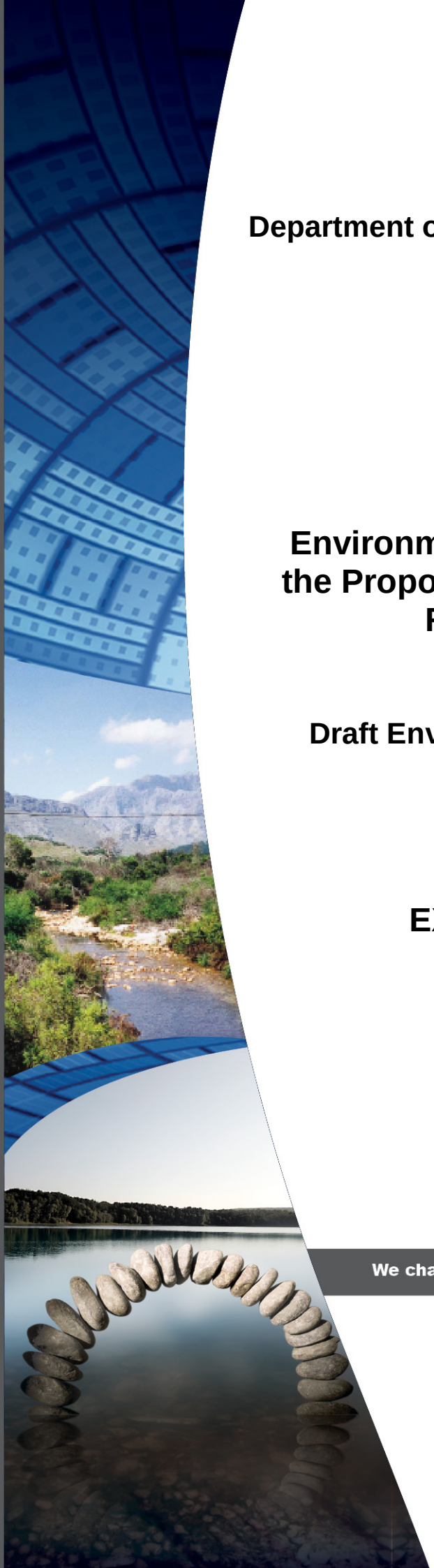

Department of Transport

PROVINCE OF KWAZULU - NATAL - ISIFUNDAZWE SAKWAZULU - NATALI
DEPARTMENT OF TRANSPORT
UMNYANGO WEZOKUTHUTHA

Environmental Impact Assessment for the Proposed Upgrade of the Sani Pass Road (P318): Phase 2

Draft Environmental Impact Assessment Report

EXECUTIVE SUMMARY

October 2011
J27344

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EXECUTIVE SUMMARY

1 INTRODUCTION

The KwaZulu-Natal Department of Transport (KZNDOT) proposes to continue with Phase 2 of the upgrading of the Sani Pass Road (P318), which transects the uKhahlamba Drakensberg Park World Heritage Site (UDP WHS) near Himeville, KwaZulu-Natal (KZN). This project originally consisted of three phases, of which Phase 1 (Ref: EIA 7377) has been granted environmental authorisation on 02 October 2006 and construction is in progress. Phases 2 and 3 have been combined into one phase, now referred to as Phase 2, which extends from km 14 at the old Good Hope Trading Post, which is also the boundary of the WHS, to km 33, the summit of the Sani Pass at the Lesotho Border post, a total distance of 19 kilometres.

The KZNDOT, as the project proponent, has appointed Arcus GIBB (Pty) Ltd (GIBB) as the Independent Environmental Assessment Practitioner (EAP) to undertake the Environmental Impact Assessment (EIA) for the proposed upgrading of the Sani Pass Road (P318): Phase 2 to obtain environmental authorisation from the Department of Environmental Affairs (DEA) for the proposed project.

This Draft Environmental Impact Assessment Report (Draft EIAR) has been compiled based on the impact assessment undertaken as part of the Scoping and EIA Process for the proposed Sani Pass Road Upgrade. The Scoping and EIA Process was undertaken in compliance and accordance with the NEMA and associated EIA Regulations of July 2006 (Government Notice No. R385 to 387).

This Draft EIAR aims to provide the DEA with adequate information on the project and assessment of the potential impacts. The DEA will use the information compiled in this EIAR to understand the potential positive and negative impacts and will then weigh these up to decided if the balance is in favour of the project going ahead, and if it is to go ahead, what measures need to be put in place to ensure that the potential negative impacts are mitigated.

This executive summary provides details of the EIA process undertaken in sufficient detail to provide the reader with a general understanding of the project, the assessment undertaken and the findings derived there from, without having to review the full detailed study.

2 PROPOSED PROJECT

The KZNDOT proposes to continue with Phase 2 of the upgrading of the existing Sani Pass Road (P318) from km 14 at the base of the mountain range to km 33 at the summit. A separate EIA was undertaken for Phase 1 (i.e. km 0 to km 14) and construction of this phase is in progress.

The Sani Pass is located in the steep and geographically sensitive upper valley of the Mkhomazana River valley forming part of the escarpment of the uKhahlamba Drakensberg Park (UDP) mountains. The Pass is exposed to extreme and varied weather conditions including, extreme heat and cold, intense sunshine, heavy rain, snow, ice, drought, fierce winds and flash flooding, which are typical for this part of the Drakensberg escarpment. The severe whether conditions result in high erosion rates, which in turn cause rapid degradation of the Sani Pass and Pass Road.

The KZNDOT has provided the following strategic motivation for the proposed

upgrade:

- Sani Pass Road (P318) provides access to, and passes through, the UDP, which is a proclaimed World Heritage Site (WHS). Sustainable access to the Park needs to be developed and carefully managed and the P318 forms an integral part of this initiative.

- Furthermore, a co-operation agreement was signed in 2005 between Lesotho and South Africa with the intention of improving commercial, social and economic opportunities as part of an initiative to improve accessibility between SADC countries. The intention is for South Africa to surface the P318 to Sani Top and for Lesotho to surface the road to Mokhotlong. The ultimate goal is to have a surfaced road all the way to Maseru.

- It is anticipated that the provision of an all-weather road through the Sani Pass will have a number of social and economic benefits, namely:

    - It will provide access to the UDP from both sides of the escarpment and incorporate the border and park access controls
    - The travel distance from Underberg and Mokhotlong for non-4x4 vehicles will be considerably reduced (by up to 350 kms) if the Pass is upgraded as proposed. Currently non 4x4 vehicles have to enter Lesotho through the Free State and double back through Maseru and Mokhotlong.
    - The Eastern Lesotho Highlands could open up to potential tourism development
    - Business and trade links between the Mokhotlong area and the businesses in Underberg and Pietermaritzburg will be strengthened and extended
    - Transportation and accessibility to Lesotho for locals from both sides of the escarpment will improve
    - A new scenic tourism route could potentially be opened up between the eastern Free State and KwaZulu-Natal via Lesotho.

Additional reasons for proposing that the Pass be upgraded and surfaced is attributable to the following:

- Closures of the Pass would result in unnecessary hardship for the impoverished communities of the Mokhotlong District, and a loss of revenue to the tourism industry.
- The existing road drainage system is unable to cope with the high intensity runoff of water on steep gradients, which results in excessive scour and gravel loss. Generally gravel roads constructed in steep gradients are more difficult to maintain, which could lead to intermittent closure of the road due to significant erosion and environmental damage.
- Gravel is a non-renewable resource and good quality gravels are particularly difficult to source in the Drakensberg areas of KwaZulu-Natal. The excessive loss of gravel from the Sani Pass is therefore of serious concern, particularly as the opening of new borrow pits has a high visual impact and is not permitted in the World Heritage Site. The haul distance for gravels from borrow pits outside the Park makes it difficult to maintain the Pass.
- The eroded gravel eventually deposits in the local streams and rivers, particularly the Mkhomazana River which flows down the Sani Valley, resulting in sedimentation and pollution of the lower reaches of the river when the stream velocity slows and also affects fish breeding and in stream habitat negatively, thereby impacting aquatic biodiversity. The silt carrying capacity of

water is related to the square of the velocity. Thus, if the flow velocity is reduced by a half, the silt carrying capacity is reduced fourfold. The very steep terrain, therefore, results in a significant silt carrying capacity which aggravates the situation.

- Gravel roads result in dust being deposited on the adjacent vegetation, which in turn leads to a decline in the quality of adjacent vegetation and impacts on biodiversity.
- Gravel roads are subject to widening by road users, who usually choose to drive on the verges around puddles and potholes, thereby extending the width of the road. To prevent this problem from occurring it is better to hard surface the road than to retain the existing gravel on the road.

The proposed Phase 2 upgrade entails a complete re-grading and resurfacing of the Sani Pass from a gravel to a hardened surface, all-weather road. The upgrade will include road widening, re-alignment of sections, new bridges, stormwater control and attenuation systems, bank and slope stabilisation and road servitude rehabilitation.

