this weed is non-selective and environmentally hazardous. Experience from other countries shows that biocontrol agents have so far not been successful in adequately controlling the weed. As noted by the 2010 mission to Serengeti National Park, the best method of control is to maximize competition against the weed by maintaining good grass growth. This emphasizes the urgency of addressing the issue of overgrazing in the property, as heavily grazed areas are prone to invasion by *Parthenium*.

3.2.9 Gravel borrow-pits

While acknowledging that it might be necessary to maintain some borrow-pits within the NCA, the former mission(s) recommended that road building materials be sourced “*from areas with a minimal impact on the natural values of the property*”. The present mission has no problem with this statement as a general principle to be followed, but believes the recommendation was intended to encourage the sourcing of materials from outside the NCA entirely. Unfortunately, for reasons elaborated in section 3.2.7 this could not offer a practical solution, meaning serious consideration has to be given to “hardening” key stretches of road including the crater ascent/descent road, the main through road to Serengeti, and various other key stretches (e.g. the 5km side road leading to Olduvai), subject as always to EIAs and paragraph 172 of the *Operational Guidelines*.

The previous mission(s) also called for the immediate closure of the gravel pit on the Crater rim near Sopa Lodge as it “*is definitely damaging the values of the property*”. The present mission can confirm that this pit has been closed, and need no longer be cause for concern.

3.2.10 Relocation of NCAA and lodge staff

The 2008 mission expressed strong concern about the limited progress in relocating NCAA and lodge staff outside the property, and recommended that “*the NCAA increases its efforts to achieve the relocation within a newly proposed time horizon of 2012*”. The present mission had insufficient time to investigate the relocation of lodge staff, but can report that progress with regard to NCAA staff remains slow, and that even now in 2012 the process is far from completion.

The NCAA has acquired a 435 acre property known as Kamyn Estate just outside the NCA on the road to Karatu. The full Master Plan is very ambitious, but of immediate interest are the components intended to reduce the staff presence within the NCA. Staff quarters to accommodate 300 families are to be provided for in 50 Block units (6 families per Block). So far only 4 Blocks together with a power house have been completed, and are already occupied by 24 families. A Zonal Office is currently under construction.

The main constraints to further construction are disputes with the contractor, and competing demands for funds. Nevertheless, some “acceleration” in the processes of relocating staff outside the NCA obviously would be very welcome and provide convincing evidence that the NCAA understands the importance of this exercise.

3.2.11 Livestock access to the Crater

In order to reduce the impact of cattle on the fragile slopes and floor of the Crater, the previous mission(s) recommended that in order to minimise demand to take them down, alternative salt licks and new water sources should be developed outside the

main crater. This has been done in consultation with the pastoral communities (see also “*Maximising resource availability*” in the discussion of NCA’s pastoralism strategy given in section 3.2.2)

3.2.12 Publication of NCAA accounts

The 2008 mission called for the NCAA to make its accounts public, implying that it and other stakeholders were unable to see how the Authority is using the income generated in managing the property. The present mission was assured that as a Government parastatal the NCAA’s accounts are necessarily in the public domain, and although it did not ask to see any accounts, it notes that the 2011 mission to the Serengeti was freely given the latest audited accounts when it called on the NCAA.

3.2.13 Benefit-sharing

Previous missions recommended the development of “*benefit-sharing mechanisms that encourage a sense of ownership of, and responsibility for, the conservation and sustainable use of the property’s natural resources*”.

