



APPENDIX 14: Impact Assessment Methodology

FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

**SCOPING & ENVIRONMENTAL IMPACT ASSESSMENT (S&EIA) FOR THE
PROPOSED 2 MEGALITRES PER DAY (MLD) SOLAR POWERED SEAWATER
DESALINATION PLANT IN THE PORT OF EAST LONDON, BUFFALO CITY
METROPOLITAN MUNICIPALITY, EASTERN CAPE PROVINCE, BY TRANSNET
NATIONAL PORTS AUTHORITY**

DFFE EA Application Reference Number: 14/12/16/3/3/2/2845

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ANCHOR
environmental

PART OF



IMPACT ASSESSMENT METHODOLOGY

The impact assessment methodology set out below is applied to all potential positive and negative direct impacts associated with the construction, operational, and decommissioning phases of the proposed project, as well as cumulative impacts and the no-go alternative. Indirect impacts are only considered where relevant and can be assessed qualitatively or using the formal impact assessment methodology described below.

The significance of all potential impacts that would result from the proposed project is determined in order to assist decision-makers. The significance of an impact is defined as a combination of the consequence of the impact occurring and the probability that the impact will occur. The significance of each identified impact must therefore be rated according to the methodology set out below:

Step 1: Consequence Rating

Determine the consequence rating for the impact by determining the score for each of the three criteria (A-C) listed below and then adding them. The rationale for assigning a specific rating, and comments on the degree to which the impact may cause irreplaceable loss of resources and be irreversible, must be included in the narrative accompanying the impact rating:

Rating	Definition of Rating	Score
A. Extent – the area over which the impact will be experienced.		
Local	Confined to project or study area or part thereof (e.g. limits of the concession area)	1
Regional	The region (e.g. the whole of Namaqualand coast)	2
(Inter) national	Significantly beyond Saldanha Bay and adjacent land areas	3
B. Intensity – the magnitude of the impact in relation to the sensitivity of the receiving environment, taking into account the degree to which the impact may cause irreplaceable loss of resources.		
Low	Site-specific and wider natural and/or social functions and processes are negligibly altered	1
Medium	Site-specific and wider natural and/or social functions and processes continue albeit in a modified way	2
High	Site-specific and wider natural and/or social functions or processes are severely altered	3
C. Duration – the time frame for which the impact will be experienced. Also state its degree of reversibility.		
Short-term	Up to 2 years	1
Medium-term	2 to 15 years	2
Long-term	More than 15 years (state whether impact is irreversible)	3

The combined score of these three criteria corresponds to a Consequence Rating, as follows:

Combined Score (A+B+C)	3 – 4	5	6	7	8 – 9
Consequence Rating	Very low	Low	Medium	High	Very high

Step 2: Probability

Assess the probability of the impact occurring according to the following definitions:

Probability – the likelihood of the impact occurring	
Improbable	< 40% chance of occurring
Possible	40% - 70% chance of occurring
Probable	> 70% - 90% chance of occurring
Definite	> 90% chance of occurring

Step 3: Impact Significance

Determine the overall significance of the impact as a combination of the consequence and probability ratings, as set out below:

		PROBABILITY			
CONSEQUENCE		Improbable	Possible	Probable	Definite
	Very Low (3-4)	INSIGNIFICANT	INSIGNIFICANT	VERY LOW	VERY LOW
	Low (5)	VERY LOW	VERY LOW	LOW	LOW
	Medium (6)	LOW	LOW	MEDIUM	MEDIUM
	High (7)	MEDIUM	MEDIUM	HIGH	HIGH
	Very High (8-9)	HIGH	HIGH	VERY HIGH	VERY HIGH

The significance rating of impacts is considered by decision-makers, as shown below. Note, this method does not apply to minor impacts which can be logically grouped into a single assessment.

INSIGNIFICANT: the potential impact is negligible and will not have an influence on the decision regarding the proposed activity.

VERY LOW: the potential impact is very small and should not have any meaningful influence on the decision regarding the proposed activity.

LOW: the potential impact may not have any meaningful influence on the decision regarding the proposed activity.

MEDIUM: the potential impact should influence the decision regarding the proposed activity.

HIGH: the potential impact will affect a decision regarding the proposed activity.

VERY HIGH: For negative impacts, the proposed activity should only be approved under special circumstances. For positive impacts, the proposed activity should strongly be considered for approval.

Step 4: Status of Impact

Note the status of the impact (i.e. will the effect of the impact be negative or positive?). Note it as “-ve” or “+ve” in the table.

Please use the following colour scheme to indicate the “**Significance**” of negative and positive impacts in the impact tables.

Positive Impacts	Very High
	High
	Medium
	Low
	Very Low
Neutral Impacts	Insignificant
Negative Impacts	Very Low
	Low
	Medium
	High
	Very High

Step 5: Confidence Rating

State the level of confidence in the assessment of the impact (high, medium or low). Depending on the data available, a higher level of confidence may be attached to the assessment of some impacts than others. For example, if the assessment is based on extrapolated data, this may reduce the confidence level to low, noting that further ground-truthing is required to improve this.