The project engineers are in the process of designing the upgraded road for Phase 2. Through an extensive identification and assessment process, six (6) feasible alternatives were reviewed. The engineers have selected Alternative 5 as the preferred road option which will include improved geometrics, upgraded drainage, constructed bridges and retaining walls, hard surfacing of the entire Pass Road. Of the pavement alternatives considered, the engineers have recommended that granular base and foam bitumen base pavement structures be further investigated during the preliminary design process for possible use on the lower section (km 14 – km 25) and Continuously Reinforced Concrete Pavement (CRCP) on the upper section from the current Border Post to the summit (km 25 – km 33).

3 SCOPING AND EIA PROCESS OVERVIEW

The following activities, as listed in the EIA Regulations as Government Notice No. R386 and 387 (July 2006 EIA Regulations) have relevance to the proposed project:

Table 1: Identified Listed Activities

Number and date of the relevant notice	Activity No	Listed activity
GNR 386 Listing Notice 1	1 (d)	The construction of facilities or infrastructure, including associated structures or infrastructure, for - resorts, lodges, hotels or other tourism and hospitality facilities in a protected area contemplated in the National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003)
	1 (m)	Any purpose in the one in ten year flood line of a river or stream, or within 32 metres from the bank of a river or stream where the flood line is unknown, excluding purposes associated with existing residential use, but including – canals; channels; bridges; dams; and weirs
	1 (p)	The temporary storage of hazardous waste
	1 (k)	The bulk transportation of sewage and water, including stormwater pipelines with – i) an internal diameter of 0.36 meters or more; or a peak throughput of 120 litres per second or more
GNR 386 Listing Notice 1	12	The transformation or removal of indigenous vegetation of 3 hectares or more or of any size where the transformation or removal would occur within a critically endangered or an endangered ecosystem listed in terms of section 52 of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)
GNR 386 Listing Notice 1	15	The construction of a road that is wider than 4 metres or that has a reserve wider than 6 metres, excluding roads that fall within the ambit

		of another listed activity or which are access roads of less than 30 metres long
GNR 387 Listing Notice 2	2	Any development activity, including associated structures or infrastructure, where the total area of the development area is, or is intended to be, 20 hectares or more
GNR 387 Listing Notice 2	5	The route determination of roads and design of associated physical infrastructure, including roads that have not yet been built for which routes have been determined before the publication of this notice and which has not been authorised by a competent authority in terms of the Environmental Impact Assessment Regulations, 2006 made under section 24(5) of the Act and published in Government Notice No. R. 385 of 2006, where: i) it is a national road as defined in section 40 of the South African National Roads Agency Limited and National Roads Act, 1998 (Act No. 7 of 1998); ii) it is a road administered by a provincial authority; iii) the road reserve is wider than 30 metres; or iv) the road will cater for more than one lane of traffic in both directions.

The proposed project therefore includes activities listed under both GN R386, requiring a Basic Assessment, and GN R387, requiring a full Scoping and Environmental Impact Assessment Process. However, the EIA Regulations (GN R385) stipulate that where any activity associated with a proposed development is listed within GN R387, a full Scoping and EIA Process must be followed, regardless of whether additional activities are identified in GN R386 for Basic Assessments. Accordingly, a full Scoping and EIA Process was followed for the proposed upgrade of the Sani Pass Road (P318): Phase 2.

Public Participation Process

An extensive Public Participation Process was followed as part of the Scoping and EIA Process. This was done in accordance with the requirements of the EIA Regulations. Interested and Affected Parties (I&APs) were provided with ample opportunities to register on the project specific I&AP database and to lodge comments throughout the EIA process. A concerted effort was made to record and consider all I&AP comments diligently in the assessments and associated reports.

Key I&APs and I&APs groups included *inter alia*:

- South African Government Departments (e.g. Environmental Affairs (DEA), Water, Agriculture and Environmental Affairs and Rural Development, Kwa Sani Municipality)
- AMAFA – KwaZulu-Natal Heritage
- KwaPitela Development Committee
- Border Control Operating Co-ordinating Committee (BCOCC)
- Ezemvelo KZN Wildlife (EKZNW)
- South African and Lesotho Taxi Associations
- Wildlife and Environment Society of South Africa (WESSA) - KZN Region
- Tourism Organisations

Scoping Phase

Before the Impact Assessment Phase, a Scoping Phase included a technical investigation and a public participation component to identify key issues associated with the project. A Draft Scoping Report (Draft SR), which included a Plan of Study

for the EIA Phase, was made available for public and authority review comment period. Comments received were recorded, responded to and addressed in the Issues and Comments and Report of the Final Scoping Report (Final SR), which received approval from the DEA on 01 July 2009.

A broad range of potential environmental impacts and issues were identified and described during the Scoping Process. Many of these were grouped into 'over-arching' impact aspects which were either individually or cumulatively significant, and therefore warranted the need for specialist investigation and assessment as part of the Impact Assessment Phase of the project. The consolidated significant issues relevant to the upgrade of the Pass and their respective specialist studies are tabulated below:

Table 2: Potential Impact Aspects Investigated by Specialists

Impact on:	Specialist Study
Ecological health of the Mkomazana River	Riverine and Aquatic Impact Assessment
Vegetation and botany adjacent to Pass	Vegetation Assessment
Avifauna	Avifaunal Issues Assessment
Social and tourism Issues	Social and Tourism Impact Assessment
Local scale economy	Economic Impact Assessment
Regional, national and international scale economy (holistic)	Holistic Economic Impact Assessment
Cultural heritage	Heritage Impact Assessment
Visual and aesthetic value of the Sani Pass	Visual Impact Assessment

Impact Assessment Phase

The Impact Assessment Phase involved a detailed assessment of the key issues according to the Plan of Study for EIA, either through detailed specialist studies or though assessment by the Environmental Assessment Practitioner. Appropriate mitigation measures and recommendations were also formulated to minimise the potential negative environmental impacts.

Impact significance was determined through considering the probability and duration of occurrence as well as the severity and the extent (national, regional, local or limited to the site) of potential impacts. Potential impacts were then rated as low, medium and/or high environmental significance in terms of the aforementioned methodology. The impacts were rated both with, and without, mitigation or enhancement, as the case may be. **Tables 1 and 2** summarise all the identified impacts and their significance ratings with and without mitigation for construction and operational phases of the proposed project respectively.

On completion of the Impact Assessment Phase, the Draft EIAR (this report) was then compiled which reported on the investigation and evaluation of the impacts, and issues and alternatives identified during the Scoping Phase. The Draft EIAR was released for 40 days public comment from 17 October 2011 to 25 November 2011.

4 COMPARISON OF PROJECT AND NO-GO ALTERNATIVES

From the assessment and the extensive public participation programme, two (2) preferred project alternatives emerged from a selection of project alternatives:

- Alternative 5 (the proponent's preferred option)
  Improves geometrics, upgrades drainage, constructs bridges and retaining walls, and hard surfaces the Pass Road from km 14 to km 33. From km 14 to

km 25 (the border post) would be asphalt surfaced, while km 26 to km 33 would be concrete.

- Alternative 3 (the 4x4 tour operators' and interest groups' preferred option)
  Improves geometrics, upgrades drainage, retains splash-throughs, constructs retaining walls and re-gravels the Pass Road.

A comparison of the project alternatives with the No-Go Alternative is presented in **Table 3** below.

The table recognises that the No-Go Alternative has two possible outcomes; either continued operation as per the *status quo* (Alternative 1A), or closure of the Pass (Alternative 1B). Should the *status quo* operation be allowed to continue, the state of the environment will probably quickly degrade to such an extent (as has been witnessed over the past few years) that EKZNW and KZNDOT will eventually be forced to close the Sani Pass to vehicles permanently, thus reverting to Alternative 1B. As part of Alternative 1B, there will then be a need to rehabilitate the road to an acceptable condition to ensure full recovery of the environment.

