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30th March 2020

RE: DRAFT EIA REPORT FOR THE PROPOSED GAS TO POWER PROJECT AT THE PORT OF SALDANHA BAY - DEFF REF NO: 14/12/16/3/3/2/2006

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A. INTRODUCTION AND EXECUTIVE SUMMARY

1. These comments on the Draft Environmental Impact Assessment Report (the Draft EIA Report) for the Proposed Gas to Power Powership Project[1] at the Port of Saldanha Bay, Saldanha Local Municipality, Western Cape are submitted by the Green Connection.
2. The Green Connection is a registered non-governmental organisation, that believes economic growth and development, improvement of socio-economic status and conservation of natural resources can only take place within a commonly understood framework of sustainable development. It aims to provide practical support to both the government and non-governmental/civil society sectors, which are an integral part of sustainable development.
3. This submission will look at five issues, namely flaws in the assessment of
   3.1. marine impacts;
   3.2. impacts of a major industrial accident;
   3.3. socio economic impact assessment;
   3.4. noise impacts;
   3.5. the no go option.
4. The Draft EIA report fails to consider the impacts of marine pollution on the already contaminated Small Bay, on the incorrect assumption that because effluent from ships is governed by regulation it does not require to be assessed in an application for environmental authorisation in terms of section 24 the National Environmental Management Act (NEMA).[2]
5. The assessment of the risks of the project as a major hazard installation is fatally flawed in that the risks of a pipe burst where the pipe traverses land is not considered. Furthermore the potential cumulative impact of a major accident in the vicinity of large scale planned liquid storage and industrial activity areas is not assessed, notwithstanding the inherently dangerous environment of a port, and the duty to consider all potential impacts.

[1] DEFF REF NO: 14/12/16/3/3/2/2006 dated 26 February 2021

[2] Act 107 of 1998

6. The socio-economic impact assessment fails to take cognizance of the economic impact of tax and other incentives afforded to the project by virtue of the Saldanha Special Economic Zone as well as the reported blanket exemption from complying with a 40% local content stipulation that has been granted to the Powerships.
7. The noise impact assessment is deficient in that it fails to consider cumulative noise impacts and the impacts on people working at the Iron Ore Terminal and surrounding areas and buildings.
8. Given these deficiencies that EIA is not capable of properly assessing the no go option and the best practicable environmental option. The analysis of the no-go option fails meet the requirements for such assessments set out in National as well as Western Cape Provincial guidelines, with the result that there is not only a fatal deficiency in the report but the decision maker is also as a consequence unable to apply its mind to all relevant considerations when considering the EIA, including the best practicable environmental option.

B THE DRAFT EIA REPORT IS NOT IN ALL RESPECTS A REPORT ABOUT SALDANHA BAY

9. The report refers in several places to Richards Bay and NGQURA, in aspects which involve material conclusions. It is not clear to the reader whether the entire report relates to Saldanha Bay or whether it is a "cut and paste" of information relating to similar projects in other parts of the country. The Draft EIA report should be withdrawn and substantially overhauled on order for the public and decision maker to have confidence that they are reading and acting on a report about an impact assessment in Saldanha Bay and not somewhere else.
10. For example in the extremely important respect of marine pollution impacts the report says the following:

> *8.4.10.1 Impact assessment findings (with and without mitigation): Powership Alternative 1 (Small Bay) and Alternative 2 (Big Bay): Operational Phase*
>
> "Four potentially significant impacts of the proposed FPP facility on the surrounding marine ecology at **the Port of Ngqura are identified**, and three of them assessed thus far. In this assessment, no mitigation measures beyond those built into the project

design are required, and so the ratings would remain unchanged. The three assessed impacts will have a Low to Very Low impact on the marine ecology. It was also concluded that the effects of underwater noise from the Powership operations on marine ecology are unlikely." (emphasis added)

It is not clear what geographic area the table that follows this statement relates to.

11. Similarly on page 190 it is stated in regard to cumulative impacts:

"Cumulative impact from the other noise sources in the Port of Ngqura is extremely difficult to predict."

12. On page 23 reference is made to Richards Bay as the location for certain listed activities.

13. On pages 110 and 181 reference is again made to the site of the activity being in Richards Bay:

"8.4.18.1 Identification of Similar Developments
The project site is located within the existing and operational port of Richards Bay, adjacent to the Richards Bay Industrial Development Zone (RBIDZ). This area is characterised by light and heavy industrial operations, with further planning to expand the port and the operations at the RBIDZ."

14. The above comments are not intended to be a comprehensive list of these anomalies.

C FAILURE TO CONSIDER IMPACT ON THE MARINE ENVIRONMENT

15. The Draft EIA report fails to properly assess the impact on the already severely degraded marine environment of Saldanha Bay, and in particular Small Bay of the Powerships, to be moored in the bay. This failure results from the fact that significant potential sources of pollution from the Powerships were excluded from the study without justification.

16. The Draft Marine Ecology Study states:[3]

"the following activities were screened out of this assessment because they will be adequately controlled in terms of the Port of Saldanha's existing harbour rules, port reception facilities, vessel management practices and other relevant domestic law.

17. However these discharges are referred to elsewhere in the report as pollution that will not occur if the no-go option is evaluated. By implication one assumes that the converse situation - where the project goes ahead - will generate marine pollution.

[3] Lwandle Marine Environmental Services: Baseline and Impact Assessment Report PREPARED FOR: REPORT REF.: LT 889 BR & EIA SALDANHA V 3.0 February 2021 page 443 of 844 Appendix I at paragraph 3.2 page 24

"Impacts to dynamic coastal processes or potential for pollution from shipping (including spent oil and lubricants, paint, solvents and waste detergents, waste from ship maintenance activities, sewage, galley waste, sweepings from hatches and engine rooms, slops from holds and tanks, ballast water, general domestic waste, medicinal/medical waste, spent batteries, discharge of heated water etc.[4]

18. The fact that regulations exist which govern discharges of pollution into the ocean in no way exempts the applicant from assessing the impacts, including cumulative impacts of such pollution on the marine environment in terms of section 24 of NEMA, whether as a result of normal or accidental releases. This contention, if correct, would undermine and render superfluous most of the scheme for environmental impact assessments under NEMA.

19. The unstated assumption of the EIA is therefore that there will be no marine pollution. This assumption is not mentioned in the section of the EIA dealing with assumptions however. [5] The failure to do so is a fatal flaw.

20. This assumption is in conflict with the clear recognition in the EMPR that there may or indeed will be marine pollution resulting from the project. Discharging, with potential significant impacts, is contemplated as part of the activity as it is mentioned in the EMPR. It is clear that the impact of accidental spills on the marine environment should have been assessed as part of the EIA, but was not. See for example in regard to the construction phase:

. "All watercourses must be protected from direct or indirect estuaries are managed in adherence to legislation and specialist recommendations spills of pollutants such as solid waste, sewage, cement, oils, fuels, chemicals, aggregate tailings, wash and contaminated water or organic material resulting from the Contractor's activities.

