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ADDENDUM REPORT:

I&AP COMMENTS AND RESPONSES ON THE ESIA OF THE PROPOSED CONSTRUCTION AND OPERATION OF THE AMMONIA PIPELINE PROJECT, ERONGO REGION, NAMIBIA

PROJECT NUMBER: ECC-145-480-REP-46-D

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construction and operation of the Ammonia Pipeline Project,
Erongo Region, Namibia

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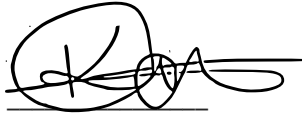
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ABBREVIATIONS

Abbreviation	Description
CMB.TECH	CMB.TECH Namibia (Pty) Ltd
DEAF	Department of Environmental Affairs and Forestry
EAP	environmental assessment practitioner
ECC	Environmental Compliance Consultancy (Pty) Ltd
EMA	Environmental Management Act No.7 of 2007
ESIA	environmental and social impact assessment
ESMP	Environmental and social management plan
HAZOP	hazard and operability study
I&APs	interested and affected parties
LOPA	layer of protection analysis
NB	Natural Biodiversity
O&L	Ohlthaver & List Group
QRA	quantitative risk assessment

1 INTRODUCTION

1.1 PURPOSE OF THE COMMENTS CONSOLIDATED REPORT

This document, compiled after the designated review period, presents the comments received from the public and registered interested and affected parties (I&APs) regarding the draft environmental and social impact (ESIA) assessment report for the proposed construction and operation of an ammonia pipeline from Arandis via Farm 58 to the Walvis Bay port area, in the Erongo Region, Namibia.

The draft ESIA was completed for the Project and undertaken in accordance with the requirements of the Environmental Management Act, 2007 (Act No. 7 of 2007) and the Environmental Impact Assessment Regulation, 2007 (No. 30 of 2011) gazetted under the Environmental Management Act (EMA), 2007 (Act No. 7 of 2007).

Environmental Compliance Consultancy (ECC) Pty Ltd, the appointed environmental assessment practitioner (EAP) for the project, prepared the relevant reports. The scoping report was available for public and registered I&AP review from July 3rd to September 16th, 2025, the final scoping report was then submitted to DEAF on the 20th of September 2024. Upon completion of the scoping phase the assessment phase commenced, the draft ESIA report was available for public and registered I&APs review from 12th to 26th August 2025.

This document consolidates all comments received during the public review period for the assessment phase and presents the responses from ECC, specialists that conducted the impact assessment studies and the Proponent.

2 SUMMARY OF COMMENTS FROM I&APS

2.1 INTRODUCTION

The draft ESIA was circulated similarly on 12 August 2025. On 26 August 2025, Mr. Detlof von Oertzen of VO Consulting sent an email to ECC (Appendix A) with comments and concerns. Additionally, on 28 August 2025, Ms Corinna Van Wyk of Legal Assistance Centre (LAC) provided a letter via email to ECC (Appendix B) with concerns. These comments were captured in the “Comments and Responses” table that are presented in Table 1.

3 DRAFT ESIA – COMMENTS AND RESPONSES

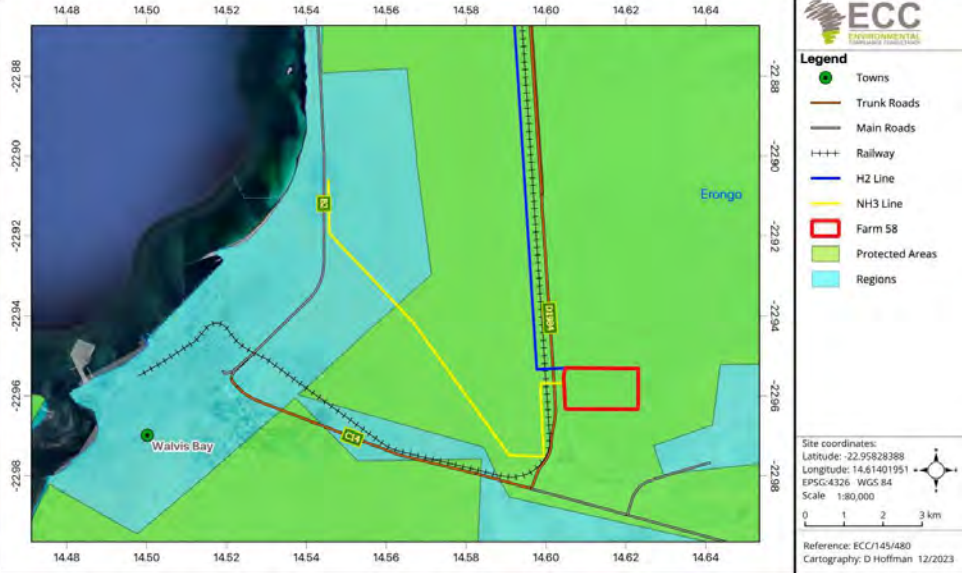
Table 1 - Comments and feedback from the draft ESIA an ESMP during the public review period

