

6. THE VISUAL ASSESSMENT

6.1 THE VISUAL ANALYSIS

This section describes the aspects which have been considered in order to determine the intensity of the visual impact on the area. The criteria includes the area from which the project can be seen (the viewshed), the viewing distance, the capacity of the landscape to visually absorb structures and forms placed upon it (the visual absorption capacity), and the appearance of the project from important or critical viewpoints.

6.1.1 The Viewshed

The viewshed is a topographically defined area which includes all possible observation sites from which the project will be visible. The boundary of the viewshed, which connects high points in the landscape, is the boundary of possible visual impact (Alonso, et al, 1986). Local variations in topography and man-made structures would cause local obstruction of views. The viewshed, based on the GIS assessment and fieldwork, extends for the main part varies from 1 km to greater than 20 km. (**Figures 3-12**).

6.1.2 The Viewing Distance

The visual impact of an object in the landscape diminishes at an exponential rate as the distance between the observer and the object increases (Hull and Bishop, 1988).

Thus, the visual impact at 1000 metres would be approximately a quarter of the impact as viewed from 500 metres. Consequently, at 2000 metres, it would be one sixteenth of the impact at 500 metres. The view of the project components would appear so small from a distance of 5000 metres or more that the visual impact at this distance is insignificant. On the other hand the visual impact of the project components from a distance of 500 metres or less would be at its maximum (**Figure 13**).

6.1.3 Critical Views

Views identified as being critical have been discussed under Section 5. These have been overlaid on the viewshed to determine the extent of these within the viewing zones radiating out from the project components. In summary the critical views are those from the surrounding villages, the main roads and the Tsitsa Falls.

