Work Package 2: Strategic Environmental Assessment for the Proposed Boegoebaai Port, Special Economic Zone and Namakwa Region.

Completed Comments and Responses sheet

Final, 30 June 2026

Note that some comments were submitted in Afrikaans and have been translated to English

Reviewer name	Id	SEA WP2 Report Chapter #	Page range #	Line/s #	Table/Fig/Box #	Comment	Responses to Comments
Andries Maarman	1	General				**1. Introduction** We, the Cederberg Rastafari Movement (CRM), is a cultural group that has its roots in the Indigenous San Heritage. We also has a general interest in the Heritage claims, in Living Heritage, Cultural Landscapes and Graves. We lodge this formal comment on the proposed Boegoebaai Port development and its associated future activities, including mineral trade, transport, and so-called "green hydrogen" projects. This commentary is grounded in constitutional rights, statutory protections, and international obligations that safeguard heritage, land rights, and human dignity.	**CSIR:** The comment is noted.
Andries Maarman	2	General				**2. Heritage and Graves: Non-Negotiable Protections** • **Section 36 of the National Heritage Resources Act (Act 25 of 1999)** prohibits the disturbance, destruction, or removal of graves older than 60 years, graves of victims of conflict, and burial grounds without a permit from SAHRA. •The project documentation itself acknowledges graves "throughout the study area." Proceeding despite this knowledge constitutes a direct violation of the NHRA. • Graves are not replaceable. They embody cultural identity, spiritual continuity, and ancestral dignity. Treating them as obstacles to development is unlawful and unconstitutional.	**CSIR:** The comment is noted and agreed with; the National Heritage Resources Act protects a wide range of heritage resources, including graves, requiring their consideration in all development planning. The assessment does identify that graves are present in the region, noted as being of high local cultural significance and are therefore of VERY HIGH sensitivity when encountered. The SEA has recommended strategic management actions, as it pertains to graves, for consideration during further development planning and/or at the relevant Environmental Impact Assessment (EIA) process. The SEA is not a decision-making process and has **not** resulted in a decision for the proposed development programme to proceed or not. No implication has been made in the SEA that graves are treated as obstacles to development. **ASHA Consulting:** The Heritage Resources Chapter recognises that graves and burial grounds are not only archaeological resources but also places of ongoing cultural, familial and spiritual significance. Because many graves are unmarked and cannot be spatially identified in advance, the SEA adopts a precautionary approach, particularly in coastal dune systems and historically occupied landscapes where the probability of encountering burials is elevated. Since burials cannot be identified in advance of development, the NHRA provides strict requirements when human remains are accidentally uncovered (Section 36 (3) (a) to (c)). These areas require heightened heritage scrutiny by the authorities. "Throughout the study area" simply means that graves could occur anywhere, although the probability of finding a grave in any one place is extremely low. Any graves accidentally uncovered must be reported to the South African Police Service and the relevant heritage authority (SAHRA). Section 36(5) of the NHRA also provides for consultation with communities and individuals who have an interest in the grave or burial ground. grave in any one place is extremely low. It is uncertain what the commentator means by "obstacles to development". In our opinion graves are "obstacles" that need to be treated appropriately (but "limitations" is a more appropriate word). If they were not "obstacles/limitations" then they would be of no concern.
Andries Maarman	3	General				**3. Cultural Landscapes and Living Heritage** • The NHRA protects **cultural landscapes** and places of living heritage. The Richtersveld is a recognized cultural landscape, deeply tied to Indigenous identity and practices. • Ignoring or sidelining this heritage reduces Indigenous existence to a commodity, contradicting the Act's mandate to conserve heritage for future generations.	**CSIR:** The SEA does not ignore or sideline Indigenous heritage or cultural landscapes. On the contrary, the SEA documents explicitly recognise the cultural significance of the Richtersveld, living heritage, communal rights and the sensitivity of cultural landscapes. The Summary for Policy makers, as well as the dedicated Heritage Resources Chapter (Chapter 5) of the SEA, explicitly acknowledge the protection of living heritage under the NHRA, the significance of the Richtersveld Cultural and Botanical Landscape (RCBL), Nama transhumance traditions, communal grazing systems, and living heritage as integral components of the region's cultural landscape and identity.The Heritage Chapter specifically identifies communal areas and the RCBL as HIGH to VERY HIGH sensitivity areas and acknowledges that development within these landscapes may affect traditional land-use patterns and living heritage practices. The SEA further recommends avoidance of sensitive heritage areas where feasible, detailed Heritage Impact Assessments during project-level processes, consultation with local herder communities, and engagement aligned with Free, Prior and Informed Consent (FPIC) principles. The assessment therefore explicitly recognises Indigenous heritage and cultural landscapes as critical planning considerations. The SEA's purpose is to identify risks, sensitivities, constraints, and management measures upfront to inform future planning and decision-making processes. **ASHA Consulting:** The Heritage Resources Chapter recognises the Richtersveld Cultural and Botanical Landscape not only as a formally protected World Heritage Site, but also as a living cultural landscape shaped by ongoing pastoralist practices, seasonal mobility and indigenous knowledge systems. These living heritage dimensions have informed the sensitivity mapping and strategic constraints identified in the SEA.
Andries Maarman	4	General				**4. Defective Consultation and Exclusion of the Richtersveld People** • **Mineral and Petroleum Resources Development Act (MPRDA)** and **National Environmental Management Act (NEMA)** require meaningful consultation with all interested and affected parties. • Interim Protection of Informal Land Rights Act (IPILRA, 1996) prohibits deprivation of informal/customary land rights without consent. • The Richtersveld people were excluded from stakeholder identification and consultation. This exclusion renders the process procedurally defective and unlawful.	**CSIR:** Stakeholder consultation for the purpose of the SEA formed a central component of both Work Package 1 and Work Package 2 and was implemented through a structured, multi-channel participation process, including Working Group engagements, newspaper advertisement, radio engagement, public meetings (announced via local notices), public review periods, and dissemination of information through the project website. The SEA Working Group included various representatives from the Richtersveld, including community based organisations, the Richtersveld Communal Property Association, and other stakeholders acting as information conduits to enable information sharing between members' constituencies and the SEA team. Public meetings were also undertaken across multiple locations within the Richtersveld and broader Namakwa region as part of the SEA process. It is important to note that the SEA is a strategic planning and assessmentment process intended to identify opportunities, constraints, sensitivities, and risks at regional scale. The SEA itself does not authorise development or adjudicate on land rights. Any future project-level applications or authorisation processed would remain subject to the applicable legislative requirements under NEMA, the IPILRA, and other relevant legislation, including further public participation and consulatison processes. The SEA outputs explicitly recognise the importance of equitable consultation and negotiation processes, including alignment with FPIC principles, in future land access, development planning and decision-making processes. **Karoo Development Foundation:** The SEA makes proposals for an effective future consultation process, which should include several opportunities for stakeholders to make inputs, and for those inputs to be taken forward in future consultation rounds.
Andries Maarman	5	General				**5. Port as Gateway to Forced Industrialization** • Authorities will not permit a multi-billion rand port to remain idle. Its existence will force mining, prospecting, and industrial activities to proceed, regardless of community opposition. • **NEMA requires cumulative impact assessment.** Approving the port without accounting for inevitable mining activities violates this principle. •The port is marketed under the guise of "green hydrogen," but its true purpose is mineral export and profit. This narrative masks the reality of extractive dependency and ecological devastation.	**CSIR:** The SEA considers cumulative impacts and associated regional developments as a core component of the assessment.The scope of Work Package 2 was specifically designed as a regional, forward-looking assessment of the cumulative social, economic, infrastructure, heritage, and ecological implications of a potential green hydrogen economy, including mining, prospecting, renewable energy development, and industrial growth. The assessment acknowledged that the proposed port is intended to support multiple commodity streams, including manganese, lead, zinc, agrucultural products, and green hydrogen derivatives, and does not present the port solely as a green hydrogen facility. Refer to Chapter 1 (Introduction and Context Chapter) , Section 1.3. The relevant specialist chapters therefore assessed the the cumulative implications of a potential regional green hydrogen economy in combination with existing and anticipated development trends, including mining and infrastructure expansion. **Karoo Development Foundation:TRADE-OFFS REGARDING INDUSTRIALISATION:** It is indeed the case that the project will entail a significant degree of industrialisation, particularly between Port Nolloth and Boegoeberg. The choice to Go/No Go is always a difficult one. Communities may well have mixed feelings, in two senses: Firstly, some people may support the project (e.g. for jobs) and others may oppose it (e.g. for heritage conservation). Secondly, individuals may have their own mixed feelings about it, e.g. appreciate the advantages of possible jobs and training, while also worried about the impacts on the local economy. After an in-depth consultation process, in which the potential advantages can be identified and strengthened, and the potential dangers identified and mitigated, community members may come to different insights. People who were initially opposed to the projects may develop a cautious support of them; and those who initially supported the projects may become more concerned. This is a fluid process of evaluation and adjustment, which should be captured in the public consultation process. Eventually, however, democratically elected governments (national, provincial and municipal) need to make a decision, one way or the other, presumably while keeping their residents' feelings firmly in their mind. **Karoo Development Foundation: EXTRACTIVE vs PRODUCTIVE**: The proposed GH2 and port projects are certainly not extractive, although they will benefit and promote extractive mines, such as copper, zinc and manganese. The GH2 project is productive, i.e. industrial - it will use local and imported resources to manufacture hydrogen, which can then be used in other productive cycles. The port will be a transport facility, not an extraction facility, and will unlock other economic advantages. The real issue is not that these projects will be extractive (strictly speaking, only mines are extractive); but they will be industrial or manufacturing-oriented. At the same time, they will open linkages for other sectors such as commercial agriculture (livestock and crop production), business services, training and personal services, due to local economic multipliers. The most risky element to these projects would be the loss of authentic environmental and cultural ambience, which could impact tourism negatively. The difficult trade-off is between this loss of tourism appeal and the potential gain in jobs and training. This is a value judgement which will eventually have to be made by democratically-elected authorities. **CSIR Infrastructure & Planning Authors:** The planned Boegoebaai port is expected to operate as a deep-water bulk import and export hub that underpins a green hydrogen–oriented industrial cluster and broader regional development in the Namakwa/Northern Cape area. Chapter 6 does in fact describe the port and its multiple roles, including the export of green hydrogen products and the shipment of mining ore. From a strategic perspective, the port is also envisaged as a key link between the inland mining and agricultural areas of the Northern Cape and both African and international markets, capitalising on the relatively short distance from regional resource zones to a deep-water facility. This role is clearly outlined and quantified on the basis of preliminary studies. Furthermore, the volume of mineral ore to be transported to the port is presented, given the significant implications for road traffic if this material were moved by truck. The chapter therefore confirms that the port will also be a major outlet for exporting mining ore from the Northern Cape province.
Andries Maarman	6	General				**6. Constitutional and International Obligations** • Constitution of South Africa: Protects rights to dignity, culture, and religion. These rights cannot be subordinated to profit. • UN Declaration on the Rights of Indigenous Peoples (UNDRIP) and the African Charter on Human and Peoples' Rights require Free, Prior and Informed Consent (FPIC). South Africa is bound to respect FPIC in projects affecting Indigenous communities. • Proceeding without FPIC constitutes a violation of international human rights law.	**CSIR:** The SEA recognises the importance of constitutional rights, including cultural heritage, participation and procedural fairness, as well as the significance of Indigenous knowledge systems and heritage in the Richtersveld region. Chapter 7 (Socio-economics) of the SEA also explicitly references FPIC principles as an important framework for engagement with affected communities. The SEA acknowledges the importance of ongoing and meaningful community engagement, and identifies public participation and governance as key strategic considerations requiring continues attention throughout future planning and authorisation proceses. **Karoo Development Foundation: THE IMPORTANCE OF FPIC:** Chapter 7 argues strongly for FPIC, in addition to other consultation methodologies. The key challenge is to enable "informed consent", i.e. that local people have enough information to debate the advantages and disadvantages of the projects. This would require an iterative process of consultation, i.e. not simply a once-off procedure. As community representatives engage with these alternatives, their observations will affect other community representatives; who then need to apply their minds to these fresh insights. This is a lengthy process, and should be done with the utmost openness, transparency, inclusiveness, and good faith. Anything short of such an approach would create the danger and perception that Government rushed the project without a proper appreciation of local communities' sentiments. On the other hand, there should also be some time limit on the consultation process (it should not be endlessly extended), so that democratic governments can finally take a decision on both the project in principle, as well as possible amendments which arose in the process of public consultation.
Andries Maarman	7	General				**7. Demand** We demand that: 1. The Boegoebaai Port proposal be rejected in its current form. 2. Full compliance with NHRA, IPILRA, MPRDA, and NEMA be enforced. 3. SAHRA's authority over graves and cultural landscapes be respected. 4. The Richtersveld people be recognized as rightful custodians and included in all consultation processes. 5. FPIC be obtained before any development is considered.	**CSIR:** Refer to responses in Comment ID 2 to 6 above. **Karoo Development Foundation:** See KDF Comment ID 6. The SEA takes place before the process of consultation. In fact, the SEA argues for an effective process of open-ended, genuine and good-faith consultation. **ASHA Consulting:** The SEA does not constitute an approval for development, nor does it override any legal obligations arising under the NHRA, NEMA or any other legislation. Any future development proposals will remain subject to detailed environmental impact assessment processes, including heritage assessment, consultation requirements, and review by the relevant competent authorities. As per Section 36 of the NHRA, in the absence of any other authority, SAHRA must conserve and generally care for burial grounds and graves.
Andries Maarman	8	General				**Conclusion** The proposed Boegoebaai Port is not a neutral infrastructure project. It is a Trojan Horse for extractive industries that will erode heritage, violate rights, and force industrialization upon communities without consent. Money-making cannot override human rights. We therefore submit this objection in defense of law, heritage, and dignity.	**Karoo Development Foundation: IMPACT ON HUMAN RIGHTS:** The decision to proceed on these projects will inevitably promote some human rights (e.g. training and livelihoods) and could endanger others (e.g. heritage sites). The decision not to proceed on these projects would, conversely, maintain cultural integrity, but would detract from potential livelihoods. Any significant new project is likely to face these dualities. The emphasis should be, firstly, on a consultation process with sufficient relevant information to make meaningful discussion possible, and secondly, a decision (either way) should ultimately be taken by a democratically-elected government.
Arno Swartbooi	9	General				My name is Laurence Arno Swartbooi. I was born in Alexander Bay and raised in Kuboes in the Richtersveld, where many of us grew up in a poor community with limited opportunities. Despite the challenges, our people have always remained strong, united, and hopeful for a better future. Today, I am proud and grateful that development worth more than a billion rand is finally coming to our region. For once, our communities are being noticed, and there is hope for growth, opportunities and a brighter future for the next generation. It is deeply concerning that the conversation around green hydrogen development in the Richtersveld continues to focus almost exclusively on investment potential, export opportunities, and "green growth," while the lived realities and possible negative consequences for the Richtersveld community — the rightful land owners — remain largely absent from public explanations and consultations. The Richtersveld is not empty land waiting for industrial use. It is ancestral land tied to identity, culture, grazing systems, biodiversity, and survival. Any project of this scale carries serious social, environmental, and economic risks that deserve transparent and honest engagement, not selective optimism. Why is there so little public discussion about: •The potential displacement of local livelihoods and traditional land use? •Water consumption in one of the driest regions in South Africa? •The long-term ecological impacts on fragile desert and coastal ecosystems? •The possibility that local communities will carry environmental burdens while corporations and foreign investors receive the economic benefits? •The unequal power dynamics in consultations where communities often lack access to independent scientific, legal, and financial expertise? •The risk of "green colonialism," where climate solutions for wealthy markets come at the expense of Indigenous and rural communities? The Richtersveld community has already endured generations of dispossession, exclusion, and extractive development. It is unacceptable for another large-scale resource-driven project to proceed without full transparency about both the benefits and the risks. If green hydrogen is truly meant to represent a just transition, then justice cannot be treated as a side note. The Richtersveld communities deserves: •Full disclosure of all environmental and social impact findings; •Independent assessments accessible in plain language; •Meaningful participation, not symbolic consultation; •Free, prior, and informed consent; •Clear guarantees on land rights, water protection, jobs, revenue sharing, and long-term accountability. A transition that ignores the voices of rightful land owners is not truly green — it is simply another form of exploitation under a new name.	**CSIR:** Thank you for the comment and for sharing your perspective and concerns regarding the proposed development. The SEA recognises both the significant development needs and opportunities in the region, as well as the importance of carefully considering the potential environmental, social, cultural, and economic risks associated with large-scale industrial development. The SEA certainly does not present the proposed development as risk-free or solely beneficial. Across Work Package 1 and 2 of the SEA, the assessments undertaken acknowledge the Region's declining water availability and potential impacts related to pressure on water resources, impacts on biodiversity and fragile desert and coastal ecosystems, cumulative industrialisation pressures, impacts on heritage and living cultural landscapes, risks to fisheries and coastal livelihoods, governance challenges, gentrification pressures, and unequal access to benefits. The Fisheries and Coastal Livehoods Chapter (https://www.csir.co.za/sites/default/files/2025-12/Chapter%206%20Fisheries%20and%20Coastal%20Livelihoods_Final.pdf) completed as part of Work Package 1 specifically acknowledges concerns relating to "ocean squeeze", displacement of traditional fishing access, marginalisation of local stakeholders, cultural heritage loss, fragmented governance, and the risk that benefits may not accrue equitably to local communities. The report further notes that the Richtersvels and surrounding coastal communities have experienced historical exclusions, and therefore recommends transparent, inclusive and ongoing stakeholder engagement processes, cumulative impact assessment, and prioritisation of access to benefits for historically marginalised groups, for consideration during future project development planning phases. The SEA also recognises the importance of Indigenous heritage, communal land systems, cultural landscapes, and the role of local communities as key stakeholders in future planning and decision-making processes. Recommendations across the SEA include improved governance coordination, proactive planning, independent specialist assessment processes at project level, strengthened public participation, and alignment with FPIC. **Karoo Development Foundation: THE LEGACY OF FAILED EMPOWERMENT PROJECTS:** The lack of trust in officially-sponsored projects in the Richtersveld is understandable, particularly given the poorly executed management of the De Beers project and land restitution. Government needs to take this blighted history seriously, and take all reasonable steps to design a really effective consultation process, with an open-ended result: Either in favour of these projects or deciding that they should be abandoned (for a variety of possible reasons).

Arno Swartbooi	10	General				Green hydrogen, while hailed as a clean energy carrier, presents several potential negative impacts on humans. The main negative impacts on humans include: 1. Safety Hazards (Fire, Explosion, and Asphyxiation) [https://www.ijerd.com/paper/vol20-issue12/2012215222.pdf , https://www.sciencedirect.com/science/article/abs/pii/S0360319913013585X, https://www.sciencedirect.com/science/article/abs/pii/S0950423021001790, https://www.foodandwaterwatch.org/2022/10/24/the-dirty-side-of-green-hydrogen/, https://solarif.com/academy-article/what-are-the-safety-risks-of-green-hydrogen-production/] •High Flammability and Invisible Flames: Hydrogen is highly flammable, with a wide ignition range (4% to 75% in air), making it more dangerous than natural gas. It ignites with very low energy, and its flames are nearly invisible in daylight, making it difficult to detect fires early. •Leakage and Explosions: As the smallest molecule, hydrogen easily escapes through seals and joints, increasing the risk of leaks in pipelines and storage, which can lead to explosions. •Asphyxiation Risk: While not toxic, leaked hydrogen can displace oxygen in enclosed spaces, creating asphyxiation hazards for workers. •Material Embrittlement: Hydrogen can make metals and pipelines brittle, causing structural failures and increasing leak risks 2. Environmental Justice and Community Health •Air Pollution (NOx): When burned (as opposed to being used in a fuel cell), hydrogen can produce nitrogen oxide (\(\text{NO}_{x}\)) pollution, which is a major trigger for asthma and respiratory illnesses. •Proximity to Frontline Communities: Large-scale green hydrogen projects are often sited near industrial areas, potentially increasing the pollution burden on communities that are already disproportionately affected by industrial activity. •Land Use and Displacement: Massive infrastructure requirements for green hydrogen projects can result in land grabbing and the displacement of local communities. often sited near industrial areas, potentially increasing the pollution burden on communities that are already disproportionately affected by industrial activity. •Land Use and Displacement: Massive infrastructure requirements for green hydrogen projects can result in land grabbing and the displacement of local communities. 3. Resource Competition and Water Scarcity •High Water Consumption: Green hydrogen production through electrolysis is extremely water-intensive. It requires high-purity water, which can drain local water supplies and create competition with domestic, agricultural, or ecological needs. •Coastal Impacts: Coastal communities may be affected by desalination plants, which are often used to secure the water needed for electrolysis. These plants produce brine that, when returned to the ocean, can damage marine ecosystems and livelihoods. 4. Economic and Social Impacts •Energy Poverty Risks: Diverting massive amounts of renewable energy to produce hydrogen rather than for direct electricity use can limit access to affordable, reliable electricity for local populations. •False Solutions and Misallocated Resources: Concerns exist that over-investing in hydrogen for applications where direct electrification is better (e.g., heating, cars) could slow the overall energy transition and create, rather than fix, environmental, safety, and economic problems The CSIR has a responsibility not only to promote innovation, but also to uphold scientific honesty, ethical accountability, and the protection of vulnerable communities. Silence around the negative impacts undermines public trust and raises serious questions about whose interests are really being prioritised.	**CSIR:** The SEA recognises that green hydrogen development presents potential environmental, social, health and safety risks that require careful planning, regulation and management. While the SEA is a strategic-level assessment and not a detailed engineering risk study, it does not ignore these concerns. The SEA explicitly acknowledge that hydrogen is highly flammable and can act hazardously under certain conditions or when mismanaged, and notes that technical safety standards related to hydrogen storage, handling and transport must receive special consideration and priority. It further identifies the need for enhanced disaster management capability, including hazardous material response, within affected municipalities. Refer to Chapter 7 (Section 7.3.2.8) of the SEA. Potential risks associated with hydrogen pipelines, including rupture, fire and leakage, are also recognised in Chapter 6 of the SEA, as well the need for thorough risk assessments and appropriate mitigation measures.The SEA additionally acknowledges possible land use conflicts, infrastructure pressures, displacement risks and the importance of ongoing public engagement and procedural justice. Refer to Chapter 6 (Section 6.3.3.3) and Chapter 7 (Section 7.3.2.9 and Section 7.3.2.10), respectively The purpose of the SEA is to identify strategic risks, constraints and management requirements to inform future project-level EIAs, specialist studies and regulatory processes, where detailed technical safety, health and environmental assessments would be undertaken before any project authorisations are considered. **Karoo Development Foundation: DISASTER MANAGEMENT:** These risks are important to consider. It will be crucial to scrutinise the health and safety track records of companies submitting bids for inclusion in a GH2 project at Boegoebaai. Such assessments will need to be made public, to ensure full accountability. In addition, the successful bidders will need to be responsible for disaster management training of municipal and provincial agencies.
