ADDENDUM TO THE
PROPOSED HELIOS - JUNO 765 KV TRANSMISSION POWERLINE AND SUBSTATIONS UPGRADE, NORTHERN AND WESTERN CAPE PROVINCES.
NEAS REFERENCE: DEA/EIA/0001558/2012
DEA REFERENCE: 14/12/16/3/3/2/439

VISUAL IMPACT ASSESSMENT

PREPARED FOR:

MOKGOPE CONSULTING CC
CONTACT: JUDITH ALFORD
TEL: 076 876 2672; EMAIL: JUDY@MOKGOPE.CO.ZA

ON BEHALF OF:

ESKOM (Pty) Ltd
Megawatt Park
Maxwell Drive
Sunninghill
Sandton

PREPARED BY:

AXIS LANDSCAPE ARCHITECTS (CC)
336 Cheverny
La Montagne
Pretoria
0184

July 2015
AXIS REF: NORJ2012

1. INTRODUCTION

Mokgope Consulting was appointed by Eskom (Pty) Ltd, as the independent environmental consultant to undertake the Environmental Impact Assessment (EIA) for the proposed establishment of a 765kV transmission power line from the Helios substation near Loeriesfontein in the Northern Cape to the Juno substation near Vredendal in the Western Cape Province.

Axis Landscape Architecture cc was appointed by Mokgope Consulting as a sub-consultant to complete a Visual Impact Assessment. This amendment to that Visual Impact Assessment (VIA) is a specialist study that forms part of the EIA and addresses the visual affects of the proposed transmission line on the receiving environment.

Gerhard Griesel, the principal Landscape Architect and Visual Specialist from Axis Landscape Architecture cc undertook this VIA. He is a registered Professional Landscape Architect at the South African Council of Landscape Architects, SACLAP no 20161. Gerhard has been involved as Visual Impact Specialist since 2005.

Neither the author, nor Axis Landscape Architects will benefit from the outcome of the project decision-making.

Three alternative deviations have been proposed with the proposed alignments to connect to the two substations. The proposed alignments stretch over approximately 145km. The study area contains the extent of the alignments and includes an approximate 5 km buffer area around the alignments. Both Helios and Juno are existing substations which would require technical upgrades to accommodate the new power line.

2. IMPACT ASSESSMENT

The significance of impacts is a comparative function relating to the severity of the identified impacts on the respective receptors. The significance of an impact is considered *high* should a *highly* sensitive receptor be exposed to a *highly* severe impact (Table 1).

Table 1: Significance of impacts

RECEPTOR SENSITIVITY	IMPACT SEVERITY		
	LOW	MEDIUM	HIGH
LOW	No significance	Low	Low
MEDIUM	Low	Medium	Medium
HIGH	Low	Medium	High

2.1. SIGNIFICANCE OF LANDSCAPE IMPACT

2.1.1. LANDSCAPE CHARACTER SENSITIVITY

The sensitivity of the landscape character is an indication of "…the degree to which a particular landscape can accommodate change from a particular development, without detrimental effects on its character" (GLVIA, 2002). A landscape with a *high* sensitivity would be one that is greatly valued for its aesthetic attractiveness and/or have ecological, cultural or social importance through which it contributes to the inherent character of the visual resource.

A landscape sensitivity rating was adapted from GOSW (2006) (Table 2) and applied in the classification of the study area into different sensitivity zones.

Table 2: Landscape character sensitivity rating (Adapted from GOSW, 2006)

	DESCRIPTION
Low sensitivity	These landscapes are likely to: ° Have distinct and well-defined landforms; ° Have a strong sense of enclosure; ° Provide a high degree of screening; ° Have been affected by extensive development or man-made features; ° Have reduced tranquillity; ° Are likely to have little inter-visibility with adjacent landscapes; and ° Exhibit no or a low density of sensitive landscape features that bare visual value.
Moderately sensitivity	These landscapes are likely to: ° Have a moderately elevated topography with reasonably distinct landforms that provides some sense of enclosure; ° Have been affected by several man-made features; ° Have limited inter-visibility with adjacent landscapes; and ° Exhibit a moderate density of sensitive landscape features that bare visual value.
Highly sensitivity	These landscapes are likely to: ° Consist mainly of undulating plains and poorly defined landforms; ° Be open or exposed with a remote character and an absence of man-made features; ° Are often highly visible from adjacent landscapes; and ° Exhibit a high density of sensitive landscape features that bare visual value.

