

**FINANCIAL AND ECONOMIC EVALUATION
OF THE GONDWANA COLLECTION OPERATIONS
AND ALTERNATIVE LAND USE OPTIONS.**

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Executive summary

This report presents results from a financial and economic evaluation of the Gondwana Collection operations, and compares returns from tourism enterprises to those of alternative agricultural land uses. This study builds on earlier work to estimate comparative land use returns for the Gondwana Canyon Park and freehold and communal stock-keeping undertaken in 2003 (Barnes and Humavindu 2003).

The analysis updates and extends the comparison for the Gondwana Canyon Park (about 95 mm mean annual rainfall), and for the first time includes the Gondwana Namib Desert Park (about 70 mm rainfall, with the Namib Desert lodge and Dune Star camp), Gondwana Kalahari Park (195 mm rainfall with Anib lodge), and the Namushasha River Lodge in the Mashi Conservancy in the Zambezi Region (about 560 mm rainfall).

In the south and west of the country the three Gondwana parks and their tourism enterprises are compared with freehold large-scale stock-keeping, and with traditional small-scale stock-keeping. Traditional small-scale stock-keeping and crop cultivation were modelled as the alternative land-uses to tourism in the Zambezi Region. A further extension of the original study is the estimation of key indicators for the aggregated tourism holdings of the Gondwana Collection for comparison with national tourism industry statistics for Namibia. A range of financial and economic indicators were estimated by the enterprise models, using actual financial data for each of the individual tourism enterprises, as well as for the economic contribution of the Gondwana Collection.

Modelled results indicate that both the financial returns and financial rates of return from tourism enterprises in southern and western Namibia are considerably higher than those for stock-keeping, under both freehold and communal farming. For both freehold and communal stock-keeping, per hectare revenue and expenditures were remarkably similar, except for the fixed costs for freehold stock-keeping. Relatively high fixed costs for freehold stock-keeping were apparently driven by high management costs, which meant that net cash income per hectare and per large stock unit equivalents (LSU) for freehold stock-keepers was negative. LSUs are an estimate of biomass, where different types and classes of livestock and wildlife are calculated as the equivalent of a 450-kilogram bovine steer or ox.

Returns from tourism enterprises in the southern and western regions of Namibia were at least 34 times greater than those from communal and freehold stock-keeping in terms of

net value added per hectare. In fact, net value added was estimated at just N\$0.06 per hectare and N\$2 per hectare for freehold and communal stock-keeping respectively. Net value added per hectare for tourism varied, estimated at N\$69, N\$342 and N\$516 per hectare for Gondwana Canyon Park, Gondwana Kalahari Park and Gondwana Namib Desert Park respectively.

Southern Namibia	Karas communal livestock	Karas freehold livestock	Gondwana Canyon Park	Gondwana Kalahari Anib Park	Gondwana Namib Dune & Desert Park
Enterprise size (ha)	2,330	126,000	126,000	9,656	12,500
Core area (ha)	2,330	78,561	78,561	9,656	12,500
Per enterprise					
Employment	2	22	96	39	66
Net cash income	185	59,804	8,989,667	5,064,188	8,085,869
Project FRR (@10 Years)	2%	10%	13%	17%	23%
Gross value added (GNI)	6,416	284,322	10,411,677	4,871,385	7,217,344
Net value added (NNI)	3,912	103,818	8,656,346	3,305,836	6,197,202
Per hectare					
Gross value added (GNI)	3	2	83	504	601
Net value added (NNI)	2	0.8	69	342	516

The Gondwana tourism enterprises in the three parks also generated higher employment levels than the land under livestock farming – between 0.76 and 5.5 jobs/1,000 ha, compared to 0.69 jobs/1,000ha under communal livestock farming, and just 0.23 jobs/1,000 ha under freehold livestock-farming. Tourism returned not only higher total wage and salary bills to local communities (assuming non-managerial employees are Namibians), but the average wage paid to unskilled workers in tourism was in excess of double that of the mandated minimum farm worker salary.

In the Zambezi Region, total financial returns at the enterprise level from tourism were significantly higher than for cropping and stock farming, with stock-keeping generating the lowest returns at the per hectare level. Economic returns (net value added) for the Namushasha River Lodge enterprise whether estimated across the 150 ha exclusive tourism zone, or across the whole of the Mashi Conservancy are by far the highest of the three land uses. Namushasha River Lodge employs 43 Namibian staff, and returns a higher (non-managerial) wage and salary-bill to local community members, compared to the estimated one job for stock-keeping and less than one job per hectare for cropping.

Zambezi Region	Namushasha River Lodge	Zambezi Region stock	Zambezi Region cropping
Enterprise size (ha)	150	180	2
Per enterprise			
Employment	45	1	1
Net cash income	2,962,811	16,498	445
Project FRR (@10 Years)	5%	20%	-2%
Gross value added (GNI)	2,845,270	10,720	1,063
Net value added (NNI)	2,759,125	8,957	754
Per hectare			
Gross value added (GNI)	18,968	60	626
Net value added (NNI)	18,394	50	443

The contribution of the Gondwana Collection to the Namibian national tourism industry was difficult to determine, given the lack of available national tourism industry data, and with sources being available only in highly aggregated forms (and in some cases, with conflicting data amongst sources). However, a number of comparisons can be drawn. The Gondwana Collection offered 856 beds in 2014, rising to 910 in 2016 which may comprise as much as 10% of total beds available nationally. The Collection had an average occupancy rate of 56%, significantly higher than the industry average of 40%. Five hundred and fifty people were employed by the Gondwana Collection in 2014. Approximately 24,000 total travel and tourism jobs are said to exist in the country (approximately 4.5% of total employment), though it is not clear how many of these are employed in the accommodation sector. For the Gondwana Collection as a whole, economic net value added for 2014 was estimated to be N\$13.2 million, N\$88 per hectare, and N\$3,214 per LSU (as calculated on wildlife populations). Financial rates of return were estimated at 6.3%, and the economic rate of return was calculated as 11.5%. These estimates cannot be compared with the size of the national industry, the direct contribution of which is estimated to be 3% of gross domestic product (GDP), rising to almost 15% of GDP if indirect and induced contributions are considered.

As part of the risk analysis, three risks in particular were identified that are perceived to have a combination of high or extreme likelihood and significant impacts. Strategies to deal with these were also identified. The first is the potential market implications of climate change, particularly from growing concerns regarding long haul aviation emissions. In order to manage this, it is recommended that Gondwana adopts principles of sustainability as an eco-efficient destination. This could include calculating the carbon footprint per guest-night at each lodge, implementing policies and actions to minimise the footprint and using this prominently as part of the marketing strategy.

The second extreme likelihood risk identified is that the forthcoming Land Bill will impact on governance and transactions models around farmland, impacting on intra-trading of shares over farmland and likely introducing additional regulatory requirements such as Competition Commission validation and screening. It is recommended that the Gondwana Collection act as an industry advocate when these developments are circulated for stakeholder input.

