

# NEPTUNE-POSEIDON 400 KV POWER LINE DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

## EXECUTIVE SUMMARY

### PROJECT BACKGROUND AND MOTIVATION

Increased demand for a reliable electricity supply in the Southern Grid has necessitated that Eskom Transmission improves the reliability and capacity of the transmission network into the area. The East London area, which is supplied from the Pembroke and Neptune Main Transmission System (MTS), is presently unfirm.

Based on the analysis of the possible Distribution and Transmission alternatives to mitigate existing and foreseen network constraints, the Neptune-Poseidon 400 kV power line project was identified as the preferred option as part of the greater East London Strengthening scheme. This project will also improve reliability in the Eastern Grid. The main project components include the following:

1. Installation of a new 400kV transmission line (including concrete foundations, towers, conductors and anchors) between the existing Neptune (near East London) and Poseidon (near Cookhouse) substations;
2. Building of turn-in lines of approximately 5km each; and
3. Upgrading of existing substations (including new 400kV feeder bays and yard extensions).

### EIA PROCESS

The Neptune-Poseidon 400 kV power line project entails certain activities that require authorisation in terms of the National Environmental Management Act (No. 107 of 1998) (NEMA). The process for seeking authorisation is undertaken in accordance with the EIA Regulations (GN No. R385, R386 and R387 of 21 April 2006), promulgated in terms of Chapter 5 of NEMA. The EIA decision-making authority is the DEA, as the project proponent (i.e. Eskom Holdings Limited, Eskom Transmission Division) is a parastatal.

The EIA Report lists the various milestones reached during the Scoping phase and provides an overview of the EIA methodology, in terms the need and desirability of the project, the formal EIA process, alignment with the Plan of Study that formed part of the Scoping Report, the route selection, screening, and assessment of alternatives and impact prediction.

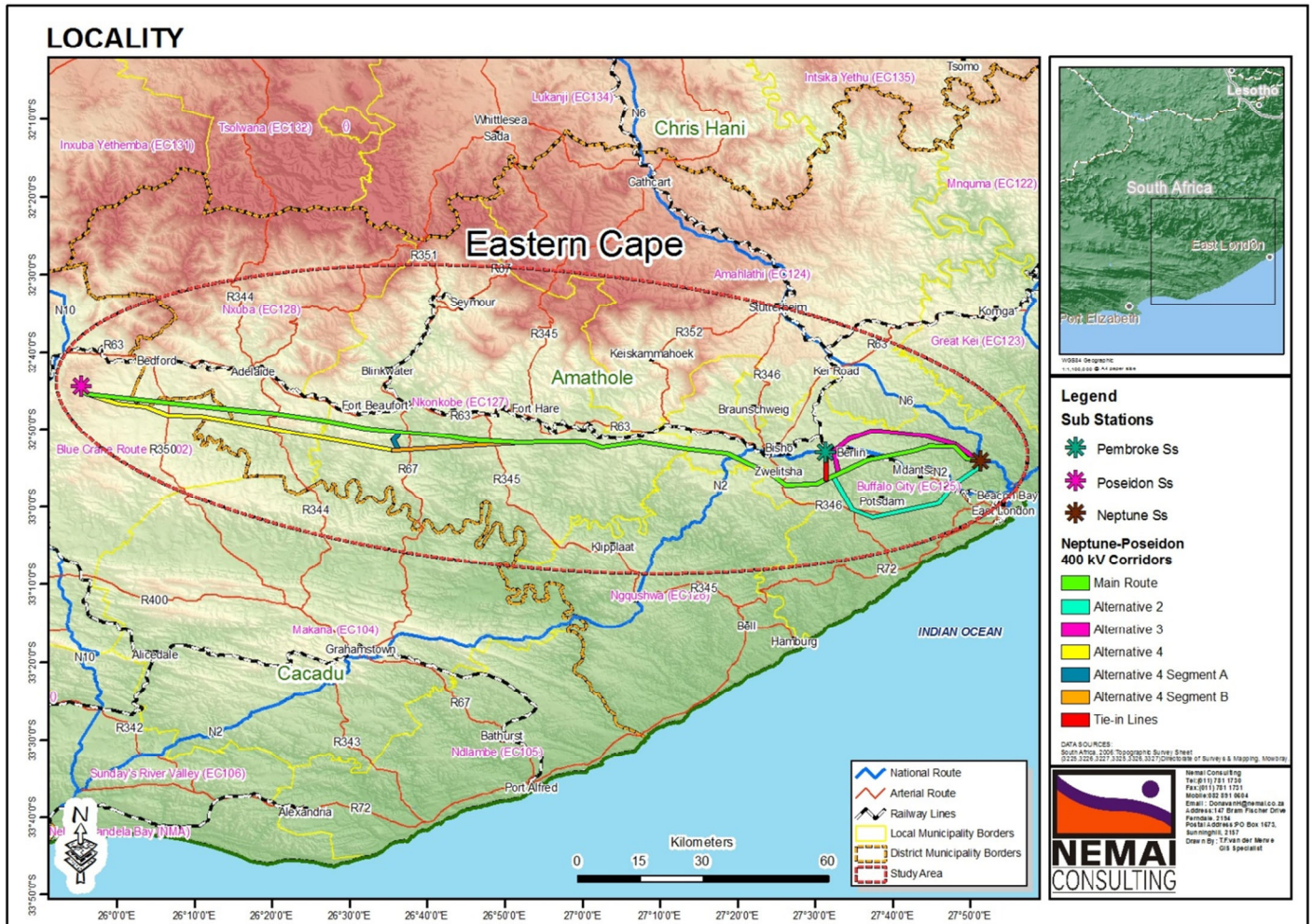
Nemai Consulting was appointed by Eskom Holdings Limited, Eskom Transmission Division as the independent Environmental Assessment Practitioner (EAP) to undertake the environmental assessment for the proposed Neptune-Poseidon 400 kV power line.

