Unit B1
Clareview Business Park
236 Imam Haron Road
Claremont
7700

P O Box 24308
Lansdowne
7779
www.thegreenconnection.org.za

30 May 2021

Department of Environment, Forestry and Fisheries
Private Bag X447
Pretoria
0001

Attention:

Mr Sabelo Malaza

Chief Director: Integrated Environmental Authorisations Department of Environment, Forestry and Fisheries

c/o Ms Thabile Sangweni Case Officer

Email: TSangweni@environment.gov.za;

Cc: Ms Millicent Solomons

Director: Priority Infrastructure Projects

Email: MSolomons@environment.gov.za

Cc: Ms. Hantie Plomp (Managing Director).

PO Box 6595, Zimbali,

4418

Phone: (032) 9463213

E-mail: pppsaldanha.triplo4@gmail.com / hantie@triplo4.com Fax:(032) 9460826

Dear Sir/Madam,

Section 13 Complaint – KARPOWER GAS TO POWER POWERSHIP PROJECT/SALDANHA BAY

DEFF Ref: 14/12/16/3/3/2/2006

1. This complaint is submitted by the Green Connection in terms of section 13 of the EIA regulations, as amended[1] regarding failure of Triplo 4 to ensure compliance with EIA regulations pertaining to the contents of environmental impact assessment reports. The complaint relates to the environmental impact assessment conducted under the application for environmental authorisation for the Proposed Gas to Power Powership Project at the Port of Saldanha Bay, Saldanha Local Municipality, Western Cape.[2] The complaint is submitted in terms of section 32(1) of NEMA, by the Green Connection in their own and the public interest, in the interests of protecting the environment and in the interests of small scale fishers of Saldanha Bay whose fishing interests may be affected as well as those small scale fishers who for practical reasons are unable to bring such complaint[3]
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. The facts on which this complaint is based are a failure to conduct a specialist study of the potential consequences or impacts on the environment and marine resources of Saldanha Bay - in particular those on which small scale fishers of Saldanha Bay depend for their livelihoods - of underwater noise generated by the ships, prior to submission of the final environmental impact assessment report (FEIAR) to the competent authority for authorisation of the project.[4] The life span of the project is 20 years and the potential consequences therefore encompass this period.

LEGISLATIVE CONTEXT

4. Excepts of the relevant legislation governing complaints of this nature are as follows:

Section 13 GENERAL REQUREMENTS FOR EAPS

13 (1) An EAP and a specialist, appointed in terms of regulation 12(1) or 12(2), must—

[1] ENVIRONMENTAL IMPACT ASSESSMENT REGULATIONS, 2014 Government Notice R982 in Government Gazette 38282 dated 4 December 2014, as amended published in GN 326 07 APRIL 2017, promulgated under the National Environmental Management Act of 1998.

[2] DEFF REF NO: 14/12/16/3/3/2/2006

[3] Section 32(1)(b) and (c)

[4] NEMA section 24(4) states that Procedures for the investigation, assessment and communication of the potential consequences or impacts of activities on the environment – (a) must ensure, with respect to every application for an environmental authorisation
(iv) (the) investigation of the potential consequences for or impacts on the environment of the activity and assessment of the significance of those potential consequences or impacts;

(a) be independent;
(b) have expertise in conducting environmental impact assessments or undertaking specialist work as required, including knowledge of the Act, these Regulations and any guidelines that have relevance to the proposed activity;
(c) ensure compliance with these Regulations;
(d) perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the application;

Section 14 - Disqualification of EAPs and specialists

(1) If the competent authority at any stage of considering an application has reason to believe that the EAP or specialist is not complying or has not complied with the requirements of regulation 13 in respect of the application, other than circumstances where the requirement of independence in regulation 13(1)(a) has been met by compliance with regulation 13(2) and (3), the competent authority may— (a) notify the EAP or specialist and the applicant of the reasons therefore, that the application is suspended until the matter is resolved and the extended timeframe for the processing of the application; and

(2) Other than circumstances where the requirement of independence in regulation 13(1)(a) has been met by compliance with regulation 13(2) and (3), an interested and affected party may notify the competent authority of any suspected non-compliance with regulation 13.

5. Requirements for the EIA reports are set out in the regulations as follows:

Section 40. Purpose of public participation
40(2) (2) The public participation process contemplated in this regulation must provide access to all information that reasonably has or may have the potential to influence any decision with regard to an application unless access to that information is protected by law.
(6) When complying with this regulation, the person conducting the public participation process must ensure that - (a) information containing all relevant facts in respect of the application or proposed application is made available to potential interested and affected parties; and (b) participation by potential or registered interested and affected parties is facilitated in such a manner that all potential or registered interested and affected parties are provided with a reasonable opportunity to comment on the application or proposed application.

Appendix 3 to the EIA regulations which deals with the requirements for environmental impact assessment reports states:

Section 1 (2) states that ***the environmental impacts, mitigation and closure outcomes as well as the residual risks of the proposed activity must be set out in the environmental impact assessment report****.* (emphasis added)
Section 2 states that the objective of the EIA process is, through a consultative process to
2(d) determine the - (i) nature, significance, consequence, extent, duration and probability of the impacts occurring to inform identified preferred alternatives; and (ii) degree to which these impacts - (aa) can be reversed; (bb) may cause irreplaceable loss of resources, and (cc) can be avoided, managed or mitigated; (emphasis added)

UNDERWATER NOISE IMPACT ISSUE

6. The noise impact on fish in Saldanha Bay was raised at the scoping stage.[5] It was described as follows:

"The site is also within a sensitive marine ecosystem that could be impacted by the underwater noise of the vessel operations. (transmission through hull, propellers, sonar ranging devices etc)."

7. The Comments and Responses Trail report, Appendix 9 to the final EIA report, records for example that this issue was raised by the Anti Gas Alliance at the scoping stage. An excerpt from this report is attached hereto as Appendix 2.

The response of Triplo 4 was:

"The following specialist and technical studies were undertaken, the potential impacts were assessed, and mitigation measures to reduce the risk rating were prescribed:

Atmospheric Impact Report by Umoyo-Nilu, dated April 2021; Noise Specialist Study by Safetech, dated April 2021;Technical Report of the Karpowerships Terrestrial and Underwater Radiated Noise (URN) Evaluation, dated 17 April 2021;Marine Ecology Specialist Study, dated April 2021 and Coastal and Estuarine Impact Assessment Report, dated April

…..

The Draft EIA report provides further details of the above studies. Areas of the Final EIA report have been updated in response to queries raised through public consultation. This includes aspects such as underwater noise."[6]

8. The initial EIA MARINE ECOLOGY SPECALIST STUDY report, (contained in the Draft EIA report on which the public was invited to comment as revision 3) states:[7]

Effects of increased noise and vibration levels on the surrounding marine ecology	The impact could not be assessed due to the lack of underwater noise and vibration levels data pertaining to floating power plant ships.

[5] Draft Scoping Report paragraph 4.9.2

[6] Comments and Responses Trail report, Appendix 9 to the final EIA report pages 426 -427

[7] Table 4.1 - *Summary of impacts associated with the proposed FPP facility's construction and operation that were identified and assessed.* DRAFT MARINE ECOLOGY SPECALIST STUDY G2P DEVELOPMENT, SALDANHA BAY Baseline and Impact Assessment Report PREPARED FOR: Triple 4REPORT REF.: LT 889 BR & EIA SALDANHA V 3.0 February 2021

9. The MARINE ECOLOGY SPECALIST STUDY (version 5) highlights the fact that noise pollution could impact adversely on the marine environment, and fish. (see Annexure 5 hereto) It states:

"Key activities associated with the proposed project that could be deleterious to the marine environment include…..increased noise levels from power generation machinery in the port inter-and subtidal environments…. Components of the marine environment that could be affected by these activities are focussed on in this baseline description and impact assessment "[8]

and

"The proposed FPP facility in the Port of Saldanha Bay is surrounded by important habitats such as Langebaan Lagoon, Malgas, Jutten and Marcus Islands, the subtidal benthic zone, the water body itself and also aquaculture development zones. These areas could be impacted by the surface noise and the underwater noise from the vessel operations. ***Underwater noise from human activities is known to have a number of adverse effects on individual aquatic organisms****. (emphasis added) Effects may arise from exposure to brief high-level sounds and may include death, injury, permanent or temporary hearing impairment or those behavioural responses that may disrupt important life functions (Popper and Hawkins 2016).* ***With longer exposures, chronic effects may occur,*** *(emphasis added) including developmental deficiencies and physiological stress (Popper and Hawkins 2016). These may affect life functions, including individual health and fitness, foraging efficiency, avoidance of predation, swimming energetics and reproductive behaviour (Popper and Hawkins 2016). The sensitive receptors to noise within the Port of Saldanha Bay are fish, diving/swimming seabirds (to be assessed by avifauna specialist) and marine mammals. "*[9]

10. The issue of noise impacts is particularly concerning given the decline in fish stocks and the location of the Powerships close to the shoreline - where juvenile fish species that are more susceptible to noise - are located:

"Saldanha Bay acts as an essential nursery habitat for many fish species due to its nutrient-rich waters. Juveniles are considered more susceptible to noise disturbances as they are less mobile, while adult fish (and marine mammals) can move out of affected areas."[10]

11. The MARINE ECOLOGY SPECALIST STUDY does not, however, study these effects. In particular it does not conduct any site-specific modelling studies for underwater noise from the proposed FPP operations, but suggests that a baseline study of the underwater noise climate in the Port of Saldanha Bay is done so that a noise modelling study can be undertaken. It states:

"This will allow for a more quantitative understanding of the underwater noise produced from FPP operations in the Port of Saldanha Bay so that a quantitative assessment of the impact of noise on the surrounding marine ecology can be done." [11]

[8] Id paragraph 1.2
[9] Paragraph 3.4.4
[10] id

12. As the final EIA report has already been submitted without such a study, it can only be done after authorisation is granted and therefore does not form part of the environmental impact assessment. A study into impacts identified in the scoping report is not a mitigation measure.
13. The MARINE ECOLOGY SPECALIST STUDY refers to a short-term study on the underwater noise produced by powership operations in Ghana but qualifies these findings by stating that noise generation from the Powerships needs to be studied in the context of the Saldanha Bay topography:

"Sound propagation from the FPP operations in Small and Big Bay will be affected by the topography of the Port. Sound waves will be absorbed and/or reflected by port structures. If we assume that the powership proposed for the Port of Saldanha Bay is equivalent in sound generation to that moored in Ghana, then effects on the surrounding marine ecology would be unlikely. However, as mentioned, a better understanding of the underwater noise climate in the Port of Saldanha Bay is required to place the noise generated by the powership in context."[12]

14. In light of this, the report makes recommendations for further study which can clearly only be undertaken after the authorisation is granted:

"It is thus recommended that:

o A baseline study of the underwater noise climates in the Port of Saldanha Bay is initiated.
o This information should be combined with the likely powership noise estimates presented above and the impacts of the total noise on the marine ecology should be reassessed.
o Long-term monitoring (at least 12 months) of underwater noise should be developed and this information should be made available to the wider scientific community."[13]

15. The overall conclusion entitled "Impact Rating Summary" states:

"It is concluded that ***there is not enough information*** *pertaining to underwater noise and vibration levels from floating power plant ships in the context of the Port of Saldanha Bay to conduct an assessment. Therefore, general sound levels from commercial vessels and from a powership moored in another location are presented, as are the biological thresholds of sensitive receptors. A quantitative underwater noise assessment is recommended to comprehensively assess the impact on the marine ecology."*[14] (emphasis added)
Regarding cumulative impacts it states:

[11] MARINE ECOLOGY SPECALIST STUDY G2P DEVELOPMENT, SALDANHA BAY Baseline and Impact Assessment Report PREPARED FOR: REPORT REF.: LT 889 BR & EIA SALDANHA V 5.0 April 2021 paragraph 3.4.4
[12] Id paragraph 3.4.4
[13] id

[14] Id paragraph 4

"A noise modelling study should be undertaken to gain a more quantitative understanding of the noise produced from powership operations in the Port of Saldanha Bay and the cumulative impacts on the surrounding marine ecology."[15]

16. The SAFETECH SPECIALIST STUDY ON NOISE IMPACTS[16] discusses both above ground and underwater noise impacts. It states that underwater noise from the project could be generated from a variety of sources.

It states that it is critical that the underwater soundscape of Saldanha Bay be determined, and the potential noise impacts of the proposed project be thoroughly assessed.

"It is therefore of critical importance that the current underwater soundscape of Saldanha Bay be determined, and the potential noise impacts of the proposed project be thoroughly assessed. A separate Underwater Noise Impact Assessment is thus recommended along with detailed underwater noise measurements using hydrophones in the important habitats and shipping routes into Saldanha Bay as described above."[17]

17. It states that information from powerships located in Ghana can be used for this study to evaluate underwater impacts and recommends for underwater noise that:

"d) A hydrophone system is used to determine the underwater soundscape in the vicinity of the Powership berth, FSRU, LNGC berth, harbour entrance and other sensitive areas in Saldanha Bay to determine the current underwater noise environment. This should commence prior to construction and continue periodically once the operational phase commences." [18]

18. Excerpts from the SAFETECH are included in Annexure 4 to this complaint. It is clear that the recommended studies can only take place after authorisation has been granted.
19. As a result of the conclusions and recommendations of both of these specialist reports, the Final EIA report is unable to present to the competent authority an assessment of a potentially significant impact, prior to authorisation of the project, namely the impact of sustained and continuous noise for 20 years on fragile and severely depleted fish populations (particularly juvenile fish) in Saldanha Bay, on which small scale fishers depend for a livelihood.

PUBLIC ENGAGEMENT ON THE ISSUE OF MARINE NOISE IMPACTS

20. A meeting was arranged by Triplo 4 with small scale fishers and referred to in the Final EIA report as "Saldanha Bay Focus Meeting for Fishers – 19 April 2021 Time: 11h00 to 13h45". The issue of marine noise impacts was repeatedly highlighted as a concern for fishers who are facing declining fish stocks and are concerned at the impact on remaining resouces in particular the Stompneus which is in a state of decline. Minutes of the said meeting are annexed hereto as Annexure 3. In a letter 25th April 2021 sent to small scale

[15] Id paragraph 5 – Cumulative impacts

[16] ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED GAS TO POWER POWERSHIP PROJECT AT THE PORT OF SALDANHA SALDANHA BAY LOCAL MUNICIPALITY, WESTERN CAPE SOUTH AFRICA - SPECIALIST STUDY ON NOISE IMPACTS

[17] SAFETECH REPORT paragraph 7.7 – at page 986 of the Specialist Reports Annexure 1 to the Final EIAR

[18] Id paragraph 8

fishers in relation to the meeting of 19th April Trirplo4 states that the underwater noise impact is being investigated. (See Annexure 1 hereto).

"Gesien die lae impakte wat verwag word, word geen verminderingspogings voorgestel nie. Die effek van geraas en vibrasie op mariene ekologie word was ondersoek en daar word verwag dat die werksaamhede van die projek laer onderwater geraas te weeg bring as ander groot vragskepe."

21. However the letter does not indicate that the specialist study had stated that there was *"there is not enough information pertaining to underwater noise and vibration levels from floating power plant ships in the context of the Port of Saldanha Bay to conduct an assessment"* and that this information would therefore not be obtained prior to authorisation being granted.
22. The final EIA does not present information on this issue in a consistent manner. It commences by stating in the EXECUTIVE SUMMARY that these impacts are unlikely [19]

The following conclusion in the EXECUTIVE SUMMARY is drawn and is inconsistent with the reservations expressed in specialist studies regarding noise impacts on the marine environment:

"Various specialist environmental studies are being commissioned to identify the potential environmental impacts of the proposed project on life below water, life on land and climate change in order to establish required mitigation in terms of alternatives and other mitigation measures during the EIA phase. The findings indicate that…. The risk associated with the project has been determined to be low and risk management can be applied to limit air quality or maritime related incidents;

"Based on the findings of the independent specialist studies, the proposed project ***will not result in significant negative environmental or social impacts*** *provided the mitigation measure recommended by the EAP and specialists."*[20]

23. This statement is made notwithstanding the fact that there is currently not enough information pertaining to underwater noise and vibration levels from floating power plant ships in the context of the Port of Saldanha Bay to conduct an assessment.
24. Further studies into impacts, and their assessment after authorisation, do not constitute mitigation measures.
25. The conclusion of the Executive Summary pertaining to underwater noise impacts fails to alert the reader at the commencement of the final EIA Report that the Marine Ecological specialist had indicated that *there is* ***not enough information*** *pertaining to underwater noise and vibration levels from floating power plant ships in the context of the Port of Saldanha Bay to conduct an assessment, and that he had stated: "However, as mentioned, a better understanding of the underwater noise climate in the Port of Saldanha Bay is required to place the noise generated by the powership in context."*[21]
26. Section 6 deals with motivation, need and desirability as envisaged in *2014 EIA Regulations (as amended), Appendix 3 (1) (f) .* It states that all impacts including negative and cumulative impacts can be adequately managed and mitigated and reduced to lower significance ratings recommended to proceed, and does so

[19] Final EIA report page (iv)
[20] Final EIA report page (iv)
[21] Id paragraph 3.4.4

unconditionally. There is no reference to the need for further studies into marine noise impacts or any uncertainty in regard thereto.