The final significant risk identified is associated with the Namibia Economic Empowerment Framework (NEEF) Bill. The new bill will require the promotion of previously disadvantaged Namibians into ownership and managerial platforms across all sectors. The Gondwana Collection should monitor developments and continue expanding its empowerment initiatives that are already evident in the group at all levels, in addition to aligning current empowerment initiatives within the group with the defined scorecards of the NEEF Bill.

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1 Introduction

The purpose of this report is to update and extend the work by Barnes and Humavindu (2003) which examined the tourism development in the then 80,000 ha Gondwana Cañon Park (now named Gondwana Canyon Park) in the south of Namibia, bordering to the immediately east of the/Ai-/Ais Hot Springs Game Park, and compared these enterprises with the alternative land uses of freehold and small-scale communal livestock farming.

This study extends that original work by reviewing the situation of the now 125,000 ha Gondwana Canyon Park and including for the first time the Gondwana Namib Desert Park (12,500 ha bordering onto the Namib-Naukluft National Park about 70 km north of Sesriem, with the Namib Desert Lodge and Dune Star Camp) and the Gondwana Kalahari Park (10,000 ha, about 30 km west of Stampriet, with Anib Lodge), as well as the Namushasha River Lodge on the Kwando River in the Zambezi region (150 ha exclusive use zone within the 29,500 ha Mashi Conservancy). Details of these four study sites are set out in Table 1.

Table 1 Summary of the four Gondwana study sites

Sites	Gondwana Canyon Park	Gondwana Namib Desert Park	Gondwana Kalahari Park	Namushasha Tourism Concession
Regions	Karas	Hardap	Hardap	Zambezi
Land tenure	Freehold	Freehold	Freehold	Leasehold on communal
Area (ha)	125,000	12,500	10,000	150*
Rainfall (mm)	95	70	190	560
Lodges	Canyon Lodge Canyon Village Canyon Roadhouse	Namib Desert Lodge Dune Star Camp	Kalahari Anib Lodge	Namushasha River Lodge
Camp sites	Yes	Yes	Yes	Yes
Number beds	202	156	114	53
Ha/bed	619	80	88	3
Occupancy (2014)	51%	62%	51%	61%

*Exclusive tourism zone in the Mashi Conservancy

In the south of the country on the freehold land (below the Veterinary 'red line'), the study compares three land uses:

- (a) commercial, nature-based tourism with lodge (and campsite) development for wildlife-viewing tourists;
- (b) freehold large-scale small-stock (mostly karakul sheep) production, with limited use of wildlife; and
- (c) traditional, small-scale, small-stock (sheep and goat) production, as practised, for example, in semi-arid communal lands to the east and north of the Gondwana Canyon Park.

Alternative land uses in the Zambezi Region were:

- (a) commercial, nature-based tourism with lodge (and campsite) development for wildlife-viewing;
- (b) traditional small-scale, cattle production, as practised in northern woodland communal lands; and
- (c) traditional, small-scale crop cultivation, a composite of the three grains (maize, sorghum and millet).

A further extension of the original study is the estimation of key indicators for the aggregated tourism holdings of the Gondwana Collection in order to provide measures intended to be comparable with national tourism industry statistics for Namibia.

2 Methods and models

The methods and models used for this analysis are based on those used in Barnes and Humavindu (2003), and are described in detail in that report (the detailed methods can be found in Appendix 1, quoted directly from the original report). The methods are summarised below (from Barnes and Humavindu 2003, unless otherwise indicated), as are data sources and changes or amendments to the original models.

Financial incomes and expenditures are those that are incurred by individuals or businesses during the operation of their enterprise (e.g. cropping, livestock farming, tourism enterprises). Thus, the financial analyses estimate private profitability, or the private benefits derived from the activity of an enterprise. Gross financial income is revenues received, while net cash income (or profit) is calculated by subtracting variable and fixed (or operating) costs from gross financial income.

In contrast, the economic analyses (e.g. gross and net national income) are measures of economic efficiency, and estimate the wider economic benefits associated with the operation of an enterprise. The differences between financial and economic estimations reflect the influence of policy and market imperfections.

In order to calculate these economic measures, financial indicators have been adjusted to reflect the opportunity costs, or the value of the best alternative use of that resource. The adjustments made by these models were the elimination of domestic taxes and subsidies (where these were known), an adjustment to the value of tradable goods to reflect excess demand for foreign exchange (an increase of 4%), and an adjustment to unskilled labour costs to reflect unemployment (a decrease of 46%).

Gross economic income is the estimate of the economic benefit of the enterprises, but with a positive adjustment (4% in these models) for the foreign exchange brought in as a result of enterprise operations. Gross value added (or gross national income, GNI) is calculated by subtracting economic costs and adjustments from gross economic income. The economic costs adjust the financial value calculations to include consideration of the opportunity costs of capital and labour, foreign inflows and outflows, exchange rates and taxes. Net value added (net national income, NNI) is calculated by subtracting economic depreciation from GNI. Gross national income is the income received by labour and capital from the sale of their services to production in the form of wages, rent and net income.

As detailed in Barnes and Humavindu (2003) large stock unit equivalents (LSU) were used to estimate biomass – whether wildlife or livestock – as the metabolic mass equivalent of a 450-kilogram bovine steer or ox, as determined for various species and intra-specific age groups. Financial and economic estimates per LSU for tourism enterprises are based on wildlife LSU, while those for stock farming enterprises are based on domestic stock LSU.

2.1 Data sources

Detailed Excel spreadsheets were created by Barnes, as representative examples of land uses, using both primary and secondary data, and they calculate annualised income statements and ten-year cost-benefit and investment analyses. As described above, several models were used and adapted as appropriate.

One base tourism enterprise model for southern Namibia was used to construct for the tourism enterprises within the Gondwana Canyon, Kalahari and Namib Desert parks. A separate base model was used to construct the Namushasha River Lodge model in the Zambezi region, to take account of the differing conditions (e.g. land tenure, wildlife populations, etc.) compared to the south. The data for these models was drawn largely from the actual financial and wildlife data from the Gondwana Collection for the financial year 2014. The value of fixed and variable capital (including wildlife) was estimated for the individual tourism enterprises, but actual data was used for the aggregate Gondwana Collection model.

The financial data from current company operations formed the basis for the assessment of the direct economic contributions and comparisons of the Gondwana Collection, in aggregate, with the national tourism economy, as found in Section 0.

Values for the agricultural enterprise characteristics were extracted from published and unpublished empirical data sources, including Barnes and Humavindu (2003) and Humavindu *et al.* (2011) and updated with information from NSA (2015) and NAB (various), as well as intensive discussions with the National Horticulture Task Team. These were used to derive ‘typical’ budgets and cost-benefit models, representing long-term average conditions for a Karas freehold stock-keeping model, a Karas communal stock-keeping model, a Zambezi stock-keeping model and a Zambezi cropping model. All of the enterprise models used updated economic parameters, as derived in Humavindu (2013).