Table 3: Comparison of Alternatives

ALTERNATIVE NUMBER	1A		1B		3		5	
DESCRIPTION	NO GO: Retain Status Quo		Close Pass: Deproclaim Road and hand over to KZN Wildlife		Improve geometrics, upgrade drainage, retain splash-throughs, construct retaining walls and re-gravel		Improve geometrics, upgrade drainage, construct bridges and retaining walls, hard surface from km 14 to km 33.	
	PROS	CONS	PROS	CONS	PROS	CONS	PROS	CONS
Impact of Alternative on KZNDOT	• Less Pressure on KZN KZNDOT Budget to construct road in the short term	• High maintenance cost in the long term • Sourcing of materials indefinitely Permanent labour force required	• No Pressure on KZN KZNDOT Budget to construct road	• Large savings in initial capital layout, but potentially high rehabilitation cost over an extended period	1. Moderate maintenance cost 2. Safer road 3. Improved environmental protection	4. Increased construction costs. 5. Difficult to maintain, permanent labour team required 6. Increasing maintenance costs as gravel is sourced from further away 7. Access is still limited to 4x4 vehicles	8. Minimised maintenance costs	9. Increased construction costs
Impact of Alternative on Environment	• None	• Severe environmental degradation (Soil and water erosion, impact on river) • Indirect environmental impacts • Not sustainable (slope stability, gravel depletion, road surface scour, indefinite sourcing of gravel material) • Ongoing environmental damage (World Heritage Site, borrow pits, haulage, introduce invader species through importation of gravel)	• Could become a wilderness area again and integrated into World Heritage Park • Positive environmental impacts as environment is rehabilitated to almost-natural state	• Cost of Rehabilitation	• Reduced environmental impacts on all sections particularly the switchbacks and water crossings • Factors causing potential impacts are controlled and impacts are mitigated	• Causes of environmental impacts are not resolved, particularly near the top of the Pass (soil and water erosion of road surface and associated secondary and tertiary impacts) • Continued environmental impacts • Requires indefinite sources of gravel • Environmentally unsustainable	• Environmental impacts (including sources) will be addressed. • Gravel will no longer erode and wash into the streams, and dust will no longer be a problem for vegetation along the road	• Environmental issues such as noise will increase in significance but within acceptable limits • Visual impact will be high even with mitigation • More traffic, more people, more direct impact on the environment, e.g., litter, vandalism, etc. • Environmental management on the Pass becomes more important and requires stringent monitoring • Improved access will create potential for developments on the Lesotho Mountain flats which could negatively impact on the environment
Impact of Alternative on Tourism	• Tourism potential remains as is	• Tourism potential remains as is	• Alternative tourism opportunities, e.g., hiking trails	• Loss of existing tourism opportunities (4x4 tours, loss of Pass as tourist attraction, nature and adventure tours)	• The ideal option for the tour operators and tourism industry • Retains 'sense of place' and ruggedness attraction	• Not completely accessible to all tourists. • Does not benefit the greater community (high maintenance costs on vehicles) • Limited tourism growth potential	• Opens up potential tourism opportunities in both KZN and Lesotho • "Experience of Sani" is opened to all	• Negatively effects Sani-specific tourism industry and tour operators • Sani Pass in 'rugged' form drops off the list of international adventure tourism destinations • Too many tourists could reduce 'remoteness' feel
Impact of Alternative on Community	• Component of community involved in Sani Pass tourism will benefit	• Larger non-tourism communities of the region, including communities in Lesotho will not benefit, • Continued limited access to services in KZN	• None	• Community members with family, business, or service ties on the other side of the border will be negatively affected through increased time and travel costs to travel around Lesotho • Reduce accessibility to family and business links • Also the agreement between South Africa and Lesotho cannot be honoured in its current form. • Majority of Sani Pass tourism will collapse with knock on effects for community employed in tourism	• None	• Only semi-accessible to all people • Growth and development are still restricted • Conflicts with SA / Lesotho Declaration of Intent dated 2005	• Increased benefit to the greater community (improved transport, faster travel, reduced maintenance costs) • Improved accessibility to family in both countries and services in KZN • Reduced pass closures due to bad weather • Increased tourism in general	• Potential negative impact in the short term on those locals and communities working within or reliant on the Sani-specific tourism industry
Impact of Alternative on Road Safety	• None	• No improvement in road safety features • Access by 4x4 only for safety reasons	• N/A	• N/A	• Safer road than option 2 • Slightly reduced Pass closures due to bad weather	• Attraction of less experienced drivers which could result in more accidents • Road safety is still a significant risk • 4x4 access only due to safety risks	• Improved access to the top of Sani Pass and Lesotho due to: - Better engineered road - All weather road - Better road surface - Improved safety features on Pass	• Attraction of less experienced drivers which could result in more accidents • Smoother surface could encourage speeding • More vehicles on the Pass would increase the potential for accidents
Impact of Alternative on KZN Lesotho Links	• Links remain as is	• Limited social and economic links with Lesotho • Socio-economic growth potential limited due to restricted accessibility	• None	• Sever social and economic ties between KZN and Lesotho • Sever only link road between KZN and Lesotho • Conflicts with SA / Lesotho Declaration of Intent dated 2005 • Loss of socio-economic opportunities	• Retains existing socio-economic links with Lesotho through KZN	• Socio-economic links with Lesotho through KZN not maximised • Growth potential limited	• Will grow socio-economic links with Lesotho through KZN due to improved accessibility • Socio-economic potential would be maximised	• Improved access for livestock thieves, dagga traders and other criminal types
Vehicle Type to be Used	• All vehicles must be 4x4		• No vehicle access		• All vehicles MUST be 4X4		• Accessible to all types of vehicles up to 8 tonnes. • Access not limited to 4X4s • Trucks must be 4x4	

In comparing the alternatives, the motivation for the proposed upgrade, detailed above, needs to be borne in mind.

Alternative 1A

With reference to **Table 3**, it is clear that retaining the *status quo* condition of the Sani Pass Road (Alternative 1A) is unfeasible for biophysical, economic and social reasons.

Based on the fact that continuous supplies of gravel will have to be hauled indefinitely from borrow pits to replenish the gravel on the road surface that washes away due to the frequent heavy rains is environmentally unsustainable, and thus a fatal flaw of this alternative. Borrow pit material is limited and new borrow pits contribute to environmental degradation. The ongoing and high cost of hauling limited gravel resources would restrict adequate maintenance of the Sani Pass (as is the current situation). In turn, a poor maintenance schedule would reduce the average condition of the Pass, increasing the potential for damage under the typical heavy weather conditions and resulting in more frequent and lengthier closures of the Pass. The condition of the Pass Road would eventually reach an environmental threshold, whereby the Pass would be so badly degraded and causing such ongoing environmental damage that it poses an unacceptable risk to users and the surrounding environment, and could possibly put the status of the World Heritage Site at risk.

Furthermore, the *status quo* option limits access to the Pass to 4x4 vehicles, hence restricting public access and preventing the realisation of apparent trade, tourism and social potential.

Alternative 1B

It is anticipated that EKZNW together with KZNDOT would then recommend the Pass be closed and rehabilitated to its natural (non-road) condition. The complete closure (Alternative 1B) would have significant tourism, economic, trade and social repercussions and achieve the complete opposite of what the Co-operative Agreement between South Africa and Lesotho envisages. The only potential beneficiary could be the environment which would be rehabilitated to near natural condition, possibly at high cost to the taxpayer. Considering the extent of the degradation caused by the construction and operation of the road and the hazardous terrain, the extreme cost for full rehabilitation is considered to be prohibitive.

Alternative 3

Alternative 3, which involves upgrading the infrastructure but retaining the gravel road surface, along the entire length of the Pass Road, is the alternative favoured by the 4x4 tour operators who take advantage of the remote and rugged nature of the Pass Road as their livelihood. This option is also supported by a number of Non Governmental Organisations and ‘nature-lovers’, who believe that the Pass should remain as ‘natural’ as possible and that surfacing the road would reduce the Sani Pass to ‘just another mountain pass road’ thereby losing its uniqueness, character and sense of place. They are also of the opinion that tourism in the region would be significantly negatively affected, which it will be in the short term. However, the Social and Economics studies undertaken all anticipate that tourism will, in fact, improve in the medium to long term. While this Alternative has both pro’s and con’s it is fatally flawed, in that it relies on the environmentally unsustainable process of borrow pit

mining to indefinitely supply the Pass with material (regardless of the quality or quantity). This is, by itself, enough reason to disqualify this alternative.

Counter arguments received seem to suggest that there is a misconception amongst the I&APs about the infinite availability of the required suitable gravel materials in Lesotho. Whilst Lesotho does have some suitable resources, they too are limited and their exploitation would also require mining in environmentally sensitive areas. Furthermore, it is presumptuous to assume that SA can claim rights and access to unlimited quantities of this material, indefinitely. Whether in SA or Lesotho, the process of endless borrowpit mining to feed a road that is continually eroding away, is environmentally and economically unsustainable and irresponsible.

Another fatal flaw of Alternative 3 is that KZNDOT would be obliged, in terms of its mandate to manage public roads and ensure traveller safety, to restrict access to the Pass to vehicles capable of travelling the road under all weather conditions. Since the road would not be an all weather road, access would still be limited to 4x4 vehicles only. This restriction further reduces the appropriateness of Alternative 3 as the best option to meet the stated objectives of the project.

Further assessment of Alternative 3 reflects that many of the other potential opportunities, such as economic and tourism development, social upliftment, and environmental and ecological protection and rehabilitation, cannot be realised as the road surface will still limit accessibility.

Alternative 5

Alternative 5 is the proponent's proposed design to meet the project's objectives, and involves upgrading the infrastructure as in Alternatives 3 and 4, but also includes hard surfacing the entire Pass Road as opposed to just the lower half to the Border Post proposed in Alternative 4. The major purpose for laying a hard surface is to open access to the Pass to all vehicles, instead of being restricted to 4x4 vehicles only. Improved access has many 'pro's' in terms of positive social and economic benefits for South Africans and Basotho, however, of particular concern is the high negative impact this Alternative will have on the 4x4 tourism industry, particularly during the 3 year construction period. Nevertheless, prospects for both the 4x4 tour operators and tourism in the area are expected to improve above *status quo* levels in the medium to long term.