"All negative cumulative impacts can be adequately managed and mitigated and reduced to lower significance ratings. This must also be consistently enforced on the Vortum (CCGT) Thermal Power Plant and the Auriga Thermal Power Plant. The cumulative positive impacts of these projects will have multi-fold social and economic benefits on both a local and national scale. The proposed development can proceed." [22]

"Environmental Sensitivities

Numerous independent specialist studies were conducted to assess the potential impact on the environmental andsocio-economic aspects related to the proposed gas to Powership project. The alternatives presented in Section 3 of this report have considered environmental, engineering and socio-economic factors. No fatal flaws were identified during the Specialist assessments and EIA process." [23]

27. The following was added in the Final EIA report
"This assessment of cumulative impacts has assessed the Vortum (CCGT) Thermal Power Plant and the Auriga Thermal Power Plant in terms of avifauna, wetlands, hydropedology, hydrology, geohydrology, climate change, estuaries, marine ecology, air quality, heritage, archaeology and palaeontology, major hazard risks, socio-economy, noise and marine traffic.

…….

All negative cumulative impacts can be adequately managed and mitigated and reduced to lower significance ratings. This must also be consistently enforced on the Vortum (CCGT) Thermal Power Plant and the Auriga Thermal Power Plant. The cumulative positive impacts of these projects will have multi-fold social and economic benefits on both a local and national scale. The proposed development can proceed."[24]

This is repeated under paragraph 8.2 – Impact assessment methodology

"All negative cumulative impacts can be adequately managed and reduced to lower significance ratings. This must also be consistently enforced on the Vortum (CCGT) Thermal Power Plant and the Auriga Thermal Power Plant. The cumulative positive impacts of these projects will have multi-fold social and economic benefits on both a local and national scale. The proposed development can proceed."[25]

28. The picture is then presented in a somewhat inconsistent fashion in Section 8 of the report dealing with IMPACT ASSESSMENT FINDINGS. In regard to marine ecology impacts the report once again concludes that the effects of underwater noise from the Powership operations on marine ecology are unlikely:

[22] Id page 95
[23] Final EIA report paragraph 6.2 at page 110
[24] id
[25] Paragraph 8.2 page 124

"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 Saldanha 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."[26]

29. However, the report then goes on to say that this high-level, non- quantitative assessment based on estimations of underwater noise from commercial ships and powerships moored in other locations, and that further studies are recommended:

"No site-specific modelling studies have been undertaken for underwater noise from the proposed FPP operations. Therefore, this is a high-level, non- quantitative assessment based on estimations of underwater noise from commercial ships and powerships moored in other locations. …..

Sound propagation from the FPP operations in Small and Big Bay will be affected by the topography of the Port. Sound waves will be absorbed and/or reflected by port structures. If we assume that the powership proposed for the Port of Saldanha Bay is equivalent in sound generation to that moored in Ghana, then effects on the surrounding marine ecology would be unlikely. However, as mentioned, a better understanding of the underwater noise climate in the Port of Saldanha Bay is required to place the noise generated by the powership in context.

It is thus recommended that:

- *A baseline study of the underwater noise climates in the Port of Saldanha Bay is initiated.*
- *This information should be combined with the likely powership noise estimates presented above and the impacts of the total noise on the marine ecology should be reassessed."*

30. Finally underwater noise impacts are presented as a matter for which it is critically important to assess the impacts.

"The proposed project is situated within the Port of Saldanha and adjacent to the Jutten Island Marine Protected Area.
It is therefore of critical importance that the current underwater soundscape of Saldanha Bay be determined, and the potential noise impacts of the proposed project be thoroughly assessed. A separate Underwater Noise Impact Assessment is thus recommended along, with detailed underwater noise measurements using hydrophones in the important habitats and shipping routes into Saldanha Bay as described above.
Subsequent to Version 3 of this report, the client was requested to provide information on a current installation of similar size. The results of a study conducted in April 2021 in Ghana of a similar Powership by GDS R&D and AB MECHENG shows that in the immediate vicinity of the hull of the vessel, the underwater noise does not appear to exceed 110dB at frequencies in the 1/3 octave band scale. The Ghana study only applies to the berthed

[26] FEIAR Page 171

Powership and not the vessel traffic associated with the operation thereof i.e. LNG deliveries etc. The ecological specialist studies can thus use the Ghana study data to evaluate the underwater noise impacts."[27]

31. However the cumulative impact assessment once again speculates that marine impacts will be of low significance notwithstanding these concerns. Table 8-5 - Significance of Potential Cumulative Impacts - rates as low the Disturbance of sediments, the uptake of large volumes of water, the discharge of thermal effluent or the generation of underwater noise cumulatively impacting on marine ecology. The report adds that noise modelling should be undertaken to "get a better understanding."

"The comprehensive, quantitative assessment of cumulative impacts requires extensive input from government departments, regulating authorities and other stakeholders. Given that the marine ecological impacts of the proposed Karpowership project are mostly considered to be of low significance, contribution of these to any cumulative impacts that may occur will also be low. A noise modelling study should be undertaken to gain a more quantitative understanding of the noise produced from powership operations in the Port of Saldanha Bay and the cumulative impacts on the surrounding marine ecology."[28]

32. The final Environmental Impact Statement in the EIA report summarises the findings of the report in paragraph 8.5.1 regading marine noise impacts:

"The effects of increased noise and vibration levels on the surrounding marine ecology could not be assessed due to the lack of underwater noise and vibration levels data pertaining to floating power plant ships. However, it is the specialist's opinion that operations will probably be below source levels from large vessels, and this is lower than the SPL thresholds listed above for the protection of marine fauna. Therefore, the effects of underwater noise from FPP operations on marine ecology are unlikely"

33. This recommendation of the report completely fails to refer the reader to the fact that the specialist reports had indicated that data from Ghana could not be determinative of the issue. Their comments are repeated here:
    a. the Marine Ecology Specialist Study had that

" If we assume that the powership proposed for the Port of Saldanha Bay is equivalent in sound generation to that moored in Ghana, then effects on the surrounding marine ecology would be unlikely. However, as mentioned, a better understanding of the underwater noise climate in the Port of Saldanha Bay is required to place the noise generated by the powership in context."[29]

    b. The Sound Expert report stated that

"It is therefore of critical importance that the current underwater soundscape of Saldanha Bay be determined, and the potential noise impacts of the proposed project be thoroughly assessed. A separate Underwater Noise

[27] FEIA report page 184
[28] Page 191
[29] Id paragraph 3.4.4

Impact Assessment is thus recommended along with detailed underwater noise measurements using hydrophones in the important habitats and shipping routes into Saldanha Bay as described above."[30]

Relevant excerpts of the Final EIA report are annexed hereto as Annexure 6.

34. Provisions consistent with the above recommendations are reflected in the EMPR report for the construction phase of the project.[31]
35. It is submitted that the following information needed to be clearly highlighted at the outset – the executive summary - of the Final EIA report, as well as when responding to public concerns about underwater noise impacts of the project, and in the conclusions and recommendations of the Final EIA report, as presented in the updated Marine Ecology Specialist Study:

*"It is concluded that there is **not enough information** pertaining to underwater noise and vibration levels from floating power plant ships in the context of the Port of Saldanha Bay to conduct an assessment. Therefore, general sound levels from commercial vessels and from a powership moored in another location are presented, as are the biological thresholds of sensitive receptors. A quantitative underwater noise assessment is recommended to comprehensively assess the impact on the marine ecology."*[32] (emphasis added)
And

"However, as mentioned, a better understanding of the underwater noise climate in the Port of Saldanha Bay is required to place the noise generated by the powership in context.
It is thus recommended that:
o A baseline study of the underwater noise climates in the Port of Saldanha Bay is initiated.
o This information should be combined with the likely powership noise estimates presented above and the impacts of the total noise on the marine ecology should be reassessed.
o Long-term monitoring (at least 12 months) of underwater noise should be developed and this information should be made available to the wider scientific community"

36. The scoping report and plan of study are required under the EIA regulations to state which impacts are to be assessed by specialists:

EIA regulations - Appendix 2 - Scoping Reports

Section 2(i) states that the scoping report must include a plan of study for undertaking the environmental impact assessment process to be undertaken, including ….. (iii) aspects to be assessed by specialists

37. The Plan of Study for the Karpowerships Gas to Power project requires the assessment of marine impacts to be undertaken by a specialist in the field. It indicates that a marine ecological assessment would be conducted describing aspects of the marine environment that may be affected by the proposed development. Lwandle, the chosen expert would identify and evaluate predicted impacts."[33]

[30] SAFETECH REPORT paragraph 7.7 – at page 986 of the Specialist Reports Annexure 1 to the Final EIAR
[31] See appendix 6 to this letter

[32] Id paragraph 4

[33] Draft Plan of Study Gas to Powership paragraph 9.3.1.4

"9.3.1.4 Marine Ecological Assessment

A specialist study is required to determine the baseline / status–quo description describing aspects of the marine environment that may be affected by the proposed development and assess the impacts of the project on the marine environment, inclusive of entrainment.

Lwandle, the appointed specialist will conduct a site visit, where after collate the available information comprising but not limited to scientific literature, previous studies carried out in the area, any relevant local reports as well as findings gathered during the site investigation. This report will describe the ecological significance and sensitivity of the area.

Following this, the impact assessment methodology (provided by Triplo4) will be applied to produce a Specialist Marine Ecology EIA and EMP. The report will succinctly identify and evaluate predicted impacts and will assess a realistic scenario for the proposed development influenced by the level of project design information."

38. Section 24(4)(b) of the National Environmental Management Act requires that
"Procedures for the investigation, assessment and communication of the potential consequences or impacts of activities on the environment –
(b) must include, with respect to every application for an environmental authorisation and where applicable— (i) investigation of the potential consequences or impacts of the 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;
*(iv) reporting on **gaps in knowledge**, the adequacy of predictive methods and underlying assumptions, and uncertainties encountered in compiling the required information;*

39. The final EIA report was required to indicate the gaps in knowledge of the Marine Ecology Specialist Study on a consistent basis throughout the report, which it failed to do. It was required to indicate that **there is currently not enough information** pertaining to underwater noise and vibration levels from floating power plant ships in the context of the Port of Saldanha Bay to conduct an assessment of noise impacts on the marine environment, and that such assessment will not take place before the Final EIA report is presented to the competent authority for authorisation.
40. As a result of this conclusion by the Marine Ecological Specialist Study the EIA was unable to include *the environmental impacts, mitigation and closure outcomes as well as the residual risks of the proposed activity (as they pertain to underwater noise impacts) in the environmental impact assessment report as required by Section 1 (2) of Appendix 3 of the EIA regulations.* Triplo4 in compiling the Final EIA report failed to therefore ensure compliance with these regulations.
41. At the time of meeting with small scale fishers on 19th April(see minutes annexure 4 hereto) Triplo 4 consultants were aware of the fact that this issue had not been studied by a specialist, given that the Marine Ecology Specialist Study is dated February 2021. Further, that the specialist study on marine impacts had recommended that *noise modelling study should be undertaken to gain a more quantitative understanding of the noise produced from vessel operations,* and that this could not feasibly take place before the submission of the final EIA report for environmental authorisation. However they did not indicate this qualification to the meeting, nor did they do so in responding to several submissions from the

public in this regard on the Draft EIA report, emphasising rather that underwater impacts were unlikely to be a significant impact. (see EIA Appendix 9 - Comments and Responses Trail Report)

42. The Final EIA report was submitted shortly after the meeting for environmental approval.
43. The record of public participation[34] records the concerns raised by various entities about the potential impact of underwater noise on marine ecology. (The relevant records are contained in Annexure 2 to this complaint.) However the responses fail to mention the conclusions made by the MARINE ECOLOGY SPECIALIST report and NOISE report referred to above that recommend that further studies are undertaken to determine potential noise impacts and that there is currently insufficient information to do so. These at the very least should have included the following recommendations and conclusions:

    a. *NOISE IMPACT SPECIALIST REPORT: "It is therefore of critical importance that the current underwater soundscape of Saldanha Bay be determined, and the potential noise impacts of the proposed project be thoroughly assessed. A separate Underwater Noise Impact Assessment is thus recommended along, with detailed underwater noise measurements using hydrophones in the important habitats and shipping routes into Saldanha Bay as described above."*[35]
    b. *MARINE ECOLOGY SPECIALIST REPORT:"It is concluded that there is* ***not enough information*** *pertaining to underwater noise and vibration levels from floating power plant ships in the context of the Port of Saldanha Bay to conduct an assessment. Therefore, general sound levels from commercial vessels and from a powership moored in another location are presented, as are the biological thresholds of sensitive receptors. A quantitative underwater noise assessment is recommended to comprehensively assess the impact on the marine ecology."*[36] Further studies are required in order to determine the potential impact

These comments and responses are included in Annexure 2 to this complaint.

44. See for example the response to concerns raised by Oceans Not Oil regarding the impact of noise on fishing:
i) Noise impact assessments show impermissible levels of noise in the vicinity of the ships, well above ambient levels. The future development of these special economic zones has not been taken into account and the gas-to-power powership noise levels have the potential to inhibit development within these zone.[37] v) The DEIAR has not considered the risks associated with compounded behavioural disturbance and how ever-present sound could constitute a threat to populations by changing behaviour and distribution regularly at critical times and in critical areas.[38]

RESPONSE: "The noise impact associated with the operational activities of the proposed project is predicted to be of Medium-Low significance after mitigation. The construction related noise impacts will be of Very- Low significance. This is as per the updated specialist report, which indicates that the SANS 10103:2008 ratings limits

[34] EIA Appendix 9 - Comments and Responses Trail Report
[35] SAFETECH REPORT paragraph 7.7 – at page 986 of the Specialist Reports Annexure 1 to the Final EIAR

[36] Id paragraph 4

[37] EIA Appendix 9 - Comments and Responses Trail Report, Page 450
[38] Id 452

will not be exceeded. Mitigation measures have been recommended and will be included as part of the Final EIA and EMPr."[39]

45. The following response is given to Anti Gas Alliance of South Africa that had commented as follows:

"There are several issues related to the reliance on the gas to power technology facilitated by ships anchored within South Africa's mega- biodiverse marine space. These include air pollution (e.g., nitrogen oxides and methane); sound pollution **(***e.g., noise from undersea cables, surveys, cycling and generation***)**
RESPONSE: Based on engagements with representatives of Coastal Links for the Saldanha project, it is understood that the Powership being located in Big Bay is within the TNPA exclusion zone. An exclusion zone of 300m is applicable to the FSRU only during regasification, which occurs approximately every 1 in 20 days. The Socio-Economic Impact Assessment confirmed that the majority of the concerns are environmental in nature, which could impact on the livelihood on the local fishermen. Relevant environmental and marine specialists have assessed aspects such as noise, leakages, and breeding ground impacts and relevant mitigation measures have been proposed to ensure that any negative impacts are reduced and/or negated. This in turn would reduce any potential influence of the proposed project on the local fishing communities.

46. Finally a response to the issue of underwater noise impacts by in some detail by Ross Holland[40] and associated received the following response:

"To further clarify the impacts on underwater noise as per the outcome of the public participation, a supplementary assessment on underwater noise was undertaken at an existing operational Powership in Ghana and included in the Final EIA

The results of the study conducted in April 2021 in Ghana of a similar Powership (24 Engines) by GDS R&D and AB MECHENG shows that in the immediate vicinity of the hull of the vessel, the underwater noise does not appear to exceed 110dB at frequencies in the 1/3 octave band scale.