Due to inaccessibility of the appropriate models, small-scale fishing, timber and wood product extraction activities, and other natural product collection and utilisation activities were not modelled. This likely has resulted in the underestimation of the actual value of the comparison with the tourism values for the Namushasha River Lodge. Also used data from Turpie *et al.* (1998) to estimate non-agricultural income for households. Income for the eastern Caprivi/Chobe floodplains (as they were then known) was estimated for various natural resource-based activities, including fishing, reeds and papyrus, palms, grass and wild foods. Across the wetlands, these activities contributed approximately 43% of gross economic and gross financial value (excluding tourism). Thus, comparisons of financial and economic values for the Zambezi region are partial, as only tourism, small-scale cattle and cropping activities have been modelled. Thus, total economic and financial values of non-tourism activities considerably underestimate actual values generated across the Mashi conservancy, given the absence of viable models to estimate these natural-resource based values.

3 Results and discussion

3.1 Comparisons of individual lodges with alternative land uses

Using the actual financial data for each of the southern Namibian lodges, as well as data for freehold and communal livestock-keeping, the models estimate a range of financial and economic indicators to enable the comparison of returns between the different land uses. Note that the estimates presented in the first part of the table are calculated per enterprise, so potentially the most accurate comparison (in terms of land use returns) is the comparison per hectare.

Table 2 Comparative base-case financial results, southern Namibia, N\$

	Karas communal livestock	Karas freehold livestock	Gondwana Canyon Park	Gondwana Kalahari Anib Park	Gondwana Namib Dune & Desert Park
Per enterprise					
Enterprise size (ha)	2,330	126,000	126,000	9,656	12,000
Core area (ha)	2,330	78,561	78,561	9,656	12,000
Employment	2	22	96	39	66
Gross income	25,208	1,972,255	36,066,878	19,045,927	27,713,601
Variable costs	13,775	908,463	16,613,698	9,897,115	12,703,387
Fixed costs	11,248	1,003,988	10,463,513	4,084,624	6,924,345
Net cash income	185	59,804	8,989,667	5,064,188	8,085,869
Project FRR (@10 Years)	2%	10%	13%	17%	23%
Project FNPV (@ 8% @10 Years)	-50,327	156,907	10,330,158	8,641,274	23,611,526
Per hectare					
Gross income	11	16	286	1,972	2,309
Variable costs	6	7	132	1,025	1,059
Fixed costs	5	8	83	423	577
Net cash income	0.08	0.47	71	524	674
Per LSU*					
Gross income	564	2,264	11,279	28,630	111,259
Variable costs	308	1,043	5,195	14,878	50,999
Fixed costs	252	1,153	3,272	6,140	27,799
Net cash income	4	69	2,811	7,613	32,462

* As noted above, LSU is calculated for domestic stock for communal and freehold livestock farmers, and for wildlife for tourism enterprises.

It can be seen from Table 2 that the returns from tourism enterprises are considerably higher than those for stock-keeping, whether freehold or communal, as well as having much higher financial rates of return. The per hectare income and expenditures of communal and freehold stock-keeping are surprisingly similar, except for fixed costs which in the case of freehold stock-keeping are driven by the comparatively high cost of management. Indeed, apparently driven by these relatively high fixed costs, net cash income per hectare and per LSU for freehold stock-keepers is negative. The very low net

cash income for the communal stock-farming enterprise is largely due to the assumption that farm workers are paid the minimum wage; if these workers are family members, it is likely that wages would be lower, or not paid at all, but living expenses drawn from enterprise revenue. Thus, net cash income is thought for these enterprises is thought to be underestimated in these models.

The tourism enterprises generated higher employment levels than livestock-keeping, of between 0.76 to 5.5 jobs/1,000 ha, compared to 0.69 jobs/1,000 ha in communal stock-keeping and just 0.23 jobs/1,000 ha in freehold stock-keeping.

The models assuming that all non-managerial employees are hired locally (i.e. within Namibia), and the wage and salary bill associated with these employees is N\$4,089,057 at the Gondwana Canyon Park, N\$1,350,308, at the Kalahari Anib Lodge, N\$1,810,512 at the Namib Desert and Dune. The average annual wage for unskilled workers in 2014 was N\$34,989 at the Kalahari Anib Lodge, N\$30,686 at the Namib Desert and Dune and N\$41,303 at the Gondwana Canyon Park. These unskilled tourism employees are earning wages considerably in excess of the minimum annual wage for farm workers, which is N\$10,656–15,456 (depending on whether they must live on-farm or not)

From both the financial and economic indicators, it can be seen that tourism enterprises, based on the use of large landscapes and wildlife, are extremely competitive when compared with stock-keeping, either by freehold or communal producers, whether judged on an enterprise, per hectare or per LSU basis. While the differences in (gross or net) economic returns between communal and freehold appear substantial on a per enterprise basis, this is largely due to the differences in enterprise size. The differences are small on a per hectare basis, with communal stock-keeping generating a slightly higher net value added, though per LSU, freehold stock-keeping has a higher net value added.

Table 3 Comparative base-case economic results, southern Namibia, N\$

	Karas communal livestock	Karas freehold livestock	Gondwana Canyon Park	Gondwana Kalahari Anib Park	Gondwana Namib Dune & Desert Park
Per enterprise					
Economic gross output	28,135	1,879,544	33,104,169	17,049,734	24,582,425
Economic costs	21,719	1,595,222	22,692,492	12,178,348	17,365,081
Gross value added (GNI)	6,416	284,322	10,411,677	4,871,385	7,217,344
Net value added (NNI)	3,912	103,818	8,656,346	3,305,836	6,197,202
ERR (@10 Years)	14%	22%	23%	24%	31%
ENPV (@ 8% @10 Years)	42,320	4,350,823	48,571,627	20,527,798	37,751,978
Economic capital cost/job	45,893	332,492	476,392	485,883	371,555
Per hectare					
Total economic capital	51	58	363	1,962	2,044
Economic gross output	12	15	263	1,766	2,049
Economic costs	9	13	180	1,261	1,447
Gross value added (GNI)	3	2	83	504	601
Net value added (NNI)	2	0.8	69	342	516
Per LSU*					
Total economic capital	2,668	8,399	14,302	28,485	98,449
Economic gross output	629	2,158	10,352	25,629	98,689
Economic costs	486	1,832	7,096	18,307	69,714
Gross value added (GNI)	143	326	3,256	7,323	28,975
Net value added (NNI)	87	119	2,707	4,969	24,879

* As noted above, LSU is calculated for domestic stock for communal and freehold livestock farmers, and for wildlife for tourism enterprises.

