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Avena Jacklin  
GroundWork

**Attention: Ms Jacklin**  
**Subject: RE: Proposed Gas to Power Powership Project at the Ports of Saldanha Bay (Western Cape), Ngqura (Eastern Cape) and Richards Bay (KwaZulu Natal)**

Dear Ms. Avena Jacklin

Reference is made to the comments received by Triplo4 Sustainable Solutions via email on the 31 March 2021. Comments are made in response to groundWork comments. groundWork comments are captured in italic text, followed by our response:

*1. groundWork submits these comments on Karpowership (Pty) Ltd's draft Environmental Impact Assessments and Specialist Reports (DEIR) of the proposed gas to power via powership projects (the "projects") located at the Port of Saldanha Bay (Western Cape), Port of Ngqura (Eastern Cape) and Richards Bay (KwaZulu Natal). These build on the comments we submitted on the Projects Scoping Report.*

*2. groundWork has a particular interest and expertise in environmental justice issues, and a long- standing history of working with, and representing, the interests of historically disadvantaged communities within South Africa.*

*3. Our concerns related to the Environmental Impact Assessments (hereinafter the 'EIA') and Specialist Reports fall into the following categories:*

- 4. Need*
- 5. Costs*
- 6. Climate change impacts*
- 7. Air quality impacts*
- 8. Marine impacts*

9. Noise impacts

10. Socioeconomic impacts

11. Participation and landowner consent

12. Severe hazard risks

13. Risk of failure

4. Need and consideration of alternatives

a. *It is a legal requirement that alternatives must be considered as a part of the EIA process. In terms of alternatives, the Environmental Impact Assessment Regulations, 2014 require that it must address not only the location alternatives, but that it must consider alternatives in terms of the type, design, layout and technology of the activity, and different means of meeting the general purpose, including not implementing the activity.<sup>1</sup> Despite this, in the DIER, there are only consideration of alternative sites, and there are no details of alternative technologies having been considered in terms of the alternatives to gas (type and technology). This falls foul of the EIA process as the project is presented as a foregone conclusion. As will be indicated below, gas and the pipelines associated with it poses significant risk not only in terms of health, environment and climate change, but significant financial risk, as this project is proposed as a long term gas project. Moreover, there are alternative renewables which are cost efficient with lower risk in terms of long-term energy procurement.*

**Response:** The identification and assessment of alternatives as part of Scoping and Environmental Impact Reporting is for the most part regulated by S24(4)(b) of NEMA and the reporting requirements prescribed in Appendices 2 and 3 of the EIA Regulations, 2014 read with the definition of “alternatives” in Regulation 1. However, it is also evident from Section 24O(1)(b)(iv) of NEMA that the alternatives considered by the competent authority need only be “reasonable and feasible”. Thus, it is not mandatory for every type of alternative described in Regulation 1 to be included in the EIA process where such alternative is not reasonable and feasible. This would include an alternative project or technology type such as renewable energy, which Karpowership would not be able to implement and which is explained in Section 3 of the EIA Report. Further, the second part of Section 24O(1)(b)(iv) of NEMA requires the competent authority to consider “any feasible and reasonable modifications or changes to the activity that may minimise harm to the environment” and thus requires the applicant to show how it can either avoid the impact completely, or adopt measures to minimise harm to the environment. These modifications and changes are described in Sections 2, 3, 8 and 9 of the EIA report, as well as the EMPr.

4.1. *The no go option: The no-go option discussions in the EIAs state, “While the no-go alternative will not result in any negative environmental impacts, it will also not result in any positive socio-economic benefits. It will also not assist government in addressing its set target for a sustainable energy supply mix, nor will it assist in supplying the increasing electricity demand within the country...Hence the “no-go” alternative is not the*



*preferred alternative.”<sup>2</sup> This shallow assessment, backed by no clear harm and benefit analysis, fails to consider the possibility that alternative energy technologies with far fewer social and environmental impacts could be used to respond to this rising energy demand. It also fails to consider the cost savings that these alternatives would provide in comparison with the project option over twenty years.*

**Response:** We disagree that the assessment of the no-go-option is “shallow”. The assumption made by groundWork that the proposed Karpowership project, if approved, precludes alternative energy technologies, presumably a reference to renewable energy projects, is misinformed. Groundwork have failed to make specific reference to what part of this policy document they rely upon. Government’s Integrated Resource Plan (IRP), 2019 provides an energy mix that includes an addition of 3000 MW of gas- and diesel-powered electricity generation onto the South African National Electricity Grid by 2030 to meet the projected national energy demands. In accordance with the Ministerial Determination gazetted on 7 July 2020, the Minister of Mineral Resources and Energy, in consultation with the National Energy Regulator of South Africa, has determined that the Department is to procure 2000 MW of new generation capacity from a range of energy source technologies. The Risk Mitigation IPP Procurement Programme (RMIPPPP) has been designed by the Department in order to fulfil the Minister’s directive. Its objectives are to fill the current supply gap, alleviate the current electricity supply constraints and reduce the extensive utilisation of diesel-based peaking electrical generators. Karpowership’s natural gas projects at Richards Bay, Ngqura and Saldanha Bay are three of the eight that were selected as preferred bidders on 18 March 2021. The other remaining five projects are solar, wind and battery-storage operated projects (i.e., predominantly renewables). Projects selected for the 20-year power purchase agreement under the RMIPPPP must be able to operate between 5:00 and 21:30, have load-following ability, and must be connected to the grid before August 2022. Cost was also a key factor considered and apart from one of the hybrid projects, the three Karpowership’s Coega and Richards Bay projects were the second and third cheapest with Saldanha being the sixth cheapest. The Minister has also subsequently issued the request for qualification and proposals for the Renewable Energy Independent Power Producers Procurement Programme (REIPPPP) window 5. For these reasons, the flaws in the EIA report are unfounded and alternative renewable energy technologies have not been considered as part of the no-go option.

