environmental affairs

Department:
Environmental Affairs
**REPUBLIC OF SOUTH AFRICA**

DETAILS OF THE SPECIALIST, DECLARATION OF INTEREST AND UNDERTAKING UNDER OATH

| | (For official use only) |
|---|---|
| File Reference Number: | |
| NEAS Reference Number: | DEA/EIA/ |
| Date Received: | |

Application for authorisation in terms of the National Environmental Management Act, Act No. 107 of 1998, as amended and the Environmental Impact Assessment (EIA) Regulations, 2014, as amended (the Regulations)

**PROJECT TITLE**

**Kindly note the following:**

1. This form must always be used for applications that must be subjected to Basic Assessment or Scoping & Environmental Impact Reporting where this Department is the Competent Authority.
2. This form is current as of 01 September 2018. It is the responsibility of the Applicant / Environmental Assessment Practitioner (EAP) to ascertain whether subsequent versions of the form have been published or produced by the Competent Authority. The latest available Departmental templates are available at https://www.environment.gov.za/documents/forms.
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**Departmental Details**

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Environment House
473 Steve Biko Road
Arcadia

Queries must be directed to the Directorate: Coordination, Strategic Planning and Support at:
Email: EIAAdmin@environment.gov.za

## 1. SPECIALIST INFORMATION

| | | | | |
|---|---|---|---|---|
| Specialist Company Name: | AG Traffic and Transportation Consultants (Pty) Ltd | | | |
| B-BBEE | Contribution level (indicate 1 to 8 or non-compliant) | 1 | Percentage Procurement recognition | 135% |
| Specialist name: | Andile Gqaji | | | |
| Specialist Qualifications: | BSc: Honours: Transportation Planning | | | |
| Professional affiliation/registration: | Professional Engineering Technologist | | | |
| Physical address: | 5 Trafford Avenue, Dawncliffe, Westville | | | |
| Postal address: | dito | | | |
| Postal code: | 3629 | Cell: | 082 786 4690 | |
| Telephone: | | Fax: | | |
| E-mail: | Andileg@agttc.co.za | | | |

## 2. DECLARATION BY THE SPECIALIST

I ,Andile, Gqaji, declare that –

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

Signature of the Specialist

AG Traffic and Transportation Consultants (Pty) Ltd

Name of Company:

19 October 2020

Date

## 3. UNDERTAKING UNDER OATH/ AFFIRMATION

I, Andile Gqaji, swear under oath / affirm that all the information submitted or to be submitted for the purposes of this application is true and correct.

A Gqaji

Signature of the Specialist

AG Traffic and Transportation Consultants (Pty) Ltd

Name of Company

19/10/2020

Date

7158537

Signature of the Commissioner of Oaths

2020 -10 -19

Date

SOUTH AFRICAN POLICE SERVICE
COMMUNITY SERVICE CENTRE
2020 -10- 19
WESTVILLE
KWAZULU-NATAL

Bhangazi Lodge Basic Assessment - Specialist Report Updates

SPECIALIST TRAFFIC IMPACT ASSESSMENT REPORT

Andile Gqaji

AG Traffic and Transportation Consultants (Pty) Ltd

For

Environmental Resources Management Southern Africa Pty Ltd

**Aim**

ERM is in the process of updating the Bhangazi Cultural Lodge Basic Assessment Report (BAR) in light of the proposed amendments to the impact footprint resulting in a generalised decrease in impact on the Greenfields sections , these changes are listed in the table below

Proposed changes to impact footprint

| **Mitigation Measure** | **Nett Result** |
|---|---|
| Remove proposed new access road, in favour of using the existing access road to the fishing camp area. | No longer need to clear an extent of 200m2 (forested area) for the access road alignment. |
| Relocate restaurant and pool complex from forest zone to disturbed fishing camp zone. | No longer need to clear an extent of 350 m2 (forested area) for the restaurant and pool complex. |
| Following above, no requirement for new access road leading to restaurant complex. | No longer need to clear an extent of 200 m2 (forested area) for the service road alignment. |
| Reducing the size of the proposed 2 and 4 bed chalet units from 75 m2 to 50 m2 and 40 m2 respectively. | Potentially cleared area reduced from 1350 m2 to 970 m2 (footprint of raised decks, not necessarily clearance of forest canopy). |
| Forest infrastructure limited to chalets and boardwalks only, all on raised timber decks. | Reduction of impact on undergrowth. |

In this regard I have been asked to :

1. Review the updated site layout plan in relation to the affected specialist area and provide comments, where necessary.

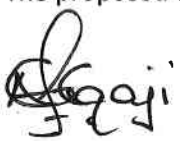
2. Updating of the impact assessment in light of the layout changes.
3. Updating the specialist report, detailing the updates and indicating the sections of the report where the updates have been made.

**Comments**

These proposed changes do not impact significantly on the result of our specialist report.

**Conclusion**

The proposed changes are welcomed and do not alter the conclusion of our specialist report.



Andile Gqaji

AG Traffic and Transportation Consultants (Pty) Ltd

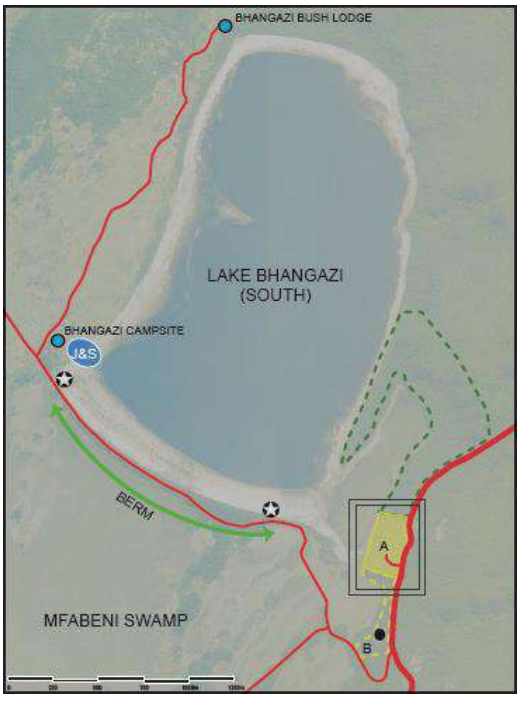
20 October 2020

April 2016

# Traffic Impact Statement Report

# of the

# Proposed Bhangazi Heritage Site Development




Prepared for:

**ERM Southern Africa (Pty) Ltd** Unit 6 | St Helier Office Park | Cnr St Helier Road & Forbes Drive | Gillitts | 3610 | Durban | South Africa

Prepared by:

AG Traffic and Transportation Consultants (Pty) Ltd
Cell: +27(0) 82 786 4690
Fax: +27(0) 86 524 1038
Email: andileg@agttc.co.za

## 1. BACKGROUND INFORMATION

AG Traffic and Transportation Consultants (Pty) Ltd were appointed by ERM Southern Africa (Pty) Ltd to undertake a Traffic Impact Statement (TIS) for the Proposed Bhangazi Heritage Site Development in the Cape Vidal area. The objective of this statement is to discuss the traffic impact of the proposed development on the existing road network.

**Figure 1** shows the location of the Bhangazi Heritage Site, marked as A and B in the Cape Vidal area. The Site Development Plan (SPD) is shown in **Figure 2** overleaf.

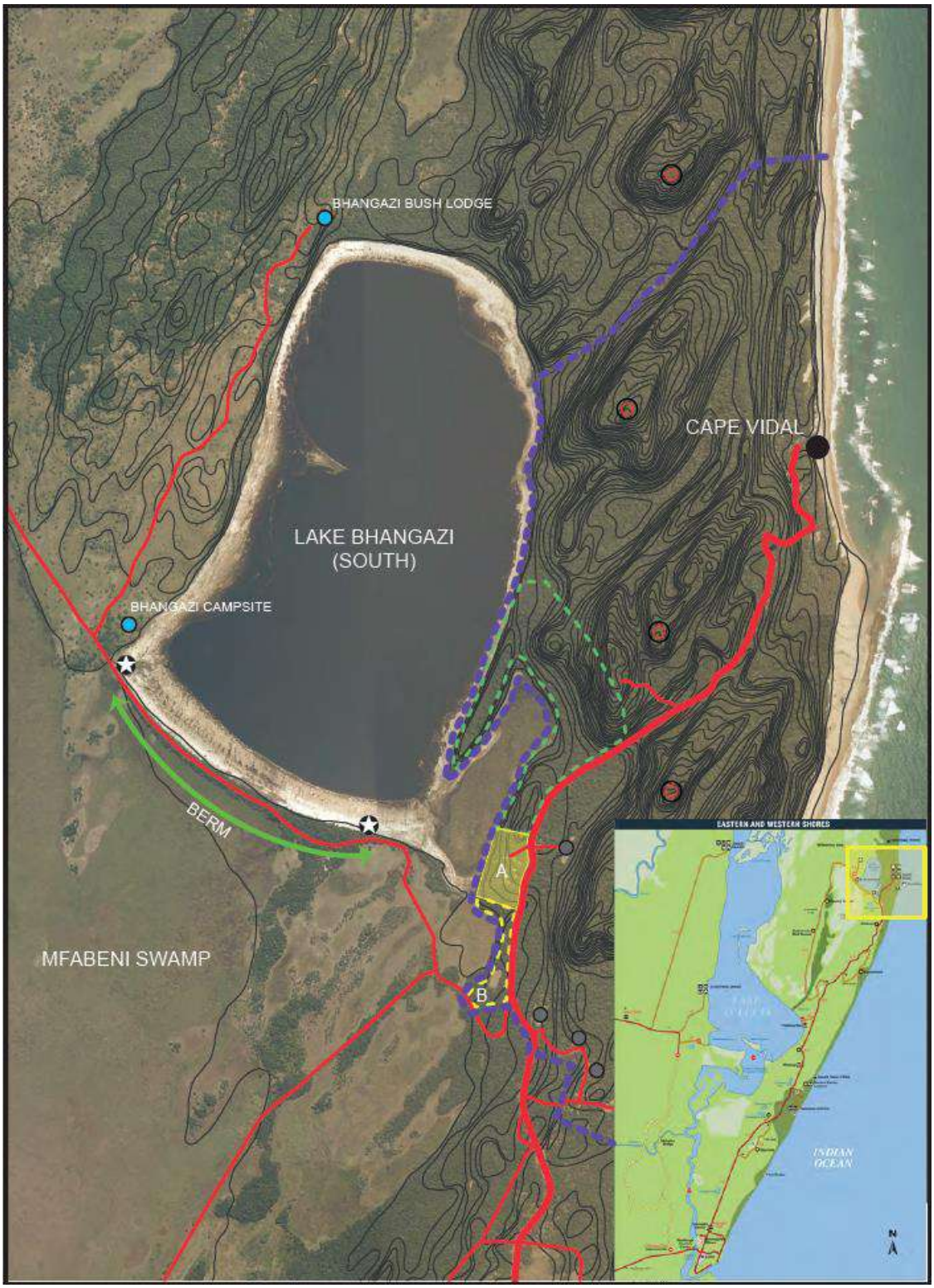



**Figure 1:** Location of Bhangazi Heritage Site within Cape Vidal.

According to the information provided, the proposed development will have the following land uses as traffic generators:

- 10 x 2 bed units;
- 8 x 4 bed units;
- 4 x 2 bed units; and
- 350 $m^2$ Restaurant (including kitchen and toilets).


**Figure 2:** Site Development Plan.

The accommodation section of the development is expected to generate external trips. The estimated seating capacity at the restaurant will be about 50 guests. The restaurant, based on its location is not expected to generate as many external trips, nevertheless if it does, it is not expected to generate more than 20% of the external trips and the remaining 80% will be internal trips.

As the worst case scenario all trips to be generated by the proposed development will be treated as external trips and will be added and analysed accordingly.

## 2. TRIP GENERATION RATE

The documents "South African Traffic Impact and Site Traffic Assessment Standards and Requirements Manual, TMH 16, Volume 2, Version 1.0, August 2012" and "South African Trip Data, TMH 17, Volume 1, Version 1.0, September 2012" published by the Committee of Transport Officials (COTO) were used to estimate the number of trips that will be generated by the proposed development.

For the purpose of undertaking an analysis for the accommodation part of the development, each 2 bed unit will be taken as representing a room, therefore, the proposed development will have 30 rooms. The 350 $m^2$ in total will consist of restaurant, a kitchen and toilets. The areas for kitchen and toilet are unknown to be deducted and as the worst case scenario the 350 $m^2$ in size will be used to conduct an analysis for the restaurant.