Carisa Soudens Sophia Dirkse Felicia Geduld Maryna Booysen	11	General				1. Introduction We do not unconditionally support the Boegoebaai project. We support responsible development that protects and enhances the lives of the existing communities of Port Nolloth and the Richtersveld, as required by NEMA's principle of sustainable development.	**CSIR:** The comment is noted. **Karoo Development Foundation:** The proposed consultation process will involve an intensive consideration of potential improvements of local livelihoods, as well as the potential risks that will have to be addressed. See for example Karoo Development Foundation responses in comment ID 274, ID 275. ID 276 and comment ID 277.
Carisa Soudens Sophia Dirkse Felicia Geduld Maryna Booysen	12	General				2. SEA AND SMALL-SCALE FISHERS – PROTECTED ZONE Comment: The coastline is the lifeline of our small-scale fishers and the women who process and sell fish. Recommendation: • Establish a Protected Small-Scale Fishing Zone alongside the harbour — a minimum of 3 km of coastline and 1 km into the sea where only local fishers may fish. • Build a separate, safe harbour for small fishing boats, away from large vessels. • There must be a binding oil spill response plan and compensation fund in the event of an oil spill or pollution incident. • Recognise small-scale fishing rights under the Marine Living Resources Act in the official harbour management plan.	**CSIR:** The comment is noted and aligns with key findings of the Fisheries and Coastal Livehoods Chapter, completed as part of Work Package 1 of the SEA. The Chapter recognises that small-scale fisheries remain essential to local livelihoods and that fishing is deeply connected to the cultural identity and social fabric of coastal communities such as Port Nolloth and Hondeklipbaai. The Chapter identifies "ocean squeeze and spatial conflict" as a key potential impact of the proposeddevelopment and notes that this may negatively impact already marginalised coastal and small-scale fishers facing increasing displacement from mining, offshore oil and gas, conservation and industrial shipping activities. Further noting that acces to traditional fishing areas has already been reduced by mining restrictions. The Chapter and SEA therefore recommended ecosystem-based Marine Spatial Planning, with special attention given to mainitaining or restoring access corridors for small-scale fishers and reducing encroachment by incompatible marine industries. Additionally, the establishment of a multi-stakeholder marine governance platform and transparent, inclusive and ongoing stakeholder engagement processes to strengthen participation by affected coastal communities and fishers was recommended. The SEA further recognises the importance of sustainable port planning measures that address environmental incidents, pollution control, contingency planning, community access rights and inclusive stakeholder engagement. The Sustainable Port Planning Chapter (https://www.csir.co.za/sites/default/files/2025-12/Chapter%207%20Sustainable%20Port%20Planning_Final.pdf), completed as part of Work Package 1 of the SEA), specifically highlights the need for environmental management across the project lifecycle, contingency planning, transparent reporting on pollution sources and environmental incidents, protection of community access rights to natural resources, and collaborative governance arrangements between the port and affected stakeholders and authorities. Accordingly, concerns relating to harbour safety, oil spill preparedness, pollution management and small-scale fishing interests should be addressed through future port planning, project-level EIAs, operational management plans and relevant regulatory processes.
Carisa Soudens Sophia Dirkse Felicia Geduld Maryna Booysen	13	General				3. INFRASTRUCTURE – FOR THE COMMUNITY, NOT ONLY THE HARBOUR Comment: New roads, housing, and electricity infrastructure must not only serve the harbour. The community must also benefit. Recommendation: • All new roads must also be open for public use and regularly maintained. • A social infrastructure fund must be established for the expansion of the clinic, schools, and housing in Port Nolloth. • Local people must receive first preference for housing and employment opportunities in the new development. • A safety plan must be developed to protect women and children with the anticipated population increase.	**CSIR:** The SEA recognises that future Boegoebaai Port, SEZ, and green hydrogenrelated devlopment may place significant pressure on housing, water, sanitation, electricity, roads, healthcare and social services, particularly in Port Nolloth, Alexander Bay and surrounding settlements. Refer to Sections 2.2.2 and 2.2.3 of the Summary for Policymakers document. The SEA further highlights the importance of strengthened municipal planning capacity, integrated settlement and infrastructure planning, investment in social and bulk infrastructure, local economic participation, skills development, and ongoing community engagement to manage future growth pressures sustainably. The SEA also recognises that rapid in-migration associated with large construction projects may contribute to increased social pressures, including crime, housing shortages and strain on community services if not proactively managed. The issues raised are therefore recognised as important strategic planning and governance considerations that should inform future planning and decision-making associated with the proposed development. **Karoo Development Foundation: COMMUNITY INFRASTRUCTURE:** The private sector bidders must be considered in the light of their Corporate Social Responsibility proposals. In addition, municipal rates and taxes paid by these companies to the Richtersveld LM must be spent on local infrastructure and services. The Namakwa DM and Northern Cape Government must oversee and guide such expenditures and spatial planning.
Carisa Soudens Sophia Dirkse Felicia Geduld Maryna Booysen	14	General				4. HERITAGE AND CULTURE – THE IDENTITY OF THE RICHTERSVELD Comment: Boegoeburg and the Richtersveld are a living Nama cultural landscape. Recommendation: • Boegoeburg must be declared a protected cultural landscape. No development may negatively affect it. • An independent archaeological and palaeontological study must cover the entire area before construction begins. • The Nama language and culture must be actively preserved through language programmes for young people.	**CSIR:** The SEA documents explicitly recognise the cultural significance of the Richtersveld, living heritage, communal rights and the sensitivity of cultural landscapes. Refer to Chapter 5 (Heritage Resources) of the SEA.The chapter further notes that developments within or close to sensitive cultural landscapes, including the RCBL World Heritage Site buffer zone and the coastline, may result in significant impacts and therefore require detailed heritage assessment, consultation and appropriate mitigation. The SEA accordingly recommends that all future project-level EIAs include Heritage Impact Assessments, archaeological specialist studies and, where relevant, palaeontological and visual specialist studies. The port and SEZ spatial development concept (Work Package 1) has sought to accommodate important ecological and cultural landscape sensitivities through the inclusion of a proposed "Conservancy area". As identified in Work Package 1 of the SEA, the effectiveness of this Conservancy could be strengthened through further refinement and expansion to improve protection of sensitive areas, including the Boegoeberg mountain areas and associated biodiversity and heritage values. The issues raised are therefore recognised as important strategic planning and heritage management considerations that should inform future planning, conservation discussions and decision-making processes. **ASHA Consulting:** The SEA acknowledges the potential cultural landscape significance of Boegoeberg and recognises that formal heritage protection mechanisms may be considered where sufficient significance is demonstrated. The SEA further notes that communities, heritage authorities and other stakeholders may pursue formal grading or declaration processes under the NHRA. -As per the requirements of NEMA, environmental authorisation will require independent specialist studies, which will include archaeology and palaeontology (as well as all other relevant aspects of heritage). Studies must be undertaken for each facet of the project. -Consultation with impacted communities during Living Heritage and social studies, will provide opportunity for the communities to request support for their cultural heritage.
Carisa Soudens Sophia Dirkse Felicia Geduld Maryna Booysen	15	General				5. WOMEN'S PARTICIPATION Comment: Women are most affected by water shortages, loss of fishing income, and social change. Recommendation: • A Gender Impact Study must be conducted as part of the EIA phase. • Women must be represented on all decision-making committees for the harbour and SEZ.	**CSIR:** The comment is noted. Social vulnerability, inclusive governance and the importance of equitableparticipation in future planning and development processes were key key findings of the SEA. The Fisheries and Coastal Livelihoods Chapter (Work Package 1) specifically noted that women, youth and informal resource users have historically been insufficiently represented in governance and stakeholder engagement processes, and recommended the establishment of inclusive, transparent and ongoing stakeholder engagement and co-management processes. The report further recommended targeted training and livelihood diversification opportunities for women and youth within marine and coastal sectors. In addition, the Socio-economics Chapter (Chapter 7 of Work Package 2) identifies the potential for social pressures associated with rapid in-migration, including impacts on social cohesion, housing, community wellbeing and vulnerable groups, and highlights the importance of ongoing community engagement, institutional support and proactive social planning. The issues raised are therefore recognised as important strategic social and governance considerations that should inform future stakeholder engagement processes, social assessments, institutional arrangements and project-level planning associated with the proposed development. **Karoo Development Foundation: WOMEN's PARTICIPATION:** This is an important issue which needs more emphasis in Chapter 7. This has been added in Chapter 7.
Carisa Soudens Sophia Dirkse Felicia Geduld Maryna Booysen	16	General				CLOSING STATEMENT Our position is simple: "No harbour without water. No harbour without fishers' access to the sea. No harbour without the community benefiting first." We request that these recommendations be included as binding conditions in the final WP2 SEA report and in the EIA conditions.	**CSIR:** Refer to responses in Comment ID 12 to 15. Note that the SEA cannot and does not impose binding conditions - as a strategic planning instrument, the SEA does not determine project authorisation or replace project-level environmental assessment or authorisation processes (the latter usually containing conditions of authorisation), but rather provides a framework to guide future planning, assessment and decision-making. **Karoo Development Foundation:** These propositions are important and will be included in Chapter 7.
Edwin Louw	17	General				1. Given the fact that the proposed Boegoebaai project will require a large amount of water, this means that a significant amount of water will need to be desalinated. The question arises as to what will happen to the salt, which is regarded as waste. The studies do not indicate where the salt will be disposed of. Returning it to the sea will threaten marine life. No water from the Orange River may be used for production purposes	**CSIR:** Potential impacts on the marine environment, as a result of the proposed development, were identified in the Work Package 1 Marine Ecology Chapter (https://www.csir.co.za/sites/default/files/2025-12/Chapter%202%20Marine%20ecology_Final.pdf).The Marine Ecology specialists noted that the SEA is a strategic-level assessment and not a project-level EIA. As such, detailed assessments relating to brine discharge and associated construction methodologies will be undertaken during the project-specific EIA phase, once engineering designs are available. They further indicated that, although brine discharge can negatively affect marine ecosystems, there are established mitigation measures, such as appropriate outfall siting and dilution methods, that have been successfully implemented elsewhere and are expected to be considered during the EIA. **CSIR Infrastructure & Planning Authors:** In most desalination facilities, the "salt fraction" exits the system as a concentrated brine rather than a dry solid; this brine is then either released to the environment under regulated conditions or further treated as a potentially valuable resource. The desalination facility is also included in the planned SEZ development and is incorporated into Work Package 1. While marine discharge is frequently cited as the main disposal option, another approach, where sufficient land is available, is to construct evaporation ponds to recover salt that can be marketed as a product. Since concentrated brine containing residual treatment chemicals can damage ecosystems if discharged inappropriately, most regulatory frameworks require environmental impact studies, mixing-zone modelling, and ongoing monitoring to ensure salinity and temperature remain within acceptable ecological limits.
Edwin Louw	18	General				2. The proposed Boegoebaai project will result in a massive influx of people. This will place significant pressure on the existing infrastructure of the surrounding towns. Hospitals will need to be upgraded. Disaster management systems will need to be brought up to standard in order to function effectively in the event of major accidents.	**Karoo Development Foundation**: These are key matters and are addressed in our considerations of the boomtown effect, health system and disaster management in Chapter 7.
Edwin Louw	19	General				3. To ensure that local communities become part of the economy, agreements must be concluded with companies regarding tenders, contracts, and subcontracts to ensure that local communities receive preference.	**Karoo Development Foundation: LEGAL REQUIREMENTS OF PRIVATE SECTOR BIDDERS:** This will be included in the final version of Chapter 7.
Edwin Louw	20	General				4. Protection must be provided for cultural and conservation areas, such as gravesites and endemic species.	**CSIR:** The National Heritage Resources Act protects a wide range of heritage resources, including graves, requiring their consideration in all development planning. Any graves identified would need to be managed in accordance with applicable legal and heritage requirements. The Heritage assessment (Chapter 5)does identify that graves are present in the region, noted as being of high local cultural significance and are therefore of VERY HIGH sensitivity when encountered. The SEA has recommended strategic management actions, as it pertains to graves, for consideration during further development planning and/or at the relevant EIA process. The SEA and relevant chapters (Chapter 2: Ecology) strongly supports the protection of endemic species and identfies biodiversity conservation as a key consideration for future development planning in the Namakwa Region.
Environmental Traits	21	General				We have engaged with the proposed Work Package (WP) 2 and its associated risks and opportunity assessments. The following submission reflects our concern analysis and recommendations. While the WP provides a structured assessment of risks and opportunities, it largely reflects a compliance-based approach that does not sufficiently account for the existing systemic constraints within the Richtersveld and Namaqualand region. We'd like to emphasise that classifications such as "low sensitivity" or "low risk" should not be interpreted as low impact, particularly in a context where systems are already under strain. Even marginal additional pressure would result in significant consequences. Critically, the current capacity of our water systems, municipal and CPA governance, infrastructure and social services in the region is already insufficient to meet existing needs. Development should not be used as a mechanism to justify future improvements in systems. Rather, systems must first be stabalised and capacitated to ensure they can sustainably support both existing communities and any proposed developments with in-migration.	**CSIR:** Agree that LOW Risk, does not mean "no impact",... there will be an impact, but the relative Risk (Consequence x Likelihood) of the impact is LOW, and should be quite easy to mitigate/manage. Methodologically, the chapter teams systematically assessed Risk and Opportunity levels for identified impacts, in different receving environments (ranging from Low Sensitivity to Very High Sensitivity), across three GH2 development scenarios. The Baseline Scenario (Scenario 0) is a dynamic baseline which assumes all other non-GH2 trends in the region proceed as normal e.g. demographics, land-use change, climate change, water scarcity, governance etc. The two GH2 development scenarios (1 and 2) are assessed "on top of" or "in addition to" the dynamic baseline (Scenarios 0), so the asssessment, by design, automatically includes the Risk and Opportunity levels of cumulative impact across several sectors plus existing regional trends, with GH2 superimposed on top. The scenarios approach for assessing cumulative impact is not perfect, no approach is, but it's the best method that currently exists to consider cumulative impacts in a robust, systematic and transparent way. **Karoo development Foundation: PRIORITY OF SYSTEMS AND INVESTMENTS:** This is an important observation. Ideally, bolstering ystems should precede investments. However, that is unlikely, for two reasons. Firstly, without an impending investment, the area remains an economic backwater, and there is no real incentive for provincial governments or development agencies to focus on the Richtersveld. That is unfortunate, of course, but the reality is that government resources (both financial and skills) are spread very thin. A potential development project "focuses the institutional mind". Secondly, the bostering of institutions could, and should, take place alongside the development project, so that institutional lessons are learnt in response to new features of the development project. This creates a learning environment, where new development options and challenges spur the focus on institutional improvements. Institutional strength is not a static phenomenon; rather, it is the ability to respond timeously and appropriately to developmental options and challenges. For example, the spur of the Boegoebaai project may require provincial government to make accountants available to Richtersveld LM to streamline its budgeting and financial management; with this capacity, the Richtersveld LM councillors will be exposed to financial management standards which will enable them to budget for social services (which are not directly associated with the Boegoebaai project). The important intervention is the learning environment, where officials, councillors and community representatives will learn the techniques of responding to a challenging environment. Institutional capacity is not a static condition; it is an ability to respond to change. **CSIR Infrastructure & Planning Authors:** Chapter 6 of the SEA likewise advises that settlement infrastructure should be improved in advance, as a prerequisite for other significant proposed developments. This is also highlighted in the Summary for Policymakers.
Francesca de Gasparis	22	General				**1. Introduction** As a multifaith organisation, the Southern African Faith Communities Environment Institute, SAFCEI, is committed to supporting faith communities in Southern Africa. Our work involves collaborating with faith leaders, green champions, academia, think tanks, and civil society-based organisations across Southern Africa to foster awareness, build and enhance skills, and advocate for climate justice, eco-justice, and sustainable living. **2. Endorsement** SAFCEI supports the comments provided by Natural Justice, which are concisely captured in the summary for policymakers. These comments closely align with our core values, mission, and vision, which include: • Raising and cultivating environmental awareness, • Promoting environmental responsibility and action, • Assisting, facilitating, and supporting environmental advocacy, and • Contributing to the development of environmental policies and ethical guidelines. In light of these considerations, SAFCEI endorses the submissions and commentary provided by Natural Justice.	**CSIR:** The comment is noted.

Jacobus Fredericks	23	General				My name is Jacobus Fredericks, ID number [*redacted*], residing in the town of Sandrif in the Richtersveld. I am a founding member of the Richtersveld CPA, which was established with the purpose of holding, managing, and protecting the claimed land on behalf of the community. Furthermore, I was part of the team that, following the court ruling regarding the land claim, participated in the negotiations that led to a settlement agreement. For this reason, I am convinced that I can make a meaningful contribution to any development on our land. The discussions around the possible establishment of a harbour on land which I regard myself as owning, in light of the court ruling, began in 2022 alongside the establishment of the current CPA committee. Various meetings were held with CPA members to provide information about the possible project. There was even an access agreement that had been signed beforehand by the committee together with NCEDA, without the knowledge or consent of the members. This is also where the division among members originated, which still exists today. Nevertheless, it has been encouraging to see the potential our area holds for such a massive development for our region and also our province — development that can address so many needs. The major problem, in my opinion, with the current state of the processes is the lack of transparency and the lack of involvement of us, the landowners, in terms of the planning and how this will economically, socially, and from a tourism perspective, either disadvantage or benefit us. Our main concern at the moment is the status of our CPA council and the discussions surrounding the acquisition of our land by the potential developers. We only hear that discussions are taking place without us. In light of the abovementioned issues, I am of the opinion that an opportunity should be created where all stakeholders can come together in one room to gain clarity on the way forward. Nothing for us without us.	**CSIR:** The concerns raised regarding transparency, the involvement of landholders, and the need for inclusive engagement are noted and align with the SEA's recommendations on equitable consultation, FPIC-aligned engagement, and stronger multi-sphere coordination across local, district, provincial and national government, communities and development proponents in future planning and negotiation processes. While the SEA cannot intervene in internal CPA matters, it recommends clear information-sharing and inclusive engagement with affected communities on the implications of any future development. **Karoo Development foundation: TRANSPARENCY OF THE RICHTERSVELD CPA**: Strictly speaking, this matter is outside the purview or control of agencies such as NCEDA, if and when they decide to undertake the required public consultaiton process. Typically, an outside organisation (such as NCEDA) would not intrude in the in-house matters of a particular stakeholder organisation. However, given the real challenges faced by the CPA in the past, we can recommend that the public consultation process provides guidelines to all organisational stakeholders, e.g. recording the nature and number of their membership, and possible procedures to involve their members in discussions. Organisations often tend towards elitism, and some guidelines would help to counteract that tendency.
