

EXECUTIVE SUMMARY:
DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT
Proposed Gas to Power Powership Project at the Port of Saldanha
and associated evacuation within Saldanha Bay Local Municipality,
West Coast District, Western Cape
DFFE REF NO: 14/12/16/3/3/2/2006

1. Introduction

Karpowership SA (Pty) Ltd proposes a Gas to Power via Powership Project at the Port of Saldanha and associated evacuation within Saldanha Bay Local Municipality, West Coast District, Western Cape.

Triplo4 Sustainable Solutions has been appointed to undertake the Scoping and Environmental Impact Reporting (S&EIR, also referred to as the EIA) process required in terms of the National Environmental Management Act 107 of 1998, as amended (NEMA).

The proposed Gas to Power Powership Project at the Port of Saldanha and associated evacuation route within Saldanha Bay has been formulated in response to the Request for Proposals (RFP) for technology agnostic New Generation Capacity under the Risk Mitigation Independent Power Producer Procurement Programme (RMI4P) issued by the Department of Mineral Resources and Energy (DMRE) to alleviate the immediate and future capacity deficit as well as the limited, unreliable and poorly diversified provision of current power generating technology with its inherent adverse environmental and economic impacts. The "Risk Mitigation Power Purchase Procurement Programme (2000MW): National" has also been designated the status of a Strategic Integrated Project (SIP) under the Infrastructure Development Act 23 of 2014 by the Presidential Infrastructure Coordinating Commission. SIPs are considered to be projects of significant economic or social importance to South Africa as a whole or regionally, that give effect to the national infrastructure plan and for this reason, can be expeditiously implemented through the provisions of the enabling Act.

The Integrated Resource Plan (IRP) 2019 identifies the necessary generation mix of technologies to respond to the demand for electricity. Inherent in the

planning process is the commitment to energy security, cost efficiency and effectiveness, and environmental sustainability. The RMI4P succeeded in attracting project proposals featuring a variety of technology combinations to provide dispatchable generation. These determinations facilitate the process of procuring the required electricity capacity. Preferred Bidder status in the RMI4P was awarded to eight projects on 18 March 2021 and three further projects on 1st June 2021, being:

- ACWA Power Projects DAO (Solar PV + BESS + Diesel Generator)
- Oya Energy (Solar PV + BESS + Diesel Generator + onshore Wind)
- Umoyilanga Energy (Solar PV + BESS + Liquid Petroleum Gas (LPG) Generator + Onshore Wind)
- Two projects for Mulilo Total (Reciprocating Gas Engines + Solar PV) and (Solar PV + BESS + Diesel Generator))
- Three projects for Karpowership SA (Floating Modular Reciprocating Gas Engines with Heat Capture Steam Turbines)
- Three further Preferred Bidder projects were added on 1 June 2021 to Scatec (Solar PV + BESS).

The Gas to Power via Powership Project at the Port of Saldanha and associated evacuation route within Saldanha Bay forms part of the solutions provided by the RMI4P preferred bidders that provides for a combination of a range of technologies that can be noted above.

Gas generated electricity has been identified by the DMRE as one of the most affordable and reliable forms of power. From the 11 preferred bidders, only 1 bidder's project bid a lower cost per kWh than Karpowership SA, and all Karpowership SA Projects are significantly cheaper on evaluation than the average of the other 8 Preferred Bidders, confirming

the affordability of the gas to power project as a fully dispatchable technology.

In total, 28 projects submitted bids in response to the RMI4P on 22 December 2020. Bids were assessed for compliance with qualification criteria and then assessed on lowest cost and committed economic development contributions. The Karpowership Saldanha Bay project was subsequently named as one of the 11 successful bids announced by the DMRE. Karpowership’s project status, upon award as a preferred bidder for the RMI4P, became classified as a Strategic Integrated Project (SIP) and are to be managed within the requirements as set out in the Infrastructure Development Act 23 of 2014- Appendix 7.1.

2. Governance Framework

NEMA prohibits a person from commencing a listed activity without the required environmental authorisation. The Project triggers several activities listed in the EIA Regulations Listing Notices 1, 2 and 3 of 2014 (as amended) (“**Listing Notices**”). The procedural requirements for such an application and associated EIA that needs to be undertaken, are prescribed by the Environmental Impact Assessment Regulations, 2014 promulgated under NEMA (as amended) (“**EIA Regulations**”).