Alternative 5 also offers the highest levels of biophysical and environmental benefits of all the alternatives, as the hard surface, in conjunction with the upgraded stormwater infrastructure, will manage water movement most effectively, minimise erosion from the road and the surrounding environment, and minimise the subsequent discharge of the eroded materials into the Mkhomazana River. This is one of the major objectives of the project – to minimise and prevent, where possible, the continued erosion and degradation of the Pass Road and surrounding environment.

In terms of road safety, differing opinions exist on whether Alternative 5 will improve levels above those of Alternative 3. Some argue that a bumpy gravel road discourages speeding and requires drivers to be more conscientious and aware, while a smooth road encourages speeding and potentially accidents. The corollary to this argument is that a hard surfaced road will reduce road safety and pose a higher risk for drivers (particularly inexperienced drivers) and pedestrians. The project team comprising the Proponent, KZNDOT; the project engineers, SSI Engineers and Environmental Consultants; and GIBB, and some of the I&APs oppose this view,

believing the proposed upgrade will improve road and traffic safety on the Pass. This view is based on the design specifications of the Pass Road pavement providing a superior driving surface, particularly during rains and thunder showers, when a gravel surface Pass Road would be extremely dangerous, particularly for non-4x4 vehicles. The hard surface design creates better grip for tyres and disperses water effectively from the road surface, thus posing a lower safety risk for drivers, particularly under wet conditions. The installation of road safety features such as rumble strips at appropriate points would also reduce safety risks.

5 IMPACT STATEMENT

Scientific methods to generate impact significance ratings as defined in **Table 4** were applied by the EAP and specialists to assess the impacts as summarised in **Table 5** for comparative purposes. The impacts and associated ratings are presented as either construction or operation phase impacts, with or without the application of mitigation measures. The main objective of the integration process is to provide a holistic evaluation of the potential biological, physical, social, economic, heritage and visual impacts of the upgrade of the Sani Pass Road.

NOTE: While GIBB prescribed a standardise impact rating method, some of the specialist studies used alternative rating methodologies or systems, which were more appropriate to the specific field and therefore more accurately reflected the true significance rating. These studies included the Regional and International Scale Economic Impact Assessment, the Visual Impact Assessment and the Cultural Heritage Impact Assessment.

In the case of the Regional and International Scale Economic Impact Assessment, the significance rating is based on a comparative assessment of the proposed project vs (a) closure of the Pass and (b) the status quo situation.

Table 4 below reflects the impact significance rating system used in the impact assessment, while subsections below provide a summary description of the various environmental impact studies and assessments, as well as the cumulative impacts.

Table 4: Impacts Significance Rating

SP	-ve Rating	Definition	+ve Rating
0	NO IMPACT LOW	A potential concern or impact, which, upon evaluation, is found to have no significant impact	NO IMPACT LOW
<30	VERY LOW - LOW	Impacts will be localised and temporary. Impacts result in minor alterations to the environment and can easily be alleviated by the implementation of effective mitigation measures.	[+]VERY LOW - LOW
31-60	MODERATE	Impacts of moderate magnitude locally to regionally in the short term. The impact results in medium alterations to the environment and can be reduced or eliminated by the implementation of effective mitigation measures.	[+]MODERATE
>60	HIGH	Impacts of high magnitude locally for longer than 6 years and/or regionally and beyond. The impact results in major alterations to the environment even if effective mitigation measures are implemented and will have an influence on decision-making.	[+]HIGH

Table 5: Summary Table of Impact Significance Ratings as determined by Specialist Studies for the Construction Phase of the Preferred Option

Impact	Impact Significance Rating	
	Without mitigation	With mitigation
Chapter 7: Vegetation Impacts		
Grassland Vegetation will be damaged by road widening	Moderate	Low
Destruction of vegetation including many endemic and rare plants in the High Altitude Grassland	High	Moderate
Considerable Destruction of Vegetation	Moderate	Low
Destruction of many *Protea subvestita* Trees	High	Low
Blasting of rocks to widen road would destroy a landmark landscape feature, as well as a rare example of high altitude trees and plants	Moderate	Low
The subshrubs, forbs and geophytes found in the undergrowth of the *Leucosidea sericea* scrub could be adversely affected by construction.	Moderate	Low
Damage to riparian vegetation at river crossings	Moderate	Low
Alteration of soil moisture regimes, altering the composition of riparian vegetation due to construction through or over streams.	High	Moderate
Alteration of soil moisture regimes, altering the composition of riparian vegetation due to construction through or over rivers.	Moderate	Low
Alteration of soil moisture regimes, altering the composition of wetland and wetland fringe vegetation due to construction through or over wetlands.	Moderate	Low
Displacement of important, rare and endemic plant species due to blasting	High	Moderate
Destruction of Summit Plateau vegetation due to spillages	High	Low
Damage to vegetation in old borrow pits and quarries	Moderate	Low
Chapter 8: Impacts on Aquatic Environment		
Sedimentation	High	Moderate
Modified Water Chemistry	Low	Low
Modified Hydrology	Moderate	Moderate
Physical Destruction of Habitat	Low	Low
Loss of Biodiversity	Low	Low
Chapter 9: Avifaunal Impacts		
Destruction & Degradation of Avifaunal Habitats	Moderate	Low
Disturbance of Avifaunal Species	Low	Low
Chapter 10: Social and Tourism Impact & Issues		
Improved Conditions for Business and Private Commuters using the Sani Pass	Moderate	Moderate
Chapter 12: Local Scale Economic Impacts		
Construction: Direct Construction Impacts	Moderate	Moderate
Construction: Secondary Construction Impacts	Moderate	Moderate
Construction: Tourism Impacts	Moderate	Low
Chapter 14: Visual / Aesthetic	Without mitigation	With mitigation
Phase 2a: Aesthetics	High	High
Phase 2b Aesthetics	High	High
Chapter 15: Cultural Heritage Impacts		
Natural resources	Medium	Low
Cultural landscape and intangible values	Medium	Low
Damage / loss of recreational resources	Medium	Low
Chapter 16: Screened Road Impacts		
Waste Pollution	Moderate	Moderate
Soil and Water Contamination	Moderate	Low

Soil and Water Contamination from Accidents on the Pass	High	Moderate
Road User Safety	Moderate	Low
Hydraulics and Stormwater Control	Moderate	Low
Impact on Fauna	Moderate	Low
Water Abstraction	Low	Low
Air Quality	Low	Low
Noise (Nuisance Impact)	Moderate	Moderate

Table 6: Summary Table of Impact Significance Ratings as determined by Specialist Studies for the Operational Phase of the Preferred Option

Impact	Impact Significance Rating	
	Without mitigation	With mitigation
Chapter 7: Vegetation Impacts		
Dust levels after construction will be reduced to almost zero.	Moderate	Moderate
Removal of Alien Invasive Plants	Moderate	Moderate
Reduced pressure on roadside vegetation through new viewpoints	Moderate	Moderate
Chapter 8: Impacts on Aquatic Environment		
Sedimentation	Low	Low
Modified Water Chemistry	Low	Low
Modified Hydrology	Low	Low
Physical Destruction of Habitat	Low	Low
Loss of Biodiversity	Low	Low
Chapter 8: Positive Impacts (current vs upgraded)		
Sedimentation	High	High
Modified Water Chemistry	Low	Low
Modified Hydrology	Moderate	Moderate
Physical Destruction of Habitat	Low	Low
Loss of biodiversity	Low	Low
Chapter 9: Avifaunal Impacts		
Bird Mortalities due to Vehicle Collisions	Moderate	Moderate
Chapter 10: Social and Tourism Impacts & Issues		
Reduction in Sense of Place	Moderate	Moderate
Reduced sustainability of 4 X 4 day tours operators and closure of some of the operations, due to insufficient tourist numbers	High	High
Reduced Sustainability of Specialist Tour Operators due to Reduced Tourist Numbers	Moderate	Moderate
Reduction in Domestic 4X 4 Self Drive Tourists to the KwaSani area for the 4 X 4 experience up the Sani Pass	Moderate	Low
Reduced Business and Potential Closure of Some Tourism Accommodation Providers in Short to Medium Term	Moderate	Low
Shrinkage in Local Economy and Decrease in Associated Socio-Economic Conditions in the Short to Medium Term	Low	Low
Reduction in Quality for Life for Some Local Residents in Short to Medium Term	Low	Low
Improved Conditions for Business and Private Commuters using the Sani Pass	High	High
Loss of Socio-Economic Benefits Associated with Changes to Two Sporting Events	Moderate	Low
Improved Road Safety and Reduced Risk of Accidents and an Increase in Road Safety on the Sani Pass	High	High
Reduced sustainability of some tourist accommodation and associated services in the Mokhotlong District due to reduction in tourist numbers in the short term	Moderate	Moderate
Improved Socio-Economic Conditions for Residents in the	High	High