The Powership proposed for the Port of Saldanha Bay has 21 Engines and would be similar or equivalent in sound generation to that moored in Ghana, therefore the effects on the surrounding marine ecology would seem unlikely. [41]

47. It should be borne in mind that Karpowership power generating ship will be stationary and generating noise for 24 hours per day, close to the breeding grounds of juvenile fish for the period of 20 years. This is distinguishable from the impacts of normal large ships which move around almost continuously as they deliver their cargo from port to port and do not spend extended periods of time producing noise at the shoreline. The comparison of the tolerance of fish to noise from large vessels in this EIA is therefore in any event questionable.
48. It is quite clear from these responses that there has been an omission to mention that the assessment of underwater noise impacts on fishing resources will not be completed before the final EIA report is submitted to the competent authority for authorisation of the activity.

[39] id Page 457
[40] Id pages 375 and 402
[41] Id page 450

CONSEQUENCES OF FAILURE TO ASSESS NOISE IMPACTS ON MARINE LIFE

49. The lack of a marine ecological specialist assessment of the impacts of noise from the project on marine life in Saldanha Bay prior to the submission to the competent authority of the Final EIA report has the following result: Interested and affected parties, in particular small scale fishers, whose livelihoods could be affected, have been deprived of a specialist assessment *prior to the approval being granted,* of what could, over twenty years result in a significant impact of the project on their livelihoods, and which assessment is required in terms of the applicable legislation.

50. Furthermore the small scale fishers and other interested and affected parties have been deprived of the opportunity of making submissions *prior to a decision being taken by the competent authority* on such expert assessment of impacts on the marine environment of sustained noise levels over 20 years - for the simple reason that the report has not been done. Reliance has been based on information relating to Karpowerships in Ghana, in circumstances where topography of the ocean and its impact on sound has not been determined.
51. The fishers were not informed at the meeting that it was not the intention of the EIA to undertake a specialist study of these impacts *prior to the approval being granted.*
52. *The MARINE ECOLOGY SPECIALIST REPORT had recommended a quantitative underwater noise assessment to comprehensively assess the impact on the marine ecology."*[42]As a result of the failure to undertake this study prior to submitting the final EIA report to the decision maker, he/she will not have all relevant information and considerations before him or herself in order to make a lawful decision as required in terms of the Promotion of Administrative Justice Act.
53. The environmental impact assessment practitioner voiced concern at the meeting of 19th April that the application is bound by timelines and the EIA report must be submitted by the 25th April. However this reason cannot exempt the EIA from complying with the regulations and assessing all potentially significant impacts that have been identified at scoping.
54. The plan of study stated that "*A specialist study is required to determine the baseline / status–quo description describing aspects of the marine environment that may be affected by the proposed development and assess the impacts of the project on the marine environment, inclusive of entrainment."*[43] The result is that the Triplo 4 has failed to ensure compliance with the EIA regulations by ensuring that information, required to be assessed and provided by a specialist in the field as determined by the plan of study regarding a potential impact (underwater noise impacts on marine environment) has been assessed by such specialist, and that such assessment has been provided both to the public for comment and to the competent authority thereafter together with a record of comments thereon, prior to the granting by that decision maker of environmental authorisation of the activity.
55. More particularly they have failed to ensure that the Final EIA sets out *the environmental impacts, mitigation and closure outcomes as well as the residual risks of the proposed activity* as required under section 1(2) of Appendix 3 of the 2014 EIA regulations.

[42] *MARINE ECOLOGY SPECIALIST REPORT* paragraph 4

[43] See paragraph above

56. In so doing they have failed to promote compliance with the objective of the regulations which according to section 2 is to *determine through a consultative process the - (i) nature, significance, consequence, extent, duration and probability of the impacts occurring to inform identified preferred alternatives; and (ii) degree to which these impacts - (aa) can be reversed; (bb) may cause irreplaceable loss of resources, and (cc) can be avoided, managed or mitigated.*[44]

57. The competent authority is accordingly called upon to act in accordance with subregulation 14(3), which provides that where an interested and affected party notifies the competent authority of suspected non-compliance in terms of subregulation 14(2), the competent authority must investigate the allegation promptly.
58. Reference is also made to subregulation 14(5), which indicates what the competent authority may take the following steps if there is reason for it to believe that there is non-compliance with regulation 13, namely:

    a. refuse to accept any further reports, plans, documents or input from the EAP or specialist in respect of the application in question;
    b. request the applicant to—

(i) commission, at own cost, an external review, by another EAP or specialist that complies with the requirements of regulation 13, of any reports, plans or documents prepared or processes conducted in connection with the application;

(ii) appoint another EAP or specialist that complies with the requirements of regulation 13 to redo any specific aspects of the work done by the previous EAP or specialist in connection with the application or to complete any unfinished work in connection with the application; or

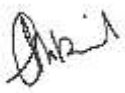
(iii) take such action as the competent authority requires to remedy the defects; or

    c. act in accordance with both paragraphs (a) and (b); and

indicate the actions to be completed and associated timeframes in order to finalise the application.

59. At the very least the Final EIA report must be withdrawn from consideration by the competent authority, until the recommended studies into marine ecology noise impacts have been completed and the small scale fishers of Saldanha Bay and other interested and affected parties given an opportunity to consider such studies and make comments thereon.

Yours faithfully



Liz McDaid
Strategic Lead
Cell: 0827315643

GREEN CONNECTION

[44] EIA regulations, 2014 Section 2(d) of Appendix 3

ANNEXURE 1

EXCERPT FROM LETTER FROM TRIPLO 4 TO SMALL SCALE FISHERS

Date: 25 April 2021

DEFF REF: 14/12/16/3/3/2/2006

Email reply to: pppsaldanha.triplo4@gmail.com / hantie@triplo4.com

VOORGESTELDE GAS TOT KRAGPROJEK BY DIE HAWE VAN SALDANHABAAI, SALDANHABAAI

PLAASLIKE MUNISIPALITEIT, WESKUSDISTRIK, WES-KAAP

Hierdie nota verskaf ‘n samevatting van die Kragskip projek by die hawe van Saldanha baai en die hoof bevindinge van die Omgewings Impak Verslag (EIA) om ‘n beter begrip te verskaf van die omgewings- en sosio-ekonomiese oorwegings wat moontlik op die kleinskaal vissermanne van Saldanha en omgewing van toepassing is.

……

2.4. Mariene Ekologie – Lwandle Consulting

Die hoofimpakte wat geidentifiseer was sluit in die effek van die projek op mariene lewe, impak van verkoelingswater op mariene organismes en die ontslag van verkoelingswater. Dit word as baie laag tot laag beskou. Die steuring van die vis kweek habitat was gevind om laag te wees. Dit is belangrik om te let na die dalende hoeveelhede visspesies en jong visse in Saldanha Baai. Dit was veroorsaak deur visvang, ‘n afname in die kwaliteit van die habitat vir jong visse en die afname in die waterkwaliteit.

Gesien die lae impakte wat verwag word, word geen verminderingspogings voorgestel nie. Die effek van geraas en vibrasie op mariene ekologie word was ondersoek en daar word verwag dat die werksaamhede van die projek laer onderwater geraas te weeg bring as ander groot vragskepe.

2.5. Onderwater Argeologiese Impak Studie – African Centre for Heritage Activities

‘n Onderwater besoek is deur Vanessa Maitland uigevoer en geen kulturele erfenis items is gevind nie. As deel van die verminderingspogings sal ‘n erfenis spesialis gedurende konstruksie aangestel word ingeval iets gevind word.

2.6. Mariene Verkeer – PRDW

Die mariene verkeersanalise is gebaseer op LNG benodighede wat 24 vaartuie vessels per jaar behels. Ongeveer 600 vaartuie gaan huidiglik die Hawe van Saldanha Baai per jaar binne. Dit is onwaarskynlik dat dit sal impakteer op die bestaande verkeer in die hawe en visvang bedrywighede sal normaal kan voortgaan.

2.7. Pluim Modelering – PRDW

Die afskeiding van water wat vir verkoeling van toerusting op die Kragskip gebruik is sal 8m onder die oppervlakte plaasvind om te verseker dat die temperatuur binne 1°C van die standard bly. Dit sal toelaat dat die hittepluim (warm water) meeloop met koue water onder die oppervlak soos dit styg wat die temperatuur van die pluim sal verlaag. Die mariene ekoloog het die ekologiese drempel beskou en dit het ‘n lae impak op mariene lewe.

2.8. Mariene Besoedeling

- Geen biosiede, soutwater of chemikalië sal met die verkoelingswater vrygestel word nie. Afval bestuursimpakte op die mariene omgewing as gevolg van grys en swart water sal verhoed word in gevolge die MARPOL vereistes.
- Afval sal bestuur word in samewerking met TNPA en kontrakteurs om vaste afval te herwin waar moontlik of na ‘n stortingsterrein te neem.

ANNEXURE 2

EXCERPTS FROM EIA APPENDIX 9 - COMMENTS AND RESPONSES TRAIL REPORT, PAGES 426 -427 – PERTAINING TO THE COMMENTS AND RESPONSES ON THE ISSUE OF UNDERWATER NOISE IN SALDANHA BAY

COMMENTS & RESPONSES TRAIL REPORT

PROPOSED GAS TO POWER VIA POWERSHIP PROJECT – PORT OF SALDANHA BAY, WESTERN CAPE

RECORD OF COMMENTS & QUESTIONS RAISED BY INTERESTED AND/OR AFFECTED PARTIES AS OF THE 02 APRIL 2021

FINAL EIA PHASE

SUMMARY OF COMMENTS RAISED DURING THE PUBLIC PARTICIPATION PERIOD FOR THE FINAL EIA PHASE

(Issues pertaining to noise are highlighted in italics)

COMMENT 1

Anti Gas Alliance of South Africa

Date: 31 March 2021

COMMENT – PAGE 362

There are several issues related to the reliance on the gas to power technology facilitated by ships anchored within South Africa's mega- biodiverse marine space. These include air pollution (e.g., nitrogen oxides and methane); sound pollution **(***e.g., noise from undersea cables, surveys, cycling and generation***);** chemical pollution (e.g., toxicity from bunker fuels and pollutant bonding); light pollution (e.g., altered faunal feeding and migrating patterns); and seaward environmental degradation (e.g., habitat destruction). These are all highly possible distinct impacts of Karpowership electricity production. These discrete disturbances go hand in hand with the net destructive impacts of fossil fuel reliance, global warming, and climate change, which consequently contribute towards ocean acidification and warming; rising sea levels; and the biodiversity crisis. The dual significances of arresting climate change and stopping the destruction of the marine environment mandate a response from all organizations associated with life, particularly those consulting on behalf of the environment.

TRIPLO 4 RESPONSE – PAGE 426 AND 434

The following specialist and technical studies were undertaken, the potential impacts were assessed, and mitigation measures to reduce the risk rating were prescribed:

Atmospheric Impact Report by Umoyo-Nilu, dated April 2021; *Noise Specialist Study by Safetech, dated April 2021;Technical Report of the Karpowerships Terrestrial and Underwater Radiated Noise (URN) Evaluation, dated 17 April 2021;Marine Ecology Specialist Study, dated April 2021 and Coastal and Estuarine Impact Assessment Report, dated April 2021*

Section 8 of the Draft EIA report provides further details of the above studies. Areas of the Final EIA report have been updated in response to queries raised through public consultation. *This includes aspects such as underwater noise.*

RESPONSE: Based on engagements with representatives of Coastal Links for the Saldanha project, it is understood that the Powership being located in Big Bay is within the TNPA exclusion zone. An exclusion zone of 300m is applicable to the FSRU only during regasification, which occurs approximately every 1 in 20 days. The Socio-Economic Impact Assessment confirmed that the majority of the concerns are environmental in nature, which could impact on the livelihood on the local fishermen. Relevant environmental and marine specialists have assessed aspects such as noise, leakages, and breeding ground impacts and relevant mitigation measures have been proposed to ensure that any negative impacts are reduced and/or negated. This in turn would reduce any potential influence of the proposed project on the local fishing communities.

COMMENT - **Page 451**

……

COMMENT 2

OCEANS NOT OIL[45]

Date: 31 March 2021

COMMENT – PAGE 445 AND 450

AT PAGE 450

5. SOUND, AIR, TEMPERATURE, AND BIOLOGICAL POLLUTION

1) SOUND

[45] Oceans Not Oil 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) Refs: 14/12/16/3/3/2/2005, 14/12/16/3/3/2/2006, 14/12/16/3/3/2/2007 pertains

i) Noise impact assessments show impermissible levels of noise in the vicinity of the ships, well above ambient levels. The future development of these special economic zones has not been taken into account and the gas-to-power powership noise levels have the potential to inhibit development within these zone.

ii) The cumulative impacts of the ensonification of the special economic zones have not been considered.

iii) The cumulative impacts of the ensonification and whole-body vibration (WBV) in fish habitats has not been considered. It was noted in 2012, by Koper and Plön, that South Africa lags behind in its knowledge on the impacts of anthropogenic sounds on its marine life, and although the development of industry is often seen as a positive initiative to create job opportunities, the long-term effects of these developments on the marine environment are potentially being overlooked7. Some threshold studies, which have only reported on only sound-pressure, may be of limited use for certain commercially valuable species, as not all species equally detect the pressure component of sound. Particle motion sensitivity, or to a combination of both particle motion and acoustic pressure, should be considered in noise impacts studies on fish and invertebrates, particularly those species lacking a gas-filled bladder (i.e. all elasmobranchs and marine invertebrates). Richards Bay harbour is a particularly important nursery habitat for juvenile fish8. Larvae and juveniles may be more susceptible to harm from this ensonification in comparison to the adults of their species, potentially jeopardizing the sustainability of various populations (Banner 1973).

TRIPLO 4 RESPONSE - PAGE 456

RESPONSE: “The noise impact associated with the operational activities of the proposed project is predicted to be of Medium-Low significance after mitigation. The construction related noise impacts will be of Very- Low significance. This is as per the updated specialist report, which indicates that the SANS 10103:2008 ratings limits will not be exceeded. Mitigation measures have been recommended and will be included as part of the Final EIA and EMPr.”

…….

COMMENT 3

Ross Holland & Associates – Sunrise Energy

31 March 2021

COMMENT ON DRAFT EIA REPORT

COMMENT - PAGE 375 AND 402.

“8.8 Shortcommings in the inclusion of recommendations and mitigation measures from the Noise Impact Study

i. We note that the following action is “highly recommended” by the noise impact specialist:

The noise impacts are re-modelled when the final design of the infrastructure and methods of construction is determined. This will enable extra noise mitigation measures to be determined before the equipment is finally

installed. (Underlining supplied) In light of the above we note with concern that this recommendation has not been included into the Planning Design and Pre- Construction requirements within the EMPr, which also does not include any proposed oversight and approval of such required additional modelling, by the Competent Authority. Given that the EAP is not an acknowledged noise specialist, we question the basis upon which this "highly recommended" mitigation measure has been omitted from the EMPr.

ii. Section 7.6 of the Noise Impact Study concludes with the following statement: "It is therefore of critical importance that the current underwater soundscape of Saldanha Bay be determined, and the potential noise impacts of the proposed project be thoroughly assessed. A separate Underwater Noise Impact Assessment is thus recommended along, with detailed underwater noise measurements using hydrophones in the important habitats and shipping routes into Saldanha Bay as described above."

We note that this requirement has been largely included (absent any mention of its "critical importance") as a "copy and paste" exercise within 8.8.6 of the EMPr.. We note the following substantive concerns: a. What possible value would such a study have if undertaken during the operational phase, once the project is a fait accompli? No mechanism is specified within the EMPr whereby the results of such a study would need to be taken into account by the proponent, nor any mechanism described whereby changes to project (in terms of either design or operational practices) would be obliged in the event that significant impacts were found to occur.

b. It is clear that as an absolute minimum (refer to Section 1 and 5 of this comment for our reservations in this regard), baseline monitoring data must be obtained from the applicants other comparable existing operational vessels and such baseline data must be analysed and modelled by both the Noise Specialist and Marine Ecologist, prior to the project progressing to the construction phase. In our considered opinion, the results of such modelling must be presented to the Competent Authority for approval, prior to the commencement of the Construction Phase of the project.

c. In the event that the necesarry pre-construction modelling is completed, the proposed Operational Phase monitoring would make sense, in order to confirm that the results, predictions and proposed mitigation measures of the modelling are adequately managing the potential impacts to the marine environment. In this case however the EMPr requires significant revision in order to adequately specify who is responsible for undertaking the monitoring, what the monitoring protocol entails, as well as the frequency and reporting requirements. iii. We note that section 8.3.29 of EMPr states that "noise impact from the proposed project should be measured during the operational phase, to ensure that the impact is within the required legal limit " We note further that the ECO designated as the responsible person for this requirement. This EMPr requirement is inadequate for the following reasons:

a. The monitoring of noise is a specialist competence, requiring specialist skills and equipment which are beyond the expertise of an ECO.

b. The EMPr fails to put forward any monitoring plan specifying the locations where noise is to be monitored.

c. The EMPr fails to specify that different noise limits are applicable to day time verses night time operations, and hence that any monitoring protocol would need to take account of both day time and night time sampling. "

TRIPLO4 RESPONSE - PAGE 376

“To further clarify the impacts on underwater noise as per the outcome of the public participation, a supplementary assessment on underwater noise was undertaken at an existing operational Powership in Ghana and included in the Final EIA

The results of the study conducted in April 2021 in Ghana of a similar Powership (24 Engines) by GDS R&D and AB MECHENG shows that in the immediate vicinity of the hull of the vessel, the underwater noise does not appear to exceed 110dB at frequencies in the 1/3 octave band scale.