A range of financial and economic indicators were also estimated for enterprises in the Zambezi Region of the country. The results of these models are presented below (Table 4 and Table 5), where Namushasha is compared with communal stock-keeping and cropping agriculture. The latter two activities are often located in overlapping areas, and so should not be considered as alternative land uses to each other; many households (especially those who are relatively wealthy and can afford livestock) undertake both of these activities within the household.

These calculations underestimate total land use returns from 'traditional' uses in the Zambezi region, given the absence of estimates for activities such as fishing, and the collection of forest and woodland products such as timber, thatching grass and reeds. These activities frequently also overlap both geographically and as household activities with both cropping and stock-keeping in the Zambezi region.

Table 4 demonstrates that returns at the enterprise level are by far the highest from tourism, overall and at the per hectare level. While at the enterprise level, stock-keeping

generates a higher cash income than cropping, per hectare returns are higher for cropping than for stock-keeping.

The per hectare estimates for Namushasha have been calculated across the 150 ha exclusive tourism use zone of the Mashu conservancy. However, if they are re-calculated on the basis of the whole 29,500 ha of the conservancy (arguably as this represents more accurately the land area required for a wildlife-intensive tourism attraction), then financial gross income per hectare is estimated at N\$435, variable financial costs per hectare to be N\$141, fixed financial costs per hectare at N\$177, and a net cash income of N\$117.

Table 4 Comparative base-case financial results, Zambezi Region, N\$

	Namushasha River Lodge	Zambezi Region stock	Zambezi Region cropping
Per enterprise			
Enterprise size (ha)	150	180	2
Concession Stock	478	35	0
Gross income	12,825,686	35,225	2,203
Variable costs	4,168,883	8,050	1,758
Fixed costs	5,693,992	10,677	0
Net cash income	2,962,811	16,498	445
Local wage income	1,548,854	23,518	445
Land rental	659,170	0	0
Project FRR (@10 Years)	5%	20%	-2%
Project FNPV (@ 8% @10 Years)	-4,604,117	48,792	-7,327
Per hectare			
Gross income	85,505	196	1,296
Variable costs	27,793	45	1,034
Fixed costs	37,960	59	0
Net cash income	19,752	92	262
Local wage income	10,326	131	262
Land rental	4,394	-	-
Per LSU (stock/wildlife only)*			
Gross income	26,837	1,006	-
Variable costs	8,723	230	-
Fixed costs	11,914	305	-
Net cash income	6,200	471	-
Local wage income	3,241	672	-
Land rental	1,379	-	-

* As noted above, LSU is calculated for domestic stock for livestock farmers and for wildlife for tourism enterprises.

Estimates are calculated per LSU for both Namushasha River Lodge and for stock for stock-keeping (for wildlife and domestic stock respectively), but are not relevant for cropping activities. These calculations enable a comparison to be made of returns per LSU

between the Zambezi Region, the southern Gondwana parks tourism and southern livestock enterprises. For both stock-keeping and tourism in the Zambezi Region, returns per LSU are in the mid- to lower-end ranges of those possible in the southern region.

Namushasha River Lodge employed 43 Namibians in 2014 (0.29 per hectare). Gross wages and salaries going to conservancy members was in excess of N\$1.5 million. Employment is modelled at approximately one permanent worker each for the stock-keeping and cropping enterprises (0.006 and 0.63 per hectare) respectively.

Table 5 Comparative base-case economic results, Zambezi Region, N\$

	Namushasha River Lodge	Zambezi Region stock	Zambezi Region cropping
Per enterprise			
Economic gross output	11,337,906	27,807	2,647
Economic costs	8,492,637	17,087	1,584
Gross value added (GNI)	2,845,270	10,720	1,063
Net value added (NNI)	2,759,125	8,957	754
ERR (@10 Years)	14%	22%	3%
ENPV (@ 8% @10 Years)	5,851,913	69,066	-2,487
Economic capital cost/job	239,742	65,786	48,847
Per hectare			
Total economic capital	68,726	475	5,305
Economic gross output	75,586	154	1,557
Economic costs	56,618	95	932
Gross value added (GNI)	18,968	60	626
Net value added (NNI)	18,394	50	443
Per LSU (stock/wildlife only)*			
Total economic capital	21,571	2,443	-
Economic gross output	23,724	794	-
Economic costs	17,770	488	-
Gross value added (GNI)	5,954	306	-
Net value added (NNI)	5,773	256	-

* As noted above, LSU is calculated for domestic stock for communal and freehold livestock farmers, and for wildlife for tourism enterprises.

Economic returns for tourism as calculated across the 150 ha exclusive tourism zone, as with financial returns, also far exceed the returns from alternative land uses. However, when calculated across the whole of the 29,500 ha Mashi Conservancy, tourism economic gross income per hectare is N\$384, economic costs per hectare fall to N\$288, and both gross and net value-added fall to N\$96 and N\$94 respectively.

3.2 The Gondwana Collection and the Namibian tourism industry

It was the intention to compare the Gondwana Collection with national tourism statistics to try to determine Gondwana's contribution. Unfortunately this has not been possible, due to the dearth of information about the national tourism industry, particularly with respect to the accommodation sector and the nature-based segment of the market that is targeted by the Gondwana Collection. Further, it is not always clear what the source of some available data is, and therefore how accurately it reflects the situation 'on the ground'. It should also be noted that the various sources of Namibian tourism statistics frequently utilise terminology differently (for example, the World Travel and Tourism Council define leisure tourists as including those travelling to visit friends and relative, while the Millennium Challenge Account data do not). This means that, while superficially data often appear comparable, they in fact refer to different things, making comparisons difficult if not impossible. However, it is possible to glean an initial understanding of the Gondwana Collection within the national industry by examining major national trends and indicators, to see how the aggregate figures for the Collection compare.

3.2.1 Foreign visitor arrivals and holiday tourists in Namibia

Namibia receives in excess of one million foreign arrivals (1,176,000 in 2013)¹(WTO 2015). Total arrivals have increased slowly since 2009, but some data suggests that this increase only holds for African source markets, with declines from others (MET 2011). In 2013, there were an estimated 422,000 visitors who were said to be visiting primarily for holidays, leisure and tourism, a share of 36% of total arrivals, which has declined from 44% in 2010(WTO 2015). The 2012/13 visitors survey indicated the breakdown of total arrivals by purpose of visit as being 39% holiday, 27% business, 25% visiting friends and relatives (VFR) and 9% 'other' purposes (MCA 2013).

The main source markets (all arrivals) in Namibia are Angola, South Africa, Germany, Zambia, Zimbabwe, Botswana, UK, USA, France and Netherlands (MET 2011). Of those visitors whose purpose of travel is for holidays, the three main source countries are South Africa (36%), Germany (17%), Angola (10%), with other important source markets being Botswana, Zimbabwe, UK, France, Italy and the USA(MCA 2013).The majority of visitors from Europe (including the UK) and the USA visit Namibia for holiday & leisure purposes (MET 2011).

