

Impact Assessment Methodology

The following methodology has been applied to the prediction and assessment of impacts. Potential impacts have been rated in terms of the direct, indirect, and cumulative nature of the impact:

- **Direct** impacts – are impacts that are caused directly by the activity and generally occur at the same time and at the place of the activity. These impacts are usually associated with the construction, operation or maintenance of an activity and are generally obvious and quantifiable;
- **Indirect** impacts – of an activity are indirect or induced changes that may occur because of the activity. These types of impacts include all the potential impacts that do not manifest immediately when the activity is undertaken, or which occur at a different place because of the activity;
- **Cumulative** impacts – are impacts that result from the incremental impact of the proposed activity on a common resource when added to the impacts of other past, present, or reasonably foreseeable future activities. Cumulative impacts can occur from the collective impacts of individual minor actions over a period of time and can include both direct and indirect impacts.

The significance of each potential impact, with and without the implementation of the proposed mitigation measures, will be assessed based on the following variables (evaluation components):

- Spatial extent – The size of the area that will be affected by the impact;
- Intensity (or Magnitude) – The anticipated severity of the impact;
- Duration – The timeframe during which the impact will be experienced;
- Probability – The probability of the impact occurring;
- Reversibility – The “reversibility” of the environmental impacts of the proposed development after project cessation or decommissioning; and
- Irreplaceability – The “irreplaceability” of natural characteristics in the area that may be impacted upon by the proposed development.

Using the criteria above, the impacts will further be assessed with the use of quantifiable values as described below (Table 1):

Table 1: Evaluation of criteria, by means of quantitative ratings and descriptions.

Criteria	Description	Quantitative Rating
Duration	Temporary (less than a year)	1
	Short term (1 to 6 years)	2
	Medium term (6 to 15 years)	3
	Long term (the impact will cease after the operational life of the activity)	4
	Permanent (mitigation will not occur in such a way or in such a time span than the impact can be considered transient)	5
Spatial extent	Site specific	1
	Local (less than 2 km from the site);	2
	Regional (within 30 km of the site)	3
	National (beyond Provincial boundaries and within National boundaries)	4
	International / Transboundary (Beyond National boundaries)	5
Intensity Applicable to Negative Impacts (at indicated spatial extent)	None (Biophysical and/or social functions and/or processes will remain unaltered)	0
	Very Low (Biophysical and/or social functions and/or processes might be negligibly altered)	2
	Low (Biophysical and/or social functions and/or processes might be slightly altered)	4
	Medium (Biophysical and/or social functions and/or processes might be notably altered)	6
	High (Biophysical and/or social functions and/or processes might be considerably altered)	8
	Very High (Biophysical and/or social functions and/or processes might be severely altered)	10
Intensity Applicable to Positive Impacts (at indicated spatial extent)	None (Biophysical and/or social functions and/or processes will remain unaltered)	0
	Very Low (Biophysical and/or social functions and/or processes might be negligibly enhanced)	2
	Low (Biophysical and/or social functions and/or processes might be slightly enhanced)	4
	Medium (Biophysical and/or social functions and/or processes might be notably enhanced)	6
	High (Biophysical and/or social functions and/or processes might be considerably enhanced)	8
	Very High (Biophysical and/or social functions and/or processes might be substantially enhanced)	10
Probability	Improbable (5% to no chance of occurring)	1
	Probable (5% - 25% chance of occurring)	2
	Medium Probability (25% - 75% chance of occurring)	3
	Highly probable (75% - 95% chance of occurring)	4
	Definite (greater than 95% chance of occurring)	5
Reversibility	No impact	0

Criteria	Description	Quantitative Rating
	Impact will be reversible	1
	High potential that impact might be reversed	2
	Moderate potential that impact might be reversed	3
	Low potential that impact might be reversed	4
	Impact cannot be reversed	5
	None	0
Irreplaceability	Very low potential for loss of irreplaceable resources	1
	Low potential for loss of irreplaceable resources	2
	Moderate potential for loss of irreplaceable resources	3
	High potential for loss of irreplaceable resources.	4
	Definite loss of irreplaceable resources	5
CUMULATIVE impact	High: The activity is one of several similar pasts, present or future activities in the same geographical area, and might contribute to a very significant combined impact on the natural, cultural, and/or socio-economic resources of local, regional or national concern.	
	Medium: The activity is one of a few similar pasts, present or future activities in the same geographical area, and might have a combined impact of moderate significance on the natural, cultural, and/or socioeconomic resources of local, regional or national concern.	
	Low: The activity is localised and might have a negligible cumulative impact.	
	None: No cumulative impact on the environment.	

Once the evaluation components have been ranked for each impact, the significance of potential impact are assessed (or calculated) using the following formula:

$$SP \text{ (significance points)} = (\text{intensity} + \text{duration} + \text{spatial extent} + \text{irreplaceable} + \text{reversibility}) \times \text{probability}.$$

The maximum value is 150 SP (significance points). The unmitigated and mitigated scenarios for each environmental impact should be rated as per the table below (Table 2).

Table 1: Definition of significance ratings (positive and negative)

Significance Points	Environmental Significance	Description
125 – 150	Very high (VH)	An impact of high or very-high significance which could influence a decision about whether to proceed with the proposed project, regardless of available mitigation options.
100 – 124	High (H)	Cumulative Impacts: The activity is one of several similar pasts, present or future activities in the same geographical area, and might contribute to a very significant combined impact on the natural, cultural, and/or socio-economic resources of local, regional, or national concern.
75 – 99	Moderate-high (MH)	If left unmanaged, an impact of moderate-high significance could influence a decision about whether to proceed with the proposed project. Mitigation options should be re-evaluated.
40 – 74	Moderate (M)	If left unmanaged, an impact of moderate significance could influence a decision about whether to proceed with the proposed project. Cumulative Impacts: The activity is one of a few similar pasts, present or future activities in the same geographical area, and might have a combined impact of moderate significance on the natural, cultural, and/or socio-economic resources of local, regional, or national concern.
<40	Low (L)	An impact of low significance is likely to contribute to positive decisions about whether to proceed with the proposed project. It will have little real effect and is unlikely to have an influence on project design or alternative motivation. Cumulative Impacts: The activity is localised and might have a negligible cumulative impact.
+	Positive impact (+)	A positive impact is likely to result in a positive consequence/ effect and is likely to contribute to positive decisions about whether to proceed with the proposed project.