In addition, the Project triggers an activity listed under the National Environmental Management: Air Quality Act 39 of 2004 (NEMAQA) which requires an atmospheric emission licence (AEL). The same EIA process prescribed by the EIA Regulations needs to be applied to the AEL application, with a number of additional requirements set out in NEMAQA and its Regulations.

The EIA Regulations outline two authorisation processes. Dependant on the type of activity that is proposed, either a Basic Assessment (BA) or a Scoping and Environmental Impact Assessment (S&EIR) process is required to obtain Environmental Authorisation (EA).

Triplo4 has determined that the proposed Gas to Power via Powership Project at the Port of Saldanha

and associated evacuation route within Saldanha Bay triggered activities in Listing Notice 1-3 of the EIA Regulations and therefore requires a S&EIR process to be followed. For the purposes of this Report, this shall be referred to as the “EIA process”.

Table 0-Error! No text of specified style in document.-1: Listed Activities

Activity	Summarised Description
Listing Notice 1	
11	The development of facilities or infrastructure for the transmission and distribution of electricity— (i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts; or (ii) inside urban areas or industrial complexes with a capacity of 275 kilovolts or more.
12	The development of infrastructure or structures with a physical footprint of 100 square metres or more within a watercourse or within 32m of a watercourse.
15	The development of structures in the coastal public property where the development footprint is bigger than 50 square metres
17	Development in the sea or in an estuary or within the littoral active zone; in respect of infrastructure or structures with a development footprint of 50 square metres or more.
18	The planting of vegetation or placing of any material on dunes or exposed sand surfaces of more than 10 square metres, within the littoral active zone
19	The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse.
19A	The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of

	soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from— (i) the seashore; (ii) the littoral active zone, an estuary or a distance of 100 metres inland of the high-water mark of the sea or an estuary, whichever distance is the greater; or (iii) the sea
27	The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation.
Listing Notice 2	
2	The development and related operation of facilities or infrastructure for the generation of electricity from a non-renewable resource where the electricity output is 20 megawatts or more.
4	The development and related operation of facilities or infrastructure, for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of more than 500 cubic metres
6	The development of facilities or infrastructure for any process or activity which requires a permit or licence or an amended permit or licence in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent.
7	The development and related operation of facilities or infrastructure for the bulk transportation of dangerous goods— (i) in gas form, outside an industrial complex, using pipelines, exceeding 1 000 metres in length, with a throughput capacity of more than 700 tons per day; (ii) in liquid form, outside an industrial complex, using pipelines, exceeding 1 000 metres in length, with a throughput capacity of more than 50 cubic metres per day.
14	The development and related operation of— (ii) an anchored platform; or (iii) any other structure or infrastructure — on, below or along the sea bed.

Listing Notice 3 (Western Cape)	
10	The development and related operation of facilities or infrastructure for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of 30 but not exceeding 80 cubic metres.
12	The clearance of an area of 300 square metres or more of indigenous vegetation within an identified geographical areas.
14	The development of— (ii) infrastructure or structures with a physical footprint of 10 square metres or more; where such development occurs— (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse.

3. Environmental Process

The EIA Regulations define the detailed approach to the S&EIR process, which consists of two phases: the Scoping Phase and the Impact Assessment Phase. This Draft EIR falls under the Impact Assessment Phase.

A Scoping and Environmental Impact Reporting (S&EIR) process was conducted during 2020-2021, as per the timeline below:

- The Scoping Report, including the Plan of Study and approved Public Participation (PP) Plan for the EIA, was accepted by the Competent Authority (CA), namely the Integrated Environmental Authorisations Directorate within the Department Forestry, Fisheries and the Environment (DFFE), on 6 January 2021.
- A Final EIA Report (EIAR) and Environmental Management Programme Report (EMPr) were submitted to the CA on 26 April 2021. The CA refused the EA application and provided KSA with the Record of Refusal (RoR) on 23 June 2021.
- On 13 July 2021, KSA appealed the CA's refusal. On 1 August 2022, the Appeal Authority (the