The majority of the study area is considered to have high landscape character sensitivity due to the relative undeveloped and pristine condition of the landscape, the generally high visual quality and associated tourism value. Low terrain variability in the study area and thus a low VAC can be expected. Generally the vegetation cover is limited to low shrubs and groundcovers, which will provide little to no visual screening for the proposed transmission line.

Previous human induced activities and interventions have minimally impacted the original landscape character. In this case, mining and existing infrastructure, including power lines, roads, etc., can be classified as landscape disturbances and elements that cause a reduction in the condition of the affected landscape type and negatively affect the quality of the visual resource.

2.1.2. SEVERITY OF POTENTIAL LANDSCAPE IMPACTS

Landscape impacts are alterations to the fabric, character, visual quality and/or visual value which will either positively or negatively affect the landscape character. During the construction and operational phases, the project components are expected to impact on the landscape character of the landscape types. The magnitude/severity of this intrusion is measured against the scale of the project, the permanence of the intrusion and the loss in visual quality, -value and/or VAC.

Table 3: Landscape impact – Altering the landscape character

Activity	Nature of Impact	Extent of Impact	Duration of Impact	Severity of Impact	Probability of Impact	Significance without Mitigation	Significance with Mitigation	Level of Confidence
Construction phase								
Alternative 1	Negative – Impacting on the visual quality of the landscape due to the presence of foreign elements and a loss of vegetation cover.	Local	Permanent if not mitigated	Moderate	Definite	Moderate	Low	High
Deviation 1E				Moderate	Definite	Moderate	Low	High
Deviation 1F				Moderate	Definite	Moderate	Low	High
Deviation 1G				Moderate	Definite	Moderate	Low	High
Alternative 2				Moderate	Definite	Moderate	Low	High
Alternative 3				Moderate	Definite	Moderate	Low	High
Operational phase								
Alternative 1	Negative – Impacting on the visual quality of the landscape due the presence of a power line.	Local	Permanent	Low	Definite	Low	Low	High
Deviation 1E				Low	Definite	Low	Low	High
Deviation 1F				Low	Definite	Low	Low	High
Deviation 1G				Low	Definite	Low	Low	High
Alternative 2				Moderate	Definite	Moderate	Low	High
Alternative 3				Moderate	Definite	Moderate	Low	High

Construction phase

The activities that are expected to cause landscape impacts and that are associated with the construction phase, are the establishment of the construction camps, construction of access roads and the clearance of the site. These activities will create surface disturbances which will result in the removal of vegetation and the exposure of the underlying soil.

The extent of the disturbances will generally affect a relative small footprint area. Access roads to the towers are expected to be a two-track dirt road which will create the minimum disturbance. During construction, the area around the individual towers will be disturbed.

The construction camps and lay-down yards are anticipated to disturb a much larger area. The size and location of the construction camps will play a major role in the severity of the landscape impact. Due to a lack of technical information, two options are considered namely; the location of construction camps in remote, virgin land, or in/adjacent existing settlements. The initial presence of a construction camp in a undeveloped landscape will cause a temporary and localised alteration to the landscape character. A construction camp located in or adjacent to an existing town or settlement will be easily associated with the town and therefore the presence of the town, mitigates the impact. The mitigating result is most effective, the bigger the town or settlement is.

Considering the moderately low VAC throughout most of the study area, the undisturbed condition of parts of the landscape and the recovery rate of the endemic vegetation, the *severity of landscape impact* during the construction stage is expected to be *moderate for Alternatives 2 and 3 and low* for Alternative 1, Deviation 1E, 1F and 1G. The impact will extend over the entire length of the different alignments and may vary in degrees of severity along the linear length as it transects landscape types of varying VAC. Surface disturbances are also minimised through, for example, utilising existing roads.

The *severity of the landscape impact* can however be mitigated to a low severity for all the Alternatives. Sensitive placement of the construction camp, limited surface disturbance and prompt rehabilitation are prerequisite conditions if the severity of impact is to be reduced.

Operational phase

Surface disturbances created during construction may remain for an extended period during the operational phase. These are seen as residual affects carried forward from the construction phase and can be completely or substantially mitigated if treated appropriately during the construction phase.

An additional impact will be caused as a result of the presence of the completed transmission line, i.e. that of the evenly spaced towers of the lines, buildings and structures. The industrial character and the near monumental vertical scale of the towers will contrast with the diverse landscape character that prevails through most of the study area.