There must not be any impact on the long term morphological dynamics of watercourses or estuaries. "[6]

21. The EMPR recognises the same issue in the operational phase:

[4]Draft EIA for Saldanha Bay Karpowerships - Page 180

[5] NEMA EIA regulations, 2014 as amended - Appendix section 3(p) requires the EIA to list "a description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures proposed."

[6] EMPR Saldanha Bay page 111

- "Discharging from the Powership must be as per the environmental authorisation, preferably within the deep water and/or where water circulation by tidal flushing would be maximised. EMPR Discharges would need to be compliant with the South African Water Quality Guidelines for Coastal and Marine Waters (DWAF, 1995; DEA, 2018b)
- All effluent and solid (general, hazardous and domestic) waste to be disposed though registered and certified service provides as per the NPA and MARPOL requirements.
- Implementation of awareness, inspections, contingency plans, compliance with port protocols and reporting of environmental incidents.
- training in environmental awareness, including the minimisation of disturbance to sensitive areas, management of waste, identification of protected biodiversity, water conservation and prevention of erosion and water pollution."[7]
- Risk reduction programmes must be continually investigated to reduce the impact from accidental fires and explosions on surrounding communities. The employees and sub-contractors of Karpowership must receive basic training in environmental awareness, including the minimisation of disturbance to sensitive areas, management of waste, identification of protected biodiversity, water conservation and prevention of erosion and water pollution.[8] etc

22. The assessment of impacts on the marine environment must take into account the state of the receiving environment and the cumulative potential impacts of the activity on that environment.[9] The failure to properly assess the impact of the ships on the marine environment is a fatal flaw especially when consideration is given to how degraded the Saldanha Bay, particularly Small Bay has become as a result of industrial activities and shipping.

23. The receiving environment is extensively described in annual "State of the Bay" reports undertaken by the Saldanha Bay Water Quality Trust.[10] These reports describe the degradation of the Bay, (particularly Small Bay where one alternative location of the Powership is situated), that has taken place progressively over the last few decades with the development of South Africa's premier iron ore export terminal, steel plant and smelter, shipping activities including regular visits by oil tankers, fishing, mariculture, and urban development on the coastline.

24. Some of these are summarised as follows:

Summary of findings of the 2020 report relevant to the Karpower application for environmental authorisation.

[7] Id page 123
[8] Id page 124
[9] NEMA section 24
[10] https://sbwqft.org.za/state-of-the-bay/

- The 2020 report refers to long-term decreases in populations of fish (e.g. white stumpnose) and many bird species, long-term changes habitat quality (sediment and water quality and increasing levels of disturbance) and important forage species (e.g. benthic macrofauna). Recent improvements in some of these underlying indicators (e.g. sediment quality and macrofauna abundance and composition) have been described as encouraging but considerable work remains to be done in maintaining and restoring the health of particularly Small Bay, especially in respect of the large volumes of effluent that are discharged to the Bay, very little of which is compliant with the existing effluent quality standards. Major future planned industrial development poses a significant threat to already severely stressed ecosystems in the Bay.[11]
- The report indicates that there is there is clear evidence of altered current strengths, circulation patterns and wave energy within the Bay, caused by the construction of the ore terminal and causeway. These changes have also contributed to the deterioration in water quality, in Small Bay in particular. Several areas in the Bay have poor water quality indicating high levels of chronic faecal coliform pollution.[12]
- Poly-aromatic hydrocarbon (PAH) contamination measured in the sediments of Saldanha Bay are associated with shipping incidents and around the ore terminal.[13] Data show that concentrations of trace metals are higher along the north eastern shore of Small Bay (particularly for lead and manganese). Concentrations of lead and cadmium in mussels farmed in Small Bay were on occasion above the limit for foodstuff prior to 2016, and cadmium exceeded guidelines in outer bay samples in recent years (2018-2020), which is concerning. The high concentrations of lead and cadmium in mussels sampled from the shore in Small Bay points to the need for management interventions to address this issue, as metal contamination poses a serious risk to the health of people consuming mussels.[14]
- The accumulation of fine sediment associated with dredging and pollution from aquaculture and increased shipping activity will perpetuate poor macrofauna in Small Bay.
- The concerning decline and absence of certain species of fish in the Small and Big Bay areas of Saldanha Bay area is mentioned, and the absence of gurnards, blacktail, elf and pipefish from 2020 Small Bay samples means that diversity (just 10 species) was the lowest in the 16- year survey history.[15]

[11] 2020 THE STATE OF SALDANHA BAY AND LANGEBAAN LAGOON 2020 Technical Report October 2020 prepared by Report Prepared by: Anchor Environmental Consultants (Pty) Ltd, (State of the Bay report), available at https://sbwqft.org.za/state-of-the-bay-2020-technical-report/ page xxi.
[12] Id page x
[13] Id page xiii
[14] Id page xiii
[15] Id page xvi

- Fish are also over exploited. The report concludes that "There is now compelling scientific evidence that the stocks of the two most commercially important fish in the Saldanha–Langebaan system, namely white stump and harders, are overexploited. If the Saldanha Bay fisheries are to remain sustainable, fishing mortality will need to be reduced."

25. The 2020 State of the Bay report recommends an assessment of the economic value of the recreational fishery in Saldanha-Langebaan. It states:

> "The economic value of the recreational fishery in Saldanha-Langebaan should not be regarded as regionally insignificant as a lot of the expenditure associated with recreational angling is taking place within Langebaan and Saldanha itself. These benefits should be quantified by an economic study of the recreational fisheries. Furthermore, the historically popular white stumpnose fishery used to be a major draw card to the area and has probably contributed significantly to the growth in the residential property market the region has experienced. These benefits should be quantified by an economic study of recreational fishers. The value of Small Bay as a fish nursery and the economic value of the resultant fisheries could then be quantitatively considered when the environmental impacts of the proposed future industrial developments within Small Bay are assessed. The monitoring record from the annual seine net surveys will prove increasingly valuable in assessing and mitigating the impacts of future developments on the region's ichthyofauna."[16]

26. The Draft EIA report however fails to consider the full extent of impacts of marine pollution generated by Powerships on Small Bay, and on its fishing resources.[17] The focus of its economic impact assessment is on revenues generated by shipping and energy production, as opposed to considering the impacts in totality including economic impacts of further pollution an already severely degraded marine environments, as well as the generation of green house gas emissions.

27. Where parts of the bay marine environment are already severely polluted, impacts are downplayed by referring to the fact that the impact takes place in an "already compromised area of the port."[18] (eg effect on the littoral and benthic community).

[16] Id page xviii

[17] The only mention of this issue is the suggestion contained in on page 60 of the Socio Economic impact assessment that efforts should also be made to allow the small fisherman a dedicated space where they can fish. SOCIO-ECONOMIC IMPACT ASSESSMENT REPORT FOR THE PROPOSED POWER POWERSHIP PROJECT AT THE PORT OF SALDANHA, SALDANHA BAY MUNICIPALITY, WESTERN CAPE February 2021 prepared by Urban-Econ Development Economists

[18] Page 120

28. The economic benefit analysis of the EIA is therefore skewed in favour of industrial development rather than aimed at considering economic benefits associated with sustainable development of the Bay. The result is that the no-go option analysis lacks the data required to assess the economic impact and potential benefits of not continuing with the activity and is not a basis for decision making as will be argued below.