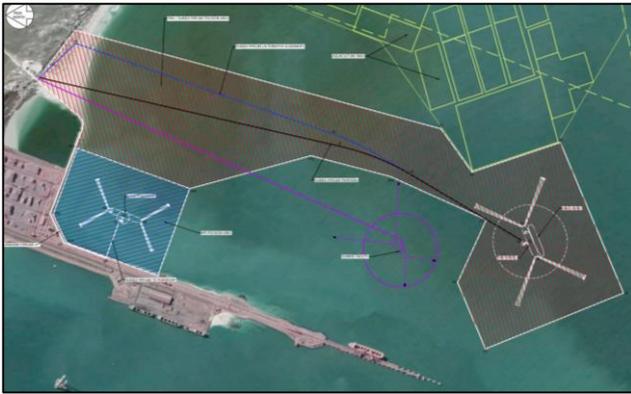


Figure 0-Error! No text of specified style in document.-3: Overview of Port Site



Figure 0-Error! No text of specified style in document.-4: Overview of Transmission Route

The most notable land uses adjacent to the project site are:

- The Port of Saldanha
- West coast coastal plain
- The area has a mixture of developments with majority of it being industrial, transport and logistics orientated.
- The agricultural landscape is largely comprised of pasture for livestock production, while the industrial development includes oil storage, paper production and steel production industries.

The two conservation areas which are located to the southeast of the project area include the West Coast National Park, a formally protected area, and the Saldanha Nature Reserve which is a provincial nature reserve. Such areas are predominately covered with natural Fynbos and shrubland.

The West Coast District (WCD) Municipality accounts for only 6.6% of the population, and is one of the three smallest municipalities in the Western Cape with the second lowest population densities.

The population of the WCD is 467 175 people in 2021, making it, outside of the metro, the third most populated district in the Province. This total is expected to grow to 491 515 by 2025, equating to an average annual growth rate of 1.3 per cent.

5. Project Motivation

The Karpowership project has arisen in response to the need to address the current energy crisis experienced in South Africa. It is in response to a bid issued by DMRE as part of the RMI4P. The purpose of the RMI4P is to satisfy the short-term electricity supply gap, ease the current electricity supply constraints and reduce the wide-scale usage of diesel-based peaking electrical generators using alternative energy technologies ((Steenkamp & Weaver, 2022; DMRE, 2021a). The energy generated through the Karpowership project will contribute towards alleviating the loadshedding burden and resultant negative socio-economic impacts by providing much needed dispatchable energy, which can be provided at baseload, mid-merit and peaking.

The RMI4P, declared a Strategic Integrated Project, is an important response to the energy crisis, and in line with the mandate of the state to provide services that ensures socio-economic growth and well-being for the benefit of all of society. Karpowership's proposed project is in accordance with the IRP 2019 where provision has been made for gas in the energy mix. Powerships should not be considered a replacement of renewable energy, but rather a complementary technology to renewable energy, which supports the transition away from coal and a reduction in the negative environmental impacts associated with coal. Coupled with the urgent need to respond to the energy crisis Karpowership's project bring a solution where electricity can be dispatched on instruction when the energy supply is under strain.

In addition, the project will result in positive multiplier impacts on the local economy during both the

construction and operational phases. Karpowership will play a positive role in the local economy through skills-, enterprise- and supplier development programmes. The direct, indirect, and induced economic impacts of the project on employment, income generation, new production and economic value will be positive. This will include skills development and capacity development towards the realisation of a just transition in South Africa. It is therefore anticipated that the Karpowership project will result in an overall positive socio-economic impact when considering the host of economic and environmental impacts.

It is worth reiterating that the Karpowership project is in an active port, and Saldanha Bay Industrial Development Zone, which is considered a key growth node catering specifically for the energy and maritime sectors.

However, a responsible and sustainable approach to the proposed project is still required, in line with the requirements of NEMA and the environmental management Acts Policies and Guidelines. In addition, a duty of care must be observed. Therefore, numerous multidisciplinary specialist impact assessments have been undertaken as part of the EIA process, integration of specialist findings was ensured and the application of a polycentric view to the impact assessment was applied. Negative and positive impacts have been identified, and as far as possible all negative impacts have been avoided or mitigated to reduce the impact, and further management recommendations provided for as per the EMPr. All Specialists, supported the project and no fatal flaws were identified. The polycentric approach gave consideration to all relevant factors, inclusive of potential impacts that the proposed project could have on the local as well as the broader community. There is further opportunity for scientific research and monitoring programmes to inform adaptive management to the life cycle of this project, and for similar port-based projects. The Sustainability Specialist, based on Specialists' inputs, independently assessed the project's geographical, physical, biological, social, economic and cultural aspect of the environment through the application of

three methods that assisted with synthesizing and conceptualizing technical information for decision making purposes. The following conclusion was reached: *"Given that the professionals who undertook the specialist studies have supported the granting of the environmental authorisation, with various requirements for mitigation and management, I support this project be granted the environmental authorisation, provided the necessary mitigation and management recommendations are upheld. The recommendations provided in this report offer further opportunity to reduce the negative impacts of this project on the environment and enhance the positive contributions and legacy that Karpowership SA can contribute to this community."*

