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31 March 2021

Dear Triplo4 Environmental Representatives

**COMMENTS ON: ENVIRONMENTAL IMPACT ASSESSMENT REPORTS FOR KARPOWERSHIP (PTY) LTDs PROPOSED GAS TO POWERSHIP PROJECT AT THE PORTS OF SALDANHA BAY (WESTERN CAPE), PORT OF NGQURA (EASTERN CAPE) AND RICHARDS BAY (KWAZULU NATAL)**

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 Saldhana Bay (Western Cape), Port of Ngqura (Eastern Cape) and Richards Bay (KwaZulu Natal). These build on the comments we submitted on the Projects Scoping Reports.
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. Risks of failure
4. Need and consideration of alternatives



4.1. 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.

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.

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

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<sup>1</sup> EIA Regulations, 2014

<sup>2</sup> Draft EIA report Richards Bay page 5



energy, and exacerbating the climate crisis.

- 4.3. According to the IRP, gas is not meant be considered as the main source of energy, but only compliment 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.<sup>3</sup>
- 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.
- 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.
- 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

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<sup>3</sup> A Roff *et al.*, *A Vital Ambition: Determining the cost of additional CO2 Emission Mitigation in the South African Electricity System*, Meridian Economics with CSIR Energy Centre, (2020), <https://meridianeconomics.co.za/wp-content/uploads/2020/07/Ambition.pdf>.



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.

## 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.
- 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.
- 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 high costs.<sup>4</sup>
- 5.4. Inadequate cost analysis of Karpowerships compared with other renewable energy options over the twenty-year period, including revenue and tax implications.<sup>5</sup> The cost

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<sup>4</sup> See, for example, S. Nicholas, *Ghana: Reliance on LNG means increased fuel price risk and further unaffordable generation contracts*. IEEFA (March 30 2021), Available at: <https://ieefa.org/ieefa-ghana-reliance-on-lng-means-increased-fuel-price-risk-and-further-unaffordable-generation-contracts/>

<sup>5</sup> A Vital Ambition



of renewable energy generation will provide local content, as well as reduce the cost of energy over time.

## 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).<sup>7</sup>

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,

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<sup>6</sup> See para 44, Thabametsi judgment.

<sup>7</sup> Para 101, Thabametsi judgment. The “baseless assertions” to which reference is made are the statements in Thabametsi’s EIR - on which the Chief Director relied exclusively - that the climate change impacts of the project were relatively small and low.



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.<sup>8</sup>

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.

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

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<sup>8</sup> S. Roman-White *et al.*, *Life cycle greenhouse gas perspective on exporting liquefied natural gas from the United States: 2019 update* 54 (2019).



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.<sup>9</sup> 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.<sup>10</sup>

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 additionality, impermanence, and leakage plaguing almost all forms of carbon offset projects<sup>11</sup>.

**6.3.6.** The increasing frequency of powerful coastal storms and their likely impact on these facilities<sup>12</sup> 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.<sup>13</sup>

## 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

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<sup>9</sup> Intergovernmental Panel on Climate Change, Working Group 1, *Chapter 8 - Anthropogenic and Natural Radiative Forcing*, in *Climate Change 2013 - The Physical Science Basis*, Fifth Assessment Report of the IPCC 659–740 (5th ed. 2014), [/core/books/summary/AR5\\_WG1\\_Chapter8](http://www.ipcc.ch/core/books/summary/AR5_WG1_Chapter8).

<sup>10</sup> T. M. Lenton *et al.*, *Climate tipping points — too risky to bet against*, 575 *Nature* 592–595 (2019), <http://www.nature.com/articles/d41586-019-03595-0> (last visited Apr 24, 2020).

<sup>11</sup> C.f. M. Cames *et al.*, *How additional is the Clean Development Mechanism?* *Oko-Institute* (2016), [https://www.infras.ch/media/filer\\_public/11/0f/110fae5f-d1ff-4e8f-9f97-f83a34c86dd1/clean\\_dev\\_mechanism\\_en.pdf](https://www.infras.ch/media/filer_public/11/0f/110fae5f-d1ff-4e8f-9f97-f83a34c86dd1/clean_dev_mechanism_en.pdf)

<sup>12</sup> E.L. Molua *et al.*, *Economic vulnerability to tropical storms on the southeastern coast of Africa*, 12 *Jamba* (2020), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7669996/>.

<sup>13</sup> J. Fitchett, *Southern Africa must brace itself for more tropical cyclones in future*, *The Conversation*, 2018, <http://theconversation.com/southern-africa-must-brace-itself-for-more-tropical-cyclones-in-future-103641>.





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 provide 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.
  - 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.
  - 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.
  - 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)
  - 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.

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<sup>14</sup> H. Tularam *et al.*, *Harbor and Intra-City Drivers of Air Pollution: Findings from a Land Use Regression Model, Durban, South Africa*, 17 Int J Environ Res Public Health (2020), <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7432936/>.

<sup>15</sup> A.R.B. Pereira *et al.* *Experimental evaluation of CO, NO<sub>x</sub>, formaldehyde and acetaldehyde emission rates in a combustion chamber with OEC under acoustic*

*excitation*, Energy Reports (2019), <https://www.sciencedirect.com/science/article/pii/S2352484719301556>



- 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.
- 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.
- 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.
- 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.
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 2-5°C 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.

- 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.’
- 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.<sup>16</sup>

## 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.

## 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

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<sup>16</sup> S. B. Joye *et al.*, *Magnitude and oxidation potential of hydrocarbon gases released from the BP oil well blowout*, 4 Nature Geoscience 160–164 (2011), <https://www.nature.com/articles/ng1067>.



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.

## 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.

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.

## 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.

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.

12.5. Risk of one line being affected

12.6. Risk of ship failure – no track record

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.

Yours Sincerely,

A handwritten signature in black ink, appearing to read 'Avena Jacklin'.

**groundWork**

Avena Jacklin

Climate and Energy Justice Campaign Manager