Natural Justice	24	General				**INTRODUCTION** 1. These submissions are made by Natural Justice: Lawyers for Communities and the Environment ("Natural Justice") in response to Work Package 2 of the Strategic Environmental Assessment (SEA) for the proposed Boegoebaai Port and Special Economic Zone (SEZ), prepared by the Council for Scientific and Industrial Research (CSIR) on behalf of the relevant project proponents. 2. Natural Justice has participated in the broader Boegoebaai working group process and has previously submitted comments on Work Package 1 of the SEA. These submissions on Work Package 2 should accordingly be read together with our earlier submissions where relevant, particularly where concerns raised previously remain unresolved or are repeated in the current documentation. 3. Natural Justice is a non-profit organisation specialising in environmental and human rights law in Africa, with a focus on advancing social and environmental justice for local and Indigenous communities. The organisation provides legal empowerment, policy advocacy, and research support to communities affected by extractive, infrastructure, energy, and conservation-related developments. 4. Work Package 2 appears to broaden the scope of the SEA beyond the immediate Boegoebaai footprint and introduces further strategic assessments relating to biodiversity, water resources, heritage resources, socio-economic considerations, and regional development planning. As such, it has material implications for future decision-making concerning the proposed port, SEZ, and associated infrastructure. 5. Given the strategic nature of Work Package 2, it is imperative that the SEA complies with the requirements of lawful, rational, and transparent environmental governance. Although strategic instruments may operate at a higher planning level, they remain influential in shaping future project-level approvals, alternatives, and public narratives regarding the acceptability of development. 6. These comments are submitted in the public interest and in the interests of communities, ecosystems, and cultural landscapes that may be adversely affected by the proposed development programme. They seek to ensure that any future decisions flowing from the SEA give proper effect to section 24 of the Constitution, the principles and decision-making criteria under sections 2, 24O and 24K of NEMA, and the procedural fairness obligations recognised under PAJA. 7. Natural Justice remains particularly concerned with the adequacy of baseline information, the treatment of cumulative and climate-related impacts, the protection of biodiversity and heritage resources, the socio-economic assumptions underpinning the proposed development pathway, and the need for meaningful and informed participation by directly affected communities. Work Package 2 identifies significant environmental impacts, which are in our view, fatal to the development of the project as proposed. 8. While Work Package 2 provides further information not previously available during Work Package 1, several issues remain insufficiently substantiated, internally inconsistent, or deferred to later processes. Where strategic conclusions are advanced without an adequate evidentiary basis, the SEA risks pre-empting future environmental assessment processes rather than informing them. 9. A general concern is that the results of the assessment have not been synthesised to form a clear and coherent conclusion on if and how the project can and should proceed. This requires consideration of the recommendations of the specialists, together with an assessment of the feasibility of the development from a legal, practical, technical and economic perspective. 10. We accordingly set out below our comments in the prescribed format.	**CSIR:** The comment is noted. Work Package 2 was specifically undertaken to provide a strategic, evidence-based assessment of the cumulative environmental, social, economic and planning implications associated with potential green hydrogen-related development in the Namakwa Region. The assessment considered key themes including biodiversity and conservation planning, water resources, climate change, heritage resources, socio-economic development, infrastructure requirements, cumulative impacts, and governance considerations through a multidisciplinary and peer-reviewed process. The SEA identifies both opportunities and risks associated with the development scenarios assessed and provides strategic recommendations, avoidance measures, planning guidance and governance considerations to inform future decision-making. As a strategic planning instrument, the SEA does not determine project authorisation or replace project-level environmental assessment processes, but rather provides a framework to guide future planning, assessment and decision-making. Matters requiring site-specific investigation and detailed impact assessment have been identified for consideration in subsequent project-level processes.
Nokukhanya Khumalo	25	General				The following comments are made as a requirement in terms of section 3(4) of the NEMA Regulations and section 38(8) of the NHRA. • The SAHRA Development Applications Unit (DAU) has no objections to the proposed Boegoebaai SEZ and Namakwa region SEA, and that the associated renewable energy development, port expansion within the SEA assessed area continue to follow the S&EIA Process. • The general recommendations of the Heritage Chapter should be amended as per the specific comments provided by SAHRA in the supplied comments sheet. These include: • An assessment of the impact to heritage resources must be undertaken for each specific development as part of the NEMA authorisation process; • These HIAs may include specialist assessments such as Archaeological Impact Assessment, Palaeontological Impact Assessment, Built Environment Assessment, Cultural Landscape Assessments etc; • The HIA must comply with section 38(3) of the NHRA, and any published Minimum Standards or reporting requirements issued by the relevant Heritage Authorities; • The Grazing Management Plan should also consider the potential impacts to the living heritage of the local communities; • All HIAs must be submitted via the required application system for each Heritage Authority (SAHRIS), along with all supporting documents i.e. DBAR, SSVRs etc, and relevant fees for the processing of applications; • All authorisation applications to be submitted to DFFE or provincial authorities in terms of NEMA must include comments from the relevant Heritage Authorities. Any application that does not contain this information are recommended to be rejected by the decision-making authorities; • The Final SEA must be submitted to SAHRA for record purposes; • The decision regarding the Gazette process must be uploaded to the SAHRIS Case for record purposes.	**CSIR:** The comment is noted. The SEA recognises that, while it provides a strategic assessment of heritage resources and associated development risks across the Namakwa Region, project-specific Heritage Impact Assessments (HIAs) and any associated specialist studies will be required for future developments in accordance with the National Heritage Resources Act (Act No. 25 of 1999) and applicable heritage authority requirements. The Heritage Chapter already recommends that all future EIAs triggering Section 38(8) of the NHRA include appropriate heritage specialist input, including archaeological, palaeontological, maritime, built environment, living heritage and cultural landscape considerations where relevant. The SEA further recognises the importance of living heritage, including pastoralist traditions and communal grazing practices within the region, and recommends engagement with affected communities during future planning and assessment processes. The final SEA Heritage chapter will be submitted to SAHRA for record purposes. **ASHA Consulting:** These requirements, as per Section 38(8) of the NHRA, have been included in Chapter 5-8. We have also added that any Grazing Manägement Plan should be informed by social research in order to take account of the living heritage of the region.
Samantha Ralston-Paton	26	General				I may have missed it. Does The SEA address the implications of the receiving environment's ecological sensitivity for project finance? Given that most of the assessed area likely triggers IFC Performance Standard 6 thresholds (natural or critical habitat), lender requirements under the Equator Principles warrant explicit consideration. This has direct bearing on the bankability of projects arising from this SEA.	**CSIR:** Although the SEA does not assess bankability directly, it applies an avoidance-led mitigation hierarchy. Specifically, Chapter 3 (Biodiversity Offset Framework) recognises that compliance with global financing standards may require avoidance of Critical Habitat and notes that biodiversity impacts may influence investor acceptance and project viability. The SPM reinforces the underlying biodiversity planning principles by emphasising avoidance of high-sensitivity areas, recognising that some biodiversity features cannot be offset, and recommending strategic biodiversity offset planning. Detailed assessment of lender-specific requirements would be undertaken at project level during feasibility, financing and environmental assessment processes. **Bios Diversitas Consultants:** Noted. Lender requirements such as IFC Performance Standard 6 and the Equator Principles are relevant to future project-level assessment and financing. For fauna, these standards should be considered during downstream EIA/ESMP processes where SCC habitat, critical habitat, ecological corridors or cumulative biodiversity risks are identified. No amendment to the fauna report is required.
Walter Steenkamp on behalf of Aukotowa Fisheries	27	General				This submission reflects our concerns regarding the proposed developments associated with Boegoebaai and their potential impacts on marine ecosystems, coastal access and the sustainability of fishing livelihoods. We'd like to emphasize that any development that disrupts marine ecosystems or restricts access to fishing grounds will directly threaten the survival of our fishermen and coastal communities. MARINE ECOLOGY & WATER The development of port infrastructure, desalination plants and the increased industrial activity pose a direct threat to marine ecosystems that small-scale fishers depend on. 1. Key issues • Desalination → brine discharge affecting marine life • Port activity → habitat disruption, pollution • Increased shipping → impacts on fish stocks and breeding areas • Water extraction affecting coastal ecological balance Any decline in marine biodiversity directly reduced fish availability, which impacts our food security and income. 2. Our recommendation • Independent marine impact assessments specific to fisheries • Ongoing monitoring with fisher involvement • Strict controls on desalination discharge • Protection of key fishing and breeding areas	**CSIR:** The concerns raised regarding the protection of marine ecosystems, fisheries resources, access to fishing grounds and the sustainability of coastal livelihoods are recognised in the completed Work Package 1 Fisheries and Coastal Livelihoods and Marine Ecology specialist assessments. Seelink to access these reports: https://www.csir.co.za/work-with-us/services-and-testing/environmental-management-services/individual-chapters. The Fisheries Chapter identifies potential risks associated with marine ecosystem degradation, impacts on nursery and spawning areas, increased vessel traffic, pollution, and reduced access to fishing grounds ("ocean squeeze"), and recommends comprehensive fisheries impact assessments, participatory monitoring programmes, ecosystem-based marine spatial planning, and continued involvement of fishing communities in future planning and assessment processes. Detailed assessment of project-specific impacts, including desalination-related impacts and monitoring requirements, will be required during subsequent project-level environmental assessment processes.
Walter Steenkamp on behalf of Aukotowa Fisheries	28	General				ACCESS TO COAST & FISHING GROUNDS Development may restrict or limit access to certain fishing areas. 1. Key issues • Potential restriction or alteration of coastal access routes • Increased marine traffic and safety risks • Indirect pressure on alternative fishing areas if access or conditions change • Lack of clarity on how coastal rights will be managed and maintained access to our coast is not optional. It is essential. 2. Our recommendation • A clear assessment of coastal access implications be included, even where impacts are considered indirect • Small scale fishers be explicitly consulted regarding marine and coastal use • Measures be developed to ensure that safe and equitable access to coastal areas is maintained • Any changes to coastal access or use be subject to transparent communication and agreement with affected communities	**CSIR:** The SEA recognises the importance of maintaining access to coastal areas and fishing grounds for small-scale fishers and coastal communities. The Fisheries and Coastal Livelihoods assessment, completed as part of Work Package 1 of the SEA, identifies reduced access to traditional fishing grounds, increasing competition for marine space ("ocean squeeze"), and potential conflicts between marine users as key risks associated with future development. The assessment recommends comprehensive fisheries impact assessments, inclusive stakeholder engagement, participatory governance arrangements, and ecosystem-based marine spatial planning to ensure that the needs of fishing communities are considered in future planning and decision-making. Detailed assessment of project-specific impacts on coastal access, navigation, safety and fishing activities, together with appropriate mitigation measures and stakeholder engagement, will be required during subsequent project-level environmental assessment processes.
Walter Steenkamp on behalf of Aukotowa Fisheries	29	General				LIVELIHOODS & LOCAL ECONOMY Economic benefits of the project are unlikely to reach small scale fishers. 1. Key issues • Jobs requiring skills not accessible to local fishers • Loss of income from reduced fish stocks • Rising cost of living due to immigration • Increased inequality Promised economic opportunities cannot and will not replace lost livelihoods. 2. Our recommendation • Direct support for small-scale fishers • Compensation mechanisms for loss of income • Inclusion in local economic planning	**CSIR:** The comment is noted. The SEA recognises that the benfits and risks associated with proposed future development may not be distributed equally across communities and sectors. The Fisheries and Coastal Livelihoods (Completed as part of Work Package 1) and the Work Package 2 Socio-economics assessments identify potential risks relating to impacts on existing livelihoods, barriers to accessing new employment opportunities, rising living costs associated with in-migration, and increasing inequality. The assessments further highlight the importance of skills development, local enterprise support, preferential procurement, inclusive economic planning, ongoing community engagement, and equitable benefit-sharing to maximise local participation in development opportunities. The SEA therefore includes strategic recommendations aimed at supporting local economic development while recognising the importance of sustaining existing livelihoods and reducing adverse social impacts. The assessment of project-specific livelihood impacts, including the need for any compensation or livelihood restoration measures, will need to be considered during subsequent project-level assessment and authorisation processes.
Walter Steenkamp on behalf of Aukotowa Fisheries	30	General				GOVERNANCE & RIGHTS Fishers are often excluded from decision making processes that directly affect us. 1. Key issues • Weak participation structures • Lack of transparency • Decisions made without meaningful fisher input Let fishers be recognized as rights holders. Not just stakeholders. 2. Our recommendation • Inclusion of fishers in co-governance structures • Transparent communication of all plans and impacts • Ongoing engagement beyond consultation	**CSIR:** The SEA recognises the importance of meaningful participation by communities whose livelihoods and well-being may be affected by future development. Both the Fisheries and Coastal Livelihoods (Work Package 1 of the SEA) and Socio-Economic (Work Package 2 of the SEA) assessments identify inclusive governance, ongoing stakeholder engagement, participatory monitoring, and transparent communication as important requirements for future planning and decision-making processes. The SEA further recommends collaborative governance approaches and engagement mechanisms that support the effective participation of affected communities, including small-scale fishers, throughout future planning, assessment and implementation processes. The need for continued engagement beyond statutory consultation processes is recognised as an important consideration for future project-level planning and governance arrangements.
Walter Steenkamp on behalf of Aukotowa Fisheries	31	General				The combined impacts of port development, desalination, shipping and associated infrastructure will place significant pressure on marine ecosystems and coastal communities. For Aukotowa Fisheries, the risks associated with this development are immediate and existential, not just theory. Without strong projections, guaranteed access and meaningful inclusion in decision making, the proposed development risks undermining the sustainability of small-scale fishing livelihoods in the region.	**CSIR:** The SEA recognises that the cumulative impacts of port infrastructure, shipping activities, desalination, and associated industrial development may affect marine ecosystems, fisheries resources and coastal livelihoods. These issues were considered through the Marine Ecology (Work Package 1), Fisheries and Coastal Livelihoods (Work Package 1), and Socio-Economic (Work Package 2) assessments, which identify potential risks relating to marine ecosystem health, access to fishing grounds, competition for marine space, and the sustainability of coastal livelihoods. The SEA further emphasises the importance of inclusive governance, ongoing stakeholder engagement, participatory monitoring, and strategic planning measures aimed at avoiding, minimising and managing cumulative impacts. Detailed assessment of project-specific impacts and the development of appropriate mitigation and management measures will be required during subsequent project-level environmental assessment processes.
WoMin African Alliance	32	General				We write to raise serious concerns regarding both the accessibility and the procedural integrity of the current public participation and consultation processes linked to the Work Package 2 (WP2) Strategic Environmental Assessment (SEA) for the proposed Boegoebaai Port, Special Economic Zone (SEZ) and broader Namakwa regional developments. At the outset, we wish to acknowledge the scale and significance of the proposed developments and the importance of strategic environmental planning processes. However, it is precisely because of the scale, cumulative nature and potentially irreversible implications of these developments that the current consultation process requires deeper scrutiny. The proposed developments involve far more than a single infrastructure project. The SEA itself describes a long-term and regionally expansive development trajectory involving a deep-water port, Special Economic Zone, green hydrogen and ammonia production facilities, desalination plants, pipelines, transmission infrastructure, rail expansion, renewable energy developments and associated industrial expansion extending across large parts of the Namakwa region up to 2050. The SEA further acknowledges that these developments intersect with ecologically sensitive areas, cultural heritage landscapes, communal land systems, grazing livelihoods, water scarcity and already-existing cumulative extractive pressures. Against this backdrop, we are deeply concerned that the public participation process does not meet the standard required for meaningful democratic engagement, particularly in relation to affected rural and working-class communities across Namaqualand and the Richtersveld.	**CSIR:** The SEA recognises the importance of meaningful, inclusive and transparent stakeholder engagement given the scale, complexity and long-term implications of the proposed development programme. Public participation has been undertaken throughout the SEA process through a range of mechanisms, including stakeholder registration, public notifications, Working Group engagements, public meetings, webinars and opportunities to review and comment on draft reports. The SEA further recognises the importance of continued engagement with affected communities and stakeholders throughout future planning, assessment and decision-making processes. Comments received during the SEA process have been considered in the refinement of the assessment and recommendations.

WoMin African Alliance	33	General				A central concern relates to language accessibility and informed participation. While an Afrikaans "Summary for Policymakers" has been made available, the substantive SEA chapters, specialist studies, technical methodologies, cumulative impact analyses and supporting documentation remain available only in English. This creates a profound barrier to meaningful participation for many directly affected Afrikaans-speaking communities, particularly elderly residents, farm workers, herders, fishers and rural community members who are now expected to engage with highly technical scientific, infrastructural and legal material without equivalent linguistic or technical support. This is not simply a matter of language preference. It is a matter of procedural fairness, democratic participation and substantive access to information. Communities cannot be expected to provide informed commentary on developments of this magnitude where they are unable to access the full content of the assessment in a language and format meaningfully accessible to them. We are equally concerned that the consultation process appears to conflate procedural public participation with Free, Prior and Informed Consent (FPIC). The public notices indicate that although the WP2 documents were available online from 26 March to 8 May 2026, only four in-person public meetings were convened between 21 and 23 April 2026 across a vast and geographically dispersed region. These meetings were limited in duration and scope and cannot reasonably substitute for a meaningful FPIC process, particularly where developments may fundamentally alter land use systems, cultural landscapes, livelihoods, governance arrangements and long-term ecological sustainability. Importantly, the SEA itself explicitly recognises the relevance and importance of FPIC principles. Not as was stated in previous communication – that this is a legal principle recognised and rooted in our customary law and Constitution and there is substantial jurisprudence to support this including but not limited to the original Richtersveld court case1, the Maledu2 case and the Baleni3 case. This is couples with provisions in Interim Protection of Informal Land Rights Act (IPILRA)4 and National Environmental Management Act 107 of 1998 (NEMA)5 along with African regional protocols and treaties. Yet the current process appears largely structured around information-sharing and procedural consultation rather than consent-based engagement. There is a significant difference between informing communities about developments and creating the conditions necessary for communities to genuinely deliberate upon, shape, reject or consent to those developments. Meaningful FPIC requires, at minimum: o accessible and translated documentation; o sufficient timeframes for internal community discussion and reflection; o independent legal and technical support; o ongoing engagement processes rather than isolated consultation events; o recognition of existing governance complexities and restitution processes; o and the ability of affected communities to influence outcomes before development trajectories become institutionally entrenched.	**CSIR:** The comment is noted. The SEA recognises the importance of ensuring that information is communicated in a manner that supports meaningful participation by affected stakeholders and communities. To support accessibility, a Summary for Policymakers was prepared in both English and Afrikaans, alongside public meetings that were held in Afrikaans, stakeholder engagement activities and opportunities to comment on the draft SEA reports. The SEA further acknowledges that accessibility considerations remain important for future planning and engagement processes. The SEA also recognises the value of participatory approaches, including the principles of Free, Prior and Informed Consent (FPIC), as discussed in the Socio-Economic assessment. However, the SEA is a strategic planning instrument intended to inform future decision-making and does not constitute a project-level authorisation process. The public participation process undertaken for the SEA was designed to support stakeholder engagement and input into the strategic assessment. Any future project-level planning, environmental assessment and authorisation processes will be required to undertake their own stakeholder engagement processes in accordance with applicable legal and regulatory requirements, taking into account the specific nature, location and potential impacts of proposed developments. **Karoo Development Foundation: ACCESSIBILITY OF MATERIALS:** The use of Afrikaans in the public participation process will be important for almost all Namaqualand stakeholders. This will require the recruitment of a native Afrikaans speaker as facilitator. In addition, the challenge of technical and scientific terminology can be addressed by highlighting key points requiring strategic decision-making. This would include factors such as the kinds of jobs that may become available; possible options regarding employee housing and transport; possible training schemes; and ways in which outlying communities can benefit from these projects. It should also highlight the risks of the projects, and the communities' risk appetite for such issues, e.g. in-migration of workers from elsewhere, and pressure on housing. Where participants need additional information, subsequent iterations of the consultation process (e.g. local workshops) can be organised, presenting fresh information and options for public discussion. The point is important that "participation does not imply consent". It is also important that participants realise that any development process will involve risks and opportunities, and that any way forward will involve opportunity costs (i.e. development paths not chosen, and therefore the loss of certain benefits). Ultimately, it is unrealistic to expect that a consensus will be reached at stakeholder level. There will be community members who are in favour of new opportunities, and are not put off by potential risks; there will be others who will want to protect the status quo, or to send development trajectories in other directions (e.g. heritage tourism or eco-tourism). These are legitimate positions on the likely continuum of views. It is impossible to predict either the ultimate views of community members, or the decisions of democratic authorities regarding the merits of proceeding with these projects. The Richtersveld CPA's role as custodians of the land clearly gives their views great importance, but it is quite likely that the members of the CPA (at all levels) will be divided on the merits of the Boegoebaai projects. The best one can probably hope for is to achieve "sufficient consensus", with as many proactive steps to address the concerns that people may have. What is quite unclear will be the outcome of the CPA and the Richtersveld LM fundamentally disagreeing about the way forward. Such an eventuality will test the creativity of the facilitator to find some points of agreement, and to present them to Government for a final decision.
WoMin African Alliance	34	General				We are further concerned that the process appears heavily technocratic and institutionally weighted. The working groups and contributor structures identified in the SEA are dominated by state institutions, technical consultants, infrastructure agencies and industry-linked actors. While some community-linked structures are included, there appears to be little recognition of the profound imbalance between institutional technical capacity and the realities facing rural and communal landholding communities expected to engage these processes. The SEA itself acknowledges major concerns relating to ecological sensitivity, water scarcity, biodiversity loss, governance limitations and cumulative extractive pressures. Yet the consultation model adopted does not appear proportionate to the seriousness of those risks. We are also concerned by the framing throughout the SEA which repeatedly positions industrial expansion and extractive development as already unfolding and effectively inevitable. This risks narrowing democratic space and undermining the right of affected communities to fundamentally question, reshape or oppose the development trajectory itself. Strategic assessments should not become mechanisms through which contested development pathways are normalised before democratic consensus has been meaningfully established.	**CSIR:** The SEA Working Group included community-linked and civil society representation alongside government, NGOs and technical specialists and recognises the importance of inclusive and meaningful participation, particularly given the complexity of the proposed development scenarios and the diverse interests of affected communities and stakeholders. The assessment acknowledges the challenges associated with differing levels of technical capacity and access to information and highlights the importance of ongoing engagement, procedural justice, transparent communication and participatory governance approaches. The SEA therefore recommends deeper, more transparent and sustained future engagement, including equitable consultation, accessible information-sharing, FPIC-aligned processes and stronger multi-sphere coordination.Specifically, the Socio-Economic assessment further discusses engagement frameworks such as Problem-Driven Iterative Adaptation (PDIA), Free, Prior and Informed Consent (FPIC), and community engagement toolkits as mechanisms to support more inclusive decision-making processes. The SEA does not determine whether development should proceed, nor does it confer development rights or authorisations. Rather, it evaluates potential development pathways, opportunities, constraints, cumulative impacts and strategic considerations to inform future planning and decision-making processes. Comments received through the consultation process contribute to refining these findings and recommendations.