*4.2. The country’s energy ‘emergency’ has been created through poor decision-making skewed towards fossil fuels development. Attempts to resolve the ‘emergency’ through additional fossil fuel investments, dependent on the whims of global energy markets, will dig a yet deeper hole and put a just transition to a low carbon economy further out of reach. Signing a 20-year contract to procure power from Karpowerships is effectively locking in gas for that time, crowding out space for ever-cheaper and more reliable clean energy, and exacerbating the climate crisis.*

Karpowership SA compiled and submitted a bid, for this project, to the IPPO and DMRE that was in compliance with the requirements of the RMIPPPP RFP. As such, Karpowership, amongst various other



requirements, complied with the requirement in the RMIPPP for a 20-year PPA. Please therefore refer to the "The Risk Mitigation Independent Power Producer Procurement Programme (RMIPPPP) in Context as published by the Department of Mineral Resources and Energy (<https://www.ipp-rm.co.za>), which elaborates on the Government's selection criteria and strategy for awarding these projects with preferred bidder status.

*4.3. According to the IRP, gas is not meant to be considered as the main source of energy, but only complement other sources. This will result in the hardwiring of expensive power at higher rates. The Karpowership generators are expected to burn LNG from 05h00 to 21h30 (more than 70% of the time) which equates to huge throughput of gas in comparison to peaker plants, which run at less than 5% of the time to supplement the energy deficit. Other analyses, such as work published by Meridian Economics in 2020, reiterate the lack of need and desirability of gas-powered energy like these powerships in terms of both cost and climate impacts, particularly in the time frames and with the contractual obligations of these projects.*

**Response:** The IPP Office and the DMRE received 28 Bids as part of the RMIPPP on 22 December 2020. Of these 28 projects, the Karpowership SA project was 3 of the 8 successful bids announced by the DMRE on 18 March 2021. Please refer to the "The Risk Mitigation Independent Power Producer Procurement Programme (RMIPPPP) in Context" as published by the Department of Mineral Resources and Energy (<https://www.ipp-rm.co.za>), which elaborates on the selection criteria applied in evaluating these projects.

*4.4. The EIAs emphasize the value of these ships providing 'baseload' to the South African grid (e.g., page 147 of the Richards Bay EIA report). Yet even as the parameters of the request for proposal (RFP) for the RMIPPP were slanted toward resources that would have traditionally filled this 'baseload' role, the rest of the world is moving into a different paradigm that makes this concept of baseload altogether obsolete. Utilities are increasingly abandoning this terminology and requirements for this kind of energy – requirements that, in today's world of ever-cheaper renewables and storage, were driving electricity prices unnecessarily upward for customers.*

**Response:** Please see the responses provided in 4.2 and 4.3 above.

*4.5. The emergency power procurement was designed to address true emergencies with early delivery and leasing of power model. The hybrid renewable energy projects selected in the procurement, which include wind, solar and battery storage, will meet these criteria within the allocated timeframes. Moreover, having a series of such projects would offer more reliable and resilient power to the grid. Yet additional projects of this type have not been considered as an alternative to the Karpowerships within the Scoping and EIA reports.*

**Response:** Please see the responses provided in 4.2 and 4.3 above.



4.6. *The energy production of the Karpowerships for the grid is not clear. The EIA for Richards Bay, for instance, suggests that the ships will have a capacity of 540 MW, yet the math doesn't add up: 27 10 MW engines (270 MW) plus 3 15.45 MW steam turbines (46.35 MW) totals 316 MW. Where the other 224 MW of power will come from is not addressed (page i of the Richards Bay draft EIA). Given the supposed criticality of this electricity for the grid, it would be important to clarify the actual energy production capacity of these ships.*

**Response:** The DEIR states that there are 27 engines that can produce over 10MW, which is the trigger for the AEL. However, the actual capacity is 18.3MW (x27 = 494.1 MW).

Karpowership SA was awarded 450 MW of contracted capacity for the Richards Bay project and will be able to provide this capacity under the requirements of the RMIPPP and South African Grid Code. The design capacity of the Powership solution is higher than the contract capacity awarded to ensure that there is redundancy in the system to be able to consistently meet the contracted capacity requirements.