### PROJECT LOCATION

A 1 km corridor (i.e. 500 m on either side of the centre line of each alternative route) was adopted as the study area. The various alternatives alignments for the Neptune-Poseidon 400kV powerline include the following (see map to follow):

- **Main Route** – Power line (approximately 191km) runs in an east to west direction from the existing Neptune substation (north-west of East London) to the Poseidon substation ( $\pm$  11 km east of Cookhouse), in the Eastern Cape. The proposed alignment is situated within the existing vacant Eskom servitude between the aforementioned substations. Two turn-ins of approximately 5 km each, which pass between Ndevana and Ilitha, connect the proposed line with the Pembroke substation.
- **Alternative 2** – Deviation from Main Route, where the power line (approximately 40km) runs in an east to west direction from the Neptune substation to the south around Mdantsane and the Bridle Drift Dam and reconnects to the Main Route to the south of Berlin, at Rini.
- **Alternative 3** – Deviation from Main Route, where the power line (approximately 39km) runs in an east to west direction from the Neptune substation to the north around Nqonqweni, around Berlin and connects to the Main Route at Hillcrest. The last 16km of this route runs parallel to an existing Eskom line.
- **Alternative 4** – Deviation from Main Route, where the power line (approximately 65km) runs in a west to east direction from the Poseidon substation to the south of the Main Route alongside the existing Eskom 220kV Pembroke-Poseidon 1 transmission line. Alternative 4 connects to the Main Route via the following two options -

- Segment A is approximate 6km in length and connects to the Main Route close to Klu Klu, south of Fort Beaufort.
- Segment B continues alongside the existing Eskom 220kV Pembroke-Poseidon 1 transmission line for ± 17km and then continues in a north-easterly direction for another ± 8km to connect to the Main Route.



**Figure 1: Locality Map**

**PROJECT DESCRIPTION**

The EIA Report contains a detailed description of each of the alternative transmission line routes. The project components, including the servitude, design considerations, tower structures, and upgrades to the existing Neptune, Pembroke and Poseidon substations are also explained. An overview is also provided of the project life-cycle (feasibility, planning and design phase, construction, operation and decommissioning).