Stakeholder name and method through which feedback was received	Comments/Questions Received	Response/Clarification
Mr. Detlof von Oertzen VO Consulting – Received via email	A. The Health and Safety Report as contained in Appendix D does not present a detailed impact assessment but appears to be a preliminary (mostly high-level qualitative) scoping report. Given the toxic and other adverse chemical properties associated with ammonia, this Appendix is clearly not meeting any of the multitude of requirements that a proper health and safety assessment must address when considering the piping of ammonia adjacent and through residential areas and traffic lanes. Should this sloppy health and safety assessment be a true reflection of the duty of care that CMB.Tech and O&L Group will show in constructing and operating an ammonia plant and ammonia pipelines in the Erongo Region, it would indeed be bad news for the Region's inhabitants.	A. The purpose of the current health and safety report was to identify the high-level safety risks to sensitive receptors, as well as to outline corresponding mitigations and recommendations at this stage. A comprehensive health, safety, and security assessment including a quantitative risk assessment (QRA) and a hazard and operability study (HAZOP)/layer of protection analysis (LOPA) will be undertaken by an independent party prior to the construction of the ammonia pipeline (as referenced on pages 5, 66, and 183).
	B. The Air Quality assessment as contained in Appendix E suggests that "Impacts due to operational phase are expected to be insignificant." In view of the multiple risk factors associated with the operation of an ammonia pipeline at and near residential settlements and major traffic	B. The air quality assessment was conducted with due consideration of the pipeline design and methodology. The Proponent plans to implement several

Stakeholder name and method through which feedback was received	Comments/Questions Received	Response/Clarification
	routes in the Erongo Region, such a statement cannot be considered credible. Indeed, and air quality assessment ought to contribute to an understanding of the impacts associated with incidents and accidents involving the ammonia pipeline, however caused, to inform precautionary and emergency matters. Consequently, the air quality assessment is considered incomplete, and its focus on “the potential air quality impacts resulting from the pipeline construction activities on the surrounding environment and human health” is woefully inadequate, and the consultant’s conclusion is based on considering the trivial (i.e. construction) aspects rather than potential operational impacts, including those occurring due to leakages, incidents, accidents, spills and related to non-standard operating conditions. Clearly, this is unacceptable.	engineering controls, including the use of corrosion-resistant carbon steel, protective coatings, and cathodic protection systems to mitigate underground corrosion. In addition, pressure controls, leak detection systems, and valve stations will be incorporated. The assessment concluded that air quality impacts from the operation of the ammonia pipeline are negligible, primarily because the pipeline is a closed system. Any potential releases would be limited to emergency scenarios and safety precautions. Emergency scenarios and risk analyses will be addressed in the comprehensive health, safety, and security assessment.
	C. The Draft ESIA Report, page 129, does not identify the potential impacts on member of the public, i.e. the residents at and near the	C. Please note that impacts that were considered significant did include

Stakeholder name and method through which feedback was received	Comments/Questions Received	Response/Clarification
	proposed ammonia pipeline routing, as a result of incidents and accidents leading to the escape of ammonia and/or ammonia leakage. This is a significant shortcoming and must be addressed, including by considering emergency scenarios. Focusing on employment is important, but potentially negative impacts are critically important and cannot be ignored.	community health and safety (as indicated on P. 129). The impacts to the community were further discussed under section 7.3.6, P.181 – 186 of the ESIA report. The impacts discussed include anxiety caused by the Project, incidences of ammonia leakage and ruptures on residents and communities. Please note that ammonia will not burn in outdoor environments, therefore explosions or emergency fires are not foreseen, however still assessed.
	D. The Draft ESIA Report, page 204, mentions the potential impacts of ammonia leakage on the marine environment. This is a complex scenario, and the simplistic manner in which the ESIA presents the potential impacts is inadequate and naïve. Indeed, an ammonia spill into the marine environment is likely to cause the mass mortality of marine organisms, causing hypoxic dead zones, habitat degradation and long-term ecosystem disruption. In addition, secondary effects on members of the public, marine fauna and flora and the adjacent coastal environments are likely. The Report's value and sensitivity	D. The pipeline will be equipped with shut-down valves, which significantly reduces the likelihood of large-scale spills. Nonetheless, ECC acknowledges the concern raised and revisited the assessment of potential impacts on the marine environment, including adjacent

Stakeholder name and method through which feedback was received	Comments/Questions Received	Response/Clarification
	rating, as well as the magnitude of change rating, do not even begin to describe the potential impacts of leakages that may occur during the operational phase, and are plainly inadequate.	ecosystems. The revised section can be found under section 7.4.3, P. 202.
	E. The above comments are examples of where the Draft ESIA and specialist reports must be improved. Overall, a multitude of errors in the Report indicate that the drafting phase was rushed and inadequate attention was paid to delivering a substantive ESIA.	E. Your comment is noted, and we revised the ESIA report and associate appendices as necessary before final submission.
Ms Corinna van Wyk Legal Assistance Centre (LAC) Letter received via email	A. Failure to assess alternative placement that would dramatically reduce the impact of the pipeline. It seems that when the proponents were first considering the entirety of the project, their plan was to locate the ammonia production plant at Farm 58 and build a much shorter (12.7 km) ammonia pipeline. See Figure 1 on page 7 of the Background Information Document:	A. The project scope has evolved from two separate pipelines—one for hydrogen from Arandis to Farm 58 and another for ammonia from Farm 58 to the Walvis Bay Port area—to a single ammonia pipeline extending from Arandis, via Farm 58, to the Walvis Bay North Port. This change reflects the greater suitability of ammonia for long-distance transport, as it is safer, less prone to