It must also be noted that since the proposed development site is situated within an existing establishment, therefore, there are current trips that are visiting the establishment that could be deducted from the primary trips to be generated by the proposed development. All trips to be generated by the proposed development will be treated as primary trips to be analysed and reported as worst case scenario.

Anticipated trips that are to be generated by the proposed development are shown in **Table 1** below.

**Table 1: Trip Generation for the Proposed Bhangazi Heritage Site Development**

| Land Use Type | Size | Unit | Trip Gen Rate AM Peak Hour | Trip Gen Rate PM Peak Hour | Total Trips Generated | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | AM Peak Hour | | | PM Peak Hour | | |
| | | | | | In | Out | Total | In | Out | Total |
| Lodging | 30 | Room | 0.30 | 0.40 | 5 | 4 | 9 | 6 | 6 | 12 |
| Restaurant | 350 | 100 $m^2$ | 0.75 | 11.80 | 2 | 1 | 3 | 16 | 25 | 41 |
| | | | TOTAL | | 7 | 4 | 12 | 22 | 31 | 53 |

Therefore, it is anticipated that in total, the proposed development will generate approximately 12 trips during the AM peak hour and 53 trips during the PM peak hour as indicated in **Table** 1above.

## 3. EXISTING ROAD NETWORK

There is one existing access point to the Cape Vidal area. It is anticipated that this access point will continue to serve the development site. The existing access road to the Bhangazi Heritage Site is along the access road towards Cape Vidal. The main entrance and exit point as indicated in **Figure 2** will exclusively serve the guests to the development site. Service/delivery vehicles will exclusively use the entrance/exit marked "A" as indicated in **Figure 2**. The access gate to Cape Vidal is via an unnamed road which is 2.6 km from the town of St Lucia. This unnamed road has one lane in each direction and in some sections it has a narrow shoulder and in some has a gravel shoulder. The road has about 3.5 m lane width. **Figure 3** shows the road network within the study area.

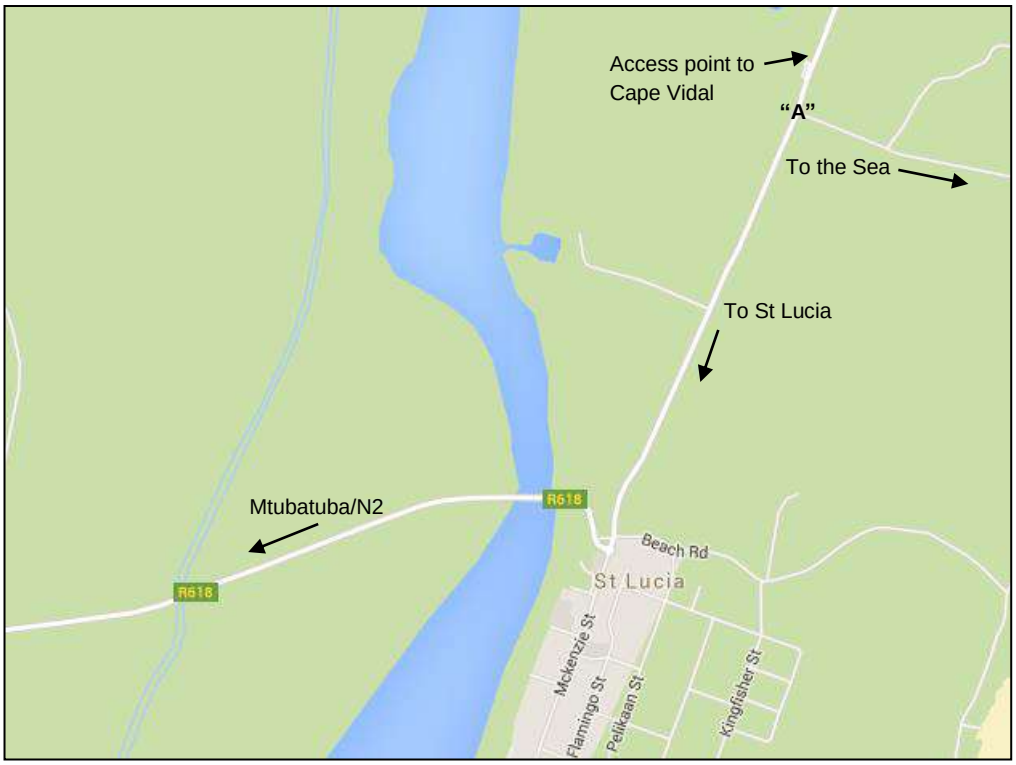



**Figure 3:** Road network.

From the gate to Cape Vidal, the existing access road that provides access towards Bhangazi Heritage Site is a tarred road which is approximately 20 km. From this tarred road, the current state of the road that directly goes to Bhangazi Heritage Site is a gravel road which is winding with sharp curves in some sections.

## 4. EXISTING CONDITIONS

In order to determine the likely traffic impact that the proposed development would have on the existing road network, it was necessary to ascertain the current traffic performance of the traffic system within the vicinity of the development site.

The closest intersection (marked with “A” in **Figure 3**) within the development site is the intersection of the unnamed road (towards St Lucia and Cape Vidal) with a road leading up to the sea. This intersection is priority controlled and is in a form of a T-junction with north-south movement being prioritised.

No public transport facilities such as bus/taxi shelters are provided on either side of this unnamed road. A negligible number of pedestrians were observed along the road.

Also no pedestrian infrastructure such as sidewalks are provided on either side of the unnamed road.

The pictures shown below were taken at this intersection.

**Figure 4:** View to the south (looking towards St Lucia).

**Figure 5:** View to the east (looking towards the Sea).

**Figure 6:** View to the north (looking towards the gate to Cape Vidal).

### 4.1 Existing traffic volumes

Manual traffic counts were undertaken on Wednesday, 13 May 2015. These traffic counts were undertaken at the nearest intersection to the development site due to its close proximity to the development site.

From these traffic counts, the AM and PM peak hours were determined to be:

- AM peak hour – 07:45 to 08:45
- PM peak hour – 16:15 to 17:15

The traffic counts were used to determine the level of traffic at affected intersection in the vicinity of the development site.

The 2015 AM and PM peak hour background traffic counts are shown in **Figures 7** and **8**, respectively.

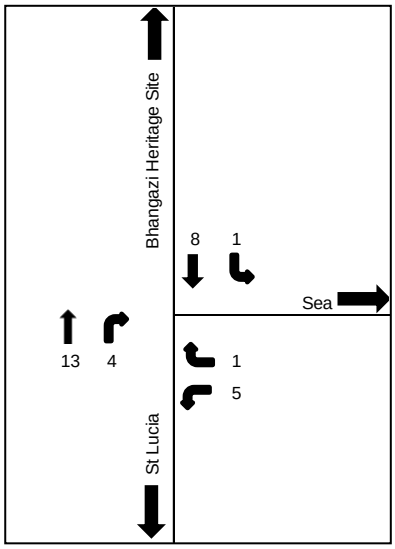



**Figure 7:** 2015 AM Peak Hour Traffic Volumes.

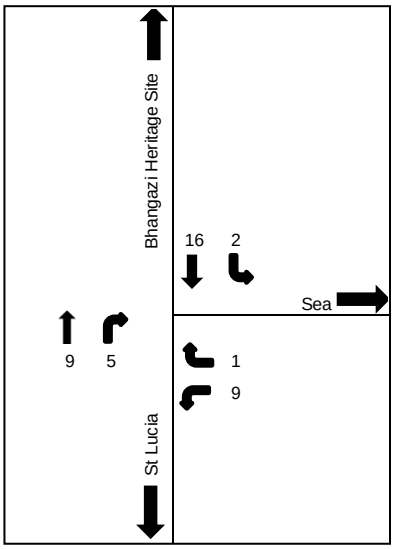



**Figure 8:** 2015 PM Peak Hour Traffic Volumes.

The development generated traffic was then distributed based on the distribution patterns as the 2015 background traffic. The development generated traffic was then combined with the 2015 background traffic for the AM and PM peak hours.
The results of the combined traffic volumes are shown in **Figures 9** and **10**.

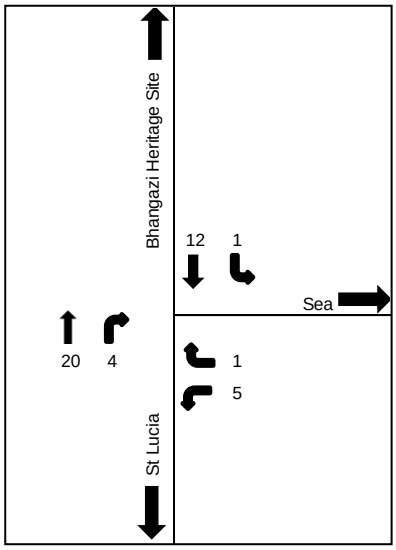



**Figure 9:** 2015 AM Peak Hour plus Development Traffic Volumes.

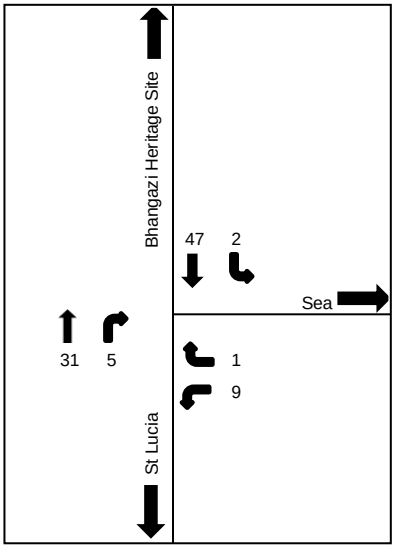



**Figure 10:** 2015 PM Peak Hour plus Development Traffic Volumes.

## 5. CAPACITY ANALYSIS

Intersection analysis was performed using aaSidra computer software in order to determine the Volume / Capacity (v/c), Delay in Seconds and Level of Service (LOS) at the respective affected intersections in the vicinity of the development site.

The summary of the capacity analysis results for both the AM and PM peak hours is shown in **Table 2** below.

**Table 2: 2015 AM and PM Background Without and With Development Traffic Analysis Results**

| Bhangazi Heritage Site/St Lucia Intersection | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Approach | 2015 AM and PM Peak Hour Without Development Traffic | | | | | | 2015 AM and PM Peak Hour With Development Traffic | | | | | |
| | AM Peak Hour | | | PM Peak Hour | | | AM Peak Hour | | | PM Peak Hour | | |
| | V/C | Delay | LOS | V/C | Delay | LOS | V/C | Delay | LOS | V/C | Delay | LOS |
| South | 0.010 | 1.2 | A | 0.009 | 3.1 | A | 0.017 | 1.2 | A | 0.024 | 2.0 | A |
| East | 0.004 | 10.7 | B | 0.009 | 10.7 | B | 0.004 | 10.7 | B | 0.010 | 10.8 | B |
| North | 0.005 | 0.3 | A | 0.010 | 0.9 | A | 0.017 | 0.5 | A | 0.030 | 0.9 | A |
| Overall | 0.010 | 1.6 | A | 0.010 | 4.0 | A | 0.017 | 2.0 | A | 0.030 | 3.3 | A |

The site observations and the analysis results as shown in **Table 2** show that during both 2015 AM and PM peak hours, the intersection analysed is currently operating satisfactorily with no approach worse than LOS B with plenty of spare capacity available.

**Table 2** also shows that after the development generated traffic has been added to the 2015 AM and PM background traffic volumes, the intersection analysed will continue to operate satisfactorily with still no approach worse than LOS B with negligible increase in delays and still plenty of spare capacity available.

Therefore, no upgrades to the roads or existing intersections as a result of the proposed Bhangazi Heritage Site development, are required.

## 6. PARKING

### 6.1 Parking Requirements

The document "South African Roads Board: Parking Standards (2nd Edition)"[1] published by the National Department of Transport (NDoT) was used to determine the number of parking bays required to meet the parking demand that will be generated by the Proposed Bhangazi Heritage Site Development.

Using the applicable parking rate of 1 bay per room and 6 parking bays/100 $m^2$ for the restaurant, it is therefore required that a minimum of 30 and 21 parking bays be provided for the rooms and restaurant, respectively. However, the restaurant will serve both internal and external trips and it is assumed that majority of the trips to the restaurant will be internal. Accordingly, it is proposed that instead of providing 21 parking bays for the restaurant, 10 parking bays be provided to meet the external trips and some internal trips demand as it is assumed that the majority of the internal trips to the restaurant will be made by walking.