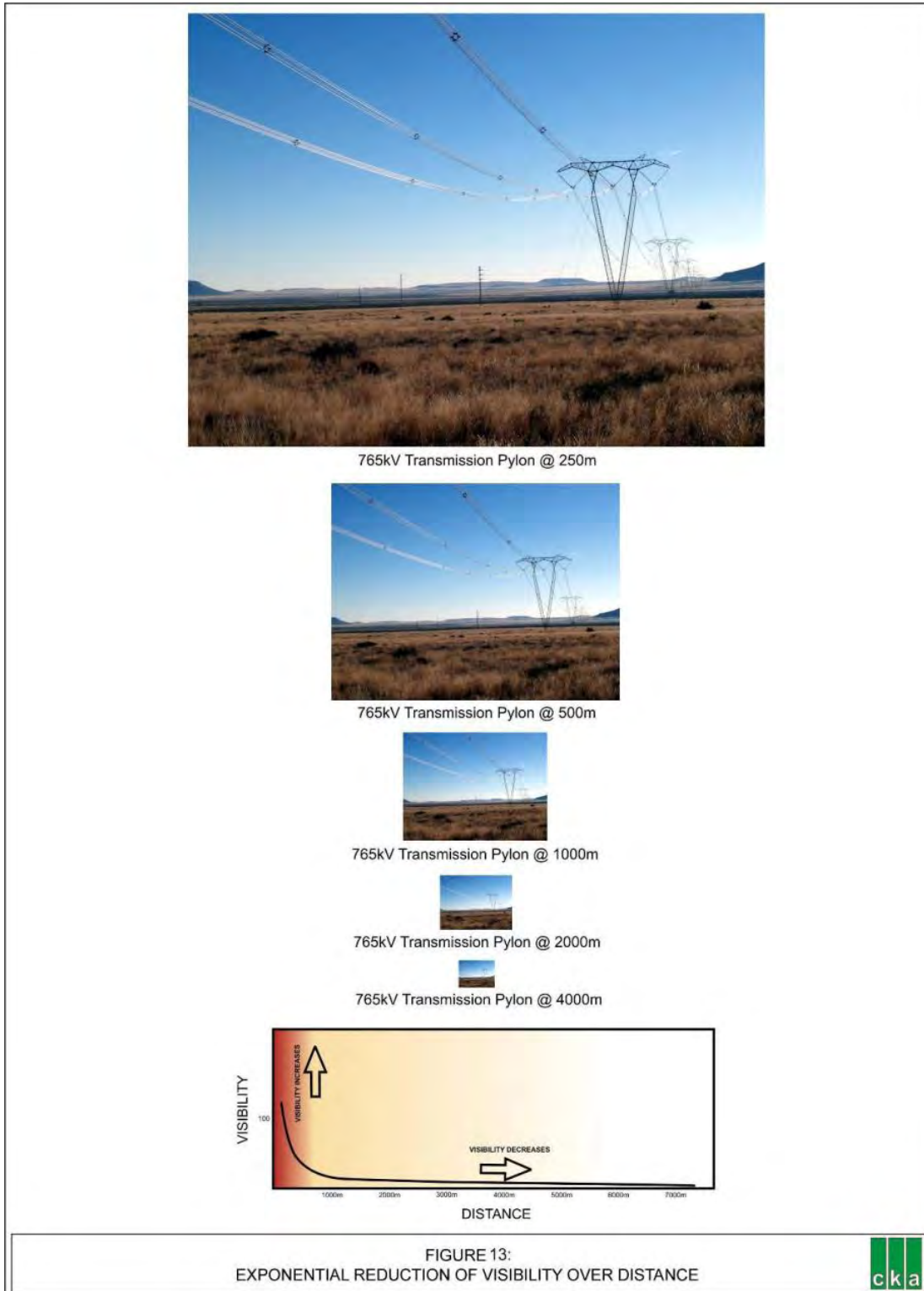


Figure 13: An Example of Exponential Reduction of Visibility over Distance

6.1.4 The Visual Absorption Capacity

The Visual Absorption Capacity (VAC) is a measure of the landscape's ability to visually accept / accommodate or embrace a development. Areas which have a high visual absorption capacity are able to easily accept objects so that their visual impact is less noticeable. Conversely areas with low visual absorption capacity will suffer a higher visual impact from structures imposed on them. In this case the VAC has been defined as a function of three factors.

The VAC was determined, based on the author's field experience, taking the following into account:

- Slope
- Visual pattern (landscape texture) with regard to vegetation and structures
- Vegetation height

Table 9: Visual Absorption Factors and their Numerical Values

VAC Factor		Categories		
Slope	Range	0-3 %	3-6 %	> 6 %
	Numerical Value VAC	3 Low	2 Moderate	1 High
Vegetation Height	Range	< 1 m	1-6 m	6 m
	Numerical Value VAC	3 Low	2 Moderate	1 High
Visual Pattern	Description	Uniform	Moderate	Diverse
	Numerical Value VAC	3 Low	2 Moderate	1 High

It is therefore concluded that the VAC can be regarded as:

It has a combined rating of 9 which equates with a **Low VAC** due to the open landscape and grassland. Areas within the deeper valleys have a moderate VAC due the steep topography

This implies that the areas with a **Low** VAC are inherently unable to visually accommodate or accept the visual change made by the proposed development.

Table 10: Visual Assessment Criteria - Intensity Rating

Visual Assessment Criteria	Intensity Rating		
	High	Medium	Low
Visibility from critical viewpoints	Highly visible within 1 km	Partially visible due to viewpoints approximately 2 km from the proposed development	Low visibility due to viewpoints approximately 3 km or more from the proposed development
Visibility from general surrounding landscape	Not obscured by natural landform	Partially obscured by landform	Mostly obscured by surrounding landform
Visual intrusion on landscape character and sense of place	Dominates sense of place	Partially influences sense of place	Has little effect on sense of place
Visual association with existing infrastructure development	Existing development is easily visible from proposed development (within 2 km)	Existing development is partially visible from proposed development (>2-<5 km)	Existing development is barely noticeable (>6 km) from the proposed development
Visibility from homesteads, conservation areas, local communities, villages and towns	Highly visible. Dominates view within 500 - 1 000 m	Visible but does not dominate view within range 1 000 - 2 500 m	Visible but are not obviously noticeable in the view > 2 500 m

Table 11: Visual Assessment Criteria - Significance Rating

Visual Assessment Criteria	Significance Rating		
	High	Medium	Low
Visibility from existing viewpoints	Particularly interferes with scenic views from	Partially interferes with scenic views from viewpoints	Components are too far from the viewpoints to interfere with

Visual Assessment Criteria	Significance Rating		
	High	Medium	Low
	viewpoints		scenic views
Visibility from general surrounding landscape	Compromises particularly scenic distant views of the landscapes	Particularly noticeable in scenic landscapes	Hardly noticeable in scenic landscapes
Visual intrusion on landscape character and sense of place	Compromises proclaimed conservation nature reserves and wilderness areas is within 500 - 1 000 m of a natural feature e.g. pans, mountains	Compromises particularly scenic landscape features e.g. coastal edge, undisturbed valleys; within 1 000 - 2 500 m	Compromises built up areas which exhibit an industrial character; is less visible, homestead greater than 2 500 m away
Visual association with existing infrastructure development	Where the development is within 200 m from existing infrastructure development	Where the development is within 1 000 m from existing infrastructure development	Where the development is further than 2 500 m from existing development. The visual intrusion is not associated with the other development
Visibility from homesteads, conservation areas, local communities, villages and towns	Where the visibility of the development interferes with the way of life such as a tourism enterprise and/or obstructs scenic distant views by being within 500 - 1 000 m of the community	Where the visibility of the development interferes with the way of life such as a tourism enterprise and/or obstructs scenic distant views by being within 1 000 - 2 500 m of the homestead	Where the visibility of the development interferes with the way of life such as a tourism enterprise and/or obstructs scenic distant views by being within 2 500 m and greater of the homestead