Mokhotlong District		
Chapter 12: Local Scale Economic Impacts		
Loss of Income to Adventure Tour Operators	High	Moderate
Tourism Lodging Facilities	High	Moderate
Tourism-Generated Retail	Moderate	Low
Agriculture: Wool & Mohair Industry	Low	Moderate
Agriculture: Diary & Meat Industry	Low	Low
Agriculture: Niche Products & Beneficiation	Low	Low
Agriculture: Supplies & Equipment	Moderate	Moderate
Cross-Border Trade: Commuter-Generated Retail	Low	Low
Cross-Border Trade; Taxi Business	Moderate	High
Cross-Border Trade: Commercial Stock Supply	Moderate	High
Chapter 13: Regional and International Scale Economic Impacts		
	vs status quo	vs no road
GDP	High	High
Foreign tourism	Moderate	High
Domestic tourism	Moderate	High
Lodging facilities	Moderate	High
4x4 Operators	High	High
Retail trade	Moderate	Moderate
Wool and mohair industry	High	High
New investment in wool and mohair industry	High	High
Movement of supplies and equipment	Low	Low
Movement of commercial stock supply	Low	Low
Taxi operators	Moderate	Moderate
Direct construction impacts	High	High
Construction impacts on tourism	High	High
Vehicle operating costs	High	High
Distance savings	Neutral	High
Time savings	Low	High
New investment in tourism sector	High	High
Ecosystem services	High	High
Employment	High	High
Payment to low-income households	Low	Low
Net impact	High	High
Chapter 14: Visual / Aesthetic	Without mitigation	With mitigation
Phase 2a: Aesthetics	High	High
Phase 2b Aesthetics	High	High
Chapter 16: Screened Road Impacts		
General Pollution	Low	Low
Soil and Water Contamination	Moderate	Low
Soil and Water Contamination from Accidents on the Pass	High	Moderate
Road User Safety	Moderate	High
Hydraulics and Stormwater Control	High	High
Impact on Fauna	Low	Low
Air Quality	Low	Low
Noise (Nuisance Impact)	Moderate	Low

5.1 Impact on the Biophysical Environment

Review of the biophysical environment impacts recognises that the construction phase of the proposed project will worsen the some of the very issues it is aimed at reducing, namely erosion and sedimentation. Whilst these impacts are mitigatable, they will occur regardless of whatever measures are put in place and will have the

potential to have a negative impact. Once construction is complete, however, the objectives of the upgrade will be achieved, with erosion and sedimentation both reduced significantly, as the installed infrastructure manages and controls water flow on and around the Pass Road. The overall outcome will therefore be a positive impact on the biophysical environment of the Sani Pass.

5.2 Impact on Vegetation

The specialist study on the vegetation of the Pass Road has shown that the impacts on the vegetation will, in the most part, be negative in the construction phase and for a short period in the initial operational phase. This is primarily due to the excavation activities that will form part of the construction phase on the road edge and the period required for the environment to recover from such disturbance. Mitigation to reduce the impact is possible and will involve intensive progressive rehabilitation for the duration of the construction phase and ongoing maintenance during the operational phase.

The most prominent impacts on vegetation relate to the destruction of endemic and rare plants and trees, both primarily due to excavation. Disturbance to the composition of vegetation near and adjacent to streams due to the construction of bridges and culverts will also have a **High Negative** impact significance. In all instances, allocation of stringent mitigation measures will reduce the rating from **High Negative** or **Moderate** to **Low Negative**. All other impacts to vegetation can be reduced from **Moderate** significance to **Low Negative** by implementation of the mitigation measures.

The vegetation study also recognised that the proposed project would have positive impacts in the sensitive areas that have been identified, which can be (a) protected and (b) rehabilitated to a better state. Dust levels would also be reduced, Alien Invasive Plants would be removed and pressure on roadside plants would be reduced through the formalisation of proper view points. Furthermore, the project will have a rehabilitation programme which will remove invasive alien plants, improving the general ecological value of the environment along the length of the Pass.

The impacts on vegetation are not considered of high enough significance to be considered a fatal flaw to the proposed upgrade.

5.3 Impact on the Aquatic Environment

Upgrading of the Pass will have a number of potentially negative impacts during construction, the most important of which is sedimentation which scored a **High Negative** significance rating. This however, reduced to **Moderate Negative** when appropriate mitigation measures were considered. The construction of the upgrade will also impact on water chemistry, hydrology and biodiversity through destruction of aquatic habitats, vegetation and fauna. All of these impacts are expected to reduce in significance to acceptably **Low Negative** levels if mitigation is applied.

The aquatic study, also determined that the existing ecological state of the aquatic environment of the catchment (not just the river) is already negatively affected, in part, by current erosion and sedimentation from the existing Pass Road, most notably the ‘washing off’ of gravel brought in from various sources for road maintenance. Upgrading the Pass Road will thus reduce the levels, rates and quantities of erosion and sedimentation. Water chemistry will improve, as will hydrology, while less destruction of aquatic habitats and loss of biodiversity will take place. The proposed

upgrade will have an overall positive impact on the aquatic environment once operational. This is one of the major environmental motivations for the project.

5.4 Impact on the Fauna and Avifauna

The impacts on fauna and avifauna relate primarily to the disturbance and/or destruction of habitats and nests within the boundaries of the Road servitude and those in close proximity, which could be disturbed by the construction activities. With the careful delineation and management of excavation boundaries and activities, the potential impact is immediately reduced in its magnitude and significance. Similarly, with the implementation of practical mitigation measures, it is expected that the ratings of the potential impacts would reduce to **Low Negative** significance.

During the operational phase, the major potential impact is mortality due to vehicle collisions, which retains a **Moderate Negative** significance rating despite mitigation measures to reduce vehicle speeds and removing the attractiveness of verges and built structures (e.g., bridges) for habitation (i.e. for nesting and breeding).

5.5 Impact on the Social Environment

The detailed Social Impact Assessment showed that the proposed upgrade of the Sani Pass would result in a range of positive and negative social impacts in South Africa and Lesotho, with some stakeholders benefitting and others losing.

The social context of tourism is inextricably linked to the economic tourism environment and therefore the economic performance of tourism will directly impact on a range of social issues, such as employment and skills development. Tourism also has an indirect effect on other social issues such as sense of place and quality of life.

In this context, most of the **negative** impacts identified are related to the sustainability of the 4x4 tour operators (**High** significance) and the loss of business to the supporting local tourist accommodation industry (**Moderate** significance), although this does not include all the tourism and accommodation facilities in the region. The sense of place would probably also be moderately affected by the proposed project.

Highly important to the summation of the tourism impacts is that, while the negative impacts are expected to occur in the short to medium term, in the long term the socio-economic conditions are however expected to recover and adapt, and eventually improve as a result of the proposed Road upgrade. This process, with the appropriate support and strategic marketing for the local tourism industry by all levels of government, can be sped up; thus mitigating the expected impact significance ratings of most applicable negative impacts. These ratings could reduce from **Moderate** to **Low Negative** (e.g., reduced business and potential closure of some tourism accommodation providers in the short to medium term). In the long term, the upgrading of the Sani Pass could result in growth in the tourism sector through the development of new markets (e.g., increased access to the Pass by non-4 x 4 vehicle owners). This would also spill over into local economic development.

The proposed upgrade would also have a number of **High Positive** social impacts related mainly to use of the Pass by business and private commuters, improved road safety and reduced accident potential. Some social improvement for the local South African communities who utilise the Pass or have family links in Lesotho, could also be expected. These same communities and those of the Mokhotlong District, could however, feel some of the knock-on effects if the tourism industries of both South

Africa and Lesotho are negatively impacted in the short term by the proposed upgrade. Again this could be offset with appropriate mitigation undertaken by the tourism stakeholders themselves, and this could result in net benefits for tourism development in Lesotho in the medium to long term.

The Social Impact Assessment also recommends a combination whereby Alternative 4 could provide an opportunity to phase in the Alternative 5 upgrade, which could help to minimise or mitigate short term negative impacts, while enhancing the opportunity for the medium to long term potential positive impacts. Accordingly only the first part of the Pass is upgraded to a hardened surface in the short term, thereby providing stakeholders, particularly tourism operators, with the opportunity to adjust their businesses in response to a gradual change to the adventure experience on the Pass, rather than an abrupt short term adjustment to the market (associated with the upgrading of the entire Pass to a hardened surface) which is more difficult to adapt to. While Alternative 4 was considered, the intermittent and lengthy construction phase (6-10 years) as opposed to 3 years anticipated for Alternative 5, in addition to the associated increased costs and the social and tourism frustration that would probably arise, suggest that this option in the described form, may not be as practical to implement.

No fatal flaws in terms of social impacts which could halt the proposed project were identified.

