

In the matter regarding an

APPLICATION FOR A GENERATION LICENCE

By

KARPOWERSHIP SA RICHARDS BAY (RF) (PTY) LTD

Application No.: NERSA-1532172523-62555

DECISION

Based on the available information and an analysis conducted on the application for a generation licence by Karpowership SA Richards Bay (RF) (Pty) Ltd, the Energy Regulator at its meeting held on 21 September 2021:

1. **approved** that Karpowership SA Richards Bay (RF) (Pty) Ltd be issued with a generation licence;
2. **approved** the Charge Rates used to calculate the tariff in Schedule 9 of the Power Purchase Agreement, as indicated in Table 1 below:

Table 1: Karpowership SA Richards Bay (RF) (Pty) Ltd tariff Charge Rates

Charge Rates	Agreed value	Unit of Measure
CCR _b	██████	Rand/MWh
NCCR _b	██████████	Rand/MWh
FOMR _b	██████	Rand/MWh
NFOMR _b	██████████	Rand/MWh
FCR	██████	Rand/MJ
VCCR _{gb}	██████	Rand/MWh

RCR _{rb}	[REDACTED]	Rand/MWh
DA _{IRb}	[REDACTED]	Rand/MW
DA _{RRb}	[REDACTED]	Rand/MW
CA _{IRb}	[REDACTED]	Rand/MW
CA _{RRb}	[REDACTED]	Rand/MW
TC	[REDACTED]	R/MJ
TR	[REDACTED]	R/MJ

3. **noted** the Power Purchase Agreement between Karpowership SA Richards Bay (RF) (Pty) Ltd and Eskom Holdings (SOC) Ltd; and
4. **approved** the Decision and Reason for Decision document.

REASONS FOR DECISION

INTRODUCTION

1. The Integrated Resource Plan 2019 (IRP 2019) identified that there is a risk of load-shedding and/or extensive use of diesel peaking plants due to the Eskom plants' low Energy Availability Factor (EAF). Short-term supply and demand side interventions were then proposed to mitigate this risk. One of the interventions was to procure 2000 to 3000 MW.
2. To implement the interventions in the IRP2019, the Minister of Mineral Resources and Energy (the Minister) issued a proposed determination to the National Energy Regulator of South Africa (NERSA) for concurrence in accordance with section 34 of the Electricity Regulation Act, 2006 (Act. No.4 of 2006) ('the ERA'). Section 34 states:
34. (1) The Minister may, in consultation with the Regulator-
 - (a) determine that new generation capacity is needed to ensure the continued uninterrupted supply of electricity;*
 - (b) determine the types of energy sources from which electricity must be generated, and the percentages of electricity that must be generated from such sources;*
 - (c) determine that electricity thus produced may only be sold to the persons or in the manner set out in such notice;*
 - (d) determine that electricity thus produced must be purchased by the persons set out in such notice;*
 - (e) require that new generation capacity must-*
 - (i) be established through a tendering procedure which is fair, equitable, transparent, competitive and cost-effective;*
 - (ii) provide for private sector participation.*
3. NERSA considered the proposed determination and concurred with it on 25 May 2020. The Minister then published the Determination in Government Gazette No. 43509 of 7 July 2020. The Determination stated that:
 - 3.1 2 000 MW should be procured from a range of energy source technologies in accordance with the short-term risk mitigation capacity allocated under heading 'Others', for the years 2019 to 2022 in Table 5 of the Integrated Resource Plan for Electricity 2019 to 2030 (published as GN 1360 of 18 October 2019 in Government Gazette No. 42784 ('IRP 2019')). The procurement programme shall target connection to the Grid for the new*

generation capacity as soon as reasonably possible, but by no later than December 2021.

- 3.2 Electricity produced from the new generation capacity ('the electricity') shall be procured through one or more tendering procedures that are fair, equitable, transparent, competitive and cost-effective and shall constitute Independent Power Producer (IPP) procurement programmes as contemplated in the Regulations ('procurement programmes').*
- 3.3 The procurement programmes shall target connection to the Grid for the new generation capacity as soon as reasonably possible, in line with the time table set out in Table 5 of the IRP 2019. Deviations from the time table set out in Table 5 are permitted to the extent necessary taking into account all relevant factors including prevailing energy security risks, the time required for efficient procurement and the required construction timelines for such new generation capacity facility.*
- 3.4 The electricity may only be sold to the entity designated as the buyer in paragraph 3.7 below, and only in accordance with the power purchase agreements and other project agreements to be concluded in the course of the procurement programmes.*
- 3.5 The procurer, in respect of the procurement programmes, will be the Department of Mineral Resources and Energy.*
- 3.6 The role of the procurer will be to conduct the procurement programmes. This includes preparing any requests for proposals and/or related and associated documentation, negotiating the power purchase agreements, facilitating the conclusion of the other agreements and facilitating the satisfaction of any conditions precedent to financial close which are within its control.*
- 3.7 The electricity must be purchased by Eskom Holdings SOC Limited.*
- 3.8 The electricity must be purchased from Independent Power Producers.*

4. The Department of Mineral Resources and Energy (DMRE), through the Independent Power Producer (IPP) Office, then released Request for Proposal (RfP) Documents for the procurement of the 2000MW on 24 August 2020. The key requirements for the RfP were:
 - 4.1 No specific technologies were targeted and the specifications were stipulated by the Transmission System Operator (SO) which, among others, included the need for each project to be dispatchable between 05:00 and 21:30 daily in response the instruction from the SO.
 - 4.2 The project provides Ancillary Services, which are necessary for grid stability.
 - 4.3 Multiple generation facilities located at different geographical locations could be bid as a single dispatchable project, without being prescriptive of the types of technologies.
 - 4.4 The projects must reach Commercial Operation as soon as possible, but no later than December 2022.