## 5. Costs

5.1. *Karpowerships are not a least cost option over twenty years. They are designed to be a short-term resource to fill a narrow gap in case of true emergencies, such as large amounts of critical power being knocked offline by a storm. The application of this technology for a twenty-year contract is quite distinct, and this lock-in will result in higher tariffs and less affordable and accessible energy – quite the opposite of what is intended for the social goals of these procurement processes.*

**Response:** Karpowership SA projects provided least-cost, least-regret option for the consideration of DMRE via the IPP Office and was selected as a preferred bidder after their consideration of the extensively detailed documentation provided, including technical, economic development, legal and financial aspects. Karpowership SA conducted all necessary simulations and studies to prove the robustness of the generation of electricity by the Powerships. As published by the IPP Office, Karpowership projects offer the second, third and sixth lowest costings of the 8 compliant, awarded projects.

5.2. *The Karpowership costs reflect their exemption from local content requirements – an exemption that other bidders were not afforded, and which naturally increased the bids of these others relative to the Karpowership bids.*

**Response:** Please refer to the "The Risk Mitigation Independent Power Producer Procurement Programme (RMIPPPP) in Context" as published by the Department of Mineral Resources and Energy (<https://www.ipp-rm.co.za>) which elaborates on the Government's selection criteria and strategy for awarding these projects with preferred bidder status. The DMRE indicates that "It is also a feature of the RMIPPPP, acknowledging the shortcomings in the local manufacturing sector, that all Bidders could apply to the DTIC for exemptions from certain Local Content designations as published by National Treasury and that such exemptions would



be taken into account during the evaluation. This regime was available to all Bidders and was granted on a case by case basis in respect of the applications received from Bidders.”

*5.3. The Request for Proposal appears to have also been skewed in the favor of Karpowerships by requiring bidders to guarantee that their power would operate from 5h00 to 21h30 and be dispatchable 60% of the day, thereby excluding the lowest cost renewables options. A far more cost-effective solution would be for the system operator to balance the system to bring on least-cost solar and wind during their production times and complement these in renewable trough production hours with flexible resources such as pumped storage and utility scale batteries. The suggestion in this RMIPPP that a reliable grid requires all resources to be dispatchable for 60% of the day is not only incorrect; it leads to much higher electricity prices for all by favoring more expensive and volatile power systems like the Karpowerships, and therefore to less reliable power as customers, utilities, and governments cannot pay these costs.*

**Response:** Please refer to the "The Risk Mitigation Independent Power Producer Procurement Programme (RMIPPPP) in Context" as published by the Department of Mineral Resources and Energy (<https://www.ipp-rm.co.za>) which elaborates on the Government's selection criteria and strategy for awarding these projects with preferred bidder status.

*5.4. Inadequate cost analysis of Karpowerships compared with other renewable energy options over the twenty-year period, including revenue and tax implications. The cost of renewable energy generation will provide local content, as well as reduce the cost of energy over time.*

**Response:** Please refer to the "The Risk Mitigation Independent Power Producer Procurement Programme (RMIPPPP) in Context" as published by the Department of Mineral Resources and Energy (<https://www.ipp-rm.co.za>) which elaborates on the Government's selection criteria and strategy for awarding these projects with preferred bidder status.

## 6. Climate change

*6.1. The 2017 judgment in the case of Earthlife Africa Johannesburg v the Minister & Others (“the Thabametsi case”) confirmed that a Climate Change Impact Assessment (CCIA) is a necessary component of an EIA for projects with climate impacts. In this case, the court acknowledged the need for a CCIA much broader than a mere assessment of anticipated emissions. It confirmed the need for a comprehensive assessment, which assesses, inter alia, the impacts of climate change on the project and the ways in which the project might aggravate the impacts of climate change in the area.<sup>6</sup> The Pretoria High Court concluded that “[w]ithout a full assessment of the climate change impact of the project, there was no rational basis for the Chief Director to endorse these baseless assertions”(emphasis added).*

*6.2. A CCIA must analyse the following:*



- *the indirect and full life-cycle emissions, these being the GHG emissions arising from extraction of gas; transportation of gas; construction of the plant, operation, and decommissioning;*
- *cumulative emissions (the additive contribution of the project to pre-existing GHG emissions for South Africa); and*
- *the environmental and social cost of the GHG emissions, that is, the contribution of the project's GHG emissions to South Africa's climate costs and impacts;*
- *the ways in which the project area will be impacted by climate change and the extent to which the project would aggravate these impacts. In other words, the project's impacts on the area's climate resilience and ability to adapt to a changed climate. Given that this is a long-term and large-scale project, consideration must be given to the ways in which climate change will impact on the area and communities where the project will be based, and how the project's own impacts will affect the area's resilience or vulnerability to the effects of climate change as they intensify; and*
- *the ways in which the effects of climate change will impact on the project itself, and its ability to operate optimally and efficiently for its full anticipated lifespan.*

*6.3. The EIAs and the CCIAs fail to adequately address these impacts. Of particular concern are the following gaps:*

*6.3.1. Emissions from gas production, gathering, processing, initial transport, and LNG liquification are not considered in the emissions assessment. Given that a range of studies have shown that these upstream emissions, a result of methane leaks and venting, as well as the energy needed to transport and liquefy gas, make gas equivalent to or worse than coal for the climate, this omission is highly problematic.*