Therefore, in total at least, 30 and 10 parking bays should be provided on site to meet the parking demand for the rooms and restaurant, respectively.

## 7. CONCLUSIONS

The objective of this report was to determine the traffic impact as a result of the Proposed Bhangazi Heritage Site Development on the existing road network and to identify the most appropriate upgrades, if required, to alleviate such an impact.

It is, therefore, concluded that:

- It is anticipated that the proposed development will not generate a substantial number of trips;
- The intersection analysed operates satisfactorily with no approach worse than LOS B before and after the development generated traffic has been added;
- The adjacent road network will be able to accommodate the trips generated by the proposed development;
- Two access points will serve the development site, one for the guests and one for the service/delivery vehicles; and
- In total at least, 30 and 10 parking bays should be provided on site to meet the parking demand for the rooms and restaurant, respectively.

## 8. RECOMMENDATIONS

It is, therefore, recommended that the Proposed Bhangazi Heritage Site Development Traffic Impact Statement Report be approved based on the following:

- No external upgrades to the roads or existing intersections required as a result of this proposed development; and
- Two access points to serve this proposed development and be taken directly off the Main Road to Cape Vidal, as shown in **Figure 2**.
- In total at least, 30 and 10 parking bays should be provided on site to meet the parking demand for the rooms and restaurant, respectively.

ENVIRONMENTAL PLANNING AND DESIGN

Our Ref: 1503/JM

20th August 2020

**ERM**
Suite S005,
17 The Boulevard,
Westway Office Park
Westville
3635

Attn: Stephanie Gopaul

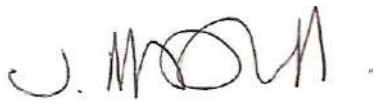
Dear Stephanie

**VISUAL IMPACT ASSESSMENT FOR THE PROPOSED BHANGAZI LODGE, KWAZULU-NATAL PROVINCE**

Further to your query of the 7th August 2020, we confirm that as long as the proposed changes do not result in removal of sections of the tree canopy or structures including roofs extending higher than the tree canopy, the assessment and findings contained in the Visual Impact Assessment dated June 2017 are still valid and remain unchanged.

Should you or the Competent Authority have any further queries, please contact the undersigned.

Yours faithfully



Jon Marshall
**ENVIRONMENTAL PLANNING AND DESIGN**

Registration Number of Corporation: 2000/050124/23
VAT Registration Number: 4640205268
PO Box 50910, Musgrave Road, 4062
tel: 083 703 2995, email: jon@enviroconsult.co.za

environmental affairs

Department:
Environmental Affairs
**REPUBLIC OF SOUTH AFRICA**

DETAILS OF THE SPECIALIST, DECLARATION OF INTEREST AND UNDERTAKING UNDER OATH

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**PROJECT TITLE**

Bhangazi Lodge

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Email: EIAAdmin@environment.gov.za

## 1. SPECIALIST INFORMATION

| | | | | |
|---|---|---|---|---|
| Specialist Company Name: | Environmental Planning and Design | | | |
| B-BBEE | Contribution level (indicate 1 to 8 or non-compliant) | 4 | Percentage Procurement recognition | |
| Specialist name: | Jon Marshall | | | |
| Specialist Qualifications: | Dip. LA | | | |
| Professional affiliation/registration: | Chartered Member of the Landscape Institute (UK).<br>Registered Professional Landscape Architect (South Africa).<br>IAIA | | | |
| Physical address: | 33 Askew Grove, Durban, 4001 | | | |
| Postal address: | PO Box 50910, Musgrave Road, Durban | | | |
| Postal code: | 4062 | Cell: | 083 703 2995 | |
| Telephone: | | Fax: | | |
| E-mail: | jon@enviroconsult.co.za | | | |

## 2. DECLARATION BY THE SPECIALIST

I, **Jon Marshall**, declare that –

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
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- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

Signature of the Specialist

Environmental Planning and Design cc

Name of Company:

21st August 2020

Date

## 3. UNDERTAKING UNDER OATH/ AFFIRMATION

I, **Jon Marshall**, swear under oath / affirm that all the information submitted or to be submitted for the purposes of this application is true and correct.

Signature of the Specialist

**Environmental Planning and Design CC**

Name of Company

20 / Aug / 2020

Date

Signature of the Commissioner of Oaths

SOUTH AFRICAN POLICE SERVICE
OPERATIONAL RESPONSE SERVICES
PORT OF ENTRY
DURBAN HARBOUR
2020 -08- 20
OUTER PERIMETER
SUID AFRIKAANSE POLISIE DIENS

Date

environmental affairs

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Bhangazi Cultural Heritage Lodge Development within iSimangaliso Wetland Park World Heritage Site

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| Professional affiliation/registration: | Chartered Member of the Landscape Institute (UK).<br>Registered Professional Landscape Architect (South Africa).<br>IAIA | | | |
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- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

Signature of the Specialist

Environmental Planning and Design

Name of Company:

18th June 2019

Date

## 3. UNDERTAKING UNDER OATH/ AFFIRMATION

I, Jonathan Marshall, swear under oath / affirm that all the information submitted or to be submitted for the purposes of this application is true and correct.

Signature of the Specialist

Environmental Planning and Design

Name of Company

18th June 2019

Date

Signature of the Commissioner of Oaths

2019 - 06 - 18

Date

SOUTH AFRICAN POLICE SERVICE
OPERATIONAL RESPONSE SERVICES
PORT OF ENTRY
DURBAN HARBOUR
2019 -06- 18
OUTER PERIMETER
SUID AFRIKAANSE POLISIE DIENS

# THE PROPOSED BHANGAZI LODGE DEVELOPMENT WITHIN THE ISAMANGALISO WETLAND PARK, KWAZULU NATAL

# VISUAL IMPACT ASSESSMENT
# SCOPING REPORT
# MAY 2015


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ENVIRONMENTAL PLANNING AND DESIGN

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**PHOTOGRAPHIC PLATES**

# 1. INTRODUCTION

## 1.1 Documentation

This Visual Impact Assessment (VIA) study will form part of the Basic Assessment environmental application that is being undertaken for the proposed development of the Bhangazi Lodge by ERM on behalf of the Bhangazi Community Trust.

In terms of the amended National Environmental Management Act (NEMA) Act No. 107 of 1998, the proposed development requires environmental authorisation. A key impact to be assessed comprises the visual impact that the facility will have on surrounding areas.

## 1.2 Project Team and Experience

Jon Marshall qualified as a Landscape Architect in 1978. He is also a certified Environmental Impact Assessment Practitioner of South Africa. He has been involved in Visual Impact Assessment over a period of approximately 30 years. He has developed the necessary computer skills to prepare viewshed analysis and three dimensional modelling to illustrate impact assessments. He has undertaken visual impact assessments for major buildings, mining, industrial development, mining and infrastructure projects and has been involved in the preparation of visual guidelines for large scale developments.

## 1.3 Site Location and Project description

The proposed development is located approximately 1.75km inland and southwest of Cape Vidal. It is situated on the south eastern bank of Bhangazi Lake.

The site falls within the within the iSimangaliso Wetland Park which is a World Heritage Site as indicated on **Maps 1 and 2**, **Locality** and **Site Context** respectively.

The site falls within the Umkhanyakude District Municipalit

The project is proposed within the Bhangazi Heritage Site (Concession Area A &
that was given to the Bhangazi Community Trust as part of a land claim settlement.

Concession area A has been marked for development, Concession area B is a no development zone. The development is proposed in Concession Area A.

The site lies adjacent to the road to Cape Vidal which is a popular tourist destination.

Initial project planning indicates that the project may be comprised of;

- Development of 16 tourist accommodation units located along the lake shore but within existing mature trees. The units will reflect the local vernacular from which it is assumed that natural materials will be utilised for external finishes. It has been assumed that each unit will have a footprint area in the order of 50m$^2$ and will be single storey. A maximum height of

6m has been assumed which allows 3m for the accommodation level and 3m for the roof structure.

- A restaurant that will also be located close to the lake shore, within existing mature trees. The restaurant will have external finishes similar in nature to the tourist accommodation units. It has been assumed that the restaurant will have a footprint area in the order of 300m$^2$ and will be single storey. A maximum height of 6m has been assumed which allows 3m for the accommodation level and 3m for the roof structure.
- Five staff quarters that will be located away from the lake shore close to existing staff quarters to the north east of the site. It has been assumed that these buildings will an individual footprint area of 50m$^2$ and will be single storey. A maximum height of 6m has been assumed which allows 3m for the accommodation level and 3m for the roof structure. They will be located close to the existing through road to Cape Vidal.
- Interpretation Centre to be used for education, as an introductory facility for visitors, accommodation check in, advertising and booking of activities such as guided tours, game drives, guided walks, and a small shop.
- A day visitor and community gathering area located away from the lake shore. This will consist of an open area with social facilities including braai and picnic facilities and a swimming pool. It is assumed that canopy trees will be retained and maintained for shade and that ground level vegetation will largely be removed for circulation.
- Visitor parking (27 bays), chalet parking (21 bays) and bus parking (2 bays) to be located away from the lake shore. These will consist of cleared areas largely located beneath the existing tree canopy or where trees have to be removed or canopy non-existent new tree planting will augment existing vegetation. A new informal access track / road will be constructed to link chalet parking areas.
- Staff parking (3 bays), Lodge parking (2 bays) and game drive vehicle parking (1 bay) located close to the staff accommodation.
- A small service and delivery area close to the staff accommodation.

An initial layout as provided by the applicant is attached as **Map 3**. It should be noted however that at the time of reporting this layout was under review with the intention of providing greater exposure to Lake Bhangazi for the accommodation units and the restaurant.

The geographical co-ordinates of approximate centre point of the proposed site are indicated in **Table 1**:

**Table 1: Coordinates of the proposed site**

| | | | |
|---|---|---|---|
| South | 28° | 08′ | 19.73″ |
| East | 32° | 32′ | 38.54″ |

## 1.4 The Nature of Visual Impact

Visual impacts may relate to a general change in the character of an area or in the change in a specific view for a person or group of people.

Visual impacts can be positive or negative and a degree of subjectivity is required to in deciding this point. The approach of any visual assessment should be to as objectively as possible describe an expected landscape and as far as is possible reflect the likely majority view regarding positive / negative aspect of an impact. This can be difficult particularly in South Africa due to different values and cultures associated with various sectors of the population. For example, poorer sectors of the population are possibly more concerned with the productive nature of a landscape than its appearance, whereas the wealthier sectors might be more concerned with scenic value particularly as it is associated with property values. If possible the values and opinions of all impacted sectors of the community should be considered.

General change to a landscape area might have greater or lesser significance subject to;

- Numbers of people that might use the landscape,
- The level of protection afforded the landscape,
- The rarity of the landscape

In terms of change to a specific view this might be defined as either visual intrusion or visual obstruction.

- Visual intrusion is a change in a view of a landscape that reduces the quality of the view. This can be a highly subjective judgement, subjectivity has been removed as far as is possible in this assessment by classifying the landscape character of each area and providing a description of the change in the landscape that will occur due to the proposed development.
- Visual obstruction is the blocking of views or foreshortening of views. This can generally be measured in terms of extent.

More often than not such an impact will be a combination of intrusion and obstruction. Obstruction can be measured in terms of the extent of an existing view that is screened by a development. However, judging intrusion again requires a degree of subjectivity. It is however possible to relate this judgement to the manner in which proposed change would impact on the use or enjoyment of an area which again requires an understanding of local values.

## 1.5 Guidelines to be Utilised and their Relevance

There are numerous guideline documents for visual impact assessment, most of which have a common approach. This assessment will be undertaken in accordance with:

- The Government of the Western Cape Guideline for Involving Visual and Aesthetic Specialists in EIA Processes (2005) (Western Cape Guidelines), which is the only relevant local guideline, setting levels of input subject to the likely sensitivity of a landscape as well as the scale and nature of a proposed development. It therefore provides a basis for justification and agreement of a required scope of work.
- The Landscape Institute and Institute of Environmental Management and Assessment (UK) Guidelines for Landscape and Visual Impact Assessment (third edition, 2013) which provides detail of international best practice and technical methodology.

Together these documents provide a basis for the level and approach of a VIA as well as the necessary tools for assessment and making an assessment legible to stakeholders.

## 1.6 Scoping Objectives

This Scoping Study identifies and evaluates potential visual impacts associated with the various aspects of the proposed Project. In terms of the EIA Regulations, feasible and reasonable alternatives must be assessed within the Scoping Study.