5. The bid evaluation criteria were based on the principles of the minimum technical, financial, economic development and legal qualification criteria that a bidder is required to comply with prior to the price evaluation process.

6. The final evaluation of the bids was then based on 90% Bid Price and 10% Economic Development Commitments.

7. On 18 March 2021, the Minister announced that eight bidders totalling 1 845.76MW were successful, and three bidders totalling 150MW were eligible, but further evaluation on price had to be done.

8. Table 2 lists the eight preferred bidders and the technology description.

Table 2: Details of preferred bidders

APPLICATION		TECHNICAL INFORMATION		
PROJECT NAME	EVALUATION PRICE (ZAR/MW)	LOCATION	MIX TECHNOLOGY INSTALLED CAPACITY	CONTRACTED CAPACITY
		NEAREST TOWN, PROVINCE	(MW)	(MW)
Oya Energy Hybrid Facility	1 550.34	Matjiesfontein, Western Cape	Solar PV – 155MW BESS – 40MW Diesel – 106MW Onshore Wind – 82.50MW	128.00

Umoyilanga Energy	1 721.64	Upington, Northern & Nelson Madela Bay, Eastern Cape	Solar PV – 138MW BESS – 75MW LPG – 12MW Onshore Wind – 77.00MW	75
ACWA Power Project DAO	1 462.00	Groblershoop, Northern Cape	Solar PV – 422MW BESS – 150MW Diesel – 15MW	150
Karpowership SA Coega	1 468.87	Nelson Mandela Bay, Eastern Cape	Floating, Modular Reciprocating Gas Engines – 450MW	450
Karpowership SA Richards Bay	1 496.03	Richards Bay, KZN	Floating, Modular Reciprocating Gas Engines – 450MW	450
Karpowership SA Saldanha	1 686.48	Saldanha Bay, Western Cape	Floating, Modular Reciprocating Gas Engines – 320MW	320
Mulilo Total Coega	1 885.37	Nelson Mandela Bay, Eastern Cape	Solar PV – 216MW Reciprocating Gas Engines – 197.76MW	197.76
Mulilo Total Hydra Storage	1 515.97	De Aar, Northern Cape	Solar PV – 216MW BESS – 150MW Diesel – 20MW	75

BACKGROUND

9. A powership is a floating power plant that is either self-propelled or barge mounted. The powership consists of wide ranges of installed capacities for utility size operations with no construction risk. A powership is ready for power generation within a short period of time. The power generated is fed directly into the transmission network from the on-board High Voltage substation, not requiring any land acquisition.
10. Powerships are designed and built using the latest dual fuel engine technology, which operate in combined-cycle mode to maximise efficiency. Fuel flexibility through Natural Gas, Liquefied Natural Gas (LNG) or low Sulphur Heavy Fuel Oil (HFO) ensures the lowest cost of delivered power with no capital outlay. Powerships deliver the most competitive cost of electricity and are ready to operate within three to six months from arrival.

11. Karpowership owns and operates the world’s first integrated floating LNG-to-power fleet. Karpowership currently has 30 completed powerships with an installed capacity exceeding 5000MW. The installed capacity per powership ranges from 30 to 620MW. Karpowership is operating its powerships in countries such as Cuba, Senegal, The Gambia, Guinea-Bissau, Guinea Conakry, Sierra Leone, Ghana, Sudan, Mozambique, Lebanon and Indonesia.

THE APPLICANT

12. As indicated in Table 1 above, Karpowership SA Richards Bay (RF) (Pty) Ltd (‘Karpowership’ or ‘the Applicant’) is one of the bidders that was selected as a preferred bidder.
13. On 13 April 2021, Karpowership SA Richards Bay (RF) (Pty) Ltd applied for a generation licence in accordance with section 7 of the ERA, which requires that no person may operate a generation facility without a licence issued by the Energy Regulator.
14. Karpowership SA Richards Bay (RF) (Pty) Ltd is a company registered in accordance with the laws of the Republic of South Africa. Its company registration number is 2020/754352/07.

SHAREHOLDING STRUCTURE

15. Karpowership SA Richards Bay (RF) (Pty) Ltd is wholly owned by Karpowership SA (Pty) Ltd and the shareholding structure of Karpowership SA (Pty) Ltd (the company) is as indicated in Table 3 below.

Table 3: Karpowership SA Richards Bay (RF) (Pty) Ltd’s shareholding

Shareholding Structure during licensing stage	
Company Name	Shareholding (%)
Karadeniz Holdings Ltd	51
Powergroup SA (Pty) Ltd	49

16. Karadeniz Holdings Ltd is a Turkish energy company that owns and operates land-based power plants and powerships through its subsidiary Karpowership. It is based in Istanbul, Turkey.
17. Powergroup SA (Pty) Ltd is a black owned company registered in accordance with the laws of the Republic of South Africa. Its company registration number is 2020/246599/07.