2.2. SIGNIFICANCE OF VISUAL IMPACTS

2.2.1. VIEWER SENSITIVITY

Within the receiving environment, specific viewers (visual receptors) experience different views of the visual resource and value it differently. They will be affected because of alterations to their views due to the proposed project. The visual receptors are grouped according to their similarities. The visual receptors included in this study are:

- Residents;
- Tourists; and
- Motorists.

To determine visual receptor sensitivity a commonly used rating system is utilised. This is a generic classification of visual receptors and enables the visual impact specialist to establish a logical and consistent visual receptor sensitivity rating for viewers who are involved in different activities without engaging in extensive public surveys.

2.2.1.1 Residents

Residents of the affected environment are classified as visual receptors of *high* sensitivity owing to their sustained visual exposure to the proposed development as well as their attentive interest towards their living environment.

2.2.1.2 Tourists

Tourists are regarded as visual receptors of exceptional *high* sensitivity. Their attention is focused towards the landscape which they essentially utilise for enjoyment purposes and appreciation of the quality of the landscape.

2.2.1.3 Motorists

Motorists are generally classified as visual receptors of *low* sensitivity due to their momentary view and experience of the proposed development. As a motorist's speed increases, the sharpness of lateral vision declines and the motorist tends to focus on the line of travel (USDOT, 1981). This adds weight to the assumption that under normal conditions, motorists will show *low* levels of sensitivity as their attention is focused on the road and their exposure to roadside objects is brief.

Motorists on the scenic routes in the study area will present a higher sensitivity. Their reason for being in the landscape is similar to that of the tourists and they will therefore be categorised as part of the tourist viewer group.

2.2.2. SEVERITY OF POTENTIAL VISUAL IMPACTS

Severity of visual impact refers to the magnitude of change to specific visual receptor's views and/or experience of the landscape. Severity of visual impact is influenced by the following factors:

- The **viewer's exposure** to the project:
  - Distance of observers from the proposed project;
  - The visibility of the proposed project (ZVI);
  - Number of affected viewers; and
  - Duration of views to development experienced by affected viewers.
- Degree of **visual intrusion** created by the project.

Empirical research indicates that the visibility of a transmission tower and hence the severity of visual impact, decreases as the distance between the observer and the tower increases. The landscape type, through which the transmission line crosses, can mitigate the severity of visual impact through topographical or vegetative screening. Bishop *et al* (1988) noticed that in some cases the tower may dominate the view for example, silhouetted against the skyline, or in some cases be absorbed in the landscape. A complex landscape setting with a diverse land cover and topographical variation has the ability to decrease the severity of visual impact more than a mundane landscape (Bishop *et al*, 1985).

The Zone of Visual Influence (ZVI) is determined through a Geographical Information System (GIS). The result reflects a shaded pattern which identifies the areas that are expected to experience views of the proposed alignments. The ZVI is limited to 5 km from the proposed locations.

2.2.2.1 Potential visual impacts on residents

Activity	Nature of Impact	Extent of Impact	Duration of Impact	Severity of Impact	Probability of Impact	Significance without Mitigation	Significance with Mitigation	Level of Confidence
Construction phase								
Alternative 1	Negative – Construction camp and lay-down yard may cause unsightly views.	Local	Temporary	Moderate	Definite	Moderate	Low	High
Deviation 1E				Moderate	Definite	Moderate	Low	High
Deviation 1F				Moderate	Definite	Moderate	Low	High
Deviation 1G				Moderate	Definite	Moderate	Low	High
Alternative 2				Moderate	Definite	Moderate	Low	High
Alternative 3				Moderate	Definite	Moderate	Low	High
Operational phase								
Alternative 1	Negative – The presence of a power line intrudes on existing views and spoils the open panoramic views of the landscape.	Local	Permanent	Low	Definite	Low	Low	High
Deviation 1E				Low	Definite	Low	Low	High
Deviation 1F				Low	Definite	Low	Low	High
Deviation 1G				Low	Definite	Low	Low	High
Alternative 2				Low	Definite	Low	Low	High
Alternative 3				Low	Definite	Low	Low	High

Generally, the study area is sparsely populated. Farm residents will experience an intrusion on their views due to the presence of the proposed Transmission Line. It is unpractical to discuss all, but they are recognised as the general population of the study area and are identified as affected visual receptors.