Stakeholder name and method through which feedback was received	Comments/Questions Received	Response/Clarification
	 See, also, this material on page 8: "During the operational phase, the ammonia pipeline will transport 800 metric tons of green ammonia from the ammonia production plant on Farm 58 to the ammonia terminal at the port of Walvis Bay. However, the Draft ESIA, the ammonia pipeline is much longer because the location of the ammonia production plant has shifted from Farm 58 to Arandis without clear justification for this decision, which should be	leakage, and less damaging to pipelines compared to hydrogen, which is highly flammable and accelerates material wear. The abundant solar energy available in Arandis, is essential for large-scale green hydrogen/ammonia production, requiring a longer distance. The Proponent intends to use specialist impact assessments to determine appropriate buffer zones, particularly in relation to sensitive environments and areas of archaeological significance.

Stakeholder name and method through which feedback was received	Comments/Questions Received	Response/Clarification
	presented in the assessment of alternatives. See Figure 2 on page 22 of the Draft ESIA:  Page 54 of the Draft ESIA states: "During the operational phase, liquid ammonia with a mass flow between 20 to 60 ton/h will be transported ~112 km from the proposed ammonia production plant on Arandis to the ammonia terminal near the Walvis Bay north port area for storage. Trained personnel will continuously monitor operations and ensure safety procedures are followed."	

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	With respect to alternatives, Section 4.5 of the Draft ESIA states: “In terms of the Environmental Management Act, No. 7 of 2007 and its regulations, alternatives considered should be analysed and presented in the EIA report. This requirement ensures that during the design evolution and decision-making process, potential environmental impacts, costs, and technical feasibility have been considered, which leads to the best option(s) being identified. “Potential alternatives that have been identified during the ESIA process so far is whether the pipeline should be designed to be placed above or below ground. It has been proposed that the ammonia pipeline be constructed underground wherever feasible. In areas between Arandis and Walvis Bay where geological conditions make underground installation impractical, the pipeline will be routed above ground. Additionally, different pipeline routing options have been considered between Farm 58 and Arandis. Taking into consideration distance from sensitive receptors and input from biodiversity and heritage assessments, the Namib-Naukluft route will be used for the ammonia pipeline between Farm 58 and Arandis.” One obvious alternative that the draft ESIA must consider is to locate the ammonia production plant at Farm 58 (its original location) and	

Stakeholder name and method through which feedback was received	Comments/Questions Received	Response/Clarification
	not in Arandis, which would require an additional 100 kilometers of ammonia pipeline, causing all of the environmental impacts associated with pipeline construction and doing so through a Protected Area. B. Furthermore, in Appendix K, prepared by Ms. Kelly Ochs, the recommended route for the ammonia pipeline with respect to minimizing impacts on biodiversity was a different route than what is presented in the Final ESIA. Appendix K recommended the route displayed in black below (Fig. 32b of Appendix K). However, another alternative was chosen, crossing through areas with high value for conservation.	B. The biodiversity impact assessment evaluated the proposed ammonia pipeline routes to identify the option with the least impact from a biodiversity perspective, following the black route as indicated on the map (Fig. 32b of Appendix K). However, from a health and safety perspective, placing the ammonia pipeline parallel to the D1986 and B2 road for an extended distance increases potential vandalism to occur near roads with people passing by, evacuation challenges and road accidents. Additionally, D1986 is generally used by heavy industrial vehicles due to the industrial zone on

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	Ranking these alternative routes from least impact to most impact: BLACK – BLUE – GREEN  Ammonia Pipeline Project (Arandis-Farm 58-Walvis Bay areas) – June 2025	Farm 58 which could result in heavier ground vibrations accelerating the wear of the pipeline. The intention of ECC and the Proponent is to establish the best proposed ammonia pipeline route considering all environmental, economic and social aspects.

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	Figures 32b: Alternative pipeline routes (Swakop Route (black); Dorob Route (green) and Naukluft Route (blue) (©ECC). Ranking all the routes from least impact to most impact: BLACK – RED – PURPLE – BLUE – GREEN – YELLOW However, following the NamWater water pipeline route (Figure 32a) or the Swakop pipeline route (Figure 32b) would be the best options as they follow an existing development corridor with associated access routes in an already disturbed area = least impact on the biodiversity/ecology (See Blue line in Figure 32a & Black line in Figure 32b).	
	C. Failure to Reasonably Assess Cumulative Impacts On page 233 of the Draft ESIA document, the proponents state: “The EIA regulations clearly state that cumulative impacts should be considered as part of the ESIA for a proposed project. Good practice requires that, as a minimum, cumulative impacts are assessed during the ESIA process. Cumulative impacts can arise when multiple environmental resources are affected by a single activity, or when a single receptor is exposed to multiple impacts from the proposed project, this is referred to as intraspecific cumulative impacts. Cumulative impacts may also arise because of the combination of two or more projects, this is referred to as interspecific cumulative impacts. A receptor could be impacted by similar types of impact from different developments, or a receptor. Cumulative	C. Unfortunately, at this stage, we are unable to elaborate on the potential new developments to occur as a result of the expanding Walvis Bay Town Plan, including the Walvis Bay North Port as well as the Arandis Town Plan as this information is not public knowledge yet. Only referencing the Ammonia Terminal Project or Ammonia/Hydrogen projects would be an inaccurate representation of the area to be expanded and other projects to come. Hence the use of vague language.