¹ Foreign visitor arrivals are one example where tourism statistics (supposedly derived from Namibian national data) can differ, as the WTTC report suggested that the country was expected to attract 1,175,000 arrivals in 2014 (WTTC 2014).

Of leisure, recreation and holiday visitors, 66% were self-booking, 22% arranged their trip through travel agents/tour operator, and 12% using 'other' means (MCA 2013). Further, only 15% of 'holiday' tourists travelled alone; and of those not travelling alone, more than 50% were travelling as part of a couple (MCA 2013). While not a strict relationship, those tourists self-arranging and travelling in small numbers are thought to be largely 'independent' tourists, and it is likely that the high proportions of these apparently independent tourists are inflated by the large number of South African and Angolan tourists (many of whom also seem to be repeat visitors and, in the case of Angolans, are mainly in Namibia for shopping, medical and educational purposes and for business). It is likely that higher proportions of European and North American tourists travel in an organised group, the majority of whom are on their first trip to Namibia.

The average length of stay of all foreign arrivals is on average nine nights. The average length of stay for non-business visitors (i.e. including VFR) is 12 nights, but differing somewhat according to source country: on average visitors from the UK and France stayed 14 nights, German visitors stayed 18 nights, while those from Italy and the USA stayed 3 nights (MCA 2013). Other sources report the average length of stay as being between 17 and 19 nights (WTO 2015), and declining 2 days since 2010 (MET 2011).

According to the 2012/13 visitor survey, the places visited by more than 10% of holiday tourists included Windhoek², Swakopmund, Etosha (visited by approximately 53% of holiday tourists), Sossusvlei (approximately 45%), Walvis Bay, Fish River Canyon (just under 30%), Damaraland, Namib Naukluft (more than 20%), Lüderitz and Spitzkoppe (MCA 2013).

The most popular activities for all foreign arrivals are shopping 54%, game viewing 29%, nature/landscape touring 26%³ and hiking/trekking 14%. The latter three activities are also the most popular for holiday tourists, but which may not overlap greatly with those tourists coming primarily for shopping (MCA 2013).

It is difficult to derive the total tourist expenditure of those international visitors arriving primarily for holidays. However, on average, total (self-reported) visitor expenditure is N\$1,840 per night, an average inflated by the combination of large numbers of Angolan

² It's not clear from the data whether Windhoek is a distinct destination, or the arrival or departure point, as many arrive on international flights through Hosea Kutako International airport.

³ While these data have been divided into the distinct categories of game viewing and nature/landscape tourism, it is thought that these categories are likely to be viewed largely as one and the same activity by many leisure tourists.

visitors and their high expenditure levels (exceeding N\$3,000/night). For those tourists visiting for holidays, expenditure averaged N\$1,267, somewhat higher than the average for VFR tourists (N\$865/night). Though accurate comparisons are not possible due to changes in the data collection methodology, overall trip expenditure may have increased by between 10–16% per annum between 2002 and 2012 (MCA 2013).

Holiday tourists report spending approximately 38% on accommodation, 15% on food and drink, 28% on local transport, 11% on shopping, 6% on entertainment and 2% on other items (MCA 2013). This excludes the cost of transportation (typically international flights) to Namibia.

Total tourism expenditure was estimated at US\$524 million in 2013, of which approximately US\$411 million was said to be personal (i.e. as opposed to business and professional travel). It is not possible to determine the proportion spent by holiday tourists, as the 'personal' category also includes visitors classified as travelling for 'other personal purposes' (WTO 2015).

3.2.2 Guests and accommodation establishments in Namibia

It appears that the two largest groups of foreign visitors staying in accommodation are holiday and business tourists. Those VFR foreign arrivals reportedly stay largely with the family and friends they are coming to visit. Unfortunately, detailed data is unavailable.

International guests accommodated reportedly increased from 769,000 to 873,000 between 2009 and 2013, though guest numbers were highly variable across those years; with a high of 914,000 in 2010 and 2012, and a low of 739,000 in 2011. Over the same period, domestic guests accommodated increased from 287,000 to 581,000 (with a huge increase to 446,000 in 2010) (WTO 2015). It should be noted that this is virtually the only piece of relatively easily available quantitative information available regarding domestic tourism in Namibia.

In 2013, the reported number of accommodation establishments for visitors was 535 (with figures generally declining from 2009), of which 276 were classed as 'hotels and similar establishments'. These hotels and similar reportedly had 4,438 rooms and 8,570 beds (and thus an average number of almost 32 beds/establishment) (WTO 2015). However, the Federation of Namibian Travel Associations reported that there were 1,171 accommodation establishments registered with the Namibian Tourism Board in 2006 (FENATA 2007). It is not clear what the cause of the significant difference was – whether

because of data discrepancies, or a significant decline in accommodation establishments. Some 1,122 other regulated businesses (tour operators, transportation, hunting operators, booking agents, vehicle rental, etc.) were also registered in 2006 (FENATA 2007). There is no more recent information available on these businesses.

The peak season for holiday visitors to Namibia is between July and September (43% of arrivals), with a lesser peak during March/April for holiday-makers mainly from South Africa. These are also the times of peak bed occupancy rates, with August alone accounting for 38% of annual bed occupancy (MET 2011).

Average annual room occupancy rates in Namibia were reportedly 30% in 2011 for the sector as a whole, a small improvement on 2010 – the tourism industry was still feeling the effects of the 2008 global financial crisis at that time, reflected particularly in the reduction of European (including UK) tourists as a result of the slow economic recovery in Europe (PwC 2012). By 2014, occupancy rates per room had recovered somewhat, and were reported to be 40% (WTO 2015).

3.2.3 National economic contributions

Inbound tourism expenditure over gross domestic product (GDP) reportedly declined from 5.8% in 2009 to 4.6% in 2012 (WTO 2015). Unfortunately, the source of these data does not provide any analysis of what the cause of the decline might be (e.g. whether it could be attributed to a decline in tourism expenditure, or simply a disproportionate increase in one or more non-tourism industries).

There is no data available that estimates the economic contribution of the tourism accommodation sector in Namibia, the only data available estimate the direct contribution of travel and tourism as a whole. This direct contribution includes commodities (accommodation, transport, entertainment, attractions); industries (accommodation services, food and beverage services, retail trade, transportation services, cultural, sports and recreational services); and sources of spending (residents' domestic travel and tourism spending, businesses' domestic travel spending, visitor exports, individual government travel and tourism spending) (WTTC 2014).

In 2013, one estimate of this direct contribution of travel and tourism to GDP was N\$3,126.5 million, or 3% of total GDP, with a forecast that it could rise by 7% in 2014. The estimate of the total contribution (i.e. including indirect or induced contributions) was considerably larger, at almost 15% of GDP. In the same year, visitor exports

generated N\$6,597 million (or 8% of total exports), with investment in travel and tourism estimated to be N\$3,545 million (or 11.5% of total investment) (WTTC 2014).