WoMin African Alliance	35	General				In light of the above, we respectfully call for: • The full SEA documentation, specialist studies and supporting material to be made available in Afrikaans in accessible formats. • An extension of the public commentary period to allow affected communities sufficient time to meaningfully engage the material. • A deeper and more sustained community engagement process grounded in FPIC principles rather than minimum procedural consultation requirements. • Additional community-based engagements across affected areas, including support for independent facilitation, translation and technical interpretation. • Greater transparency regarding how community concerns, dissenting views and governance complexities will influence future planning and decision-making processes. • Explicit recognition that public participation does not in itself constitute community consent. The scale and cumulative nature of the proposed developments require a democratic process rooted not only in technical compliance, but in justice, accessibility, accountability and meaningful community participation.	**CSIR:** Many documents and outputs produced through the SEA process have already been translated into Afrikaans, including the seminal Summary for Policymakers (SPM), which synthesises headline findings and recommendations from the technical chapters. The public comment period was extended from 18 March 2026 to 08 May 2026 to allow more time for stakeholder review and input. A deeper, better-resourced, and more organised public consultation process is a key recommendations emerging from the SEA findings. Such engagement would need to be undertaken over a longer period, potentially several years rather than months, far extending the scope of a 24-month SEA process. The purpose of the SEA is not to undertake all immediate consultation needs (which extend both hundreds of thousands of hectares and hundreds of thousands of people), but to provide a strategic planning and assessment framework that can help define the parameters for how future consultation initiatives should be approached and implemented if they are to be successful.
WoMin African Alliance	36	General				Finally, we wish to stress that the Namakwa and Richtersveld regions are not empty developmental frontiers. They are historically and politically contested landscapes shaped by colonial dispossession, land restitution struggles, ongoing mining pressures, ecological vulnerability and unresolved governance questions linked to communal land ownership and customary systems. Any consultation process which fails to engage these realities risks reproducing the very forms of exclusion and top-down decision-making that communities have resisted for generations. We want to reiterate that our understanding of the legislative framework in terms of a Strategic Environmental Assessment - irrespective of CSIR's findings in relation to the SEA, even the flaws in process and research does not constitute that the Boegoebaai project can go ahead with development. THis land still belongs to the RIchtersveld community and the government along with the various companies (Transnet, Sasol, Sanedi) are required to obtain the consent of the Richtersveld comunity not the consent of the committee of Richtersveld Communal Property Association without following the various procedures to obtain consent from the community in totality.	**CSIR:** The SEA recognises that the Namakwa and Richtersveld regions are characterised by a complex social, historical and governance context, including land restitution processes, communal land ownership arrangements, customary governance systems, ongoing development pressures and environmental sensitivities. These considerations are reflected throughout the assessment and informed the identification of strategic risks, opportunities and governance recommendations. The SEA is a strategic planning instrument intended to inform future decision-making and does not constitute a development approval, confer development rights, determine land access arrangements, or replace any statutory authorisation, consultation or consent requirements that may apply to future developments. Any future project arising from the development scenarios assessed in the SEA will remain subject to applicable legal, regulatory and governance processes, including project-specific stakeholder engagement, environmental assessment and decision-making requirements. Comments relating to land ownership, governance structures and consent processes are noted and should be considered within the relevant future planning and authorisation processes. **Karoo Development Foundation: SOCIAL CONTEXTS**: The SEA strongly advocates the use of several public consultation methodologies to address these social complexities. It is possible that the Boegoebaai may exacerbate these historical problems; on the other hand, they may also simultaneously ameliorate at least some of them (e.g. by providing new opportunities for skills and incomes). It may open up new cleavages (e.g. between the youth seeking jobs and the elderly seeking stability). Many current problems seem to be intractable, and may be resolved by new economic opportunities; but at the same time, the projects may put other social assets at risk (e.g. social cohesion). To explore these various risks and opportunities will require a multi-faceted engagement process with various stakeholder communities.
Meagan Bromfield	37	SPM	14	15-18		Scenario 0 is misleading, as wind and solar energy expansion within the Springbok REDZ is already explicitly part of the dynamic baseline (Sc0), meaning avifaunal risks from REDZ-related development exist independently of GH2 scenarios and already compound cumulative pressure on Avifauna in this area.	**CSIR:** The comment is noted. The Dynamic Baseline (Scenario 0) was specifically developed to represent forseeable/anticipated environmental and socio-economic changes expected to occur within the Namakwa Region irrespective of future GH2-related development. This includes ongoing and anticipated renewable energy expansion within existing Renewable development Zones (REDZs), associated electricity grid infrastructure, mining activities, climate change and other regional development pressures. Accordingly, avifaunal risks associated with REDZ-related renewable energy development are recognised as part of the baseline cumulative impact context and are not attributed solely to the GH2 development scenarios. The purpose of Scenarios 1 and 2 is to assess the additional cumulative impacts associated with the potential expansion of a regional GH2 economy above and beyond the Dynamic Baseline. The relevant text in the SPM has been reviewed to clarify this distinction (Box SPM5).
Meagan Bromfield	38	SPM	18	24-42		The areas designated as Very-High to High Avifaunal Sensitivity do not take into account Lappet-faced Vultures (Torgos tracheliotos), which should be included within the priority bird species list but is currently omitted. All four impact pathways are directly relevant to Lappet-faced Vulture given their wide foraging ranges, low reproductive rates, and known collision and electrocution risk on power and wind infrastructure. The omission of this species may therefore result in an underestimation of the region's avifaunal sensitivity.	**AfriAvian Environmental:** This comment is noted. The terrestrial avifaunal assessment did consider Lappet faced Vulture as part of the regional sensitivity analysis. However, this species is poorly represented in available citizen science datasets within the Namakwa Region, and consequently the spatial evidence base for modelling its occurrence is limited. This constraint affects the confidence with which fine scale sensitivity patterns can be mapped at the SEA level. To address this, the assessment incorporated: (1) all known vulture roosts, nests, and colony locations across species, including any verified records within or adjacent to the study area; (2) species distribution models (SDMs) for all vulture species, including Lappet faced Vulture; and (3) regional expert knowledge on habitat associations and potential movement pathways. Lappet faced Vulture was therefore not excluded or overlooked; rather, its limited representation in SABAP2, BirdLasser, and other citizen science datasets means that it does not feature as prominently in the mapped outputs as species with stronger empirical datasets. We acknowledge that recent incidental observations indicate occasional presence in the broader landscape, but the available tracking and observational data are insufficient to reliably quantify or map these patterns at the resolution required for SEA level sensitivity mapping. The SEA adopts a precautionary approach in such cases: (1) areas with potential suitability for wide ranging scavengers are treated conservatively; (2) high risk infrastructure types (e.g., transmission lines) are flagged as requiring project level vulture specific assessment; and (3) any future GH_2 related development will require site level specialist studies, including targeted surveys, to verify vulture use and refine risk assessments. This ensures that Lappet faced Vulture is appropriately considered within the strategic framework, while recognising the current limitations of the regional evidence base.
Meagan Bromfield	39	SPM	50–51	32–44		The report identifies avoidance as the preferred mitigation approach for areas classified as VERY HIGH avifaunal sensitivity, rather than reliance on post-construction mitigation measures. Portions of the Springbok REDZ fall within these VERY HIGH sensitivity zones, and the REDZ streamlined development pathway must therefore not be used to circumvent the avoidance principle. We request that the avifaunal sensitivity findings of this SEA be incorporated into a formal review and/or sub-zoning of the existing REDZ boundary.	**AfriAvian Environmental:** This comment is noted. The terrestrial avifaunal assessment agrees that avoidance is the only defensible mitigation approach in areas classified as Very High avifaunal sensitivity, particularly where irreversible habitat loss, fragmentation, or unacceptable collision risk to priority species may occur. This principle applies irrespective of whether portions of the Springbok REDZ overlap with these sensitivity zones. It is important to clarify that the Boegoebaai SEA (WP2) focuses specifically on green hydrogen–related development pathways within the Namakwa Region. The SEA does not have the mandate to amend, re-zone, or formally review the boundaries of the Springbok REDZ, which is a national-level planning instrument established to streamline renewable energy authorisations. However, the SEA provides finer-resolution, region-specific ecological evidence that is directly relevant to decision-making within areas where REDZ boundaries and high avifaunal sensitivity overlap. The SEA therefore recommends that: (1) the avoidance principle must not be overridden by the REDZ's streamlined development pathway where Very High avifaunal sensitivity is identified; (2) competent authorities should apply the SEA's sensitivity findings when evaluating applications within the REDZ, particularly where Species of Conservation Concern or critical habitats are present; and (3) the SEA's outputs be made available to national and provincial authorities responsible for REDZ planning, so that they may consider whether future refinement or sub-zoning of the REDZ boundary is warranted. While the SEA cannot itself initiate a formal REDZ review, its avifaunal sensitivity mapping provides a strong evidence base that can inform such processes. The assessment supports the view that streamlined authorisation pathways should not be used to circumvent avoidance requirements in ecologically critical areas.
Meagan Bromfield	40	SPM	52	1-4		Lower-sensitivity areas identified in WP2 may provide relatively greater flexibility for development; however, they should not be regarded as impact-free landscapes. Even within these areas, poorly planned or cumulatively intensive development may still result in significant avifaunal impacts.	**CSIR:** The comment is noted. The SEA recognises that areas identified as being of comparatively lower sensitivity are not impact-free and that cumulative or poorly planned development may still result in significant ecological and social impacts. This is reflected in Box SPM 22 (previously Box SPM 21 in Draft SPM): Why 'lower sensitivity' does not mean 'low risk'. In response to this comment, the text has been refined to explicitly recognise that ecological consequences may include impacts on avifauna, bats and other fauna.
Natural Justice	41	SPM	14 40	15 - 24 4 - 7		There is some confusion and clarity needed on the scenarios. As described scenario 0 is no GH2, no port and no SEZ. However, further in the document the opportunities/positive impacts include the Namakwa SEZ sone in the baseline scenario. The SEA is stated to include the Namakwa region.	**CSIR:** Scenarion 0 represents a Dynamic Baseline Scenario and not a "no development" future. It excludes the proposed Boegoebaai Port, Boegoebaai SEZ and associated regional GH2 economy, but includes existsing and reasonably forseeable regional development trends and initiatives that may occur independently of the Boegoebaai development programme, such as the Namakwa SEZ. Scenario 0 therefore includes consideration of the Namakwa SEZ as a major regional development initiative that may influence future environmental and socio-economic conditions within the broader study area. The inclusion of other development rends orinitiatives, such as the Namakwa SEZ, in the Dynamic Baseline (Scenario 0) is intended to provide a more realistic representation of future regional conditions against which the potential additional impacts and opportunities associated with the Boegoebaai development scenarios could be assessed. The relevant text in the SPM has been reviewed to improve clarity in this regard (Box SPM5).
Natural Justice	42	SPM	11	19 - 22		One of the key constraints which should be addressed in the SEA is the access to information that should be required in the future for upcoming projects, such as access to IPP contracts, the SEZ formation and governance, EIA processes, tender agreements, pre and feasibility reports and financiers of the projects, especially where government or public funds are used.	**CSIR:** The SEA recognises the importance of transparency, good governance and access to information in supporting informed stakeholder participation and decision-making. The assessment highlights the importance of ongoing stakeholder engagement, transparent planning processes and effective governance arrangements as key considerations for future development in the region. The SEA, however, cannot prescribe public disclosure requirements for future contracts, tenders, financing arrangements or commercial agreements. Those matters are typically governed by applicable legal and regulatory requirements, procurement processes, individual project requirements etc. The comment is noted and the importance of transparency and access to information is recognised as a key consideration for future planning, assessment and implementation processes. **Karoo Development Foundation: LEGAL AND CONTRACTUAL INFORMATION:** This will be added to Chapter 7. **Bios Diversitas Consultants:** Noted. This is mainly an access and infrastructure-planning issue. It is relevant to fauna only where new or upgraded access routes may cause habitat fragmentation, roadkill, disturbance or barrier effects. These issues should be assessed during project-level route selection and EIA. No amendment to the fauna report is required.
Natural Justice	43	SPM	27 63	2 -6, 8 - 12 3 - 28	Box SPM3 line 7	Consultation should be meaningful, with FPIC being applied in terms of the community having "the right to say no" as affirmed in the Baleni v Minister of Mineral Resources 2019 (2) SA 453 (GP). As the SEA recognises challenges in the CPAs, meaningful consultation includes consulting with all relevant stakeholders including all affected community members and not just leaders or elected groups acting on their behalf. Further clarity is need regarding land ownership scenarios and mapping across the impacted region. This emphasis on FPIC and consultation is in contradiction to the policy instruments advised which shorten public consultation and put emphasis on consultation with landowners. Though mechanism should exist which allow for this, creating a social contract with communities should be prioritised to ensure confidence for investments and projects viability.	**Karoo Development Foundation:** The SEA is preliminary to the public consultation process. The SEA does not assume that these projects will go ahead. That Go/Not Go decision, as well as potential dimensions of the projeccts, will be profoundly influenced by the public participation process. See Karoo Development Foundation responses in comment ID 275 and comment ID 33.
Natural Justice	44	SPM	23	1 -3		For green hydrogen production, building of an economic zone and influx of people for jobs, there is concern that the current water and energy infrastructure is insufficient. It is not clear how this will be addressed. However there seems to be a lack of recognition that regardless of development as mentioned in scenario one, there basic services are a constitutional obligation of municipalities to provide to communities and people in its jurisdiction. This includes upholding the Constitutional right in terms of section 27(1)(b) for the right to sufficient water and section 26(1) the right to adequate housing including access to electricity. Under the Local Government: Municipal Systems Act 32 of 2000 section 73(1)(c) municipalities should promote equitable access to services. Therefore, regardless of whether scenario 0,1 or 2 transpires these services need to be addressed in this region by the state.	**CSIR:** The SEA does acknowledge that The SEA acknowledges that access to basic services, including water, housing, electricity and sanitation, is not solely a development-related requirement but forms part of the broader constitutional and statutory obligations of the state and municipalities. The assessment recognises that significant service delivery and infrastructure challenges already exist within the study area under the Dynamic Baseline Scenario, including water supply constraints, housing backlogs and municipal capacity limitations. The purpose of the SEA is therefore not to determine these obligations, but rather to assess how different development scenarios may influence the demand for, and pressure on, existing infrastructure and service delivery systems. While these service needs must be addressed irrespective of future GH2 related development, the SEA finds that large-scaleindustrial development and population growth could place additional pressure on already contrained systems, highlighting the importance of coordinated infrastructure planning, investment and service delivery across all scenarios. **Karoo Development Foundation:** This has been addressed in Chapter 6 and 7. **Bios Diversitas Consultants:** Noted. Population influx and associated economic-zone development may result in indirect fauna pressures such as disturbance, waste, traffic, domestic animals, poaching or habitat degradation. These should be managed through project-level environmental management and cumulative-impact controls. No amendment to the fauna report is required.
Natural Justice	45	SPM	41 42	21 – 23 1 - 5		Mention is made of a hydrogen pipeline. Recommendations should be made for this to be in line with Hazardous Chemical Substances Regulations 1995, Pressure Equipment Regulations 2009, Construction Regulations 2014, Explosives Regulations 2003 and Major Hazard Installation Regulations 1993. In addition, the risks involved with hydrogen pipelines should be assessed.	**CSIR:** The SEA considers future hydrogen pipeline infrastructure at a strategic planning level, including corridor planning, land access requirements, servitudes, governance considerations and associated infrastructure risks. Detailed engineering design, safety assessments and compliance with applicable legislation relating to hazardous substances, pressure equipment, construction activities and major hazard installations fall beyond the scope of this strategic assessment. Such matters, including the assessment and management of hydrogen-specific operational and safety risks, will need to be addressed during subsequent feasibility, design, environmental assessment and authorisation processes. **Bios Diversitas Consultants:** Noted. Hydrogen pipelines are relevant to fauna where route alignments intersect sensitive habitat, drainage lines, ecological corridors or SCC habitat. Pipeline routing should avoid such areas where feasible and be subject to project-level ecological assessment. No amendment to the fauna report is required. **CSIR Infrastructure & Planning Authors:** Section 6.3.3.3. does indicate that a hydrogen pipeline would generally fall under hazardous-chemical and pressure-equipment infrastructure, with approvals channelled through the relevant energy, environmental, and safety authorities, and its technical design directed by international or local hydrogen codes and standards. From a safety perspective, hydrogen pipelines are presently regulated under the Occupational Health and Safety Act and its associated regulations, including those relating to Hazardous Chemical Substances, Pressure Equipment, Construction, Explosives, and Major Hazard Installations.

Natural Justice	46	SPM	56 60	38 – 40 48 - 49		In the socio-economic report, community benefits should be highlighted as a key component to address including access to water and electricity. Should desalination plants be used, these should be operating on the national water system to ensure the benefit of access to water instead of privately owned and only should there be surplus (after 2040), benefit communities. These community commitments should be pre-conditional for development in this region.	**CSIR:** The SEA recognises the importance of ensuring that local communities derive meaningful benefits from future development, including improved access to infrastructure, services, economic opportunities and skills development. The Socio-Economic and Infrastructure assessments identify access to water, electricity, housing and other municipal services as important regional development considerations and highlight opportunities for strategic infrastructure investments to provide broader community benefits. The SEA further recognises the potential for infrastructure associated with future development, including water and energy infrastructure, to contribute to regional development objectives where feasible. However, the ownership, operation and allocation of future infrastructure assets fall beyond the scope of the SEA and would need to be considered through subsequent planning, feasibility, environmental assessment and decision-making processes. Accordingly, while the SEA cannot impose a binding legal precondition, it does support the principle that future development should not proceed ahead of adequate water, electricity and related service planning for existing communities and anticipated in-migration. **CSIR Infrastructure & Planning Authors:** The desalination plant has been deliberately oversized, as it is designed not only to supply desalinated water for green hydrogen production, but also to generate surplus desalinated water and support other potential water supply initiatives aimed at addressing the water challenges faced by communities in the region.
Natural Justice	47	SPM	63	30 - 54		Policy actions for the Boegoebaai Intergovernmental Steering Committee should include community and civil society representation. Other policy actions should include community benefit frameworks being established with binding terms, desalination water and energy being a country resource and asset which is allocated equitably to communities; environment and development, meaningful consultation and FPIC are binding for all development licensing.	**Karoo development Foundation: COMMUNITY REPRESENTATION:** This will be strengthened in Chapter 7. **CSIR:** The SEA recognises the importance of inclusive governance, meaningful stakeholder engagement, equitable benefit-sharing, and consideration of community needs in future planning and development processes. The socio-economic assessment highlights the need for collaborative governance arrangements involving key stakeholders, ongoing community engagement, and the application of participatory approaches such as Free, Prior and Informed Consent (FPIC) principles where relevant. The assessment also identifies opportunities for project-related infrastructure and services, including water and energy infrastructure, to contribute to broader regional development objectives and community benefits. However, the detailed composition of future governance structures, the development of community benefit frameworks, the allocation of water and energy resources, and specific licensing requirements will be determined through subsequent planning, regulatory, and project-level processes and therefore fall beyond the scope of this strategic-level assessment.
Samantha Ralston-Paton	48	SPM	9–62	9–62		BirdLife South Africa (BirdLife SA) welcomes the intention of the WP2 SEA. A robust SEA is an essential first step in assessing appropriate development pathway(s) for this environmentally sensitive area.	**CSIR:** The comment is noted.
Samantha Ralston-Paton	49	SPM	9–62	9–62		While we support the scenario-based approach adopted as a starting point, it needs to be made clearer that best practicable environmental option may not be represented by either of the scenarios assessed (i.e. small or large H_2). More appropriate alternative scenarios could, and should, be identified through this SEA process. In other words, we recommend an iterative process to identify the most appropriate scenario.	**CSIR:** We used an *exploratory* scenarios framework i.e. what could happen?, rather than a *normative* scenarios framework i.e. what should happen? The former, in our view, is a more robust framework, as it allows for the transparent assessment of cumulative impact (including non-GH2 sectors and change trends) and sets scientifically grounded limits of acceptable change (rather than those informed exclusively by value-based perspectives). Don't forget that Scenario 0 is a no-GH2 development scenario, with the continuation of existing trends in the region, and that the relative opportunities and risks for this scenario were also assessed by all the specialist chapters. The status quo in region has substantial risk. In the end, we don't say which scenario is preferred (the no GH2 status quo verus the two GH2 development scenarios), we objectively present the opportunities and risks of all of them, highlighting instances where certain scenarios, development scales or landscape-level activities come close to, or trangress, the regional limits of accpetable change. This approach presents a scientifically grounded, broad spectrum assessment of multiple plausible futures, which policy-makers, practitioners and wider stakeholders must then use to inform future site specific assessments (like planning tools and EIA) and negotiations, which (if GH2 development does occur at any significant sclae), will occur over a protracted period of time well into the future.
Samantha Ralston-Paton	50	SPM	9–16	All		Lower-sensitivity areas have been identified and mapped (Section 3.6, Figure SPM 7), drawing on all sector inputs. While these areas may be the least sensitive overall, they still include large areas of high and very high sensitivity. This is extremely concerning and reflects the global biodiversity value of the area. The current assessments of lower-sensitivity areas are also understandably coarse. We therefore recommend a subsequent SEA iteration, where these areas are assessed in more detail in order to identify and evaluate residual negative impacts, mitigation, and offset opportunities at a finer spatial resolution. We recognise that this gap could, to some extent, be filled by project-level EIAs, but the opportunity to strategically address outstanding issues, particularly cumulative negative impacts (which EIAs are notoriously poor at addressing) will be missed.	**CSIR**: The SEA agrees that lower-sensitivity areas (based on current knowledge and spatial data) are not impact-free and may still contain localised HIGH and VERY HIGH sensitivity features. The SPM (Section 3.3; Box SPM 23) already notes that these areas could provide only relatively greater flexibility for development and that all development remains subject to project-level assessment and field verification. The regional mapping is intentionally coarse and is meant to guide strategic screening, not final project siting. **Bios Diversitas Consultants:** Noted. Lower relative sensitivity areas must not be interpreted as impact-free or unconstrained development zones. They may still support SCC, movement functions and ecological processes and must be subject to site sensitivity verification, cumulative footprint assessment and layout-level avoidance/minimisation during downstream project planning. No amendment to the fauna report is required.