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	impacts have a wide temporal and spatial scope and are not restricted to a local area nor need to happen at the same time. It is, therefore, crucial to identify a suitable study and assessment area, as well as a timeframe to assess." [emphasis added] However, the analysis then goes on to provide only a short (<10 pages) and vague description of limited scope. The draft ESIA speaks primarily in vague terms about "multiple developments" and "other new developments" occurring in the area of the start and finish of the pipeline, without defining what types of developments they are referring to or which impacts are likely to accumulate. The section does not address the long-term temporal scales that are relevant to these communities, and most importantly, it fails to discuss the complete set of works relating to green hydrogen and green ammonia that are underway in the nation and have interconnect impacts. It is not adequate to discuss the cumulative impacts of this pipeline with other undisclosed generic development projects, and it is egregious to fail to assess the cumulative impacts of all inter-dependent ammonia and hydrogen projects that are being scoped independently. For example, at the very least, there should be extensive analysis of the impacts to the region from ammonia and hydrogen production + transport via pipeline (e.g. this project) + ammonia terminal	

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	and storage + port and shipping from climate, air/water/soil/noise pollution, human health, and flora/fauna perspectives.	
	D. Climate Change and GHGs: The Climate Change Impact Assessment is not referenced in the ESIA and contains many problems. Appendix I consists of two climate change studies. These studies aren't referenced in the ESIA at all and there are multiple issues with them. One study covers the section between Arandis and Farm 58 is for a hydrogen pipeline, which doesn't appear to be part of the ESIA. The other study only covers the section between Farm 58 and the North Port in Walvis Bay for an ammonia pipeline. Both studies contain maps showing the pipeline between Arandis and Farm 58 being a hydrogen pipeline, which is not what the ESIA discusses as the project under consideration. Neither study contains information on greenhouse gas emissions from pipeline construction.	D. The climate change study has been added (P. 105 under section 5.14) and is referenced on P.130 of the ESIA and the climate change section under 7.1 has been revised. Moreover, the climate change specialist study for this Project has since been revised (Appendix I of the ESIA). The matter was deemed out of scope and therefore no GHG calculations have been created for construction.

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	Neither study contains a detailed list of assumptions or other information on how operational emissions were estimated, making it impossible to assess their accuracy. Both studies state that pipeline operations will not require electricity and will therefore have no Scope 2 emissions. However, the ESIA and both climate studies mention cathodic protection for the pipelines, which often involves the use of electricity. Since the Scope 1 emissions provided don't appear to involve emissions for moving ammonia or hydrogen through the pipelines, it isn't clear if pipeline emissions have been fully accounted for. The Scope 1 calculations for the pipeline between Arandis and Farm 58 include impacts from hydrogen gas leaks, which would not occur under the project as described in the ESIA because it's ammonia that is proposed to be transported. The climate change study for the ammonia pipeline mistakenly implies the pipeline would be transporting hydrogen multiple times (page 18, 35, 38).	For the list of assumptions please refer to P. 44-45. Please note that the climate change report has been updated, kindly refer to appendix I. The Scope 1 calculations inclusion of hydrogen leaks were corrected in revised climate change report for the Ammonia Pipeline Project. The erroneous reference did not impact

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	The climate study for the ammonia section of pipeline shows larger Scope 1 emissions from ammonia leaks than the climate study for the hydrogen pipeline shows for hydrogen leaks. Ammonia is not a GHG, so it is not clear how fugitive ammonia shows up in these Scope 1 calculations. <i>The ESIA improperly dismisses the Project's climate impacts as non-significant while also failing to consider the project's full emissions</i> Table 17 of the ESIA lists social and environmental topics with "Non-significant impacts" and includes Climate Change, stating: "The ammonia pipeline is not expected to result in any significant direct emissions. The only emissions identified are Scope 1 emissions, estimated at 152.413 tonnes of carbon dioxide equivalent (tCO₂e), which are considered negligible. Of this total, approximately 33% is attributed to fugitive emissions, while the remaining 67% is associated with vehicle emissions related to the construction and maintenance of the pipeline.	calculations. However, corrections were made to the revised Ammonia Pipeline climate change report. The revised Ammonia Pipeline climate change report explains fugitive emissions and looks only at the Ammonia Pipeline of ~112 km length.