Table 12: Visual Assessment Criteria - Intensity Rating
 (This is the criteria against which the impact is assessed and is not the impact assessment)

CRITERIA	HIGH	MEDIUM	LOW
1. Visibility	Very visible from many places beyond 5 000 m zone	Visible from within the 5 000 m zone but partially obscured by intervening objects.	Only partly visible within the 5 000 m zone and beyond due to screening by intervening objects.
2. Genius Loci / Sense of Place	A particularly definite place with an almost tangible dominant ambience or theme.	A place which projects a loosely defined theme or ambience.	A place having little or no ambience with which it can be associated.
3. Visual Quality	A very attractive setting with great variation and interest but no clutter.	A setting which has some aesthetic and visual merit.	A setting which has little aesthetic value.
4. Visible Social Structures	Housing and/or other structures as a dominant visual element.	Housing and/or other structures as a partial visual element.	Housing and/or other structures as a minor visual element.
5. Surrounding Landscape Compatibility	Ideally suits or matches the proposed development.	Can accommodate the proposed development without appearing totally out of place.	Cannot accommodate proposed development without it appearing totally out of place visually.
6. Character	The site or surrounding area exhibits a definite character.	The site or surrounding area exhibits some character.	The site or surrounding area exhibits little or no character.
7. Scale	A landscape which has horizontal and	A landscape with some horizontal and vertical	Where vertical variation is limited and most elements

CRITERIA	HIGH	MEDIUM	LOW
	vertical elements in high contrast to the human scale.	elements in some contrast to the human scale.	are related to the human and horizontal scale.
8. Visual Absorption Capacity (VAC)	The ability of the landscape to easily accept visually a particular development because of its diverse landform, vegetation and texture.	The ability of the landscape to less easily accepts visually a particular development because of a less diverse landform, texture and vegetation.	The ability of the landscape not to visually accept a proposed development because of a uniform texture, flat slope and limited vegetation cover.
9. View Distance	If uninterrupted view distances to the site are > 5 km.	If uninterrupted view distances are < 5 km but > 2.5 km.	If uninterrupted view distances are > 500 m and < 2 500 m.
10. Critical Views	Views of the project are to be seen by many people passing on main roads and from prominent areas i.e. towns / urban areas / settlements, game farms, guest farms / lodges, hiking corridors, conservation areas, naturally scenic areas.	Some views of the project from surrounding towns / urban areas / settlements, main roads and game farms / lodges / conservation areas, naturally scenic areas.	Limited views to the project from towns / urban areas / settlements, main roads and game farms / lodges / conservation areas, naturally scenic areas.

6.1.5 Cumulative Impacts

Visual impacts have been assessed in terms of the impact the development will have on the visual environment. Visual assessment is a component of the human aesthetics and is considered part of a suite of social impacts such as noise and sense of place which together may result in a higher cumulative impact than if it were read in isolation. This study assesses only the visual impacts.

As the proposed development is located on rural agricultural land and can be regarded as a “greenfields” area, there is no cumulative impact as it is not adding to an existing development network within the site boundaries. It can, conversely, be argued that there is a cumulative impact of 100 % as the proposed development is entirely new of which there previously was not one. However, visually the development is connected to external developments such as the Eskom transmission lines, existing villages, roads and agricultural lands that skirt and traverse the affected area in which the cumulative impact increases. This increase cannot be measured empirically. However, it can be assumed that, as visual impacts reduce exponentially with distance, conversely doubling the size and volume of a development may increase the impact exponentially.

Notwithstanding the increase in cumulative impact, it is often preferable to place new such structures alongside existing such structures are disturbed areas in the belief that the impact is less that if the same impact was exerted on an area that has not previously been impacted upon.

7. IMPACT ASSESSMENT FOR DAMS AND ASSOCIATED WATER INFRASTRUCTURE

This Chapter presents the findings of the environmental impact assessment for the dams and associated activities (DEA Ref no. 14/12/16/3/3/2/677).

The activities assessed under this chapter are listed below:

- The Ntabelanga and Lalini Dams.

7.1 CONSTRUCTION AND DECOMMISSIONING PHASES

7.1.1 Aesthetics Ntabelanga Dam

Alteration to the sense of place

Recommended mitigation:

- Rehabilitate all construction scarring outside dam basin. Concentrate where possible all borrow areas and quarries below the full supply line. Final mitigation will be incorporated into the EMP.

Table 13: Impact Table Ntabelanga Dam – Construction and Decommissioning Phase

Aesthetics	Extent	Duration	Intensity	Potential for irreplaceable loss of resources	Probability	Confidence	Significance
Proposed Project with Ntabelanga Dam							
Without Mitigation	Regional	Long term	Very high	High	Definite	Medium	Medium-Low
With Mitigation	Regional	Long term	Very high	High	Definite	Medium	Medium-Low
Cumulative Impact –the impact on the sense of place is regarded as high in that the dam will visually alter the entire valley. However, the significance is considered to be medium low in that a water body is usually regarded as having a high positive aesthetic appeal.							

