



ANNEXURE G1

IMPACT ASSESSMENT METHODOLOGY

REPORT



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ENVASS 
ENVIRONMENTAL ASSURANCE (Pty) Ltd

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1. Environmental Impact Assessment Methodology

A “**significant impact**” is defined as it is defined in the EIA Regulations (2010): “*an impact that by its magnitude, duration, intensity or probability of occurrence may have a notable effect of one or more aspects of the environment*”. The objective of this EIA methodology is to serve as framework for accurately evaluating impacts associated with current or proposed activities in the biophysical, social and socio-economical spheres. It aims to ensure that all legal requirements and environmental considerations are met in order to have a complete and integrated environmental framework for impact evaluations.

The process of determining impacts to be assessed is one of the most important parts of the environmental impact assessment process. It is of such high importance because the environmental impacts identified can and are often linked to the same impact stream. In this method all impacts on the biophysical environment is assessed in terms of the overall integrity of ecosystems, habitats, populations and individuals affected. For example the removal of groundcover for the sloping or scraping of an embankment. This leads to higher amounts of water runoff which increases the rate of erosion. Further down in the river the amount of sediment increases because of the increased erosion. A number of fish species cannot endure the high amount of sediment and moves off. The habitat is thus changed or in the process of changing. Thus one needs to understand that the root of the problem (removal of groundcover) is assessed in terms of the degree of change in the health of the environment and/or components in relation to their conservation value. Thus if the impact of removal of groundcover of a definable system is high and the conservation value is also high then the impact of removal of groundcover is highly significant.

1.1 Environmental Impact Assessment (EIA) 2010 requirements

The Environmental Impact Assessment (EIA) 2010 Regulations promulgated in terms of Sections 24 (5), 24M and 44 of the National Environmental Management Act (NEMA) (Act 107 of 1998) requires that all identified potential impacts associated with the proposed project be assessed in terms of their overall potential significance on the natural, social and economic environments. The criteria identified in the EIA Regulations (2010) include the following:

- **Nature of the impact;**
- **Extent of the impact;**
- **Duration of the impact**
- **Probability of the impact occurring;**
- **Degree to which impact can be reversed;**
- **Degree to which impact may cause irreplaceable loss of resources;**
- **Degree to which the impact can be mitigated; and**
- **Cumulative impacts.**

ENVASS has developed an impact assessment methodology (as defined in point 2 below) whereby the **Significance** of a potential impact is determined through the assessment of the relevant temporal and spatial scales determined of the **Extent, Magnitude** and **Duration** criteria associated with a particular impact. This method does not explicitly define each of the criteria but rather combines them and results in an indication of the overall significance.

1.2 ENVASS IMPACT ASSESSMENT METHODOLOGY

a) *Nature of the impact*

The NATURE of an impact can be defined as: “a *brief description of the impact being assessed, in terms of the proposed activity or project, including the socio-economic or environmental aspect affected by this impact*”.

b) *Extent of the impact*

The EXTENT of an impact can be defined as: “a *brief description of the spatial influence of the impact or the area that will be affected by the impact*”.

EXTENT Extent or spatial influence of impact	Footprint	Only as far as the activity, such as footprint occurring within the total site area
	Site	Only the site and/or 500m radius from the site will be affected
	Local	Local area / district (neighbouring properties, transport routes and adjacent towns) is affected
	Region	Entire region / province is affected
	National	Country is affected

c) *Magnitude of the impact*

The MAGNITUDE of an impact can be defined as: “a *brief description of the intensity or amplitude of the impact on socio-economic or environmental aspects*”.

MAGNITUDE Magnitude / intensity of impact (at the specified scale)	Zero	Natural and/or social functions and/or processes remain <i>unaltered</i>
	Very low	Natural and/or social functions and/or processes are <i>negligibly</i> altered
	Low	Natural and/or social functions and/or processes are <i>slightly</i> altered
	Medium	Natural and/or social functions and/or processes are

		<i>notably altered</i>
	High	Natural and/or social functions and/or processes <i>severely altered</i>

d) Duration of the impact

The DURATION of an impact can be defined as: “a short description of the period of time the impact will have an effect on aspects”.