6. Project Description

The Project entails the generation of electricity from one Powership moored in the Port of Saldanha Bay, fueled with natural gas supplied from a second ship, a FSRU. The two ships will be moored in the port for the Project's contracted 20-year lifespan (as per the RMI4P requirements- Appendix 8.3). A LNGC will bring in LNG and offload it to the FSRU approximately once every 20 to 30 days, dependent on power demand which is determined by the buyer, ESKOM. The FSRU stores the LNG onboard and turns the liquid form into gaseous form (Natural Gas) upon demand from the Powership (Regasification). Natural gas will be transferred from the FSRU to the Powership via a subsea gas and overland pipeline. The Project's design capacity is 415MW. Electricity will be generated on the Powership by 24 reciprocating engines, each having a heat input in excess of 10MW (design capacity of 18.32MW each at full capacity). Heat generated by operation of the reciprocating engines is captured, and that energy is used to create steam to drive two steam turbines that each have a heat input of circa 15.45MW. The contracted capacity of 320MW, which will be measured at the Point of Utility Connection located at the new switching station, and which cannot be exceeded under the terms of the RMI4P, will be evacuated via a 132 kV transmission line. This line of approximately 7.5km in length will interconnect the Powership to the National Grid utilising the existing

Aurora- Saldanha Steel network via a new 132kV on shore switching station.

7. Alternatives

The EIA Regulations require that all S&EIR processes must identify and describe feasible and reasonable alternatives, including a 'No-Go' option. Numerous alternatives were identified and considered to date.

Table 0-Error! No text of specified style in document.-2: Alternatives Screened Out at Scoping Phase

Alternative	Screened Out Reason
Powership: Positioned in Small Bay	As a result of TNPA engagements
Overland gas pipeline routed behind the oyster dam	As a result of landowner engagements
Connection to Blouwater substation	

The following alternatives were considered in the EIA:

a. Layout Alternatives

Marine:

Preferred Gas Pipeline: The gas pipeline is connected from the FSRU via a subsea pipeline and onshore pipeline in Big Bay where it thereafter routed in front of the Oyster dam and along the causeway before it connecting via a subsea pipeline to the Powership. The route to the onshore pipeline is more direct than the alternative and the onshore pipeline traverses 400m less of the beach.

Gas Pipeline Alternative 1: The gas pipeline is positioned 400m east of the preferred route therefore traverses more of the beach. The alignment to the Powership from this point is aligned with the preferred route.

Transmission:

Preferred: The electricity generated on the ship will be converted by the on-board High Voltage substation and transmitted along a 132kV line. This new transmission line of approximately 7,5km will interconnect the Powership to the National Grid utilising the existing Aurora- Saldanha Steel network via a new 132kV on shore switching station. The

monopole transmission towers are proposed within a 60 metre corridor which includes the 31m working servitude. The servitude stretching approximately 7,5km from the port to the existing Aurora- Saldanha Steel network via a new 132kV on shore switching station (SS2/SS3), will have a width of 31m as per Eskom safety specifications. This route is primarily based between Transnet and the Saldanha Steel property.

Alternative 1: The new transmission line of approximately 7,2km and the route to east of the preferred option. There is one switching station, (SS1) associated with this route. This route is primarily based between Transnet and the Saldanha Steel property and crosses properties owned by Afrisam and Duferco (where two local landowners are currently undergoing late stages of an arbitration process against one another, albeit with no definitive timeline).