The NCAA described at some length to the present mission, the range of benefits afforded to the resident communities. These include:

- free veterinary and breed improvement services (dips, vaccination, AI etc)
- free human medical services at health facilities (1 hospital, 3 dispensaries) and outreach clinics, including maternity and family planning support (since 1994, roughly 280 women per year have taken advantage of the latter)
- free road development and maintenance in village areas
- educational support, including a free daily lunch for all primary school children, and a large number of scholarships namely 1,344 in the period 1995-2010 (see Table 2), plus 918 in 2011-2012, giving a total of 2,262 to date of which roughly 28% are girls
- supplementary food aid (1,900 tonnes of maize since 2009 cultivation ban)
- direct grant finance for community-proposed development projects (last year valued at TZS 1.25 billion, this year at TZS 1.35 billion)
- 7 cultural bomas have been established which generate direct income from visiting tourists
- 50% of the revenue accrued from campsites established along community-guided walking safari routes

Table 2: Summary of students sponsored by the NCAA between 1995 and 2010

Education level	Number of students
Primary	12 (disabled)
Secondary	980
Technical colleges (VETA)	154
Other colleges (NACTE)	134
Universities	64
TOTAL	1,344

In addition there are various incentive schemes in place, providing rewards in cash or kind for certain activities (e.g. reporting and collection of invasive plants)

3.2.14 A regional Forum

The previous mission(s) recommended that an overall vision for the ecosystem be developed through the Serengeti Ecosystem Forum (SEF), taking into account the conservation of the OUV of both the Ngorongoro and Serengeti World Heritage properties. The members of the SEF signed a MoU in August 2008, but it appears from the GMP that the SEF's brief has been extended, and a Tarangire-Manyara-Ngorongoro-Serengeti-Mara Forum is now working on an Integrated Landscape Conservation Plan. The mission was informed that the Forum meets twice a year.

3.2.15 Participation of resident communities

The 2008 mission noted with concern “the growing tension” evident between NCAA and resident Maasai communities, and recommended that the former take steps to ensure the latter's active participation in the decision-making processes and governance of the property.

The NCAA, in insisting that the community participation is adequate, highlighted the following:

- There is a community-elected Pastoral Council (PC), an apex body whose Chairman sits on the NCAA's Board of Directors and attends Finance and Audit Board Committee meetings as well as full Board meetings. Additionally, two other PC Members (its Manager and Accountant) sit on the Conservation, Community Development and Ecological Monitoring Board Committee. Both the Council and its Chairman are regularly consulted on matters pertaining to the community
- As detailed in several annexes to the GMP itself, numerous community representatives were involved in all stages of the preparation and review of the GMP, including two full Council sessions. Representatives of all 17 villages remain involved in reviews of the GMP's implementation, the last such being in June-July 2011
- The NCAA regularly interacts with the community at grass roots level, for example the *Ujirani Mwema* (good neighbourhood) meetings convened in all 17 villages in December 2011 to discuss the benefits which NCAA has been providing, and the need for the communities to join hands with the NCAA in all matters related to conservation and protection of the property.

Despite these assurances considerable tension, indeed anger and suspicion also, continued to be evident in the course of the present mission's meeting with the Chairman of the PC and some twenty other community leaders and representatives. It was apparent from those present that the prime cause of this is not so much a lack of interaction with the NCAA, as the previous call for a study of carrying capacity, and the World Heritage Committee's endorsement of the same in subsequent Decisions. The communities perceive this as a direct and serious threat that leaves them feeling like "rootless plants" without a proper home. For this they chiefly blame IUCN, and insist that they must be involved in any such study and decision-making based on it.

The UNESCO representatives (World Heritage Centre and UNESCO Office in Dar as Salam) present proposed a conference to address this and various other sensitive issues that were touched on, and to clear up certain misunderstandings as to the respective roles of the State Party, the NCAA, the WHC and the Advisory Bodies that became apparent. The community representatives welcomed this proposal, albeit with a degree of cynicism.

Certainly, such a forum would provide a good opportunity to go over the constraints imposed on both the management authority and the pastoral community by the Ngorongoro Conservation Ordinance, and their long-term implications for sustaining a pastoral way of life indefinitely into the future. A key message would be to reassure the community that while no *bona fide* residents will be evicted, those remaining have firstly to respect the legally valid livelihood constraints peculiar to the NCA, and secondly to accept that because of them the best interests of the community and the management authority are actually almost identical. The *quid pro quo* for those electing to stay, respect the law and collaborate with the NCAA and share responsibility for sustaining their pastoral way of life, is that the latter will continue to provide them with all the familiar benefits (see 3.2.13). For those unwilling to do so, but willing to relocate voluntarily, the NCAA will continue to facilitate and pay for that also.