THE APPLICATION

18. On 13 April 2021, NERSA received an application for a licence to operate a generation facility from Karpowership SA Richards Bay (RF) (Pty) Ltd.
19. The Applicant submitted the financial model on 20 April 2021.
20. On 24 May 2021, NERSA and Karpowership SA Richards Bay (RF) (Pty) Ltd had a meeting to discuss the adequacy of the application submitted by the Applicant. At this meeting, NERSA requested that the Applicant submit a revised application form.
21. On 31 May 2021, the Applicant submitted an updated application form that replaced the application form submitted on 13 April 2021.
22. The following supporting documents were received with the application:
 - 22.1 Preferred bidder appointment letter from the IPP Office;
 - 22.2 Power Purchase Agreement (PPA) between the Applicant and Eskom Holdings SOC Ltd ('Eskom');
 - 22.3 Acknowledgement of receipt of an application for the Water Use Licence from the Department of Water and Sanitation;
 - 22.4 Acknowledgement of receipt of the scoping report for the proposed gas to power project from the Department of Environment, Forestry, Fisheries and the Environment (DFFE);
 - 22.5 Single line diagram;
 - 22.6 Draft Transmission Agreement with Eskom;
 - 22.7 Eskom Cost Estimate Letter and;
 - 22.8 Draft Request for budget quote.
23. On 27 August 2021, the Applicant submitted the following permits.
 - 23.1 Water Use Licence. Approval for the Water Use Licence from the Department of Water and Sanitation;
 - 23.2 Statement of no objection received from the uMhlathuze Municipality under Fire Safety by Law.
 - 23.3. No objection letter from the South African Civil Aviation Authority;
24. On 10 September 2021, the applicant submitted the Occupation Health & Safety Agreement (OHSA) Construction Permit which was issued by the Department of Employment and Labour on 13 July 2021.
25. The following documents are outstanding:

- 25.1. Approval for the Environmental Authorisation from the DFFE;
- 25.2. The rights from Transnet National Port Authority (TNPA) for port access, construction, operation and maintenance;
- 25.3. Fuel Supply agreement and;
- 25.4. NERSA's Gas licence.

REGULATORY LEGAL ANALYSIS

26. Electricity regulation with regards to licensing is premised on the provisions of the ERA and NERSA cannot appropriate any powers to itself which are not detailed in the law. The framework for licensing has been thoroughly detailed in section 10(2) of the ERA and the framework is complemented by the related licensing procedure approved by the Energy Regulator.
27. NERSA licences the operation of generation facility and nothing else. It must also be recognised that, the licensing of the facility is not the penultimate of the approval that the licensee has to receive within the Republic. Section 10(2) of the ERA contains myriad of issues which some are matters that NERSA must evaluate and take a decision on or simply, there are matter that are so fundamental to the powers of NERSA regarding licensing which licensing cannot be completed without them being satisfied.
28. Section 10(2) further includes referral matters, these are matters which NERSA does not have the powers to evaluate and conclude on their appropriateness, relevance and conclusivity thereto because the powers to deal with them resides in another authority outside of NERSA. Subsection (2)(e) requires the applicant to submit plans and their ability to comply. The legislature deliberately did not use the words approved plans as that would have been much easier because that would have been a submission of decision.
29. The plans ability referred to in the subsection is not in terms of the language of the section, the final position in that when submitted to NERSA, the applicant has satisfied and complied with the basket of approval required but an appreciation of the due diligence which the applicant has made of the environment enabling the construction and operation of the facility when complete.
30. The powers that NERSA has regarding the provision of the section is to scan the environment which the application relates to and demand the submission of the information if not submitted and that achieves rationality to the decision and performance of NERSA mandate. It will be irrational for NERSA to misdirect itself that

it has powers to determine the correctness of the information which the related work must be performed by another authority. It will also be irrational for NERSA to consider information from the newspapers and not verified to make a decision. Caution should be extremely exercised on media reports which may distort the narrative of the application and misguide the exercise of powers.

Evidence that the Applicant has plans and ability to comply with Section 10(2) e.

31. On 10 September 2021, the applicant submitted a plan in accordance with s10(2)(e) of the ERA, which provides that the application must demonstrate "the plans and the ability of the applicant to comply with applicable labour, health, safety and environmental legislation, subordinate legislation and such other requirements as may be applicable".
32. After the DFFE refused Karpowership SA's application, the applicant lodged an appeal with the DFFE, within the required timeframe, on 13 July 2021. Each appeal has site-specific details that the DFFE will be required to consider when adjudicating on the outcome of the appeals. However, the over-arching grounds of the appeal are common across all three project sites.
33. In terms of the EIA regulations, the DFFE has a maximum of 50 days to make a final decision on the appeal if no external expert is appointed to review the matter. A final decision may only be delivered on 5 November 2021 if the DFFE takes the full 50 days' period to make its final decision on the appeal.
34. Karpowership SA commenced engagements with TNPA immediately following the appointment of the applicant as a preferred bidder under RMI4P where it was agreed that any agreement between the parties needed to be concluded pursuant to a directive issued by the Minister of Transport under section 79(1) of the National Ports Act. Karpowership SA also engage with the Deputy Director-General (DDG) of the Ministry of Transport and the DDG indicated that the Ministry has engaged with the TNPA and approved that the TNPA commence commercial discussions with Karpowership SA on a confidential and non-binding basis whilst the section 79 application was being processed by the Ministry. The parties are working towards concluding the relevant agreements required to secure onshore and offshore access rights in the ports in accordance with the National Ports Act, 12 of 2005. The applicant has provided a draft term sheet in relation to the relevant agreement(s) to the TNPA to facilitate with the preparation of the agreement by TNPA.

APPLICATION APPROVAL PROCESS

35. On 7 and 9 June 2021, the Applicant published notices in the *Zululand Observer* and the *Eyethu Bay Watch* respectively, notifying members of the public about the proposed project and inviting them to submit objections or comments to the Energy Regulator.
36. The adverts also notified members of the public that the applications had also been published on the Applicant and NERSA's websites.
37. The Energy Regulator published notices to comment on the application, and invited interested and affected stakeholders to a scheduled public hearing on 19 August 2021, in the following newspapers:
 - 37.1 the *Business Day*, on 16 July 2021;
 - 37.2 the *City Press*, on 18 July 2021.
 - 37.3 the *Star*, on 19 July 2021; and
 - 37.4 the *Sowetan*, on 19 July 2021.