7.1.2 Aesthetics Lalini Dam

Alteration to the sense of place

Recommended mitigation:

Rehabilitate all construction scarring outside dam basin. Concentrate where possible all borrow areas and quarries below the full supply line. Final mitigation will be incorporated into the EMP.

Table 14: Impact Table Lalini Dam Lines – Construction and Decommissioning Phase

Aesthetics	Extent	Duration	Intensity	Potential for irreplaceable loss of resources	Probability	Confidence	Significance
Proposed Project with Lalini Dam size 1 (preferred alternative)							
Without Mitigation	Regional	Long term	Very high	High	Definite	Medium	Medium-Low
With Mitigation	Regional	Long term	Very high	High	Definite	Medium	Medium-Low
Proposed Project with Lalini Dam size 2							
Without Mitigation	Regional	Long term	Very high	High	Definite	Medium	Medium-Low
With Mitigation	Regional	Long term	Very high	High	Definite	Medium	Medium-Low
Proposed Project with Lalini Dam size 3							
Without Mitigation	Regional	Long term	Very high	High	Definite	Medium	Medium-Low
With Mitigation	Regional	Long term	Very high	High	Definite	Medium	Medium-Low
Cumulative Impact – the cumulative impact on the sense of place is regarded as high in that the dam will visually alter the entire valley. However, the significance is considered to be medium low in that a water body is usually regarded as having a high positive aesthetical appeal. The size of impoundment will not make a significant affect the change to the sense of place.							

7.2 OPERATION PHASE

7.2.1 Aesthetics Ntabelanga Dam

Alteration to sense of place

Recommended mitigation:

None

Table 15: Impact Table Ntabelanga Dam - Operation Phase

Aesthetics	Extent	Duration	Intensity	Potential for irreplaceable loss of resources	Probability	Confidence	Significance
Proposed Project with Ntabelanga Dam							
Without Mitigation	Regional	Long term	Very high	High	Definite	Medium	Medium-Low
With Mitigation	Regional	Long term	Very high	High	Definite	Medium	Medium-Low
Cumulative Impact –the impact on the sense of place is regarded as high in that the dam will visually alter the							

entire valley. However, the significance is considered to be medium low in that a water body is usually regarded as having a high positive aesthetic appeal.

7.2.2 Aesthetics Lalini Dam

Alteration to sense of place

Recommended mitigation:

None

Table 16: Impact Table Lalini Dam - Operation Phase

Aesthetics	Extent	Duration	Intensity	Potential for irreplaceable loss of resources	Probability	Confidence	Significance
Proposed Project with Lalini Dam size 1 (preferred alternative)							
Without Mitigation	Regional	Long term	Very high	High	Definite	Medium	Medium-Low
With Mitigation	Regional	Long term	Very high	High	Definite	Medium	Medium-Low
Proposed Project with Lalini Dam size 2							
Without Mitigation	Regional	Long term	Very high	High	Definite	Medium	Medium-Low
With Mitigation	Regional	Long term	Very high	High	Definite	Medium	Medium-Low
Proposed Project with Lalini Dam size 3							
Without Mitigation	Regional	Long term	Very high	High	Definite	Medium	Medium-Low
With Mitigation	Regional	Long term	Very high	High	Definite	Medium	Medium-Low
Cumulative Impact – the impact on the sense of place is regarded as high in that the dam will visually alter the entire valley. However, the significance is considered to be medium low in that a water body is usually regarded as having a high positive aesthetic appeal. The size of impoundment will not make a significant affect the change to the sense of place.							

8. IMPACT ASSESSMENT FOR ELECTRICITY GENERATION AND DISTRIBUTION INFRASTRUCTURE

This Chapter presents the findings of the environmental impact assessment for the electricity generation and distribution related activities (DEA Ref no. 14/12/16/3/3/2/678).

The assessed under this chapter are listed below:

- 18.5km powerline from the Lalini Dam tunnel.

8.1 CONSTRUCTION AND DECOMMISSIONING PHASES

8.1.1 Aesthetics Transmission Lines Lalini Dam

Alteration to sense of place

- Recommended mitigation: Alternative 3 should be avoided as it will have a high negative impact on the sense of place of the Tstita Falls and associated valley. It is recommended that Alternative 1 be selected but re-aligned to drop below the ridge line into the adjacent valley where it will have the valley sides to provide a backdrop and reduce the silhouette image against the skyline. Final mitigation will be incorporated into the EMP.