Both before and after the proposed conference, the NCAA could develop these themes at future *Ujirani Mwema* meetings.

4 CONCLUSIONS AND RECOMMENDATIONS

The State Party has not complied diligently with Para 172 of the *Operational Guidelines*, and its State of Conservation Reports for Ngorongoro are generally lacking in sufficient detail and statistics (such as human and livestock census data; poaching incidents; traffic data etc.). Consequently it has been left for reactive monitoring missions to discover significant infrastructural initiatives either when they are already *fait accompli* (e.g. the new NCA HQ complex on the crater rim noted by the 2008 mission), or when the time left in which to influence proceedings is running out (e.g. the infrastructural components of the proposed Ramat livestock development project noted by the present mission).

The NCAA has been remiss in not involving either the World Heritage Centre or the Advisory Bodies in the formulation of its General Management Plan (GMP), and in not keeping them apprised of the various other regulatory instruments through which management of the area is effected (e.g. building codes). Similarly, the NCAA does need to provide better evidence that the GMP is indeed being implemented systematically.

The mission offers the following general recommendations (GRs) in relation to the above observations and conclusions.

(GR1): The State Party should respect paragraph 172 of the Operational Guidelines, and forward - as a matter of standard procedure - copies of all relevant development proposals and their associated Heritage and Environmental Impact Assessments to the World Heritage Centre in a timely manner.

(GR2): The NCAA should provide the World Heritage Centre and the Advisory Bodies with copies of all management related plans and regulatory instruments, preferably at the draft stage so there is still time to offer comments on their final content prior to approval and adoption.

(GR3): A comprehensive monitoring system to track progress in the implementation of the General Management Plan should be introduced as soon as possible and the resultant progress reports shared with the World Heritage Centre.

GRs 1, 2 and 3 are designed to maximise the flow of information from the NCAA to the World Heritage Committee, and to provide the latter with more opportunity to influence plans before they become *fait accompli*.

4.1 Conclusions and specific recommendations with regard to the NCA's OUV relevant to Cultural Heritage

4.1.1 Progress made in operationalisation of the MOU between the Department of Antiquities (DoA) and Ngorongoro Conservation Area Authority (NCAA)

(CR1): The State Party considers finalising the MoU between the NCAA and DoA before the 36th Session of the World Heritage Committee (St. Petersburg, 2012), and ensure implementation thereof starts immediately, and in particular prioritise the establishment of the Heritage Department as part of the formal structures of the NCAA with adequate financial and technical resources.

4.1.2 NCAA General Management Plan [2011-16]

(CR2): State Party considers prioritising and providing resources to the Cultural Heritage Department to allow for a holistic assessment of all past, current and future strategies (and as per decisions and recommendations of the WHC) for the effective management of cultural resources within NCAA towards creating a complimentary addendum to the existing GMP (2011-16) while waiting for the next cycle of the GMP review.

CR2 will ensure that the mitigation measures towards sustaining and protecting the OUV as illustrated by the cultural attributes is prioritised alongside natural attributes.

4.1.3 The requested details of the specific area and location of the palaeo-anthropological resources, including specific boundaries for Laetoli, Lake Ndutu, Nasera, and the Ngorongoro Burial Mounds and other sensitive archaeological landscapes throughout the property;

(CR3) *NCAA should prioritise the establishment of the Heritage Department at optimal levels, and in particular the engagement of a well-qualified and experienced practitioner in order to ensure that implementation commences as soon as possible.*

The World Heritage Centre and ICOMOS expressed their willingness to review the Terms of Reference (TORs) for hiring the Cultural Heritage Manager to ensure that a competent and skilled individual is appointed.

