

APPENDIX E: SLR IMPACT ASSESSMENT METHODOLOGY

METHOD OF ASSESSING IMPACT SIGNIFICANCE

The identification and assessment of environmental impacts is a multi-faceted process, using a combination of quantitative and qualitative descriptions and evaluations. It involves applying scientific measurements and professional judgement to determine the significance of environmental impacts associated with the proposed project. The process involves consideration of, *inter alia*: the purpose and need for the project; views and concerns of interested and affected parties (I&APs); social and political norms, and general public interest.

1 IDENTIFICATION AND DESCRIPTION OF IMPACTS

Identified impacts are described in terms of the nature of the impact, compliance with legislation and accepted standards, receptor sensitivity and the significance of the predicted environmental change (before and after mitigation). Mitigation measures may be existing measures or additional measures that were identified through the impact assessment and associated specialist input. The impact rating system considers the confidence level that can be placed on the successful implementation of mitigation.

2 EVALUATION OF IMPACTS AND MITIGATION MEASURES

2.1 INTRODUCTION

Impacts are assessed using SLR's standard convention for assessing the significance of impacts, a summary of which is provided below.

In assigning significance ratings to potential impacts before and after mitigation the approach presented below is to be followed.

1. **Determine the impact consequence rating:** This is a function of the "intensity", "duration" and "extent" of the impact (see Section 2.2). The consequence ratings for combinations of these three criteria are given in Section 0.
2. **Determine impact significance rating:** The significance of an impact is a function of the consequence of the impact occurring and the probability of occurrence (see Section 2.2). Significance is determined using the table in Section 2.4.
3. **Modify significance rating (if necessary):** Significance ratings are based on largely professional judgement and transparent defined criteria. In some instances, therefore, whilst the significance rating of potential impacts might be "low", the importance of these impacts to local communities or individuals might be extremely high. The importance/value which interested and affected parties attach to impacts will be highlighted, and recommendations should be made as to ways of avoiding or minimising these perceived negative impacts through project design, selection of appropriate alternatives and / or management.
4. **Determine degree of confidence of the significance assessment:** Once the significance of the impact has been determined, the degree of confidence in the assessment will be qualified (see Section 2.2). Confidence in the prediction is associated with any uncertainties, for example, where information is insufficient to assess the impact.

2.2 CRITERIA FOR IMPACT ASSESSMENT

The criteria for impact assessment are provided below.

| Criteria | Rating | Description |
|--|-------------------------|---|
| Criteria for ranking of the INTENSITY (SEVERITY) of environmental impacts | ZERO TO VERY LOW | Negligible change, disturbance or nuisance. The impact affects the environment in such a way that natural functions and processes are not affected. People / communities are able to adapt with relative ease and maintain pre-impact livelihoods. |
| | LOW | Minor (Slight) change, disturbance or nuisance. The impact on the environment is not detectable or there is no perceptible change to people's livelihood. |
| | MEDIUM | Moderate change, disturbance or discomfort. Where the affected environment is altered, but natural functions and processes continue, albeit in a modified way. People/communities are able to adapt with some difficulty and maintain pre-impact livelihoods but only with a degree of support. |
| | HIGH | Prominent change, disturbance or degradation. Where natural functions or processes are altered to the extent that they will temporarily or permanently cease. Affected people/communities will not be able to adapt to changes or continue to maintain-pre impact livelihoods. |
| Criteria for ranking the DURATION of impacts | SHORT TERM | < 5 years. |
| | MEDIUM TERM | 5 to < 15 years. |
| | LONG TERM | > 15 years, but where the impact will eventually cease either because of natural processes or by human intervention. |
| | PERMANENT | Where mitigation either by natural processes or by human intervention will not occur in such a way or in such time span that the impact can be considered transient. |
| Criteria for ranking the EXTENT / SPATIAL SCALE of impacts | LOCAL | Impact is confined to project or study area or part thereof, e.g. limited to the area of interest and its immediate surroundings. |
| | REGIONAL | Impact is confined to the region, e.g. coast, basin, catchment, municipal region, etc. |
| | NATIONAL | Impact is confined to the country as a whole, e.g. South Africa, etc. |
| | INTERNATIONAL | Impact extends beyond the national scale. |
| Criteria for determining the PROBABILITY of impacts | IMPROBABLE | Where the possibility of the impact to materialise is very low either because of design or historic experience, i.e. $\leq 30\%$ chance of occurring. |
| | POSSIBLE | Where there is a distinct possibility that the impact would occur, i.e. > 30 to $\leq 60\%$ chance of occurring. |
| | PROBABLE | Where it is most likely that the impact would occur, i.e. > 60 to $\leq 80\%$ chance of occurring. |
| | DEFINITE | Where the impact would occur regardless of any prevention measures, i.e. $> 80\%$ chance of occurring. |
| Criteria for determining the DEGREE OF CONFIDENCE of the assessment | LOW | $\leq 35\%$ sure of impact prediction. |
| | MEDIUM | $> 35\%$ and $\leq 70\%$ sure of impact prediction. |
| | HIGH | $> 70\%$ sure of impact prediction. |
| Criteria for the DEGREE | NONE | No change in impact after mitigation. |