In 2013, travel and tourism directly supported 24,000 jobs, an estimated 4.5% of total employment, which was expected to rise by 8% in 2014 (i.e. to around 24,950). The total contribution of travel and tourism (i.e. including indirect and induced contributions) reportedly supported in excess of 100,000 jobs, or 19% of the total job market (WTTC 2014). However, it is not clear what the base assumptions or source data are for these estimates.

3.2.4 Gondwana Collection

The Gondwana Collection had a total of 856 beds in 2014, increasing to 910 beds in 2016, and operates on a land area of approximately 150,000ha. The Collection is estimated to have about 10% of the total 8,570 beds in the 'hotels and similar establishments' category⁴, but its occupancy rate of 56% is considerably above the estimated industry average of 40% for 2014 (though the Collection estimate does include data for a small number of campsites).

A total of 550 people are employed, with 64 managers, 254 skilled employees and 232 unskilled employees. Unfortunately, it is not possible to estimate the proportion of the total accommodation sector employment due to a lack of available data, but Gondwana Collection employment appears to generate only a small proportion of the estimated 24,000 total travel and tourism jobs. However, it should be recognised that the direct travel and tourism employment is estimated for the whole of the travel and tourism industry, including the accommodation sector, but also including estimates for travel agents, airlines and passenger transport services, restaurant and leisure industries that deal directly with tourists.

Inputting actual financial figures from the Gondwana Collection for 2014, the aggregate model makes a series of financial and economic estimates (Table 6). Given the lack of disaggregated estimates of different sectors in the Namibian national tourism industry (e.g. accommodation, restaurants, transport, retail, etc.), it is difficult to determine the contribution that the Gondwana Collection makes to the nation.

⁴ These figures are not entirely comparable.

Table 6 Base case estimates for the Gondwana Collection, 2014, N\$

	Total	Per ha	Per LSU*
Financial base case, 2014			
Financial turnover	168,669,222	1,124	41,018
Variable costs	77,818,969	519	18,925
Fixed costs	61,401,621	409	14,932
Net cash income	29,448,635	196	7,162
Financial rate of return	6.1%	-	-
Economic base case, 2014			
Economic gross output	150,298,015	1,002	36,220
Annual economic costs	128,754,918	858	31,311
Gross value added	21,543,097	144	5,239
Net value added	13,215,332	88	3,214
Economic rate of return	11.5%	-	-

* LSU is calculated for wildlife.

3.3 Risk analysis

A risk assessment detailing governance, policy, operational and financial risks was undertaken, noting both policy and operational recommendations to mitigate against the identified risks. Key risks that could impair the attainment and maintenance of the indicated benefits of the Gondwana Collection have been identified, together with summary evaluation and proposed strategic responses, and are outlined in Table 7. Only tourism specific responses have been incorporated in the follow tables. Where appropriate or desirable, responses should be coordinated with relevant partners and public agencies. Definitions for relevant terms can be found in Appendix 2.

Table 7 Risks at the environmental, sectoral, institutional and personal levels

The risk: what can happen?	Overall risk classification	Likelihood rating (a)	Consequence rating (b)	Overall risk level (a+b)	Tourism strategies
Risks from the physical environment					
Potential market implications of climate change, particularly from growing concerns regarding long haul aviation emissions	Extreme	4	4	8	Ensure Gondwana is positioned as having adopted principles of sustainability and as an eco-efficient destination. Gondwana should calculate a carbon footprint per guest night per lodge. Consider introducing initiatives and incentives to reduce the footprint (e.g. endeavour to reduce the footprint when travelling in Namibia to that when at home). This should also be highlighted in Gondwana's marketing strategy.
Damage to natural environment through insensitive development and uncontrolled or excessive loadings of visitors	Low	2	3	5	Identify and ensure appropriate regulation and management of protected areas through management plans and annual work plans. Adopt and apply principles of sustainability throughout the Gondwana group of companies, including regular external assessments such as eco awards in Namibia.
Fear about disease (i.e. Ebola, Swine flu, Zika virus)	Medium	2	4	6	Risks although high, are remote as they are driven by regional idiosyncrasies. Develop appropriate information (media) strategies when needed.
Risks from the human and institutional environment, outside the tourism sector					
Financial recession in, or significant shift in exchange rate with, key source markets	High	3	4	7	Ensure diversity of markets and market segments without excessive

The risk: what can happen?	Overall risk classification	Likelihood rating (a)	Consequence rating (b)	Overall risk level (a+b)	Tourism strategies
					dependencies. Accelerate development of emerging and new markets and segments. A hedging strategy may be pursued and adopted within the group.
Higher fuel costs contributing to decreased competitiveness	Low	2	3	5	Currently low oil price trajectory. Monitor and collaboratively build response with air carriers and other stakeholders when the situation changes adversely.
Imposition of heavy taxes on tourism sector by government (i.e. land leasehold tax, carbon tax, etc.)	High	3	4	7	Environmental fiscal reforms are ongoing. Act as industry advocate when these regulations are circulated for stakeholder input.
Forthcoming Land Bill will impact on governance and transactions models around farmland	Extreme	4	4	8	New legislation once adopted will impact on intra-trading of shares over farmland and also most likely introduce additional regulatory requirements such as Competition Commission validation and screening. Act as industry advocate when these developments are circulated for stakeholder input.
Namibia Economic Empowerment Framework (NEEF) Bill	High	2	4	6	New Bill will require the promotion of previously disadvantaged Namibians into ownership and managerial platforms across all sectors. Monitor developments and continue expanding the empowerment initiatives already evident in the group. Align current empowerment initiatives within the group with the

The risk: what can happen?	Overall risk classification	Likelihood rating (a)	Consequence rating (b)	Overall risk level (a+b)	Tourism strategies
					defined scorecards of the NEEF Bill. Explore a worker shareholding scheme.
Risks from the tourism and related commercial sectors					
Increased aggressiveness in competitiveness from directly competing destinations	High	3	3	6	Constantly monitor and consider responses to all competitive initiatives. Establish and maintain consumer travel patterns and behaviours research and reporting capabilities and systems. Advocate to relevant stakeholders to ensure Namibia is continually positioned in target markets as being a premium destination offering an unique experience that is unavailable elsewhere. Ensure that growth concentrates on the unique selling points of Namibia and that these are not eroded by poor planning and lack of co-ordination between government ministries.
Inability to attract investment for expansions	Low	2	3	5	Ensure continual balance sheet optimisation to unlock corporate and development financing opportunities.
Risks to the individual traveller (personal risks)					
Accidental death, disability, or injury of visitor	High	2	4	6	Identify all physical risks to safety and ensure appropriate preparation and publication of safety information, and warnings signage (in languages of all major markets). Ensure tourism operator adoption and compliance with international standards of operation; incorporate as part of accreditation criteria.