The established Heritage department should consider implementing the following 2011 recommendations;

(CR4): *Collect previously published information on the exact location of known paleo-anthropological resources (e.g. site maps) and prior excavations conducted at all major localities in the NCA to create a GIS database. Such a database can be expanded if necessary as on-going research in the NCA continues and yields results. An up-to-date GIS database could be facilitated by demanding all research teams (in terms of proposed research guidelines) to report the results of their surveys and excavations to the NCAA and the Antiquities Division.*

(CR5): *Clearly identify the boundaries of sites that have already been gazetted, such as the Nasera Rock Shelter, Olduvai Gorge, etc.*

(CR6): *Consider joining the satellite monitoring programme, as a management tool to immediately/rapidly detect any developments or negative impacts on the property.*

4.1.4 **The progress made in developing and adopting formal research guidelines for the collection, reporting, curation, and conservation of archaeological and paleo-anthropological remains that are in compliance with the Antiquities Act and other applicable international standards;**

(CR7): *The State Party considers enforcing the existing Guidelines on research and conservation within the NCA.*

Funds permitting, it should also review and produce tailor-made guidelines for the NCA with the help of the Commission for Science and Technology (COSTECH) for the effective management of collection, reporting, curation and conservation of archaeological and paleo-anthropological remains.

4.1.5 **The progress made in the establishment of conservation plans for all paleo-anthropological localities;**

(CR8): *The State Party considers prioritising the development of conservation plans for all paleo-anthropological localities by allocating adequate financial and human resources to the Cultural Heritage Department to be established as part of NCAA's new structure.*

Absence of such plans indeed affects the management of cultural attributes conveying the OUV of the property. The following site-specific issues should be considered by the State Party for attention under this overall Recommendation;

(a) *Laeotoli footprint*

In addition to the 2011 recommendations, the State Party considers implementing urgent preventive conservation strategies at the site to reduce the potential impact of the water accumulating as a result of poorly constructed drainage ways, including dealing with the vegetation growth on and around the trackway.

(b) *Zinjanthropus site; Any potential plans for the construction at the Zinjanthropus site in Olduvai Gorge;*

- Stabilize the erosion at the FLK-Zinjanthropus excavation site, and more broadly, at all excavations conducted in Olduvai Gorge and elsewhere within the NCA before any development can be considered for any of the sites. Future research projects must have a component on site stabilisation;
- Mitigate and limit the impacts of livestock at the Olduvai Gorge through a renewed participatory approach in collaboration with the pastoral communities. This could include the construction of watering holes outside the gorge and/or the identification of “safe areas” within the Gorge that are less sensitive to the detrimental impacts of livestock. This requires working together with the Maasai Pastoralist Council (*see also development of the pastoralism strategy*);
- Submit any potential plans for construction at Olduvai Gorge to the World Heritage Centre for consideration and review.

The lack a stabilisation programme at the site may is gradually leading to the destruction of the cultural attributes attesting to the OUV of the property from a cultural perspective.

(c) *Ngorongoro Crater Burial Mounds*

Collect published documentation concerning the number and location of the burial mounds. If sufficient information is not available, the team instead recommends that the NCAA conduct a detailed mapping survey of the burial mounds as a management tool to ensure their effective management and protection in the future. This work should be conducted in tandem with the mapping and establishment of site boundaries for all identified paleo-anthropological localities in the conservation area as part of creating baseline information for cultural attributes that illustrate the OUV of the property.

(d) *Nasera Rock art shelter*

- Ensure the protection of the Nasera Rock shelter from livestock through installing a psychological barrier compatible with the site as well as engaging the pastoral communities on their use of site as a shelter through the existing forum;
- Regularly (and using acceptable techniques) mitigate or limit the impacts of vegetation (trees and shrubs) to the archaeological deposits.

- Provide interpretation at the site and control visitor use, regulate potential camping at the area.