OBJECTORS AND INTERVENING PARTIES

38. On 6 July 2021, NERSA received a letter from the Centre of Environmental Rights (CER) requesting an extension on the commenting period of the public participation process. NERSA granted an extension, allowing CER to send their written objections no later than 2 August 2021.
39. On 2 August 2021, CER submitted an objection on behalf of their client Groundworks. The submission was to object to Karpowership SA Richards Bay (RF) (Pty) Ltd's application to NERSA for an electricity generation licence. The submission highlighted the following reasons for the objection:
 - 39.1. The objector believes that Karpowership SA Richards Bay (RF) (Pty) Ltd will not be able to meet environmental legislative requirements which means that the project does not fulfil the requirements of Section 10(2)(e) of the Electricity Regulation Act;
 - 39.2. The project does not present the best technology available but rather an expensive and dangerous one that will increase carbon and greenhouse gas emissions which would fast track the effects of climate change;
 - 39.3. That it is inefficient and irresponsible for South Africa to sign 20-year contracts with Karpowership when there are alternatives that could produce the same capacity at a cheaper rate and;

- 39.4. The application is not aligned with the Electricity Regulation Act because it is neither consistent with “achieving the efficient, effective, sustainable and orderly development and operation of electricity supply infrastructure in South Africa” nor “ensuring that the interests and needs of present and future electricity customers and end users are safeguarded and met.”
40. NERSA’s analysis regarding the above is that, part of the objection which the objector is raising (environmental authorisation) reside within the policy development realm and NERSA cannot venture into such space. With regards to section 10(2)(e), the distinction should be drawn between matters within the jurisdiction of NERSA and those that falls outside when considering section 10 of the ERA. An applicant is expected to show its ability to comply with environmental, labour and health aspects. NERSA cannot decide on these aspects as the custodianship of them is outside of NERSA. NERSA has in the past considered applications with matters outside of its jurisdiction not complete. Therefore, the objection raised by the objector falls to be dismissed and the objector directed to the correct authority.
41. The rest of the analysis of comments and objections received during and after the public hearing of 19 August 2021 is on Table 4. Of the sixteen presenters that presented during the public hearings, thirteen objected to the Karpowership generation licence application and three were in support of the application. The summary of the objections and NERSA analysis is shown below.

Table 4: Summary of Stakeholder objections and NERSA’s analysis

	Stakeholder objections	NERSA’s analysis
1.	Most objectors raised their concerns regarding the criminal investigation by the Department of Forestry, Fisheries and Environment (DFFE) that is underway. There is a legal challenge by DNG Energy underway. A parliamentary investigation is also underway. Shell also has a court case and there are accusations of paying bribes to the Department of Mineral Resources and Energy (DMRE), which must not be ignored.	Any challenge to the procurement process should be directed to the DMRE or the IPP Office. This is outside NERSA’s mandate.
2.	The projects will emit so much carbon over twenty years, carbon border taxes and carbon taxes, and noise pollution.	South Africa’s energy policy promotes the use of different technologies. The gas technology is also cleaner than coal.
3.	Some stakeholders recommended that the IPP Office reassess the rules and regulations of these projects.	This is outside NERSA’s mandate. It should have been directed to the DMRE and the IPP Office.
4.	Some stakeholders mentioned that the redaction of critical information on application forms sets unreasonable constraints to make meaningful and informed representations on various issues	Financial information is confidential. The information about the tariff was however availed, and was also disclosed when the Minister announced the preferred bidders.

	that go to the heart of the generation licence applications.	
5.	Some stakeholders said should NERSA issue a generation licence in these circumstances, the decision will amount to procedurally unfair administrative action, and will be vulnerable to being set aside on review.	NERSA's mandates is derived from the Electricity Act, and NERSA's decision will be guided by the Act. NERSA has processed the applications in accordance with the Act.
6.	The objector expressed that NERSA licence approvals could be challenged and the DMRE should act on NERSA's ROD. Another objection was that NERSA is not achieving the ERA objective of the 'orderly development of the ESI'.	NERSA's mandate is derived from the Electricity Act, and NERSA's decision will be guided by the Act. NERSA believes that licensing this project will ensure that it fulfils the objectives of the Act, and will result in orderly development of the ESI.
7.	The following issues were raised: Since the Karpowership uses cold sea water to cool-off their generators and dumps hot water back to the sea, this will destroy fish and oyster farming. It will compromise the quality of water, which will drastically impact the agriculture/farming companies around the area. It will cause a negative impact on the economy, environment and tourism in the coastal area.	Environmental concerns are outside NERSA's mandate. The Environmental Impact Studies submitted by the applicant will however address this concern.
8.	There was an issue that the application did not comply with the IRP2019 and other technologies have not been achieved. It was further mentioned that the cause is a poorly drafted RFP by the DMRE.	The IRP identified that short-term supply and demand side interventions will be needed. One of the interventions was to procure 2 000MW to 3 000MW. This procurement programme is aimed at achieving that. The application therefore complies with the IRP2019.
9.	Major shareholder is a Turkish company that owns 51% shares, which means South Africa will lose 51% profit.	Investment on the RMIPPP was open for both local and international investors.
10.	Due to complex engineering equipment on Karpowership vessels, which is assembled offsite, highly skilled personnel from abroad will be required.	Skills development is one of the economic requirements for the RMIPPP programme, local personnel will gain experience from the experts.
11.	Karpowership obtained exemptions from the Department of Trade and Industries to comply with the 40% local content requirement for goods and services to be locally sourced, which would have potentially empowered local manufacturing industries. The applicant also obtained tax exemptions, which will benefit Karpowership more than other South African companies.	This is outside NERSA's mandate, the concerns should be raised with the DTI.