Step 6: Mitigation and Optimisation Measures

Identify and describe practical mitigation and optimisation measures that can be implemented effectively to reduce or enhance the significance of the impact and achieve the management outcome.

Mitigation / impact management measures for reducing negative impacts must be classified as either:

- **Essential:** Mandatory measures that must be implemented and are non-negotiable. These measures are assumed to be implemented in the “with mitigation” impact scenario and are therefore incorporated into the post mitigation impact assessment significance rating; or
- **Best Practice / Recommended:** Non-mandatory measures that should be implemented where feasible and appropriate. Alternative measures or approaches may be adopted, provided that the required environmental outcome is still achieved and a clear and defensible motivation is provided for not implementing the recommended measure. These do not affect the overall impact rating if not implemented.

Optimisation measures aimed at enhancing potential benefits are generally considered Best Practice / Recommended and are non-mandatory.

Mitigation and optimisation measures must be inserted into the completed impact assessment table, with an indication on whether they are Essential or Recommended. The impact should be re-assessed with mitigation/ optimisation, by following Steps 1-5 again to demonstrate how the extent, intensity, duration and/or probability change after implementation of the proposed mitigation measures.

Step 7: Impact management outcomes

Next, also specify the desired **impact management outcome** that these measures aim to achieve.

To ensure that mitigation measures are effectively translated into EMPr actions, specialists should develop mitigation/ optimisation measures with an outcome-based approach in mind. These actions or measures should therefore not only reduce the significance of impacts, but also contribute to achieving a clearly defined desired outcome. The outcome/s should be clearly indicated for each impact.

In many cases, a single overarching impact management outcome may apply to multiple impacts and may in some instances be applicable across all impacts assessed within a specialist report.

Step 8: Impact Assessment Description and Table

1. **Describe the impact** being assessed.
2. **Explain how the significance ratings were determined by motivating the ratings assigned before mitigation** (Steps 1 to 5), explaining why the impact was assigned the selected extent, intensity, duration, probability, and confidence rating.
3. Briefly state the reversibility of the impact and the degree to which it can be avoided, managed, and mitigated.
4. Describe the mitigation/ optimisation measures.
5. **Motivate the ratings assigned after mitigation**, explaining how implementation of the mitigation measures changes the impact ratings and significance (e.g. why the extent reduces from Regional to Local, the intensity from Medium to Low, while the duration remains Long-term, etc.).
6. State the **Desired Impact Management Outcome**.

Example 1: Negative Impact

Table 1: Impact.

	Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
Without mitigation	Regional 2	Medium 2	Long-term 3 (Reversible/ Irreversible/ Some Reversibility)	High 7	Probable	HIGH	-‘ve	High
Essential mitigation measures/ Recommended mitigation measures • Xxx • Xxxx								
With mitigation	Local 1	Low 1	Long-term 3	Low 5	Improbable	VERY LOW	- ve	High

Desired Impact Management Outcome to be achieved: xxx

Example 2: Positive Impact

Description of impact and motivation for ratings before and after optimisation measures.

Table 1: Impact.

	Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
Without optimisation measures	Regional	Medium	Short term	Medium	Probable	MEDIUM	Positive	Med-High
Optimisation measures: • xxx. • xxxxx								
With optimisation measures	Regional	Medium to High	Short term	High	Probable	HIGH	Positive	Med-High

Desired Impact Management Outcome to be achieved: xxx

Example 2: Insignificant Impact and no mitigation required.

Description of impact and motivation for ratings.

Table 1: Impact.

	Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Confidence
Without mitigation	Regional 2	Low 1	Medium term 2	Very low 4	Improbable	INSIGNIFICANT	-ve	High
Mitigation measures: • Not considered to be necessary due to low significance.								

Desired Impact Management Outcome to be achieved: xxx

Step 9- Summary table

Prepare a summary table of all impact significance ratings as follows:

Impact	Extent	Intensity	Duration	Consequence	Probability	Significance	Status	Reversibility	Degree impact can be avoided	Degree impact can be managed:	Degree impact can be mitigated:
Impact 1: xxx						VERY LOW	-ve	Reversible Or Irreversible Or Some degree of reversibility such as xxx	Can be fully avoided Or Cannot be fully avoided	Highly Manageable Not manageable	No mitigation needed/ possible Highly Effective Moderately effective
No mitigation						n/a					
Impact 2: xxxx						MEDIUM	-ve				
With mitigation						LOW	-ve				
Impact 3: xxxx						VERY LOW	-ve				
With mitigation						INSIGNIFICANT					
Impact 4: xxx						MEDIUM	+ve				
With mitigation						HIGH	+ve				

Indicate whether the proposed development alternatives are environmentally suitable or unsuitable in terms of the respective impacts assessed by the relevant specialist and the environmentally preferred alternative.