4.1.6 The requested comprehensive report on the partial excavation of the Laetoli footprints undertaken in 2011;

(CR9): The State Party considers consulting the World Heritage Committee on further developmental plans at Laetoli Footprints pending the submission of an official State Party Report on the re-excavation and re-burial with clear recommendations for consideration by the World Heritage Committee.

This follows the submission of conflicting technical reports to the State Party by institutions and individuals who participated in the re-excavation and re-burial process. The decision of the State Party of the future conservation of the site has either the potential to conserve or destroy the cultural attributes that illustrate the evolution of hominids as a key attribute illustrating the OUV of the property.

(CR10): The State Party further considers accelerating the process of establishing and convening the International Technical Committee Meeting on Laetoli which could assist in finalising the official State Party report.

The World Heritage Centre expressed its willingness to assist the State Party in fundraising for the convening of the International Technical Committee on Laetoli.

4.1.7 Effectiveness of future reactive monitoring mission reports;

In order to improve the effectiveness of future reactive monitoring mission reports and provide the State Party with an opportunity to implement the World Heritage Committee decisions and recommendations regarding cultural values the following is recommended:

(CR11): Noting the progress and consistence that the State Party has demonstrated in implementing the World Heritage Committee decisions and recommendations, especially in 2010 and 2011, the Mission recommends that the World Heritage Committee considers requesting the State Party to invite a Joint WHC/ICOMOS/IUCN reactive monitoring mission in 2014, which results should be considered at the 38th Session of the Committee.

This is in order to give the State Party enough time to implement decisions and recommendations. However, the State Party is encouraged to continue submitting its annual State of Conservation Reports to the World Heritage Centre as a standing obligation in terms of the *Operational Guidelines*.

4.2 Conclusions and Recommendations with regard to the NCA's OUV relevant to Natural Heritage

4.2.1 Criterion (vii): (contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance)

“The stunning landscape of Ngorongoro Crater combined with its spectacular concentration of wildlife is one of the greatest natural wonders of the planet. Spectacular wildebeest numbers (well over 1 million animals) pass through the property as part of the annual migration of wildebeest across the Serengeti ecosystem and calve in the short grass plains which straddle the Ngorongoro Conservation Area/Serengeti National Park boundary. This constitutes a truly superb natural phenomenon.”

The area’s OUV elements under Criterion vii are not currently under threat, providing the NCAA adheres strictly to an EIA process prior to all new developments and increases efforts to enforce the LAUs stipulated in its GMP (see also GR1 and GR2). As far as the iconic main crater is concerned, lodge developments on the crater rim have been frozen; settlement and cultivation on the crater floor are banned; access to the crater is increasingly strictly controlled with respect to both livestock and vehicles. Of some concern are proposals to harden the ascent and descent roads, and upgrade the entire road network on the crater floor, including the road from Naabi Hill to Seronera which links the NCA to Serengeti National Park. In other parts of the NCA, borrow-pits have been closed, building codes exist for both tourist facilities and pastoral dwellings, and new roads will be subject to EIAs.

The main threats to the wildebeest migration and calving grounds revolve around maintaining the quantity and quality of available grazing resources as discussed in 4.2.3 below.

(NR1) The NCAA should commission a full EIA of the proposed new borrow-pit on the crater floor, and share this with the World Heritage Centre.

(NR2) The NCAA should construct a demonstration stretch of road using the method and materials under consideration for upgrading the crater floor road network, and advise the World Heritage Centre when this is ready for inspection.

(NR3) The NCAA should carefully evaluate the options for improving the road from Naabi Hill to Seronera, in close cooperation with TANAPA, taking into consideration all potentially damaging environmental impacts, before a decision to tarmac the road is taken.