5.6 Combined Impact on the Economic Environment

Two separate and independent economics specialist studies were undertaken. Within the constraints and limitations of the scale of the study, the initial local scale economics study recognised that the primary economic issues were related to 4x4 tourism and accommodation and therefore focussed on these issues with less emphasis on the broader range on economic impacts related to the proposed upgrade. Based on recommendations of this study and the limitations within which it was undertaken, a broader scale economics study was then commissioned to provide the regional and international perspective.

Local Scale Economic Impact Assessment

The local economic specialist study showed that the preferred alternative (Alternative 5) would generate net positive but shallow economic benefits to a broad cross-section of stakeholders in the regional economy. At the same time, this alternative would also generate severe, negative impacts to stakeholders within several specific industries. Negative impacts caused by the upgrade are concentrated in three industries - existing tour operators, lodging facilities, and (to some extent) retailers oriented to the existing tourism market. The upgrade would also generate a 'Low' negative impact in terms of loss of jobs.

The broad base of industries that would benefit from the upgrade include wool & mohair, agricultural suppliers, dairy and livestock farmers, niche agricultural producers, retailers that serve cross border commuters, taxi operators, commercial traders, and operators of new tours. It must be highlighted, however, that although these sectors will benefit, the impact is expected to be **Low Positive** with small benefits. The construction industry and its suppliers would also benefit from the project, but only during the construction period. Similarly, local communities could also benefit significantly from job opportunities during the construction phase.

The study suggests that the proposed upgrade project may not be 'viable' if measured on the economics alone and may have a serious, deleterious impact on tour operators and lodging facilities in the area. However, these impacts do not have to represent a "fatal flaw" for the project if a strategic and comprehensive effort is made by Government to assist these local industries shift to a different tourism economy. This conclusion needs to be placed in the context of the limitations of the study, in that focus is on Phase 2 of the Sani Pass Road upgrade only, which represents only a portion of the overall project to extend economic improvements across Lesotho.

If judged on a broader regional scale, the study notes that the overall project may indicate a different economic impact as a regional transportation corridor. The Local Economic Study was also limited to a review of the costs and benefits of Phase 2 alone, and has focused on tourism and trade between Underberg and Mokhotlong. Thus, the Phase 2 construction cost is not "amortised" as part of the larger corridor for regional economic benefit. At the time the study was undertaken, the intentions of the Lesotho government to upgrade their section of the P318 were not confirmed and thus, the compounding benefits could not be considered in the assessment.

The study further recommended that a Market Analysis be conducted, to determine the types and programmes for specific destination tourism attractions that could be developed or accessed to help ameliorate the loss of specialty Sani Pass tour operations. Then, based on those findings, a Strategic Plan for Sustainable Tourism and Agricultural Development should be created to harness the economic potential of this beautiful region, whilst also protecting its unique natural resources and quiet isolation. Economic development in both the Mokhotlong District and the Kwa Sani Municipal area is dependent less on the particular improvements to this road than on a broad-based and sustained programme of investment in sustainable tourism, infrastructure, and agricultural beneficiation. If effectively developed, the strategy could see many of the impacts rated **Low Positive** changing to **Moderate Positive** impacts and reversal of some of the negative impacts to positive.

Broad Scale Economic Impact Assessment

The broad scale economic assessment undertook a complex analysis of the broader economic parameters (including but not limited to GDP, foreign and domestic tourism, retail and commercial industries, taxi operators, vehicle and time costs) which could be impacted by the proposed upgrade. The results show **High Positive** outcomes for almost all parameters assessed compared against the *status quo*, and essentially confirm that the proposed upgrade has far reaching positive economic impacts beyond the boundaries of the local area. These broader positive impacts then positively influence the local economic impacts, thus explaining why the two economic studies differ in some of their findings (the local study does not consider external, broader regional and international influences).

As identified in the Local Scale Economic Impact Assessment, the broader study also recognises that the most significant impact will be on the 4x4 tour operators and tourism during the construction phase. The assessment study also notes that, with appropriate strategic tourism planning and development, assistance to, and the cooperation of, the 4x4 operators, the negative impact could be reversed and show **High Positive** benefits in the medium to long term.

The conclusion of the Broad Scale Economic Impact Assessment is that the proposed upgrading of the Sani Pass Road will have net **High Positive** economic impacts for both South Africa and Lesotho.

5.7 Impact on the Visual / Aesthetic Environment

The specialist Visual Impact Assessment recognises that the Sani Pass Road travels through a landscape with an inherently very high visual quality and notes that although the existing road has a negative impact on the visual quality of the valley, this quality is still regarded as **High Negative**. Intimate points of interest such as stream crossings, waterfalls, geological features and colourful flowering plants, in addition to the **Moderate** to **Low Negative** intrusive visual impact of the existing road, create experiences along the road adding to the sense of place value and aesthetic appeal.

The upgrade of the Sani Pass Road from the Good Hope Trading Store site to the summit will exert a negative influence on the visual and aesthetic environment, largely as a result of:

- Alterations to the current aesthetic experience.
- The higher travel speeds allowed that will detract from the current slow, laboured travel speed, which allows for a close appreciation of interesting detail alongside the road.
- The potential increase in vehicular traffic that will alter the current situation in terms of noise and activity.
- The need to cut into the existing landform to accommodate the vertical alignment and the width of the new servitude.
- The increased scale of the road in this rural / natural setting.

The significance of the impact is rated as **High Negative** even after the implementation of extensive, site specific and innovative mitigation measures. The significance is due to the high disruption to the visual and aesthetic amenities along the road during construction and the change to the landscape in terms of road widening, cuts and fills, rock face stabilization, etc. that will intensify the visual contrast of the road with the landscape. Furthermore, the impacts are on a regional scale and of a long term duration.

Even with a **High Negative** significance rating, the visual impact of upgrading the Sani Pass Road is considered acceptable, because the Pass and its surrounding environment will still retain most of its aesthetic appeal and sense of place. Furthermore, ensuring the retention of the aesthetic appeal of these features (e.g., switchbacks), even if in a modified way, is considered to outweigh the cost of the complete loss of these features if they were to collapse because they were not supported by the necessary engineered infrastructure. As such, the No-go alternative may eventually result in an even higher negative impact.

5.8 Impact on Cultural Heritage Resources

In general, the uKhahlamba Drakensberg Park project area has several archaeological sites, particularly rock art sites, Stone Age shelters, stone wall enclosures, on the park's management records, as well as AMAFA and Natal Museum records. Since the proposed road development is an upgrade of the existing Sani Pass gravel road to an all-weather road, the project's footprint will be limited to the existing road and associated road reserve. As such, the Archaeological and

Heritage Impact Assessment did not anticipate that significant archaeological or other physical cultural properties would be affected by the proposed road works.

Although the impact on physical cultural resources would be minimal, given the fact that the proposed road works will be limited to upgrading an existing road, the heritage significance of the affected area lies mostly in the intangible value associated with the cultural landscape represented by the existing road route and associated milieu.

The other generic value of the project area is that the road traverses a portion of the protected UDP WHS. The Sani Pass Road itself has gone through a series of developments, including the road's early history of construction, repairs and upgrade, which have seen the pass evolve over time from a foot path, to a mule track, a wagon track and eventually a motorised vehicle road. The proposed road upgrade, therefore, should be viewed as part of the Sani Pass' continuous development. From this point of view, the heritage assessment study did not identify any prohibitive archaeological or heritage barriers that may require the road upgrade project to be abandoned. The study thus supported the proposed project, on condition that it is implemented in a sustainable manner while ensuring it will not degrade the overall natural and cultural values of the area.

5.9 Screened Impacts

The Environmental Assessment Practitioner also assessed the 'Screened' Impacts. The 'Screened Impacts' were those potential impacts considered to be common to all road projects that involve construction and which require ongoing operational post construction maintenance. They include, amongst others, waste pollution, soil and water contamination, road user safety, air quality and noise (nuisance impact). These potential impacts are considered 'screened' impacts as they did not undergo specific specialist investigation and assessment, but are, nonetheless, assessed with the same importance and respect, particularly considering the physical and ecological context of the environment within which the upgrade is proposed. These impacts are considered well understood and can confidently be effectively managed and mitigated, in both construction and operation, through the implementation of strict procedures and practices contained in the Environmental Management Programme, thereby reducing their potential environmental impact.

Construction Phase

Review of all the screened impacts in combination, highlights those most likely to have an impact should the proposed Sani Pass Road upgrade go ahead. In the Construction Phase, only soil and water contamination from accidents on the Pass was rated as having a **High Negative** impact significance rating, which reduced to **Moderate Negative** with the application of appropriate mitigation measures. Conversely, water abstraction and air quality were rated as having **Low Negative** impact significance with or without mitigation. The remaining potential screened impacts were all calculated at **Moderate**, reducing to **Low Negative** significance with mitigation application - except pollution, soil and water contamination and noise, which all remained at moderately significant with mitigation.