Table 17: Impact Table Transmission Lines – Construction and Decommissioning Phase

Aesthetics	Extent	Duration	Intensity	Potential for irreplaceable loss of resources	Probability	Confidence	Significance
Proposed Powerline 1							
Without Mitigation	Regional	Long term	High	Medium	Definite	Medium	Medium-Low
With Mitigation	Regional	Long term	High	Medium	Definite	Medium	Low
Proposed Powerline 2							
Without Mitigation	Regional	Long term	High	Medium	Definite	Medium	Medium-
With Mitigation	Regional	Long term	High	Medium	Definite	Medium	Medium-
Proposed Powerline 3							
Without Mitigation	Regional	Long term	High	High	Definite	Medium	Very High
With Mitigation	Regional	Long term	High	High	Definite	Medium	Very High
Cumulative Impact –the cumulative impact is high as this introduces a transmission into an environment that there previously had not been one. he impact on the sense of place is by Alternative 3 is regarded as high in that the transmission line and associated infrastructure will visually alter the entire valley and is of very high significance due to the impact on the nearby Tsitsa Falls. The significance of Alternative 2 is considered to be medium in that							

the will still be an impact on the valley bottom but it does not impact on the Tsitsa Falls.

8.2 OPERATION PHASE

8.2.1 Aesthetics

Alteration to sense of place

- Recommended mitigation: Alternative 3 should be avoided as it will have a high negative impact on the sense of place of the Tsitsa Falls and associated valley. It is recommended that Alternative 1 be selected but re-aligned to drop below the ridge line into the adjacent valley where it will have the valley sides to provide a backdrop and reduce the silhouette image against the skyline. Final mitigation will be incorporated into the EMP.

Table 18: Impact Table Transmission Lines - Operation Phase

Aesthetics	Extent	Duration	Intensity	Potential for irreplaceable loss of resources	Probability	Confidence	Significance
Proposed Powerline 1							
Without Mitigation	Regional	Long term	High	Medium	Definite	Medium	Medium-Low
With Mitigation	Regional	Long term	High	Medium	Definite	Medium	Low
Proposed Powerline 2							
Without Mitigation	Regional	Long term	High	Medium	Definite	Medium	Medium-
With Mitigation	Regional	Long term	High	Medium	Definite	Medium	Medium-
Proposed Powerline 3							
Without Mitigation	Regional	Long term	High	High	Definite	Medium	Very High
With Mitigation	Regional	Long term	High	High	Definite	Medium	Very High
Cumulative Impact –the cumulative impact is high as this introduces a transmission into an environment that there previously had not been one. he impact on the sense of place is by Alternative 3 is regarded as high in that the transmission line and associated infrastructure will visually alter the entire valley and is of very high significance due to the impact on the nearby Tsitsa Falls. The significance of Alternative 2 is considered to be medium in that the will still be an impact on the valley bottom but it does not impact on the Tsitsa Falls.							

9. IMPACT ASSESSMENT FOR ROADS INFRASTRUCTURE

This Chapter presents the findings of the environmental impact assessment for the road infrastructure (DEA Ref no. 14/12/16/3/3/1/1169).

The activities included under this chapter are listed below:

- Upgrading and relocation of roads and bridges;
- Construction of new access roads around the Lalini Dam site.

9.1 CONSTRUCTION AND DECOMMISSIONING PHASES

9.1.1 Aesthetics

Alteration to sense of place

- Recommended mitigation: Final mitigation will be incorporated into the EMP.

Table 19: Impact Table: Access Roads - Construction and Decommissioning Phase

Aesthetics	Extent	Duration	Intensity	Potential for irreplaceable loss of resources	Probability	Confidence	Significance
Proposed Access Road from Maclear							
Without Mitigation	Regional	Long term	Medium	Medium	Definite	Medium	Medium-Low
With Mitigation	Regional	Long term	Medium	Medium	Definite	Medium	Medium-Low
Proposed Access Road from Tsolo							
Without Mitigation	Regional	Long term	Medium	Medium	Definite	Medium	Medium-Low -
With Mitigation	Regional	Long term	Medium	Medium	Definite	Medium	Medium-Low -
Proposed Measured Roads							
Without Mitigation	Regional	Long term	Medium	Medium	Definite	Medium	Medium-Low
With Mitigation	Regional	Long term	Medium	Medium	Definite	Medium	Medium-Low
Cumulative Impact –the cumulative impact is medium. It is not considered that the road upgrades will add to the existing impact of road infrastructure from a visual point of view. Falls.							

9.2 OPERATION PHASE

9.2.1 Aesthetics

Alteration to sense of place

- Recommended mitigation: Final mitigation will be incorporated into the EMP.