Considering the distribution of residents across the study area, it can be concluded that the entire study area has a low density of residents with the exception of higher concentrations of residents in the towns and human settlements.

Construction phase

During the construction phase, unsightly views may be created by the presence of construction camps and the lay-down yards. The duration of the potential visual impact will be temporary which will result in an anticipated *moderate* significance of visual impact for all the alternatives. The visual exposure to the construction activity will initially be limited and only local residents will experience views of the site preparation activity. As the structures increase in scale and height, the ZVI increases, resulting in a greater number of affected viewers and a subsequent increase in visual exposure.

The cleared sites, construction camps and material lay-down yard will appear unsightly and out of character. Large scale construction elements such as cranes, will be highly visible and increase awareness of the construction activity over a considerable area. The visual intrusion caused during the construction stage will be moderate, but will be temporary in nature.

Operational phase

The farming communities next to the power lines may experience a low degree of visual intrusion due to their distance to all the Alternatives.

The presence of a transmission line in the visual field of the residents in this part of the study area will spoil the uncluttered panoramic views they currently experience. The silhouette of a transmission line on the horizon will be visible from a great distance and thus increase the ZVI considerably, potentially impacting on more residents.

2.2.2.2 Potential visual impacts on tourists

Activity	Nature of Impact	Extent of Impact	Duration of Impact	Severity of Impact	Probability of Impact	Significance without Mitigation	Significance with Mitigation	Level of Confidence
Construction phase								
Alternative 1	Negative – Construction camp and lay-down yard may cause unsightly views and spoil the undisturbed views over the landscape.	At a number of point locations	Temporary	High	Definite	High	High	High
Deviation 1E				Moderate	Definite	Moderate	Low	High
Deviation 1F				Moderate	Definite	Moderate	Low	High
Deviation 1G				Moderate	Definite	Moderate	Low	High
Alternative 2				High	Definite	High	High	High
Alternative 3				Moderate	Definite	Moderate	Low	High
Operational phase								
Alternative 1	Negative – The presence of a power line intrudes on existing views of the landscape	Local	Permanent	Moderate	Definite	Moderate	Low	High
Deviation 1E				Moderate	Definite	Moderate	Low	High
Deviation 1F				Moderate	Definite	Moderate	Low	High
Deviation 1G				Moderate	Definite	Moderate	Low	High
Alternative 2				Moderate	Definite	Moderate	Low	High
Alternative 3				Low	Definite	Low	Low	High

The study area is renowned for its exceptional biodiversity and pristine desert-like landscapes. These characteristics provide the basis for the tourism industry which plays a major role in the economy of the Northern Cape Province. The entire study area is considered to have a high tourism potential. Tourists flock to Namaqualand during the early spring period when the spectacular floral display is at its peak. During this season tourists infiltrate every small gravel road and town, in search of secluded locations where they can experience the true remoteness and undisturbed beauty of the landscape.

The type of tourist that visits the Namaqualand is expected to travel considerably through the study area by vehicle. This implies that they will experience a large part of the study area in a relative short time span.

Construction phase

The temporary duration of the construction phase is not expected to cause major visual impacts. The location, number and size of the construction camps and lay-down yards will be crucial in regulating the impact. Detail information is not available and its anticipated that the visual impact will occur localised and that a small number of tourists will be adversely affected by these project components during construction.

Their exposure to possible unsightly views of the construction camps and the associated activity will however be minimal and localised.

The potential visual impact on tourists during the construction phase of the proposed project can be mitigated with relative ease. The greatest factor to consider is the location of the construction camp.

Operational phase

Considering the extent of the proposed alternatives, a great number of tourists might be affected during their visit to Namaqualand. Although it is difficult to pinpoint particular locations in the study area that are of specific value, since the entire study area bares value, the areas next to the roads will be most important. The presence of a transmission line in this pristine landscape will severely spoil the picturesque view that are experienced over the undulating hills

2.2.2.3 Potential visual impacts on motorists

Activity	Nature of Impact	Extent of Impact	Duration of Impact	Severity of Impact	Probability of Impact	Significance without Mitigation	Significance with Mitigation	Level of Confidence
Construction phase								
Alternative 1	Negative – Intruding on existing views of the landscape.	At a number of point locations	Short period	Low	Probable	Low	Low	High
Deviation 1E				Low	Probable	Low	Low	High
Deviation 1F				Low	Probable	Low	Low	High
Deviation 1G				Low	Probable	Low	Low	High
Alternative 2				Low	Probable	Low	Low	High
Alternative 3				Low	Probable	Low	Low	High
Operational phase								
Alternative 1	Negative – Intruding on existing views of the landscape.	Local	Short period	Low	Probable	Low	Low	High
Deviation 1E				Low	Probable	Low	Low	High
Deviation 1F				Low	Probable	Low	Low	High
Deviation 1G				Low	Probable	Low	Low	High
Alternative 2				Low	Probable	Low	Low	High
Alternative 3				Low	Probable	Low	Low	High