The Powership proposed for the Port of Saldanha Bay has 21 Engines and would be similar or equivalent in sound generation to that moored in Ghana, therefore the effects on the surrounding marine ecology would seem unlikely.

…….

ANNEXURE 3

EXCERPTS OF MINUTES OF MEETING OF 19 APRIL 2021 BETWEEN TRIPLO 4 AND SMALL SCALE FISHERS

Saldanha Bay Focus Meeting for Fishers – 19 April 2021 Time: 11h00 to 13h45 Alistair	Burt
Vickey	De Villies
Solene	Smith
Tartum-Lee	Manuel
Natalie-Jane	Van Wyk
Camelita	Mostert
Alex	Kempthorne

MS Teams Attendees:		
Name:	**Surname:**	**Organisation:**
Shanice	Singh	Triplo4
Beyza	Özdemir	Karpowership
David	Clark	Karpowership
Hantie	Plomp	Triplo4
Marcel	Theron	UrbanEcon
Marius	Meyer	UrbanEcon
Melissa	Gopaul	Triplo4
Nerita	Sewnath	Triplo4
Pinar	Göl	Karpowership
Ravin	Rajoo	Karpowership
Waldo	Adams	EDS
Janine	Espin	Lawyer

Adam	Gunn	Lawyer
Janice	Tooley	Lawyer
Tim	[redacted] van der Merwe	Lawyer

Evidence of discussions at the Fishers focus meeting with the women representatives

KARPOWER Focus Group Meeting with Subsistence and Micro Fisheries.

Hosted by: Attendance in Person:

Alistair Burt at Weskus Coffee Roastery in Langebaan at 11H00 am to 13h25.

Alistair Burt (AB) - Phelemanga
Vicky DeVilliers (VdV) – Urban Econ
Solene Smith (SS) – Coastal Link LangeFbaan /
Tatum-Lee Manuel (TM) – Coastal Links/Green Connection Natilie-Jane van Wyk (NvW) – Coastal Links
Camelita Mostert (CM) – Coastal Links Langebaan
Alex Kempthorn (AK) – Urban-Econ
Shanice Singh (SSi) – Triplo4
Beyza Özdemir (BO) - Karpowership
David Clark (DC) - Karpowership
Hantie Plomp (HP) – Triplo4
Marcel Theron (MT) – Urban-Econ
Marius Meyer (MM) – Urban-Econ
Melisa Gopaul (MG) – Triplo4
Nerita Sewnath (NS) – Triplo4
Pinar Göl (PG) - Karpowership
Ravin Rajoo (RR) - Karpowership
Tim van der Merwe (TvdM) - Lawyer
Waldo Adams (WA) – EDS
Janine Espin - EDS
Adam (A) - Lawyer
Janice Tooley (JT) - Lawyer

Attendence via Microsoft Teams:

Purpose of the Meeting:
The purpose of the meeting was twofold.

Primarily it was an opportunity for the EAP's Triplo4 to engage with the Interested and Affected Parties (I&AP's), specifically in the subsistence and micro fisheries space, regarding concerns raised by fishermen pertaining to the proposed IPP Power ships proposed for Saldanha Bay.

Secondly, it was an opportunity to unpack and understand the concerns raised in letters received by Triplo4 regarding the impacts on the small fisheries in the Saldanha Bay area. Urban Econ representatives AK and VdV were present to assist with questions raised pertaining to the social impacts raised by the local fishermen.

AB/All	Welcomed everyone. Permission to record the presentation and the meeting for the purposes of minutes was obtained. All participants confirmed that the recording of the meeting was accepted.
HP	Welcomed everyone and thanked everyone for attending the meeting in which it was hoped clarity on the project could be offered.
All	All participants introduced themselves and stated who they represented. Hantie (HP) introduced herself. Alistair (AB) introduced himself as the facilitator. Carmelita (CM) introduced herself as the "Chair of the local Fishers". Natalie Jane (NvW) from Saldanha, representing Coastal Links and Green Connection. Taitum-Lee Manuel (TM) from Langebaan representing Coastal Links, Green Connection and Masi Fundisa. Solene Smith (SS) from Langebaan, the chair of the Local

	Fisherman, Coastal links and working with Masi Fundisa. Vicky de Villiers (VdV), working for Urban Econ. Alex Kempthorne (AK), also from Urban Econ.
AB	Attendance Register has been filled in and Covid Protocols have been observed. (Annexure 1) Information Packs were printed and handed out. These information packs included 3 maps and the presentation presented by HP.
AB	Agenda proposed, presentation by HP, then we address the concerns from the floor and deal with those matters accordingly.
HP/All	Requested clarity on the medium of communication as introductions were conducted in English. Questions in English are welcome. All participants were happy to receive the communications in Afrikaans as per the arranged request.
HP	Presented the Presentation (Annexure 2), Date to be corrected from 12th April to 19th April. The project was introduced, the purpose been to address the power shortages from Eskom, and the Department of Minerals and Energy, trying to determine alternative power producers, by means of a Tender process for the provision of power into the Eskom grid. As part of the tender process certain conditions must be met, in terms of legislative and bidding requirements. To address the risks produced by load shedding. Out of the Tender process, 28 bidders were identified, this was narrowed down by a commission to 8 bidders, which were put forward as preferred bidders, of which KARPOWER is one of these bidders. These bidders still need to meet certain conditions to provide power. One of these conditions is the completion of an Environmental Impact Assessment (EIA) as per the National Legislation. This meeting forms part of the Environmental Impacts process. Background on the process, the bid was approved in August 2020, requiring the EIA process to commence. Public participation as per the EIA process occurred on the 21st September 2020, with notifications been sent out. A public participation meeting was then held on the 15th October 2020. The reports were made available to the public. In Saldanha bay the report was made available at "Cup A Cake", as per suggestion by the local ward councillor, Councillor Truter. The process was then followed and the final concept report was sent into the Department of Environmental Affairs Forestry and Fisheries (DEFF) in November 2020. DEFF has a time period in which they can evaluate the report. The report was approved for the next phase on the 6th January 2021. From the 6th January 2021, all the specialist studies have been commissioned and done, with the associated data capture and analysis. The report went out 26th February 2021-31st March 2021 for commentary. Commentary was received from the public, specifically Coastal Links and Green Connection. Specific commentary from Coastal Links engagement was with Christie, and later with CM. Concerns about Gas harvesting were raised earlier in the process. This was addressed between HP and Christie, no gas harvesting is associated with this project within South Africa in terms of this project. Scope of the Project. There is effectively 2 parts to the project. The first component is the marine component within the harbour and on the water. The second component is based on the land. In terms of the first component, there will be two ships permanently in the harbour. For a 20 year as per the DME. The proposal is that there will be a ship on the small bay side and a ship on the big bay side. In phase 1 only small bay was looked at. But Transnet in the process indicated that there was a possibility that they would prefer the ship on the big bay side of the harbour. But the finalization as to where they would prefer the ship to be had not been determined. As such both positions were assessed and analysed

during the study. The small bay side was influenced by work done by Eskom and Transnet from 2015, when the feasibility assessments were considered. The big bay section in phase 2 was considered based on new information tabled by Transnet. The second ship that will be present is what is called a Floating Storage Regasification Unit (FSRU). This is the ship on the southern side of the image noted in the maps provided (Annexure 3;4;5) and is placed in the middle of the big bay.

Looking at the FSRU, this is basically a ship that holds the gas that is delivered in a liquid form. On the images there is a purple part representing the FSRU and a grey part representing the refuelling ship that will transfer the Liquid Natural Gas (LNG) onto the FSRU every 20 – 30 days based on the demand for energy from the ships to generate power for Eskom. There is a gas pipeline running from the FSRU to the Powership, which will generate the electricity. During the process Transnet has confirmed that they prefer the Big bay side and are no longer in favour of the Small bay side.

If we look at the electricity that will be generated on the ship, the electricity needs to be moved into a substation for distribution and use. This needs to move through a switching station and then into the Eskom substation by means of a transmission line. The transmission line will be a 132kV line.

An example of the ships was showed in the presentation, identifying the FSRU and the Powership. As part of the EIA process specialist studies need to be done to determine the possible impacts that this project might have on the environment. For this meeting, the focus has been placed on the studies that impact on the Focus group and the fishing community, as raised by Coastal Links and Green Connection. These studies look at the possible impacts, positive or negative. And if there is a negative impact how can these negative impacts be reduced. One of the studies conducted was a Visual Impact Study conducted by John Marshall, and he looked at the Powership and the FSRU that will be based in the Harbour, and the neighbourhood of the harbour, considering that these vessels are both ships in a busy harbour. An image from Club Mykonos was shared showing the visual impact from this viewpoint. The impact was regarded as reasonably small and was classified as smaller on the big bay side for visual impacts from the causeway. The next slide is the southern view of the harbour and offers a visual perspective on Harbour and how it would look. The FSRU will be visible for 1,4km's according to the study.

The next study that we will look at is the Noise study. The study was done by SafeTech consulting. The slide shows the noise and considers the existing ambient noise in the area, including the sea and bird noises, as well as the existing industrial activities occurring within the port of Saldanha bay. Specific attention was also paid to the impacts

of noise on the residents of Blue Water Bay, during the operational phase of the project and this was determined as medium, after which mitigatory measures were considered. The noise from the construction period was also considered and this was noted as been a very short period, and as such the impact was regarded as been very low. Possible mitigation measures were highlighted in the report on noise. After this study was done further questions were raised about noise reduction technologies that are part of the ships. The power ship has got noise reduction technologies built into it.

The next study looked at Wetlands. The study area was highlighted as the yellow bubble on the slide and indicated the area in which the 132kV line will run to join an existing Eskom substation. There

		were no Wetlands noted within a 400m radius of the proposed powerline on which an impact assessment could be conducted. As a result, the impact on Wetlands was identified as been very low. As a result of this no permissions are required from the Department of Water and Sanitation (DWS). Other studies done in terms of the on-shore aspects of the project were also conducted.
	HP	Introduced new members joining the meeting online. Devona Naidoo, Jannine Essmen, Sandra, Umeshi and Karen.
	HP	Other studies done in terms of the on-shore aspects of the project, looked at any water impacts, Geohydrology, specifically looking at possible ground water aspects and impacts. Hydro-paedology was also investigated. Hydro-paedology is basically the flow or movement of water underground through the soil. This was done to determine if the project might impact on underground water movements having a displaced impact further downstream, in any other areas, specifically wetlands. There were no risks noted in these studies for other wetlands in the area, specifically around the transmission line as the footprint of the development is very small and as such has an insignificant impact. A heritage study was also done in this area and no important areas were identified requiring further investigation and study. This information was sent to DEFF and they have assessed the information. In terms of heritage in the area possible deposits in the area were classified as low and may include shell middens, or stone age tools, but this is highly unlikely to occur in the impacted area, but the normal standard of practice for these types of impacts was suggested in case heritage items are found during the construction of the transmission line. The following area that was investigated was the Langebaan Lagoon/Estuary, and the coastal aspects associated with this project. The study showed that the estuary mouth is approximately 3km's from any of the proposed ships, and that pollution aspects are no larger than existing port activities. The area that is thought to be the most important to the fishermen is the marine aspects, in which it is encouraged that this matter be discussed. The main purpose of the meeting is to discuss the possible marine impacts of the project. There is a possibility that the project could have an impact on the fishing communities' livelihoods, when looking at fishing activities. In this project we spoke about the power ship, which will be placed alongside the wharf, and should therefore be out of the way of any movements done by the local fishing industry. The one that might have an impact is the FSRU vessel that will be anchored in the big bay area. A Green circle is drawn around this vessel. What was determined through a safety risk assessment during the process, conducted by DHR consultants. This specific study looked at the health and safety impacts on health and safety impacts that could possibly occur because of the re-gassing of the FSRU standing in the bay. The greatest risk during this activity is if a leak occurs when the LNG, is pumped over to the FSRU. As a result of this a proposal was made that during the re-gassing process which will take a maximum of 2 days every 20 days, it might be a longer time period based on Eskom's demand for energy. Re-gassing may occur between 20-30-40days. The time period between re-gassing is determined as to how frequently Eskom
		requires energy. The re-gassing process could take up to 2 day, and during this period a proposed exclusion safety zone of 300m's. The green circle on the maps provided indicates the exclusion zone, which is likely to implemented once a month. Outside of the re-gassing process there are no other exclusions associated with the project. In terms of the ship that must come into the bay, this will be controlled by Transnet, and the Transnet Harbour Masters and Pilots, so it is likely that the ships will

be treated as any other ships and brought in, in a safe manner.

One of the things that was investigated is the temperature. In the generation of electricity, the machinery needs to be cooled, the power ship utilises sea water in an open loop system to cool its machinery, as such the discharge water is warmed. The heat discharge was assessed for its impact on the marine environment around the ship. The slide highlighted the temperature difference of between 1-1,25 and 1,25-1,50C within 100m of the power ship. The water is discharged of the warmed water occurs 8m below the surface water. This is to ensure that there is no heat is dissipated with limited impact on the environment. The marine ecologist was then requested to investigate impact of the temperature increase around the ship. Specifically, are there any concerns for fish populations and marine life, that could have an impact on the fishing opportunities for the fishing community. The answer for these specific questions, was that the heating of the water will not have a significant impact on the marine ecology. In the associated risk assessments for the discharge of cooling water on marine organisms was shown as very low-low impact, and the impact on fish was shown as a low impact. As a result of the low impacts identified no mitigation measures were proposed. One proposed mitigation measure is that the impacts need to be quantified and qualified during the life cycle of the project. Monitoring will need to take place. The project has also given feedback to the Saldanha Bay Water Quality Trust Forum, Karpower has also indicated that they would like to become members of the Trust Forum so that they can monitor the water quality and can share and receive information from the Trust Forum. There was also an underwater archaeological impact study done. The specialist that conducted this study was Vanessa Matron, and she also found no cultural or heritage items in her study. It was suggested that a heritage specialist should be appointed during the construction of the underwater pipeline. The marine traffic was also assessed in a study conducted by PRDW. Specifically assessing the frequency of how often the re-gassing ships would be entering the bay. As previously indicated, this was determined as once a month. It was determined that there are 600 vessels utilising the Saldanha bay harbour, the Re-gassing vessels will consist of 12 during a year, and it was thus determined that the power ships will have a very low to no impact on the marine traffic. To give a little further information on marine pollution, in the process of cooling the power ship, no chemicals are used or biotics' in the cooling process, and there will be no impact on the marine ecology and the marine environment. Any biotics that might be existing in the cooling system will be purified by flushing it into the bilge tank. The cleaning of the bilge tank is then done in accordance with the associated legislative frameworks for the clearing of the bilge tanks. No water will be flushed in the bay.
The next slide shows the safety study, highlighting the worst-case scenario impact in the event of a gas leak, there could be smaller impacts, but the slide is modelled on the worst-case impact. The reason for looking at the largest impact, is to ensure that it can be controlled and managed, because if the largest impact can be managed smaller impacts can be managed. The study showed that the largest impact is actually quite small, and it would have very little impact on any other areas, or any other shipping activities as there are no other ships there. At the time that the risk is high during the re- gassing of the FSRU, is the time that the exclusion zone will be implemented reducing the risk.

So these are the highlights of the studies that were done the suggested mitigation measures, and the reasons for the mitigation measures, what we would like now is Questions that focus on the concerns of the fishermen so that we can gain a greater understanding as to the concerns. We have received correspondence from a couple of groups, and we want to understand these concerns.