12.	The procurement process was flawed and there are court challenges to this effect by DNG Energy. There is also no information on how the evaluation was conducted, especially with regard to the three powerships.	Any challenge to the procurement process should be directed to the DMRE or the IPP Office. This is outside NERSA's mandate.
13.	The EIA was denied and there are environmental investigations with regard to EIA. Many issues of environmental harm were highlighted during the public presentation process. Although EIA is appealed, there is no guarantee that it will succeed, so NERSA must wait for the appeal judgement.	Part of the objection raised resides within the policy development realm and NERSA cannot venture into such space. With regard to section 10(2)(e), the distinction should be drawn between matters within the jurisdiction of NERSA and those that fall outside when considering section 10 of the ERA. An applicant is only expected to show its ability to comply with environmental, labour and health aspects. NERSA cannot decide on these aspects as their custodianship is outside of NERSA. NERSA has, in the past, considered applications with matters outside of its jurisdiction as incomplete. Therefore, the objection raised should be dismissed and the objector directed to the correct authority.
14.	There are no Port Authority Permit approvals in accordance to section 56 and/or S79 Ministerial Direction (Minister of Transport) in terms of the National Ports Act.	The applicant has applied for the respective permits. NERSA is required to only consider the generation licence application. However, the Applicant must ensure that they obtain gas approvals from NERSA for the LNG product, which will be used as primary energy.
15.	There is no evidence of Eskom agreeing to the PPA.	The Minister has determined that Eskom will be the buyer and Eskom has not objected.
16.	There were concerns about the 20-year PPA for Karpowership projects.	The 20-year PPA is a standard term for all projects in the risk mitigation procurement projects. The term itself gives financiers confidence of backing such programmes since it provides certainty to their investments.
17.	Financial close of these projects has not been reached, and may never be reached.	Financial close will only be achieved after the generation licence is issued. The financial close deadline was extended to end of September 2021.
18.	The tariffs are not the lowest nor were they significantly different from those of several of the other bidders at the date of bid. Tariffs are also indexed to the forex exchange rates, which do not bring certainty to the South African market.	Section 15 of the Electricity Regulation Act requires NERSA to approve tariffs that will enable the efficient operator to recover their cost and make a reasonable rate of return. Different technologies have different cost structures. South Africa's

		energy policy also promotes the use of different energy mix, and the cost will always be different. The different technologies complement each other, rather than competing with each other, e.g. solar PV and gas complement each other.
19.	Application does not fit in just transition towards a low carbon, inclusive, climate change resilient economy and society. Clean technologies are needed. The 20-year PPA will lock SA in carbon and greenhouse gas emissions.	South Africa's energy policy promotes the use of different technologies. The gas technology is also cleaner than coal. Twenty-year PPA will enable the applicant to recover the cost over a longer period, resulting in lower tariffs that are affordable to the consumers.
20.	Karpowerships are not in line with the objects of the Act, which seek to achieve efficient, effective, sustainable and orderly development and operation of the electricity infrastructure.	The Karpowerships applications should be considered in the context of energy mix. They will complement intermittent renewable energy technologies. Their ability to provide ancillary services will also assist the grid. The objection is therefore unfounded.
21.	The applicants will end up with excess capacity as in Ghana.	South Africa's energy requirements are different from Ghana's requirements. The claim of excess capacity has no basis considering that Eskom has aging coal fleet, and there is already load-shedding in the country.
22.	There is a low economic impact. There will be 106 job created during construction and 44 during operation.	The jobs created during construction are far much higher than what is being quoted. For Karpowership SA Richards Bay for example, jobs created are 1 300 person's months during construction and 3 9740 person's months during operation. Full economic information, including investment that will be brought in the country, is on project dashboard.
23.	Information about the tariff and associated evaluation was not included in the consultation documents, and it would be irrational for NERSA to expect the public to comment effectively on those aspects.	Financial information is confidential. The information about the tariff was however availed, and was also disclosed when the Minister announced the preferred bidders.

24.	The PPA should offer incentives for early Commercial Operation Date (COD) and penalties for late COD. Other stakeholders said the PPA was not shared with them and can therefore not make an informed comment on the PPA terms and conditions.	There are penalties for late COD. For every day that the achievement of the Commercial Operation Date (COD) is delayed by beyond the scheduled COD (unless such delay is caused by Force Majeure, a Late System Connection Event or a Compensation Event), the expiry date shall be brought forward by six days for each day of delay, provided that the expiry date may not be brought forward more than five years.
25.	There was a concern that there is a lack of transparency in respect of the business case, the community was not informed about Karpowership project, the advertisement was not published in local language (newspaper), as well as a concern about fishing industry as it will be greatly affected by this project	<p>Consultation was done adequately as required by section 11 of the Electricity Regulation Act. Each applicant advertised in local newspapers in two official languages. The applications were also published on NERSA website, as well as on the respective applicant's website. NERSA then advertised in four newspapers, namely the <i>Business Day</i>; the <i>City Press</i>, <i>The Star</i> and the <i>Sowetan</i>.</p> <p>Due to COVID-19 restrictions we were unable to hold public hearings in areas where these facilities will be built.</p>