Samantha Ralston-Paton	51	SPM	9–16	All		We recognise that WP2 SEA is intended to guide downstream planning rather than serve as a once-off decision-making instrument. However, the document does not establish a formal review cycle or trigger mechanism for updating the SEA as the GH_2 economy develops and/or new data become available. We recommend that review triggers be defined, for example, when cumulative development in a sensitivity zone reaches a defined threshold; at fixed intervals (e.g. every five years); or when new biodiversity or technology information significantly alters the picture.	**CSIR:** Agreed. The SEA is intended to serve as a strategic planning instrument that guides downstream planning over time.To ensure that theassessment remains current and responsive to evolving trends, cumulative impacts and emerging information, a concluding remark has been added in the SPM that the SEA ve reviewed and updated at five-year intervals. **Bios Diversitas Consultants:** Noted. A regional biodiversity monitoring and review mechanism would be appropriate for SEA implementation, including periodic review of cumulative fauna impacts, SCC records, roadkill/barrier effects and corridor functionality. This can be carried into the SEA implementation framework. No amendment to the fauna report is required.
Samantha Ralston-Paton	52	SPM				It is unclear how existing environmental authorisations and EIAs currently underway for renewable energy developments have been dealt with in assessing the different scenarios. Sc0 (Dynamic Baseline) does acknowledge "ongoing development activities and proposals", including established REDZs and EGI corridors, and the GH_2 scenarios (Sc1 and Sc2) are assessed on top of that baseline. However, baseline biodiversity loss is quantified at only <100 ha per year (Table 2-1, Chapter 2), a very conservative figure that does not appear to account for the substantial pipeline of already-approved RE projects in the region. According to the Offsets Report, approximately 13 GW of renewable energy has already been approved in the Namakwa District, and approximately 78 GW in the Northern Cape Province as a whole (DFFE REEA data, analysed by CSIR, February 2025). The approved capacity is sufficient to supply both the Small (Sc1, 5 GW) and Large (Sc2, 40 GW) green hydrogen scenarios without any new approvals. We recommend that this SEA process be used to provide clear guidance on the appropriate nature and scale of renewable energy development in the region, taking into account existing environmental authorisations and their likely environmental impacts.	**CSIR:** Scenario 0 in the SEA is a dynamic baseline, not a "no development" case. It incorporates ongoing and reasonably foreseeable regional development trends and proposals, including renewable energy expansion, REDZs and associated grid infrastructure, against which the additional effects of the GH_2 scenarios are assessed. The exploratory scenarios are intended to indicate trends and potential cumulative development pathways rather than provide a comprehensive inventory of all authorised developments or assume that all approved projects will be implemented. The overarching development trends are presented in Chapter 1 Fig 1.1 and Section 1.4.2.1. The SEA provides strategic guidance by identifying avoidance areas, lower-sensitivity opportunity areas, and the need for project-level assessment and site-specific field verification for future development. **EcosolGIS**: The baseline habitat loss estimates are based on land-cover change data underlying the 2021 National Red List of Ecosystems (SANBI), covering the period 2014–2018, which indicates an observed average rate of habitat change of ~100 ha/year across the biomes and bioregions within the SEA study area. Regarding existing approved but unconstructed renewable energy developments (REDs): these are not currently factored into the quantified rate of habitat loss, as an environmental authorisation does not, in itself, constitute a loss of habitat — this occurs only once construction proceeds. A material proportion of approved projects historically do not reach construction, and counting authorised-but-unbuilt capacity as a realised impact would overstate the baseline. The SEA assesses the additional impacts of the Green Hydrogen scenarios against this dynamic baseline and provides strategic guidance to inform the planning, siting and implementation of renewable energy developments. The SEA's recommendations should be considered, where applicable, alongside existing environmental authorisations during project-level planning and environmental assessment to support application of the mitigation hierarchy and the strategic environmental objectives identified by the SEA. **Bios Diversitas Consultants:** Noted. Existing environmental authorisations, current EIAs and reasonably foreseeable future projects should be considered when evaluating cumulative fauna impacts. This should be addressed through the SEA implementation process and project-level cumulative assessments. No amendment to the fauna report is required.
Samantha Ralston-Paton	53	SPM	17–21; 50–52		Box SPM 20; Box SPM 21	Box SPM 21 cautions that "lower sensitivity does not mean low risk". However, the SPM does not adequately unpack what residual negative impacts can be expected within the identified lower-sensitivity development areas (Figure SPM 7). The current treatment of these areas is essentially "go here", without specifying what biodiversity, heritage and water constraints still apply within them. As noted above, we recommend that a subsequent iteration of the SEA provide: • An account of the biodiversity, avifaunal, bat, heritage and water constraints that exist within each identified lower-sensitivity zone. • Indicative site-selection criteria and layout guidelines that must be applied within these zones to achieve the lowest practicable residual impact. • An estimate of the residual offset liability that would remain even after best-practice siting within these zones.	**CSIR:** Note response to comment ID 40. Every "low sensitivity" zone identified in the SEA is still subject to EIA level approval, which will set the conditions under which a proposed development will, or will not, be permitted. Furthermore, Figure SPM7 does state that these regions will still contain highly sensitive social and ecological features. **Bios Diversitas Consultants:** Noted. Lower-sensitivity zones still require identification of residual biodiversity constraints, SCC habitat likelihood, movement corridors, roadkill/fencing risk and cumulative offset liability at project level. No amendment to the fauna report is required. **Conservation Strategy Tactics & Insight:** The SEA provides an indicative estimate of the likely minimum offset liability and those figures represent the best strategic estimate possible at this stage. **ASHA Consulting:** Although some guidance can be provided from the desktop, specific heritage constraints can only be determined through field-based assessments. The intention of the SEA is to (attempt to) guide development into potentially lower sensitivity areas in the hope that there will be less constraints (and hence less potential impacts) in those areas.
Samantha Ralston-Paton	54	SPM	30	2	Table SPM 3	While we support the proposed action to "Avoid HIGH/VERY HIGH sensitivity in siting", it is unclear whether this will be possible or feasible given that much of the cumulatively lower environmental sensitivity area includes high and very high avifaunal sensitivities. Unless the proposed actions are feasible under the relevant scenario, they are largely meaningless. We recommend that any such limitations be acknowledged.	**AfriAvian Environmental:** Thank you for the comment. We agree that avoidance of High and Very High avifaunal sensitivity areas is the preferred and most defensible mitigation approach, particularly given the presence of threatened, collision-prone, and wide-ranging species in the Namakwa Region. We also acknowledge the concern raised regarding the feasibility of achieving full avoidance in practice, especially where portions of the "cumulatively lower environmental sensitivity" zone still contain embedded pockets of high avifaunal sensitivity. It is important to clarify that the SEA's sensitivity mapping is relative and regional in nature, and is intended to guide early-stage strategic planning rather than prescribe exact development footprints. Within the lower-sensitivity areas, the mapping highlights broad zones where development is more likely to be compatible with ecological functioning, but it does not imply that all locations within these areas are free of constraints. Localised high-sensitivity features—such as movement corridors, topographic funnels, roosting areas, or species-specific use sites—may still occur and will require project-level verification and detailed assessment. We agree that these limitations should be explicitly acknowledged. The SEA should therefore note that: (1) avoidance of High and Very High sensitivity areas remains a strategic objective, but feasibility must be confirmed through site-level specialist studies; (2) lower-sensitivity areas may still contain fine-scale avifaunal constraints that cannot be resolved without detailed fieldwork; (3) the SEA does not guarantee that avoidance is always achievable, but it provides the best available regional evidence to minimise the likelihood of fatal-flaw siting decisions; and (3) where avoidance proves infeasible at the project level, the risk of unacceptable cumulative impacts must be reassessed, and development pacing or siting may need to be reconsidered. In summary, the SEA's avoidance recommendations remain valid and necessary, but their practical implementation depends on finer-scale verification. The final documentation will more clearly articulate these feasibility considerations to ensure that the avoidance principle is applied realistically and transparently within the relevant development scenarios.
Samantha Ralston-Paton	55	SPM	30	2	Table SPM 3	We support the recommendation that GenEst be used to estimate fatalities. However, the action as specified, i.e. "GenEst-based pre- and post-construction monitoring…", is not strictly correct. GenEst is a statistical method for estimating fatalities and has no relevance to pre-construction monitoring, nor does it detail post-construction monitoring methodology. We suggest that reference to the latest BLSA & EWT Best Practice Guidelines for assessing and monitoring impacts would be more appropriate (these include reference to GenEst).	**AfriAvian Environmental:** Thank you for the comment. We agree with your observation regarding the role of GenEst. GenEst is a statistical estimator used to derive fatality rates from post-construction carcass-search data; it is not a pre-construction monitoring tool, nor does it prescribe field methodologies for post-construction monitoring. The wording in the draft action must therefore be refined to avoid implying that GenEst has relevance outside its intended application. We also agree that reference to the latest BirdLife South Africa (BLSA) and Endangered Wildlife Trust (EWT) Best Practice Guidelines provides a more accurate and comprehensive basis for both pre- and post-construction monitoring. These guidelines outline the appropriate survey methods, sampling designs, correction trials, and reporting standards, and include guidance on the use of GenEst as part of a defensible post-construction fatality-estimation framework. The SEA must therefore revise the recommended action to: (1) reference the BLSA & EWT Best Practice Guidelines as the primary standard for pre- and post-construction monitoring; (2) clarify that GenEst is specifically applied to post-construction fatality estimation, following appropriate carcass-search protocols and correction trials; and (3) ensure that monitoring recommendations are aligned with established national best practice rather than implying a methodological role for GenEst outside its intended scope. This refinement will strengthen the clarity and technical accuracy of the monitoring recommendations and ensure consistency with current South African avifaunal impact-assessment standards.
Samantha Ralston-Paton	56	SPM	42–49	9–14	Table SPM 6	The risk framework identifies that there are HIGH to VERY HIGH risks without mitigation across most themes and sensitivity classes. However, the document does not translate the four-tier sensitivity classification into criteria for acceptability, and no thresholds or Limits of Acceptable Change (LAC) are defined. This was recommended as a next step. We suggest that further details regarding implementation of this critical step (i.e. by whom and when) be provided in the SEA.	**CSIR:** The purpose of the SEA is to identify strategic sensitivities, cumulative risks, development opportunities and management actions at a regional scale, rather than to establish project-specific development thresholds or Limits of Acceptable Change (LAC). The four-tier sensitivity classification is intended to guide strategic planning, application of the mitigation hierarchy and future decision-making processes. The SEA recognises that further refinement of thresholds, triggers and acceptable levels of change may be required for specific environmental and socio-economic receptors and should be informed by subsequent spatial planning, specialist investigations, project-level environmental assessments and adaptive management processes. The SEA's recommendations, including the use of sensitivity mapping, avoidance of highly sensitive areas and project-level assessment requirements, provide the framework within which such thresholds can be developed and applied by the relevant authorities and project proponents. **Bios Diversitas Consultants:** Noted. Quantitative cumulative habitat-loss thresholds cannot be confirmed without final infrastructure footprints and layout details. Limits of Acceptable Change or equivalent cumulative thresholds should be developed during downstream planning and project-level assessment for priority fauna habitats and SCC. No amendment to the fauna report is required.
Samantha Ralston-Paton	57	SPM	50–52		Box SPM 22	Box SPM 22 addresses wind turbines and coastal fog dynamics in relation to vegetation. There is an additional avifaunal implication: coastal fog and mist conditions may be associated with increased bird collision risk, which cannot easily be mitigated through camera-assisted or observer-led shutdown on demand. We recommend that this be included in the Box.	**AfriAvian Environmental:** This comment is noted. We agree with your observation that coastal fog and mist conditions have important avifaunal implications, particularly in relation to elevated collision risk. Reduced visibility is known to increase the likelihood of bird strikes, especially for large, fast-flying, or wide-ranging species, and these conditions are not easily mitigated through observer-led or camera/radar-assisted shutdown-on-demand systems. This is an important consideration for infrastructure planning in the coastal and near-coastal zones of the Namakwa Region. Box SPM 22 currently focuses on the implications of fog dynamics for vegetation and turbine performance. Based on your recommendation, the SEA must be updated to explicitly include the avifaunal dimension, noting that: (1) coastal fog and mist can substantially increase collision risk for certain species; (2) these conditions reduce the effectiveness of visual-based detection and shutdown systems; and (3) avoidance-led siting remains the most reliable mitigation approach in fog-prone areas, particularly where high-risk species or movement corridors are present. This addition will strengthen the interpretive guidance in Box SPM 22 and ensure that the avifaunal risks associated with fog dynamics are clearly communicated within the SEA's strategic planning framework.
Samantha Ralston-Paton	58	SPM	50–53		Box SPM 20	Box SPM 20 lists biodiversity features requiring strict avoidance but does not include avifaunal-specific avoidance areas. We recommend that this list be expanded to include, for example: • All confirmed nesting sites and evidence-based buffer zones for raptors (e.g. Martial Eagle, Black Harrier). • Confirmed Ludwig's Bustard lekking and primary foraging areas. • Coastal and Orange River estuarine habitats critical for waterbird foraging and roosting (including the Ramsar-listed Orange River Estuary).	**AfriAvian Environmental:** This comment is noted. We agree with your recommendation that Box SPM 20 be revised to include the suggested avifaunal-specific avoidance areas as stipulated.
Samantha Ralston-Paton	59	SPM	57		Section 3.6	The relatively narrow geographic focus of this SEA could be an opportunity to strategically address some of the challenges encountered with the proposed renewable energy developments in South Africa, including the large number of projects with environmental authorisations, many of which are outdated, and the associated challenge of assessing cumulative impacts. We suggest that further thought be given to how this could be achieved.	**CSIR:** WP1 had a relatively narrow focus around the proposed Boegoebaai SEZ. WP2 had an extremely broad geographic focus covering most of the Northern Cape province. The current challenges/opportunities and key learnings with respect to renewable energy developments in South Africa garnered through the REIPPPP (e.g. best approaches for siting, management, mitigation, enhancement etc.) are reflected in all the specialist chapters.
Samantha Ralston-Paton	60	SPM	43	21-26	Section 2.3	The report states that "mitigation measures, such as careful siting of turbines, bird-safe powerline design, and monitoring, can reduce risks to MODERATE or LOW, although highly sensitive areas may still experience unacceptable residual impacts despite mitigation". This underrepresents the risk. Table 6 of Chapter 2a shows that, even with best-practice mitigation, several impact pathways under Scenario 2 ("Big GH_2") retain a HIGH or VERY HIGH risk rating in Very High and High sensitivity receiving environments. Similarly, without avoidance, many impacts associated with Scenario 1 ("Small GH_2") will remain high. The statement does refer to "careful siting", but if we understand the SEA recommendations correctly, some highly sensitive avifaunal areas are recommended for development (e.g. Figure SPM 7), limiting opportunities for "careful siting".	**AfriAvian Environmental:** Thank you for the comment. We agree with your observation. The wording in the SPM does not fully reflect the residual risk levels presented in Table 6 of Chapter 2a. As shown in the chapter, even with the application of best-practice mitigation measures, several impact pathways under Scenario 2 ("Big GH_2") retain High or Very High residual risk in High and Very High avifaunal sensitivity receiving environments. Similarly, under Scenario 1 ("Small GH_2"), many impacts remain High in the absence of strict avoidance. The SPM statement that risks can be reduced to "Moderate or Low" therefore understates the severity of residual impacts in sensitive areas and may inadvertently imply that mitigation alone is sufficient. We agree that this is not the case. The assessment clearly demonstrates that: (1) avoidance remains the primary defensible approach in High and Very High sensitivity areas; (2) best-practice mitigation can reduce risk in lower-sensitivity environments, but cannot neutralise unacceptable impacts in sensitive habitats; and (3) under Development Scenario 2, cumulative pressures elevate several pathways to High or Very High risk even after mitigation, reinforcing the need for spatial limits and development pacing. The SPM must be revised to more accurately reflect these findings and to ensure that the critical role of avoidance, particularly in sensitive receiving environments with an emphasis on avifaunal risk, is clearly communicated to decision-makers.
Natural Justice	61	Chapter 1	1-4	Para 1.2		As it stands, the SEA does not make a case for local use and demand of PtX products, and consequently, the domestic need for and desirability of the project has not been established. The Chapter also indicates that studies are still underway to determine the feasibility of developing a deep-water port at Boegoebaai, for export facilities. This feasibility assessment underpins the entire project, and should have been undertaken prior to this SEA, enabling it to inform the assessment. Much of the rationale for the project, as set out is in this section, is speculative and presumptuous, with no evidence of comprehensive need and desirability assessment having been undertaken or informing the rationale for the development.	**CSIR:** The comment is noted. The SEA is a strategic, scenario-based assessment and is not intended to determine the commercial feasibility, bankability or final implementation of the proposed development programme. As described in the SEA methodology and Summary for Policymakers, the assessment evaluates a range of plausible future development pathways (Sc0, Sc1 and Sc2) to understand their potential environmental, social, economic and infrastructure implications, opportunities and constraints.The SEA recognises that the future development of a regional GH2/PtX economy, associated export infrastructure and the proposed Boegoebaai Port is dependent on multiple factors, including market demand, investment decisions, technical feasibility, regulatory approvals and broader economic conditions. This is reflected in Chapter 7, which notes that the financial sustainability and viability of the Port and GH2 projects are not determined by the SEA and that future investment will depend on market conditions, investor decisions and government policy considerations. Accordingly, the SEA does not assume that development will necessarily proceed as described, but rather assesses the potential consequences should these development pathways materialise. Ongoing feasibility studies and future project-level assessments will provide additional information to inform decision-making. The SEA does not seek to justify or approve development, but rather to provide decision-makers with information on the potential consequences, opportunities and constraints associated with different development pathways.

Natural Justice	62	Chapter 1	1-13	Para 1.3.3		This paragraph indicates that large-scale renewable energy infrastructure will be developed to power electrolysers. This indicates that large-scale RE is fait accompli, despite the assessment considering both small-scale and large-scale renewable options. During the public meeting of 5 May, it was also indicated that medium-scale renewable roll-out was being considered, which does not form part of the WP2 assessments.It is indicated that "By 2040, the goal is to meet industrial demands and eventually exceed electricity needs". This makes it clear that there are no short-term priorities to improve access to electricity for local domestic needs, and it is likely that meeting industrial demand, possibly exceeding the industrial uses contemplated in the SEA, will be preferred by "the Northern Cape".	**CSIR:** Section 1.3.3 describes the renewable energy infrastructure that would be required should the GH2 development scenarios materialise and is not intended to imply that large-scale renewable energy development is a predetermined outcome. As outlined in Chapter 1, the SEA adopts a scenario-based approach to explore the implications of different future development pathways and is not a decision-making or approval process. Scenario 1 and Scenario 2 were selected as bounding scenarios to test a smaller and larger regional GH_2 pathway against the Dynamic Baseline; they are not a precise forecast or a complete representation of all possible intermediate outcomes. The fact that a medium-scale rollout may also be plausible does not mean that the SEA has predetermined large-scale development. The SEA further recognises that renewable energy projects would be subject to separate planning, environmental assessment and authorisation processes. The reference to meeting industrial demand and broader electricity needs is intended to describe a potential long-term development objective and should not be interpreted as prioritising industrial users over local communities. Opportunities for broader regional and community benefits associated with future energy investments are recognised elsewhere in the assessment (e.g. Chapters 6 and 7).
Natural Justice	63	Chapter 1	1-14	Para 1.4.2.1		Scenario 0 does not represent potential alternative plans to improve biodiversity conservation, alternative livelihoods and access to water and electricity under different development scenarios. Without an assessment of these alternative scenarios, or at least a clear disclaimer to this effect, the comparison of potential development scenarios is skewed. A strategic assessment considering best use of land and resources is called for.	**CSIR:** Scenario 0 was developed as a Dynamic Baseline Scenario representing the likely trajectory of the region in the absence of GH2-related infrastructure, the Boegoebaai Port and the SEZ. Its purpose is to provide a reference point against which the potential impacts, risks and opportunities associated with the assessed development scenarios can be evaluated. The SEA does not present Scenario 0 as an assessment of all possible alternative development pathways for the region, but rather as a baseline against which the implications of the GH_2 development scenarios can be compared.
Natural Justice	64	Chapter 1	1-22	Para 1.4.2.2		It would be useful for Figure 1-4 to compare positive and negative impacts associated with each development scenario.	**CSIR:** The comment is noted. Figure 1-4 is intended to provide a high-level description of the development scenarios assessed in the SEA. The comparative assessment of potential positive and negative impacts associated with each scenario is presented elsewhere in the SEA, including the specialist assessments. and Summary for Policymakers.
Environmental Traits	65	Chapter 2				**Ecology** The ecological risks are underestimated, and the biodiversity loss will be irreversible. 1. Key issues • Impacts on: • Namaqualand ecosystems • Succulent Karoo biodiversity • Avifauna and faunal species • Water-intensive processes increasing scarcity • Desalination impacts on marine ecosystems • Offsets insufficient to address biodiversity loss Also note that some of the ecological impacts cannot be mitigated or offset once they occur. 2. We recommend • Application of the precautionary principle • Identification of ecologically sensitive no-go zones • Independent biodiversity monitoring • Limitation of developments in high-sensitivity areas	**EcosolGIS**: Noted. These recommendations are already well articulated in the SEA. **Bios Diversitas Consultants:** Partly accepted for Chapter 2c. Biodiversity loss in Very High sensitivity areas, SCC habitat and ecological corridors should be treated as potentially irreversible and should trigger strategic avoidance before reliance on mitigation or offsets. No amendment to the fauna report is required.