Operational Phase

The ratings for the latter three construction impacts that still yielded **Moderate** significant ratings despite mitigation are considered acceptable in light of the operational ratings which reflect that, once the road is constructed, the majority of the

ratings reduce to **Low Negative**. As with the Construction Phase, soil and water contamination from accidents on the Pass, retains the highest significance rating without mitigation. This does, however, only reduce to **Moderate Negative** due to the potential environmental damage an accident could produce. The low probability of such incidences occurring allows the risk to be considered acceptable in the context of the aims and objectives of the Phase 2 project as a whole.

A number of the I&APs argued that an improved road surface and design would encourage users to travel faster on the Pass Road and would result in an increase of traffic, which in turn would increase the rate and risk of accidents occurring substantially thereby worsening road safety on the Pass. However, based on discussions with the design engineers it is understood that the operation of the proposed upgrade will have **High Positive** significance ratings for road user safety.

The first motivation for this counter argument is that the Pass Road will not change significantly in its position and alignment. As such, most, if not all, tight corners and bends will remain and will continue to be natural deterrents to speeding. The improvement in safety is as a result of, not only improved road conditions, but also the installation of additional safety features and structures like road traffic signs and barriers along most of the length of the Pass. Speed control measures, such as rumble strips, may also be installed at points known to be high safety risks. Another important motivation for the counter argument is based on the improved design for hydraulics and stormwater control. The design of the road, in particular to (a) reduce and control the volume of runoff which currently discharges to the Pass Road and (b) shed the excess stormwater and direct it to the stormwater channels, will reduce the safety risks currently associated with water on the Pass Road. Furthermore, with less water collecting on the surface and with improved drainage, icing up of the Pass Road during the winter will also be less than current and potentially pose a lower safety risk to road users. Coupled with improved control at the new border post, whereby all vehicles will be checked for roadworthiness, the risk of accidents occurring is expected to reduce, and road safety to improve.

5.10 Cumulative Impacts

The Sani Pass Road Upgrade Project: Phase 2 achieves certain objectives as an individual project, but it is also a piece of a much larger puzzle without which the “bigger picture” cannot be realised i.e. environmental protection integrated with sustainable socio-economic development of the eastern area of Lesotho. The Phase 2 Road Upgrade project has strong links to other current projects in the region such as the Phase 1 upgrade, the Lesotho project to surface the P318 to Mokhotlong, and the project to move the Sani Border Post. The Phase 2 Road Upgrade project also has important links to unlocking the development potential of the region in terms of tourism development and socio-economic growth and development with a number of potential projects in the pipeline. All are however, dependent on improved and accessible access to Sani Top. If the Phase 2 project is approved, potential environmental impacts, both positive and negative could occur. Road and tourism development in the Mokhotlong Region of Lesotho could have significant negative impacts on the environment if not properly managed, while in South Africa, the Sani Pass Road Upgrade Project could reduce the amount and rate of erosion of the Pass and essentially eliminate the ongoing need for borrowpits, which are in themselves, significant environmental impactors. By improving accessibility for all road users to Lesotho and completing the transport link between the two countries, the Sani Pass Road Upgrade Project, as a whole, could actually create the opposite scenario of the intended outcome in the short (immediate) term. Negative social and economic impacts may be (immediately) experienced as the businesses which exploit the

limited access to the Sani Pass for income, will find their services in their current form, are no longer necessary or needed. Medium to longer term projections, however, suggest the upgrade would ultimately result in positive impacts as the socio-economic dynamics change and adapt to the situation.

Without the upgrade of the Pass and the elimination of existing environmental impacts, protection of the Pass and UDP WHS against future environmental impacts cannot take place. The social, economic and tourism development potential of the region, which has been recognised, will also never be realised.

6 FINDINGS VS MOTIVATION

In determining whether or not the proposed development should receive environmental approval, one needs to bare the project motivation in mind, and based on the completed assessment, review the findings against the motivation to determine whether the project is justified.

The motivation for the upgrading of the Sani Pass Road from a gravel to a hardened surface, all-weather road includes the following considerations:

- *The existing road drainage system is unable to cope with the high intensity runoff of water on steep gradients, which results in excessive scour and gravel loss. Generally, gravel roads constructed on steep gradients are more difficult to maintain which could lead to intermittent closure of the road due to significant erosion and environmental damage.*

The EIA identified that excessive erosion and scouring on the Sani Pass Road has been taking place for many years and has caused significant damage to not only the Pass Road but to the terrestrial and aquatic (rivers and wetlands) environments adjacent to, and linked with, the Pass. Undertaking the proposed upgrade would specifically address and remedy key environmental problem areas through engineered solutions.

- *Gravel is a non-renewable resource and good quality gravels are particularly difficult to source in the Drakensberg area of KwaZulu-Natal. The excessive loss of gravel from the Sani Pass is therefore of serious concern, particularly as the opening of new borrowpits have high ecological and visual impacts and are not permitted in the World Heritage Site. The haul distance for gravels from outside borrow pits makes it difficult to maintain the Pass.*

The creation of borrowpits to provide materials to continuously and indefinitely repair the Sani Pass Road to allow open access to all vehicles is environmentally unsustainable and goes against basic principles of environmental management. Furthermore, the continued use of borrowpits also creates new and destructive environmental impacts at each borrowpit. The continuous replacement of gravel on the Sani Pass, as would be necessary for Alternatives 1 to 4 (favoured by some interested parties), also does not address the larger erosion problem which is degrading the environment at a high rate.

- *Furthermore, a co-operation agreement was signed in 2005 between Lesotho and South Africa to improve access between the two countries via Sani Pass. This is part of an initiative to improve accessibility between SADC countries. The intention is for South Africa to surface the P318 from Himeville to the Lesotho border and Lesotho to surface the section from the SA border to*

Mokhotlong approximately 60kms away. The ultimate goal is to have a hard-surfaced road all the way to Maseru.

Provision of an all-weather road up the Sani Pass will make the Pass accessible to all vehicles from Underberg / Himeville (and beyond) through to Lesotho. Upgrading of the section of road from the Lesotho border post to Mokhotlong which is currently under investigation and design, will complete the link and achieve the goal of a hard surfaced road all the way to Maseru and fulfil the objectives of the co-operation agreement.

- *The Sani Pass Road currently provides access to, and passes through, the UDP, which is a proclaimed World Heritage Site. Sustainable access to the Park needs to be developed and carefully managed and Sani Pass Road (P318) forms an integral part of this initiative. Furthermore, the co-operation agreement, as stated above, also aimed to improve access between the two countries via the Sani Pass. This project is thus part of an initiative to improve accessibility between SADC countries.*

Any proposed development in the UDP must ensure that the project has nominal impacts on the WHS. The existing Sani Pass Road is having significant environmental impacts on the UDP WHS mainly due to poor stormwater control and high erosion rates. Implementing the upgrade as proposed would not only ensure protection of the environment into the future but would also remedy such existing environmental impacts on the Sani Pass through the implementation of engineered measures to control erosion and scour along the Pass Road.

- *Aside from being an access road into Lesotho, the Sani Pass Road is used by local residents, landowners, tour operators and tourists to access private properties located along the first section of the road, the UDP and the top of the Pass itself. The Sani Pass also represents an important international trade, service and tourism link between Lesotho and KwaZulu-Natal with many of the Basotho people from the Mokhotlong District travelling into South Africa to make use of the facilities in Underberg and Himeville and even Pietermaritzburg and Durban.*

The Sani Pass Road is the only link road between the province of KwaZulu-Natal and Lesotho and fulfils an important international trade, service and tourism function. Upgrading the Road to an all-weather hard surfaced road will open the Pass to many more users who could take advantage of the access to engage, promote and improve trade, tourism and community links between South Africa and Lesotho. The potential does exist for the new and improved accessibility to create negative social and economic impacts in the short term on both sides of the border, however, all indications are that the medium to long term projections will show definite positive benefits. This needs a coordinated effort by the South African and Lesotho Governments in compliance with the Cooperation Agreement signed between the two states, to compile and implement a bigger, holistic plan or 'Master Development Plan' for the region which considers both environmental protection requirements and socio-economic development opportunities and constraints.

In addition to the environmental benefits, it is anticipated that the provision of an all-weather road through the Sani Pass will have a number of anticipated economic benefits, namely:

- It will provide access to the UDP from both sides of the escarpment and

incorporate the border and park access controls

- The travel distance between Underberg and Mokhotlong for non 4x4 vehicles will be drastically reduced by approximately 350kms
- The Eastern Lesotho Highlands could potentially open up to tourism development
- Business and trade links between the Mokhotlong area and the businesses in Underberg and Pietermaritzburg will be strengthened and extended
- Transportation and accessibility to Lesotho for locals from both sides will improve
- A potential new scenic tourism route could be opened up between the eastern Free State and KwaZulu-Natal via Lesotho

In terms of the EIA findings, if the proposed Upgraded Road is constructed, these economic benefits can be realised - provided the recommendations of the project team and specialists are implemented and the appropriate Development Master Planning for the eastern region of Lesotho is undertaken and marketing strategies specific to tourism promotion of the Sani Pass are designed and implemented by the Lesotho Government working with the South African Government.