42. There are also stakeholders that supported the applications, the reasons and analysis are tabulated as below.

Table 5: Summary of Stakeholder support and NERSA's analysis

Stakeholder support	NERSA analysis
The Integrated Coastal Energy Alliance (ICEA) is part of the Integrated Coastal Economy Alliance (ICEA) as collaboration between the West Coast Black Business Alliance Black Business Alliance (WCBBA), Eastern Cape Maritime Business Chamber (ECMBC), National Federated Chamber of Commerce and Industries (NAFCOC)-Nelson Mandela Bay and Nelson Mandela Local Business (SMME Leaders from all 60 wards) and Al Ansaar Saldanha. It supported the project because of the economic benefit it brings to the coastal areas. It highlighted that most of these objectors do not even live in the areas where these projects will be implemented.	NERSA agrees that sustainability is four dimensional, i.e. electricity security of supply, environmental, financial and social aspects. The important thing is to ensure a balance of these four dimensions.

APPLICABLE LAW

43. The legal mandate for the Energy Regulator to issue a licence for the operation of a generation facility is derived from the following Acts:
- 43.1 the Electricity Regulation Act, 2006 (Act No. 4 of 2006); and
 - 43.2 the National Energy Regulator Act, 2004 (Act No. 40 of 2004).

ANALYSIS OF THE APPLICATION

Permits from other Government departments or Regulatory Authorities

44. Karpowership SA Richards Bay (RF) (Pty) Ltd is in the process of engaging with all key stakeholders to acquire all the necessary permits. Below is a list of all outstanding permits that the Applicant is in the process of obtaining:
- 44.1. The Environmental Authorisation application was submitted to the DFFE. On 23 June 2021, the Department of Forestry, Fisheries and the Environment refused the application for Environmental Authorisation. On 13 July 2021, Karpowership appealed the refusal.
 - 44.2. The gas licence applications have been submitted to NERSA.
 - 44.3. The Applicant has commenced discussions with the Transnet National Ports Authority regarding:
 - I. the granting of port access rights, including mooring of the powership and Floating Storage Regasification Unit (FSRU);
 - II. the construction, operation and maintenance rights, as well as the necessary land rights, in respect of the LNG pipeline infrastructure to allow for the supply of regasified natural gas from the FSRU to the powership; and
 - III. the construction, operation and maintenance rights, as well as the necessary land rights, to allow for the evacuation of power to the national grid via a 132kV overhead transmission line.
 - 44.4. The Gas Supply Agreement is currently being finalized between Karpowership SA Fuel Services Company (Pty) Ltd and Karpowership SA Richards Bay (Pty) Ltd. A copy of the signed gas supply agreement will be submitted to NERSA as soon as it is available.

Fuel Supply Agreement

45. Karpowership SA Fuel Services Company (Pty) Ltd is finalising negotiations for a LNG agreement with an international oil and gas company, Royal Dutch Shell, for the purchase of LNG, which will be delivered by Shell to the Port of Richards Bay where the powership is located. The LNG will be delivered by LNG carriers, which will transport the LNG from an LNG liquefaction terminal located overseas.
46. The LNG carrier will transfer the LNG ship-to-ship to the on-site fuel storage on the FSRU over a 1 to 2 day period, approximately every 25 to 40 days, depending on the evacuation. The FSRU stores the LNG, and when required to meet demand, converts the liquid form to a gaseous vapour before piping the gas to fuel the powership.
47. Karpowership SA Richards Bay (RF) (Pty) Ltd has entered into a gas supply agreement with Karpowership SA Fuel Services Company (Pty) Ltd for the supply and purchase of gas. The gas supply agreement is currently being negotiated between the Applicant and Karpowership SA Fuel Services Company (Pty) Ltd. The agreement is being finalized and will be provided to NERSA once available.
48. Karpowership SA Fuel Services Company (Pty) Ltd shall deliver natural gas to the Applicant at the point where the FSRU connects to the natural gas pipeline, delivering gas to the powership in the port of Richards Bay.

Financial Information

49. The total investment cost for this project is [REDACTED]. The project is funded in terms of debt and equity. The project funding structure is outlined in Table 6 below.

Table 6: Karpowership SA Richards Bay (Pty) Ltd's project funding

Sources	R' m	%
Debt	[REDACTED]	[REDACTED]
Equity	[REDACTED]	[REDACTED]
Total	[REDACTED]	[REDACTED]

50. Investment cost = $\frac{\text{Capital Costs}}{\text{Maximum Capacity}}$
 = [REDACTED]
 = [REDACTED]

51. The comparison between the applicant's investment cost and the Energy Information Administration (EIA) for gas engines is shown on table 7 below:

Table 7: Investment cost comparison

EIA Gas Engines Benchmark (February 2020) (R/kW)	Applicant (R/kW)
[REDACTED]	[REDACTED]

52. The applicant's investment cost is 31% lower than the EIA benchmark. This is favourable and is attributed to the higher capacity of the applicant.

53. The lenders naturally prefer a higher equity to provide a buffer to their investment should a project fail, while the shareholders prefer a higher debt because the cost of debt is generally lower than the cost of equity.

54. The Debt/Equity ratio is a therefore a result of a compromise between the project company and the lenders, based on the overall risk to be borne by the lenders, the project risk generally, the nature of the project, the industrial sector and technology involved, the value of the project and the nature of the financial markets.

55. The Debt/Equity ratios for power projects in developing countries tend to be in the order of 80:20 to 70:30. In South Africa, the average Debt/Equity ratio for renewable energy IPP procurement is 75:25. The Applicant's Debt/Equity ratio is therefore favourably comparable with the best that can be obtained in the energy markets.