Table 20: Access Roads - Operation Phase

Aesthetics	Extent	Duration	Intensity	Potential for irreplaceable loss of resources	Probability	Confidence	Significance
Proposed Access Road from Maclear							
Without Mitigation	Regional	Long term	Medium	Medium	Definite	Medium	Medium-Low
With Mitigation	Regional	Long term	Medium	Medium	Definite	Medium	Medium-Low
Proposed Access Road from Tsolo							
Without Mitigation	Regional	Long term	Medium	Medium	Definite	Medium	Medium-Low -
With Mitigation	Regional	Long term	Medium	Medium	Definite	Medium	Medium-Low -
Proposed Measured Roads							
Without Mitigation	Regional	Long term	Medium	High	Definite	Medium	Medium-Low
With Mitigation	Regional	Long term	Medium	High	Definite	Medium	Medium-Low
Cumulative Impact	The cumulative impact is medium. It is not considered that the road upgrades will add to the existing impact of road infrastructure from a visual point of view. Falls.						

10. IMPACT ASSESSMENT FOR THE NO PROJECT ALTERNATIVE

10.1 NO PROJECT ALTERNATIVES

The no project alternative was not specifically evaluated as this alternative would maintain the visual status quo. In other words there would be no change to the visual environment and hence no impact.

11. CONSULTATION PROCESS

11.1 CONSULTATION PROCESS FOLLOWED

Engagement with Interested and Affected Parties (I&APs) forms an integral component of the EIA process. I&APs have an opportunity at various stages throughout the EIA process to gain more knowledge about the proposed project, to provide input into the process and to verify that their issues and concerns have been addressed.

The proposed project was announced in April 2014 to elicit comment from and register I&APs from as broad a spectrum of public as possible. The announcement was done by the following means:

- The distribution of Background Information Documents (BIDs) in English and isiXhosa;
- Placement of site notices in the project area and Municipal offices (Tsolo and Qumbu);
- Placement of advertisements in one regional (The Herald) and two local (Daily Dispatch and the Mthatha Fever) newspapers; and
- Publication of all available information on the DWA web site (www.dwa.gov.za/mzimvubu).

The Draft Scoping Report (DSR) was made available for a 30 day public comment period in May 2014. All documents were uploaded to the web, notification letters were sent out, the summary of the DSR was translated into isiXhosa, distributed to all registered stakeholders and hardcopies of the full report and translated summary report were available at public places. Additionally, three public meetings were held in the affected areas, Siqhungqwini, Tsolo and Lalini respectively. An Authorities Forum Meeting with all relevant authorities was held in the Eastern Cape on the 28 May 2014. This was to assist the authorities with commenting on the relevant documentation.

Comments received from stakeholders were captured in the Issues and Response Report (IRR) which formed part of the Final Scoping Report (FSR). The FSR was made available to the public for a 21 day comment period on 13 June 2014 and was submitted to the Department of Environmental Affairs (DEA). Comments received during the Final Scoping public comment period were compiled and an updated IRR was submitted to DEA on 8 July 2014 and uploaded to the website. The FSR was accepted by DEA with certain conditions on 15 July 2014. Following this, a newsletter was compiled and translated to isiXhosa, explaining everything that has happened to date as well as what is to come. Both the English and isiXhosa versions were electronically distributed to all registered stakeholders and hardcopies were distributed by the local facilitators in the affected areas.

The Draft Environmental Impact Assessment Report (DEIR), its summary (translated into isiXhosa), the various specialist studies, the Environmental Management Programmes (one for the construction and operation of the project, and one for the borrow areas and quarries) as well as the Water Use Licence Application will be made available for a period of thirty (30

days) for stakeholders to comment. Hardcopies will be made available at the same venues as the DSR and all documents will be uploaded to the website. The availability of these documents as well as the announcement of the upcoming public meetings in Siqhungqwini, Tsolo and Lalini will be advertised on the Eastern Cape SABC radio station, Umhlobo Wenene FM, which has a listenership of over 4 million people. Another Authorities Forum Meeting is scheduled for September 2014.

Stakeholder comments will be taken into consideration with the preparation of the final documents. The availability of the final documents will be announced prior to submission to the decision-making authority. Once a decision has been made by the DEA, all stakeholders will again be notified.

11.2 SUMMARY OF COMMENTS RECEIVED

I&APs did not raise any issues related to visual impacts.

12. OTHER INFORMATION REQUESTED BY THE AUTHORITY

No specific information related to visual impacts was requested by the authorities.

13. IMPACT STATEMENT

13.1 THE VISUAL IMPACT

The visual impact of the project in the landscape is a function of many factors or criteria (Table 6). The value ratings assigned to Table 5 refer to the impact a development could have on the visual elements that have been assessed. The impact ratings in Table 5 are assessed in terms of visual attributes and are represented in Tables 6 and 7. Some of the factors are measurable such as viewing distance, the visual absorption capacity of the surrounding landscape, and the scale of the surrounding environment and landform. Other factors are subjective viewpoints, which are extremely difficult to consistently categorise the opinion of the community. Studies in the USA have shown that professionals and environmental groups view modification of the natural landscape more negatively than other groups (McCool, *et al* 1986).