**PROFILE OF THE RECEIVING ENVIRONMENT**

The EIA Report provides a general description of the status quo of the receiving environment in the project area (1 km wide corridor for each of the alternative routes), and also provides local and site-specific discussions on those environmental features investigated by the respective specialists. This allows for an appreciation of sensitive environmental features and possible receptors of the effects of the proposed project.

**SPECIALIST STUDIES**

The necessary specialist studies triggered by the findings of the Neptune-Poseidon 400kV Scoping process, aimed at addressing the identified key issues and compliance with legal obligations, include the following:

- Ecological Study (termed Faunal, Floral and Avifaunal Ecological Surveys);
- Heritage Impact Assessment;

- Agricultural Potential Assessment;
- Visual Impact Assessment;
- Economic Study; and
- Social Impact Assessment.

The information obtained from the respective specialist studies were incorporated into the EIA report in the following manner:

1. The information was used to complete the description of the receiving environment in a more detailed and site-specific manner;
2. A summary of each specialist study is contained in the report, focusing on the approach to the study, key findings and conclusions drawn;
3. The evaluations performed by the specialists on the alternative routes were included in the comparative analysis to identify the most favourable option;
4. The specialists' impacts assessment, and the identified mitigation measures, were included in the overall project impact assessment;
5. Specialist input was obtained to address comments made by Interested and Affected Parties that related to specific environmental features pertaining to each specialist discipline; and
6. Salient recommendations made by the specialists were taken forward to the final EIA Conclusions and Recommendations.

## IMPACT ASSESSMENT

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This section of the EIA Report focuses on the pertinent environmental impacts that could potentially be caused by the proposed Neptune-Poseidon 400kV transmission line during the pre-construction, construction and operation phases of the project.

The impacts to the environmental features are linked to the project activities, which in broad terms relate to the physical infrastructure (emphasis on construction and operation stages). Impacts were identified as follows:

- An appraisal of the project description and the receiving environment;
- Impacts associated with listed activities contained in GN No. R386 and R387;
- Issues highlighted by environmental authorities;
- Findings from specialist studies; and
- Comments received during public participation.

The impacts associated with the listed activities and raised by environmental authorities are discussed on a qualitative level. In order to understand the impacts related to the project's components, the activities and environmental aspects associated with the project life-cycle were identified.

Cumulative impacts, such as use of local road network, alien and invasive vegetation along the corridor, following existing high-voltage power lines, high erodible nature of local soils and benefits to macro-economy, are also considered.