**Response:** The CCIAs have been updated to include Scope 3 emissions.

*6.3.2. The current primary exporters of LNG – Qatar, Australia, the United States, and Malaysia, are all over 10,000 km long distance from South Africa. There are not only many emissions generated by the ship to travel this distance, but large quantities of LNG boil off over this distance. Many LNG carriers vent much of this boiled off methane to the atmosphere to control pressure in the ship tanks.*

*6.3.3. It is unclear why coal and heavy fuel oil should be used as the comparative emissions cases throughout the EIAs and CCIAs, as, rather than the other project types against which the projects were competing in this procurement. At minimum, the climate change assessments should compare emissions from the Karpowerships to both coal and renewables alternatives.*

**Response:** A large portion of the current electricity demand is being met by coal-fired power stations. South Africa is a signatory member of the Paris Climate Agreement and has voluntarily committed to decarbonising its economy. An essential part of this is moving away from carbonintensive power plants, such as coal-fired plants, and moving towards greener energy technologies. The Integrated Resource Plan (IRP) accounts for



the introduction of gas-powered electricity generation onto the South African National Electricity Grid, to meet the projected national energy demands

*6.3.4. The EIA and CCIA employ a methane Global Warming Potential of 21 over 100 years to compare the projects' climate impacts to coal (e.g. page 24 of the CCIA for Richards Bay). The latest IPCC report, however, concludes that methane has between 28 and 36 times the global warming potential of CO<sub>2</sub> over a 100-year time scale. Given that this has been established since 2013, there is no reason that the study should be relying on the 2007 IPCC Assessment Report's figures. Moreover, there is good reason to use the 20-year global warming potential for methane, given the short-lived gas's contribution to warming that could unlock major climate tipping points in the next twenty years.*

*6.3.5. The mitigation measures proposed for the significant greenhouse gas impacts of these ships are entirely undeveloped and inadequate. There is no plan for capturing the carbon emissions from the ships, despite carbon capture and storage being suggested as a plausible mitigation measure. Carbon offsets are notoriously inadequate at successfully offsetting fossil fuel emissions, with problems of faulty baselines, lack of additionally, impermanence, and leakage plaguing almost all forms of carbon offset projects.*

*6.3.6. The increasing frequency of powerful coastal storms and their likely impact on these facilities is discounted in the EIAs and CCIAs, with the focus primarily instead on the drying trends. The "protection" supposedly afforded by the bays is clearly insufficient in the face of a cyclone, for example.*

**Response:** Well noted. We confirm that all three CCIA reports have been substantively amended to align more fully with the Thabametsi judgment. We note that the CCIAs have been revised to include Scope 3 emissions.

With their unique design that incorporates proven, state of the art technology, and mobile and fast-track nature, Powerships can serve for various purposes in different countries by delivering reliable and economical power at the highest efficiency.

Powerships are deployed to various corners of the world on a short to long term basis, adding electricity generation capacity to the host countries as base load, mid-merit or peak shaving power source. Karpowership's marine experts study the local sea and weather conditions in the project sites and prepare a detailed mooring plan in collaboration with experienced 3rd party marine design companies. They prepare a custom mooring design for the specific location in accordance with the requirements of the local weather and sea conditions. In addition, Karpowership has encountered various extreme weather and sea conditions in different regions with geographical attributes and natural phenomena. Karpowership's specialist and experienced marine and engineering teams successfully overcame all kinds of such undesired conditions that have been encountered in the past years. In more detail, drastic Eastern-Mediterranean storms and winds



dominating Lebanon, the sandstorms that has been managed without any negative consequences in Iraq and the South Asian typhoons encountered during the commercial operation process in Indonesia are examples of such extreme conditions that Karpowership has come across in the different regions of the world.

All LNG storage tanks are sealed, with no release to atmosphere. Safety systems are present should an emergency occur to release gas and relieve containment pressure.

## 7. Air quality

7.1. *Karpowerships, unlike traditional state-of-the-art combined cycle gas to power plants, lack pollution controls because of the additional weight and space these require in a confined, floating ship.*

7.2. *The location of these ships just off the coast also means that communities living along the coast will be exposed to the emissions from the ships at all times that the predominant onshore wind is blowing, which is typically during the day and therefore exactly when these ships will be called on to pe power.*

7.3. *While it is often assumed that the coastal location of these facilities will reduce their degradation of local air quality because of more breeze along the coast, these areas are also subject to strong inversion layers, particularly during June and July.<sup>14</sup> These inversions trap air pollutants so that they cannot disperse, severely degrading local air quality.*

7.4. *In this context, the Atmospheric Impact Report has several glaring flaws:*

7.4.1. *Air toxics emitted by natural gas combustion on these ships, including carcinogenic formaldehyde and acetaldehyde<sup>15</sup>, are not evaluated or quantified in the Report.*

**Response:** Carcinogenic formaldehyde and acetaldehyde are not criteria air pollutants, and are not air pollutants addressed through the Minimum Emission Standards (MES). They are therefore not evaluated or quantified. The AIRs focused on are SO<sub>2</sub>, NO<sub>x</sub> and PM<sub>10</sub> as these are the pollutants that are regulated from an emissions point of view.

