12 SUMMARY AND CONCLUSION

12.1 INTRODUCTION

The aim of the Environmental Impact Assessment (EIA) for the proposed 1507 MW (net capacity) Combined Cycle Gas Turbine (CCGT) power plant and gas pipeline is to provide information to inform decision-making that will contribute to environmentally sound and sustainable development. This report is to be submitted to the Department of Environmental Affairs (DEA) to provide information and an independent assessment, thus enabling the DEA to make an accountable and properly informed decision regarding whether or not to grant an environmental authorisation for the proposed development in terms of NEMA.

This report will also assist the DEA to define under what conditions the development should go ahead if authorisation is granted. In considering the development of this type of facility, it is inevitable that there will be certain negative environmental impacts. However, these have largely been mitigated and should be viewed along with Saldanha Steel's urgent requirement for stable, economical electricity for the long term future and the requirement for new generation capacity in South Africa.

Through the EIA process, which included stakeholder and specialist input, ERM has identified and assessed a number of potential impacts relating to the development. A brief overview of the EIA findings and key mitigation measures are presented in this chapter.

The preferred layout of the power plant has been designed based on the sensitivity constraints of the site, as established during the EIA process, including ecological sensitivities, as identified during the initial screening process. The pipeline routing was selected to avoid, as far as possible, the high value conservation areas. The technology to be used was selected to minimise safety risks associated with the Project.

12.2 SUMMARY OF IMPACTS IDENTIFIED AND ASSESSED

12.2.1 Construction Phase Impacts

A summary of the bio-physical and socio-economic impacts, including their pre-mitigation and residual impacts post-mitigation, is given in *Table 12.1* below.

Table 12.1 ***Summary of the significance of identified impacts in the construction phase of the proposed Project*** *(+ve = positive; -ve = negative)*

Impact	Significance (Pre-mitigation)	Residual Impact Significance (Post-mitigation)
Decreased Ambient Air Quality	Negligible (-ve)	Negligible (-ve)
Increase in Ambient Noise Levels	Negligible (-ve)	Negligible (-ve)
Destruction/disturbance of Flora	Minor to Moderate (-ve)	Minor (-ve)
Loss of Faunal Habitat	Moderate (-ve)	Minor (-ve)
Direct Faunal Impacts	Minor (-ve)	Negligible (-ve)
Habitat Degradation for Fauna	Minor (-ve)	Negligible (-ve)
Avifaunal Habitat Loss during Construction	Moderate (-ve)	Minor (-ve)
Disturbance to Avifauna	Moderate (-ve)	Minor (-ve)
Impact on Traffic Levels	Negligible (-ve)	Negligible (-ve)
Land Use Planning Risk, Natural Gas Pipeline	Negligible (-ve)	Negligible (-ve)
Land Use Planning Risk , Propane Generator	Negligible (-ve)	Negligible (-ve)
Location Specific Individual Risk, Natural Gas Pipelines and Propane Generator	Moderate (-ve)	Moderate (-ve)
Employment Creation, Skills Enhancement and Local Business Opportunities	Moderate (+ve)	Moderate (+ve)
Impacts Associated with the Presence of a Workforce and Jobseekers	Moderate (-ve)	Minor - Moderate (-ve)
Impacts Associated with Pressure on Social Infrastructure and Services	Moderate (-ve)	Moderate (-ve)
Impact on Human Health due to Air Emissions and Dust Generation	Negligible (-ve)	Negligible (-ve)
Nuisance due to Noise, Dust and Vibration	Moderate (-ve)	Minor (-ve)
Risk to Workers' H&S due to Hazardous Activities	Minor to Moderate (-ve)	Minor (-ve)
Impacts to Pre-colonial & Colonial Archaeology	Minor (-ve)	Negligible (-ve)
Impacts to buried Palaeontology	Major (-ve)	Negligible (-ve)

As can be seen, the post-mitigation significance of the unplanned events (linked to location specific individual risk) considered by the quantitative risk assessment was determined to be moderate.

The location of the power plant and pipeline route were specifically selected to avoid ecologically sensitive areas. This resulted in minor and negligible post-mitigation significance.

The implementation of palaeontological chance find procedures and mitigation measures reduces the potential impact to negligible.

Negative impacts associated with the proposed development have been mitigated to a level which is deemed appropriate for the construction phase to proceed.