D FAILURE TO ASSESS THE IMPACTS OF A MAJOR INDUSTRIAL ACCIDENT

Failure to consider land based pipeline rupture and fire

29. The draft Scoping Report indicates further that a specialist risk assessment will be undertaken in terms of the Major Hazard Installation (MHI) Regulations published in terms of the Occupational Health and Safety Act (OHSA).

30. The Quantitative Risk Assessment of the Karpowership Gas to Power Operations for the EIA in the Port of Saldanha Bay[19] contains a substantial flaw: The impacts of jet fires from a pipeline shear are not evaluated for pipeline shears that occur at a point of the pipeline that is closest to where people might be working or standing.

31. The Port of Saldanha Bay including the iron ore terminal is a busy port and major expansion is planned for the future. Section 2.1 of the Quantitative Risk Assessment states:

> "The main activity of the Port of Saldanha Bay is the export and import of goods The Port of Saldanha Bay is South Africa's deepest draft port and handles around 67 million tons of cargo per year (about 500 vessel calls). … The port has iron ore stockpiles on reclaimed land."

32. In section 4.4. the Quantitative Risk Assessment models the consequences of jet fires from the following scenarios:

"• Jet fire as the result of a liquid loading hose shear;
• Jet fire as the result of a 1-inch hole in a liquid loading hose;
• Jet fire as the result of a vapour return hose shear;
• Jet fire as the result of a 1-inch hole in a vapour return hose;
• Jet fire as the result of venting;
• Jet fire as the result of a pipeline shear;
• Jet fire as the result of a pipeline 1-inch leak;

[19] starting at page 638 of Appendix I

• Flash fire as the result of a loading hose failure."

33. Section 2.4.3 of the Quantitative Risk Assessment describes this pipeline:

"2.4.3. Pipeline

"The regasified LNG is exported from the FSRU in two 90m 300mm diameter hoses. The hose strings connect to a PLEM (Pipe Line End Manifold), which delivers the gas through a 600mm diameter, 1.33km long pipeline on the breakwater, to an offshore Khan Class Power Ship moored next to the Orca Class Power Barge. (See layout below.) The vapour pressure in the pipeline will be 10bar. …."

It is noted in particular that there is an extensive amount of pipeline that is land-based, adjacent to the iron ore stockyard.

34. With respect to a jet fire as the result of a pipeline shear, these jet fires could occur anywhere along the route of the pipeline, including at a portion that is land-based, adjacent to the iron ore stockyard.

The Quantitative Risk Assessment states:[20]

"For a pipeline shear, the subsequent jet fire the flame length was calculated at 192.08m with a wind speed of 1.5m/s."

Page 39 of the Quantitative Risk Assessment shows a consequence of a jet fire from a pipeline shear at a location that is on the sea. However, this is a location that is least likely to kill or injure a person. If the same jet fire from a pipeline shear were to occur including at a portion of the pipeline that is land-based, adjacent to the iron ore stockyard the consequences would be different depending on the location.

Page 58 of the Quantitative Risk Assessment concludes:

"No one within the port area is exposed to a risk greater than 1.0e-06 (one in a million) and ship staff is exposed to a risk of no more than 1.0e-05 (one in a hundred thousand). These risks are acceptable for persons operating in a national port."

35. However, this conclusion seems to explicitly exclude a jet fire occurring from the shear of a portion of the pipeline that is land-based adjacent to the iron ore stockyard, a location where human activities are most likely to damage the pipeline and where humans are most likely to be working or standing close to the pipeline.

The risk assessment is therefore incomplete and not a basis for decision making.

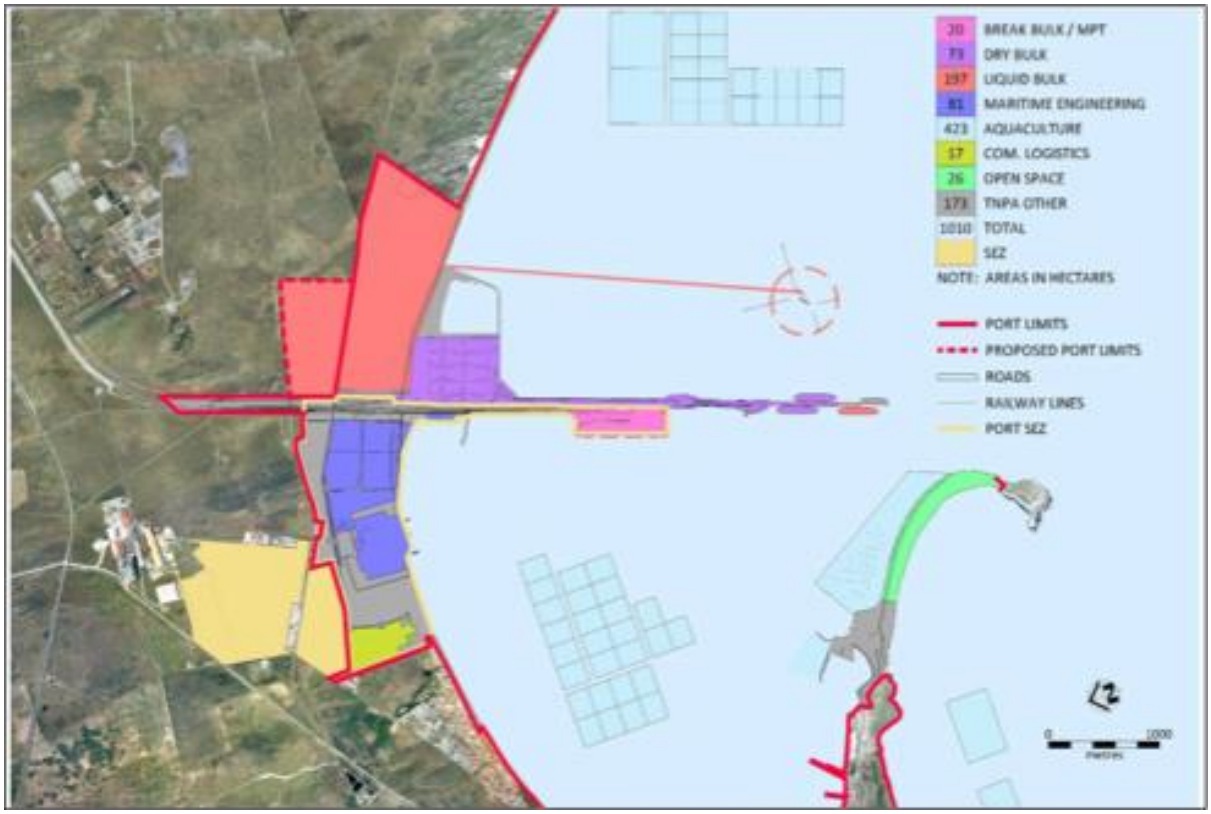
[20] QRA page 38

Failure to consider cumulative potential impacts

36. Apart from this failure to consider impacts, the report fails to consider the cumulative impact of a major accident in relation to future storage of fuels in the vicinity of the Khan Powership.