The risk: what can happen?	Overall risk classification	Likelihood rating (a)	Consequence rating (b)	Overall risk level (a+b)	Tourism strategies
Visitor becomes victim of crime	High	4	2	6	<p>Advocate for minimum standards. Establish life guard facilities as appropriate.</p> <p>Ensure appropriate visitor information. Provide efficient and supportive response to incidents. Advocate for police tourism liaison officers to enable better understanding and response to particular tourist needs.</p>

4 Conclusions

The analysis updated the earlier analysis of land use returns in southern Namibia, comparing the Gondwana Canyon Park with communal and freehold livestock farming. In addition, this study also extended the comparison of land use returns to the Gondwana Namib Desert Park, Gondwana Kalahari Park and the Gondwana Namushasha River lodge. As with the Gondwana Canyon Park, the southern lodges were compared with freehold and communal stock-keeping, while Namushasha River Lodge was compared with both traditional livestock farming and crop cultivation. Returns to the whole of the Gondwana Collection enterprises were also estimated, using an aggregated model.

For the southern Namibian enterprises, the financial returns from tourism are considerably higher than those for either freehold or communal stock-keeping, with a negative per hectare and per LSU net cash income for freehold farmers. Net value added per hectare for tourism enterprises in the south were at least 34 times greater than those from communal or freehold stock-keeping. While net value added per hectare for tourism varied according to enterprise, between N\$69 and N\$516 per hectare, for freehold and communal stock-keeping, estimates were just N\$0.06 per hectare and N\$2 per hectare respectively.

In the Zambezi Region, total financial and economic returns at the enterprise level from tourism were significantly higher than for cropping and stock-keeping; re-affirmed at the per hectare level. In the southern, western and Zambezi regions, tourism enterprises generated higher employment levels than alternative land uses. In particular, in the south and west, the average annual wage for unskilled labour was in excess of double the minimum annual wage for farm workers.

A lack of data at the national level constrained our ability to compare the contribution of the Gondwana Collection to the Namibian national tourism industry. However, it does appear that the Collection contributes approximately 10% of available beds, and has an average occupancy rate significantly higher than the industry average. The Collection employed 550 people in 2014, though it is not clear how many of the approximately 24,000 direct travel and tourism jobs are within the accommodation sector, and so it is not possible to calculate the contribution of the Gondwana Collection to the sector. Economic net value added for the Gondwana Collection in 2014 was estimated to be N\$13.2 million, N\$88 per hectare, and N\$3,214 per LSU. The financial rate of return was estimated at 6% and the economic rate of return as 11.5%. The direct contribution of the travel and tourism industry as a whole (i.e. not just the accommodation sector) is

estimated to be 3% of GDP, rising to almost 15% of GDP if indirect and induced contributions are considered. Unfortunately, it is not possible to determine the contribution of the accommodation sector to these estimates, and thus the contribution of the Gondwana Collection to the national industry is not certain.

As part of the risk analysis, three risks in particular were identified that are perceived to have a combination of high or extreme likelihood and significant impacts. Strategies to deal with these were also identified. The first is the potential market implications of climate change, particularly from growing concerns regarding long haul aviation emissions. In order to manage this, it is recommended that the Gondwana Collection adopts principles of sustainability and as an eco-efficient, low carbon destination. The second extreme likelihood risk identified is that the forthcoming Land Bill will impact on governance and transactions models around farmland, impacting on intra-trading of shares over farmland and likely introducing additional regulatory requirements such as Namibian Competition Commission validation and screening. It is recommended that the Gondwana Collection act as an industry advocate when these developments are circulated for stakeholder input. The final significant risk identified is associated with the NEEF Bill. The new bill will require the promotion of previously disadvantaged Namibians into ownership and managerial platforms across all sectors. The Gondwana Collection should monitor developments and continue expanding those empowerment initiatives that are already evident in the group, in addition to aligning current empowerment initiatives within the group with the defined scorecards of the NEEF Bill.

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Appendix 1 Detailed methods

All text in this appendix is quoted directly from the source of Barnes and Humavindu (2003), and all relevant information was correct at that time. See original report for full details of cited references.

Economic and financial analysis

‘The methods used for the financial and economic analysis were aimed at determining the direct use values of the land uses, as defined within the context of the “total economic value” of natural resources, as described by Pearce & Turner (1990)⁵ Direct use values contribute directly to income and employment, and have high importance for decision-makers in Namibia. The other components of total economic value, while important, particularly in the international context, are difficult to measure and have not been studied in Namibia. One of these is the economic value of biodiversity, which may embrace indirect use value, option value and existence or bequeath values.

The primary measure of the economic direct use value used is that of national income, as defined by Gittinger (1982) and Pearce (1986). In the context of the land uses studied, national income refers to the income received by the factors of production (labour and capital) from the sale of their services to production in the form of wages, rent and net income. With some adjustments for trading gains or losses, it is equivalent to the concept of national product, which is the “value added” generated in these land-use activities (total value of the goods and services produced, less raw materials and other goods and services consumed during the production process). We used value added as a base to estimate net national income, which is gross national income less depreciation of capital.

The estimates of net national income were measured using economic prices, which reflect the costs to society, of using or producing resources. Economic prices reflect opportunity costs (the values of the resources’ best alternative use). Where financial prices differed significantly from opportunity cost, shadow pricing was applied, using the preliminary

⁵ The components of total economic value include direct use, indirect use, option, bequest and existence values associated with the resources. Direct use values are derived from the actual utilisation of the resource. They contribute tangible value in the form of income, and make up the main component of formal economic growth, which in turn is the focus of national development efforts. Indirect use values are derived from ecological or social function (such as erosion protection, waste assimilation, political stability, etc.). Option values reflect the values perceived in retaining the option to use the resource in the future. Bequest values reflect the value perceived in preserving or retaining the resource for others in the future. Existence values reflect the value perceived in retaining the mere existence of the resource.

criteria of the Environmental Economics Unit in the Ministry of Environment and Tourism (Barnes, 1994). The approach was similar to those described in manuals developed for South Africa (CEAS, 1989) and the World Bank (Gittinger, 1982). The main shadow pricing adjustments made, were the elimination of domestic taxes and subsidies (where these were known⁶), an adjustment (up by 6%) to the value of tradable goods to reflect excess demand for foreign exchange, and an adjustment (down by 65%) to unskilled labour costs to reflect unemployment.

Cost and benefit flows were discounted over time to reflect the time value of money. For this study a discount rate of 8% was applied to both financial and economic models. In the financial enterprise models, the value of land was reflected as subsidised expenditure in rentals. In the economic analysis, land rental was treated as a domestic transfer and excluded. The economic measures of land-use value were thus made before inclusion of land opportunity costs. This allowed direct comparison between models regarding returns to land. The economic models also did not include central government expenditures in the wildlife and agricultural sectors.