7.4.2. *Toxic volatile organic compounds (VOCs) emitted by natural gas leaks, likely to occur in one or multiple parts of the chain of gas connections between the ships and the mainland, also go unmentioned in the Report.*

**Response:** LNG will be stored in cryogenic containment vessels, and transferred within a closed system using advanced technology. It is expected that TVOC emissions due to leaks, if any, will be very small or negligible. TVOCs were therefore not estimated or considered in the AIRs.



*7.4.3. Hazardous secondary pollutant formation as a result of NO<sub>x</sub>, SO<sub>2</sub>, and VOC emissions from the ships, particularly ground-level ozone, is also not evaluated in the report.*

**Response:** Ozone is a regional pollutant resulting from emissions of NO<sub>x</sub> and VOCs present in the atmosphere from anthropogenic and natural sources, and the photochemical reaction with sunlight. Acid rain is also regarded as a regional-scale phenomenon. They cannot be attributed to a single source and the assessment of the contribution of a single source to ozone formation and acid rain is not practical or possible without baseline measurements. There are no baseline measurements at or close to any of the Karpowership Project sites. Despite that, the NO<sub>x</sub> emissions from Karpowerships are very low and the contribution to these regional-scale effects will, as a result, also be very low.

*7.4.4. The CALPUFF models used do not include emissions from other proposed facilities within the host ports, but rather add the ships' emissions only to current air quality monitoring data, thereby leaving out critical cumulative impacts of emissions from other industrial activity in the three ports in the future (e.g. in Richards Bay: Mondi, other gas plants and fuel storage tanks)*

**Response:** The CALPUFF model input for the Karpowership Project does not include emissions from current and proposed facilities within the host ports. Although cumulative impacts have not been modelled in CALPUFF, they have indeed been assessed.

The cumulative assessment of the contribution of current emission sources at each of the host ports has been done through the evaluation of ambient air quality monitoring. In so doing, all sources that contribute to ambient air quality in the respective host ports are included; i.e., industrial, fuel storage and handling, stockpiles, transportation, the port, agricultural burning and marine, amongst others.

Monitored ambient concentrations at each host port and the modelled concentrations resulting from the project have been used to assess the cumulative contribution of the project. It is important to note that there is a notable distinction between modelling all sources to get a spatial indication of what ambient concentrations might be, and using ambient air quality data. Modelling all sources is a challenging exercise and not all sources can be included, specifically in Richards Bay where there is a high contribution of background particulate matter. If this is not included in the emissions inventory in the model, the cumulative prediction in that model is flawed. Using ambient data in turn, an ambient monitoring station is exposed to all sources and the concentration detected by that monitoring station gives an indication of what the ambient concentrations are like.

It is also important to note that the Air Quality specialist used the monitoring data to understand the cumulative contribution of all sources and the additive effect of the Karpowerships. Karpowerships are assessed in isolation, and the cumulative effects of the project use ambient air quality data in the port. At each of the sites, the cumulative effects of the contribution of PM<sub>10</sub>, SO<sub>2</sub> and NO<sub>2</sub> from the Karpowership are



predicted to be very low and the potential to increase these ambient concentrations is highly unlikely to result in exceedances of the National Ambient Air Quality Standards. The contribution of the project at all three sites was shown to be insignificant, so the cumulative assessment was also deemed to be insignificant on this basis.

*7.4.5. The reports therefore fail to assess the worst-case scenario adequately, in which these cumulative emissions are emitted on a day when a temperature inversion prevents dispersion of these hazardous pollutants.*

**Response:** The operational phase of the Karpowership engines is a worst-case scenario, and this has been assessed adequately. Emissions from the engines are based on the Minimum Emission Standards, which represent the Worst Case Scenario. This is a standard and widely accepted practice. Although the engines may not run all the time, the modelling assumes that the engines run continuously throughout the year (i.e., 24/7). The CALPUFF model is able to simulate the effects of temperature inversions, and the resultant predicted concentrations are indicated in the model output. Elevated ambient concentrations due to temperature inversions are also likely to be picked up by the monitoring station.

*7.5. The risks of an explosion resulting from these ships in busy and economically important port areas are not to be taken lightly, nor are the air quality impacts that would follow such an explosion. Nonetheless, these scenarios are not considered in the air quality assessment reports.*

**Response:** Noted. However, we have never modelled an explosion of a facility as a scenario in an AIR as it is not a requirement. It should also be noted that Karpowership is operational in 11 countries, and to date, Karpowership has generated approximately 70 billion kilowatt hours of power around the world with zero environmental incidents. Lastly, as per the MHI specialist, the risks posed by the LNG ships are relatively low. These risks were determined using internationally acceptable methods. There has never been an LNG ship explosion anywhere.

*7.6. There are several other KARPOWERSHIPS running on natural gas elsewhere in the world, including in Ghana and Indonesia, but the emissions from these ships have nowhere been included in the draft EIA materials has been no information forthcoming on air quality monitoring and assessments from other Karpowerships operating in other countries such as.*

**Response:** Different countries have different air quality legislation and emission standards. A comparison with emissions from Karpowership operations in other countries is therefore not applicable to the operations in South Africa. What is applicable, is the Karpowership operations in South Africa which will be regulated in



terms of the NEM: AQA. As such, the operations will be regulated according to the conditions of the respective AELs, which will require compliance with the Minimum Emission Standards for gaseous fuels.