56. The plant is expected to generate 52 TWh during the PPA term of 20 years.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Tariff Analysis

61. When considering applications for the approval of tariffs, the Energy Regulator is guided by the ERA. Section 15(1)(a) of the ERA states that:

15.(1) A licence condition determined under section 14 relating to the setting or approval of prices, charges and tariffs and the regulations of revenues-

(a) must enable an efficient licensee to recover the full cost of its licensed activities, including a reasonable margin or return.

62. The PPA tariff is designed to recover the cost for provision of Dependable Capacity (MW), Energy (MWh), the Start-up Capabilities in a single day, Ancillary Services and payable Carbon Tax payments. The tariff formula is as follows:

$$TP_m = CP_m + EP_m + SU_{tm} + ASP_m + CT_m$$

Where:

TP_m = Total Payments for Energy (in Rand) for the Billing Period m.

CP_m = Net Dependable Capacity Payment for the Billing Period m.

EP_m = Commercial Energy Payment for the Billing period m.

SU_{tm} = Total Start Up Payment for Billing Period m, in excess of one (1) start up per day.

ASP_m = Total Ancillary Service Payment for the Billing Period m.

CT_m = Carbon Tax payable by the Seller to the Responsibility Authority for the Billing Period m.

m = the current Billing Period in a contract year.

63. The formulas for the calculation of each component is further illustrated in Schedule 9 of the PPA.

64. The Applicant's Charge Rates for calculating the tariff using the above formulas is shown in Table 8 below.

Table 8: Karpowership SA Richards Bay (RF) (Pty) Ltd's Charge Rates¹

Charge Rates	Agreed value	Unit of Measure
CCR _b	[REDACTED]	Rand/MWh
NCCR _b	[REDACTED]	Rand/MWh
FOMR _b	[REDACTED]	Rand/MWh
NFOMR _b	[REDACTED]	Rand/MWh
FCR	[REDACTED]	Rand/MJ
VCCR _{gb}	[REDACTED]	Rand/MWh
RCR _{rb}	[REDACTED]	Rand/MWh
DA _{IRb}	[REDACTED]	Rand/MW
DA _{RRb}	[REDACTED]	Rand/MW
CA _{IRb}	[REDACTED]	Rand/MW
CA _{RRb}	[REDACTED]	Rand/MW
TC	[REDACTED]	R/MJ
TR	[REDACTED]	R/MJ

¹ CCR_b Capital Cost Recovery Charge Rate
 FOMR_b Fixed O&M Recovery Charge Rate
 FCR Fuel Charge Rate
 VCCR_{gb} Variable Cost Recovery Charge Rate
 RCR_{rb} Renewable Recovery Charge Rate
 DA_{IRb} Instantaneous Reserve Response Rate
 DA_{RRb} Regulating Reserve Rate
 CA_{IRb} Instantaneous response rate
 CA_{RRb} Regulating Response Rate
 TC Transportation Cost
 TR Transportation and Regasification Cost

65. All charge rates may have a subscript 'b' denoting the value as at the base date (1 April 2020), as all rates would be fully indexed to the Consumer Price Index (CPI) annually on 1 April of each year.



67. FOMR_b is the tariff that compensates fixed costs of the project. This is a pass-through cost that does not include any profit margin during the PPA term. The same amount of payment is received in any generation case.

68. VCCR_{gb} is the tariff that compensates variable costs of the project. This is also a pass-through cost that does not include any profit margin during the PPA term. The amount paid differs per generation case.

69. FCR is the tariff that compensates the LNG molecule only. This is strictly related to LNG molecule, as transportation and FSRU costs are covered under FOMR_b.

70. Ancillary charges consist of four elements, including instantaneous reserve fuel and Operation and Maintenance (O&M) charges and regulating reserve fuel and O&M charges. The Ancillary service charge rates become:

70.1 CA_{IRb} – fuel charge rate for instantaneous reserve

70.2 DA_{IRb} – variable O&M charge rate for instantaneous reserve

70.3 CA_{RRb} – fuel charge rate for regulating reserve

70.4 DA_{RRb} – variable O&M charge rate for regulating reserve

71. Using the Applicant's submitted charge rates, the tariff for April 2022 is R1.291/kWh and each charge rate will escalate with the CPI.

72. The Applicant's tariff in Table 9 below shows the tariff for the first five years.

Table 9: Karpowership SA Richards Bay (RF) (Pty) Ltd's calculated tariff

Operation FY year (from 1 April - 31 March of the following year)	1 (2022 FY)	2 (2023 FY)	3 (2024 FY)	4 (2025 FY)	5 (2026 FY)
Total Electricity Production (MWh)	██████	██████	██████	██████	██████
Total Combined Revenues (R'm)	██████	██████	██████	██████	██████
Effective Revenues per energy output (ZAR/MWh)	██████	██████	██████	██████	██████

73. The 2022 average tariff for Open Cycle Gas Turbines (OCGTs) is R4.8/kWh. The OCGT tariff is 73% higher than the Applicant’s tariff. This is due to the fact that diesel that is used for OCGTs is expensive.
74. The 2022 average tariff for the Short-Term Power Purchase Programme (STPPP) is R1.3/kWh.