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	No Scope 2 emissions are anticipated, and Scope 3 emissions were not assessed as part of this study. Given the minimal nature of the projected emissions, the overall impact has been deemed non-significant and is therefore not discussed further in this report.” There are many problems with this statement and the significance determination: The value for emissions listed is the same as listed in the climate study for ~12 km of ammonia pipeline between Farm 58 (Portion 8) and the North Port in Walvis Bay (see Climate Change Study #1, page 9), meaning it doesn't cover the full length of the pipeline described by the ESIA (which includes an additional ~100 km of pipeline). Additionally, the climate study indicates these would be annual emissions, a fact not covered in the ESIA's statement. As mentioned above, these emissions estimates didn't include emissions from construction and likely Scope 2 emissions from electricity consumption. While the ESIA refers to the project's GHG emissions as "negligible", "minimal", and "non-significant", the Foreword to the IPCC's Special Report on Global Warming of 1.5°C concludes with the statement that: "Every bit of warming matters, every year matters, every choice matters". Every ton of GHG emitted has a meaningful impact on climate and two useful tools for demonstrating this are the social cost of carbon (SCC) and the mortality	Refer to the revised Ammonia Pipeline climate change report for new context inclusive of some Scope 3 emissions. Further, although the SCC and MCC are tools, the revised report relies on a comparative of additional carbon versus existing carbon to arrive at a qualitative understanding.

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	cost of carbon (MCC). The SCC represents the economic cost associated with each ton of GHG emissions, taking into account the damages caused by climate change, such as impacts on human health, agriculture, infrastructure, and ecosystems. It provides a monetary value to quantify the societal impact of emissions. The MCC represents the number of expected excess deaths caused by the emission of a given amount of GHGs. Instead of immediately assuming the impact of the project's emissions would be negligible, the MIA should have included a discussion of the SCC and MCC associated with the project's full emissions from construction and operations.	
	E. Split Technical Studies in the Appendices Many of the appendices contain paired studies, with one study covering the ammonia pipeline between Farm 58 and the North Port at Walvis Bay and the other study covering the formerly proposed hydrogen pipeline between Arandis and Farm 58, which is no longer part of this ESIA. For some impacts, splitting these analyses into two separate studies means that the full impact is not accurately considered. In some cases, only the impacts from one of the paired studies is reported in the ESIA, meaning that the full impact of the project wasn't accurately considered in the ESIA's impact determination.	E. Where considered necessary, certain assessments were subsequently updated such as the biodiversity and heritage impact assessment reports that were revised to reflect material changes identified from a heritage and biodiversity perspective. As the specialist reports were completed prior to the decision to consolidate the pipeline.

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	Split Study	Analyses a hydrogen pipeline segment?	Identified Problems	Air quality: Ammonia will in no form be released in the air during normal operations. However, in the Project ESMP air quality monitoring on a monthly basis was included as a requirement. We also included monitoring PM2.5 and PM10 and passive gas. In an emergency scenario where failure is experienced and there is ammonia spillage, leakage or explosions, a comprehensive health, safety, and security assessment including a quantitative risk assessment (QRA) and a hazard and operability study (HAZOP)/layer of protection analysis (LOPA) will be undertaken by an independent party prior to the construction of the ammonia pipeline (as referenced on pages 5, 66, and 184-185).
	Air Quality	Yes	Segments were modeled separately rather than together. Operational emissions dismissed despite fugitive ammonia emissions analyzed in climate studies. Ammonia contributes to PM2.5, but both AQ studies state "Impacts due to operational	
	Noise	Yes	Noise Studies looked at sensitive receptors along the old route rather than the current planned route, meaning analysis of distances and impacts to sensitive receptors is incomplete.	
	Heritage	No (but figures show		

Stakeholder name and method through which feedback was received	Comments/Questions Received	Response/Clarification									
	<table border="1"> <tr> <td></td><td>hydrogen pipeline)</td><td></td></tr> <tr> <td>Traffic</td><td>Yes</td><td></td></tr> <tr> <td>Climate Change</td><td>Yes</td><td>Values from only one of the studies reported in the ESIA</td></tr> </table>		hydrogen pipeline)		Traffic	Yes		Climate Change	Yes	Values from only one of the studies reported in the ESIA	Noise: The noise assessment was carried out to account for nearby sensitive receptors, individual dwellings and accessibility, looking at all proposed pipeline routes. Climate Change: The climate change study has since been revised and consolidated into one report and incorporated under section 7.1 of the ESIA.
	hydrogen pipeline)										
Traffic	Yes										
Climate Change	Yes	Values from only one of the studies reported in the ESIA									
	F. Fails to Assess Hazards to Public Safety or Undertake a Quantitative Risk Assessment (QRA) The ESIA fails to assess the hazards to public safety of a high-pressure liquid ammonia pipeline The Draft Scoping Report for the Project states: “7.5 HEALTH AND SAFETY ASSESSMENT “The objective is to assess potential health and safety impacts associated with the construction and operation of the ammonia pipeline project. The	F. The objective of the current Health and Safety Report is to identify high-level safety risks to sensitive receptors and to outline preliminary mitigation measures and recommendations. A comprehensive Health, Safety, and Security Assessment, incorporating a Quantitative Risk Assessment (QRA) and a Hazard and Operability Study									