Alternative 2: The new transmission line of approximately 8,6km and the route to east of the preferred option. There are two switching station, (SS2 and SS3) alternatives associated with this route. This route was not supported from an avifaunal and ecological perspective and is considered a no-go option due to the alignment occurring within the flight path or paths of three priority species including GPS-tracked single pair of Black Harriers present. Furthermore, the terrestrial ecologist indicated that this route traverses an area of critically endangered limestone strandveld which should be avoided.

b. Design Alternatives

The proposed transmission line can be constructed of either a monopole or lattice steel construction, based on the final engineering design requirements, the topography and geotechnical survey results. As the extent of the lattices' footprint is much bigger and require more vegetation clearance than the monopoles, the monopoles are the preferred option.

c. Technology Alternatives: Fuel

The Powerships to be deployed will generate electricity using Wärtsilä engines running exclusively on natural gas. Wärtsilä conducts extensive research on the use of different fuel sources within its engines,

improving and optimising their technology to future-proof and deliver leading efficiency. Wärtsilä have made significant progress on the possibility of using hydrogen gas to power with their engine technology; whilst it is already technically possible to utilise a mix of hydrogen with natural gas, this technology is in its infancy and is undergoing rigorous research and development for pure hydrogen operations, and outcomes of that research and development (R&D) are anticipated within the coming years.

d. No Go Alternative

The option of not implementing the activity, i.e. the “no-go” alternative, was considered. In respect of the Project, it would mean that the existing status quo would prevail. While the benefit of this option is that there will be no negative environmental or social impacts, there also would be no positive environmental or socio-economic benefits as well as deployment of cleaner turnkey energy technology in keeping with the South Africa’s Just Energy Transition objectives.

Based on the findings of the independent specialist studies, the proposed project will not result in significant negative environmental or social impacts provided the mitigation measures recommended by the EAP and specialists, as contained in Section 8 of the draft EIA report and the EMPr are implemented.

In fact, the proposed project will have positive environmental impacts due to mitigation measures involving ecological research and subsequent long-term improvements resulting from improved knowledge. Negative environmental impacts resulting from loadshedding, declining energy or the use of more environmentally harmful alternative fuel sources will also be prevented.

The highly significant positive socio-economic impacts will not be realised in the no-go scenario. A socially just transition for the poor and unskilled workforce and marginalised individuals and Government’s target for a sustainable energy supply mix will also not occur in context of the Karpowership Project in Port of Saldanha. The lost benefit of having electricity derived from natural gas, reduces the stability and resilience of power grids, thereby reducing the energy transition

towards facilitating rapid deployment of renewable energy sources. Dispatchable power to the national grid to meet existing as well as future increased electricity demand within the country will not be available to prevent the disastrous and devastating economic decline associated with loadshedding resulting from an ever-increasing deficit of power. Continued loadshedding will negatively impact on the wellbeing of the majority of the SA population, on the economy as a whole as well as on local and international investor sentiments. Opportunities to stimulate the economy through employment, social development programmes, bursaries for education, other educational programmes, skills development programmes and procurement from local suppliers will be lost while the broader economic sectors such as industry, tourism, and entertainment will also face growth constraints. Moreover, individuals and especially the disadvantaged and marginalised, will have to face increasing risks to their livelihoods as well as reduced economic opportunities.

When the minimal potential environmental and socio-economic risk with mitigation is measured against the potential environmental and socio-economic benefits, there is simply no contest. The environmental benefits are significant and the social and economic benefits vastly outweigh the mitigated environmental and socio-economic impacts.

The no-go option is thus not consistent with the principles of sustainable development in relation to the provision of electricity which falls under the SDG 7: Affordable and Clean Energy and SDG 8: Decent Work and Economic Growth. It is thus the reasoned opinion of the EAP that the proposed 320MW Gas to Power Powership Project, should be authorised subject to the conditions proposed in Section 9.2, which include compliance with the EMPr. Hence the “no-go” alternative is not recommended.

8. Stakeholder Engagement

Stakeholder engagement is a key component of the S&EIR process and is being undertaken in accordance with the requirements of the EIA Regulations. Stakeholder engagement periods include the following:

- Initial notification and submission of the BID;
- Formal public comment period on the draft EIA Report

The key stakeholder engagement activities during the EIA processes are summarised in Table 0-1-3:

Table 0-Error! No text of specified style in document.-3: Summary of Stakeholder Engagement Activities

Activity	Date
Pre-consultation Meetings	20 October 2022
Initial Notification	
Advert, BID, Site Notices, Flyers, Leaflets, Radio Announcements	24 -28 October 2022
Consultation Meetings	24 October – 09 November 2022
Impact Assessment	
Draft EIAR Comment Period	10 November – 13 December 2022
Public & Virtual Meeting	25 November 2022