The measures of gross and net national income were measures of economic efficiency. They provided an indication of the contribution of the land use to economic growth, development, and include the benefits of employment. The financial analyses resulted in profitability measures, indicating the private incentives for investment in the activity. The extent to which these private returns differ from the economic ones indicated the influence of policy and/or market imperfections, as described by Jansen *et al.* (1992).

Models were detailed spreadsheets with annualised income statements and ten-year cost-benefit, investment analyses. They were developed, as representative examples of the land uses, using data from both the literature, and empirical survey. Sensitivity analysis was used to test robustness of models and assumptions, and determine the strength of conclusions to be drawn from results. All models contained wildlife or livestock herd/flock projections, incorporating birth rates, mortality rates, off-takes and purchases, within the constraint of the rangeland carrying capacities.

Land use models

The two livestock systems modelled were distinctive in terms of parameters such as flock

⁶ Subsidies to freehold livestock production appear to have been largely eliminated during the 1990s. Communal land farmers still benefit from some, including water and veterinary subsidies, but the exact values are not clear. Approximate estimates have been used.

sizes, flock growth, stocking rates, lambing rates, mortality rates, off-take rates, milk production, use of stock as a store of value, etc. The assumptions for the small-scale livestock model were synthesised from the survey results of Goldbeck (2002), DRD (1992), G. Cowlshaw (2003, pers. comm.) and Metzger (1994). All these surveys took place in the southern communal areas. Some corroboration of assumptions was possible using findings from elsewhere, including those of Flint (1986), Arntzen (1998), Phuti (1984, 1985), Yaron, *et al.* (1992) and Barnes *et al.* (2001).

The small-scale livestock model closely simulated conditions in the Warmbad area, where sheep, mostly karakul, are slightly dominant over Boer goats. Products included live sales, home consumption of meat and milk, sale of wool and pelts, and use of stock as a store of value (measured as capital appreciation). Less important products included use of donkeys and horses for transport (other than as an input to the enterprise), sales of cattle, and sale/consumption of irrigated vegetables. A typical small-scale enterprise made use of a shared borehole and 2330 hectares of unfenced communal land. Some 22 such enterprises would make use of the 52 000 hectares of the 87 000-hectare property, which was deemed suitable for livestock production. Each would bear a share of the capital costs of shared infrastructure (waters, perimeter fencing, roads, etc.). The tendency for open-access grazing results in high stocking rate around the “ecological” carrying capacity.

The assumptions for the large-scale, freehold livestock model were synthesised primary data from a workshop of nine freehold farmers held at the Gondwana Canyon Lodge on 13 January 2002. This information was supported from unpublished survey data (1991 to 1993) from the Directorate of Planning, Ministry of Water, Agriculture and Rural Development (C. van der Merwe, pers comm., 1993), and published survey data (1986) from the Combud Programme in South Africa (DL-E, 1986a, 1986b). Some corroboration was also possible using survey information from the South African Karoo (DEM, 1955). The system deemed best-suited to the study area was karakul sheep production. Products include pelts, slaughter stock, wool and, to some extent, use of stock as a store of value (measured as capital appreciation). Very small amounts of Boer goats are included, as well as limited consumptive use of gemsbok, kudu and springbok. Only some 52 000 hectares of the 87,000 ha property was deemed to be utilisable for livestock production. The system allowed for exclusive access and enclosure (fencing) so that grazing pressure tended to be closer to the ‘economic’ carrying capacity, than was the case with the small-scale system.

The wildlife-viewing tourism model was developed directly from the physical and financial records of the private sector investment on the study area, and also empirical physical and financial data collected, between 1986 and 1999, from tourism operators and projects throughout Namibia (Unpublished Data, Environmental Economics Unit, Ministry of Environment and Tourism, 2002). The whole of the available 87 000 hectares was deemed utilisable for tourism, although activities would be highly concentrated. The assumptions for the wildlife stock projection were derived from the records for the property, and also from Spinage (FGU-Kronberg, 1987), and Craig and Lawson (1990). Wild-game populations were assumed to grow at constant rates of half the intrinsic rate of increase for that species. Ecological carrying capacity was defined as the area of habitat required to support one large stock biomass unit, while maximum sustainable yield is possible. Biomass, as the measure of wildlife and livestock density, was calibrated in large stock unit equivalents (LSU). One LSU is the metabolic mass equivalent of a 450-kilogram bovine steer or ox, as determined for various species and intra-specific age groups by Meissner (1982a, 1982b). Wildlife pressure on the rangeland is not high.

Sensitivity analyses were conducted on all of the base-case land-use models by varying parameters such as livestock lambing rates, livestock mortality rates, product prices, capital costs, stocking rates, stock off-take rates, tourism occupancy rates, and person-power needs. This provided a good sense of the robustness associated with the parameters, and assumptions on these. Some of the key assumptions associated with the base-case models are shown in Table 1 for comparison. Summaries of the base-case models are presented in Appendix 1, and the full models are presented in Appendices 2, 3 and 4.'

Source: Barnes and Humavindu (2003, p.5-7).

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Appendix 2 Risk management definitions

The United Nations World Tourism Organisation takes the view that risks to the health, safety and security of tourists, host communities and tourism employees can originate from four source areas:

1. Physical or environmental risks (natural, climatic, epidemic)
2. The human and institutional environment outside the tourism sector
3. The tourism sector and related commercial sectors
4. The individual traveller (personal risks)

Risks have been identified and evaluated against two key criteria of consequences and likelihood.

Risk impact is categorised as:

Category	Description
Insignificant	No disruption to normal business No disturbance of visitors No financial loss No media or public interest.
Minor	Minimal disruption to normal business Limited or no financial loss No media coverage or public interest.
Moderate	Short-term disruption to normal business and services to visitors Some financial loss Limited media reporting.
Major	Disruption to normal business for more than 24 hours financial losses Anger and frustration on the part of visitors Critical media reports and public criticism of tourism Damaged reputation as a destination.
Catastrophic	Unable to meet visitors' requirements and provide Normal service type and level Severe financial losses; Widespread criticism of tourism; Critical international media reports Mass cancellation of bookings; Damaged reputation as a destination.

Risk likelihood is defined as:

Category	Description
Almost certain	Is expected to occur in most circumstances
Likely	Will probably occur
Moderate	Might occur at some time in the future
Unlikely	Could occur but doubtful
Rare	May occur but only in exceptional circumstances

Risk consequences can be categorised as:

Consequences		Insignificant	Minor	Moderate	Catastrophic	Catastrophic
Likelihood	Ranking	1	2	3	4	5
Almost certain	5	6	7	8	9	10
Likely	4	5	6	7	8	9
Moderate	3	4	5	6	7	8
Unlikely	2	3	4	5	6	7
Rare	1	2	3	4	5	6

Risks are then classified as:

Extreme risk	>7	Immediate action required
High risk	6, 7	Senior risk management attendance needed
Medium risk	5	Risk management responsibility to be specified
Low risk	<5	Manage by routine procedures