37. Significant chemical storage and industrial activity is planned for the areas alongside the proposed route of the pipeline - where it travels over land to the Powership - regardless of which alternative is chosen. The Draft EIA report[21] refers in detail to future port planning and bulk storage - see map below. There are also plans in the medium term for land reclamation next to the current iron ore stockyard for the construction of new LNG facilities. In the long term there is a new proposed land-based LNG storage area inside the port limits.[22] The map also indicates significant areas set aside for dry bulk and maritime engineering, and being industrial activities, the potential exists for storage of hazardous and/or inflammable chemicals in these areas.[23] There is also a plan for a 17 hectare logistics park, where it is reasonable to assume there will be transportation and storage of cargo, potentially containing hazardous substances. The consequence of a major accident along the pipeline in the vicinity of these fuel storage areas or industrial activity areas was not considered. This is a fatal flaw.

[21] DEIA report page 96
[22] id
[23] Figure 6.3 page 97



38. The DEIA report describes the planned route of the pipelines from FSRU to powership as follows:

> "The subsea section of the gas pipeline connecting the FSRU to the Powership will be routed perpendicular to the coastline and adjacent the existing Liquid Petroleum Gas pipelines and will connect to the FSRU via a flexible marine hose riser. The onshore section of the gas pipeline will follow the existing pipeline servitude along the edge of the Saldanha Iron Ore terminal and across existing port causeway to the Powership mooring location. [24] The position of the gas line route and the transmission route are dictated by the position of the Powership either within Small Bay (as proposed in the Scoping Phase) or Big Bay (as preferred by TNPA). "

39. It is clear from these maps and descriptions that regardless of which alternative is chosen the onshore pipeline will be located for at least 500 m alongside each of the planned liquid bulk storage and dry bulk storage areas as well as being located a similar distance from the proposed maritime engineering area.

40. Ports are recognised to be areas of potentially high risk given a number of factors, including the fact that work at ports takes place throughout the day and night and in all

[24] DEIA report page 15

types of weather. There are often pressures to load or unload a ship's cargo quickly to catch a tide or to free up a wharf. Visiting drivers want to pick up or drop off their cargo as quickly as possible and get back on the road.[25]

41. The following image of the crater left by the Tianjin explosion in 2016[26] which killed 173 people and caused $1bn in losses is a sobering reminder of the heightened risk of industrial accidents in ports especially industrially orientated parts of ports given that hazardous chemicals for import, export and other uses are often stored there.

42. The failure of the Draft EIA to consider the cumulative impact of a major accident on future storage of fuels in the vicinity of the Khan Powership is a fatal flaw.

[25] A quick guide to health and safety in ports – UK Health and Safety Executive. See also The International Labour Organisation (ILO) has a Code of Practice on Safety and health in ports (ILO152): www.ilo.org/public/libdoc/ilo/2005/105B09_39_engl.pdf. The Maritime and Coastguard Agency (MCA) produce a wide range of guidance and information on health and safety for seafarers, and general safety information relevant to port operations: www.mcga.gov.uk/c4mca/mcga07-home.htm. International Maritime Organisation: www.imo.org International Cargo Handling Coordination Association: www.ichca.com

[26]Tianjin chemical blast: China jails 49 for disaster Published 9 November 2016 BBC news-https://www.bbc.com/news/world-asia-china-37927158

E. FLAWS IN THE ASSESSMENT OF SOCIO ECONOMIC IMPACTS

43. The socio economic impact assessment (SEIA) for the Proposed Powership Project at the Port of Saldanha focusses its recommendations on a determination of whether the project has an overall positive impact or not.[27] The report refers to the fact that the project will generate jobs, promote local businesses and skills development and in summary will contribute R324.3 million per annum to the GDP in the construction phase and R254.9 million per annum in 2020 prices in the operational phase.[28] It is estimated that 1525 full time jobs will be created during the construction phase and 240 jobs will be created in the operational phase.[29] Other positive impacts mentioned are the provision of electricity and reduction in load shedding. The overall conclusion of the socio economic impact assessment report is that the benefits of the project outweigh the negative economic impacts.

44. The assessment fails to indicate the fact that the project is unlikely to pay taxes and has been exempted from 40% of local content requirements, and how this will impact on its assessed benefit to the overall economy.

45. It also does not indicate to what extent projected local economic benefits will be impacted by the fact that the ships and gas will be sourced overseas.

46. It also does not indicate the cost of climate change impacts generated by the project, and which will be felt most keenly in sub Saharan Africa.

Local content requirements

47. It has been reported in the media that the Karpowerships project has been granted a blanket exemption from complying with a 40% local content stipulation designed to encourage the development of locally based manufacturers and suppliers by the Department of Trade, Industry and Competition (DTIC). [30] This could impact on

[27] Socio-Economic Impact Assessment For The Proposed Power Powership Project At The Port of Saldanha within the Saldanha Bay Municipality, Western Cape February 2021 (p719 of Expert reports) at Page 67-69
[28] SEIA Pages 40 and 51
[29] Id page 42 and 53
[30] https://www.dailymaverick.co.za/article/2021-03-14-floating-gas-powerships-plan-gets-another-free-pass-from-south-african-government/

projected local economic benefits and needs to be assessed in the socio economic impact assessment.

48. The following local benefits are indicated and the report needs to clarify how these and other local economic benefits will be affected by the local content exemption referred to above.

> "The current regulations prescribes that a minimum of 1% of the revenue derived by a project should be allocated towards the socio-economic development community and a further 0.4% to enterprise development. These contributions are verified by the Department of Energy via quarterly audits to ensure that the figures are achieved. In-line with these regulations, it is anticipated that the development will contribute R11 million to enterprise development, and a further R27.7million to socio-economic development annually over a 20-year period. Approximately 80.0% of both these contributions will accrue directly to the local community, while the remaining 20% will accrue to communities in other parts of the province. "[31]

Tax exemption in the Special economic zones

49. The project is to be located in the port of Saldanha Bay SEZ, which is a designated Special Economic Zone (SEZ) it is therefore assumed for the purposes of this submission that the project will be entitled to all the tax and other monetary exemptions that flow from location within a special economic zone in South Africa. However this is not mentioned in the socio economic impact assessment. It is stated in the that

> "In the current context, the proposed Gas to Power project will entail the mooring, deploying and operation of a Karpowership within the Port of Saldanha (Figure 1), which is a designated Special Economic Zone (SEZ)."[32]
>
> And
>
> "The Port of Saldanha Bay was identified as a preferred location in this region as it meets the specifications for the proposed Powership project and occurs within a designated Strategic Economic Zone (SEZ)."[33]

[31] SEIA p 57

[32] Gas to Power Project: Coastal and Estuarine Impact Assessment Report Port of Saldanha / Langebaan Lagoon at page 3, Page 375 of the combined expert reports