4.2.2 Criterion (viii): (be outstanding examples representing major stages of earth's history, including the record of life, significant on-going geological processes in the development of landforms, or significant geomorphic or physiographic features)

“Ngorongoro crater is the largest unbroken caldera in the world. The crater, together with the Olmoti and Empakaai craters are part of the eastern Rift Valley, whose volcanism dates back to the late Mesozoic / early Tertiary periods and is famous for its geology. The property also includes Laetoli and Olduvai Gorge, which contain an important palaeontological record related to human evolution.”

The property's fundamental geomorphic and physiographic features are essentially immutable, and as such only susceptible to threats beyond management control (e.g. volcanism and earthquake). Threats and recommendations relating to specific palaeontological sites such as Laetoli and Olduvai Gorge are addressed in sections 3.1 and 4.2.

4.2.3 Criterion (ix): (be outstanding examples representing significant on-going ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals)

“The variations in climate, landforms and altitude have resulted in several overlapping ecosystems and distinct habitats, with short grass plains, highland catchment forests, savanna woodlands, montane long grass plains and high open moorlands. The property is part of the Serengeti ecosystem, one of the last intact ecosystems in the world which harbours large and spectacular animal migrations.”

Essentially the overall diversity of NCA habitats remains undiminished, but the major concern is that the character of its grasslands in particular could change in such a way that their productivity and ability to support grazing animals become severely reduced. This in turn would endanger the NCA's ability to sustain its important resident and migratory wildlife populations. Currently, two main threats are recognised in this context, namely overgrazing and certain invasive species of plant.

Overgrazing occurs when demand persistently exceeds supply. Overgrazed areas lose cover, and weeds and other unpalatable plants, including invasive species such as *Parthenium*, are the first to recolonize the bare and heavily trampled areas. It may be many years before an overgrazed area can recover its former composition and productivity, if at all. The mission noticed many such areas in the course of its visit, but has no information on their overall extent or dynamics. Given that the demands of the wild grazers are beyond management control, efforts to minimise overgrazing necessarily centre on domestic animals and the people who keep them. Strategies include relocating people (and thereby their livestock also), improving animal health and breed quality, opening new water and salt sources, and developing new husbandry and marketing initiatives.

Whilst all of these should continue, the fact that per capita livestock holdings have been dropping suggests more effort should be put into the promotion of family planning among the pastoral communities. Since all of these measures will take time to have an effect, the NCAA should continue to provide food aid in preference to either cultivation or restocking as these measures can only aggravate pressure on available grazing resources. Overgrazing remains a major threat to the OUV of the property. While the mission considers that a carrying capacity study would no longer be helpful, alternative options should be further explored. Particularly, the lack of data on the nature and extent of overgrazing should be urgently addressed, in order to facilitate the implementation of an appropriate management response.

(NR4) The NCAA should commission an independent study on the nature and extent of overgrazing (on the short grass plains in particular), on the basis of which it should revise its monitoring programme as required, and formulate

an appropriate management response, including through the development of a comprehensive grazing management strategy.

- (NR5)** *The NCAA is encouraged to continue its efforts to arrange for the voluntary relocation of residents, by increasing the incentive to relocate.*
- (NR6)** *The NCAA should provide to the World Heritage Centre a fully detailed and costed proposal for the “RAMAT” livestock development initiative with accompanying EIA as soon as possible, including an assessment of the feasibility of locating this project outside the property.*
- (NR7)** *The NCAA should strengthen its efforts to ensure that family planning services continue to be available and promoted.*

Certain species of invasive plants can drastically affect the productivity of grasslands. This can happen with or without overgrazing, but the disturbances associated with the latter will always make invasion easier. Although the NCAA claims to have the most threatening species under control, there is one whose presence has been noted that has the potential to ruin grasslands on an ecosystem scale. This is *Parthenium hysterophorus*, whose occurrence must be very closely monitored as it is exceedingly difficult to eliminate once it really takes hold. The best method of control is to maximise competition against the weed by maintaining good grass growth. This requires exclusion of grazing livestock/wildlife until grass has become re-established, followed by a reduction in stocking rates to prevent reinvasion by the weed. These considerations reinforce the need to control overgrazing in the first place.