*7.7. While the EIA reports make several references to the decision not to use Heavy Fuel Oil (HFO) in these dual-fuel engines, the EIAs also reference impacts of HFO use, leaving doubt about the claim that HFO will not be used (e.g., pages 62-63 in the EIA for the Richards Bay project). Air quality and climate impacts would be even greater in the case of the use of HFO.*

**Response:** HFO will not be used by Karpowership to generate power at any of the South African port sites. References to the use of HFO in the draft AIR for Richards Bay have been removed. Reference to HFO was mentioned in the draft EIA Report as a technology alternative, with a clear statement indicating that the HFO is not being considered further as an alternative fuel due to the significant advantages of LNG. The operating fuel for power generation will only be LNG, and the powerships will not use HFO for any part of the generation process. All relevant licenses, permits and approvals applied for are for the consumption and use of LNG only (refer to section 3.2.4 of the EIA Report).

*7.8. These engines require constant rotating maintenance. Without this, they will run much less efficiently and emit more pollutants per MW of power. Direct, continuous emissions monitoring both on stacks and at the border (typically called “fenceline monitoring”) of these ships should be required, both to assess standard emissions levels, and to detect any anomalies in emissions.*

**Response:** Due to the very low predicted ambient concentrations, ambient air quality monitoring is not deemed necessary for this project, so it was not recommended in the AIR. However, being a Listed Activity, the project will require an Atmospheric Emission License (AEL) and Karpowership will have to monitor and report on stack emissions annually. Although unlikely, the Licensing Authority may also impose ambient monitoring requirements on the project through the AEL.

## **8. Marine Ecology Impacts**

*8.1. The impacts of waste and discharge of water from the cooling of the generators has not been adequately assessed and only modelling was used to determine the effects of discharge of heated water on the receiving environment. Seawater will be drawn for cooling and discharged at temperatures of between 2-5oC higher than the receiving environment. This is expected to happen continuously during the operations that is 16.5hrs per day for twenty years. When studies of actual discharge from currently operating Karpowerships was requested during online public consultation meetings, I&APs in attendance were told that they would not be applicable. There was no response to the question of whether the discharge will be monitored and reported during operations in South African ports.*



**Response:** The impacts of the thermal discharge on the marine ecology were quantitatively assessed using the modelling data for the worst-case scenario (i.e., all generators operating). The results indicated that accepted biological thresholds were not exceeded outside of the allowed 300 m zone of initial dilution. Little effect on the marine ecology outside of this zone is expected due to the temperature range being within biologically tolerable levels. It was recommended that, during operation, the FPP operator must ensure that water temperatures at 300 m from the discharge points are compliant with the South African Water Quality Guideline Threshold, insinuating that monitoring of the water temperature in the surrounding water body during operation is required. This information is detailed in the specialist report.

*8.2. The Marine Ecology Impact Assessments screen out a series of important impacts that these three large vessels, and a regularly visiting LNG carrier, are likely to have on the local marine environment in each port over the 20 years of their contract, including*

*8.3. Vessel waste discharge and hydrocarbon leakage (e.g., p. 25 in the Richards Bay report, Section 3.2: Activities Screened Out of Assessment). The studies apply this strict filter under the questionable assumption that these activities ‘will be adequately controlled in terms of the Port’s...existing harbour rules, port reception facilities, vessel management practices, oil spill contingency plans and other relevant domestic law.’*

**Response:** It was assumed that these activities will be managed in line with the Ports’ existing harbour rules, port reception facilities, vessel management practices, oil spill contingency plans and other relevant domestic and international law, as this is standard industry good practice and is legally required as a component of harbour management.

*8.4. The risk of an LNG or gas spill to local marine life has been summarily dismissed in the marine impact assessments (e.g., page 25 in the Richards Bay report), yet research suggests that methane not only dissipates into the atmosphere, but can also dissolve in water, changing the chemistry and affecting marine life.*

**Response:** The paper referred to addresses hydrocarbon gas release from a well blow out at depths of > 1000 m, vastly different to what would be expected in the current proposed project. In the current proposed project, if an accidental gas release was to occur, it would occur on the surface of the water. LNG vaporizes rapidly in air, becoming buoyant at -110°C, and disperses quickly. It would thus would not affect marine life in the water column.

## **9. Noise**

*9.1. Modeled noise levels exceed recommended levels within each port, with few mitigation options considered for the benefit of workers.*



9.2. *There has been no information forthcoming on noise assessments and impacts from other Karpowerships operating in other countries and whether noise monitoring will be conducted during operations in South Africa.*

9.3. *Underwater noise studies were not conducted in the noise assessments or within the marine ecology impact assessments, despite the significant impacts that this noise has on many species, and marine mammals in particular.*

**Response:** The Noise Assessment Report and the Marine Ecology Report were further updated to include information from other Karpowerships operating in Ghana. The reports concluded that the results of a study conducted in Ghana of a Powership with 24 engines shows that in the immediate vicinity of the hull of the vessel, the underwater noise does not appear to exceed 110dB at frequencies in the 1/3 octave band scale. If it is assumed that powerships proposed are equivalent in sound generation to that moored in Ghana, then effects on the surrounding marine ecology would be unlikely.