The characteristics of a scoping exercise are as follows:

- Feasible and reasonable alternatives are identified and selected for further assessment;
- Important characteristics of the affected environment are identified;
- Significant issues that are to be examined in the assessment procedure are identified; and
- It provides the basis for determining terms of reference for the assessment stage.

Based on a brief assessment of the landscape and likely receptors and in accordance with the Western Cape Guidelines, this scoping study will identify key concerns or issues relating to potential visual impacts arising from the project, and to determine boundaries and parameters for visual input.


ISIMANGALISO WETLAND PARK
Hluhluwe
Lake St Lucia
Lake Bhangazi
Cape Vidal
Proposed Development Site
N2
INDIAN OCEAN
St Lucia
Legend
UNSURFACED ROADS AND TRACKS
SETTLEMENT
PROTECTED AREA
ROADS
BHANGAZI LODGE
ISIMANGALISO WETLAND PARK
MAP 1 - SITE LOCATION


Lake St Lucia
KwaDlembe
Lake Bhangazi
Bhangazi
Cape Vidal
Lake Bhangazi South
Proposed Development Site
St Lucia
KwaSheleni
HORES STATE FOREST
TSGROND
Legend
UNSURFACED ROADS AND TRACKS
BERM
SETTLEMENT
BHANGAZI LODGE
ISIMANGALISO WETLAND PARK
MAP 2 - SITE CONTEXT


LAKE BHANGAZI
(SOUTH)
SQ
P
S
OA
DV
VP
BP
I
H
R
Main entrance & exit
LEGEND
PRIMARY ROAD
SECONDARY ROADS
BHANGAZI HERITAGE SITE CONCESSION A
BHANGAZI HERITAGE SITE CONCESSION B
BHANGAZI LAKE CONCESSION
PERMANENT FRESH WATER
RUINS
VISITOR ROAD
LIMITED ACCESS ROADS
PEDESTRIAN WALKWAY, RAISED
15M CONTOUR (NO DEVELOPMENT BOUNDARY)
GRADIENT CHANGE/ LOCALIZED TERRACE
VISUALLY SCREENED AREA
LOCAL HIGH POINT (VISUAL BUFFER TO NORTH)
UNITS
GUIDED TRAILS
5M CONTOURS
16 UNITS
Max. 40 beds, catered & self-catered facilities, 3 Star Rating
OVERFLOW ACCOMMODATION
5 STAFF QUARTERS
HELICOPTER LANDING SITE, EMERGENCY
RESTAURANT
INTERPRETATION CENTRE
Accommodating cultural interpretation, check-in &
activities such as guided drives, guided walks,
guided canoing, beach outings, etc.
SERVICES & DELIVERY AREA
VISITORS PARKING
27 bays for visitors & day visitors
CHALET PARKING
21 bays for overnight guests, limited access
BUS PARKING
2 bays
STAFF/LODGE PARKING
2 lodge vehicles, 1 game drive vehicles & 3 staff vehicles
DAY VISITORS/COMMUNITY GATHERING AREA
including activities such as the pool area, picnic spots,
braai area, etc.
3
BHANGAZI LODGE
ISIMANGALISO WETLAND PARK
MAP 3 - INITIAL DEVELOPMENT PROPOSAL

## 2. ZONE OF THEORETICAL VISIBILITY

The Zone of Theoretical Visibility (ZTV) is defined as "a map usually digitally produced showing areas of land within which a development is theoretically visible".

The ZTV has been identified in order to focus the study on the area that is likely to be impacted by the proposed development.

ZTV for the proposed development have been assessed using Arc Spatial Analyst GIS **(Map 4)**. The assessment is based on terrain data that has been derived from satellite imagery. This data was originally prepared by NASSA and is freely available on the CIAT-CCAFS website (http://www.cgiar-csi.org). Permission for use of this data in this project has been obtained from the project administrator (**Appendix I**).

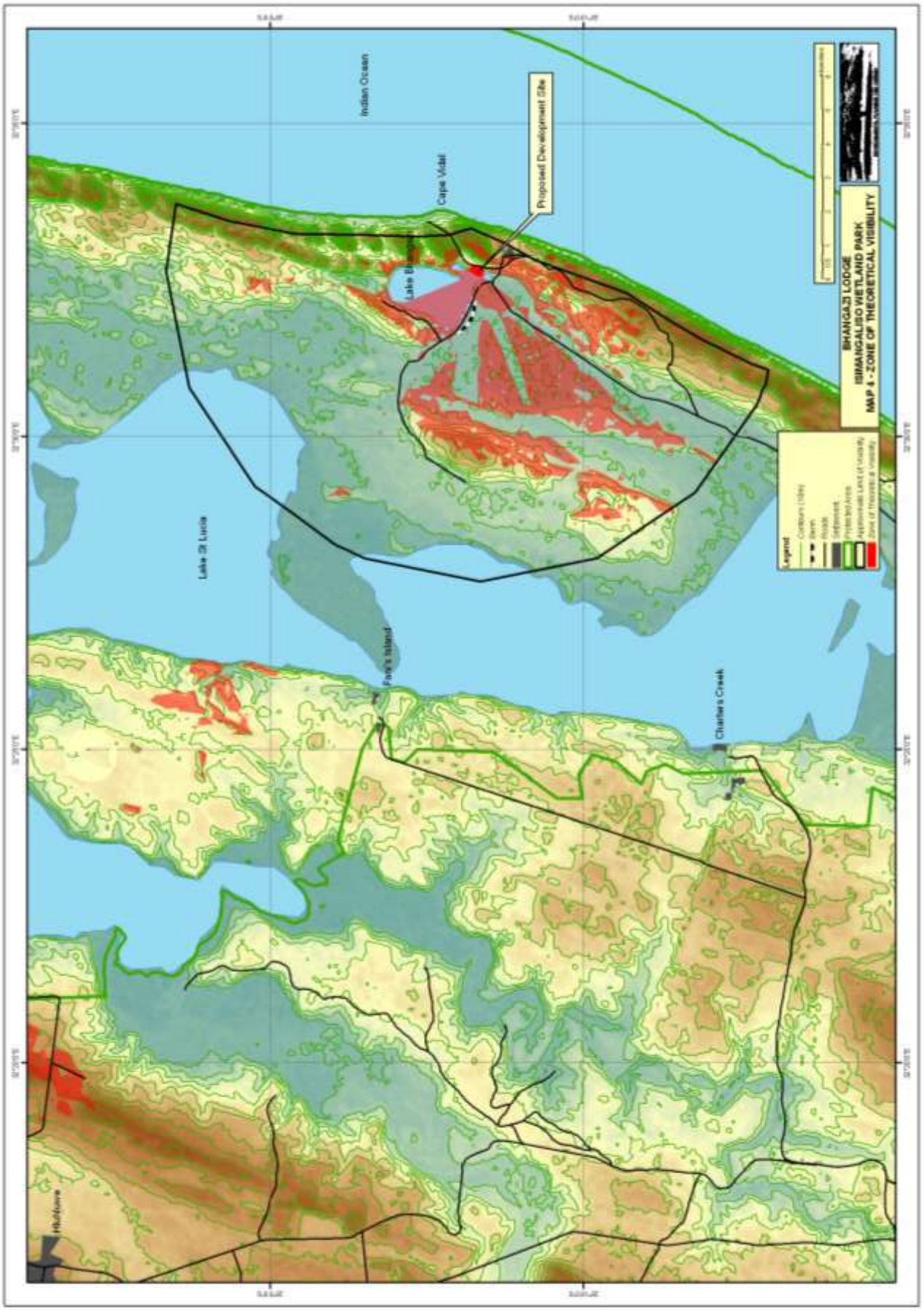
The GIS Assessment also does not take the curvature of the earth into account. In order to provide an indication of the likely limit of visibility due to this effect a universally accepted navigational formula (**appendix II**) has been used to calculate the likely distance that the proposed structures might be visible over. This indicates that in a flat landscape a structure 6m high could be visible at a distance of approximately 9km. This buffer is indicated on Ma order to indicate the likely limit of visibility.

It should be noted that existing vegetation which is likely to have a significant modifying effect on the visibility of the proposed development has not been taken into account in the definition of the ZTV.

The mapping indicates that;

- The proposed development could be visible to the southern sector of Lake Bhangazi as well as the southern and western shores. It is however only likely to be visible over small areas of the eastern shore.
- The proposed development could be visible to large sections of the enclosed valley to the south of Lake Bhangazi.
- The proposed development is only likely to be visible intermittently to high ground to the south and east.
- The majority of the ZTV is located within the limit of Approximate Limit of Visibility. Mapping does indicate that it could be visible to small sections of the western shore of Lake St Lucia. However due to distance this is highly unlikely.

The study should therefore focus on the ZTV within the Approximate Limit of Visibility (9km)


Indian Ocean
Cape Vidal
Proposed Development Site
Lake St Lucia
Fanti's Island
Charters Creek
BHANGAZI LODGE
EMANGALISO WETLAND PARK
MAP 4 - ZONE OF THEORETICAL VISIBILITY
Legend

## 3. EXISTING LANDSCAPE

It is possible that landscape change due to the proposed development could impact the character of an important landscape area.

Importance can be derived from specific features that can relate to urban or rural settings. They might include key natural, historic or culturally significant elements.

Importance might also relate to landscapes that are uncommon or under threat from development.

Generally the most significant natural areas are afforded a degree of legal protection such as National Parks and Reserves; however, they might also have local significance and not be protected.

This section describes the types of landscape that may be impacted, indicates likely degree of sensitivity and describes how the landscape areas are likely to be impacted.

### 3.1 Landscape Protection

The affected area falls within the iSimangaliso Wetland Park which is a World Heritage Site. World Heritage Site Status implies the highest order of landscape protection.

Nomination criteria for inscription as a World Heritage Site included;

- Ecological processes
- Superlative natural phenomena and scenic beauty
- Biodiversity and threatened species

The IUCN Technical Investigation prior to inscription also highlighted the integrity of the landscape as key to the inscription decision.

Therefore anything that could potentially erode this integrity either from within the protected area must therefore be considered as having negative impact.

### 3.2 Landscape Character

Landscape character is defined as "a distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another".

Landscape Character is a composite of a number of influencing factors including;

- Landform and drainage.
- Nature and density of development.
- Vegetation patterns.

#### *3.2.1 Landform and Drainage*

**Refer to Map 5**. The proposed site area is located immediately inland of the coastal dune cordon. Due to a band of cohesive Berea Red sands adjacent to the coast, the steeply shelving sea floor, strong NE / SW prevailing wind system and strong wave action, steeply sloping beaches and tall, steeply sloping sand dune system has developed to the east of

the proposed site. The tall dune reaches heights of between 90 - 150m amsl in the vicinity of the proposed site.

The tall dune cordon provides a significant barrier to drainage of areas to the north and west which results in drainage pans and perhaps greater confluence of systems that might be expected in areas in areas where the coastal due is less of a barrier. This has resulted in the formation of Lake St Lucia and associated wetlands as well as a number of more minor water bodies including Bhangazi Lake which is immediately to the west of the proposed site.

Smaller water bodies are fed by ground water more than surface water drainage. These water bodies form in depressions close to the western side of the dune cordon. Lake Bhangazi located close to the foot of the coastal dune cordon with a relatively small surface catchment area is one of the larger examples of this.

Lake St Lucia is a more major system and this has forms an estuary that drains through the dune to the south of the town of St Lucia.

Immediately inland of the coastal dune system soils are predominantly sandy in nature resulting in a series of small undulating dunes, seepage areas and wetlands. This area is backed by a band of Zululand Group siltstone and sand stone which forms a higher ridge on the western edge of the Wetland Park.

Landform and drainage therefore contributes to the landscape character in the following way;

- The Berea Red sands on which the tall dunes to seaward of the proposed site and minor north south ridgelines within the immediate hinterland provide a tall backdrop to the area.
- The sands of the coastal plain in which the site is located a low undulating area within which the wetland landscape that the iSimangaliso is famous for has formed.
- The taller siltstone / sandstone ridge inland of the wetland park provide the inland limit of the wetland landscape.

### *3.2.2 Nature and Density of Development*

Development within the study area can be divided into the following types;

- **Occasional small scale tourism and service orientated development within the Wetland Park.** This includes;
  - A small area of service buildings in the vicinity of the proposed site.
  - Bhangazi Lodge which is located on the north western shore of Lake Bhangazi. This is comprised of four accommodation units and a small service area.
  - Visitor facilities including camping and caravan park areas at Charters Creek, Fanies and Lister Point on the western shore of Lake St Lucia. These facilities are located in excess of 10km from the proposed development. Whilst these facilities are not likely to impact on or be impacted by the proposed development, they do highlight the consistency of approach to small scale visitor facilities within the Park.
- **Urban development** that is generally located on higher areas inland and to the south of the site. This development is located some distance (more than 25km) from the proposed site. It includes the settlement of Hluhluwe and St Lucia. Due to distance,

these settlements are unlikely to impact on or be impacted on by the proposed development.