The critical appraisal of the visual impact of the project and associated works on the landscape is presented from the viewpoint of the informed citizen and professional. To the more economically depressed communities surrounding the proposed project, it may well be that they do not, or will not, object to the visual intrusion in their immediate environment. It may be that they welcome it since they could perceive it as a symbol of prosperity and personal advancement opportunity.

13.1.1 The View Distance

The visual impact of the project and associated structures will reduce exponentially as the viewer moves further away from the proposed structures (Hull and Bishop, 1988).

The project components will exert a high visual impact within the 1 000 m zone. The viewshed analysis (**Figures 3, 4 and 6 to 12**) has indicated that some of the components of the proposed development will be visible beyond the 10 000 m zone. However, due to topography visibility for the most part is restricted to less 10 km with most views restricted to less than 5 km.

13.1.2 Critical Viewpoints

Critical views were determined during the field trips and from the 1:50 000 topographical maps and are discussed under Visibility – Section 5

Critical viewpoints are those areas from where most viewers would be exposed to the impact such as from public areas that rely on the aesthetic environment such as main roads, towns and villages as well as the Tsitsa Falls.

13.1.3 Extent

The visual impact for construction of all project components will occur on a regional scale due to the extent of the development. However, the visual impact for the operational phase will extend as far as it can be seen, which will be generally less than 10 km.

The viewshed analysis suggests that theoretically some of the project components can at times be seen for over 10 - 20 km. Due to the exponential decrease in visibility, the visibility of these components should be insignificant beyond 10 km.

Due to the diminishing visibility, as a result of distance, the project components will exert an impact on a local rather than regional scale and should be regarded as **medium low**.

13.1.4 Duration

The duration of the impact during construction will be short term due to the relatively short construction period and the rehabilitation of the disturbed areas.

The duration of the impact during the operational phase will be permanent, in other words greater than 10 years and beyond the anticipated lifetime of the project, with the impact terminating only after a possible decommissioning of the project. The impact is therefore regarded as **High**

13.1.5 Intensity or Severity

The intensity of the visual impact during construction and operation will be high within the 500 – 1 000 m zone wherever the project components intrude in the critical viewpoints. However, the project should not greatly have an impact on the visual environment to such an extent that it will substantially affect important systems or communities.

The impact intensity for the Ntabelanga Dam is regarded as **Very High** as is that for the Lalini Dam. The intensity for Transmission Lines 1, 2 and 3 is **High**. The impact intensity for the Road from Maclear, the Road from Tsolo and the Measures roads is regarded as **Medium**.

13.1.6 Frequency of Occurrence

The frequency of occurrence of the impact is **continuous** while it remains visible, i.e. 24 hours. Although only the areas that could be lit at night such as the hydroelectric pump stations will be for 24 hours.

13.1.7 The Probability of Occurrence

The construction and operational impact described is probable and can be regarded as **Definite**. It must be recognized, however, that much of this assessment is subjective and that it is not possible to empirically state that the impact will occur.

13.1.8 Reversibility

The impact on reversibility is regarded as having a Medium rating due to the fact that the vegetation and landforms can to some extent be recreated, restored or rehabilitated to the original form. This is dependent on how much disturbance to the natural vegetation takes place during construction. If the entire area is first stripped of vegetation and or topsoil and drainage channels altered prior to construction and operation the ability to reverse the impact becomes far more difficult or even impossible. The impact on reversibility for the

dam sites is regarded as Medium-High due to the fact that inundation of these areas will have a permanent effect on the soil structure and land forms

13.1.9 Irreplaceable Loss of Resources

The impact on irreplaceable loss of resources for the Ntabelanga and Lalini Dams is regarded as **High**. The intensity for Transmission Lines 1, 2 is regarded as medium and for 3 is **High**. The impact intensity for the Road from Maclear, the Road from Tsolo and the Measures roads is regarded as **Medium**.

13.1.10 Consequence

The consequence is regarded as **Medium**.

13.1.11 Significance

The significance of the impact for the Ntabelanga Dam is regarded as **Medium-low** as is that for the Lalini Dam. The intensity for Transmission Lines 1 is **Low**, for Transmission Line 2 is **Medium** and for Transmission Line 3 is **Very High**. The impact significance for the Road from Maclear, the Road from Tsolo and the Measures roads is regarded as **Medium-Low**.

13.1.12 Nature of the Impact

The impact status is considered **negative** for the construction and operational phases.

13.1.13 Degree of Confidence in Predictions

The confidence is considered to be **medium** as the level of judgement is based generally on common sense, general knowledge, the author's field experience and the inherently subjective nature of this type of assessment.

14. CONCLUSION AND RECOMMENDATIONS

The impact assessment was undertaken for only the dam sites, transmission lines, roads and irrigation areas. This study evaluated the visual impact of the Mzimvubu Water Scheme with a view to assessing its severity based on the author's experience, expert opinion and accepted techniques.