12.2.2 *Operational Phase Impacts*

A summary of the bio-physical and socio-economic impacts associated with the operational phase, including their pre-mitigation and residual impacts post-mitigation, is given in *Table 12.2* below.

Negative impacts associated with the proposed development have been mitigated to a level which is deemed acceptable. The post-mitigation significance of unplanned events considered by the quantitative risk assessment was determined to be moderate. However, these unplanned events are not considered a fatal flaw if the mitigation measures outlined in the Environmental Management Programme (EMPr) are incorporated during the detailed design phase. Similarly, post-mitigation significance of the increased nuisance caused by the Project and change in sense of place was determined to moderate, but is also not considered to be a fatal flaw.

Table 12.2 ***Summary of the significance of identified impacts in the operational phase of the proposed Project*** *(+ve = positive; -ve = negative)*

Impact	Significance (Pre-mitigation)	Residual Impact Significance (Post-mitigation)
Decreased Ambient Air Quality	Minor (-ve)	Minor (-ve)
Contribution to Climate Change*	Major (-ve)	Major (-ve)
Increase in Ambient Noise Levels	Minor (-ve)	Minor (-ve)
Disturbance of Flora	Negligible to Minor (-ve)	Negligible to Minor (-ve)
Habitat Degradation Fauna	Minor (-ve)	Negligible (-ve)
Disturbance to Avifauna	Moderate (-ve)	Minor (-ve)
Impact on Traffic Levels	Minor (-ve)	Minor (-ve)
Land Use Planning Risk, Natural Gas Pipelines	Negligible (-ve)	Negligible (-ve)
Land Use Planning Risk, Propane Generator	Negligible (-ve)	Negligible (-ve)
Location Specific Individual Risk, Natural Gas Pipelines and Propane Generator	Moderate (-ve)	Moderate (-ve)
Employment Creation, Skills Enhancement and Local Business Opportunities	Minor (+ve)	Minor (+ve)
Impact on Human Health due to Air Emissions and Dust Generation	Minor (-ve)	Minor (-ve)
Increased nuisance factors and change in sense of place	Moderate (-ve)	Moderate (-ve)
Risk to Workers' H&S due to Hazardous Operation Activities	Minor (-ve)	Minor (-ve)
Impacts to Pre-colonial & Colonial Archaeology	Minor (-ve)	Negligible (-ve)

*As far as greenhouse gasses are concerned, the Project is expected to emit >1 000 000 t CO_2e per annum, which according to the benchmarks applied by international lender standards, assigns this project a magnitude of 'Very Large'. This translates into an overall significance rating of Major (Negative)

using the impact significance scale being used for the Project. Whist the mitigation measures proposed will help to ensure emissions are minimised as far as possible, the residual (post-mitigation) significance rating will remain Major (Negative) because of the nature of the significant GHG emissions that result from the operation of any fossil fuel based power plant. It should be noted that in the absence of abatement technologies such as carbon capture and storage (CCS), which is not yet a reality in South Africa, most (if not all) coal and gas power plants will have major negative impacts by nature of their significant GHG emissions. As noted in the report, this finding should be considered in the context of the positive impacts associated with the Project in relation to its high thermal efficiency and low GHG intensity relative to current grid electricity generation in South Africa, and that the Project is being developed in line with South Africa's energy policy, notably the IRP, GUMP and Gas IPP program which together aim to increase the capacity of the South African electricity grid and build gas-based power capacity.

12.3 RECOMMENDATIONS

ERM is confident that suitable effort has been made by the Project to accommodate the mitigation measures recommended during the EIA process, to the extent that is practically possible, without compromising the economic viability of the proposed Project. The implementation of the mitigation measures detailed in *Chapter 10* and listed in the EMPr, including monitoring, will provide a basis for ensuring that the potential positive and negative impacts associated with the establishment of the Project are respectively enhanced and mitigated to a level which is deemed adequate for the Project to proceed. In addition a cumulative impact assessment has been undertaken, with the relevant input from specialists obtained.

In summary, based on the findings of this assessment, ERM is of the opinion that the CCGT power plant and associated pipeline should be authorised, contingent on the mitigations and monitoring for potential environmental and socio-economic impacts as outlined in the EIA Report and EMPr being implemented.