- **Roads and tracks** in the vicinity of the proposed site are generally low key. The main access road that runs past the site linking St Lucia to Cape Vidal is a two lane surfaced road. Other minor roads and tracks are generally single lane and are either unsurfaced or concrete surfaced.

Development therefore contributes to the landscape character of the area surrounding the proposed development in the following manner;

- Natural vegetation is generally sufficiently dense to ensure that the occasional small scale tourism and park service development areas generally only influence landscape character in their immediate vicinity. It is however possible that lakeside development could be visible over a wider area and that light from these areas could erode the feeling of being in a wilderness environment particularly from the shores of the lake.
- Urban development is generally some distance from the proposed development area and intervening topography and natural vegetation are likely to minimise its influence on landscape character.
- Roads and tracks within the area are relatively minor and whilst they do present an obviously man made element within a largely natural environment, outside the vicinity of the road or track they have a minimal influence on local landscape character.

### *3.2.3 Vegetation Patterns*

**Refer to Map 6**. The majority of vegetation in close proximity to the site comprised of natural vegetation including;

- Northern Coastal Forest that covers the dune slopes and minor ridgelines. From reference to KwaZulu Natal Vegetation Type Descrption (C R Scott Shaw and B Escott) this is comprised of dense thickets of 5-6 m up to tall forests with the canopy reaching 15 m with well-developed shrub layer and very poorly developed ground layer.
- Subtropical Freshwater Wetlands which according to Scott Shaw and Escott are typically located within flat topography supporting low beds dominated by reeds, sedges and rushes, water logged meadows dominated by grasses. Found typically along edges of often seasonal wetlands.
- Maputaland Wooded Grassland which is generally found in the flat landscape of the Maputaland coastal plain supporting coastal sandy grasslands rich in geoxylic suffrutices, dwarf shrubs, small trees and very rich herbaceous flora.
- Swamp Forest located on slightly elevated ground within and beside wetlands.

The vegetation types indicated contribute to landscape character of the area in the following way;

- The fact that the majority of vegetation in the area is natural helps to provide the wilderness feeling that is so important to retain within the Wetland Park.
- The Northern Coastal Forest that covers the higher ridgelines and dune slopes providing a dramatic backdrop to the site. This vegetation type on minor inland ridgelines also reinforces the screening ability and helps to compartmentalise the landscape.

- Bands of Swamp Forest on slightly elevated land beside wetlands also provides tall screens that help to compartmentalise the landscape.
- Freshwater wetlands provide open vistas through the landscape.
- Wooded Grasslands in the vicinity of the proposed site are reasonably open with occasional trees and shrubs only.

### *3.2.4 Landscape Character Areas, Visual Absorption Capacity and Significance*

Landscape Character Areas (LCAs) are defined as "single unique areas which are the discrete geographical areas of a particular landscape type".

The affected landscape can generally be divided into the following LCAs. Because the affected area has a predominantly natural character, these are largely defined by topography and vegetation. Development in the form of small scale visitor facilities / park service areas and roads and tracks have a very localised modifying effect

- **Lake Bhangazi.** This LCA is enclosed by the tall coastal dune an coastal forest to the east and north east, by a minor ridgeline reinforced with Coastal Forest and Coastal Belt vegetation that runs to the west and north west of the lake and by a natural bund that retains the lake and is also covered by dense coastal vegetation to the south. This combination of landform and vegetation combine to produce an enclosed landscape with the lake as a focal point. Once inside this space, views of other landscape character areas are not possible.

  Anything that is developed on the shores of the lake has the potential of being visible to the lake and lake shores opposite the development. This area therefore has a low visual absorption capacity.

  Subject to height and the extent and nature of vegetation that needs to be cleared, development away from the lake shore is likely to be screened by dense forest vegetation. This landscape therefore has a high visual absorption capacity for small scale low development.

  The higher that development occurs either on the minor ridgelines to the west or the major coastal dune to the east, the less the visual absorption capacity that is likely to be afforded by the landscape.

- **Enclosed Wetland Valley**. This area falls immediately to the south of Lake Bhangazi. This LCA is comprised of an area of wet grassland that is enclosed by a minor ridge line with swamp forest and Coastal Belt vegetation to the west, the tall dune slope with costal forest to the east and the small berm to the south of Lake Bhangazi that is reinforced with dense Coastal Belt vegetation to the north. This has created an enclosed landscape from which views of other LCAs are difficult if not impossible to see. From within views are often possible from one side of the LCA to the other across wet grasslands.

  Any development that occurs within this LCA, even at lower levels is likely to be visible over much of the LCA. Development at lower levels however is unlikely to be visible to other LCAs. For development at lower levels, this LCA might therefore be considered to have medium visual absorption capacity.

However, the higher that development occurs either on the minor ridgelines to the west or the major coastal dune to the east, the less the visual absorption capacity that is likely to be afforded by the landscape.

- **St Lucia Valley.** This LCA is comprised of Lake St Lucia, its surrounding wetlands and low valley slopes. Uninterrupted long and broad views are possible within this LCA over the lake and surrounding wetlands.

### 3.3 Significance of the Landscape Character Areas

The St Lucia Valley LCA is a large scale open natural lake and wetland landscape and is the image of the Park that most visitors are likely to remember. It is therefore critical that visual impacts associated with development are minimised within this LCA.

The Wetland Valley LCA is a relatively enclosed natural landscape. The only development obvious are the minor tracks and the road that run through it. The LCA provides an important link between the main St Lucia Lake and Bhangazi Lake. From the site visit it is obvious that the animals that are so obvious on Lake Bhangazi utilise this LCA extensively for refuge and as their primary habitat area. This LCA is overlooked from the main visitor access. The impact of increased development in this LCA could put at risk the profusion of wild life that is visible on Bhangazi Lake.

The Lake Bhangazi LCA is a relatively small enclosed landscape that is focused on the body of open water. The large dune to the east and the covering of dense forest that surrounds it helps to provide a dramatic visual experience. The expanse of open water attracts wildlife and makes viewing animals of all kinds from the lake shore easy. The dense vegetation surrounding the lake also serves to screen development that has already occurred ensuring that the LCA from most viewpoints retains its natural appearance.

**ST LUCIA VALLEY**

PLATE 1

PLATE 2

Open, large scale natural landscape within which extensive views from one side of the valley to the other are possible.

**ENCLOSED WETLAND VALLEY**

PLATE 3

PLATE 4

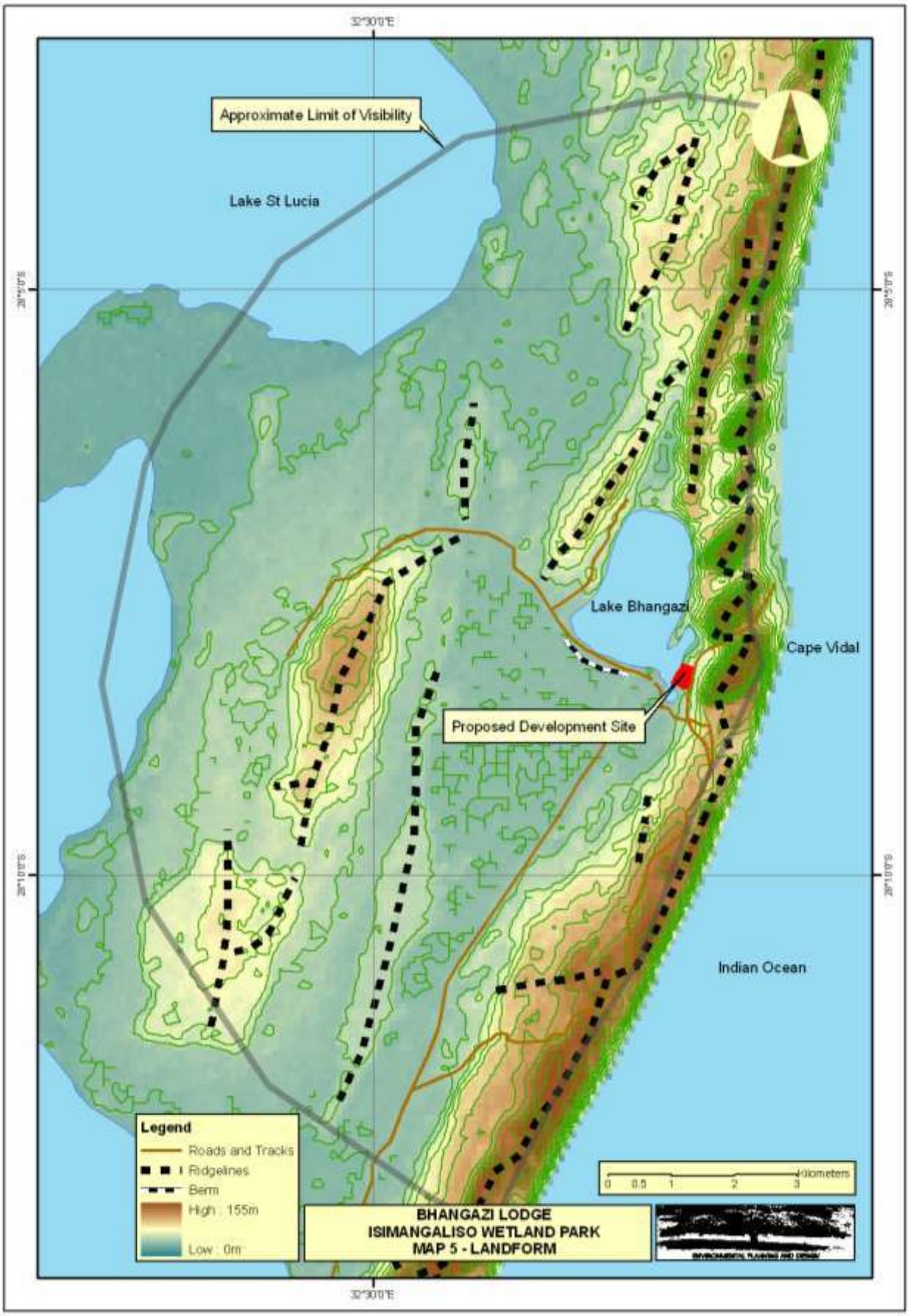
Enclosed natural wetland landscape, views are possible over wet grassland areas but are enclosed by vegetation and minor ridgelines.