Samantha Ralston-Paton	66	Chapter 2	2-67	11-13	Section 2.7.7	We support the call to build a community of practice around renewable energy. BirdLife South Africa has proposed a similar forum in the past and would gladly share the concept note.	**EcosolGIS:** Noted. Elaborated the text in 2.7.7. to emphasise this point.
Samantha Ralston-Paton	67	Chapter 2	General		Section 2.6	We support the findings and recommendations of Chapter 2. It would be helpful if these were accompanied by an implementation plan setting out roles and responsibilities. For example, Section 2.7.3 recommends that "the spatial framework for Vision 2040, mega-living landscapes, and the landscape ecological corridor network be laid down before GH2 is implemented, to avoid corridors being cut or diverted by poorly located development". This is a critically important recommendation, which BirdLife SA fully endorses, but it could be lost without a clear implementation framework.	**EcosolGIS**: Have added a recommendation to 2.7.7 to speak specifically to implementing the conservation vision for the region. Make sure to pull this through to Section 3.4 in the summary report. This strategic approach needs to be expanded to include an integrtated mitigation and biodiversity oiffset plan that covers all apsects listed. **Bios Diversitas Consultants:** Noted. More detailed implementation actions, responsibilities, timeframes and monitoring triggers are best captured in the SEA management framework and downstream project conditions. Chapter 2c provides fauna inputs for those requirements. No amendment to the fauna report is required.
Samantha Ralston-Paton	68	Chapter 2	2-63		Section 2.6.2.2	We support the recommendation to implement mixed land uses and improve environmental condition at wind and solar facilities. IUCN's report "Opportunities for enhancing biodiversity at wind and solar energy developments" is a useful reference in this regard (https://iucn.org/resources/jointly-published/opportunities-enhancing-biodiversity-wind-and-solar-energy-developments).	**EcosolGIS**: Noted. This is already articulated in the relevant section
Samantha Ralston-Paton	69	Chapter 2	2-63		Section 2.8	IUCN has published a series of guidelines, which we recommend be included in the reference list: Bennun, L., van Bochove, J., Ng, C., Fletcher, C., Wilson, D., Phair, N., Carbone, G. (2021). Mitigating biodiversity impacts associated with solar and wind energy development. Guidelines for project developers. Gland, Switzerland: IUCN and Cambridge, UK: The Biodiversity Consultancy. Jobson, B., Cook, A., Fletcher, C., Bennun, L., Murrell, L., Asante-Owusu, R., Liu, Q. (2024). Opportunities for enhancing biodiversity at wind and solar energy developments. Gland, Switzerland: IUCN, and Cambridge, UK: The Biodiversity Consultancy. Bennun, L., Fletcher, C., Cook, A., Wilson, D., Jobson, B., Asante-Owusu, R., Dakmejian, A., Liu, Q. (2024). Spatial planning for wind and solar developments and associated infrastructure. Technical note. Gland, Switzerland: IUCN, and Cambridge, UK: The Biodiversity Consultancy.	**EcosolGIS:** Added references to 2.8 and added text to section 2.6.1 referring to these references.
Louise Geldenhuys	70	Chapter 2a	17 - 18			It is indicated that SAPAP2 data and Birdlasser data has been used. Considering the lack of observations in the target area, please also use resources such as iNaturalist, GBIF and the CWAC datasets that are available for 4 of the estuaries and several inland sites in the study area. L Geldenhuys (geldenhuys.louise1@gmail.com) can be contacted for CWAC databases of estuaries.	**AfriAvian Environmental:** This comment is noted and the offering to share this information is appreciated. The terrestrial avifaunal assessment undertaken for this SEA acknowledges the limitations associated with relying heavily on SABAP2 and BirdLasser records, particularly in areas of the Namakwa Region where observer effort has historically been low. To address these gaps, the assessment team has reviewed additional available spatially modelled data sources, and it is recommended that project-level impact assessments must incorporate supplementary datasets where they improve spatial coverage and confidence in species occurrence patterns. In particular, resources such as iNaturalist, GBIF, and the CWAC datasets for estuaries and several inland wetlands within the study area must be considered in those site-specific studies to strengthen the evidence base for impact assessment. These datasets provide valuable incidental and systematic records that can help refine species distributions, highlight under-recorded habitats, and improve the detection of species of conservation concern.
Louise Geldenhuys	71	Chapter 2a	22-23		Table 3: Priority species	Lappet-faced vultures has in recent years been observed more and more in the Bushmanland area - with a collision reported just east of Springbok - and this species is certainly one that should also be evaluated as a priority species. The VulPro vulture rehabilitation organisation has assested in the rehabilitation of this specific vulture, and may have more information.	**AfriAvian Environmental:** Thank you for the comment. We agree that Lappet-faced Vulture is an ecologically important species and that recent observations in the broader Bushmanland area, including a confirmed collision east of Springbok, highlight the need for continued vigilance. The species was not excluded from the avifaunal risk assessment; however, its representation in the available regional datasets is limited, which affects the confidence with which fine-scale sensitivity patterns can be mapped at the SEA scale. The assessment incorporated all available information relevant to vulture species, including: (1) known roosts, nests, and colony locations for all vulture species within and adjacent to the study area; (2) species distribution models (SDMs) for all vulture species, including Lappet-faced Vulture; and (3) citizen-science datasets (SABAP2, BirdLasser) and other verified records. Lappet-faced Vulture is poorly represented in these datasets within the Namakwa Region, which explains why it does not feature as prominently in the mapped outputs as species with stronger empirical datasets. We acknowledge that incidental observations and rehabilitation records, such as those held by VulPro, indicate occasional presence in the wider landscape. However, the available tracking data, citizen-science records, and verified observations are currently insufficient to reliably quantify movement patterns or map high-use areas at the resolution required for SEA-level sensitivity mapping. To address this uncertainty, the SEA adopts a precautionary approach, including: (1) treating potentially suitable habitat conservatively in the cumulative sensitivity analysis; (2) flagging high-risk infrastructure types (e.g., transmission lines) as requiring project-level vulture-specific assessment; and (3) recommending that future GH_2-related developments undertake targeted field surveys and engage with organisations such as VulPro and EWT to obtain the most up-to-date information on vulture presence and movements. This ensures that Lappet-faced Vulture is appropriately considered within the strategic planning framework, while recognising the current limitations of the regional evidence base and the need for detailed site-level verification during subsequent Environmental Impact Assessment (EIA) processes.
Louise Geldenhuys	72	Chapter 2a	22-23		Table 3: Priority species	Lesser flamingoes occurs in large numbers at the Orange River Mouth Estuary - and would fly over the study area to and from the Orange Rivier Mouth - therefore this species can also be seen as a priority species of concern.	**AfriAvian Environmental**: Noted. The potential presence of flamingos within the broader landscape is acknowledged. While these species are not expected to occur regularly within the immediate project area, it is possible that individuals may occasionally move through or fly across the site as part of wider movement patterns in the region. It should, however, be noted that the detailed significance of any potential impacts on flamingos, as well as the need for species-specific mitigation, would be assessed during the site-specific EIA process for each individual proposed project. This process would inform the development of site-specific mitigation measures where necessary, which may include appropriate operational responses such as automated shutdown on demand, depending on the level of risk identified.
Meagan Bromfield	73	Chapter 2a	11		Figure 1	Figure 1 depicts the overlap between the Springbok Renewable Energy Development Zone (REDZ) and the study area; however, this overlap is neither acknowledged nor discussed within the text. REDZs are designated as 'lower-sensitivity' zones intended to streamline renewable energy development approvals. This directly conflicts with the High to Very High avian sensitivity ratings produced by this assessment for much of the same geography.	**AfriAvian Environmental:** Noted. Figure 1 illustrates the spatial overlap between the Namakwa regional study area as it pertains to this SEA and the location of the Springbok Renewable Energy Development Zone (REDZ) in relation to the proposed Boegoebaai Port and SEZ development. As noted, this terrestral avifaunal assessment was undertaken specifically for the Boegoebaai SEA and therefore focuses on green hydrogen and the related development pathways within the broader Namakwa Region, rather than on renewable energy development within the REDZ per se. For this reason, the chapter does not explicitly analyse or interpret the REDZ designation, which falls outside the core scope of WP2. It is important to clarify that REDZs were delineated to streamline renewable energy authorisations based on national-scale sensitivity screening, whereas this assessment applies a finer-resolution, region-specific analysis tailored to the ecological characteristics of the Namakwa landscape and the bird species of conservation concern present. As a result, the avifaunal sensitivity mapping identifies High to Very High sensitivity in portions of the region that overlap with the Springbok REDZ. This does not represent a conflict, but rather reflects the difference in purpose, scale, and methodological resolution between the two planning instruments. The SEA uses the avifaunal sensitivity outputs to inform green hydrogen-related strategic planning, including avoidance-led decision-making where irreversible impacts or fragmentation risks may occur. The presence of a REDZ does not diminish the ecological sensitivity of the Namakwa Region, nor does it override the need for avoidance where species of conservation concern or critical habitats are at risk. Therefore, while the REDZ is acknowledged spatially, the avifaunal sensitivity ratings presented in this avifaunal assessment reflect a region-specific, species-focused evaluation aligned with the SEA's objectives and are therefore appropriate for informing strategic planning within the Namakwa Region.
Meagan Bromfield	74	Chapter 2a	17	25-49		The SABAP2 dataset is acknowledged as likely incomplete for the Northern Cape due to low observer effort. While supplementation through SDMs and BirdLasser data is referenced, we remain concerned that a priority species such as the Lappet-faced Vulture, which is known to occur within the area, has not been included in the assessment.	**AfriAvian Environmental:** This comment is noted. The terrestrial avifaunal assessment did consider Lappet faced Vulture as part of the regional sensitivity analysis. However, this species is poorly represented in available citizen science datasets within the Namakwa Region, and consequently the spatial evidence base for modelling its occurrence is limited. This constraint affects the confidence with which fine scale sensitivity patterns can be mapped at the SEA level. To address this, the assessment incorporated: (1) all known vulture roosts, nests, and colony locations across species, including any verified records within or adjacent to the study area; (2) species distribution models (SDMs) for all vulture species, including Lappet faced Vulture; and (3) regional expert knowledge on habitat associations and potential movement pathways. Lappet faced Vulture was therefore not excluded or overlooked; rather, its limited representation in SABAP2, BirdLasser, and other citizen science datasets means that it does not feature as prominently in the mapped outputs as species with stronger empirical datasets. We acknowledge that recent incidental observations indicate occasional presence in the broader landscape, but the available tracking and observational data are insufficient to reliably quantify or map these patterns at the resolution required for SEA level sensitivity mapping. The SEA adopts a precautionary approach in such cases: (1) areas with potential suitability for wide ranging scavengers are treated conservatively; (2) high risk infrastructure types (e.g., transmission lines) are flagged as requiring project level vulture specific assessment; and (3) any future GH_2 related development will require site level specialist studies, including targeted surveys, to verify vulture use and refine risk assessments. This ensures that Lappet faced Vulture is appropriately considered within the strategic framework, while recognising the current limitations of the regional evidence base.
Meagan Bromfield	75	Chapter 2a	22-23		Table 3	Further to the above concern, Table 3 identifies 44 priority species but does not include the Lappet-faced Vulture. This represents a significant omission. The species is classified as Endangered, has a small and declining southern African population, possibly breeds within the wider Namakwa region, and is highly susceptible to both electrocution and collision impacts associated with power lines and wind turbines. We therefore request that this species be included within the assessment.	**AfriAvian Environmental:**This comment is noted. The terrestrial avifaunal assessment did consider Lappet faced Vulture as part of the regional sensitivity analysis. However, this species is poorly represented in available citizen science datasets within the Namakwa Region, and consequently the spatial evidence base for modelling its occurrence is limited. This constraint affects the confidence with which fine scale sensitivity patterns can be mapped at the SEA level. To address this, the assessment incorporated: (1) all known vulture roosts, nests, and colony locations across species, including any verified records within or adjacent to the study area; (2) species distribution models (SDMs) for all vulture species, including Lappet faced Vulture; and (3) regional expert knowledge on habitat associations and potential movement pathways. Lappet faced Vulture was therefore not excluded or overlooked; rather, its limited representation in SABAP2, BirdLasser, and other citizen science datasets means that it does not feature as prominently in the mapped outputs as species with stronger empirical datasets. We acknowledge that recent incidental observations indicate occasional presence in the broader landscape, but the available tracking and observational data are insufficient to reliably quantify or map these patterns at the resolution required for SEA level sensitivity mapping. The SEA adopts a precautionary approach in such cases: (1) areas with potential suitability for wide ranging scavengers are treated conservatively; (2) high risk infrastructure types (e.g., transmission lines) are flagged as requiring project level vulture specific assessment; and (3) any future GH_2 related development will require site level specialist studies, including targeted surveys, to verify vulture use and refine risk assessments. This ensures that Lappet faced Vulture is appropriately considered within the strategic framework, while recognising the current limitations of the regional evidence base.
Meagan Bromfield	76	Chapter 2a	42	3-5		The proposed cumulative "caps" on development density within avian-sensitive landscapes may be conceptually appropriate; however, they are likely to have limited practical effect unless they are spatially linked to, and enforceable within, development planning and approvals associated with the Springbok REDZ.	**AfriAvian Environmental:** Noted. The terrestrial avifaunal assessment acknowledges that cumulative development "caps" within sensitive landscapes are only meaningful if they are spatially explicit and linked to enforceable planning and authorisation processes. The proposed caps are therefore intended as strategic guidance within the context of the Boegoebaai SEA, signalling thresholds beyond which cumulative habitat fragmentation and avifaunal risk would become unacceptable under the Large GH_2 scenario. It is important to clarify that this avifaunal assessment focuses on green hydrogen–related development in the Namakwa Region, not on renewable energy development within the Springbok REDZ. While portions of the REDZ overlap spatially with the SEA study area, the REDZ framework operates under a separate national-level policy instrument with its own screening and approval processes. The avifaunal sensitivity findings presented here do not alter the REDZ designation but provide finer-resolution, region-specific ecological evidence that should inform any future planning or authorisation decisions within overlapping areas. Within this SEA, the cumulative caps are linked to: (1) the regional avifaunal sensitivity mapping and scenario-level risk ratings; (2) identification of high-risk avifaunal habitats and movement corridors where avoidance is required; and (3) strategic spatial planning recommendations that guide where development should be limited or excluded. Although the SEA cannot directly amend or regulate the REDZ framework, the sensitivity outputs and cumulative thresholds provide a strong evidence base for competent authorities to apply avoidance-led decision-making during site-specific environmental authorisation processes, including within areas designated as lower-sensitivity for renewable energy at the national scale. Therefore, the cumulative caps are designed to support strategic, enforceable avoidance within the SEA's planning domain, while also providing ecologically robust inputs that can inform decision-making in overlapping REDZ areas where avifaunal sensitivity is higher than previously recognised.
Meagan Bromfield	77	Chapter 2a	43	24-26		The document repeatedly references Population Viability Analysis (PVA) as a recommended tool for monitoring and adaptive management, but no PVA is actually undertaken for any species as part of this assessment. For Endangered species such as Lappet-faced Vulture populations within the Namakwa region, which likely represent an important proportion of the national population, the inclusion of a PVA as part of the risk assessment process, rather than deferring it to post-construction monitoring, would substantially strengthen the defensibility of both the assigned risk ratings and the proposed mitigation thresholds.	**AfriAvian Environmental:** Thank you for the comment. We agree that Population Viability Analysis (PVA) is a powerful tool for assessing population-level risk, particularly for Endangered species such as Lappet-faced Vulture, whose regional populations may represent an important proportion of the national total. However, it is important to clarify that PVA did not form part of the scope of work for WP2 of the SEA. The terrestrial avifaunal assessment was designed as a strategic, regional-scale desktop study, focused on identifying broad sensitivity patterns, cumulative risk drivers, and avoidance priorities for green hydrogen development in the Namakwa Region. While the assessment references PVA as a recommended tool for long-term monitoring and adaptive management, undertaking a defensible PVA requires: (1) detailed demographic parameters (survival, fecundity, recruitment); (2) multi-year carcass detection and fatality data; (3) verified information on local population structure and movement ecology; and (4) robust baseline estimates of population size and trend. These data are not currently available for most priority species in the Namakwa Region, including Lappet-faced Vulture, and cannot be reliably inferred from the limited regional datasets available at the SEA stage. For this reason, the SEA emphasises that PVA is most appropriately undertaken at the project-level, once site-specific field data, verified occurrence records, and post-construction monitoring information become available. This ensures that any PVA is based on defensible empirical inputs rather than speculative assumptions. The SEA's role is therefore to: (1) identify where avoidance is required due to non-mitigable or population-level risks; (2) highlight species for which PVA would be a valuable tool during EIA and operational phases; and (3) provide a strategic framework that guides project-level studies toward the most critical species and impact pathways. Therefore, while a PVA would indeed strengthen population-level risk evaluation for species such as Lappet-faced Vulture, it falls outside the scope and data availability of WP2. The SEA instead provides the strategic foundation upon which future, site-specific PVAs can be meaningfully developed.
Meagan Bromfield	78	Chapter 2a	44-45	Section 9		The conclusions do not reference the REDZ designation, nor do they address the apparent conflict between REDZ status and the High to Very High avifaunal sensitivity findings presented in this assessment. This omission represents a key gap in the interpretive guidance provided by the Avifaunal SEA.	**AfriAvian Environmental:** Noted. The terrestrial avifaunal assessment acknowledges that portions of the Namakwa regional study area overlap spatially with the Springbok Renewable Energy Development Zone (REDZ). As noted in the chapter, this avifaunal assessment was undertaken specifically for the Boegoebaai SEA, with a focus on green hydrogen–related development pathways in the Namakwa Region. It did not assess the REDZ designation or its national-scale screening rationale, as these fall outside the scope of WP2 of this SEA. The apparent discrepancy between the REDZ's national-level "lower-sensitivity" designation and the High to Very High avifaunal sensitivity identified in this avifaunal assessment reflects differences in scale, purpose, and methodological resolution: (1) REDZs were delineated using broad-scale national screening to streamline renewable energy approvals, not to evaluate green hydrogen infrastructure or cumulative industrialisation scenarios; (2) the SEA applies a strategic-level, finer-resolution, region-specific analysis tailored to the ecological characteristics of the Namakwa landscape and the distribution of threatened and endemic species; and (3) the Namakwa Region is recognised as an area of exceptionally high avifaunal sensitivity, and this is reflected in the SEA's mapping irrespective of national-level REDZ classifications. The conclusions of the avifaunal assessment therefore rely on the best available regional evidence, and the sensitivity outputs are intended to guide avoidance-led strategic planning for green hydrogen development. While the SEA cannot amend or reinterpret the REDZ framework, the findings provide an important ecological evidence base that can inform competent authorities when considering development proposals within areas where REDZ boundaries and high avifaunal sensitivity overlap.

Meagan Bromfield	79	Chapter 2a	Annexure A	50-52	Table	The species–impact scoring table in Annexure A does not include the Lappet-faced Vulture. Given its well-documented high susceptibility to electrocution (with vultures among the most electrocution-vulnerable raptors in southern Africa due to their large wingspans and tendency to perch on pylons) as well as collision risk with powerlines and wind turbines, its omission from the weighted scoring framework is likely to result in an underestimation of overall avifaunal sensitivity, particularly within the collision and electrocution impact layers. We therefore request that this species be included in the assessment.	**AfriAvian Environmental:** This comment is noted. The terrestrial avifaunal assessment did consider Lappet faced Vulture as part of the regional sensitivity analysis. However, this species is poorly represented in available citizen science datasets within the Namakwa Region, and consequently the spatial evidence base for modelling its occurrence is limited. This constraint affects the confidence with which fine scale sensitivity patterns can be mapped at the SEA level. To address this, the assessment incorporated: (1) all known vulture roosts, nests, and colony locations across species, including any verified records within or adjacent to the study area; (2) species distribution models (SDMs) for all vulture species, including Lappet faced Vulture; and (3) regional expert knowledge on habitat associations and potential movement pathways. Lappet faced Vulture was therefore not excluded or overlooked; rather, its limited representation in SABAP2, BirdLasser, and other citizen science datasets means that it does not feature as prominently in the mapped outputs as species with stronger empirical datasets. We acknowledge that recent incidental observations indicate occasional presence in the broader landscape, but the available tracking and observational data are insufficient to reliably quantify or map these patterns at the resolution required for SEA level sensitivity mapping. The SEA adopts a precautionary approach in such cases: (1) areas with potential suitability for wide ranging scavengers are treated conservatively; (2) high risk infrastructure types (e.g., transmission lines) are flagged as requiring project level vulture specific assessment; and (3) any future GH_2 related development will require site level specialist studies, including targeted surveys, to verify vulture use and refine risk assessments. This ensures that Lappet faced Vulture is appropriately considered within the strategic framework, while recognising the current limitations of the regional evidence base.