[33] LANDSCAPE & VISUAL IMPACT ASSESSMENT REPORT February 2021, page 4

50. Some of the economic benefits to investors in these zones are described as:

> "5.5.Special Economic Zones Act
>
> This new SEZ Programme was developed also in response to the National Industrial Policy Framework, and the New Growth Path, as well as developments in the global economic environment such as the formation of BRICS. Both initiatives promote national economic growth and industrial development by offering various incentives, investment opportunities, import and export duty exemptions, fast tracked construction and customised space for heavy, medium and light industry and custom secure areas amongst others." [34]

51. However it is not clear how this will impact on the stated economic benefits of the project, and this needs to be clarified in the socio economic impact report. For example the report states:

> "e) Temporary increase in government revenue
>
> During the construction phase of the Powerships and its related infrastructure will generate revenue for the government during the construction period through a combination of personal income tax, VAT, companies' tax, etc. Additional government revenue will also be earned through corporate income tax. Government earnings will be distributed by national government to cover public spending which includes amongst others the provision and maintenance of transport infrastructure, health and education services as well as other public goods. "[35]

Cost of climate change impacts

52. The Draft EIA report fails to assess the economic cost of the greenhouse gas emissions of the proposed Powerships. The Climate Change Impact Assessment for the proposed Powership at Saldanha Bay, Western Cape admits to the following expected emissions of greenhouse gases:

> "Over the expected operating lifespan of the Powership project of 20 years at constant 100% capacity, **cumulative generation emissions are 15.21 million tons CO2e under the worst-case scenario**." [36]

[34] Id page 12
[35] Id Page 45
[36] Climate Change Impact Assessment, for Saldanha Bay page 34

53. The Climate Change Impact Assessment for the proposed Powership at Richards Bay, KwaZulu- Natal admits to the following expected emissions of greenhouse gases.[37]

"Over the expected operating lifespan of the Powerships of 20 years (74 460 operational hours), at constant 100% capacity, **cumulative generation emissions are 19.56 million tons CO2e**."

54. The Climate Change Impact Assessment for the proposed Powership at Port of Ngqura, Eastern Cape, admits to the following expected emissions of greenhouse gases.[38]

"Over the expected operating lifespan of the Powerships of 20 years (74 460 operational hours), at constant 100% capacity, **cumulative generation emissions are 19.56 MT CO2e.**"

55. Cumulatively, the three Powerships would emit **54.33 million tons CO2e**. The Climate Change Impact Assessments do not evaluate the social costs associated with these emissions. Economists with the School of Global Policy and Strategy, University of California San Diego, published the updated information about the social cost of carbon:

"*The social cost of carbon (SCC) represents the economic cost associated with climate damage (or benefit) that results from the emission of an additional tonne of carbon dioxide (tCO2). One way to compute it is by taking the net present value of the difference between climate change damages along with a baseline climate change pathway and the same pathway with an additional incremental pulse release of CO2. The SCC provides an economic valuation of the marginal impacts of climate change. ...*

"The GSCC is the sum of the CSCC values. We calculated CSCC for each set of scenario, parameter and model specification assumptions, and established an uncertainty range based on a bootstrap resampling method (Methods and Supplementary Information) and then aggregated to the global level. The median estimates of the GSCC (Fig. 1) are significantly higher than the Inter-agency Working Group estimates, primarily due to the higher damages associated with the empirical macroeconomic production function, although similar SCC values have been estimated in the past using other methodologies. ***Under the 'middle-of-the-road' socio-economic scenario (SSP2) and its closest corresponding climate scenario (RCP6.0), and with the central specification of Burke–Hsiang–Miguel (BHM) damage function (short run, no income differentiation) we estimated a median GSCC of US$417 per tCO2 (ρ, 2%; μ, 1.5*****).***"[39]

[37] CCIA for Richards Bay Page 32
[38] CCIA for Ngqura page 31

[39] Ricke, K., Drouet, L., Caldeira, K., & Tavoni, M. (2018). Country-level social cost of carbon. Nature Climate Change, 8(10), 895.

56. Applying the median GSCC from the 2018 study demonstrates that CO2e emissions from the three power ships would cause social costs of at least **US$22.65 billion** (US$417/tCO2 x 54.33 million tCO2).

Economic impacts on the no-go option

57. The assessment of the no-go option requires a comparison of the economic benefits and disadvantages of the proposed project against the benefits and disadvantages of not proceeding with the project. This is not feasible if the climate change impacts and their socio-economic costs are not included for assessment in the socio economic impact assessment, as one of the most likely outcomes of the no go option would be that the demand for energy would be taken up by development of renewable energy sources such as wind, geothermal energy or solar energy which do not generate greenhouse gas emissions and associated socio economic costs. The EIA without an assessment of the socio-economic costs of its greenhouse gas emissions is therefore incomplete.

58. Furthermore the socio-economic impact assessment does not give a comparative cost to the fiscus, consumer and taxpayer of the electricity generated by the Powerships, compared to the provision of that electricity in the no-go option through renewable energy and potentially other sources of energy. This omission results in the Draft EIA report failing to place all relevant information and considerations before the decision maker.

F. FAILURE TO PROPERLY CONSIDER ALTERNATIVES AND THE NO-GO OPTION

F1: Legislative context – consideration of alternatives and the no-go option

59. The National Environmental Management Act [40] sets out the basic requirements for the consideration of alternatives and the no–go option in section 24 (4) (b):

> "Procedures for the investigation, assessment and communication of the potential consequences or impacts of activities on the environment – must include, with respect to every application for an environmental authorisation and where applicable— (i) investigation of the potential consequences or impacts of the

[40] Act 107 of 1998

alternatives to the activity on the environment and assessment of the significance of those potential consequences or impacts, including the option of not implementing the activity;

60. The NEMA environmental impact assessment regulations define what is meant by alternatives in the EIA context: [41]

"alternatives", in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to the - (a) property on which or location where the activity is proposed to be undertaken; (b) type of activity to be undertaken; (c) design or layout of the activity; (d) technology to be used in the activity; or (e) operational aspects of the activity; and includes the option of not implementing the activity (otherwise referred to as the "no-go option").[42]

59. 2014 EIA Regulations (as amended), Appendix 3 require

"(h) a full description of the process followed to reach the proposed development footprint within the approved site as contemplated in the accepted scoping report, including: (i) details of the development footprint alternatives considered"

60. The recognition that the no-go option must be considered as would an alternative, is recognised in the EIA which states:

"The No-Go Option is also an alternative that is required to be assessed as part of the EIA."[43]

61. Guidelines published by the Department of Environmental Affairs describe how alternatives must be determined.[44] They state:

a. The 'no-go' alternative is also regarded as a type of alternative, but is described separately to emphasize its importance in EIA.
b. n a situation where negative environmental impacts have high significance, the 'no-go' alternative takes on particular importance. In some cases, the 'no-go' alternative may be the only realistic alternative and then it has a critical role to play.
c. The baseline, or 'no-go' option, as well as all other relevant alternatives must be described, assessed and evaluated at the <u>same scale and level of detail that enables adequate comparison with the proposed project</u>. (emphasis added)

[41] Appendix 3 section 1
[42] EIA regulations 2014 published under the NEMA - GNR 982 published in GG 38282 dated 4 December 2014 (the EIA regulations) section 1 definitions
[43] DEIAR page 110
[44] DEAT Criteria for determining Alternatives in EIA, Integrated Environmental Management, Information Series 11, Department of Environmental Affairs and Tourism (DEAT), Pretoria. 2004