The major routes in the study area are the R357 and R383 connecting the towns, mines and farms. The secondary road network in the study area carries a much lower volume of motorists. Many of the roads are gravel roads which are mostly utilised by the local residents. Their duration of views will be temporary and it is expected that the visual intrusion that they will experience will be low.

Construction phase

The potential visual impact that may be experienced by motorists during the construction phase is considered to be minimal. Limited information is available and the number, location and size of the construction camps and lay-down yard are essential for accurately assessing the visual impact.

The presence of the construction camp and lay-down yard may create unsightly views. Motorists' visual exposure to the impact will be brief and the severity of visual impact will be *low*. The significance of potential visual impact is expected to be *low*.

Operational phase

None of the Alternatives will be visible from the main roads. The severity and significance of visual impact for the proposed alternatives on motorists will be low. The speed at which motorists travel also has a moderating effect on the severity of the visual impact and further reduces visual exposure.

3. RECOMMENDED MITIGATION MEASURES

The aim of mitigation is to reduce or alleviate the intrusive contrast between the proposed project components and activities, and the receiving landscape to a point where it is acceptable to visual and landscape receptors.

3.1. GENERAL

- Proceed with construction of the substation during the off peak tourism season;
- Where areas are going to be disturbed through the destruction of vegetation, for example the establishment of the construction camp, the vegetation occurring in the area to be disturbed must be salvaged and kept in a controlled environment such as a nursery, for future re-planting in the disturbed areas as a measure of rehabilitation;

3.2. ACCESS ROUTES

- Make use of existing access roads where possible;
- Where new access roads are required, the disturbance area should be kept as small as possible. A two-track dirt road will be the most preferred option;
- Locate access routes so as to limit modification to the topography and to avoid the removal of established vegetation;
- Avoid crossing over or through ridges, rivers, pans or any natural features that have visual value. This also includes centres of floral endemism and areas where vegetation is not resilient and takes extended periods to recover;
- Maintain no or minimum cleared road verges;
- Access routes should be located on the perimeter of disturbed areas such as cultivated/fallow lands as not to fragment intact vegetated areas; and
- If it is necessary to clear vegetation for a road, avoid doing so in a continuous straight line. Alternatively, curve the road in order to reduce the visible extent of the cleared corridor.

3.3. TRANSMISSION TOWERS

- Avoid crossing over or through ridges, rivers, pans or any natural features that have visual value. This also includes centres of floral endemism and areas where vegetation is not resilient and takes extended periods to recover;
- The preferred type of tower is the compact cross-rope or the cross-rope suspension tower. These two tower types are the most visually permeable and create an extremely low degree of visual obstruction;
- Avoid changing the alignment's direction too often in order to minimise the use of the self-supporting strain tower. This tower type is the most visually intrusive as the steel lattice structure is more dense than the other two tower types, hence creating more visual obstruction;
- Where practically possible, provide a minimum of 1 km buffer area between the transmission line and sensitive visual receptors; and
- Rehabilitate disturbed areas around pylons as soon as practically possible after construction. This should be done to restrict extended periods of exposed soil.
- Align the route along the footslopes of hills, mountains and ridges. This is to maximise the backdrop screening effect of the topography that will reduce presenting the Transmission line in silhouette.
- Plan the route so that the route crosses existing main routes as close to 90° as possible as this will reduce the time that the line is in the viewshed of the passing motorist / viewer.

- Align the route through areas of existing visual clutter and disturbance such as alongside railway lines, existing Transmission lines, roads and other visible infrastructure, rather than through pristine or undisturbed areas where possible. However, the cumulative effect of adding to the visual clutter prior to the final placement should be evaluated.
- Avoid areas where the current land uses, such as game farm, lodges, etc. often rely on the absence of human visual intrusion.
- The galvanising of the pylon should be allowed to weather to a matt grey finish rather than be painted silver, as is often the case. This allows the structures to blend in with the existing environmental colours more readily than the silver that is highly reflective especially early morning and late afternoon. Should it be necessary to paint, it is recommended that a neutral matt finish be used.