## ANALYSIS OF ALTERNATIVES

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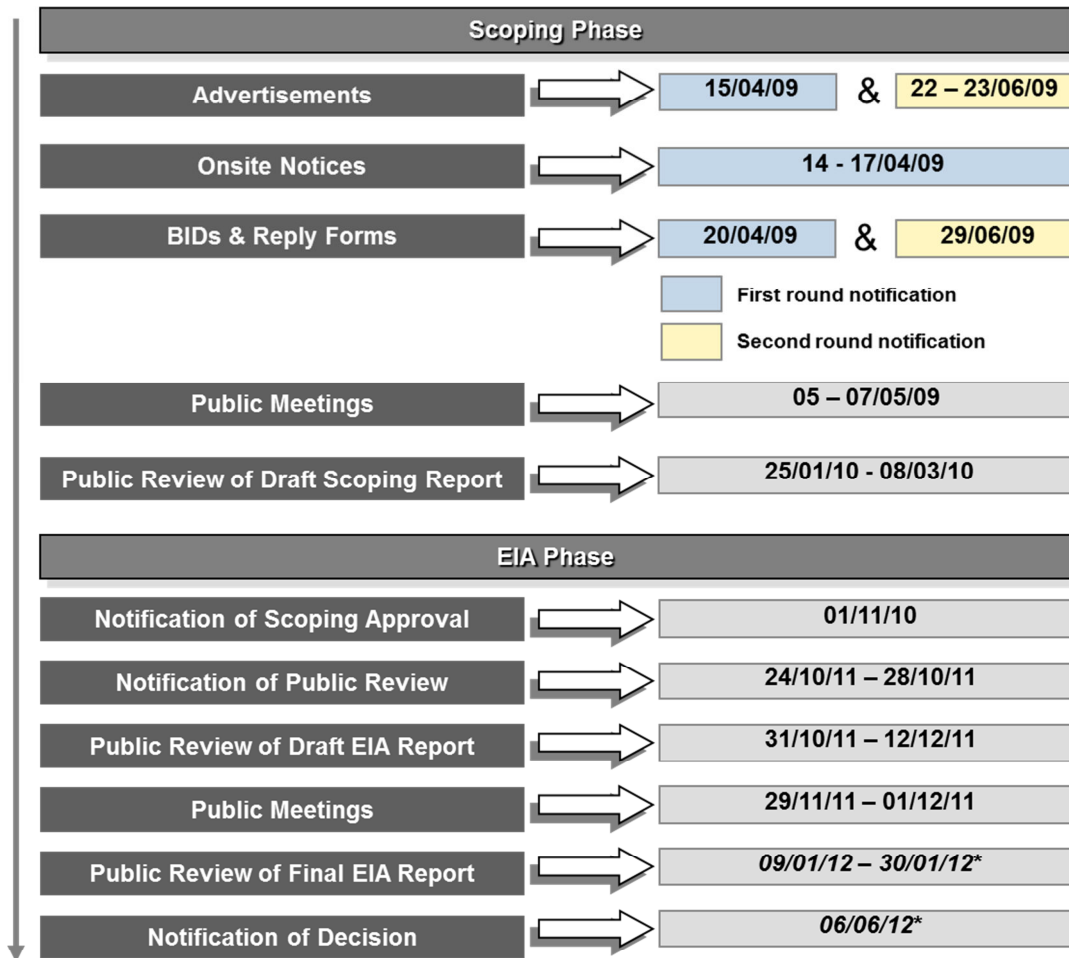
Based on the recommendations of the specialists and the comparison of the impacts associated with the various alignments, the following options are considered to be the preferred alternatives:

- **Western section:**  
The specialists were in agreement that Alternative 4 is the preferred option, which primarily stems from the route's alignment adjacent to an existing transmission line. This selection was confirmed when considering the impacts of each route.
- **Central section:**  
Consensus was reached between the specialists and the comparative impact evaluation that Alternative 4 Segment B was the favoured route, which again related to its positioning alongside the existing power line for most of its route.
- **Eastern section:**  
The Main Route emerged as the preferred option in the eastern part of the project area, due to the existing vacant servitude and the related impacts to the receiving environment that were deemed to be the least significant when compared to the other alternatives. The only deviation from this finding was the Economic Study, which favoured Alternative 2. Regardless, the overall findings were sufficiently compelling to select the Main Route as the Best Practicable Environmental Option (BPEO).

**PUBLIC PARTICIPATION**

The EIA Report provides a full account of the public participation process that was followed for the EIA phase for the Neptune-Poseidon Project.

The figure to follow outlines the public participation process undertaken for the Neptune-Poseidon Project Scoping and Environmental Impact Assessment phases.



**Note:** \* - dates may change during course of EIA

**EIA CONCLUSIONS AND RECOMMENDATIONS**

With the selection of the BPEO for the transmission line route, the adoption of the mitigation measures include in the EIA Report and the dedicated implementation of the Environmental Management Plan, it is believed that the significant environmental aspects and impact associated with this project can be suitably mitigated. With the aforementioned in mind, it can be concluded that there are no fatal flaws associated with the project and that authorisation can be issued, based on the findings of the specialists and the impact assessment, through the compliance with the identified environmental management provisions.

The EIA Report recommends various conditions that are regarded as critical mitigation measures emanating from the environmental assessment process.