- (NR8)** *The NCAA, while commended for its success in controlling invasive species, should increase its efforts to monitor closely the distribution and abundance of invasive plant species (Parthenium in particular), and put in place as required a clear invasive species control strategy in consultation with IUCN.*

It is important to note that while it is important to avert rangeland degradation in order to protect the property’s OUV, failure to do so would also impact negatively on the pastoralists’ ability to subsist on their livestock. In other words maintaining range quality is of equal interest and importance to both management and residents. An effort should therefore be made to ensure the pastoralists understand this, as they will then be more likely to cooperate and collaborate in voluntary relocation and livestock development initiatives.

- (NR9)** *It is recommended that the NCAA makes a renewed effort through its Ujirani Mwema meetings to explain to the people that the Authority’s strategies to reduce the size and improve the quality of domestic herds are very much in the pastoralists’ own long term interests also.*

- 4.2.4 Criterion (x):** (contain the most important and significant natural habitats for in-situ conservation of biological diversity, including those containing threatened species of Outstanding Universal Value from the point of view of science or conservation)

“Ngorongoro Conservation Area is home to a population of some 25,000 large animals, mostly ungulates, alongside the highest density of mammalian predators in Africa including the densest known population of lion (estimated 68 in 1987). The property harbours a range of endangered species, such as the Black Rhino, Wild hunting dog and Golden Cat and 500 species of birds. It also supports one of the largest animal migrations on earth, including over 1 million wildebeest, 72,000 zebras and c.350, 000 Thompson and Grant gazelles.”

The protection afforded to wildlife in the Crater is excellent as it is under constant surveillance from more than a dozen observation points distributed around the rim. These positions are manned on a 24/7 basis, each providing shelter, cooking and sleeping facilities for two Rangers equipped with powerful binoculars, night-vision scopes and radios that enable communication with superiors in HQ, a patrol vehicle on the crater floor, and the other posts. While nowhere can ever be 100% safe from poachers, this system makes the Crater one of the most important in-situ refuges for the endangered Black Rhinoceros in particular. It also sustains the very high densities of both predators and prey that contribute to these OUVs. The numbers of individual species can and do fluctuate according to disease and other natural factors, notably the lion population (which presently exceeds 80 in the Crater alone), but the overall spectacle remains superlative.

Outside of the Crater wildlife is more vulnerable, but other than for a recent spate of illegal logging for Sandalwood (*Osiris lanceolata*), and the loss of 3 elephants in the forest, the impact of poaching cannot presently be perceived as a significant threat to the OUV. It must be recognised that much of the credit for this state of affairs is due to the resident Maasai continuing to maintain their traditional tolerance of wildlife. This as much as anything sustains the NCA’s vital contribution to the conservation of an outstanding phenomenon of global importance, namely calving grounds for the great wildebeest migration. However, it should be noted that the issue of overgrazing, if not adequately addressed, could have a direct and significant negative impact on the exceptional productivity of the grasslands that sustain the high biological diversity that justifies the inscription of the property under criterion (x).

(NR10) The NCAA and the resident communities are commended for the protection afforded to the migratory wildebeest, Black Rhino and all other species whether endangered or not, but in view of the present upsurge in poaching elsewhere in Africa are urged to not relax their vigilance.

5. ANNEXES

1. Terms of reference
2. Itinerary and programme
3. Composition of mission team
4. Meeting attendance registers
5. Documents provided by the State Party during the Mission
 - 5.1. Draft MoU between NCA and DOA
 - 5.2. Laetoli Archaeological Final Report (Prof Musiba)
 - 5.3. Cultural Heritage Research Guidelines
 - 5.4. General Management Plan [2006-2016] January 2010 revision
 - 5.5. Laigwanak Study Tour-Uganda
 - 5.6. Livestock Improvement Report-RAMAT
 - 5.7. The Re-location project to Jama Oldonyo Sambu report
6. Photographs