	AB	Thanked HP for her presentation and opened the floor for question pertaining to the presentation.
	NvW	In the area as identified around the warf on the map the Stompneus (fish) breeds, in both small bay and big bay, the bay and the placement of the vessel is not relevant. The placement of the ships is disruptive to the Stompneus, which is basically putting a species at risk. This is the only species that breeds in these two bays along the entire west coast. The ships are therefore putting a species in danger. The noise reduction, of that type of activity affects the fish. Utilising the page highlighting the noise footprint from the presentation the statement was made that the study was worried about the people in the Blue Bay area, but it affects the fisherman, because fisherman don't like noise, meaning that in the whole area highlighted in the slide there wont be any fish, meaning that fisherman will have to search beyond that area, disrupting the traditional fishing grounds, and in so doing affecting the fisherman's ability to make an income.
	HP	The Marine Ecologist did look at the species, assessing the activities of juvenile fish as well. The understanding is that the current propulsion activities of ships in the harbour, will have a higher noise out put than what is expected from the power ships. So, the actual current activities have a potentially greater impact on the breeding grounds for the Stompneus. The marine ecologist has looked at this, but HJ will raise this with the specialist to verify and offer surety that the feedback been given is correct. There has been an evaluation of the noise and it is not expected that this noise will have any significant impact on the breeding grounds of the fish, and this will be confirmed in writing.
	NvW	The way the presentation was understood is that Transnet is going into a partnership with Karpower.
	HP	There are no partnerships. The project is an independent power producers (IPP) project called for by the DMRE. However, as a landowner and a stakeholder there are agreements that must be concluded with Transnet in terms of all their requirements. There are no partnership agreements.
	NvW	The small-scale fishers are already against Transnet because of the fishing grounds that they are already not allowed to fish at and their unwillingness to work with the fishers. The marine ecologist's feedback is awaited. Another 3 ships, in the port/bay area is going to add to the congestion and conflict between the various user groups in the bay. The power ships will contribute significantly to the noise in the area and disrupt the fishing grounds.
	HP	There are answers from the specialist as far as the Stompneus is concerned. The matter of Transnet, the project is an independent project, and perhaps from a Social Economic perspective this could be discussed. This is not a Transnet project.
	AK	No investigation between the Small Fisheries and Transnet has been done, the study has focused on Karpower and Karpowers impact. The matter been raised is a current problem and it is a matter that should be addressed and looked at as it could influence the Karpower project.
	NvW	Stated that Transnet itself is not a problem, the Port is a problem for the local fishermen, because the Port is excluding the fisherman from where the fish are.
	AK	Requested NvW to show the area on the map where the exclusion area is. (Photo 1)
	NvW	Even the slightest noise scares fish away, based on the noise slide, it is therefore that whole area in which the fish are scared away, and the noise footprint indicates that the fish will not enter the bay.
	AK	Asked for clarity on the No fishing zone, highlighted around the wharf. The Question posed was is

		this a legal exclusion or just Transnet chasing the local fishers away.
	NvW	Stated that it is not a legal exclusion, it is an exclusion imposed by the Port.
	AK	Asked NvW to show her where the Fisherman currently do fish at this stage.
	CM	Then stopped NvW from showing AK, as it was stated that the persons in the meeting could not speak for the whole fishing community without speaking to fishers that go and catch the fish. The presentation by HP was commended, but it was reiterated that the 4 fisher ladies could not speak on behalf of the fishermen that catch the fish. The fisherman needs to hear the presentation and understand what is happening, they can then advise and inform the project. The request was made that another meeting is called in which the fisherman on the ground can be engaged.
	TM	Added that it is imperative that the Fisherman on the ground understands the impacts. The presentation needs to be done at a level that engages the fisherman that has a low level of schooling and literacy. Not everyone will understand the technical language.
	CM	Highlighted the right of the fishers to make their own decisions based on Section 24 of the Constitution.
	HP	Indicated what can and can't be done by the project. The area is still a Transnet Port, and there are certain requirements that are relevant to Karpower as well. However, there are also certain bidder requirements where Karpower might be able to assist through their CSI projects or future opportunities during the implementation phase of the project. Karpower will have no say in the management of the port, and Transnet is still in control of the port. The only exclusion that Karpower has is the 200m zone around the FSRU, when re- gassing occurs. They have no say in the Port. As such Karpower will have no say over the exclusion zones within the port. The specialist will be asked to show methodology as to why they determined the noise issues not to be a concern, even though the matter has been raised as a concern. The specialist will be asked to give a formal answer in writing.
	SS	Requested to give comments and share her experience. She has worked with the fishers for more than 20 years. We know our needs, we know our status and we know that we can offer suggestions, which has already happened in the past. • The fishers are always the last people to be included. And we are tired of bottom down decisions, we think the decisions should come from the bottom up, because we have the experience of going through 2 legal cases because we know what our right is. • We live within the boundaries of a Marine Protected Area (MPA). You here of developments all the time, only to find out that the development has already occurred. Then it is to late to highlight our concerns. I want to spell out our local rights, our fishing grounds where we fished in the past, and give a short summary of events. We were born into this community, when there we no role players in this environment. SANParks, the military, the yacht club and everyone that has exclusive rights were not here. We could fish, we had our own rules, we knew our fishing grounds, where we could fish and where we cannot fish. The fishers had their own patterns of regulation. No one has ever considered the fishers local knowledge. Many of the fishers can give the people that want to do projects in the area

advise. But it is never considered or requested. We are now

frustrated because when it comes to a decision like this whether we are informed or not, money talks, billions of Rands get ploughed into the country, a whole lot of activity happens without the fishers been consulted. Fishing is not our privilege; it is our right. A fisherman can't be turned into a lawyer, a fisherman is a fisherman. When these fishermen started fishing, they began in a time period without rules and regulations. An example with regards to the fish farms, the fishermen were not even concerned, assurance was given that the fish cannot escape. My fishers can carry on fishing, there will be no escapes from the fish farm. In another example the Iron Ore, we were assured no dust will escape, but the dust is all over the place, the area is degraded by the dust. Some of the residents have taken the matter to court because some of the dust is in their houses. No one has ever conducted research on us, a researcher comes to find out how much Crayfish is in the water, how much fish is in the water. I can tell you today the Stompneus is in the red, they are dead. But data that was collected with the fishers shows that sports fishermen catch more fish in the lagoon than what our fishermen are allowed to catch. Tons of Crayfish and tons of White Stompneus, up to 92 tons get caught in the lagoon annually, and the fishers may not fish in the lagoon. Zones were introduced to the lagoon, by SANParks and the Army, who are not fishers, yet they claim it is their water. The same applies to the Crayfish. Researchers say there is no Crayfish, and just after they said that millions walked out of the water (Red tide event), because our local knowledge is not taken into consideration. My fear about the power ships, and my focus is over the fish. I want to make a difference for my people and their livelihoods from the lagoon. How will we ever know if what the researcher said and recommended is correct and has been implemented. What is going to happen if one of those pipelines burst? How do we know it cannot burst? What if nature plays another role? Look at how climate change is busy changing things in the environment. Our water is warming, our fish are going to disappear as certain as I am sitting here today, because of too many projects occurring on or around the lagoon. I want to ask every minister in government that wants to give land to the people, what about the fishers, why do not you give us a piece of ocean. We have respect for the fish in the water, we know what happens if there are no fish.

I feel the only reason we are been seen today is because of the two letters that were sent in by Green Connection and Coastal Links. We indicated to the minister earlier this week that we are at a level that we can make decisions for ourselves. We don't have book knowledge, but we have experiential knowledge, because we are the users of the lagoon and Saldanha Bay. We agree with the use of zones and we know where we can and cannot fish, but we have had to go to court before because of exclusionary practices on the lagoon. We are all entitled to use the lagoon. We won our case in court. The solution to all these problems is allow the fishers in the lagoon the opportunity to manage the lagoon fish stocks, with all the role players. We want surety that the Karpower project is not going to have negative impacts on the fishers. Considering Climate Change, none of us could have predicted Covid 19, or the Devils Peak fire in Cape Town that broke out yesterday (18 April 2021). That is how nature works no one knows, not even a professor. We can make predictions, but we cannot verify that it will or won't happen. Do not ignore us. Commercial boats can trawl our waters, but we are not allowed to catch fish in our traditional fishing grounds because the military and SANParks say so. It is heart-breaking to see a fisherman that goes to sea for a whole week and comes back with nothing. The fishers are

		always the last to be consulted. We need to meet with the fishers so that they know what is going to happen, we have to go back to our fishers.
	HP	Thank you for sharing with us. We hear what your frustrations are there are a few items that we can perhaps address. We are not holding this meeting because Green Connection or Coastal Links spoke with us. Your concerns are important to us. The first time I received the letter, it was a handwritten letter from Christie, and I phoned Christie on the same day that I received the letter. I also Whatsapped Christie and spoke to Christie to give feedback. In the EIA process, and due to Covid 19 we made special arrangements with DEFF to hold online public participation meetings, because of the safety aspects as a result of Covid 19. Some of us have lost family and friends to Covid. Covid is a real danger. We proposed to Christie, that we do a Zoom, and we will give you the money so that you can do the meeting. We received feedback that the fishers want a one-on-one face to face meeting. To explain how important, you are to us you are the only people that we are having a face-to-face meeting with, because the suggested meeting via zoom was not accepted. We are open to having a later zoom meeting. What needs to be understood is that this is part of the EIA process, and there are very specific timeframes that we need to comply with. We are bound by the time frames. Project started in August 2020, September and October 2020 the public participation occurred, November 2020 the document was submitted, January 2021 the Feedback was received from the Department February 2021, we started again with the Public Participation, finishing in March 2021 with the public participation. And we are submitting in April 2021. It is not only like this for this project all projects work according to this type of timeline. So, we are constrained with Time. We are grateful for the face-to-face meeting, and we will definitely give feedback on the noise. I hear your concerns and that you need to be able to go fishing, and that there is respect for the zones, but that there is a need to acknowledge the local knowledge of the fishers. WE want to work towards solutions, and the fact that we are meeting today shows that this matter is important, and the information form the fishers is important. The key areas of concern are over the noise, the spill risk and the areas in which fishing can occur, and how this project might impact on the project. Are there any other questions or concerns that we can list?
	TM	Commented that SS is speaking from the bottom of her heart, and that she could not have put it better. How are you going to ensure that there are no long-term negative impacts on the Environment? For example, a scientist can tell you what the possible problem is now, but what about after the 20 year period? What happens when Karpower's purpose in Saldanha is completed? What happens after the 20 years? It is not just us that will be affected, but our children, and our grandchildren that will be affected.
	HP	Its important to see this project for the community, in terms of sustainable development, we must look at the social economics of a project, which is three phased, Social, Economics, and the Environmental aspects. All of these are considered as this is what determines weather a development is sustainable. One of the points in terms of the ecology is that monitoring must be done. So, within the Environmental Management Programme (EMPr), commitments are made to address environmental aspects and these need to be monitored throughout the project, this is one area where it is required that mitigations are considered. It takes into consideration the impacts identified and how those impacts are addressed. A negative impact can't just be identified, and the project carries on it must be addressed. Another way is for the project to participate in local forums, and I have mentioned that the Karpower ships have indicated that they would like to be involved in the

		Saldanha Bay Water Quality Trust, this is a direct response to impacts identified during the EIA process. Karpower has identified this as an important
		forum and already committed to involvement in this forum. I would like to suggest that if there are other forums that look at the Fishers needs and concerns, this could be an area where the project could consider and acknowledge the issues and work with the fishers in trying to achieve a solution. This is perhaps how the project could participate and facilitate assistance, and it is perhaps possible to include these requirements in the EMPr. The specific process can be discussed, but suggestions of a specific focus group and a forum group could be specified in the EMPr. Allowing the project to monitor its impact on the fishers, and the fishers to provide feedback to the project. In terms of the livelihoods of the community, it is important to mention that there was a social economic study conducted, and part of the conditions for the project is that members of the community are offered work opportunities as part of the project. There are job opportunities that will be offered to the community. There might be members of the fishers family members that indicate that they just want to catch fish, and that is 100% acceptable, but there might also be others that say that I would like to work on such a ship, I would like international opportunities. So I would like to receive certain training and subject matter. So training opportunities are been assessed. Also part of the Social Economics assessment is the purpose of the project and that it intended to assist with the Load Shedding that we are experiencing across the country, and the effects that Load Shedding has on the economy. The biggest impact is that job opportunities will be created and made available for those in the nearby communities. A request was made for Urban Econ to expand on this information if necessary.
	NvW	Requested that all the reports are made available and sent to her. Please e-mail them to NvW, natiliejanevanwyk@gmail.com . This should be elaborated on and shared with the public. You can't elaborate and explain things in this forum. I am literate and I am educated, the next fisherman is not. So, you could give this proposal to the next fisherman, but if 5 percent of them say yes they are going to take the opportunity of jobs. What happens to the rest of the community? If it is Snoek season or any other season, and the fishermen go out to sea they can earn up to R5000/day, just for one trip. Can you assure them they will make that kind of money by working for Karpower. You all earn monthly salaries of R30K+, what about the fishermen, what about me and what about the local community. What about them, they are not educated, I would not say they are illiterate, but they are not well educated. Some of them barely have grade 9. What about those that cannot work, because the way I see it companies only hire up to age 35. Age 35 and older they do not hire anymore, and all of these fishermen are older than 35. There are one or two children of the fishermen that are between the ages of 18 and 35. [redacted]
	SS	Out of experience we have learnt that all the companies that come with the promise of jobs, take the first people they can, or people that are shown to them by politicians or councillors, and the fishermen are still left out in the street with no work. The youth are taken, and this is taking them away from the tradition of fisheries. Our fisheries are traditional fisheries passed on through generations. We catch in a sustainable and traditional manner. The promise of work opportunities is a no go for the fishers. We have never seen a project come

		without its own personnel. The projects bring their own people from where they come from. That is what our experience has taught us. There is no guarantee before the project comes. The politicians get involved and cater for their own people; job opportunities are not fairly distributed in the community. The politicians also make the decisions so that they can make more money or steel more money. Experience has showed us that these processes are influenced by corruption. We want assurance that this will not happen on this project. The national politicians have never visited
		Saldanha, but they make decisions that influence us. All we want is that the fishers are included at the table and have a say in the decisions.
	HP	In the Environmental Authorisation (EA) process, assessment of the social economic impact study, specific aspects are assessed. Outside of the EIA process, there is also the risk mitigation project, social economic assessment. Outside of the EIA there also the greater Risk Mitigation project, these assessments are all conducted at a higher level and consider the broader issues, as part of the Sustainable Development Process. My suggestion is to inform Karpower, so that they are aware of the challenges at a Social Economic level, and that opportunities like to days meeting are a great opportunity to take things further to discuss the concerns and how to address the concerns with the community. It is possible to take the process forward with transparency so that there is no chance of misunderstanding. This would be independent of the Social Economic Assessment within the EIA process.
	TM	As the statement for HP, was understood, answers can't be provided, which we understand. At the end of the day, we need enough information to make a decision. The matters discussed in this meeting is just a drop in the bucket. There are many other questions, and it is not just us in Saldanha, its also the other comrades from Green Connection.
	SS	Not just Green Connection the West coast area.
	TM	It actually goes around the three main ports, so the people in Richards bay are also asking questions. The people in Gqeberha as well. My recommendation is that the same as you have done here in terms of going out of your way to meet us and explaining to us, the same must happen at the other two ports.
	HP	Acknowledged the suggestion, stating that it is important, but that each one of the areas will have its own set of circumstances. We responded specifically to the Saldanha bay fishers as they raised their concerns and there were discussions with Christie. It is further acknowledged that the documentation was requested. All the documentation is available in Hard Copies at Cup a Cake in Saldanha bay. It was also sent through to Christie. Everything is available at Cup a Cake. Not just phase 2 was made available but also the information from phase 1. So, if anyone wants to see the studies all the studies are available in Saldanha bay. In terms of the other areas, everyone of these areas has its own geographical areas and its own critical aspects that we are specifically addressing. Thank you for that suggestion.
	AB	Received a copy of the Social Economic Report from AK, and passed it onto TM, and informed HP.
	CM	Is this ship going to pay tax in South Africa? I ask, because I am an owner of a boat and I pay tax, I pay tax on the fuel I put into my boat. I agree with SS, we must be recognised, there must be transformation and Karpower must respect us in our environment and with our heritage rights. I come from a long line of fishermen. They say that it won't have an impact on the fishing stocks, but according to us a leakage could occur, we also need to talk about the small harbour and the big harbour, they are not far from each other. If they are 2km's apart it is far, but as far as I know they are 1,2 km's apart. In the pepper bay harbour, you look directly at Port net, which is 5minutes away.