Natural Justice	80	Chapter 2a	2A-2	15-21		The chapter correctly identifies the Namakwa Region as an area of high avifaunal sensitivity, including habitat for threatened and endemic bird species. The SEA should identify strategic avoidance areas where infrastructure development may result in irreversible habitat fragmentation or unacceptable impacts on species of conservation concern.	**AfriAvian Environmental:** Noted. The terrestrial avifaunal assessment acknowledges that the Namakwa Region supports a concentration of threatened, endemic, and habitat-specialist bird species, and is therefore an area of inherently high ecological sensitivity. In line with this, the sensitivity mapping and species-specific risk layers were developed to inform strategic avoidance at the SEA level, rather than relying solely on project-level mitigation. The assessment identifies high-sensitivity habitats, breeding and concentration areas, and key movement corridors where infrastructure development would likely result in irreversible habitat fragmentation or unacceptable impacts on species of conservation concern. These areas have been incorporated into the regional sensitivity layers and scenario-level risk ratings provided to the SEA team. Their purpose is to guide the early delineation of strategic avoidance zones, consistent with the mitigation hierarchy under section 2(4)(a) of NEMA, where avoidance is the only defensible response. While project-level impact assessments will refine micro-siting and assess detailed mitigation options, the SEA already integrates these avifaunal sensitivity outputs to ensure that areas of highest ecological importance are safeguarded through avoidance-led spatial planning at the strategic stage. **Bios Diversitas Consultants:** Cross-theme fauna response: noted. For Chapter 2c, Very High sensitivity areas, SCC habitats, threatened ecosystem remnants and ecological corridors should be treated as strategic avoidance or highly constrained areas where infrastructure may cause irreversible fragmentation or unacceptable residual impacts. No amendment to the fauna report is required.
Natural Justice	81	Chapter 2a	2A-17 to 2A-18	29-49; 1-18		The assessment should clarify the extent to which avifaunal sensitivity mapping and species occurrence records are based on field verification versus desktop modelling and existing datasets. This distinction materially affects the reliability of strategic planning conclusions	**AfriAvian Environmental:** Noted. The terrestrial avifaunal assessment entails a desktop based study where the avifaunal sensitivity mapping draws on a combination of available high-resolution modelled outputs and existing datasets - sources that include SABAP2 and birdLasser records, regional biodiversity plans, habitat-suitability layers, and expert-derived species distribution information. This data sources is then further informed by expert specialist knowledge of the study area, and the chapter acknowledges this distinction because it influences the confidence levels associated with different spatial outputs. The assessment reflects these differing data foundations through: (1) confidence ratings applied to sensitivity criteria; (2) conservative assumptions where field verification was not possible; and (3) precautionary treatment of areas where desktop data indicate potential use by species of conservation concern. This blended approach is consistent with the strategic nature of an SEA, where regional-scale planning decisions must be informed by the best available evidence while acknowledging data limitations. The distinction between available desktop datasets and modelled information versus the absence of field-verified data at this SEA level has therefore been incorporated into the interpretation of sensitivity outputs and the formulation of scenario-level planning recommendations.
Natural Justice	82	Chapter 2a	2A-25 to 2A-35	Mapped outputs throughout section	Figures 6-11	Sensitive habitats and avifaunal movement corridors identified in the mapping should be incorporated into strategic avoidance planning at SEA level rather than deferred primarily to project-level mitigation measures.	**AfriAvian Environmental:** Noted. The terrestrial avifaunal assessment agrees that sensitive habitats and movement corridors should inform avoidance-led planning at the SEA level rather than being deferred to project-level mitigation. In line with the mitigation hierarchy under section 2(4)(a) of NEMA, the chapter's sensitivity mapping and species-specific risk layers were developed specifically to guide strategic spatial planning decisions before detailed infrastructure design occurs. The assessment identifies very high and high-sensitivity habitats, breeding and roosting areas, and key movement corridors where fragmentation or displacement would result in unacceptable or irreversible ecological impacts. These areas have been incorporated into the regional sensitivity layers and scenario-level risk ratings provided to the SEA team. Their purpose is to support the early delineation of zones where development should be avoided outright, thereby reducing reliance on project-level mitigation measures that cannot address permanent habitat loss or cumulative fragmentation. While project-level impact assessments will refine micro-siting and implement detailed robust mitigation, the SEA already integrates these avifaunal sensitivity outputs to ensure that strategic avoidance is embedded in the spatial planning framework from the outset. **Bios Diversitas Consultants:** Cross-theme fauna response: noted. Sensitive habitats and movement corridors should inform strategic avoidance planning and should not be deferred solely to project-level mitigation. No amendment to the fauna report is required.
Natural Justice	83	Chapter 2a	2A-12 to 2A-17	14–20; 14–19; 47–49		The chapter correctly identifies transmission infrastructure as a major avifaunal risk driver. The SEA should assess the cumulative implications of expanded transmission infrastructure associated with hydrogen production, renewable energy development and regional industrialisation under the Large GH_2 scenario	**AfriAvian Environmental:** Noted. The terrestrial avifaunal assessment acknowledges that transmission infrastructure is one of the most significant risk drivers for birds in the Namakwa Region, particularly for large raptors, bustards, and other species vulnerable to collision and electrocution. In line with this, the chapter considers transmission development not only as a project-level impact pathway but as a major contributor to cumulative ecological pressure under the Large GH_2 scenario. While the precise alignment and extent of future transmission corridors cannot be finalised at the SEA stage, the assessment evaluates cumulative implications at a regional scale by: (1) incorporating existing and planned grid infrastructure into the sensitivity analysis; (2) identifying species and habitats most vulnerable to expanded transmission networks; (3) assessing how additional grid build-out associated with hydrogen production, renewable energy expansion, and regional industrialisation may intensify collision and fragmentation risks; and (4) highlighting areas where cumulative transmission-related impacts could exceed acceptable ecological thresholds. These cumulative considerations have been integrated into the scenario-level risk ratings and spatial sensitivity layers provided to the SEA team. This ensures that the SEA's strategic planning outputs reflect the broader implications of expanded transmission infrastructure and guide the avoidance of high-risk areas before detailed routing and project-level design occur.
Natural Justice	84	Chapter 2a	2A-15 to 2A-16	35–40; 1–9		The assessment should more clearly distinguish between impacts capable of mitigation and impacts associated with permanent habitat loss, displacement and cumulative ecological fragmentation. Mitigation measures such as line marking may reduce some impacts but do not eliminate cumulative habitat transformation.	**AfriAvian Environmental:** Noted. The terrestrial avifaunal assessment recognises the importance of distinguishing between impacts that can be meaningfully mitigated and those that result in permanent habitat loss, displacement, or cumulative ecological fragmentation. While certain operational or design-stage measures—such as line marking, micro-siting, and disturbance buffers—can reduce specific risks (e.g., collision/electrocution likelihood or localised disturbance), they do not reverse or offset the broader transformation of habitat associated with large-scale infrastructure development. Accordingly, the chapter differentiates between: (1) Mitigable impacts, where risk can be reduced to acceptable levels through micro-siting, design optimisation, operational controls, or technology-based measures; and (2) Non-mitigable or residual impacts, where habitat loss, fragmentation, or displacement would be permanent and where cumulative effects may compromise regional ecological functioning. In line with section 2(4)(a) of NEMA and the mitigation hierarchy, the assessment identifies circumstances where avoidance—not mitigation—is the only defensible response. These include high-sensitivity habitats, breeding or roosting areas for species of conservation concern, and movement corridors where fragmentation would have irreversible ecological consequences. These distinctions have been incorporated into the sensitivity mapping and scenario-level risk ratings provided to the SEA team, ensuring that areas subject to permanent or cumulative ecological loss are treated as requiring avoidance at the strategic planning stage. **Bios Diversitas Consultants:** Cross-theme fauna response: noted. For fauna, impacts that can be reduced through design and management should be distinguished from impacts that are effectively irreversible, such as permanent habitat transformation, corridor severance and loss of confirmed SCC habitat. No amendment to the fauna report is required.
Natural Justice	85	Chapter 2a	2A-30 to 2A-35	Mapped sensitivity outputs	Figures 7–11	The SEA should identify whether projected infrastructure corridors overlap with critical avifaunal habitats, breeding areas or migratory pathways and whether these overlaps may compromise regional ecological connectivity.	**AfriAvian Environmental:** Noted. The terrestrial avifaunal assessment has evaluated the potential overlap between indicative infrastructure corridors associated with the Large GH_2 scenario and areas of high avifaunal sensitivity, including priority habitats, known or likely breeding areas/nest sites, and key movement or migratory pathways. Because final infrastructure alignments remain uncertain at the SEA stage, the analysis focuses on spatial coincidence at a regional scale rather than on project-specific routing. The sensitivity mapping and species-specific risk layers highlight where such overlaps could compromise ecological connectivity—particularly in relation to movement corridors used by large raptors, bustards, and other wide-ranging/migratory species of conservation concern. These findings have been provided to the SEA team to inform the strategic spatial planning process, ensuring that corridor placement avoids areas where connectivity is most vulnerable to fragmentation or collision risk. While detailed avoidance and micro-siting will be refined during project-level impact assessments, the SEA outputs already identify where proposed infrastructure corridors intersect with critical avifaunal features and where such overlaps would pose an unacceptable risk to regional ecological connectivity. **Bios Diversitas Consultants:** Cross-theme fauna response: noted. For fauna, impacts that can be reduced through design and management should be distinguished from impacts that are effectively irreversible, such as permanent habitat transformation, corridor severance and loss of confirmed SCC habitat. No amendment to the fauna report is required.
Natural Justice	86	Chapter 2a	2A-13	9-13		The SEA should more clearly assess coastal and marine avifaunal sensitivity associated with increased shipping activity, industrial lighting, port infrastructure and coastal disturbance linked to the Boegoebaai Port development.	**AfriAvian Environmental:** As noted in the chapter, the WP2 Terrestrial Avifaunal Assessment focuses specifically on inland and terrestrial bird species and habitats within the Namakwa regional study area. Coastal and marine avifaunal sensitivity—particularly in relation to shipping activity, industrial lighting, port infrastructure and coastal disturbance—falls within the scope of the separate marine and coastal specialist studies commissioned under the SEA. To ensure integration across themes, the terrestrial avifaunal assessment has highlighted where inland species of conservation concern may interact with coastal processes (e.g., wide-ranging raptors, large terrestrial migrants, and for example wetland species also using coastal foraging zones). The SEA team is incorporating these linkages into the cumulative sensitivity and scenario-level risk synthesis. It is believed that these findings will be integrated with the terrestrial avifaunal outputs in the SEA's spatial planning and cumulative impact framework. In this way, the SEA will provide a coherent, cross-ecosystem assessment of avifaunal sensitivity associated with the Boegoebaai Port development and related GH_2 activities.
Natural Justice	87	Chapter 2a	2A-42 to 2A-43	8-22		Several mitigation measures rely on future infrastructure siting and project-level design controls. The SEA should clarify which impacts are considered unacceptable even after mitigation and therefore require avoidance in accordance with the mitigation hierarchy under section 2(4)(a) of NEMA.	**AfriAvian Environmental:** Noted. The avifaunal assessment recognises that several mitigation measures—particularly those relating to collision and electrocution risk, disturbance buffers, and habitat fragmentation—depend on the eventual siting and design of project-level infrastructure. In accordance with section 2(4)(a) of NEMA and the mitigation hierarchy, the chapter therefore differentiates between impacts that can be reduced through design-stage controls and those that remain unacceptable even after the full suite of feasible mitigation is applied. At the strategic level, the assessment identifies circumstances where avoidance is the only defensible option. These include: (1) areas supporting threatened or range-restricted species where habitat loss or fragmentation would result in irreversible ecological consequences; (2) high-sensitivity movement corridors or concentration areas where collision and/or electrocution risk cannot be reduced to an acceptable level through operational or technological mitigation; and (3) locations where cumulative pressures under the Large GH_2 scenario are already approaching ecological thresholds, such that any additional impact would compromise regional population viability. These avoidance requirements have been incorporated into the regional sensitivity layers and scenario-level risk ratings provided to the SEA team. While detailed project-level design will refine the application of mitigation measures, the SEA outputs clearly indicate where impacts remain unacceptable and must be avoided outright in line with the mitigation hierarchy. **Bios Diversitas Consultants:** Cross-theme fauna response: noted. Mitigation uncertainty should be handled through a precautionary approach. Residual high or very high risk in Very High sensitivity areas should trigger avoidance or a no-go outcome unless project-level evidence demonstrates otherwise. No amendment to the fauna report is required.
Natural Justice	88	Chapter 2a	2A-19	7–20		The chapter acknowledges uncertainty regarding future infrastructure placement and cumulative development intensity. In light of these uncertainties, the SEA should adopt a more precautionary approach consistent with section 2(4)(a)(vii) of NEMA, particularly where impacts on threatened or highly sensitive species may be irreversible.	**AfriAvian Environmental:** Noted. The terrestrial avifaunal assessment recognises the inherent uncertainty associated with future infrastructure siting, sequencing, and cumulative development intensity under the Large GH_2 scenario. In line with section 2(4)(a)(vii) of NEMA, the assessment has therefore adopted a precautionary approach where data gaps or spatial uncertainties intersect with high-sensitivity species or habitats. This precautionary approach is reflected in several aspects of the chapter: (1) sensitivity mapping that errs on the side of ecological protection where species of conservation concern may occur or where habitat suitability is high; (2) conservative assumptions regarding potential collision, disturbance, and fragmentation risk in areas where infrastructure footprints cannot yet be spatially resolved; and (3) cumulative risk characterisation that highlights where irreversible impacts could arise if development intensity exceeds ecological thresholds, even if precise infrastructure layouts remain unknown. While the SEA cannot pre-empt detailed project-level design, the precautionary framing has been integrated into the regional sensitivity layers and scenario-level risk ratings provided to the SEA team. These outputs ensure that, in the face of uncertainty, areas important for threatened or highly sensitive bird species are treated with heightened caution in the strategic planning process. **Bios Diversitas Consultants:** Cross-theme fauna response: noted. Where future infrastructure placement is uncertain, Chapter 2c inputs should be used conservatively and site-level verification should be required before approval. No amendment to the fauna report is required.
Natural Justice	89	Chapter 2a	2A-38 to 2A-40	Risk assessment discussion		The SEA should clarify whether cumulative impact thresholds for species of conservation concern were assessed regionally under the Large GH_2 scenario rather than primarily at individual infrastructure scale.	**AfriAvian Environmental:** Noted. The terrestrial avifaunal assessment distinguishes between two analytical scales: (1) project- or infrastructure-level impact pathways, and (2) regional-scale cumulative pressures relevant to the Large GH_2 development scenario. While the specialist chapter necessarily evaluates direct impacts at the scale of individual infrastructure components (e.g., footprint loss, disturbance, collision risk), the assessment of cumulative thresholds for species of conservation concern was undertaken at the broader Namakwa regional scale, consistent with the SEA's mandate. Specifically, the study considers how the Large GH_2 scenario may interact with existing and foreseeable pressures—habitat transformation, fragmentation, climate-related stressors, and other energy-sector developments—to influence regional population viability and ecological resilience. Although quantitative thresholds (e.g., maximum tolerable mortality or habitat loss) cannot be robustly defined for all priority species due to data limitations, the assessment identifies where cumulative risk is likely to exceed acceptable ecological limits based on species' sensitivity, distribution, and known vulnerability to infrastructure. These regional findings have been provided to the SEA team to inform scenario-level risk characterisation and spatial planning. In summary, cumulative impacts were not assessed solely at the infrastructure scale; they were evaluated within a regional framework aligned with the Large GH_2 scenario, with the results integrated into the SEA's higher-level synthesis. **Bios Diversitas Consultants:** Cross-theme fauna response: noted. Cumulative thresholds for SCC and sensitive habitats should be developed through downstream planning once project footprints are known. Until then, Very High sensitivity areas and ecological corridors should be treated conservatively. No amendment to the fauna report is required.
Natural Justice	90	Chapter 2a	2A-41 to 2A-44	Management section		The SEA should integrate avifaunal sensitivity findings more directly into strategic spatial planning recommendations, including identifying areas unsuitable for infrastructure expansion due to cumulative ecological sensitivity and fragmentation risk.	**AfriAvian Environmental:** Noted. The terrestrial avifaunal sensitivity findings generated through this assessment are indeed intended to inform higher-level spatial planning decisions within the SEA process. The specialist study identifies areas of elevated ecological sensitivity, collision risk, and fragmentation vulnerability, and these outputs have been provided in a format suitable for integration into the SEA's spatial planning tools and decision-support layers. At the SEA level, the synthesis of these sensitivity layers, together with other biophysical and socio-economic constraints, supports the identification of zones where infrastructure expansion would pose disproportionate ecological risk. This includes areas where cumulative pressures, landscape fragmentation, or the presence of priority species and habitats render development strategically unsuitable. While the specialist chapter does not itself designate "no-go" areas, it provides the evidence base required for the SEA team to delineate such zones within the broader spatial framework. Therefore, the avifaunal assessment has been structured to feed directly into strategic spatial planning recommendations, and the integration of these findings into the SEA's cumulative sensitivity mapping will ensure that areas of high avifaunal importance are appropriately safeguarded in the final spatial planning outputs. **Bios Diversitas Consultants:** Cross-theme fauna response: noted. Fauna sensitivity findings should inform strategic siting, exclusion zones and corridor planning for renewable energy and associated infrastructure. No amendment to the fauna report is required.
Natural Justice	91	Chapter 2a	2A-44	Conclusion section		A recurring concern throughout the chapter is that avifaunal impacts are frequently discussed at individual infrastructure level rather than as cumulative regional ecological pressures associated with simultaneous industrialisation, renewable energy expansion and transmission infrastructure growth. Greater emphasis should therefore be placed on cumulative habitat fragmentation, ecological connectivity and avoidance-based strategic planning.	**AfriAvian Environmental:** Noted. The terrestrial avifaunal assessment acknowledges that while individual infrastructure components (e.g., turbines, transmission lines, roads, industrial facilities) each present discrete impact pathways, the most significant ecological risks in the Namakwa Region arise from their combined, landscape-scale effects. For this reason, the chapter evaluates avifaunal impacts not only at the infrastructure level but also as cumulative regional pressures associated with simultaneous industrialisation, renewable energy expansion, and transmission network growth under the Large GH_2 scenario. The assessment places particular emphasis on: (1) cumulative habitat fragmentation, where multiple developments collectively erode habitat integrity beyond what any single project would cause; (2) regional ecological connectivity, especially for wide-ranging raptors, bustards, and other species of conservation concern whose movement corridors are vulnerable to incremental disruption; and (3) avoidance-based strategic planning, consistent with the mitigation hierarchy, to ensure that very high and high-sensitivity habitats and movement pathways are safeguarded before project-level design occurs. These cumulative considerations have been incorporated into the regional sensitivity mapping and scenario-level risk ratings provided to the SEA team. The purpose of these outputs is to guide strategic avoidance and spatial planning decisions at the SEA level, reducing reliance on project-level mitigation measures that cannot address permanent or landscape-scale ecological change. **Bios Diversitas Consultants:** Cross-theme fauna response: noted. Cumulative fragmentation and isolation risks should not be addressed only at project scale; they should also be considered at regional planning and SEA implementation level. No amendment to the fauna report is required.

Samantha Ralston-Paton	92	Chapter 2a	1–5	1–35	Executive Summary	The WP2 avifaunal assessment was conducted entirely via desktop analysis, integrating SABAP2 atlas data and species distribution models (SDMs). This may be appropriate at a strategic, regional scale. However, we recommend that the implications for decision-making be more clearly stated in the SPM. Avifaunal specialist studies, including fieldwork, are a necessary part of EIA processes for GH_2-related infrastructure. The SEA does not substitute for site-level data collection and sensitivity verification.	**AfriAvian Environmental:** Noted. We agree with the concern raised. As noted in the chapter, the WP2 terrestrial avifaunal assessment was undertaken as a desktop-based, regional-scale analysis, drawing primarily on SABAP2 data, species distribution models, and other supplementary datasets. This approach is appropriate for an SEA, where the objective is to identify broad spatial patterns of sensitivity, cumulative risk, and avoidance priorities rather than to provide site-specific verification. We concur that the implications of this methodological scope should be clearly stated in the SPM. In particular, the SEA does not replace the need for detailed, project-level, site-specific avifaunal specialist studies. Any GH_2-related infrastructure proposed within the Namakwa Region will still require: (1) comprehensive field surveys to confirm species presence, habitat use, and movement patterns; (2) site-level sensitivity verification, including micro-siting constraints; and (3) project-specific impact assessment, including collision-risk evaluation, disturbance analysis, and cumulative impact screening. The SEA's desktop outputs are therefore intended to guide strategic avoidance and early infrastructure planning, not to serve as a substitute for the rigorous field-based assessments required during EIAs. This distinction must be emphasised more explicitly in the SPM to ensure that decision-makers understand both the value and the limitations of the SEA-level avifaunal sensitivity mapping.
Samantha Ralston-Paton	93	Chapter 2a	22	All	Table 3	Species prioritisation: We recommend that the species priority list and weighting framework be strengthened by placing greater emphasis on demographically vulnerable species (in relation to wind energy and powerline fatalities) and habitat specialists (e.g. Red Lark and Sclater's Lark, in relation to solar energy).	**AfriAvian Environmental:** Noted. We appreciate this comment. However, we consider that the species prioritisation and weighting approach applied in this study already gives appropriate and sufficient consideration to both demographically vulnerable species and habitat specialists, and that these factors are adequately reflected in the resulting sensitivity maps. The framework does not rely solely on conservation status, but incorporates multiple lines of ecological relevance, including species' spatial patterns of occurrence, range restriction, habitat association, and the broader implications of species-specific vulnerability. In relation to wind energy and powerline fatalities, species known to be vulnerable at the demographic level are already inherently prioritised through the weighting framework, because the approach recognises that risk is not uniform across taxa and that the consequences of additional mortality are greater for species with life-history traits such as low reproductive output, long generation times, and poor resilience to adult mortality. Similarly, in the context of solar energy, habitat specialists such as Red Lark and Sclater's Lark are already effectively captured through the inclusion of habitat-linked distribution patterns and ecological specificity within the modelling and weighting process. Accordingly, we are satisfied that the current prioritisation framework provides a robust basis for identifying areas of elevated avifaunal sensitivity across the study area. The integration of multiple species distribution models, together with species-specific weighting informed by ecological and conservation-related considerations, ensures that the sensitivity map is responsive both to species vulnerable to direct mortality and to those sensitive to habitat transformation. For this reason, we consider the existing approach to be sufficiently precautionary and scientifically defensible, and capable of producing a robust sensitivity surface without requiring substantive amendment.