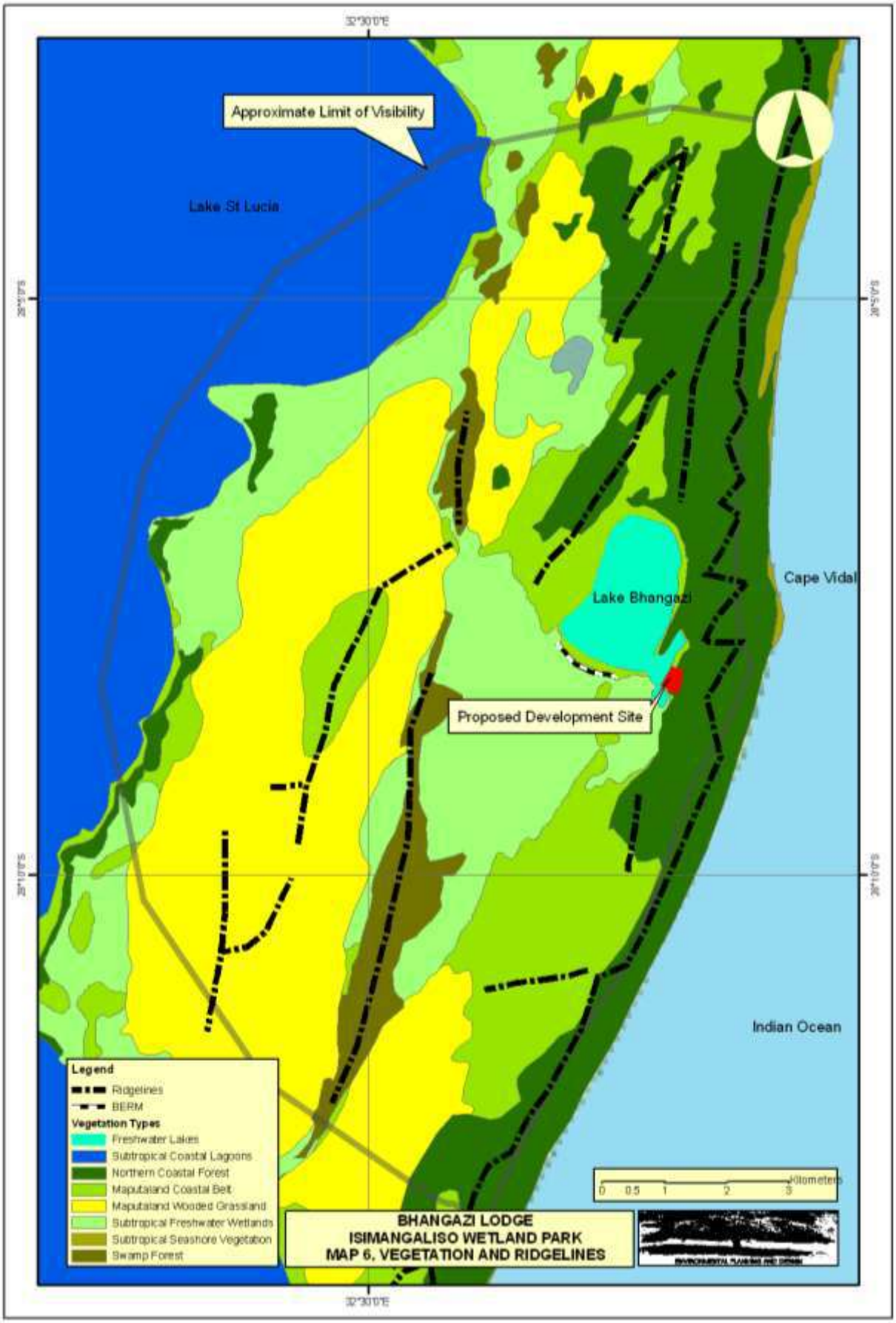
**BHANGAZI LAKE**

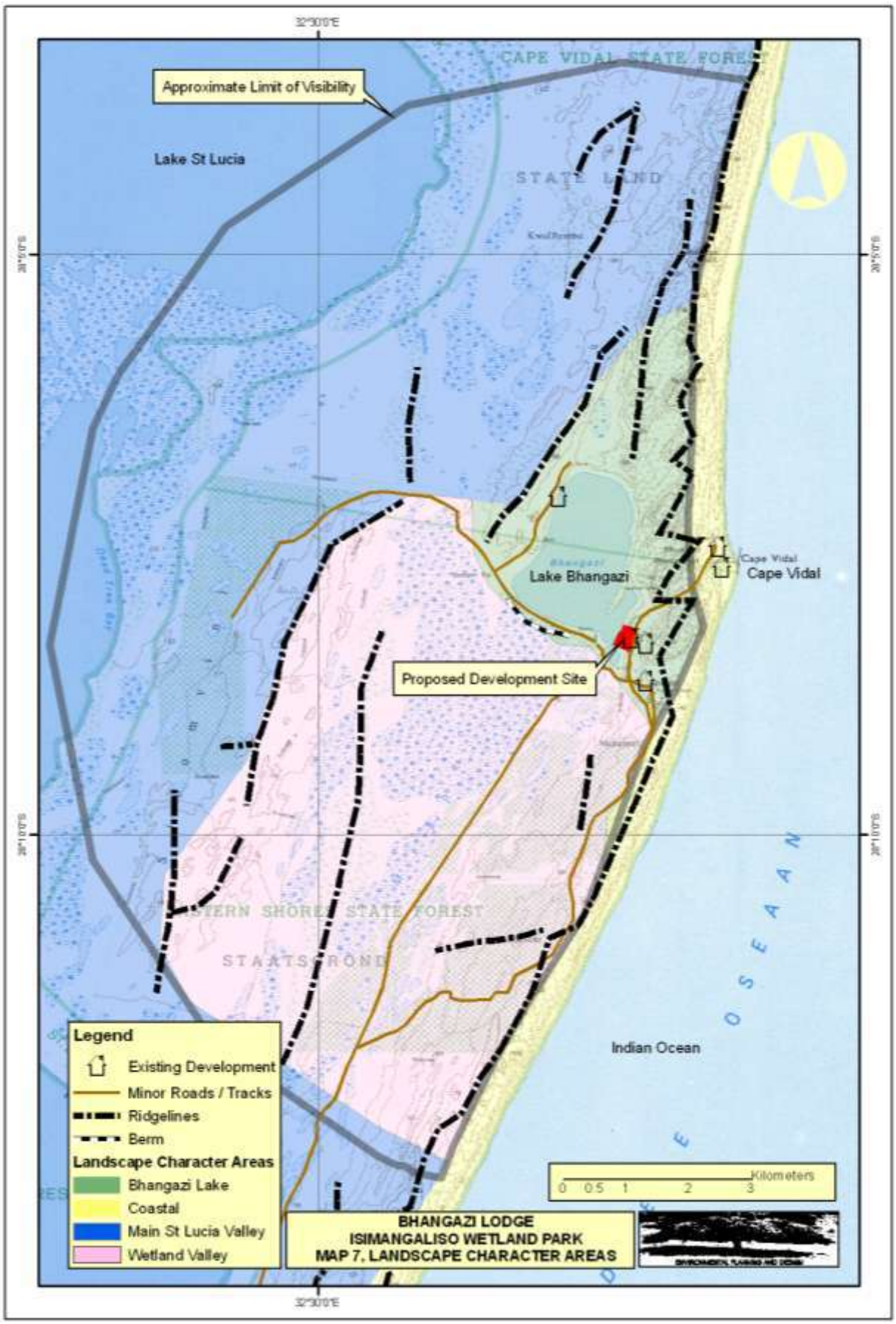
PLATE 5

PLATE 6

Bhangazi lake attracts wildlife from surrounding areas. It is enclosed by the tall dune to the east, minor ridgelines to the west, a small berm to the south and encircled by dense vegetation.


32°30'0"E
Approximate Limit of Visibility
Lake St Lucia
Lake Bhangazi
Cape Vidal
Proposed Development Site
Indian Ocean
Legend
Roads and Tracks
Ridgelines
Berm
High : 155m
Low : 0m
Kilometers
0 0.5 1 2 3
BHANGAZI LODGE
ISIMANGALISO WETLAND PARK
MAP 5 - LANDFORM


32°30'0"E
Approximate Limit of Visibility
Lake St Lucia
Lake Bhangazi
Cape Vidal
Proposed Development Site
Indian Ocean
Legend
Ridgelines
BERM
Vegetation Types
Freshwater Lakes
Subtropical Coastal Lagoons
Northern Coastal Forest
Maputaland Coastal Belt
Maputaland Wooded Grassland
Subtropical Freshwater Wetlands
Subtropical Seashore Vegetation
Swamp Forest
0 0.5 1 2 3
Kilometers
BHANGAZI LODGE
ISIMANGALISO WETLAND PARK
MAP 6. VEGETATION AND RIDGELINES


Approximate Limit of Visibility
Lake St Lucia
CAPE VIDAL STATE FOREST
STATE LAND
Lake Bhangazi
Cape Vidal
Proposed Development Site
EASTERN SHORES STATE FOREST
STAATSBOSBOU
Indian Ocean
Legend
Existing Development
Minor Roads / Tracks
Ridgelines
Berm
Landscape Character Areas
Bhangazi Lake
Coastal
Main St Lucia Valley
Wetland Valley
Kilometers
0 0.5 1 2 3
BHANGAZI LODGE
ISIMANGALISO WETLAND PARK
MAP 7. LANDSCAPE CHARACTER AREAS

## 4. AFFECTED AREA AND LIKELY VISUAL RECEPTORS

Visual Receptors are defined as "individuals and / or defined groups of people who have the potential to be affected by the proposal".

### 4.1 Affected Area

From the site visit it is obvious that existing vegetation which in areas is dense will have a significant modifying effect on the visibility of the proposed development, including;

- The dense coastal vegetation on the berm to the south of Lake Bhangazi effectively blocks views of the lake and lower sections of the coastal dune and minor ridgelines that surround the lake.
- Wooded grassland and swamp forest to the west of Lake Bhangazi effectively blocks the view that might otherwise be possible between the sections of minor ridgeline to the west of the study area. This prevents longer range views across the wetland area towards Lake St Lucia.
- Tall coastal forest on the ridgelines and slopes to the north and east of the proposed development area will effectively block intermittent views of the proposed development that might otherwise be possible to the north of the study area.

The modifying effects noted above result in the likelihood of the proposed development largely being screened from the wider landscape and likely to only be visible from a limited area focused on the southern and western sectors of the Lake Bhangazi LCA.

It is highly unlikely that the development will be visible from the St Lucia Valley.

The proposed development could be intermittently visible to elevated areas of the coastal dune to the north, east and south.

The potentially affected area of the ZTV is indicated on **Map 8: Visual Receptors**.

### 4.2 Identified visual receptors

It is possible that an area might be sensitive due to an existing use. The nature of an outlook is generally more critical to areas that are associated with recreation, tourism and in areas where outlook is critical to land values.

This section is intended to highlight possible receptors within the landscape which due to use could be sensitive to landscape change. They include;

- Area Receptors which include;
  - Lake Bhangazi which could be used for boat trips for visitors.
- Linear Receptors which include main routes through the area. It is likely that these routes will be mainly used by tourists. They include;
  - The main access road that runs from St Lucia to Cape Vidal. From the site visit, the site is only visible from a short area of this road either side of the viewpoint listed under Point Receptors below.
  - The access track that runs across the berm to the south of Lake Bhangazi. Whilst this was closed at the time of reporting, it seems likely that this will be opened up again to at least guided walks. From the site visit, currently

views of the lake are only visible from the viewpoints indicated under Point Receptors. Views towards the site are not visible from the track side of the berm. They would hoever be visible if vegetation on the berm were to be cleared.

- The minor road access to Bhangazi Lodge that runs to the west of the Wetland Valley, within the main St Lucia Valley and along the western shore of Lake Bhangazi within the Bhangazi Lake LCA.

- Point Receptors that include;
  - Two viewpoints that are located on the berm to the south of Lake Bhangazi. These are located at either end of the berm.
  - A viewpoint that has been located on the St Lucia to Cape Vidal access road overlooking Lake Bhangazi from the south.
  - The small Bhangazi Lodge development on the north western shore of Lake Bhangazi.

It is noted that there is a possible future tourism development that is being planned for the south western edge of Bhangazi Lake.

Visual receptors that may be sensitive to landscape change associated with the proposed development are indicated on **Map 8: Visual Receptors**.

### 4.3 Likely significance of visual receptors

Significance of change to a view for a visual receptor is likely to relate to use.

Uses such as tourism and recreation areas are likely to rely on the maintenance of an outlook for successfully attracting guests and users. Housing areas could depend on outlook for the enjoyment of the area by residents and for maintaining property values. A route that is particularly important for tourism may also be dependent on outlook for the maintenance of a suitable experience for users.

The assessment indicates that all identified visual receptors are important or potentially important for tourism activities. They are all therefore significant. It is suggested however that maintaining a natural edge to Bhangazi Lake is probably the mots important consideration. Without this, it is likely that the wilderness experience for visitors to the lake will be lost. It is also likely wildlife will negatively impacted if the lake edge is disturbed to any extent. This will also impact negatively on the attraction and enjoyment of visitors.

PLATE 7

**Area Receptor –Bhangazi Lake**

Views of natural forest on the lake shore are seen at the moment from the lake.

PLATE 8


**Linear Receptor – Main Access Road (St Lucia to Cape Vidal)**

Views of the Bhangazi Lake surrounded by natural forest are possible from a short section of this road either side of a formal viewpoint providing a completely natural view.


**Linear Receptor – Track to South of Lake Bhangazi**

Views of the Lake Bhangazi LCA are currently screened by the area of forest that has established on the berm immediately to the south of the lake.