9. Assessment of Potential Impacts

a. Specialist Studies & Technical Reports

Specialist studies were undertaken to investigate key potential direct, indirect and cumulative impacts:

- Hydrology & 1:100 Year Floodline Assessment
- Aquatic Assessment
- Hydopedology Assessment
- Geohydrology Assessment
- Water Balance Assessment
- Wetland Delineation & Functionality Assessment
- Heritage & Palaeontology Assessment
- Terrestrial Biodiversity Assessment
- Avifauna Assessment
- Baseline Underwater Noise Report
- Underwater Noise Assessment Report
- Underwater Heritage Impact Assessment Report
- Marine Ecology Assessment & Fisheries Impact Report
- Marine Avifaunal Assessment
- Estuarine and Coastal Assessment
- Traffic incl. Marine
- Thermal Plume Modelling Report
- Air Quality Impact Assessment

- Ambient Noise Impact Assessment
- Climate Change Impact Assessment
- Socio-Economic Impact Assessment
- Small Scale Fishers Specialist Engagement Report
- Sustainability
- Tourism Impact Assessment
- Visual Impact Assessment
- Major Hazard Installation Assessment
- Role of Gas in the Just Transition
- Cost implications Gas vs Renewable forms of Energy

For all potentially significant impacts, the significance of the anticipated impact was rated without and with recommended mitigation measures in Section 7.3.

b. Impact Significance

The significance of potential impacts and risks of the proposed Project was determined in order to assist decision-makers. The overall impact ratings, assuming mitigation measures (see Section 7.3) are effectively implemented, are presented in Table 0-1-4.

Table 0-Error! No text of specified style in document.-4: Summary of Stakeholder Engagement Activities

Potential Impact and Risk	Significance	
	Pre-Mitigation	Post Mitigation
Hydrology Impacts (Section 7.4.1)		
No impacts		
Aquatic Impacts (Section 7.4.2)		
No impacts		
Hydopedology Impacts (Section 7.4.3)		
Site preparation impacting on soil interflow processes, soil quality, soil structure and land capability	Neutral/ Negligible	Neutral/ Negligible
Disturbing vadose zone, the in-situ placement of new soils, vegetation clearing & soil stockpiling impacting on soil interflow processes, soil quality, soil structure and land capability	Low	Neutral/ Negligible
Surface water (wetland) quality as well as possible oil & fuel spills impacting on soil quality	Low	Neutral/ Negligible
Geohydrology Impacts (Section 7.4.4)		
Disturbing vadose zone during soil excavations and possible hydrocarbon contamination (construction activities)	Low	Neutral/ Negligible

Impacts to downstream groundwater users (construction and operational phase); Perched water table dewatering	Neutral/ Negligible	Neutral/ Negligible
Hydrocarbon contamination of the vadose zone (operational phase)	Neutral/ Negligible	Neutral/ Negligible
Wetland Impacts (Section 7.4.5)		
Catchment modifications	Low	Very Low
Water Quality	Low	Very Low
Archaeology and Palaeontology Impacts (Section 7.4.6)		
Loss of fossil bones and shells during excavation of pylon foundations	Low	Very Low
Terrestrial Biodiversity Impacts (Section 7.4.7)		
Loss of Dune Strandveld	Medium-Low	Very Low
Loss of Flats Strandveld – Alternative route 1 or Preferred Alternative (Construction)	Medium-High	Medium-Low
Loss of Limestone Strandveld – Alternative route 1	Medium-High	Medium-Low
Loss of Flora SCC (Construction)	Medium-High	Low
Loss of Flora SCC (Operation)	Medium-Low	Very Low
Loss of Fauna SCC	Medium	Very Low
Loss of biodiversity in general (Construction)	Medium-High	Medium-Low
Loss of biodiversity in general (Operation)	Medium-Low	Low
Fragmentation (Construction)	Medium	Medium-Low
Fragmentation (Operation)	Low	Very Low
Invasion of alien species	High	Medium-Low
Avifauna Impacts (Section 7.4.8)		
Negative impact of transmission line due to direct impact mortality (or avoidance of area) around any new power line for the Red-listed bird groups (operational phase)	High	Medium-high
Negative impact due to avoidance of the construction area for the transmission line (construction phase)	Low	Low
Major disturbance to (i) harrier breeding habitat and (ii) roosting habitat of the Cape Cormorants by the presence of the Stringing yard	High	Medium
Noise from power generation	Medium-High	Medium
Underwater Noise Impacts (Section 7.4.9)		
No impact		
Underwater Archaeology Impacts (Section 7.4.10)		
Impacts to underwater heritage resources	Low	Low
Marine Ecology and Marine Avifauna Impacts (Section 7.4.11)		