## **10. Socio-economic impacts**

10.1. *The costs of this energy relative to renewable sources over the 20-year time frame is not considered in the Socio-Economic analysis.*

10.2. *Karpowerships was exempted from the socio-economic development that would come with local content requirements, including localisation and job creation.*

10.3. *Half of the jobs associated with the project will be short term site establishment construction jobs, while the long-term production ones are high-skilled positions likely to be filled by Turkish crew. The precise assumptions included in the jobs multiplier figures included in the socio-economic impact assessments are not provided; these numbers seem extreme given the contained nature of the powerships. The RMIPPPP was designed to require bidders to meet or exceed the threshold of 40% Local Content during the construction and measurement period to ensure compliance with the qualification criteria. Karpowerships however received an exemption from this.*

10.4. *There are also several communities that can be potentially harmed from the power plant, including fishing communities. These include subsistence fishers, recreational fishers, and fishers that depend on fishing for their livelihoods. The socio-economic impacts assessment must comprehensively assess the potential risks and costs of the power plant to these and other local communities that subsist on natural resources nearby to the project site.*

**Response:** We acknowledge the concerns of the communities, however Karpowership met or exceeded all of the Economic Development Requirements set out in the bid criteria and was thus awarded Preferred



Bidder status. The bid would have been non-compliant if this criteria was not met. There are therefore commitments to local jobs, local procurement, local skills development and socio-economic development. This will all be implemented to the benefit of the local communities and will be monitored and reported on a monthly basis, with annual independent audits taking place.

### **11. Public participation**

*11.1. Public participation has not been sufficient, and information related to the project has not been easily accessible to affected communities. The tribal authorities and communities of Dube and Mkhwanazi near the Richard's Bay port were not identified as potentially impacted communities and were not notified or included in the public participation processes.*

*11.2. Informal settlements and land users that include market gardeners in the affected areas have not been notified or included in the list of potentially affected parties. The market gardeners that work their gardens along the canal in Richard's Bay for example have not been notified and included in the decision-making process. Similar groups near the sites in Ngqura have also not been consulted with.*

*11.3. Fisher communities, and especially subsistence fishers that are dependent on the oceans for their livelihoods and food security were not notified and made aware of the proposed development.*

*11.4. Adequate notice must be given to reach out to people in the affected areas. Public participation is a two-way process and should allow for engagement and understanding of the impacts of the proposed developments. The pandemic should not be used to fast track development while excluding and restricting people's ability to participate. It is violating people's right as public trustees to the environment and their role in maintaining a healthy and vibrant democracy.*

*11.5. Many communities were also excluded from any online and digital consultation as they are unable to afford the technology and data to access this information. Those that were able to attend the online sessions had the chatbox disabled and were unable to write in comments. The reasons given by the environmental assessment practitioner for disabling the Chatbox during the online consultation were inconsistent with those minuted.*

**Response:** The Public Participation Process (PPP) was conducted in line with the approved PPP Plan and accepted Plan of Study. The PPP was transparent and provided access to information, with measures used including the erection of site notices, distribution of informative flyers, and the placing of advertisements in 2 local newspapers, all of which was done in 2 languages, namely English and isiZulu. In addition, a full copy of the draft EIA Report was placed in a public place (the Richards Bay Library), located in the city centre near the municipal building. It must also be stressed that the project area is within the operational harbour with restricted access to the public. Lastly, during the public meeting (morning session), a request for isiZulu



translation was raised which was immediately addressed. An isiZulu speaking person joined the meeting to interpret, however no comments or questions were raised in isiZulu throughout the rest of the meeting, nor were any raised during the evening session. During the public meetings, the facilitator disabled the chat function to prevent “side meetings”, which can cause distractions and also may not be attended to. This is the same approach that is adopted in physical meetings, where questions and queries are not conducted or attended to during the presentations, but rather during the question-and-answer sessions, where the full attention of the presenters and participants is given.

In terms of the fishing communities, engagements with local fishermen or their representatives was undertaken for the Saldanha, Coega and Richards Bay projects.

At the Richards Bay project, engagements with recreational and small-scale fishing community established that there is no fishing taking place within the harbour itself. Recreational fishing and other legal and illegal fishing take place at the harbour mouth, which is more than 4 km away from where the FSRU will be moored. All stakeholders consulted indicated that it is highly unlikely that the operations will have any impact on the fishing community. Please refer to the Socio-Economic Study, specifically sections 3.5.2, 3.6, and Annexure 3.

For the Port of Ngqura, fishermen were contacted through Eyethu Fishing, who indicated that they were representatives of the fishing communities in the area. Furthermore, all the fishermen identified by Eyethu Fishing were sent SMSes and telephoned to advise on the project. Ward Cllr 53 and 60 were also provided with project information in the form of flyers and the hard copy of the Draft EIA for the communities.

At the Saldanha project, there was numerous correspondence with Mr Christi Links in the form of emails, calls and WhatsApp messages. In addition, a focus meeting was undertaken with Coastal Links, Masifundise and Green Connection representatives to understand and address concerns.