62. The Western Cape Government Environmental Affairs and Development Planning has also published a guideline on Alternatives.[45] These guidelines state:

> "The "feasibility" and "reasonability" of and the need for alternatives must be determined by considering, inter alia, (a) the general purpose and requirements of the activity, (b) need and desirability, (c) opportunity costs, (d) the need to avoid negative impact altogether, (e) the need to minimise unavoidable negative impacts, (f) the need to maximise benefits, and (g) the need for equitable distributional consequences."[46]

63. Regarding the no-go option these guidelines state:

> "The no go option. The assessment of alternatives must at all times include the "no-go" option as a baseline against which all other alternatives must be measured. The option of not implementing the activity must always be assessed and to the same level of detail as the other feasible and reasonable alternatives. (emphasis added)[47]

64. It follows that the consequences and impacts of the no-go option, which is also an alternative to the proposed project, needs to be considered in light of section 24 of NEMA, and the National and Provincial guidelines, which are relevant considerations as contemplated in section 6 of the Promotion of Administrative Justice Act.

65. The no-go option is also an option for consideration in determining the best practicable environmental option, amplifying the requirement that the benefits and damage of the no-go option must be assessed.

66. The Best Practicable Environmental Option:

The NEMA principles apply to all actions of the state that may significantly affect the environment.[48]

Consideration of the Best Practicable Environmental Option (BPEO)

[45] Western Cape Government Environmental Affairs and Development Planning - EIA GUIDELINE AND INFORMATION DOCUMENT SERIES (MARCH 2013)- Guideline on Alternatives,. Available at Publication):https://www.environment.gov.za/sites/default/files/docs/guidelineontransitionalarrangements.pdf
[46] Id, Page 10 (page 72of 129 of the publication)
[47] Id Page 12 (page 74 of 129)
[48] NEMA section 2(1)

The best practicable environmental option principle is defined as follows:

> "(4) (a) Sustainable development requires the consideration of all relevant factors including the following….. (b) Environmental management must be integrated, acknowledging that all elements of the environment are linked and interrelated, and it must take into account the effects of decisions on all aspects of the environment and all people in the environment by pursuing the selection of the best practicable environmental option.
>
> 'best practicable environmental option' means the option that provides the **most benefit** or causes the **least damage** to the environment as a whole, at a cost acceptable to society, in the long term as well as in the short term."[49]

67. In summary It follows that in terms of NEMA section 24, when considering the no-go option

    a. its consequences and impacts must be assessed, including the potential harm and benefit, and to the same level of detail as the other feasible and reasonable alternatives. (emphasis added)

    b. the reasonability of the no-go option needs to be determined by considering, inter alia, (a) the general purpose and requirements of the activity, (b) need and desirability, (c) opportunity costs, (d) the need to avoid negative impact altogether, (e) the need to minimise unavoidable negative impacts, (f) the need to maximise benefits, and (g) the need for equitable distributional consequences.

F2: Failure to consider the no-go option and best practicable environmental option

68. As will be set out below, the Draft EIA report failed to assess the no-go option and the best practicable environmental option in a manner compliant with the regulatory scheme for environmental impact assessments under section 24 of NEMA, and this is a fatal flaw in the assessment.

69. The no-go option is the option of not proceeding with the project. However consumer demand for electricity will in all likelihood remain, as will the imperative to replace coal generated energy sources with sources that generate less or no GHG emissions. In order to pursue the BPEO, when considering the no-go option, the harm and benefit of

[49] Section 1 definitions

currently available alternative electricity generating sources should have been considered in the Draft EIA and was not. There is no mention of the harm or benefit of any other feasible technology given in the report, apart from unsubstantiated speculation that alternatives would probably emit more GHG if the no go option was pursued.

70. It is noted that the Draft EIA report for Saldanha Bay does not consider alternatives to the proposed activity - in the sense of alternative means of meeting the general purpose and requirements of the activity, without the burning of fossil fuels - relying on the decision of the scoping stage and acceptance of the plant of study which did not include this alternative.

71. The reason for the applicant not considering alternatives was provided as follows in correspondence from the EAP consultants in response to submissions made on the draft scoping report, and is based primarily on the applicant's business model.[50]

> Section 240(1)(b)(iv) NEMA requires technological and financially feasible alternatives to the project to be considered. Karpowership's business model provides for the generation of power using HFO's or natural gas. Thus, in terms of the definition of alternatives "different means of meeting the general purpose and requirements of the activity", HFO as an alternative fuel to generate power from the Powership was addressed in the Scoping report as a technological alternative. The use of natural gas as a cleaner technology was thus proposed as the most feasible activity and BPEO alternative within Karpowerships energy generation activity.

72. This reason is rejected as being without legal basis and Green Connection reserves the right to challenge the authorisation if granted on the basis that it failed to properly consider alternatives to the project.

[50] Triplo4 Sustainable Solutions (Pty) - letter dated 17 November 2020 to Adrian Pole Attorneys in response to submissions on the Draft Scoping Report

73. As a result of the failure to consider alternatives (which would not result in fossil fuel combustion), there is therefore only one alternative to the project as a whole and it is the no-go option.

74. The report confirms that the "The No-Go Option is also an alternative that is required to be assessed as part of the EIA." [51] However the report fails to consider the no-go option in a manner which is compliant with the regulatory scheme for environmental impact assessments set out above, including consideration of the six factors set out in the guidelines as are required when determining feasible alternatives. These factors were at best only partly considered. The need to avoid negative impacts altogether, and the need to minimise unavoidable negative impacts - for example in regard to marine pollution - were not considered given the fact that the assessment did not properly assess marine impacts and regards them as being of low significance.[52]

75. The no-go alternative is dismissed, rather than comprehensively analysed, with the following statement, which is contested.

> "If the Karpowership gas-to-energy project is not implemented, the benefits of the proposed activity will not be realised (with the status quo remaining) and neither will the associated negative impacts/risks. This means that the supply of additional electricity to the national grid will not be supplemented by an IPP. The status quo with regard to the national supplier will remain, i.e. the national grid will continue to be strained as a result of aging and failing systems within the fleet. This will be exacerbated by the time taken for the national supplier to design, assess, receive authorisation, construct and bring online any new power generation facilities. The negative impacts on the physical and social environmental will also not occur. In contrast, any positive impacts or opportunities that will be created by the proposed development, such as job creation or social upliftment, will not be realised. [53]

[51] DEIA report page 110

[52] No impacts to dynamic coastal processes or potential for pollution from shipping (including spent oil and lubricants, paint, solvents and waste detergents, waste from ship maintenance activities, sewage, galley waste, sweepings from hatches and engine rooms, slops from holds and tanks, ballast water, general domestic waste, medicinal/medical waste, spent batteries, discharge of heated water etc.).