		From Pepper bay you can see Seaharvest, SAMSA in big bay. The other point that I want to make is that a little bit of gas in the air, could affect our people's health. The risk assessment says that there is a low risk of and that is why there is a proposed exclusion zone, however what if the fishermen are out and there is a large spillage, how do we get back, what is going to happen to us? The other point raised by SS, regarding the politics, is now past, we will not tolerate that going forward.
	HP	In terms of a leakage, it is important that we must understand that this gas is not LPG, it is LNG, so the pollution in the event of a leakage is not the same as LPG. LNG reacts
		differently to LPG, it will be in a liquid form, and if there is a leakage there are a number of emergency procedures and safety procedures that are deployed. Specifically, because this is your resource. You don't want to lose that gas because you are paying for that gas. This is why there are a number of procedures in place, this is also why the Safety and Risk assessment were conducted to ensure that the impacts are managed and this study has determined that the zones recommended will be appropriate to manage any possible impacts. The person that did the report stated that there was a 6x greater chance that a person could be struck by lightning. Meaning that the chance of a leakage or an incident are very small. This is how I understood the information and I will check my facts with the specialist. You want assurance on one the safety, and two the procedures in the event of an incident. The second part in terms of the health impacts, these were also identified as very low based on the fact that it is LNG, and NG in gas form. I will also get more information on this for you. The question regarding the tax. I know that the project is Karpower South Africa (Pty) Ltd. I do not know the specific details around taxation as this falls outside the scope of the EIA.
	AB	Clarity was determined that Karpower South Africa (Pty) Ltd. would therefore need to be registered with SARS in order to operate in South Africa.
	HP	Confirmed this is correct.
	AB	Are there any other questions?
	TM	Requested the Specialist Reports in Afrikaans.
	HP	Indicated that a summary could be done but to have all the reports translated would not be possible, as they are massive reports and there are significant time constraints. It would be easier if specific areas that need to be translated then we could request it for the focus areas in the report. Are there any questions related to Geomorphology, Hydro-paedology, and Wetlands?
	NvW	No questions on these matters that I and they would feel comfortable asking about at this time without the rest of the local fishermen.
	AB	The general consensus is that the 4 ladies present for the Fishers, will feed back to the local fisher with regards to these reports. The focus areas at this point in time are on Noise and, the Social impacts around livelihoods.
	AK	Would like to understand where are the fisherman launching their boats from and where they are fishing and approximately how many fishermen there are.
	CM	The ladies will come back with this information as they are not in a position to give this information to AK and VdV at this point.
	SS	Will all the information raised in the meeting be addressed and will sufficient answers be offered to the fishermen, and will they be happy with the answers, in so far as that they have been considered and consulted in the process.

	HP	In terms of the feedback and commentary received notes have been taken and the project is very grateful for the inputs. So a greater understanding of the aspects and impacts can be achieved, these matters will be considered and included in the EMPr. We cant answer how the fishermen will receive the answers, and as such no promises of happiness can be guaranteed. We hop that you will be happy and we hope that we can build on and work together with this focus group meeting going forward. There will definitely be an answer to the concerns raised. The EIA report needs to go to DEFF on the 25th April 2025. If the report is not submitted on this date then the report will not be compliant with the required time frames. Outside of the EIA, there is the Social Impact Assessment, which will hopefully allow us to work together on these matters.
		We are specifically looking at the Noise, the Social Impact and looking forward the insurance that the project won't establish itself and then exclude the community. (Accountability).
	CM	Are we going to be recognised in future meetings, so that our issues are recognised and acknowledged?
	HP	Our meetings from a EIA process are now complete. In the future in the other processes there is certainly no reason that the members in this meeting cant be included and heard as the project is developed.
	TM	The three aspects noted are the most important aspects for now. There will be other aspects.
	AB	The panel was asked if there were any further concerns, no concerns were raised, and the meeting was concluded after 2hrs 20 minutes. Some minor discussions were held as we packed up to vacate the venue. These discussions were not minuted.
	These minutes were drafted from a recording made during the meeting. The minutes were done in English, which meant that alot of the information needed to be translated. A copy of the recording can be made available.	

ANNEXURE 4

EXCERPTS FROM THE SAFETECH SPECIALIST STUDY ON NOISE IMPACTS FOR THE ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED GAS TO POWER POWERSHIP PROJECT AT THE PORT OF SALDANHA SALDANHA BAY LOCAL MUNICIPALITY, WESTERN CAPE SOUTH AFRICA

7.7. Underwater Noise Impacts

In marine environments sound is important to animals as it is used for a variety of purposes such as communication, navigation, orientation, feeding and the detection of predators. The limitation of vision, touch, taste, and smell in water means that sound is critical due to its physical properties for e.g., speed of transmission and is this an important sensory medium for marine animals.

Marine mammals thus use sound as a primary means for underwater communication and sensing. They emit sound to communicate regarding the presence of danger, food, a conspecific or other animal, and also about their own position, identity, and reproductive or territorial status. Underwater sound is especially important for odontocete cetaceans that have developed sophisticated echolocation systems to detect, localise and characterise underwater objects, for example, in relation to coordinated movement between conspecifics and feeding behaviour (Convention on Biological Diversity 2020).

Anthropogenic changes to the acoustic environment include increases in the number of high- intensity noise events and chronically elevated and homogenised background sound levels (Shannon et al 2015). Any increase in anthropogenic noise could thus have significant effects on the environment in an ecologically sensitive area.

The underwater noise that could be generated in this project includes, but is not limited to, the following:

- An increase in marine traffic during LNG deliveries. The main noise sources will be propellor noise, sonar ranging devices and engine noise transmitted through the hull.
- Pile driving when constructing and installing the LNG offloading infrastructure.
- Noise that is radiated through the ship's hull during power generation.
- Noise from the suction and discharge of cooling water used on the ship into the harbour

environment.

7668	30	41	Version 4	28/09/2020 - 30/09/2020

The proposed project is situated within the Port of Saldanha and adjacent to the Jutten Island Marine Protected Area.

It is therefore of critical importance that the current underwater soundscape of Saldanha Bay be determined, and the potential noise impacts of the proposed project be thoroughly assessed. A separate Underwater Noise Impact Assessment is thus recommended along, with detailed underwater noise measurements using hydrophones in the important habitats and shipping routes into Saldanha Bay as described above.

Subsequent to Version 3 of this report, the client was requested to provide information on a current installation of similar size. The results of a study conducted in April 2021 in Ghana of a similar Powership by GDS R&D and AB MECHENG shows that in the immediate vicinity of the hull of the vessel, the underwater noise does not appear to exceed 110dB at frequencies in the 1/3 octave band scale. The Ghana study only applies to the berthed Powership and not the vessel traffic associated with the operation thereof i.e. LNG deliveries etc. The ecological specialist studies can thus use the Ghana study data to evaluate the underwater noise impacts.

8. CONCLUSION&RECOMMENDATIONS

The results of the noise impact assessment of the proposed Gas to Power - Powership Project within the Port of Saldanha shows that a number of the ***terrestrial*** receptors (refer to Table 9), the SANS 10103:2008 rating limits will be exceeded, especially the sensitive residential areas, such as Blue Bay Lodge. Modelling of the Big Bay alternative indicates that the NSAs will be less impacted and thus, from a noise perspective, would be the preferred site option. It is not anticipated that there will be complaints from the industrial areas. The noise impact associated with the operational activities of the proposed project is predicted to be of **Medium-Low** significance **after** mitigation at the Port of Saldanha. The construction related noise impacts will be of **Very- Low** significance.

The following is highly recommended:

1. a) Install acoustic enclosures around all major noise emitting components to supress the noise emissions from equipment such as engines, exhaust stacks etc.
2. b) Install silencers on equipment such as exhaust stacks outlets and all air outlets and inlets.
3. c) Periodic terrestrial noise measurements are taken during the construction and operational phases.

Amendments	Survey	Date		
7668	31	41	Version 4	28/09/2020 - 30/09/2020

d) A hydrophone system is used to determine the underwater soundscape in the vicinity of the Powership berth, FSRU, LNGC berth, harbour entrance and other sensitive areas in Saldanha Bay to determine the current underwater noise environment. This should commence prior to construction and continue periodically once the operational phase commences.

Dr Brett Williams

ANNEXURE 5

EXCERPTS FROM THE MARINE ECOLOGY SPECALIST STUDY (CONDUCTED BY LWANDLE TECHNOLOGIES PTY LTD)

lwandle
MARINE ENVIRONMENTAL SERVICES

MARINE ECOLOGY SPECALIST STUDY G2P DEVELOPMENT, SALDANHA BAY

Baseline and Impact Assessment Report

PREPARED FOR:

REPORT REF.: LT 889 BR & EIA SALDANHA V 5.0 April 2021

+27 (0)21 705 0819 info@lwandle.co.za
Unit B3, Millside Park, 37-41 Morningside Road, Ndabeni, Cape Town, 7405, South Africa
PostNet Suite 50, Private Bag X3, Plumstead, Cape Town, 7801, South Africa

3.4.4 Impact 4: The effects of increased noise and vibration levels on the marine ecology

Underwater noise will be generated primarily by the FPP operations as no pile driving during construction is required. The noise generated by the FPP operations is expected to be continuous. Currently, there is only one short-term study detailing source level data for sounds propagated into the marine environment by FPP ships. No site-specific modelling studies have been undertaken for underwater noise from the proposed FPP operations. Therefore, this section is presented as a high- level, non-quantitative assessment based on estimations of underwater noise from commercial ships and powerships moored in other locations. It is recommended that a baseline study of the underwater noise climate in the Port of Saldanha Bay is done so that a noise modelling study can be undertaken. This will allow for a more quantitative understanding of the underwater noise produced from FPP operations in the Port of Saldanha Bay so that a quantitative assessment of the impact of noise on the surrounding marine ecology can be done.

The potential underwater noise and vibration impacts may arise from the following sources:

o Noise from the establishment of the berthing, gas reticulation and electrical reticulation infrastructure.

o Noise from the Power Ships, FSRU and LNG supply vessels (their engines, steam turbines, cooling fans and pumps). The noise will include audible, low frequency and infrasound.

McKenna et al. (2012) presented source levels for several types of merchant ships (container ships, vehicle carriers, bulk carriers, open hatch cargo ships and chemical, crude oil and product tankers) travelling at different speeds. Source levels ranged from 176.6 to 188.1 dB re 1 µPa^2 (20–1000 Hz frequency range) with the lowest source level from a chemical tanker and the highest from a container ship and the sound exposure level at 3 km ranged between 117.1 to 127.0 dB re 1 µPa^2 s. Similarly, (OSPAR 2009) reported source levels of 180 to 190 dB re 1 µPa^2 at 1 m (50-100 Hz) for large vessels >100 m length (e.g. container and cargo ships, supertankers).

In a short-term study on the underwater noise produced by powership operations, measurements were obtained over 13- to 30-minute time periods from 14 locations surrounding an operating powership near Takoradi in Ghana. The gas engine powership (Khan class) has an electrical output capacity of 470 MW from 24 operating engines and was operating at 100% capacity during the time of measurement. The vessel is moored in water approximately 10 m deep. At sites adjacent to the vessel hull (between 8 and 35 m from the vessel hull), underwater noise levels averaged between 101.83 and 111.45 dB re 1 µPa^2 and the maximum noise recorded was 112.90 dB re 1 µPa^2. At sites further away (within 200 m from the vessel), underwater noise levels averaged between 96.03 and

111.21 dB re 1 µPa^2. At sites within 560 m of the vessel but on the opposite side of the breakwater, underwater noise levels averaged between 92.42 and 99.11 dB re 1 µPa^2.

The proposed FPP facility in the Port of Saldanha Bay is surrounded by important habitats such as Langebaan Lagoon, Malgas, Jutten and Marcus Islands, the subtidal benthic zone, the water body itself and also aquaculture development zones. These areas could be impacted by the surface noise and the underwater noise from the vessel operations. Underwater noise from human activities is known to have a number of adverse effects on individual aquatic organisms. Effects may arise from exposure to brief high-level sounds and may include death, injury, permanent or temporary hearing impairment or those behavioural responses that may disrupt important life functions (Popper and Hawkins 2016). With longer exposures, chronic effects may occur, including developmental deficiencies and physiological stress (Popper and Hawkins 2016). These may affect life functions, including individual health and fitness, foraging efficiency, avoidance of predation, swimming energetics and reproductive behaviour (Popper and Hawkins 2016).

The sensitive receptors to noise within the Port of Saldanha Bay are fish and marine mammals. To a certain extent, benthic invertebrates may also be impacted by underwater noise and vibration, however evidence is limited. Saldanha Bay acts as an essential nursery habitat for many fish species due to its nutrient-rich waters.

Juveniles are considered more susceptible to noise disturbances as they are less mobile, while adult fish (and marine mammals) can move out of affected areas. Other important receptors in the area are the various seabird species including penguins, gannets and cormorants. The impact on seabirds is not considered in this report and is rather detailed in the Avifauna specialist report.

Southall et al. (2019) presented a set of updated criteria for the levels of underwater noise that may lead to a temporary threshold shift (temporary damage to hearing and behavioural changes) or a permanent threshold shift (permanent auditory injury) in marine mammals based on peak Sound Pressure Levels (SPLs). Mammal species were categorised into several groups including low frequency cetaceans (various Balaenopteridae species), high frequency cetaceans (various Delphinidae species including *Delphinus* and *Sousa* spp.), very high frequency cetaceans (various other Delphinidae species) and other marine carnivores (including otariid pinnipeds). Additional criteria have been considered for assessing the impact of noise on fish, based on the work of Collett and Mason (2014) and the Fisheries Hydroacoustic Working Group (FHWG) in the USA.

These criteria are summarised in Table 3.7.

LT-889: MARINE ECOLOGY INPUT TO EIA SALDANHA V5.0

Table 3.7: Proposed injury criteria for marine mammals and fish (Sources: Southall et al. 2019, Collett and Mason 2014 and FHWG 2008).

Species Group	Temporary threshold shift (behavioural changes): Peak SPL	Permanent threshold shift (auditory injury): Peak SPL
Low frequency cetaceans	213 dB re 1 µPa	219 dB re 1 µPa
High frequency cetaceans	224 dB re 1 µPa	230 dB re 1 µPa
Very high frequency cetaceans	196 dB re 1 µPa	202 dB re 1 µPa
Pinnipeds (in water)	226 dB re 1 µPa	232 dB re 1 µPa
Fish	168 dB re 1 µPa	206 dB re 1 µPa

Other important receptors in the area are the various seabird species. Penguins show avoidance responses at approximately 110 dB, cormorants have an underwater hearing threshold of 71 dB at 2 kHz (Hansen et al. 2017) and the underwater hearing threshold of northern gannets is 101 dB at 1 kHz and 90 dB at 2 kHz (Crowell et al. 2018). As mentioned, the impact on seabirds is not considered in this report and is rather detailed in the Avifauna specialist report.

Sound propagation from the FPP operations in Small and Big Bay will be affected by the topography of the Port. Sound waves will be absorbed and/or reflected by port structures. If we assume that the powership proposed for the Port of Saldanha Bay is equivalent in sound generation to that moored in Ghana, then effects on the surrounding marine ecology would be unlikely. However, as mentioned, a better understanding of the underwater noise climate in the Port of Saldanha Bay is required to place the noise generated by the powership in context.

It is thus recommended that:

o A baseline study of the underwater noise climates in the Port of Saldanha Bay is initiated.
o This information should be combined with the likely powership noise estimates presented

above and the impacts of the total noise on the marine ecology should be reassessed.
o Long-term monitoring (at least 12 months) of underwater noise should be developed and

this information should be made available to the wider scientific community.

4 IMPACT RATING SUMMARY

Four potentially significant impacts of the proposed FPP facility on the surrounding marine ecology at the Port of Saldanha Bay are identified, and three of them assessed thus far. For most impacts, no mitigation measures beyond those built into the project design are required, and so the ratings remain unchanged. There is, however, little information on the occurrence and distribution of calcrete reef in Saldanha Bay. To mitigate the impact of gas pipeline construction on this benthic habitat, it was thus recommended that a bathymetric survey is undertaken prior to pipeline

installation. This will enable routing of the pipeline to avoid the calcrete reef habitat as far as possible.

It is concluded that there is not enough information pertaining to underwater noise and vibration levels from floating power plant ships in the context of the Port of Saldanha Bay to conduct an assessment. Therefore, general sound levels from commercial vessels and from a powership moored in another location are presented,

as are the biological thresholds of sensitive receptors. A quantitative underwater noise assessment is recommended to comprehensively assess the impact on the marine ecology.