ECONOMIC INFORMATION

75. The socio-economic benefits of the project is provided in Table 10 below.

Table 10: Karpowership SA Richards Bay (RF) (Pty) Ltd’s job creation

Job creation (person-months²)	
During construction (12 months)	1 300
During operation (20 years)	39 740

76. The job creation during operation is very high because of the complexity of the project. There will be employees working on the gas side of the facility whilst others work on the electricity side. All the employees will be working for Karpowership.
77. The citizen shareholding in the project company is 49% against the RfP target of 49%.
78. Black people shareholding in the project company is 49% against the RfP target of 30%.
79. The shareholding by black people in the construction contractor is set at 77% against the RfP target of 25%.
80. The shareholding by black people in the operations contractor is 49% against the RfP target of 25%.
81. During the 12-month construction phase, the jobs that will be created for South African citizens, specifically black citizens and citizens from the local community, greatly exceeds the threshold set out in the bid and in some instances exceeded the targets.



² 1 job =12 person months and 1 person-month = 160 working hours

- [REDACTED]
83. From the above, the project compiles with the major Economic Development targets as set out in the RfP.

POWER PURCHASE AGREEMENT

84. The Request for Proposal (RfP) documents, including the PPA, were noted by the Electricity Subcommittee of 9 March 2021 and then circulated to the Regulator Members. The salient points in the PPA analysis are:
- 84.1 The Term of the PPA is 20 years. This period is within the lifespan of the project, which is 25 years. The PPA term is also long enough to enable the bidders to recover the full cost of the projects at affordable prices. The shorter the PPA term, the higher the tariff.
 - 84.2 There is a fair and balanced allocation of risks between affected parties.
 - 84.3 The adopted price competitive mechanism was found to be compatible with fair pricing to electricity consumers.
 - 84.4 All the payment obligation risks or liabilities of the buyer were found to be adequately catered for through a government support package in the form of an Implementation Agreement (IA).
 - 84.5 Delays in connecting the plant is penalised in the PPA so as to encourage the selected bidders to honour the committed Scheduled Operation Dates. For every day that the achievement of the Commercial Operation Date (COD) is delayed by beyond the Scheduled COD (unless such delay is caused by Force Majeure, a Late System Connection Event or a Compensation Event), the expiry date shall be brought forward by six days for each day of delay, provided that the Expiry Date may not be brought forward more than five years.
 - 84.6 In the PPA, there is a Clause that states: 'The Buyer shall reimburse to the Seller the Use of System Charges, **if any**, which the Seller is obliged to pay and has paid in terms of the Distribution Agreement or the Transmission Agreement, as the case may be, in each Billing Period.' NERSA suggest that this be explained further to make it clear that it will only be applicable after the unbundling of Eskom and the establishment of the Transmission Operator, or when a third-party network is used.
 - 84.7 The PPA accommodates the anticipated unbundling of Eskom and allows the Buyer to assign all or some of its rights and obligations under the PPA to a third party as part of the dissolution, restructuring, amalgamation or

reorganisation of the Buyer or its businesses or of the electricity sector in General.

85. The Energy Regulator noted the risk allocation and cost recovery provisions in the project agreements for new generation capacity under the RMIPPPP.

TECHNICAL INFORMATION

86. The Karpowership SA Richards Bay generation facility is situated at the port of Richards Bay in Umhlathuze Municipality in the KwaZulu-Natal Province.
87. The contracted capacity for the project is 450MW and its installed capacity is 488MW. The configuration of the generation facility is planned to be 25x18.32MW gas engines and 2x15MW recovery steam turbines. The excess capacity is to ensure high availability, high reliability and security of supply via the built-in redundancy. It will also improve the generating station's capacity for ancillary services, such as voltage and frequency regulation, even when the station is operating at its maximum contracted capacity.
88. The project will consist of a FSRU with a minimum storage capacity of 125 000 cubic meters and a minimum regasification capability of 2.3 million standard cubic meters per day.
89. The LNG will be delivered by the LNG carrier and will be stored in the FSRU. When the natural gas is required for power generation by the powership, the LNG will be warmed and turned from a liquid state to a gaseous state and will then be pumped from the FSRU to the powership via a gas pipeline.
90. The power that is generated will then be converted by the on-board High Voltage Substation and the electricity evacuated via a 132kV transmission line, which feeds into the national grid.
91. The plants expected life span and estimate of conversion efficiency are 25 years and 43.6% respectively.
92. Table 11 below shows the technical information and specifications of the Karpowership SA Richards Bay (RF) (Pty) Ltd's generation facility.

Table 11: Technical information and specifications

Karpowership SA Richards Bay (RF) (Pty) Ltd	Data
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Facility name	Karpowership Richards Bay
Power Plant Technology	Gas Engine
Installed capacity (MW)	488
Contracted Capacity (MW)	450
Minimum stable load (MW)	103
Design auxiliary consumption (MW)	10.3
Number of turbines	25X18.32MW Gas Engine and 2X 15MW STG
Fuel Type	Natural Gas
Heat rate of the facility (KJ/kWh)	9160
Number of transformers	6 x 160MVA; 15/132kV
Grid connection point voltage level	132kV
Maximum grid export capacity (MW)	450
Average plant availability	92%

93. The generation facility will connect to a new 132KV switching station to be constructed 7km to the terminal towers on the Bayside end of the Impala Bayside 132KV lines.



95. The O&M of the power station will be carried out by a contractor under an O&M Agreement. The O&M Agreement has an annual fixed component and a variable per kWh component.

CONCLUSION AND RECOMMENDATION

96. From a conspectus of the facts and evidence, Karpowership SA Richards Bay (RF) (Pty) Ltd's application for a generation licence is in compliance with the requirements of the Electricity Regulation Act, 2006 (Act No. 4 of 2006) and the National Energy Regulator Act, 2004 (Act No. 40 of 2004). It is thus appropriate to make the decision as set out above.