| Criteria | Rating | Description |
|--|-----------------|--|
| TO WHICH IMPACT CAN BE MITIGATED - the degree to which an impact can be reduced / enhanced | VERY LOW | Where the significance rating stays the same, but where mitigation will reduce the intensity of the impact. |
| | LOW | Where the significance rating drops by one level, after mitigation. |
| | MEDIUM | Where the significance rating drops by two to three levels, after mitigation. |
| | HIGH | Where the significance rating drops by more than three levels, after mitigation. |
| Criteria for LOSS OF RESOURCES - the degree to which a resource is permanently affected by the activity, i.e. the degree to which a resource is irreplaceable | LOW | Where the activity results in a loss of a particular resource but where the natural, cultural and social functions and processes are not affected. |
| | MEDIUM | Where the loss of a resource occurs, but natural, cultural and social functions and processes continue, albeit in a modified way. |
| | HIGH | Where the activity results in an irreplaceable loss of a resource. |

2.3 DETERMINING CONSEQUENCE

Consequence attempts to evaluate the importance of a particular impact, and in doing so incorporates extent, duration and intensity. The ratings and description for determining consequence are provided below.

| Rating | Description |
|------------------|--|
| VERY HIGH | Impacts could be EITHER: of high intensity at a regional level and endure in the long term ; OR of high intensity at a national level in the medium term ; OR of medium intensity at a national level in the long term . |
| HIGH | Impacts could be EITHER: of high intensity at a regional level and endure in the medium term ; OR of high intensity at a national level in the short term ; OR of medium intensity at a national level in the medium term ; OR of low intensity at a national level in the long term ; OR of high intensity at a local level in the long term ; OR of medium intensity at a regional level in the long term . |
| MEDIUM | Impacts could be EITHER: of high intensity at a local level and endure in the medium term ; OR of medium intensity at a regional level in the medium term ; OR of high intensity at a regional level in the short term ; OR of medium intensity at a national level in the short term ; OR of medium intensity at a local level in the long term ; OR of low intensity at a national level in the medium term ; OR of low intensity at a regional level in the long term . |
| LOW | Impacts could be EITHER of low intensity at a regional level and endure in the medium term ; OR of low intensity at a national level in the short term ; OR of high intensity at a local level and endure in the short term ; OR of medium intensity at a regional level in the short term ; OR of low intensity at a local level in the long term ; OR of medium intensity at a local level and endure in the medium term . |
| VERY LOW | Impacts could be EITHER |

| Rating | Description |
|--------|---|
| | of <i>low intensity</i> at a <i>local level</i> and endure in the <i>medium term</i> ; OR of <i>low intensity</i> at a <i>regional level</i> and endure in the <i>short term</i> ; OR of <i>low to medium intensity</i> at a <i>local level</i> and endure in the <i>short term</i> . OR Zero to very low intensity with any combination of extent and duration. |

2.4 DETERMINING SIGNIFICANCE

The consequence rating is considered together with the probability of occurrence in order to determine the overall significance using the table below.

| | | PROBABILITY | | | |
|-------------|-----------|---------------|---------------|-----------|-----------|
| | | IMPROBABLE | POSSIBLE | PROBABLE | DEFINITE |
| CONSEQUENCE | VERY LOW | INSIGNIFICANT | INSIGNIFICANT | VERY LOW | VERY LOW |
| | LOW | VERY LOW | VERY LOW | LOW | LOW |
| | MEDIUM | LOW | LOW | MEDIUM | MEDIUM |
| | HIGH | MEDIUM | MEDIUM | HIGH | HIGH |
| | VERY HIGH | HIGH | HIGH | VERY HIGH | VERY HIGH |

In certain cases it may not be possible to determine the significance of an impact. In these instances the significance is **UNKNOWN**.