A summary of the impact scoring is presented below (Table 4.1).

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TRIPLO4, G2P DEVELOPMENT, PORTS OF SALDANHA, NGQURA AND RICHARDS BAY 48

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Table 4.1: A summary of impacts associated with the proposed FPP facility's construction and operation that were identified and assessed.

		Consequence			Likelihood		
Impact	**Impact Description**	**Intensity**	**Duration of impact**	**Spatial Scale**	**Frequency**	**Probability of impact**	**Significance**
1 pre-mitigation	Effects of gas pipeline construction and installation and vessel mooring on the benthic community	Unknown	Unknown	Local	Once	Definite	Unknown
1 post-mitigation	Effects of gas pipeline construction and installation and vessel mooring on the benthic community	Minor	Medium	Local	Once	Definite	Very Low

2	Effects of the uptake of cooling water on marine organisms in the surrounding water body	Minor	Permanent	Site- specific	Continuous	Definite	Low
3	Effects of the discharge of cooling water on the marine ecology in the receiving water body	Negligible	Permanent	Site- specific	Continuous	Definite	Low
4	Effects of increased noise and vibration levels on the surrounding marine ecology	The available literature on powership noise generation indicates that vibration escaping the hull is probably of low intensity. Consequently, disturbance of marine fauna from such sources in a working port should be low compared to that due to higher sounds of navigating ships and service vessels. Quantitative measurement of the underwater noise produced in the context of the Port of Saldanha Bay is however required to confirm this.					

5 CUMULATIVE IMPACTS

As the project site is located within an existing and operational port, existing and operational facilities include the LPG MBM in Big Bay, Saldanha Steel, Saldanha Bay Iron Ore Terminal and Oil Jetty, Sishen Pier, Sea Harvest and the Oyster Dam.

There are several other power generation projects proposed within and close to Saldanha Bay. These include the Vortum Energy (Pty) Ltd energy generation facility and associated infrastructure, the Auriga Thermal Power Plant, and the gas to power project proposed by Mulilo Thermal Developments (Pty) Ltd. All of these projects have proposed onshore infrastructure and do not

require seawater for cooling i.e. have no associated marine infrastructure. Furthermore, The Strategic Fuel Fund proposes to develop an LPG import facility, pipeline and handling facility within the Port of Saldanha Bay. No construction or development will occur in the marine environment. These projects, thus, presumably will have no marine ecological impacts and their cumulative impacts on the marine environment are not considered further.

Any development or maintenance activity in the Port of Saldanha (in close proximity to the proposed Karpowership project) involving the disturbance of sediments, the uptake of large volumes of water, the discharge of thermal effluent or the generation of underwater noise may, along with the proposed Karpowership project, have cumulative impacts on the surrounding marine ecology. The comprehensive, quantitative assessment of cumulative impacts requires extensive input from government departments, regulating authorities and other stakeholders. Given that the marine ecological impacts of the proposed Karpowership project are mostly considered to be of low significance, contribution of these to any cumulative impacts that may occur will also be low. A noise modelling study should be undertaken to gain a more quantitative understanding of the noise produced from powership operations in the Port of Saldanha Bay and the cumulative impacts on the surrounding marine ecology.

ANNEXURE 6

EXCERPTS FROM FINAL EIA REPORT

FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT:

The Proposed Gas to Power Powership Project at the Port of Saldanha Bay, Saldanha Local Municipality, Western Cape

DEFF REF NO: 14/12/16/3/3/2/2006
A Project of Karpowership SA (PTY) Ltd

26 April 2021

FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

Applicant: Report name:

Report type: Project name:

Project number:

Version: Compiled and Authorised by:

Karpowership SA (Pty) Ltd

Final Environmental Impact Assessment Report for the Proposed Powership at Port of Saldanha, Saldanha Local Municipality, Western Cape

Final Environmental Impact Assessment Report

Proposed Gas to Power Powership Project at the Port of Saldanha at Saldanha Bay Local Municipality, Western Cape, South Africa

E-BL01.200445 Original

COMPILED BY:

Triplo4 Sustainable Solutions (Pty) Ltd

Suite 5, The Circle, Douglas Crowe Drive, Ballito, 4420 +27 (0)3 946 3213 +27 (0)32 946 0826

hantie@triplo4.com

www.triplo4.com

Final EIA report page 95 -96

6 MOTIVATION, NEED AND DESIRABILITY

2014 EIA Regulations (as amended), Appendix 3 (1) (f) a motivation for the need and desirability for the proposed development, including the need and desirability of the activity in the context of the preferred development footprint within the approved site as contemplated in the accepted scoping report; (g) a motivation for the preferred development footprint within the approved site as contemplated in the accepted scoping report;

PROPOSED DEVELOPMENT

This section contextualises the strategic planning context within which the Project is being proposed.

South African legislation, including the Constitution and NEMA, entrenches the principle of sustainable development as do the various National strategies, policies, programmes and plans, including the National Development Plan 2030 (NDP). The motivation for the need and desirability motivation for the proposed Project thus needs to be assessed within the context of these strategies, policies, programmes and plans by specifically looking at whether the proposed project is ecologically sustainable and socially and economically justifiable.

STRATEGIC OVERVIEW

The United Nations Sustainable Development Goals (SDGs) or Global Goals were adopted by all member states of the United Nations in 2015 in the commitment to end poverty, protect the planet and ensure peace and prosperity for all people by 2030. South Africa was one of these nations.

The provision of electricity falls under the SDG 7: Affordable and Clean Energy. Notably, the goals are integrated and an improvement in one area affects the outcome of the other SDG areas. For example, an improvement in SDG 7: Affordable and Clean Energy is likely to lead to an improvement in the other SDGs such as: 1 (No Poverty); 3 (Good Health and Well-Being); (8 (Decent Work and Economic Growth); 9 (Industry, Innovation and Infrastructure); 11 (Sustainable Cities and Communities) and 13 (Climate Action)

Environmental

The principles outlined in the National Environmental Management Act 107 of 1998 (NEMA) must be applied to all decision-making that may affect the environment and its biodiversity. The first two principles in Section 2 of NEMA are that, “environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably” and “[development must be socially, environmentally and economically sustainable”.

Given the integrative nature of sustainability, the requirement for and provision of reliable energy will cross cut various environmental, social and economic goals. Various specialist environmental studies are being commissioned to identify the potential environmental impacts of the proposed project on life below water, life on land and climate change in order to establish required mitigation in terms of alternatives and other mitigation measures during the EIA phase. The findings indicate that:

- Ambient concentrations resulting from the project is predicted to be very low;
- The project will undoubtedly produce greenhouse gas emissions with varying degrees of global warming

potential that contribute to anthropogenic climate change and its resultant impacts, however, these impacts are likely to occur whether the project is approved or not. The mitigations offered to avoid or reduce these impacts in Section / Appendix – I12

- Marine environment impacts such as physical disturbance of the littoral zone, increased seawater temperatures and modifications to the hosted biological communities may occur. However, gas pipeline design and construction as well as mitigations for e.g. temperature increases as per maritime engineering may be effected within coastal temperature discharge standards thereby reducing impacts;

- The risk associated with the project has been determined to be low and risk management can be applied to limit air quality or maritime related incidents;
- Life on land impacts e.g. vegetation clearance, aquatic and wetlands are within the limits of acceptable change as the relatively short distance (less than 10km) 132KV transmission line is the only aspect of the project to have a terrestrial impact. The Karpowership with its relatively small footprint will be moored in the port and have no significant footprint typically associated with power stations or solar power plants.
- Abstraction for cooling purposes will be from the coastal waters with an abundant supply being available in the Port. Fresh water resource allocation, protection of the reserve as well as concerns related to water scarcity, usually associated with land-based power stations, will therefore not be a concern.
- Waste management impacts to the marine environment from black and grey water can be avoided in accordance with the MARPOL requirements.

This assessment of cumulative impacts has assessed the Vortum (CCGT) Thermal Power Plant and the Auriga Thermal Power Plant in terms of avifauna, wetlands, hydropedology, hydrology, geohydrology, climate change, estuaries, marine ecology, air quality, heritage, archaeology and palaeontology, major hazard risks, socio-economy, noise and marine traffic. The operation of the above projects together with the Powerships will result in cumulative GHG emissions and the addition to the potential polluting activities in the Algoa Bay and Port. As a result and before mitigation there will be a High negative impact on climate change, the Marine Protected Area as well as conflict with marine mammals and birds. The cumulative impact of the loss of vegetation communities, SCC and biodiversity will have a Medium negative impact on terrestrial ecology. The estimated 155 birds that are expected to be killed annually on transmission lines will have Medium-Low negative impacts on avifauna. In contrast, the increase in economic activities as well as the increase in the GDP and production will have High positive impacts on the estuary and the socio- economy.

All negative cumulative impacts can be adequately managed and mitigated and reduced to lower significance ratings. This must also be consistently enforced on the Vortum (CCGT) Thermal Power Plant and the Auriga Thermal Power Plant. The cumulative positive impacts of these projects will have multi-fold social and economic benefits on both a local and national scale. The proposed development can proceed.

The concept of generating power on the sea has several benefits over land-based power plants, including a small footprint (e.g. the same amount of output can be achieved in a much smaller area compared to land based power plants), significantly shorter timeframes for project delivery / adding capacity, as the Powership arrive already assembled and ready-to-operate, and land-based impacts are limited and of short term, associated with the establishment of the transmission line and the temporary assembly area for the gas pipeline.

More detail of each of these environmental factors is provided in the relevant EIA report sections, namely the alternatives (Section 3), baseline environment section (Section 4) as well as impact assessment (Section 8).

These impacts also need to be considered together with the socio-economic-context i.e. the impact on need to improve the economy and job creation, sustaining businesses and industry within a constrained energy sector and ensuring energy provision for a growing population where many are still disadvantaged and have to making a living without energy. The proposed project is likely to have a significant socio-economically benefit locally, provincially and nationally based on the proposed capacity to be generated and supplied to the grid network. Potential negative impacts on the socio-economic conditions also have to be considered such as air pollution

and impacts on health and contribution to climate change; impacts on other economic activities and livelihoods and the safety risk due to the presence of a major hazardous installation. These issues, positive and negative are expanded in the sections that follow.

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Environmental sensitivities

Numerous independent specialist studies were conducted to assess the potential impact on the environmental andocio-economic aspects related to the proposed gas to Powership project. The alternatives presented in Section 3 of this report have considered environmental, engineering and socio-economic factors. No fatal flaws were identified during the Specialist assessments and EIA process.

This assessment of cumulative impacts has assessed the Vortum (CCGT) Thermal Power Plant and the Auriga Thermal Power Plant in terms of avifauna, wetlands, hydropedology, hydrology, geohydrology, climate change, estuaries, marine ecology, air quality, heritage, archaeology and palaeontology, major hazard risks, socio-economy, noise and marine traffic. The operation of the above projects together with the Powerships will result in cumulative GHG emissions and the addition to the potential polluting activities in the Algoa Bay and Port. As a result and before mitigation there will be a High negative impact on climate change, the Marine Protected Area as well as conflict with marine mammals and birds. The cumulative impact of the loss of vegetation communities, SCC and biodiversity will have a Medium negative impact on terrestrial ecology. The estimated 155 birds that are expected to be killed annually on transmission lines will have Medium-Low negative impacts on avifauna. In contrast, the increase in economic activities as well as the increase in the GDP and production will have High positive impacts on the estuary and the socio-economy.

All negative cumulative impacts can be adequately managed and mitigated and reduced to lower significance ratings. This must also be consistently enforced on the Vortum (CCGT) Thermal Power Plant and the Auriga Thermal Power Plant. The cumulative positive impacts of these projects will have multi-fold social and economic benefits on both a local and national scale. The proposed development can proceed.

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IMPACT ASSESSMENT METHODOLOGY

2014 NEMA EIA Regulations (as amended), Appendix 3 (1) (v) the impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts; (vi) the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks; viii) the possible mitigation measures that could be applied and level of residual risk.

This section describes the method used to assess and rank the impacts and risks of the site layout alternatives, including cumulative impacts for all phases of the proposed project, and indicates of the extent to which the issue and risk can be avoided or addressed by the management actions.

The following criteria were considered for the assessment of each impact.

The nature of an impact is the type of effect that the activity will have on the environment. It includes what is being affected and how.

The significance of an impact is determined by a combination of its consequence and likelihood. The table below describes the scoring of the impacts and how they determine the overall significance.

	Scoring of Impacts
	Consequence
Severity	1 – Insignificant / Non-harmful 2 – Small / Potentially harmful 3 – Significant / Slightly harmful 4 – Great / Harmful 5 – Disastrous / Extremely harmful
Duration	1 – Up to 1 month 2 – 1 month to 3 months 3 – 3 months to 1 year 4 – 1 to 10 years 5 – Beyond 10 years / Permanent
Spatial Scale	1 – Immediate, fully contained area 2 – Surrounding area 3 – Within business unit area or responsibility 4 – Within mining boundary area / Beyond BU boundary 5 – Regional, National, International
Overall Consequence = (Severity + Duration + Extent) / 3	
	Likelihood
Frequency of the Activity	1 – Once a year or once / more during operation / LOM 2 – Once / more in 6 months 3 – Once / more a month 4 – Once / more a week 5 – Daily / hourly
Probability of the Incident / Impact	1 – Almost never / almost impossible 2 – Very seldom / highly unlikely 3 – Infrequent / unlikely / seldom

	4 – Often / regularly / likely / possible 5 – Daily / highly likely / definitely
Overall Likelihood = (Frequency + Probability) / 2	
Overall Environmental Significance = Overall Consequence X Overall Likelihood	
	Overall Environmental Significance:
0 - 2.9	Very Low
3 - 4.9	Low
5 - 6.9	Medium - Low
7 - 8.9	Medium
9 - 10.9	Medium - High
11 and above	High

The impacts identified in the Scoping Report have been expanded on in this EIA Report following receipt of more information from the various specialist studies. Impacts scoring a higher significance in the Scoping Report, received more attention in this EIA Report. The impacts identified in the impact assessment were identified in the specialist

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Final EIR for the Proposed Gas to Power Project at Port of Saldanha, Saldanha Bay Municipality Western Cape. reports and through the public participation process. The scoring and assessment of impacts as well as discussion

of mitigations in this EIA Report have followed a detailed assessment process.

This assessment of cumulative impacts has assessed the Vortum (CCGT) Thermal Power Plant and the Auriga Thermal Power Plant in terms of avifauna, wetlands, hydropedology, hydrology, geohydrology, climate change, estuaries, marine ecology, air quality, heritage, archaeology and palaeontology, major hazard risks, socio-economy, noise and marine traffic. The operation of the above projects together with the Powerships will result in cumulative GHG emission and the addition to the potential polluting activities in the Algoa bay and Port, a resultant have High negative impact on climate change, the Marine Protected Area as well as conflict with marine mammals and birds. The cumulative impact of the loss of vegetation communities, SCC and biodiversity will have a Medium negative impact on terrestrial ecology. The estimated 155 birds that are expected to be killed annually on transmission lines will have Medium-Low negative impacts on avifauna. In contrast, the increase in economic activities as well as the increase in the GDP and production will have High positive impacts on the estuary and the socio-economy.

All negative cumulative impacts can be adequately managed and reduced to lower significance ratings. This must also be consistently enforced on the Vortum (CCGT) Thermal Power Plant and the Auriga Thermal Power

Plant. The cumulative positive impacts of these projects will have multi-fold social and economic benefits on both a local and national scale. The proposed development can proceed.

Refer to Section 8.4 (Impact Assessment) for the impacts and mitigation measures associated with the proposed activity.

Environmental, social and economic impacts associated with the project were further identified through site visits undertaken by project team and various specialists, consideration of the project description, site layout and the specialist studies. As part of the public participation process, I&APs were given an opportunity to provide input to the project at the public meeting sessions and through the review of the BID, advertisements, site notices and the Draft Scoping Report. I&APs will be given a further opportunity to provide input through the review of the EIA Report and/or summary. The feedback received from I&APs also provided input into the identification of environmental and socio-economic issues to be assessed.

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- The effects of increased noise and vibration levels on the marine ecology

Final EIR for the Proposed Gas to Power Project at Port of Saldanha, Saldanha Bay Municipality Western Cape.

Underwater noise will be generated primarily by the FPP operations as no pile driving during construction is required. The noise generated by the FPP operations is expected to be continuous. Currently, there is only one short-term study detailing source level data for sounds propagated into the marine environment by FPP ships. No site-specific modelling studies have been undertaken for underwater noise from the proposed FPP operations.