3.4. CLEARED SERVITUDES

- Locate the alignment and the associated cleared servitude so as to avoid the removal of established vegetation; and
- Avoid a continuous linear path of cleared vegetation that would strongly contrast with the surrounding landscape character. Feather the edges of the cleared corridor to avoid a clearly defined line through the landscape.

3.5. CONSTRUCTION CAMPS AND LAY DOWN YARDS

- If practically possible, locate construction camps in areas that are already disturbed or where it isn't necessary to remove established vegetation like for example, naturally bare areas;
- Utilise existing screening features such as dense vegetation stands or topographical features to place the construction camps and lay-down yards out of the view of sensitivity visual receptors;
- Keep the construction sites and camps neat, clean and organised in order to portray a tidy appearance; and
- Screen the construction camp and lay-down yards by enclosing the entire area with a dark green or black shade cloth of no less than 2 m height.

4. CONCLUSION

The three alternative deviations have been evaluated against international accepted criteria to determine the impact they will have on the landscape character and the viewers that have been identified in the study area.

Landscape impacts: All the deviations will have the greatest landscape impact in the construction phase on sensitive landscape types, the extent for is rated *Medium*.

The operational phase is characterised by a *moderate to low* landscape impact on a regional scale.

Impacts on residents: The severity can be reduced in both the construction and operational phases through mitigation measures.

Impacts on tourists: Both the construction and operational phases are characterised with a *moderate* visual impact with mitigation.

Impacts on motorist: *Low* impacts on motorists are expected in both the construction and operational phases

GLOSSARY OF TERMS

Aesthetics	The science or philosophy concerned with the quality of sensory experience. (ULI, 1980)
Horizon contour	A line that encircles a development site and that follows ridgelines where the sky forms the backdrop and no landform is visible as a background. This is essentially the skyline that when followed through the full 360-degree arc as viewed from a representative point on the site defines the visual envelope of the development. This defines the boundary outside which the development would not be visible.
Landscape characterisation/ character	This covers the gathering of information during the desktop study and field survey work relating to the existing elements, features, and extent of the landscape (character). It includes the analysis and evaluation of the above and the supporting illustration and documentary evidence.
Landscape condition	Refers to the state of the landscape of the area making up the site and that of the study area in general. Factors affecting the condition of the landscape can include the level maintenance and management of individual landscape elements such as buildings, woodlands etc and the degree of disturbance of landscape elements by non-characteristics elements such as invasive tree species in a grassland or car wrecks in a field.
Landscape impact	Changes to the physical landscape resulting from the development that include; the removal of existing landscape elements and features, the addition of new elements associated with the development and altering of existing landscape elements or features in such as way as to have a detrimental affect on the value of the landscape.
Landscape unit	A landscape unit can be interpreted as an “outdoor room” which are enclosed by clearly defined landforms or vegetation. Views within a landscape unit are contained and face inward.
Sense of place	That distinctive quality that makes a particular place memorable to the visitor, which can be interpreted in terms of the visual character of the landscape. A more emotive sense of place is that of local identity and attachment for a place “*which begins as undifferentiated space* [and] *becomes place as we get to know it better and endow it with value*” (Tuan 1977)[1].
Viewer exposure	The extent to which viewers are exposed to views of the landscape in which the proposed development will be located. Viewer exposure considers the visibility of the site, the viewing conditions, the viewing distance, the number of viewers affected, the activity of the viewers (tourists or workers) and the duration of the views.
Viewer sensitivity	The assessment of the receptivity of viewer groups to the visible landscape elements and visual character and their perception of visual quality and value. The sensitivity of viewer groups depends on their activity and awareness within the affected landscape, their preferences, preconceptions and their opinions.
Visual absorption capacity (VAC)	The inherent ability of a landscape to accept change or modification to the landscape character and/or visual character without diminishment of the visual quality or value, or the loss of visual amenity. A high VAC rating implies a high ability to absorb visual impacts while a low VAC implies a low ability to absorb or conceal visual impacts.

[1] Cited in Climate Change and Our 'Sense of Place', http://www.ucsusa.org/greatlakes/glimpactplace.html

Visual amenity The notable features such as hills or mountains or distinctive vegetation cover such as forests and fields of colour that can be identified in the landscape and described. Also included are recognised views and viewpoints, vistas, areas of scenic beauty and areas that are protected in part for their visual value.