[53] Id page 179

76. The above assertions are not substantiated by facts. Reliance is placed on broad generalisations which are overly positive towards the proposed activity. The only figures provided are for economic impacts, but these are incomplete in material respects as set out above in comment on the socio-economic impact assessment, above. General, unsubstantiated statements are also made as to the negative consequences of not proceeding with the activity. For example the report makes unsubstantiated claims as to the negative impact on climate change when analysing the consequences of the no-go option:

"Supplementary baseload will have to be sought elsewhere, possibly from sources with higher GHG emissions than LNG."[54]

45. The cost to society of the additional green-house gasses emitted by the plants is not assessed. The no-go option was merely presented as a lost opportunity to generate electricity from gas, in line with general government policy and projections of economic benefit.

46. The consequence of these omissions is that the decision maker is not able to apply its mind to relevant considerations about the socio-economic impacts of the proposed project as compared with the effects of filling the power requirements with other technologies, such as renewable energy that are available the Western Cape, and which will not have the following negative impacts of Powerships which include:

    a. Tax exemptions
    b. Costs of greenhouse gas emissions;
    c. Exemption from local content requirements;
    d. Possible contamination of marine resources;
    e. Noise;
    f. Potential for major industrial accidents.

F3: Renewable energy

[54] Table 8-5 Impact of the No-Go Alternative page 179

77. It is noted that recent media reports refer to the availability and/or feasibility of renewable energy projects and plans in the vicinity of Saldanha Bay, Coega and Richards Bay. Hence these alternative options, their consequences and impacts including socio-economic impacts should have been investigated and considered in the consideration of the no-go option and the BPEO, but were not:

- Potential for renewable energy generation in Ngqura is planned with an overall capacity of 183 MW, a 12 MW Photovoltaic (PV) solar farm, with Bioenergy projects in the pipeline.[55]
- Research into prospects for renewable energy potential in Kwazulu Natal indicates that KZN province has a RE potential exploitable of about 45 GW divided into 53.63 % of global normal irradiance (GHI), 23.28 % of direct normal irradiance (DNI), 13.52 % of wind energy, 9.51 % of geothermal and 0.06 % of biomass energy that can be converted into electricity, ocean energy and hydropower excluded. Northern KZN has considerable potential for solar power generation.[56]
- Significant wind energy is already being generated in the Saldanha Bay are at the Umoya Wind form which Located 125km north of Cape Town on the R45 in the Saldanha Bay Municipality in the Western Cape province, Umoya Energy Wind Farm generates approximately 176 600 MWh of clean renewable energy every year.[57]

78. The no-go option was merely presented as a lost opportunity to generate electricity from gas, in line with general government policy and projections of economic benefit. The adverse economic result of increased marine pollution in Small Bay was not considered.

> "The primary direct impact of not implementing the proposed project relates to a missed opportunity to align with South Africa's prevailing energy policy, the Integrated Resource Plan which calls for diversification of electricity supply sources, including natural gas in the transition to an energy mix dominated by renewables in the long-term. The result is likely to be that the electricity baseload which would have been provided by the Powership will be procured elsewhere to stabilize the national grid, potentially from a higher-emitting fuel source such as coal or heavy fuel oil (HFO)."[58]

79. The failure to properly consider the no-go option is fatal to the application for authorisation.

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[55] See https://www.coega.co.za/Content2.aspx?objID=193

[56] Assessment of renewable energy potential in Kwazulu-Natal province, South Africa N. Marc-AlainMutombo B.P.Numbi Energy Reports Volume 5, November 2019, Pages 874-881, at page 876 https://www.sciencedirect.com/science/article/pii/S2352484719300319

[57] https://umoyaenergy.co.za/wind-farm/

[58] Draft EIA report page 180

80. Apart from the issue of tax relief and exemption from local content requirements mentioned above, the comparative cost to the taxpayer of electricity generated by Powerships (including cost of providing supporting marine infrastructure) as compared with the costs to the taxpayer of the equivalent amount of electricity generated by renewable energy is not provided in the Draft EIA report.
81. The potential cost of the potential adverse economic consequences as result of increased marine pollution or a potential marine pollution incident in Ngqura harbour was not considered.
82. The consequence is that the information necessary to consider the best practicable environmental option is absent and it is hence it is impossible for the decision maker is apply its mind to this factor in making a decision to authorise the plant. This is a fatal flaw.

F: FLAWS IN THE ASSESSMENT OF NOISE IMPACTS

83. The noise impact assessments for the Powerships contain admissions that their operations would cause impermissible levels of noise at key receptors, and that includes three residential receptors at Saldanha Bay (Indicated on Table 9 – Noise during the operational Phase - as NSA 1, 8 and 9.) Alternative 1 in Saldanha Bay exceeds industrial limits at night at NSA 2 which is approximately a kilometre from the Powership.
84. The Draft EIA report provides the following information: (see SPECIALIST STUDY ON NOISE IMPACTS)[59]

[59] Page 802 of the combined expert reports

6. RELEVANT LEGISLATION AND GUIDELINES

SANS 10103:2008 provides typical rating levels for noise in various types of districts, as described in Table 5 below.

Table 4 -Typical rating levels for noise in various types of districts.

Type of District	Equivalent Continuous Rating Level, LReq.T for Noise					
	Outdoors (dB(A))			Indoors, with open windows (dB(A))		
	Day-night	Daytime	Night-time	Day-night	Daytime	Night-time
Rural Districts	45	45	35	35	35	25
Suburban districts with little road traffic	50	50	40	40	40	30
Urban districts	55	55	45	45	45	35
Urban districts with one or more of the following: Workshops; business premises and main roads	60	60	50	50	50	40
Central business districts	65	65	55	55	55	45
Industrial districts	70	70	60	60	60	50

Table 9 - Noise Level at receivers during operational phase

NSA No.	SANS 10103:2008 District	SANS 10103:2008 Limits dB(A)		Alternative 1 Predicted Noise Levels (dB(A))	Alternative 1 Comment on results	Alternative 2 Predicted Noise Levels (dB(A))	Alternative 2 Comment on Results
		Day	Night				
1	Residential	50	40	56.0	Exceeds Day & Night Limits	49.5	Exceeds Day & Night Limit
2	Industrial	70	60	62.2	Exceeds Night Limit	54.2	Within Limits
3	Residential	50	40	0,0	Within Limits	0,0	Within Limits
4	Residential	50	40	0.0	Within Limits	0.0	Within Limits
5	Residential	50	40	0,0	Within Limits	0,0	Within Limits
6	Residential	50	40	22,1	Within Limits	0,0	Within Limits
7	Residential	50	40	40,9	Exceeds Night Limit	41.0	Exceeds Night Limit
8	Residential	50	40	0,0	Within Limits	0,0	Within Limits
9	Residential	50	40	47,8	Exceeds Night Limit	0,0	Within Limits

85. The report fails to assess the cumulative impact of the noise generated by the Powerships when considered together with other ambient noise, on the basis that cumulative noise extremely difficult to predict.[60] Baseline monitoring of the ambient noise levels at and adjacent to the proposed sites was conducted. Ambient noise levels in the area of the proposed development were 54.9 dB(A). South African noise control

[60] Paragraph 7.5

regulations and the local authority regulations describe a disturbing noise as any noise that exceeds the ambient noise by more than 7dB.