Stakeholder name and method through which feedback was received	Comments/Questions Received	Response/Clarification
	assessment will identify hazards, evaluate risks, and recommend measures to mitigate and manage health and safety concerns. "Scope of Work: "The assessment will include: - Identification of potential health and safety hazards related to construction and operation activities." An ESIA for a 112-km, 60-bar (equivalent to 870 pounds per square inch) liquid-ammonia pipeline must include a Quantitative Risk Assessment (QRA) that evaluates pipeline-rupture scenarios and compares resulting ammonia levels to U.S. Environmental Protection Agency Acute Exposure Guideline Level (AEGL) toxic endpoints. Ammonia is a toxic inhalation hazard with health-based thresholds that enable quantitative assessment. The U.S. AEGL program defines acute public-health thresholds for airborne ammonia: AEGL-1 (notable discomfort), AEGL-2 (irreversible/serious long-lasting effects or impaired escape), and AEGL-3 (life-threatening effects or death), with tabulated ppm values vs. exposure time.[1]	(HAZOP)/Layer of Protection Analysis (LOPA), will be conducted by an independent party prior to construction of the ammonia pipeline (see references on pages 5, 66, and 184-185).

Stakeholder name and method through which feedback was received	Comments/Questions Received	Response/Clarification																														
	Ammonia 7664-41-7 (Final) <table><tr><th></th><th>10 min</th><th>30 min</th><th>60 min</th><th>4 hr</th><th>8 hr</th></tr><tr><td>ppm</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>AEGL 1</td><td>30</td><td>30</td><td>30</td><td>30</td><td>30</td></tr><tr><td>AEGL 2</td><td>220</td><td>220</td><td>160</td><td>110</td><td>110</td></tr><tr><td>AEGL 3</td><td>2,700</td><td>1,600</td><td>1,100</td><td>550</td><td>390</td></tr></table> Pipeline ruptures can generate dense-gas plumes that reach communities kilometers away. A high-pressure (≈60 bar) loss-of-containment can flash to a cold, dense ammonia cloud that hugs the ground and travels downwind. Recognized QRA methods require dense-gas dispersion modeling across stability classes and wind speeds to map distances to AEGL-2/AEGL-3 exceedance—something that a qualitative ESIA cannot do reliably. These are designed for protecting the general public, including sensitive sub-populations, and are standard “levels of concern” for emergency planning and consequence modeling. Using AEGLs lets the ESIA translate concentrations from dispersion models into actionable impact zones. International good practice requires a QRA for major-hazard pipelines affecting the public. Pipeline safety guidelines and risk-management frameworks all call for scenario-based frequency and consequence analysis, production of individual-risk contours and societal-risk (F–N) curves, and demonstration that risks are driven as low as reasonably practicable		10 min	30 min	60 min	4 hr	8 hr	ppm						AEGL 1	30	30	30	30	30	AEGL 2	220	220	160	110	110	AEGL 3	2,700	1,600	1,100	550	390	
	10 min	30 min	60 min	4 hr	8 hr																											
ppm																																
AEGL 1	30	30	30	30	30																											
AEGL 2	220	220	160	110	110																											
AEGL 3	2,700	1,600	1,100	550	390																											

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	(ALARP)—deliverables that belong inside an ESIA for route selection, design, and emergency planning. Because ammonia's acute toxicity is well-characterized by AEGL thresholds and because pipeline ruptures can create large, ground-hugging toxic clouds, an ESIA that omits a QRA risks underestimating real public-safety impacts. Despite the requirements of the Scoping Report and international good practice, no quantitative risk assessment is provided in the ESIA for the project. Appendix D of the ESIA alludes to the possibility that a quantitative risk assessment might be provided at a future point in time, stating: "During the Front -end engineering design (FEED) study of the pipeline the risk associated with the pipelines will be evaluated and mitigation measures will be defined and implemented. "During the engineering studies of the pipelines, that have commenced on 12 February 2025, CMB.TECH together with its engineering partner will perform a risk assessment of the installation." It would be unacceptable to delay the Quantitative Risk Assessment (QRA) until after approval of the ESIA for a 112-km, 60-bar ammonia pipeline. Risk is fundamental to project approval. The QRA identifies how far toxic	

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	ammonia clouds could travel (using AEGL-2/AEGL-3 thresholds) and which communities or sensitive receptors fall inside risk contours. Without that analysis, decision-makers cannot judge whether the project is acceptable, what route is safest, or whether risk levels are tolerable under national or international standards. Mitigation and design depend on QRA results. Valve spacing, leak detection, burial depth, route alignment, and emergency-response planning must be informed by quantified risk outcomes. Approving the ESIA without these inputs locks in a design that may later prove unsafe or non-compliant. Public participation rights are undermined: Communities and civil society cannot meaningfully comment on health and safety impacts if AEGL-based hazard zones and risk maps are not disclosed during the ESIA process. In short, postponing the QRA until after ESIA approval would mean that regulators, financiers, and the public are asked to accept the pipeline without knowing whether its risks are manageable, which defeats the core purpose of the ESIA.	
	G. Fails to Adequately Account for Biodiversity Impacts and Mitigate Impacts Appropriately	G. Dr. Peter Cunningham (Biodiversity specialist) has conducted the vertebrate fauna & flora as per ToR and is not involved with the overall project