Effects of gas pipeline construction and installation and vessel mooring on the benthic community	Medium-Low	Low
Effects of the intake of cooling water on marine organisms in the surrounding water body	Medium	Medium-Low
The effects on the marine ecology in the receiving water body due to discharge of cooling water or increased noise and vibration levels	Medium-High	Medium
The effects of impacts on ecosystem services (operational phase)	Medium	Medium
Impact on dynamic coastal processes	Medium-Low	Low
Impact of coastal pollution	High	Low
Coastal and Estuary Impacts (Section 7.4.12)		
No impacts		
Atmospheric Impacts and Risks (Section 7.4.13)		
SO ₂ ; NO ₂ and PM ₁₀	Low	Low
Terrestrial Noise Impacts and Risks (Section 7.4.14)		
Noise impacts from construction and operational activities	Medium-Low	Low
Climate Change Impacts and Risks (Section 7.4.15)		
Contribution to climate change	Low (Positive)	Low (Positive)
Socio-Economic Impacts and Risks (Section 7.4.16)		
Temporary increase in the GDP and production of the national and local economies during construction	High (Positive)	High (Positive)
Temporary increase in employment in local and national economies	High (Positive)	High (Positive)
Contribution to skills development in the country and in the local economy	Medium (Positive)	Medium (Positive)
Temporary improvement of the standard of living of the positively affected households or temporary increase in government revenue	Medium (Positive)	Medium (Positive)
Temporary increase in social conflicts associated with the influx of construction workers and job seekers to the area	Medium-Low	Low
Added pressure on economic and social infrastructure during construction as a result of increase in local traffic and in migration of construction workers	Medium-Low	Low
Impact on the sense of place experienced by the local community as a result of visual and noise effects that appear during the construction	Medium	Low

phase		
Temporary increase in the GDP and production of the national and local economies during construction	High (Positive)	High (Positive)
Creation of sustainable employment positions nationally and locally	High (Positive)	High (Positive)
Skills development of permanently employed workers during operations phase	Medium-Low (Positive)	Medium-High (Positive)
Improved standard of living for benefitting households and provision of electricity for future development	Medium-High (Positive)	Medium-High (Positive)
Sustainable increase in national and local government revenue	Medium-High (Positive)	Medium-High (Positive)
Local community and social development benefits derived from the project's operations	Medium (Positive)	Medium-High (Positive)
Impact on the sense of place experienced by the local community as a result of visual and noise effects that appear during the operational phase	Low	Low
Tourism Impacts and Risks (Section 7.4.17)		
Potential negative noise impact in the Saldanha Bay Port on the marine tourism activities.	Low	N/A
Potential negative visual and noise impacts on tourism at Saldanha Bay Port	Low	N/A
Potential positive impacts of Karpowerships electricity provision on the hospitality and tourism industry in the Saldanha Bay	Very High (Positive)	Very High (Positive)
Potential Positive Impacts on Energy and Industrial Tourism in the Saldanha Bay	Low (Positive)	Low (Positive)
Traffic Impacts (Section 7.4.18)		
No impacts.		
Visual Impacts (Section 7.4.19)		
Change the character and sense of place of the landscape setting (Landscape Change) - Powership & FSRU	Low	N/A
Change the character and sense of place of the landscape setting (Landscape Change) - Preferred and Alternative 1 & 2 Power lines	Low	Low
Change the character of the landscape as seen from the Saldanha urban area and beach - Powership Alternative 1	Medium	N/A

Change the character of the landscape as seen from		
<ul style="list-style-type: none"> Saldanha urban area and beach - Powership Alternative 2 & Transmission Line Mykonos - Power Ships Alternatives 1 & 2, FSRU and Transmission Line Langebaan, Langebaan lagoon and the West Coast National Park - Powership Alternative 1, 2 and Transmission Lines 	Low	N/A
Visual impact of operational, safety and security lighting of the facility at night on observers	Low	Low
Major Hazard Installation Risk (Section 7.4.20)		
Impacts are acceptable		
Marine Traffic Impacts and Risk (Section 7.4.21)		
No impacts		

c. Key Mitigations Measures

The mitigation hierarchy (avoid, reduce, rehabilitate and offset) was applied. Key design mitigation proposed to address impacts of the bypass are summarised below:

Avoid

- Screening out of Alternative 2:
 - The avifauna assessment indicated the presence and activity of a black harrier with flight paths that would constantly cross the proposed powerline.
 - Critically endangered limestone strandveld located within an area for which offsets are not possible. Avoidance was the only option;
- The gas pipeline alternative selected the shortest route within the coastal dune area, avoiding pristine areas.
- The transmission line was proposed adjacent existing infrastructure associated with disturbance and transformation.
- The use of close-loop water systems that exclude the use of biocides and chlorine and thus prevent any potential pollution within the marine environment.

Reduce

- The design of the Powerships provide for built-in noise mitigation e.g. double hull and anti-vibration mounts
- Management of water intake velocities and placement of intake outside the benthic environment to reduce impacts within the marine ecosystem
- Navigational simulations and TNPA agreements on FSRU and Powership positions ensured the optimal position of the vessels to avoid marine traffic collisions and align with TNPA Port planning.
- Various measures were stipulated as per the EMPr for the construction and operational phase to reduce impacts.

Rehabilitate

Rehabilitation is stipulated for any areas disturbed during construction as per the measures provided in the EMPr. The EMPr also provides for the maintenance of areas to prevent degradations during the operational phase.

d. Comparison of Alternatives

Powership and FSRU Position within Big Bay

No alternative mooring sites were initially considered as per the Scoping Report, as the preferred location is within the TNPA port limits and is aligned with the proposed Port plans. TNPA's preference for the Powership position within Big Bay instead of Small Bay (Figure 0-1-3) was an outcome of prior public participation and engagements between Karpowership and TNPA. This position has been assessed by the specialists and provided to all stakeholders and I&APs for comment.

Gas Pipeline

The Preferred Alternative is a shorter route to the overland gas pipeline connection. Following a more detailed bathymetry, it was possible to reorient the pipeline, position the shore crossing adjacent to the Sunrise LPG pipeline shore crossing and reuse the same area of the beach for the stringing yard as was used for the Sunrise installation. This relocation of the shore crossing results in 400m less of the pipeline route traversing the dune field. This is preferred by both the avifaunal specialist and the terrestrial

biodiversity specialist as it is of an impact on the dune environment than Alternative 1.

Transmission Line Corridors

The Preferred Alternative Corridor has been selected as the preferred alternative based on the negative implications of the other 2 alternatives.

Alternative 1 Corridor is primarily based between Transnet and the Saldanha Steel property and crosses properties owned by Afrisam and Duferco (where two local landowners are currently undergoing late stages of an arbitration process against one another, albeit with no definitive timeline).

Alternative 2 Corridor is not supported as it was determined that this alternative is a no-go option by the avifaunal specialist as it cuts across the flight paths of three priority species including GPS-tracked Black Harriers, and the terrestrial ecologist indicated that this route traverses an area of critically endangered limestone strandveld which should be avoided.

10. Conclusion & Way Forward

This draft EIAR identified and assessed the potential biophysical and socio-economic impacts associated with the Proposed Gas to Power Powership Project at the Port of Saldanha and associated evacuation route within Saldanha Bay.

It is the opinion of the EIA project team, incorporating the signatories below, that all components of this application, including the EIR with attached independent specialist reports, EMPr, public participation process and supporting documentation, comply with the relevant guidelines and contain all the required information in terms of GN 982 to enable an informed decision by the competent authority.

It is the reasoned opinion of the EAP that the Gas to Power Powership project is acceptable, will not create unacceptable environmental impacts and can be reasonably authorised subject to the implementation of the mitigations and management measures set out

in the EMPr. This opinion was reached with due consideration of:

- the independent specialist studies, with each and every specialist concluding their assessment with a supportive statement for the proposed development (i.e. no fatal flaws were identified),
- the independent contributions to the need and desirability,
- the impacts identified from a macro, micro, cumulative and polycentric (integrative) perspective in terms of the geographical, physical, biological, social, economic and cultural aspect of the environment,
- the potential to avoid or minimise negative impacts and maximise positive impacts through *inter alia* the socio-economic development plan and reduced loadshedding.