86. The environment in the vicinity of the mooring is industrial, for both alternatives, with trains shunting on the iron ore terminal, and staff at Transnet and others working and operating there. It is reasonable to therefore to assume that cumulative noise levels for these persons could be significant given the fact that even without considering cumulative noise levels, the Powerships emit continuous noise at levels which exceed permissible residential and industrial levels as far as a kilometer away at NSA2 (which is the nearest residential area of Blouwater) for Alternative 1. Judging from the predicted noise levels from the Powerships, cumulative noise levels are likely to be particularly significant, in industrial facilities around the Iron Ore Terminal which start within 500 meters of the moorings and exend to 1000 m from the moored Powership itself.

87. The noise impact assessment did not assess the noise in these workplaces in the vicinity of the Powership mooring at the Iron Ore Terminal and its associated buildings. The closest receptors considered were around a kilometre away in the residential area of Bluewater Bay. The report merely states that It is not anticipated that there will be complaints from the industrial areas.[61] This is an unjustifiable omission to assess a significant potential impact on the health and well being of employees working in the Transnet iron ore terminal and surrounding areas , and constitutes a fatal flaw.

88. A map of the noise affected area (Figure 5) indicates that in the area within 700 meters of the powership, noise levels of between 70 and 90 decibels will occur, and that the area of the iron ore terminal and associated buidings is shown to fall within a 70 to 80 decibel range. Current ambient noise levels ascertained from a field study showed that the ambient noise levels in the area of the proposed development were 54.9 dB(A). The modelling results for the operational phase were only for noise from the operational activities and exclude other noise sources around the site, such as road traffic and the noise in the existing port areas, which are part of the existing ambient noise.[62]

[61] Paragraph 8
[62] Paragraph7.3

89. People working on the ore terminal and adjacent buildings could be affected by noise up to 80 decibels, without considering cumulative noise levels. This constitutes a significant impact for persons working in the vicinity of the Powerships. The failure to assess cumulative noise levels is a fatal flaw given the significant noise levels that will be generated by the Powerships and the EIA requirement that cumulative impacts be assessed.

90. Measures intended to mitigate noise in the construction phase are inadequate, as described in the EIA:

"The noise impact from the proposed project should be measured during the operational phase, to ensure that the impact is within the required legal limit."

As regards the operational phase:

" Install acoustic enclosures around all major noise emitting components to supress the noise emissions from equipment such as engines, exhaust stacks etc.

Install silencers on equipment such as exhaust stacks outlets and all air outlets and inlets." [63]

91. The EMPR has several vague provisions aimed at noise reduction, none of which will provide effective and enforceable mitigation, bringing the levels of noise within acceptable limits from a human health perspective. These include:

- "The Contractor must keep noise level within acceptable limits,[64]
- The noise impact from the proposed project should be measured during the operational phase, to ensure that the impact is within the required legal limit.[65]
- The mitigation measures proposed by noise specialist should be adhered to.[66]
- Noise pollution must be minimised to ensure faunal inhabitants are not stressed.[67]
- Noise levels must be kept within prescribed limits. All noise and sounds generated must adhere to SANS 10103 specifications for maximum allowable noise levels for rural areas."[68]

92. None of these provisions are sufficiently precise to be enforceable. The last mentioned item does not protect health in that it considers the noise from the Powership in

[63] Noise impact assessment Paragraph 7.3 at Page 848 of the combined expert reports
[64] EMPR page 57
[65] Id page 71
[66] Id page 83
[67] Id page 91
[68] Id page 110

isolation, whereas the cumulative noise in the industrial environment around the port could be significant.

93. It is noted that the Draft EIA recommends the authorisation of an activity that operates continuously and produces noise levels that are not compliant with regulatory standards, making only the vague suggestion that noise should be suppressed to prescribed levels. The competent authority cannot lawfully authorise an activity that is non-compliant, justifying doing so on the basis of the authorisation being subject to conditions where these conditions are unenforceable. On this basis alone the Powership project should not be authorised.

G. THE ISSUE OF BASE LOAD

94. The Draft EIA report states that a positive impact, rated as high, of the Powership operations is the addition of 415MW of baseload electricity to the national grid.[69] The approach of the Draft EIA to base load is however outdated. It reflects the approach of the National Electricity Regulator's (NERSA). In its definitions, NERSA states that

> "base load generation means the generating facilities within a utility system, which are operated to the greatest extent possible to maximise system mechanical and thermal efficiency and minimise system operating cost. Typical example is the coal power station".

95. The view has been expressed by *inter alia* the CEO of UK National Grid, Steve Holliday that base-load is an outdated concept.[70] The US Energy Information Administration holds the view that base load is "the minimum amount of **electric power** delivered or required over a given period of time at a steady rate."[71]

96. NERSA and the Powerships Draft EIA report appear to conflate the need for the electricity system to deliver a minimum demand at all times with a power station needing to produce power at all times. This can be likened to a factory that runs 24 hours a day. It does not mean that each factory worker has to work 24 hours a day, as long as there is sufficient

[69] Draft EIA Report Page 150
[70] https://energypost.eu/interview-steve-holliday-ceo-national-grid-idea-large-power-stations-baseload-power-outdated.
[71] US Energy Information Administration. Online glossary, available at: https://www.eia.gov/tools/glossary/index.php?id=B

work going on to produce the expected output.[72] With regard to base load, the Rocky Mountain Institute's Amory Lovins explains:

> "That widely heard claim is fallacious. The manifest need for some amount of steady, reliable power is met by generating plants collectively, not individually. That is, reliability is a statistical attribute of all the plants on the grid combined."[73]

97. Accordingly the base load that is potentially available from the Powerships will also be available from generating plants collectively including new renewable energy plants.

H. HEAVY FURNACE OIL

98. The Draft EIA refers to the fact that the ships run on HFO. The air pollution impacts of use of this fuel need to be assessed in the EIA. Furthermore the public needs to be assured that the ships will not be burning HFO to generate electricity given its high emissions of greenhouse gasses and air pollutants.

CONCLUSION

99. The Draft EIA report contains a significant number of fatal flaws as set out above.

100. In light of the significant deficiencies in the Draft EIA report a proper assessment of the best practicable environmental option is not feasible and no decision to authorise the project will be lawful.

101. Apart from these deficiencies it is submitted that the location of this project is totally inappropriate for Saldanha Bay, given

a. The state of Small Bay and the potential for further degradation due to marine pollution posed by the Karpowerships project, and
b. The potential consequences of a major industrial accident given the planned large scale storage and infrastructure for gas in the vicinity of the mooring of the powerships.

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[72] Steve Thomas. January 2021. "Submission to NERSA on South Africa's proposed nuclear power programme."

[73] Amory B Lovins. 13 October 2009. Rocky Mountain Institute. "Four Nuclear Myths." Available online at:

https://rmi.org/wp-content/uploads/2017/05/RMI_Document_Repository_Public-Reprts_2009- 09_FourNuclearMyths.pdf

102. Accordingly the application for environmental authorisation should not be granted.

Green Connection

30 March 2021

Comments authored by **Angela Andrews**.
Additional legal comment provided by **Dr. Mark Chernaik, E-LAW (US).**