*11.6. The landowner consent documentation for all three sites were missing and we seek confirmation of Karpowership’s compliance in relation to conducting the environmental impact assessments with the correct authorising bodies and their representatives.*

**Response:** As per confirmation from DEFF: “Based on 39 (2) and the subsequent confirmation of SIP status received, the landowner consent is not required for SIP projects”.

## **12. Explosion Risks**

*12.1. LNG carriers and Floating Storage Regasification Units (FSRUs) are essentially floating bombs, composed of huge quantities of latent energy. The dangers of having these directly beside an active port that contains many other fuel sources and stores fertilizers, are significant, and cannot be underestimated.*



*These risks come from:*

*12.1.1. Accidents*

*12.1.2. Severe storms, which are also poised to become more common with climate change*

*12.1.3. Terrorism*

*12.2. There is very little consideration of these possibilities within the EIAs, however, or assessment of what such an explosion would mean for workers or communities.*

***Risks of failure***

*12.3. Karpowerships does not have a track record of running for 20 years and it is largely unproven technology. Attempting to shore up a national grid on the back of technology that has not been proven for the purpose for which it is intended, and which is dependent on global gas markets over that period questions the consistent provision of this power.*

**Response:** Karpowership has carried out numerous risk studies on their powerships, including QRA, FERA and Gas Dispersion assessments, HAZID/HAZOP Review, Collision Risk Assessment, and several others. Due to the company's stringent risk management philosophy that is comprised of a number of mitigation procedures and policies, all risks are covered under their comprehensive insurance policies. They operate in several countries that each have unique coastlines and incorporate an array of challenges, and have not had any significant safety or other incidents.

Karpowership is operational in 11 countries. Powerships are supplying 25% of Lebanon, 26% of Ghana, 10% of Mozambique, 60% of Gambia, 10% of Sudan, 80% of Sierra Leone, 10% of Guinea, 15% of Senegal, 100% of Guinea Bissau, 30% of North Sulawesi/Indonesia, 55% of East Nusa Tenggara/Indonesia, 80% of Ambon/Indonesia, 10% of Medan/Indonesia, and 10% Cuba's total electricity generation.

The specialist studies and assessments conducted were adequate and in line with the relevant guidelines and legal requirements. The specialists are adequately qualified with years of experience, and their assessments, conclusions and recommendations are adequate and sufficient to form a basis for decision making.

*12.4. An LNG fuel disruption during the 20-year operational period may result in ships being either inoperable or granted "emergency" exemptions that enable Heavy Fuel Oil (HFO). Karpowerships can burn both HFO and LNG. There is no indication of how will fuel usage be monitored, reported and regulated.*

**Response:** The reciprocating engines proposed for the project are dual fuel capable, but for operation purposes, only regasified LNG will be used. No HFO will be used for the power generation. HFO or liquid fuel is only used for propulsion of the vessels, but since no maneuvering of the vessels is planned during the PPA period, no HFO or liquid fuel will be stored or used onboard. During operations, electricity requirements of the vessels will be provided for by power generation equipment.



Additionally, Karpowership SA compiled and submitted a bid for this project to the IPPO and DMRE that was in compliance with the requirements of the RMIPPP RFP. As such, Karpowership, amongst various other requirements, complied with the requirement in the RMIPPP for a 20 year PPA. Please refer to the "The Risk Mitigation Independent Power Producer Procurement Programme (RMIPPPP) in Context" as published by the Department of Mineral Resources and Energy (<https://www.ipp-rm.co.za>), which elaborates on the DMRE's strategy.

#### *12.5. Risk of one line being affected*

**Response:** The MHI was undertaken for the length of the pipeline. A random point on the pipeline was used to calculate the scenario. The risk of a death to a person along the pipeline is  $1.0e-9$  (one in a billion chance). This risk is very low. There are LNG pipelines across Gauteng and there have not been any incidents.

#### *12.6. Risk of ship failure – no track record*

**Response:** There are no scenarios for intrinsic failure for ships. It is assumed that loading takes place for most of the time that a ship is present, and the loading scenarios are dominant compared to intrinsic failure. The only scenarios that are relevant in addition to loading are external damage as a result of ship collisions. These are very much determined by the local situation. In the case that a ship is located in a (small) port outside of established transport routes, the probability of a collision that leads to an outflow is so small that it does not need to be taken into consideration (i.e., the risk is negligible). In other cases, the basic failure frequency for accidents ( $f_0$ ) has to be determined based upon the specific route section.

*In conclusion, Karpowerships does not fit into the presidential commitment to a just transition towards a low carbon, inclusive, climate change resilient economy and society. It is not the best technology available, but rather, it is expensive, dangerous, exclusionary and will lock South Africa into gas which will increase our carbon and greenhouse gas emissions and fast track the effects of climate change. Karpowerships are not needed. There are better alternatives that will meet our electricity demand are cleaner, safer, cost effective, inclusive and will improve our climate resilience in the just transition. These alternatives were not considered in the environmental assessment reports."*

**Response:** Karpowership responded to a tender issued by the DMRE for the RMIPPP which was technology agnostic. Karpowership, not being a Renewable Energy Company, responded to the tender with the technology they utilise.

Thank you again for your comments and trust that this letter addresses them.

Yours sincerely,





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