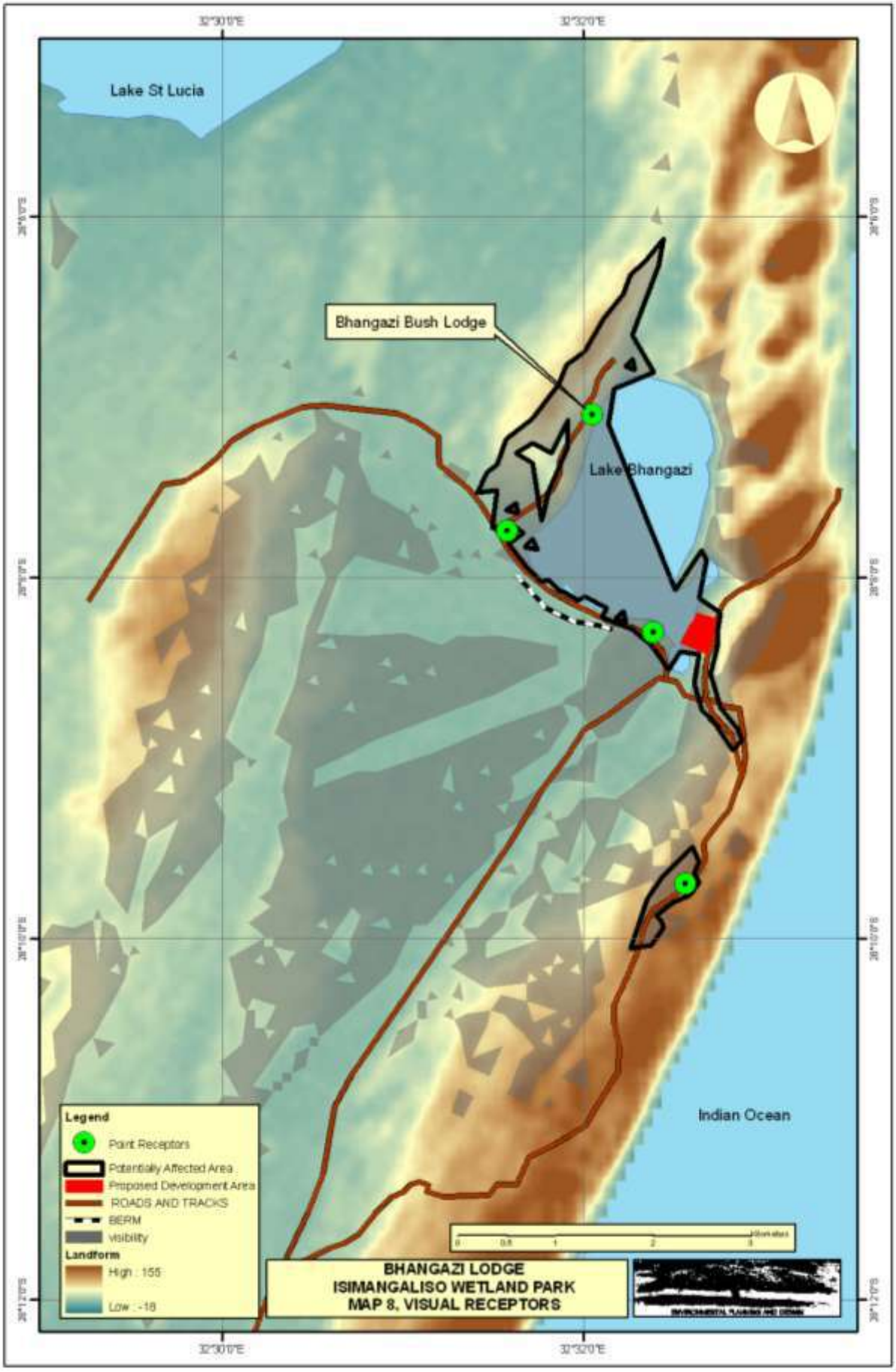

**Point Receptor – View Point to South East of Lake Bhangazi**

Views of the lake surrounded by natural forest are seen from existing viewpoints.

PLATE 11

**Point Receptor – Bhangazi Bush Lodge**

Views of the lake surrounded by natural forest are seen from the Lodge.


Lake St Lucia
Bhangazi Bush Lodge
Lake Bhangazi
Indian Ocean
Legend
Point Receptors
Potentially Affected Area
Proposed Development Area
ROADS AND TRACKS
BERM
visibility
Landform
High : 155
Low : -18
BHANGAZI LODGE
ISIMANGALISO WETLAND PARK
MAP 8. VISUAL RECEPTORS

# 5. POTENTIAL VISUAL ISSUES ASSOCIATED WITH THE PROPOSED DEVELOPMENT

## 5.1 General

The mapping indicates that;

1. The proposed development is likely to be visible from a relatively small area focused on the Lake Bhangazi LCA and is unlikely to impact on any other LCA with the exception of 2.
2. It may be possible for proposed development to impact on a small section of the St Lucia to Cape Vidal Road around the location of a formal viewpoint approximately 2km to the south of the proposed development.

## 5.2 Possible Change in Landscape Character

Subject to the extent and location of development it is possible that the natural character of Lake Bahngazi could be eroded.

Subject to the extent of vegetation clearance it is possible that the development could create built elements that detract from the view of the natural landscape as viewed from the St Lucia to Cape Vidal Road.

## 5.3 Likely implications for Visual Receptors

Lake Bhangazi LCA is an enclosed landscape which due to the lake attracts a profusion of wildlife from surrounding areas. It is therefore an obvious place for watching and enjoying a variety of game from relatively close quarters.

Subject to extent and location, disturbance of the natural vegetation on the edge of Lake Bhangazi, the development could be visible to the southern and western shores of the lake. This could erode the current natural appearance of the lake shore and could also discourage wild life into the area. If this should occur the experience of visitors who are attracted to the Park for its natural environment and natural scenic beauty would be negatively impacted.

Also subject to the extent of clearance and the nature of the proposed development it is possible that it could result in built elements being visible within an otherwise natural view from the St Lucia to Cape Vidal Road.

## 5.4 Planning and Design Considerations

The developer needs to develop sufficiently to ensure that the facility is economically viable, attractive to visitors and results in maximum exposure of visitors to key views and wildlife associated with the Lake. However if the lake frontage is over developed this could result in loss of wildlife from the area and the appearance of development within what is a pristine natural environment.

A delicate balance between development and the natural environment therefore needs to be struck. The locating of development behind the tree line and the minimising of vegetation clearance are critical in achieving this balance.

It may be possible to develop immediately behind the tree line and below the tree canopy on the lake frontage, however, the lay eye indicates that the forest edge is dense and it is likely that trees and lower storey vegetation will have to be removed to allow this to occur.

Given that the forest edge is dynamic, the removal of trees could result in the ingress of weed species and the unplanned loss of additional vegetation over time.

The ecologist's input regarding the likely stability of the forest edge profile given the possible removal of vegetation will be critical in assessing the likely impact over time.

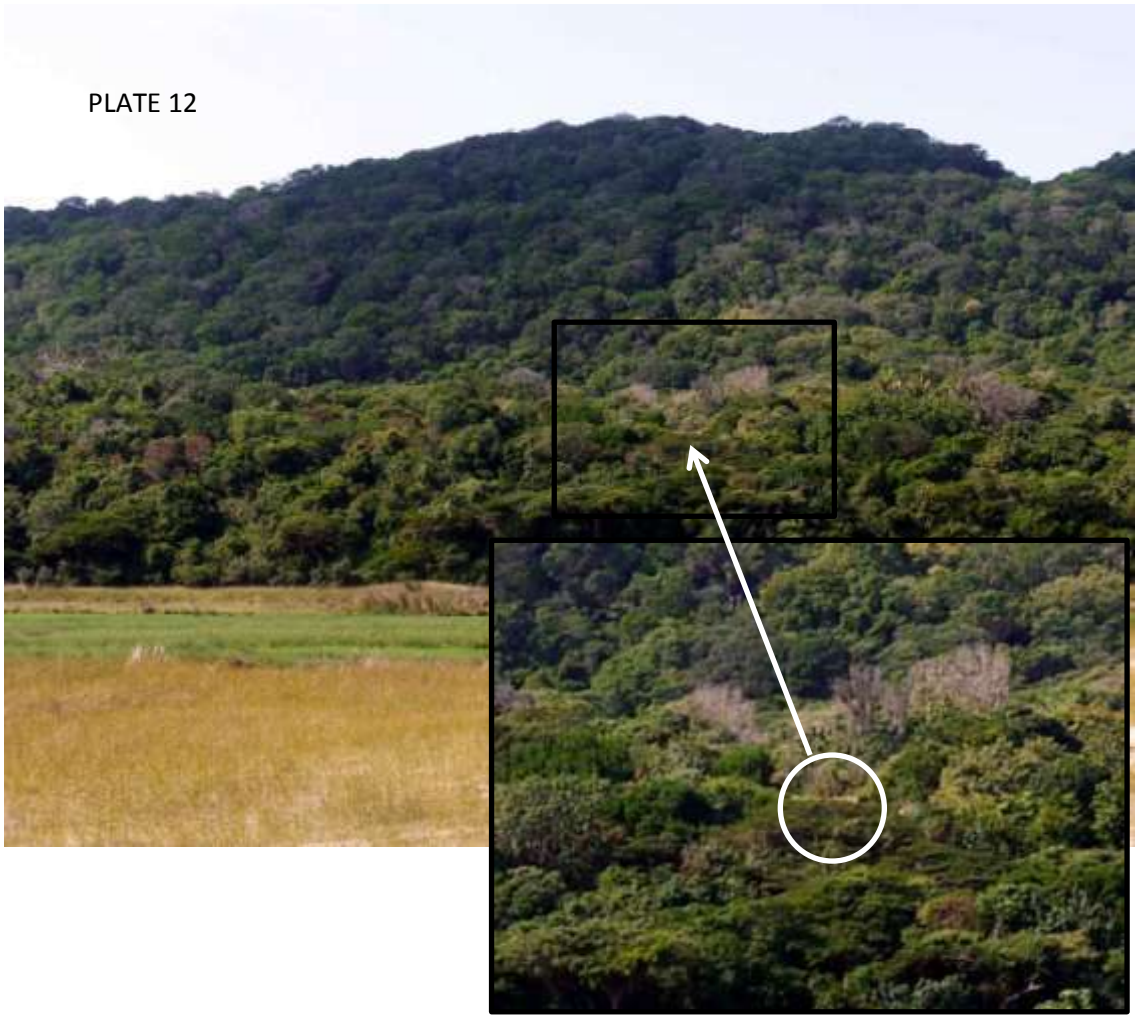
The restaurant and pool deck is probably the elements of largest concern due to the size and exposure that will probably be required. Locating it to the north of the site will minimise its impact on the north west shore possibly hiding it from the Bhangazi Bush Lodge but it will potentially be visible from the southern shore. Locating it to the south will minimise impact on the southern shore and south west corner but it will potentially be visible to the western shore. Placing it central on the site will mean that it is potentially visible from both the western and southern shores.

The careful location of units below the forest canopy and the minimising of clearance of trees and understorey vegetation are critical to minimising visual impacts; the closer that the planned units are to the lake shore and the greater the extent of clearance that occurs, the greater the risk that the development will be obvious from the lake and from the main access road. In order to manage this it is recommended that a detailed tree survey including accurately locating the all canopy trees is undertaken. The impact can then be considered in detail.

Careful consideration will also have to be given to lighting, the use of colour and reflective surfaces

- Lighting particularly close to the lake edge has the potential to be seen on the lake and on the opposite lake shore. Even a single exposed bulb could change the wilderness impression during hours of darkness. Added to this is that one of the attractions of the wilderness is the night sky which can be enjoyed with significantly greater clarity than in light polluted developed areas. Therefore there is a need to design lighting carefully.
- Contrasting and complementary colour has the ability to be highly obvious within a natural landscape. Colours should be visually recessive such that the structures blend into the background landscape. It may be necessary to undertake tests to ensure that the desired effect is achieved. It I soften assumed that green will be most effective in achieving this as the surrounding landscape is predominantly green. It is often forgotten that the colour of the landscape changes over time and that it is made up of a large variety of shades of green. The use of a uniform green therefore often stands out against this variety. The use of black or mid to dark grey is often the most successful colour that blends into a variety of natural landscapes.
- The use of any reflective material must also be undertaken carefully. Reflective finishes particularly on a roof could make the development obvious from the look out on the main access road and on surfaces close to the lake frontage could make the development obvious to the opposite lake shore particularly when the sun is low in the west in the late afternoon.

PLATE 12



**Existing Forest Edge that will be impacted by development.**

Development will require removal of some existing vegetation. Roof structure of existing development is just visible. Additional clearance could increase the impact of development on Bhangazi Lake and erode the wilderness experience.