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	<i>The ESIA only describes the pipeline, while characteristics of the area and environmental and social impact assessment of the whole project are not available in this ESIA.</i> It seems, from the page 41 of the Biophysical Assessment (Vertebrate Fauna and Flora): "Ammonia pipelines+Ammonia Terminal (Arandis-Farm 58-Walvis Bay Area's) in the Appendix K of the ESIA, that the whole project includes at least an ammonia terminal in the coast, unknown activities in Farm 58, solar PV Plant and access routes besides the pipeline. The accurate description of the area, of the whole project and an assessment of the environmental and social impacts is not available." The biodiversity baseline provided is not enough to assess the impacts of the pipeline construction and operation. For example, a detailed vegetation map as well as a detailed cartography with the distribution of endemic and threatened species should have been included in the assessment, but is not available. Without this information, the assessment of the impacts on biodiversity cannot be accurate.	description. The Ammonia Terminal and activities at Farm 58 and their associated activities are covered under separate projects. Social aspects are not covered under the biodiversity study. The habitats and vertebrate fauna & flora have been thoroughly described in the report. Vegetation map is not included as per the ToR. Such maps (and all vegetation maps) are coarse, and their only real value is for support and/or aesthetic. The important aspect is where this NB vegetation occurs along the route - and this has been described and highlighted throughout report - i.e., NB habitats. Furthermore, it is not possible to have a detailed map with endemic/threatened

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	Mitigation measurements do not assure that endemic and threatened species will not be affected by the activities related to the project. For example, one of the recommendations to mitigate the impacts of fragmentation on fauna caused by the pipeline is to bury the pipeline “where possible”. The detailed characterization of the possibility of burying the pipeline does not seem to be available in the ESIA, and in consequence, the impacts of the pipeline on fragmentation of biodiversity cannot be assessed adequately.	spp. as vertebrates are mobile and not fixed in time/space. It is still not feasible for flora- what is more important though is identifying the NB habitats where these spp. occur/potentially occur and this has been done. One can never ensure that each spp. will survive development activities - mitigations are to point out NB areas to avoid & ensure minimal disturbances throughout. Burying the pipeline has been advocated throughout report and viewed as the best-case scenario. Where not possible - often related to geology that would require blasting which would result in more disturbances, etc., then only above ground. Dr. Peter Cunningham published the only paper on pipeline effects/impacts on vertebrates from Namibia and should

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	There are iconic species, such as <i>Welwitschia mirabilis</i>, which is a very long living species, up to 2,000 years. The recommendation is to “limit” and “avoid” the impact on this species “when possible”. The detailed characterization of destroying individuals of <i>Welwitschia</i> is not available, as the distribution and abundance of each individual of the species and a detailed design of the pipeline distribution is not available. See as an example below from page 82, Annex K, ESIA: “1. Limit the development to actual sites to be developed and avoid affecting adjacent areas, especially the <i>Salsola</i> spp. dune hummocks; well vegetated Khan/Swakop/Tumas Rivers; ephemeral drainage lines; rocky outcrops (especially white geology areas); dolerite ridges; <i>Welwitschia</i> Flats, etc. throughout the entire area. 2. Avoid development & associated infrastructure in sensitive areas – e.g., <i>Salsola</i> spp. dune hummocks; well vegetated Khan/Swakop/Tumas Rivers; ephemeral drainage lines; rocky outcrops (especially white geology areas), small drainage lines with <i>Welwitschia mirabilis</i> plants; lapped-faced vulture nesting sites; rocky outcrops; etc. – in the proposed development	be read in context for a better understanding. A detailed map is impractical as discussed above. Very few were identified <i>Welwitschia</i> along final route and reference to this spp. throughout report mainly related to the other "alternative" routes assessed. So, if applying the general mitigations then any such NB habitats could be avoided - a pipeline can be adjusted to such features. The final layout of such a pipeline would also have to involve the environmental officer on site for small scale deviations, etc. Large trees are uncommon in the project area and included just in case there are and/or vultures decide to use such a tree along the route, etc. This can be assessed and planned as there are

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	area (See Sections 4 & 5; Figures 28, 30-34). This would minimise the negative effect on the local environment especially unique features serving as habitat to various vertebrate fauna species." As above, the detailed characterization of big trees is not available. In consequence, the impact of destroying big trees with nests of endangered species and key systems to sustain biodiversity cannot be adequately assessed. The recommendation to "avoid" the impact on big trees, with nests of endangered species is general, and cannot be followed up by a plan. Typically, a plan for relocalizing each individual of each threatened or endemic species should be available to assure a certain survival rate. This plan is missing from the ESIA. Offsetting biodiversity losses do not seem to be part of the mitigation strategy in the ESIA, as would be expected since all projects should follow the standard mitigation hierarchy with respect to minimizing, mitigating, restoring, and offsetting biodiversity loss. Biodiversity loss is expected as a	few big trees and no nests observed - just precautionary mitigation as reports and the actual work often occurs years apart and things can change. Mitigations are to increase awareness of potential threats & NB habitats and minimise and/or prevent such development impacts. It is impractical to assume that all impacts can be completely avoided. Similarly with the following statement "Typically, a plan for relocalising each individual of each threatened or endemic species should be available to assure a certain survival rate. This plan is missing from the ESIA." As it is not feasible to implement. Impacts are not viewed as severe if all NB habitats are avoided & mitigations followed. By following proposed mitigations, route alignment & practical