Visual character This addresses the viewer response to the landscape elements and the relationship between these elements that can be interpreted in terms of aesthetic characteristics such as pattern, scale, diversity, continuity and dominance.

Visual contour The outer perimeter of the visual envelope determined from the site of the development. The two dimensional representation on plan of the horizon contour.

Visual contrast The degree to which the physical characteristics of the proposed development differ from that of the landscape elements and the visual character. The characteristics affected typically include:

- Volumetric aspects such as size, form, outline and perceived density;
- Characteristics associated with balance and proportion such scale, diversity, dominance, continuity;
- Surface characteristics such as colour, texture, reflectivity; and
- Luminescence or lighting.

Visual envelope The approximate extent within which the development can be seen. The extent is often limited to a distance from the development within which views of the development are expected to be of concern.

Visual impact Changes to the visual character of available views resulting from the development that include: obstruction of existing views; removal of screening elements thereby exposing viewers to unsightly views; the introduction of new elements into the view shed experienced by visual receptors and intrusion of foreign elements into the view shed of landscape features thereby detracting from the visual amenity of the area.

Visual impact assessment A specialist study to determine the visual effects of a proposed development on the surrounding environment. The primary goal of this specialist study is to identify potential risk sources resulting from the project that may impact on the visual environment of the study area, and to assess their significance. These impacts include landscape impacts and visual impacts.

Visual quality An assessment of the aesthetic excellence of the visual resources of an area. This should not be confused with the value of these resources where an area of low visual quality may still be accorded a high value. Typical indicators used to assess visual quality are vividness, intactness and unity. For more descriptive assessments of visual quality attributes such as variety, coherence, uniqueness, harmony, and pattern can be referred to.

Visual receptors Includes viewer groups such as the local community, residents, workers, the broader public and visitors to the area, as well as public or community areas from which the development is visible. The existing visual amenity enjoyed by the viewers can be considered a visual receptor such that changes to the visual amenity would affect the viewers.

Zone of visual influence The extent of the area from which the most elevated structures of the proposed development could be seen and may be considered to be of interest (see visual envelope).

REFERENCES

BLM (Bureau of Land Management). (1986). Handbook H-8431-1, Visual Resource Contrast Rating. U.S. Department of the Interior BLM. http://www.blm.gov/nstc/VRM/vrmsys.html

Government Office of the South West - England (2006). Using landscape sensitivity for renewable energy. REvision 2010 – Empowering the region [Online]. http://www.oursouthwest.com/revision2010/lca_methodology_windbiomass.doc [Accessed 8 November 2006]

Landscape Institute and the Institute of Environmental Assessment and Management. (2002). Guidelines for Landscape and Visual Impact Assessment (GLVIA). Second Edition, E & FN Spon Press.

M. Hill, J. Briggs, P. Minto, D. Bagnall, K. Foley, A.Williams. (March 2001). Guide to Best Practice in Seascape Assessment. Maritime (Ireland / Wales) INTERREG Programme- Building Bridges.

Oberholzer, B. (2005). Guideline for involving visual and aesthetic specialists in EIA processes: Edition 1. CSIR Report No ENV-S-C 2005 053 R. Republic of South Africa, Provincial Government of the Western Cape, Department of Environmental Affairs and Development Planning, Cape Town.

Swanwick, C. Department of Landscape, University of Sheffield and Land Use Consultants. (2002). Landscape Character Assessment:: Guidance for England and Scotland. The Countryside Agency / Scottish Natural Heritage.

Van Riet, W., Claassens, P., Van Rensburg, J., Van Viegen, T., Du Plessis, L. 1997. *Environmental Potential Atlas for South Africa.* The Department of Environmental Affairs and Tourism in conjunction with The Geographic Information Systems Laboratory CC and the University of Pretoria. J.L. van Schaik.

Van Rooyen, M.W. 2002. Management of the old field vegetation in the Namaqua National Park, South Africa: conflicting demands of conservation and tourism. Published paper from *The Geographical Journal*, Vol. 168, No.3, September 2002, pp. 211-223.

U.S.D.O.T., Federal Highway Administration, Office of Environmental Policy. (March 1981). Visual Impact Assessment for Highway Projects. U. S. Department of Transportation Washington D. C.

Urban Land Institute, 1980. Visual Resource Management 0510-1: Environmental Comment (May 1980). Washington D.C.