# 6 RECOMMENDED METHODOLOGY FOR ASSESSMENT

## 6.1 Requirements in accordance with the Western Cape Guidelines

The criterion recommended by the Western Cape Guidelines for justification of level of input for a VIA is the expected level of visual impact. This categorisation is derived from the following matrix;

| Type of environment | Type of development (see Box 3) Low to high intensity | | | | |
|---|---|---|---|---|---|
| | Category 1 development | Category 2 development | Category 3 development | Category 4 development | Category 5 development |
| Protected/wild areas of international, national, or regional significance | Moderate visual impact expected | High visual impact expected | High visual impact expected | Very high visual impact expected | Very high visual impact expected |
| Areas or routes of high scenic, cultural, historical significance | Minimal visual impact expected | Moderate visual impact expected | High visual impact expected | High visual impact expected | Very high visual impact expected |
| Areas or routes of medium scenic, cultural or historical significance | Little or no visual impact expected | Minimal visual impact expected | Moderate visual impact expected | High visual impact expected | High visual impact expected |
| Areas or routes of low scenic, cultural, historical significance / disturbed | Little or no visual impact expected. Possible benefits | Little or no visual impact expected | Minimal visual impact expected | Moderate visual impact expected | High visual impact expected |
| Disturbed or degraded sites / run-down urban areas / wasteland | Little or no visual impact expected. Possible benefits | Little or no visual impact expected. Possible benefits | Little or no visual impact expected | Minimal visual impact expected | Moderate visual impact expected |

The categorisation of development is indicated below;

**Category 1 development:**
e.g. nature reserves, nature-related recreation, camping, picnicking, trails and minimal visitor facilities.

**Category 2 development:**
e.g. low-key recreation / resort / residential type development, small-scale agriculture / nurseries, narrow roads and small-scale infrastructure.

**Category 3 development:**
e.g. low density resort / residential type development, golf or polo estates, low to medium-scale infrastructure.

**Category 4 development:**
e.g. medium density residential development, sports facilities, small-scale commercial facilities / office parks, one-stop petrol stations, light industry, medium-scale infrastructure.

**Category 5 development:**
e.g. high density township / residential development, retail and office complexes, industrial facilities, refineries, treatment plants, power stations, wind energy farms, power lines, freeways, toll roads, large-scale infrastructure generally. Large-scale development of agricultural land and commercial tree plantations. Quarrying and mining activities with related processing plants.

From the assessment undertaken it is apparent that the proposed project falls into a **category 2 development** as it might be classed as a low key resort.

Given the fact that the proposed development will impact on a protected area, in accordance with the guidelines, the proposed development might be expected to have high visual impact for which a Level 4 Assessment is required.

A level 4 assessment requires the following input;

- Identification of issues raised in scoping phase, and site visit;
- Description of the receiving environment and the proposed project;
- Establishment of view catchment area, view corridors, viewpoints and receptors;
- Indication of potential visual impacts using established criteria;
- Inclusion of potential lighting impacts at night;
- Description of alternatives, mitigation measures and monitoring programmes.
- 3D modelling and simulations, with and without mitigation.
- Review by independent, experienced visual specialist (if required).

The Guidelines also indicate that if moderate impact is anticipated then the level of assessment should be Level 3.

A Level 3 Assessment is practically the same as Level 4 but without the requirement for 3D modelling and simulations.

Current information is highly schematic and is not adequate to assess impacts in detail, however, when development plans are available they should be reviewed to see if new roof lines are likely to break through the existing natural tree canopy or the existing tree line on the lake edge. In order to undertake this assessment a detailed tree survey will also be necessary to overlay on the development plan. If after undertaking this assessment it is obvious that development is unlikely to be visible, a Level 3 Assessment is recommended as it is would be pointless to undertake simulations.

However, should it be found that the proposed development is likely to be visible either through the treeline to Lake Bhangazi or through the canopy to the St Lucia to Cape Vidal Access Road then a Level 4 Assessment must be undertaken.

## 6.2 Detailed Methodology

The following methodology will be used in preparation of the VIA report.

### *6.2.1 Identification of issues raised in scoping phase, and site visit*

Likely issues have already been identified in this scoping analysis. These issues will be verified from a site visit as well as response from stakeholders to the scoping documentation.

### *6.2.2 Description of the receiving environment and the proposed project*

The receiving environment has been described and categorised. This has been verified from a site visit.

### *6.2.3 Establishment of view catchment area, view corridors, viewpoints and receptors*

Zones of theoretical visibility and visual receptors have been established from a GIS analysis that has been verified during a site visit.

Subject to detailed planning, viewpoints will be confirmed during a further site visit.

### *6.2.4 Indication of potential visual impacts using established criteria*

Areas of likely visual impacts have been identified and described from this scoping exercise. They relate to degradation of the natural character of the landscape surrounding Bhangazi Lake, include;

1. Subject to the extent and location of development it is possible that the natural character of Lake Bahngazi could be eroded.
2. Subject to the extent of vegetation clearance it is possible that the development could create built elements that detract from the view of the natural landscape as viewed from the St Lucia to Cape Vidal Road.

It is proposed that the criteria detailed in **Table 2** are used for the assessment.

These impacts will be investigated in detail during the assessment stage. In order to undertake this detailed assessment the following information will be necessary;

1. A detailed tree survey of the affected area recording the location (x, y and z coordinates), approximate height, approximate spread and condition of trees in addition to their species.
2. The footprint area of proposed units overlaid onto the tree survey.
3. Descriptions of the proposed units including heights and finishes of walls and roofs.

| **Table 2, Proposed Assessment Criteria for Landscape Degradation** | | |
|---|---|---|
| 1 | **INTENSITY OF IMPACT** | **Rating** |
| 1a | The introduction of new landscape elements that will be obvious and will erode an existing natural landscape character. | High Impact Intensity |
| 1b | The introduction of new landscape elements that could be visible but are unlikely to be obvious to the majority of visual receptors. | Medium Impact Intensity |
| 1c | The introduction of new landscape elements that are unlikely to be visible to identified visual receptors. | Low Impact Intensity |
| 2 | **SIGNIFICANCE OF IMPACT** | **Rating** |
| 2a | All identified impacts will affect a formally protected landscape | High Significance |
| 3 | **POSITIVE / NEGATIVE IMPACT** | **Rating** |
| 3a | Loss of rural natural characteristics | Negative impact |

### *6.2.5 Inclusion of potential lighting impacts at night*

The impact of lighting at night will be included in the assessment using the above criteria. Potential light impacts include;

1. It is possible that light pollution from the proposed development could reduce the natural wilderness character of the surrounding landscape during hours of darkness.

In order to assess this it will be necessary for the design team to confirm Lighting proposals and proposed mitigation measures to minimise light pollution to the adjacent lake.

### *6.2.6 Description of alternatives, mitigation measures and monitoring programmes.*

No alternatives have been identified for this project other than the "no go" alternative which will be considered in the assessment.

Mitigation and monitoring measures will be developed during the preparation of the VIA report.

### *6.2.7 Review by independent, experienced visual specialist (if required).*

Confirmation of this requirement is needed.

## 7 CONCLUSIONS

The brief assessment undertaken indicates that there is potential for the proposed development to change the character of the Bhangazi Lake landscape. This however is subject to detailed planning and the extent of disturbance that will be needed to develop the site.

The main risks are associated with the proposed development include;

- Clearance of canopy trees resulting in roof lines and development being visible from higher levels on the St Lucia to Cape Vidal Road.
- Clearance of vegetation and development being visible from the landscape surrounding Bhangazi Lake.
- Light from the development being visible to the surrounding landscape during the hours of darkness.

The affected landscape has the highest level of protection that it is possible within South Africa and it is recognised as having international importance due to its "Superlative natural phenomena and scenic beauty". Ensuring that the proposed development does not impact on this existing character is therefore critical.

Whilst visual impacts are indicated as likely to be low, any erosion of the existing natural landscape character through development is likely to affect the current status.

It is noted that existing development on the site is just visible to the Lake which illustrates the need for careful planning, as additional clearance and development could exacerbate this current impact.

As careful planning is required and impacts are likely to relate to both the nature of proposed development and the clearance of vegetation, it is recommended that a detailed tree survey including location, height, spread, condition and species of trees is undertaken in order that the impact of clearance can be accurately assessed.

## 8 REFERENCES

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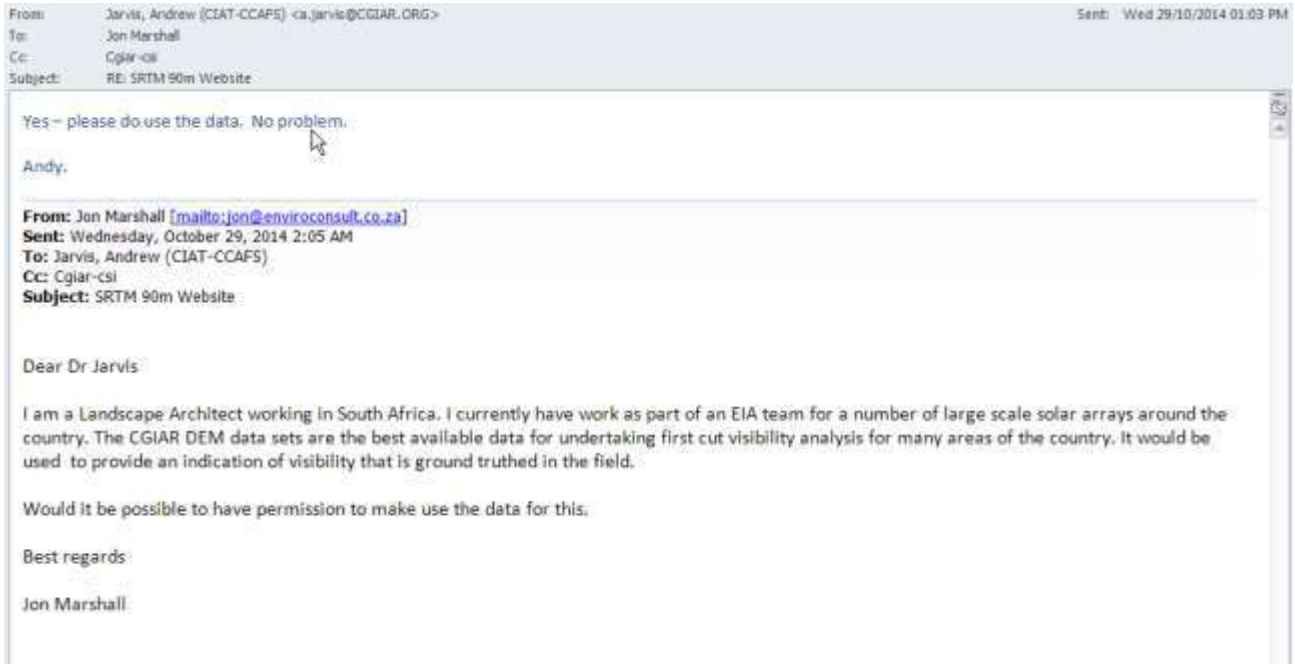
**APPENDIX I, PERMISSION TO UTILISE CGIAR DEM DATA**



From: Jarvis, Andrew (CIAT-CCAFS) <a.jarvis@CGIAR.ORG> Sent: Wed 29/10/2014 01:03 PM
To: Jon Marshall
Cc: Cgiar-csi
Subject: RE: SRTM 90m Website

Yes – please do use the data. No problem.

Andy.

**From:** Jon Marshall [mailto:jon@enviroconsult.co.za]
**Sent:** Wednesday, October 29, 2014 2:05 AM
**To:** Jarvis, Andrew (CIAT-CCAFS)
**Cc:** Cgiar-csi
**Subject:** SRTM 90m Website

Dear Dr Jarvis

I am a Landscape Architect working in South Africa. I currently have work as part of an EIA team for a number of large scale solar arrays around the country. The CGIAR DEM data sets are the best available data for undertaking first cut visibility analysis for many areas of the country. It would be used to provide an indication of visibility that is ground truthed in the field.

Would it be possible to have permission to make use the data for this.

Best regards

Jon Marshall

## APPENDIX II, CALCULATION OF VISUAL HORIZON

### The Mathematics behind this Calculation

This calculation should be taken as a guide only as it assumes the earth is a perfect ball 6378137 metres radius. It also assumes the horizon you are looking at is at sea level. A triangle is formed with the centre of the earth (C) as one point, the horizon point (H) is a right angle and the observer (O) the third corner. Using Pythagoras's theorem we can calculate the distance from the observer to the horizon (OH) knowing CH is the earth's radius (r) and CO is the earth's radius (r) plus observer's height (v) above sea level.

Sitting in a hotel room 10m above sea level a boat on the horizon will be 11.3km away. The reverse is also true, whilst rowing across the Atlantic, the very top of a mountain range 400m high could be seen on your horizon at a distance of 71.4 km assuming the air was clear enough.