Based on the field observations and the studies herein and with the implementation of the mitigation measures, the following conclusions are made from a visual point of view:

All the project components will exert a negative influence on the visual environment. This is largely due to:

- high visibility of components within a relatively visually uniform landscape;
- impact on the visual quality and the sense of place;
- impact on selected critical views;
- the height and scale of the components could be dominant in the landscape;
- high visibility of construction and operation activity within large areas of uniform visual pattern;
- the low Visual Absorption Capacity of some of the settings which is attributable to:
 - undulating topography;
 - uniform and monotonous vegetation cover;
 - the lack of visual diversity.

The significance of the visual impact during construction and operation is regarded as:

- Ntabelanga Dam

The significance of the visual impact is considered **medium-Low** (a rating of 2 on a scale of 1-5) during construction and operation.

- Lalini Dam

The significance of the visual impact is considered **medium-Low** (a rating of 2 on a scale of 1-5) during construction and operation.

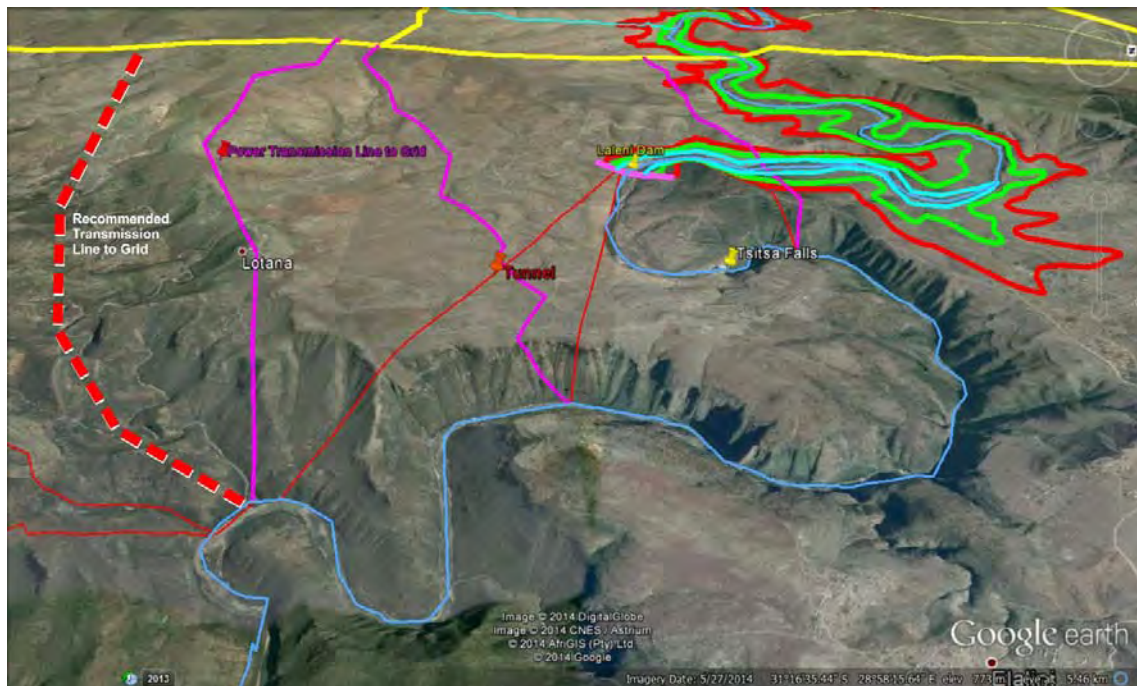
- Transmission Lines

The significance of the visual impact of Transmission Line 1 is regarded as **Low** (a rating of 1 on a scale of 1-5), for transmission Line 2 is **Medium** (a rating of 3) and for Transmission Line 3 it is regarded as **Very High** (a rating of 5 on a scale of 1-5).

- Roads

The impact significance for the Road from Maclear, the Road from Tsolo and the Measures roads is regarded as **Medium-Low** (a rating of 2 on a scale of 1-5).

In conclusion, based on the field observations and the studies herein, from a visual point of view, it is recommended that the alignment of Transmission Line 3 be realigned to avoid the ridge as set out in **Figure 14, Recommended Transmission Line Alignment**.



Red dotted line the recommended alignment

Figure 14: Recommended Transmission Line Alignment

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APPENDIX A

PHOTOS



Photo 1: Crossing the Tsitsa River near the Lalini Dam site.



Photo 2: Dam wall site for the Lalini Dam



Photo 3 Dam basin site for the Lalini Dam



Photo 4: The Tsitsa River gorge below the falls at approximately the position of Transmission Line 1 and the Hydroelectric pump station.



Photo 5: Irrigation lands near Tsolo.



Photo 6: Irrigation lands near Tsolo.



Photo 7: The Tsitsa River below the proposed Ntabelanga Dam wall



Photo 7: Erosion donga within the Ntabelanga Dam basin



Photo 8: View from the road to Maclear across the upper reaches of the Ntabelanga Dam.