7 RECOMMENDATIONS

The following recommendations should be considered in the DEA's review of the EIA for the proposed upgrading of the Sani Pass Road (P318). The recommendations and mitigation measures presented in this report are significant in ensuring that the biophysical, environmental, social and economic impacts are adequately addressed and mitigated to justify and validate the proposed project.

The most important recommendations are presented below. Of these, some of which are strategic and others require international joint responsibility and cooperation between South Africa and Lesotho.

- Where it is practical from a road design perspective, the mitigation measures specific to the approved alignments prescribed by the specialists should be implemented.
- In terms of design, measures should be incorporated to allow for the retention of existing natural, aesthetic and cultural features where appropriate.
- All aquatic ecosystems (including rivers and wetlands) identified and mapped during the assessment of aquatic ecosystems must be treated as sensitive and important areas, particularly those considered to be more significant systems.
- During both construction and operation, it is important that any accidental spills of fuels, construction materials, chemicals, effluents or other harmful substances are reported and acted upon immediately. Effective remediation and cleanup strategies and procedures need to be implemented.
- In the operational phase, EKZNW in conjunction with the KZNDOT, will need to implement a carefully designed management plan for the road and road reserve up Sani Pass.
- A detailed landscape and rehabilitation plan should be developed by the landscape architect together with the flora specialist and EKZNW. The general roadside landscaping shall reflect the existing surrounding landscape.
- It is essential that all cut and fill slopes, as well as all areas disturbed or affected by construction activity, are suitably topsoiled and vegetated as soon as is possible after final shaping. The progressive rehabilitation measures will allow the maximum growth period before the completion of the project.

- All work areas affected by the construction beyond the construction site must also be rehabilitated. This includes areas such as temporary access roads, construction campsites, workers campsites, borrow pits, lay down areas, etc.
- A waste awareness programme should be implemented by the responsible authority to encourage road users to minimise their waste generation, and thereby minimise the potential for waste pollution.
- Develop and implement a construction stormwater management plan to ensure that all stormwater collected on site is managed to minimise potential contamination.
- Road use management (traffic volumes, vehicle types, speed and noise) should be given particular attention as it is likely to be a key determinant of the quality of tourist experiences.
- Careful medium to long term planning, by the District and Local Municipalities and local enterprises, to proactively position the economies of Underberg and Himeville to harness the growth potential associated with anticipated increased business (e.g., harnessing new trade opportunities with Lesotho) and tourist numbers could help to maximise long term benefits for the region.
- If the positive impacts to road safety are to be permanently retained, this will require continuous investment in road maintenance once the road has been upgraded. If the road is not maintained these positive impacts could be reversed.
- Strict safety regulations should be required during the construction phase to avoid incidents of collisions between road users and construction vehicles, or risks of accidents on areas under construction during poor weather conditions.
- The strong reliance by tourism operators in the Mokhotlong District on the tourist market supplied by tourism operators in South Africa via the Sani Pass, is a potential weakness which could be mitigated by Lesotho operators expanding their marketing efforts in order to attract tourists entering Lesotho through alternative border posts.
- Alternative tours should be considered and developed by the 4x4 tourism industry. Mitigation measures should be oriented to assisting the tour operators shift to potential new businesses or other markets.
- In order to reduce the impacts on trade, tourism and accommodation, both the Lesotho and South African governments, as well as the KwaZulu-Natal provincial administration, should undertake intensive marketing campaigns to promote the area for tourism.
- South Africa should engage with Lesotho to develop a 'Master Development Plan', which includes tourism, for development of the eastern Region of Lesotho. Such plans for Lesotho need to consider upgrading tourism accommodation facilities, signage and service levels, as well as develop appropriate branding and an informed marketing strategy to evolve the sector further than the adventure market. By working closely together, on integrated economic development initiatives the South African and Lesotho Governments would assist in expanding trade throughout the region to the maximum benefit on both sides of the border.
- Give appropriate consideration to the planning of associated economic developments if the true potential is to be harnessed, and the compromising of current investment and tourism operations is to be avoided. This mitigation can only be undertaken by the Lesotho Government (e.g., maintenance and upgrading of road infrastructure in Lesotho) and stakeholders themselves.
- The Lesotho Tourism Authority should consider developing new tourism routes, not only in the valleys below the mountains but also in the highlands in Lesotho. There are a number of attractions with considerable potential; Sehlabatheba National Park is an example.

8 CONCLUSION

The proposed upgrade will thus have both positive and negative impacts. Consideration of the ecological impacts together suggests that the positives outweigh the negatives. Further, the cumulative ecological impact is acceptable in the medium to long term as it will reduce, and possibly reverse, environmental damage to the uKhahlamba-Drakensberg Park related to the operation of the Pass Road. This recognises that the current Pass Road is having significant negative environmental impacts on the environment, to the point where, without major mitigation and cooperation from all parties concerned, the Pass will have to close permanently and be rehabilitated to its original state in order to prevent further damage to the ecology of the World Heritage Site.

The Social Impact Assessment recognised that the proposed project will impact in various ways on the road users, the tour operators and the local communities, who all utilise the Pass in one way or another. The relatively small group of 4x4 tour operators will be the most negatively affected due to the potential loss of business which is their livelihood. The associated tourism industry may also be negatively affected due to the anticipated loss of 4x4 tourists. The Local Scale Economics Study suggests that the new income generated will not compensate for the loss of income from the 4x4 tourism business in the short term. Medium to long term forecasting, however, shows an improvement in the economic development of the area.

Conversely, the studies also indicate that preferred Alternative 5 will generate net positive but shallow economic benefits to a broad cross-section of stakeholders in the regional economy. Hundreds, if not thousands, of people in the local communities on both sides of the border will benefit from the Upgrade. Not only will the Upgrade open up better employment and trade opportunities, but it will also provide access to social, commercial and public services not readily available in Lesotho. The Upgrade will improve accessibility for families distributed between Lesotho and South Africa and travel for commuters will be faster, safer, more comfortable and more cost effective as vehicles (private and taxis) will cost less to maintain. Local trade and agriculture could also benefit in varying degrees from the upgraded access.

The Broad Scale Economics Study, which considers a much broader range of factors and undertook a more detailed economic analysis presents a much more optimistic and positive picture for the region if the Pass Road is upgraded. The study indicates positive impacts in almost every aspect considered for both South Africa and Lesotho, including the 4x4 tour operators.

All three studies recognise that the high negative impact on the most affected group, the 4x4 tour operators can either be reduced and/or reversed through adaptation of the business to the changing economic and tourism environment. The success of the adaptation requires willingness from the tour operators to adapt their businesses to the changing tourism environment, but also requires commitment from the South African government to develop and implement a tourism strategy that will create a sustainable tourism environment for the region (including 4x4 tours).

The visual or aesthetic environment will be negatively affected, regardless of the measures taken to make the infrastructure look as natural and as aesthetically pleasing as possible. The sense of place of the Sani Pass is one of its major draw cards and alteration to the visual component may negatively impact on this value. However, for the Pass Road to exist in its current form or any modified form, supporting and stabilizing infrastructure must be constructed and thus, the partial loss

of some of the Pass's aesthetic value, is considered an acceptable compensation for the Pass remaining open.

The uKhahlamba Drakensberg Park World Heritage Site includes the Sani Pass as a heritage resource. No specific cultural heritage resources were identified along the length of the Pass by the Cultural Heritage Assessment, although resources do occur in the vicinity. The main issue relates to the negative impact on the cultural heritage value of the Pass Road. Taking into account the evolution of the Pass, which is considered part of its heritage value, and the fact that appropriate measures will be put in place to minimize the impacts, the loss is considered acceptable in the context of the proposed upgrade.

The screened impacts also reflect positive and negative impacts with the upgrading of the Pass Road. The only significant negative impact and risk is the potential contamination of soil and groundwater during the construction phase and, to a lesser degree, during the operational phase. All other potential impacts such as pollution, noise and dust) can be adequately reduced to acceptable levels and therefore do not pose a risk to the viability of the project.

9 OPINION OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

It is the opinion of GIBB that the project, as proposed by the KZNDOT to upgrade the Sani Pass Road (P318): Phase 2 to a hard-surfaced, all-weather road, be granted Environmental Authorisation subject to implementation of the recommendations provided in EIAR. This opinion is based on GIBB's understanding of the project scope, familiarity with the issues and concerns, insight into the current and future environmental impacts, and experience undertaking EIAs. GIBB could find no fatal flaws in the Proponents preferred ***Alternative 5*** and thus recommends that the proposed project to upgrade the Sani Pass to an all-weather, hard-surfaced road ***be authorised*** as the best option to meet, not only the proponent's requirements, but those of the affected environment and surrounding communities at large.