DURATION Duration of the impact	Short term	Construction phase up to 3 years after construction
	Medium term	Up to 6 years after construction
	Long term	More than 6 years after construction

e) Probability of the impact occurring

The PROBABILITY of an impact can be defined as: “the estimated chance of the impact happening”.

PROBABILITY	Unlikely	<i>Unlikely</i> to occur (0 – 25% probability of occurring)
	Possible	<i>May</i> occur (26 – 50% chance of occurring)
	Probable	<i>Likely</i> to occur (51 – 75% chance of occurring)
	Definite	Will <i>certainly</i> occur (76-100% chance of occurring)

f) Degree to which impact can be reversed

The REVERSABILITY of an impact can be defined as: “the ability of an impact to be changed from a state of affecting aspects to a state of not affecting aspects”.

REVERSABILITY	Reversible	Impacts can be reversed through the implementation of mitigation measures
	Irreversible	Impacts are permanent and can't be reversed by the implementation of mitigation measures

g) Degree to which impact may cause irreplaceable loss of resources

The IRRIPACIBILITY of an impact can be defined as:” the amount of resources that can(not) be replaced”.

IRRIPLACABILITY Irreplaceable loss of resources	No loss	No loss of any resources
	Low	<i>Marginal</i> loss or resources
	Medium	<i>Significant</i> loss of resources
	High	<i>Complete</i> loss of resources

h) Degree to which the impact can be mitigated

The degree to which an impact can be MITIGATED can be defined as: “the effect of mitigation measures on the impact and its degree of effectiveness”.

MITIGATION RATING	MITIGATED Degree impact can be mitigated	High	<i>Impact 100% mitigated</i>
		Medium	<i>Impact >50% mitigated</i>
		Low	<i>Impact <50% mitigated</i>

i) Confidence rating

CONFIDANCE in the assessment of an impact can be defined as the:” *level of certainty of the impact occurring*”.

CONFIDENCE RATING	CONFIDENCE	Unsure	Amount of information on and/or understanding of the environmental factors the potentially influence the impact is <i>unlimited and sound</i>
		Sure	Amount of information on and/or understanding of the environmental factors the potentially influence the impact is <i>reasonable and relatively sound</i>
		Certain	Amount of information on and/or understanding of the environmental factors the potentially influence the impact is <i>limited</i>

j) Cumulative impacts

The effect of CUMULATIVE impacts can be described as:” the effect the combination of past, present and “reasonably foreseeable” future actions have on aspects”.

CUMULATIVE RATING	CUMULATIVE EFFECTS	Low	<i>Minor</i> cumulative effects
		Medium	<i>Moderate</i> cumulative effects
		High	<i>Significant</i> cumulative effects

1.3 SIGNIFICANCE OF IMPACTS

The SIGNIFICANCE can be defined as: "the combination of the duration and importance of the impact, in terms of physical and socio-economic extent, resulting in an indicative level of mitigation required".

SIGNIFICANCE RATING	SIGNIFICANCE	Neutral	<ul style="list-style-type: none"> • Zero magnitude with any combination of extent and duration
		Very low	<ul style="list-style-type: none"> • Very low magnitude with any combination of extent and duration except regional and long term • Low magnitude with a site specific extent and construction period
		Low	<ul style="list-style-type: none"> • Very low magnitude with a site specific extent and long term duration • Low magnitude with any combination of extent and duration except site specific and construction period or regional and long term • Medium magnitude with a site specific extent and construction period duration • High magnitude with a site specific extent and construction period duration
		Medium	<ul style="list-style-type: none"> • Low magnitude with a regional extent and long term duration • Medium magnitude with any combination of extent and duration except site specific and construction period or regional and long term • High magnitude with either a local extent and construction period duration or a site specific extent and medium term duration • High magnitude with a regional extent and construction period or a site specific extent and long term duration • High magnitude with a regional extent and construction period or a site specific extent and long term duration • High magnitude with a local extent and medium term duration
		High	<ul style="list-style-type: none"> • Medium magnitude with a regional extent and long term duration

			<ul style="list-style-type: none">• High magnitude with either a regional extent and medium term duration or a local extent and long term duration
		Very high	<ul style="list-style-type: none">• High magnitude with a regional extent and long term duration• High magnitude with either a regional extent and long term duration