In an assessment on the underwater noise produced by Powership operations, measurements were obtained over 13- to 30-minute time periods from 14 locations surrounding an operating Powership near Takoradi in Ghana. The gas engine Powership (Khan class) has an electrical output capacity of 470 MW from 24 operating engines and was operating at 100% capacity during the time of measurement. The vessel is moored in water approximately 10 m deep. At sites adjacent to the vessel hull (between 8 and 35 m from the vessel hull), underwater noise levels averaged between 101.83 and 111.45 dB re 1 μPa^2 and the maximum noise recorded was 112.90 dB re 1 μPa^2. At sites further away (within 200 m from the vessel), underwater noise levels averaged between 96.03 and 111.21 dB re 1 μPa^2. At sites within 560 m of the vessel but on the opposite side of the breakwater, underwater noise levels averaged between 92.42 and 99.11 dB re 1 μPa^2.

Sound propagation from the FPP operations in Small and Big Bay will be affected by the topography of the Port. Sound waves will be absorbed and/or reflected by port structures. It is assumed that the Powership proposed for the Port of Saldanha Bay is equivalent in sound generation to that moored in Ghana, then effects on the surrounding marine ecology would be unlikely.

Recommendations:

- A baseline study of the underwater noise climates in the Port of Saldanha Bay is initiated.
- This information should be combined with the likely Powership noise estimates presented above and the

impacts of the total noise on the marine ecology should be reassessed.

- Long-term monitoring (at least 12 months) of underwater noise should be developed and this information

should be made available to the wider scientific community.

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Underwater Noise Impacts

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DIRECT IMPACTS

Install Silencers on equipment such as exhaust stacks outlets and all air outlets and inlets.

In marine environments sound is important to animals as it is used for a variety of purposes such as communication, navigation, orientation, feeding and the detection of predators. The limitation of vision, touch, taste, and smell in water means that sound is critical due to its physical properties for e.g., speed of transmission and is this an important sensory medium for marine animals.

Marine mammals thus use sound as a primary means for underwater communication and sensing. They emit sound to communicate regarding the presence of danger, food, a conspecific or other animal, and also about their own position, identity, and reproductive or territorial status. Underwater sound is especially important for odontocete cetaceans that have developed sophisticated echolocation systems to detect, localise and characterise underwater objects, for example, in relation to coordinated movement between conspecifics and feeding behaviour (Convention on Biological Diversity 2020). Anthropogenic changes to the acoustic environment include increases in the number of high intensity noise events and chronically elevated and homogenised background sound levels (Shannon et al 2015). Any increase in anthropogenic noise could thus have significant effects on the environment in an ecologically sensitive area.

The underwater noise that could be generated in this project includes, but is not limited to, the following: - An increase in marine traffic during LNG deliveries. The main noise sources will be propeller noise, sonar ranging devices and engine noise

transmitted through the hull.

- - Pile driving when constructing and installing the LNG offloading infrastructure.
- - Noise that is radiated through the ship’s hull during power generation.

- - Noise from the suction and discharge of cooling water used on the ship into the harbour environment.
- The proposed project is situated within the Port of Saldanha and adjacent to the Jutten Island Marine Protected Area.
- It is therefore of critical importance that the current underwater soundscape of Saldanha Bay be determined, and the potential noise impacts of the proposed project be thoroughly assessed. A separate Underwater Noise Impact Assessment is thus recommended along, with detailed underwater noise measurements using hydrophones in the important habitats and shipping routes into Saldanha Bay as described above.
- Subsequent to Version 3 of this report, the client was requested to provide information on a current installation of similar size. The results of a study conducted in April 2021 in Ghana of a similar Powership by GDS R&D and AB MECHENG shows that in the immediate vicinity of the hull of the vessel, the underwater noise does not appear to exceed 110dB at frequencies in the 1/3 octave band scale. The Ghana study only applies to the berthed Powership and not the vessel traffic associated with the operation thereof i.e. LNG deliveries etc. The ecological specialist studies can thus use the Ghana study data to evaluate the underwater noise impacts.

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ENVIRONMENTAL IMPACT STATEMENT

2014 NEMA EIA Regulations (as amended), Appendix 3 (1) (l) an environmental impact statement which contains- (i) a summary of the key findings of the environmental impact assessment: (iii) a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives.

8.5.1 Summary of Findings of Environmental Impact Assessment

- During the EIA, the impact of the Proposed Gas to Power via Powership Development on the biophysical and socio-economic environments were assessed. Below is a summary of the main findings for the proposed project, following proposed mitigation:

Aspect	Finding
Terrestrial Ecological	The site is mostly of low sensitivity due to the wide distribution of modified and degraded habitats and the alignment of the transmission line route with existing infrastructure. It is the opinion of the specialist that the proposed development go ahead, provided the mitigation measures are put into place.
Avifaunal	Despite the line's close proximity to two internationally significant Important Bird Areas there was little evidence that the development will cause an impact to the avifauna based on few power line fatalities. The specialist recommended that the routing for the proposed 132kV line should be given authorisation provided all proposed mitigations are in place to allow for the project to proceed with a systematic post-construction monitoring programme in place.
Vegetation	The proposed routes are primarily within transformed or modified habitat, resulting in little overall loss of indigenous vegetation. It is the opinion of the specialist that the proposed development go ahead, provided the mitigation measures are put into place.

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Aspect	Finding

Wetlands	Due to no watercourses being at risk, no further assessments were required. The specialist further recommends that all construction activities of the proposed development can occur but must take into cognisance the surrounding biodiversity in the area that was regarded as sensitive by the Terrestrial Ecologist.
River Riparian (Aquatic)	No aquatic assessment could be conducted in accordance with the SASS5 protocol as no water flow was present within the study site. Mitigation measures as included in the Department of Environmental Affairs (DEA) generic Environmental Management Plan were recommended.
Surface Water (Hydrology)	Since there are no nearby surface water bodies at the proposed Saldanha Bay development site, the specialist indicated there is no risk posed to surface water in the area.
Groundwater (Geohydrology)	The risk and impact assessment undertaken suggest that the potential geohydrological impact at the site (quantity and quality) is low-marginal
Estuary	There are no immediate points of impact within the EFZ relative the project activity. A full estuarine impact assessment for the Langebaan Lagoon is not deemed necessary. The specialist indicated the proposed activity is considered acceptable and that the project should be authorised taking due consideration of the mitigation measures included.
Coastal	The majority of the potential impacts associated with the project are likely to be highly localised, that is, in situ of the project components within the Port of Saldanha, and not anticipated to have a direct effect on the integrity and ecology of the lagoon.
Marine Ecology	The effects of increased noise and vibration levels on the surrounding marine ecology could not be assessed due to the lack of underwater noise and vibration levels data pertaining to floating power plant ships. However, it is the specialist's opinion that operations will probably be below source levels from large vessels, and this is lower than the SPL thresholds listed above for the protection of marine fauna. Therefore, the effects of underwater noise from FPP operations on marine ecology are unlikely.
Noise	The noise impact associated with the operational activities of the proposed project is predicted to be of Medium-Low significance after mitigation at the Port of Saldanha. The construction related noise impacts will be of Very- Low significance.
Sites of Archaeological, Historical and Cultural Significance	Excavations for powerline footings may uncover buried Pleistocene archaeological remains such as stone artefacts, bone, and shell. Larger concentrations of bone, shell and stone tools may be recovered which would elevate the significance of the finds, but this is, considered to be unlikely.

Aspect	**Finding**
Visual Aspects	Identified visual impacts are all likely to be insignificant. There is no reason from a landscape and visual impact perspective why the proposed project should not proceed.
Climate Change	The specialist concluded that the significant climate change impacts that have been identified can be offset to acceptable levels through proactive implementation of appropriate mitigation measures. The extent to which the project proponent contributes to carbon capture, storage or offset initiatives will depend on what offset ration is considered acceptable to both proponent and competent authorities.
Risk	A potential incident involving the Gas to Power Project at the Port of Saldanha Bay could impact on the

	neighbouring berths. The risks associated with this MHI were found to be acceptable. The main risk attributed to the operation of the Powership is the possible rupture of one of the gas transfer hoses. This may result in a discharge of LNG into the marine environment due to pipeline bursting, leading to a flash and pool fire, considered as a High impact which can be mitigated to a Medium impact. The risks were found to be acceptable for the Gas to Power Operations. .

ANNEXURE 6 Extracts from the EMPR

PLANNING AND DESIGN PHASE & PRE-CONSTRUCTION ACTIVITIES

8.4. PART B: ENVIRONMENTAL MANAGEMENT PROGRAMME FOR THE DEVELOPMENT FOR GAS LINES, POWERSHIPS AND FSRU'S

The following will provide environmental specifications for the project of the gas pipeline, the Powerships and the FSRU.

Since the Powership and FSRU are assembled off-site and will be delivered to the port fully equipped and ready to operate, the construction and post-construction phases activities are deemed not relevant for these components, and are then related to the installation of the gas pipeline only. The planning and design phase, as well as the operational and decommissioning phases are related to all components of this section, namely the gas pipeline, the powerships and the FSRU.

8.5. Planning and Design Phase & Pre-Construction Activities

8.5.1. Administrative and Legal Requirements

Impact Management Outcome: All construction work must comply with the conditions of the relevant authorisations, licences and permits.

Impact Management Actions:	**Implementation**		**Monitoring**		
1. All environmental legal requirements must be identified and considered, such as Environmental Authorisation, licenses (water use licences, atmospheric emissions licenses, waste management licenses) and must be authorized prior to the commencement of the gas to power project. 2. Appoint an EAP and conduct the required environmental processes in terms of the NEMA, NEM:WA & NEM:AQA to ensure legal compliance, when relevant. 3. Confirm that in a case of any changes to the original design / layout, that these do not trigger additional activities that were not applied for nor authorised. 4. Consider and implement where feasible environmentally responsible layout and sustainable designs to reduce resource consumption (water) and prevent potential pollution and /or environmental degradation during the operational phase of the project. 5. Consider and implement where feasible favourable socio-economic options / solution, including but not limited to low maintenance infrastructure, incorporation with existing	**Responsible Person/s**	**Method of Implementation**	**Responsible Person**	**Frequency of Monitoring**	**Mechanism for Monitoring Compliance**
	Project Developer	Obtaining authorisations, permit and licences prior to construction	ECO	Once-off	All authorisations, licences and permits must be filed in the Site Environmental File

CONSTRUCTION PHASE ACTIVITIES

16. Although removal of alien species will mostly require removal by hand and the use of saws, the use of herbicides and pesticides may be required. Only specified and approved herbicides and pesticides must be used for control of alien and invasive species. Manufacturer's instructions must be followed when using chemical methods, especially in terms of quantities, time of application etc. 17. Applications of herbicides and pesticides must be applied by certified, approved and trained employees or contractors. 18. Alternative 1: To avoid disturbance to breeding Kelp Gulls and African Oystercatchers, the gas pipeline should not be constructed over the dune area during the period 1 October to 31 January. 19. A long-term hydrophone system is installed in the vicinity of the FSRU, LNGC berth, harbour entrance and other sensitive areas in Algoa Bay to determine the current underwater noise environment. 20. Construction activities, specifically excavation and moving/transporting of large components, to be restricted to daylight hours to prevent potential disturbance to roosting bird populations, and the core estuarine area					

PLANNING AND DESIGN PHASE & PRE-CONSTRUCTION ACTIVITIES					
facilities and infrastructure and logistical arrangements and implementation of low energy or renewable energy options. 6. Compile an Emergency Response Action Plan (ERAP) prior to the commencement of the project. 7. The ERAP must deal with accidents, potential spillages and fires in line with relevant legislation. 8. Include the EMPr in all tender documentation and ensure that environmental requirements for the construction are budgeted for by all contractors and sub-contractors. 9. The noise impacts are re-modelled when the final design of the infrastructure and methods of construction is determined. This will enable extra noise mitigation measures to be determined before the equipment is finally installed. 10. A separate study should be considered to determine the impact on the marine environment. This should include the impact of anthropogenic noise on the African penguins breeding on Jahleel Island, as well as the underwater noise impacts. 11. The applicant must take into account, adhere to and implement the relevant section of the ICM Act applicable to this gas to powership project at the Port of Ncqura;					

8.5.2.Roles and Responsibilities for Environmental Management					
Impact Management Outcome: The implementation of the environmental management plan and environmental management on-site.					
Impact Management Actions:	**Implementation**		**Monitoring**		
1. The overall responsibility for ensuring the implementation of this environmental management plan rests with the Project Manager and Project Developer (Karpowership). This environmental responsibility is also in line with	**Responsible Person/s**	**Method of Implementation**	**Responsible Person**	**Frequency of Monitoring**	**Mechanism for Monitoring Compliance**
	Karpowership	Environmental Authorisation,	ECO	Fortnightly	Agreements and

CONSTRUCTION PHASE ACTIVITIES					
16. Although removal of alien species will mostly require removal by hand and the use of saws, the use of herbicides and pesticides may be required. Only specified and approved herbicides and pesticides must be used for control of alien and invasive species. Manufacturer's instructions must be followed when using chemical methods, especially in terms of quantities, time of application etc. 17. Applications of herbicides and pesticides must be applied by certified, approved and trained employees or contractors. 18. Alternative 1: To avoid disturbance to breeding Kelp Gulls and African Oystercatchers, the gas pipeline should not be constructed over the dune area during the period 1 October to 31 January. 19. A long-term hydrophone system is installed in the vicinity of the FSRU, LNGC berth, harbour entrance and other sensitive areas in Algoa Bay to determine the current underwater noise environment. 20. Construction activities, specifically excavation and moving/transporting of large components, to be restricted to daylight hours to prevent potential disturbance to roosting bird populations, and the core estuarine area					

OPERATION PHASE AND RELATED ACTIVITIES					
31. Adherence to port safety regulations and emergency procedures, particularly during construction/installation. 32. The ship-to-ship transfer of LNG will be managed under an internationally-accredited process via trained personnel to ensure compliance and within clear quality, health and safety regulations. The fuel lines between the FSRU and the Powership will be via double walled with annular space being inerted and continuously purged with Nitrogen "N2" gas. A gas detector in-circuit will identify a leak, so that the fuel gas can be immediately isolated and shut off, the leak identified, and the necessary repairs or replacements made. 33. Hydraulic monitoring of the pipeline to ensure that the system operates as per design specifications. If pressure losses are noted, a pipeline survey should be undertaken to look for leaks. Pipe sections which rupture should be amended accordingly to prevent possible erosion and land subsidence. 34. No operational activities associated with the project to take place on the Eastern Breakwater. 35. All lighting to be down lighting, to be limited to that required for safe operations and not to illuminate or be directed towards Jahleel Island or the Coega estuary and shoreline. 36. Undertake light and noise audits (daytime and night time) on the Eastern Breakwater at its closest point to Jahleel Island and at the Klub Road causeway crossing the Coega Estuary before operations start to determine the baseline, once operations start and annually thereafter. 37. Undertake underwater noise audits at the end of the Eastern Breakwater before operations start to determine the baseline, once operations start and annually thereafter.					

OPERATION PHASE AND RELATED ACTIVITIES

31. Adherence to port safety regulations and emergency procedures, particularly during construction/installation.
32. The ship-to-ship transfer of LNG will be managed under an internationally-accredited process via trained personnel to ensure compliance and within clear quality, health and safety regulations. The fuel lines between the FSRU and the Powership will be via double walled with annular space being inerted and continuously purged with Nitrogen "N2" gas. A gas detector in-circuit will identify a leak, so that the fuel gas can be immediately isolated and shut off, the leak identified, and the necessary repairs or replacements made.
33. Hydraulic monitoring of the pipeline to ensure that the system operates as per design specifications. If pressure losses are noted, a pipeline survey should be undertaken to look for leaks. Pipe sections which rupture should be amended accordingly to prevent possible erosion and land subsidence.
34. No operational activities associated with the project to take place on the Eastern Breakwater.
35. All lighting to be down lighting, to be limited to that required for safe operations and not to illuminate or be directed towards Jahleel Island or the Coega estuary and shoreline.
36. Undertake light and noise audits (daytime and night time) on the Eastern Breakwater at its closest point to Jahleel Island and at the Klub Road causeway crossing the Coega Estuary before operations start to determine the baseline, once operations start and annually thereafter.
37. Undertake underwater noise audits at the end of the Eastern Breakwater before operations start to determine the baseline, once operations start and annually thereafter.

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