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	consequence of this project and should be fully accounted for in the mitigation hierarchy, inclusive of the standard offsetting step. Lastly, the area where the pipeline intends to cross through are protected areas (Fig. 2), involving two National Parks. The ESIA does not seem to provide information regarding the reasons why these areas were declared to be protected, and an assessment of compatibility between the National Parks and this project seems to be not available.	recommendations this would offset biodiversity loss. Burying the pipeline would result in the least overall disturbances for all spp. assessed. The purpose for establishing the two National Parks was incorporated in Chapter 5, section 5.10., P 101.

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	 Figure 1: Locality map of the proposed project.	

4 ACKNOWLEDGEMENTS

Through the ESIA process, the Proponent and ECC have endeavoured to provide a platform to hear and address all relevant comments put forward by I&APs. ECC would like to thank the I&APs and stakeholders for providing feedback during the scoping and the ESIA phase of the Project. We acknowledge and appreciate the time required to review these documents and ECC genuinely appreciate the input provided by I&APs. The valuable feedback received during the ESIA process will ensure a robust impact assessment is submitted to the relevant authorities for a record of decision to be made. ECC acknowledges that constructive feedback results in an improved ESIA and a project that is understood by the community and I&APs.

APPENDIX A - EMAIL RECEIVED FROM MR DETLOF VON OERTZEN (VO CONSULTING) ON THE 26TH OF AUGUST 2025

Dear ECC staff

Herewith our preliminary comments on the ESIA and specialist reports for the proposed construction and operation of the ammonia pipeline from Arandis via farm 58 to the North Port.

- The Health and Safety Report as contained in Appendix D does not present a detailed impact assessment, but appears to be a preliminary (mostly high-level qualitative) scoping report. Given the toxic and other adverse chemical properties associated with ammonia, this Appendix is clearly not meeting any of the multitude of requirements that a proper health and safety assessment must address when considering the piping of ammonia adjacent and through residential areas and traffic lanes. Should this sloppy health and safety assessment be a true reflection of the duty of care that CMB.Tech and O&L Group will show in constructing and operating an ammonia plant and ammonia pipelines in the Erongo Region, it would indeed be bad news for the Region's inhabitants.
- The Air Quality assessment as contained in Appendix E suggests that "Impacts due to operational phase are expected to be insignificant." In view of the multiple risk factors associated with the operation of an ammonia pipeline at and near residential settlements and major traffic routes in the Erongo Region, such a statement cannot be considered credible. Indeed, an air quality assessment ought to contribute to an understanding of the impacts associated with incidents and accidents involving the ammonia pipeline, however caused, to inform precautionary and emergency matters. Consequently, the air quality assessment is considered incomplete, and its focus on "the potential air quality impacts resulting from the pipeline construction activities on the surrounding environment and human health" is woefully inadequate, and the consultant's conclusion is based on considering the trivial (i.e. construction) aspects rather than potential operational impacts, including those occurring due to leakages, incidents, accidents, spills and related to non-standard operating conditions. Clearly, this is unacceptable.
- The Draft ESIA Report, page 129, does not identify the potential impacts on member of the public, i.e. the residents at and near the proposed ammonia pipeline routing, as a result of incidents and accidents leading to the escape of ammonia and/or ammonia leakage. This is a significant shortcoming and must be addressed, including by considering emergency scenarios. Focusing on employment is important, but potentially negative impacts are critically important and cannot be ignored.
- The Draft ESIA Report, page 204, mentions the potential impacts of ammonia leakage on the marine environment. This is a complex scenario, and the simplistic manner in which the ESIA presents the potential impacts is inadequate and naïve. Indeed, an ammonia spill into the marine environment is likely to cause the mass mortality of marine organisms, causing hypoxic dead zones, habitat degradation and long-term ecosystem disruption. In addition, secondary effects on members of the public, marine fauna and flora and the adjacent coastal environments are likely. The Report's value and sensitivity rating, as well as the magnitude of change rating, do not even begin to describe the potential impacts of leakages that may occur during the operational phase, and are plainly inadequate.

The above comments are examples of where the Draft ESIA and specialist reports must be improved. Overall, a multitude of errors in the Report indicate that the drafting phase was rushed and inadequate attention was placed on delivering a substantive ESIA.

I hope that my inputs add value – please do not hesitate to contact me if you have questions.

Best regards

Detlof

APPENDIX B – LETTER RECEIVED VIA EMAIL FROM MS CORINNA VAN WYK (LAC) ON THE 28TH OF AUGUST 2025