Samantha Ralston-Paton	94	Chapter 2a	22	All	Table 3	Migratory species: As South Affrica is a signatory to the Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA), consideration should also be given to prioritising migratory birds in the SEA process. The SEA should also reflect the significance of AEWA (and other MEAs) in the context of the various development scenarios.	**AfriAvian Environmental:** We acknowledge this comment and agree that South Africa's obligations under the Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA), as well as other relevant multilateral environmental agreements (MEAs), are important considerations in the SEA process. In this regard, migratory bird species, particularly waterbirds of conservation concern, were taken into account within the specialist assessment to the extent relevant to the study area and the nature of the development scenarios being considered. The SEA is, by design, a strategic-level screening and planning tool, and therefore focuses on identifying broad patterns of environmental sensitivity rather than providing a species-by-species assessment for all potentially affected taxa. Within this context, the significance of AEWA and other MEAs is recognised principally through the identification and avoidance of areas that may support important habitats, movement corridors, or concentrations of sensitive avifauna. For migratory waterbirds in particular, this is most likely to be relevant in relation to wetlands, inland water bodies, estuaries, and other aquatic habitats that may provide stopover, foraging, or seasonal refuge functions. Accordingly, while AEWA-listed and other migratory species are relevant to the SEA, their sensitivity is not expected to be uniform across all development scenarios, but rather to depend on the spatial overlap between proposed development areas and habitats of functional importance to these species. Where such overlap may occur, the relevance of AEWA and associated MEAs becomes more significant and should be addressed explicitly in subsequent project-level EIAs. We therefore consider that the SEA appropriately acknowledges the strategic importance of these agreements, while allowing for more detailed, site-specific evaluation of migratory bird risks and obligations at the individual development application stage.
Samantha Ralston-Paton	95	Chapter 2a	36–41	All	Table 6	RESIDUAL RISK REMAINS VERY HIGH UNDER SCENARIO 2 — POTENTIAL FATAL FLAW Table 6 demonstrates that, even with best-practice mitigation, the following impact pathways retain a HIGH or VERY HIGH risk rating in Very High and High sensitivity environments under Scenario 2 ("Big GH_2"): • Habitat loss / fragmentation — VERY HIGH (with mitigation) in Very High sensitivity areas. • Collision with wind infrastructure — VERY HIGH (with mitigation) in Very High sensitivity areas. • Electrocution on powerlines — VERY HIGH (with mitigation) in Very High and High sensitivity areas. BirdLife SA is of the opinion that these residual risk levels are not compatible with responsible development in a globally significant biodiversity hotspot, nor is it reasonable to claim that hydrogen produced under these scenarios is "green". We recommend that the SPM explicitly state that residual VERY HIGH risk ratings in Very High sensitivity areas constitute a potential fatal flaw for Scenario 2 development in those areas, and that environmental authorisations should not be issued in these areas without robust evidence that the risks can be reduced to an acceptable level.	**AfriAvian Environmental:** Thank you for this comment. We are in agreement with the BLSA's opinion contained in their comment and are in support of their associated recommendation.
Samantha Ralston-Paton	96	Chapter 2a	23	6	Figure? Section 6.3	Figure number is missing.	**AfriAvian Environmental:** Noted. Figure numbering and referecing in Chapter 2a have been corrected.
Samantha Ralston-Paton	97	Chapter 2a	41	1-21	Setion 7.5	With regard to "Recommended Management Responses for Risk Categories", we suggest adding the following: - turbine design (incl. height of blade fip from ground), - cut-in speed, and - turbine layout (e.g. not perpendicular to flight paths).	**AfriAvian Environmental:** Noted. Section 7.5 in Chapter 2a has been updated to include the additions as suggested. **Bios Diversitas Consultants:** Cross-theme fauna response: noted. Risk-category management responses should be applied as decision triggers for fauna: high residual risk in sensitive habitats should require avoidance, redesign or further site-level verification. No amendment to the fauna report is required.
Samantha Ralston-Paton	98	Chapter 2a	41-42	32-5	Section 8.1	We suggest that this section include more specific details (e.g. recommended buffers) regarding spatial controls.	**AfriAvian Environmental:** The comment is acknowledged. However, in our specialist opinion, it would not be appropriate to prescribe specific recommended buffer distances within the context of a strategic environmental assessment (SEA). Spatial controls at SEA level are intended to provide broad guidance on areas of elevated sensitivity and development constraint, rather than fixed, species-specific setback requirements. The suitability and extent of such buffers can vary considerably depending on the species concerned, the type of development proposed, the habitat context, local topography, and the nature and intensity of anticipated impacts. At the scale of an SEA, applying uniform or prescriptive buffer distances may therefore be misleading, as it could imply a level of precision and transferability that is not supported across all landscapes and scenarios. In many cases, appropriate buffers require detailed consideration of site-specific ecological features, species presence, species behaviour, seasonality, habitat use, and the latest available empirical evidence. These factors are more appropriately assessed at the project-specific level, where the location, layout, and impact pathways of a proposed development can be evaluated in sufficient detail. For this reason, we consider it more appropriate for the SEA to identify no-go areas, areas of elevated sensitivity, and zones where heightened caution or specialist input will be required, rather than prescribing fixed spatial buffers at this stage. This approach maintains the strategic intent of the SEA while allowing subsequent project-level assessments to determine scientifically defensible and context-appropriate setback distances where these are warranted. **Bios Diversitas Consultants:** Cross-theme fauna response: noted. Specific buffers, corridor widths and management prescriptions require site-specific verification and should be confirmed during project-level EIA/EMPr processes. No amendment to the fauna report is required.
Samantha Ralston-Paton	99	Chapter 2a	42	3-5	Section 8.1	We would have liked to see a discussion of how much development could be sustained within the "cumulative lower sensitivity areas" without significant negative impacts. In other words, what scale of development could be accommodated without raising a red flag or fatal flaw due to cumulative negative impacts?	**AfriAvian Environmental:** Noted. The terrestrial avifaunal assessment acknowledges the importance of understanding how much development could be accommodated within the "cumulative lower sensitivity areas" before significant negative impacts arise. At the SEA scale, however, it is not possible or scientifically defensible to define a precise quantitative development threshold, as cumulative ecological responses depend on the eventual configuration, technology, spacing, and timing of multiple infrastructure components across the landscape. Instead, the avifaunal assessment provides a relative cumulative sensitivity framework that identifies where development is more likely to remain compatible with ecological functioning, and where cumulative risks would escalate rapidly. Within the lower-sensitivity areas, the SEA concludes that development may be feasible provided that: (1) infrastructure is spatially dispersed rather than clustered; (2) key movement corridors and localised very high and high-risk features are avoided; (3) transmission routing does not introduce new fragmentation nodes; and (4) project-level site-specific screening confirms the absence of species-specific constraints. The SEA therefore does not prescribe a fixed "cap" or numerical limit, but rather establishes the conditions under which development density remains ecologically tolerable. If these conditions cannot be met, or if multiple developments begin to erode connectivity or introduce new collision/electrocution-risk concentrations, the assessment indicates that a "red flag" or fatal-flaw threshold would be approached. This approach is consistent with the strategic nature of the SEA, which is intended to guide avoidance-led spatial planning rather than pre-empt detailed project-level cumulative impact modelling. The sensitivity mapping and scenario-level risk ratings provide the framework within which competent authorities can evaluate whether proposed development in lower-sensitivity areas remains within acceptable cumulative limits. **Bios Diversitas Consultants:** Cross-theme fauna response: noted. The sustainable level of development cannot be quantified for fauna without confirmed footprints, but cumulative habitat loss, corridor fragmentation and SCC habitat displacement should be assessed before additional approvals. No amendment to the fauna report is required.
Samantha Ralston-Paton	100	Chapter 2a	43	14-26	Section 8.4	With regard to post-construction monitoring, we recommend that this section include a discussion of: - any potential constraints to post-construction fatality monitoring in the environment (e.g. due to accessibility) and - any area- or species-specific impacts that should be monitored above and beyond standard monitoring requirements.	**AfriAvian Environmental:** Noted. Section 8.4 in Chapter 2a has been updated to include the additions as suggested. **Bios Diversitas Consultants:** Cross-theme fauna response: noted. Post-construction monitoring should include fauna where relevant, particularly roadkill, fencing/barrier effects, rehabilitation success, SCC presence and corridor functionality. This should be built into project EMPr and monitoring requirements. No amendment to the fauna report is required.
Natural Justice	101	Chapter 2b	2B-3	5-17		The chapter correctly identifies the Namakwa Region as supporting sensitive bat assemblages associated with arid ecosystems and ecological corridors. The SEA should identify strategic avoidance areas where infrastructure development may result in irreversible habitat fragmentation or disruption of key movement corridors.	**Animalia Consultants:** Thank you for your comment. Key movement corridors for bats are unknown. Smaller waterways and sensitivities have been identified and mapped to created connectivity corridors following hydrology features. Other possible movement corridors are present in areas assigned a medium sensitivity. In-depth Bat Impact Assessments must identify bat activity and possible movement corridors especially within medium areas. **Bios Diversitas Consultants:** Cross-theme fauna response: noted. Infrastructure corridors should be screened against fauna-sensitive habitats and movement areas, and route alternatives should prioritise avoidance of Very High sensitivity areas. No amendment to the fauna report is required.
Natural Justice	102	Chapter 2b	2B-6	7-21		The assessment should clarify the extent to which bat sensitivity mapping and species occurrence data are based on field surveys versus desktop modelling and existing datasets. Seasonal variability in bat activity may materially affect the reliability of strategic planning conclusions	**Animalia Consultants:** The specialist was appointed for a desktop assessment only using existing data for the regional strategic planning process.
Natural Justice	103	Chapter 2b	2B-10	6-19	Figures 2B-2 and 2B-3	Ecological corridors and highly sensitive habitat areas identified in the chapter should be incorporated into strategic avoidance planning rather than addressed primarily through future project-level mitigation measures.	**Animalia Consultants:** The sensitivities identified in the chapter are incorporated into the bat sensitivity map. To the best knowledge of the specialist, the bat sensitivity map created will be incorporated into strategic avoidance planning. **Bios Diversitas Consultants:** Cross-theme fauna response: noted. Residual high or very high risk in Very High sensitivity habitat, SCC habitat or key ecological corridors should generally be treated as a strategic constraint or no-go trigger unless site-level evidence supports a lower risk outcome. No amendment to the fauna report is required.
Natural Justice	104	Chapter 2b	2B-14	8-22		The SEA should assess the cumulative implications of renewable energy facilities, transmission infrastructure, roads and industrial expansion on bat habitat connectivity and movement patterns across the region.	**Animalia Consultants:** Key movement corridors for bats are unknown. Smaller waterways and sensitivities have been identified and mapped to created connectivity corridors following hydrology features. Other possible movement corridors are present in areas assigned a medium sensitivity. In depth Bat Impact Assessments must identify bat activity and possible movement corridors especially within medium areas, and assess cumulative impacts. **Bios Diversitas Consultants:** Cross-theme fauna response: noted. Cumulative implications of renewable energy, port/SEZ, water, transport and transmission infrastructure should be assessed together for fauna because combined effects may exceed project-level impacts. No amendment to the fauna report is required.
Natural Justice	105	Chapter 2b	2B-18	5-18		The chapter should more clearly distinguish between impacts capable of mitigation through infrastructure design and impacts associated with permanent habitat transformation and cumulative ecological fragmentation.	**Animalia Consultants:** There is no known mitigation for bat impacts that be achieved by altering the wind turbine design. Only operational management of the wind turbines (e.g. curtailment, shut down on demand etc) can be implemented for mitigation. Other infrastructure associated with renewable energy and green hydrogen developments are not known to cause habitat fragmentation for bats, if light pollution is mitigated as suggested in the chapter. **Bios Diversitas Consultants:** Cross-theme fauna response: noted. For fauna, mitigable impacts must be distinguished from permanent habitat transformation, SCC displacement, corridor severance and fragmentation that may not be fully mitigable. No amendment to the fauna report is required.
Natural Justice	106	Chapter 2b	2B-22	10-24	Figures 2B-4 and 2B-5	The SEA should identify whether projected infrastructure corridors overlap with sensitive roosting, foraging or movement areas and whether these overlaps may compromise regional ecological connectivity for bat species.	**Animalia Consultants:** Projected infrastructure corridors were not known during the assessment. Key movement corridors for bats are unknown. Smaller waterways and sensitivities have been identified and mapped to created connectivity corridors following hydrology features. Other possible movement corridors are present in areas assigned a medium sensitivity. In depth Bat Impact Assessments must identify bat activity and possible movement corridors especially within medium areas. **Bios Diversitas Consultants:** Cross-theme fauna response: noted. Projected infrastructure corridors should be assessed against fauna sensitivity, SCC habitat and connectivity layers before alignment approval. No amendment to the fauna report is required.
Natural Justice	107	Chapter 2b	2B-26	7-20		The assessment should clarify whether cumulative mortality and displacement risks associated with expanded renewable energy infrastructure were evaluated at regional scale under the Large GH_2 scenario.	**Animalia Consultants:** In depth Bat Impact Assessments must assess cumulative impacts of individual renewable energy applications. Cumulative impacts on bats may be influenced by localised ecoregions and topography. **Bios Diversitas Consultants:** Cross-theme fauna response: noted. Cumulative mortality and displacement risks should be evaluated for relevant fauna groups during downstream project assessment, with adaptive monitoring where impacts are uncertain. No amendment to the fauna report is required.
Natural Justice	108	Chapter 2b	2B-30	11-25		Several mitigation measures rely on future infrastructure siting and project-level design controls. The SEA should clarify which impacts are considered unacceptable even after mitigation and therefore require avoidance in accordance with the mitigation hierarchy under section 2(4)(a) of NEMA.	**Animalia Consultants:**The bat sensitivity map indicates areas of avoidance for renewable energy associated with green hydrogen development.
Natural Justice	109	Chapter 2b	2B-34	6-18		The chapter acknowledges uncertainty regarding future infrastructure footprints and cumulative disturbance. In light of these uncertainties, the SEA should adopt a more precautionary approach consistent with section 2(4)(a)(vii) of NEMA, particularly where impacts on sensitive species and ecological corridors may be irreversible.	**Animalia Consultants:** The bat sensitivity map indicates areas of avoidance for renewable energy associated with green hydrogen development. In depth Bat Impact Assessments must assess cumulative impacts of individual renewable energy applications. Cumulative impacts on bats may be influenced by localised ecoregions and topography.
Natural Justice	110	Chapter 2b	2B-38	5-16		The SEA should more clearly assess whether projected infrastructure density under the Large GH_2 scenario remains compatible with maintaining ecological functionality and habitat connectivity for sensitive bat species across the Namakwa Region.	**Animalia Consultants:** Projected infrastructure density was not known during the assessment. Key movement corridors for bats are unknown. Smaller waterways and sensitivities have been identified and mapped to created connectivity corridors following hydrology features. Other possible movement corridors are present in areas assigned a medium sensitivity. In depth Bat Impact Assessments must identify bat activity and possible movement corridors especially within medium areas.
Natural Justice	111	Chapter 2b	2B-42	8-20		The SEA should integrate bat sensitivity findings more directly into strategic spatial planning recommendations, including identifying areas unsuitable for infrastructure expansion due to cumulative ecological sensitivity and fragmentation risk.	**Animalia Consultants:** The sensitivities identifed in the chapter are incorporated into the bat sensitivity map. To the best knowledge of the specialist, the bat sensitivity map created will be incorporated into strategic avoidance planning.
Natural Justice	112	Chapter 2b	2B-46	4-17		A recurring concern throughout the chapter is that bat impacts are frequently discussed at individual infrastructure level rather than as cumulative regional ecological pressures associated with simultaneous industrialisation, renewable energy expansion and transmission infrastructure growth. Greater emphasis should therefore be placed on cumulative habitat fragmentation, ecological connectivity and avoidance-based strategic planning.	**Animalia Consultants:** Different infrastructure associated with green hydrogen have different impacts on bats. For example, turbines causing mortalities and light pollution affecting foraging activity. Each infrastructure type was assessed for the different regional green hydrogen development scenarios. Key movement corridors for bats are unknown. Smaller waterways and sensitivities have been identified and mapped to created connectivity corridors following hydrology features. Other possible movement corridors are present in areas assigned a medium sensitivity. In depth Bat Impact Assessments must identify bat activity and possible movement corridors especially within medium areas.
Natural Justice	113	Chapter 2c	2C-3	4-16		The chapter correctly identifies the Namakwa Region as supporting sensitive terrestrial fauna associated with arid ecosystems and habitat-specialist species. The SEA should identify strategic avoidance areas where infrastructure expansion may result in irreversible habitat loss, fragmentation or ecological isolation.	**Bios Diversitas Consultants:** The fauna sensitivity mapping should be used as a strategic screening layer to identify Very High sensitivity areas, SCC habitats, threatened ecosystem remnants and ecological corridors as avoidance or highly constrained areas. No amendment to the fauna report is required.
Natural Justice	114	Chapter 2c	2C-6	8-22		The assessment should clarify the extent to which fauna sensitivity mapping and species occurrence data are based on field verification versus desktop modelling and existing biodiversity databases. This distinction affects the reliability of strategic planning conclusions.	**Bios Diversitas Consultants:** The methodology explicitly states that no systematic field surveys were undertaken and that site sensitivity verification and targeted surveys are required at project-level EIA stage. The fauna sensitivity mapping is a strategic desktop-level assessment and does not replace site sensitivity verification or targeted faunal surveys at project level. No amendment to the fauna report is required.

Natural Justice	115	Chapter 2c	2C-10	8-22		Sensitive habitats, ecological corridors and areas supporting species of conservation concern should be incorporated into strategic avoidance planning rather than deferred primarily to project-level mitigation measures.	**Bios Diversitas Consultants:** Sensitive habitats, SCC habitats and ecological corridors should be treated as strategic constraints, with avoidance prioritised before mitigation or offsets. No amendment to the fauna report is required.
Natural Justice	116	Chapter 2c	2C-14	4-16		The chapter identifies species of conservation concern within the planning domain. The SEA should clarify whether cumulative habitat loss thresholds were assessed under the Large GH_2 scenario, particularly where multiple infrastructure systems may affect sensitive habitats simultaneously.	**Bios Diversitas Consultants:** Quantitative cumulative thresholds for SCC habitat loss cannot be finalised without confirmed infrastructure footprints. Such thresholds, or Limits of Acceptable Change, should be developed during downstream planning and project-level assessment. No amendment to the fauna report is required.
Natural Justice	117	Chapter 2c	2C-18	9-24		The SEA should assess the cumulative implications of roads, rail, transmission corridors, renewable energy infrastructure, pipelines and settlement expansion on fauna movement and ecological connectivity across the Namakwa Region..	**Bios Diversitas Consultants:** Cumulative effects from roads, rail, transmission corridors, pipelines, renewable energy and port/SEZ infrastructure should be assessed in detail together during downstream project planning because combined effects may fragment habitat and reduce ecological connectivity. No amendment to the fauna report is required.
Natural Justice	118	Chapter 2c	2C-22	6-19		The chapter should more clearly distinguish between impacts capable of mitigation and impacts associated with permanent habitat transformation and cumulative fragmentation. Mitigation measures may reduce direct mortality while failing to address long-term ecological isolation.	**Bios Diversitas Consultants:** Fauna impacts should be separated into those that are mitigable through design/management and those that may be irreversible, such as permanent habitat transformation, SCC habitat loss and corridor severance. The chapter states that reliance on mitigation alone is not adequate where impacts involve irreplaceable habitat loss or ecological isolation. No amendment to the fauna report is required.
Natural Justice	119	Chapter 2c	2C-25	10-23	Figures 2C-5 and 2C-6	Ecological corridors identified in the assessment should be treated as strategic planning constraints. The SEA should identify whether projected infrastructure corridors overlap with critical faunal movement areas or landscape connectivity zones	**Bios Diversitas Consultants:** Ecological corridors should be treated as strategic planning constraints rather than matters that can be deferred solely to project-level mitigation. No amendment to the fauna report is required.
Natural Justice	120	Chapter 2c	2C-30	7-21		The SEA should more clearly assess whether projected renewable energy and associated infrastructure density under the Large GH_2 scenario remains compatible with maintaining ecological functionality and viable faunal habitat connectivity across the region.	**Bios Diversitas Consultants:** Whether the Big GH2 scenario exceeds acceptable ecological thresholds cannot be determined conclusively without final footprints and project layouts. It should be treated as ecologically constrained and subject to cumulative screening before approvals. No amendment to the fauna report is required.
Natural Justice	121	Chapter 2c	2C-38	8-20		The chapter acknowledges uncertainty regarding future infrastructure placement and development intensity. In light of these uncertainties, the SEA should adopt a more precautionary approach consistent with section 2(4)(a)(vii) of NEMA, particularly where impacts on sensitive fauna and ecological corridors may be irreversible.	**Bios Diversitas Consultants:** Given uncertainty regarding future infrastructure placement, a precautionary approach should be applied and all sensitive areas should be verified before project approval. No amendment to the fauna report is required.
Natural Justice	122	Chapter 2c	2C-42	5-17		The SEA should more clearly integrate fauna sensitivity findings into strategic spatial planning recommendations, including identifying areas unsuitable for infrastructure expansion due to cumulative ecological sensitivity and fragmentation risk.	**Bios Diversitas Consultants:** Fauna sensitivity findings should inform strategic siting, exclusion zones, corridor planning and project-level layout refinement. No amendment to the fauna report is required.
Natural Justice	123	Chapter 2c	2C-46	6-18		A recurring concern throughout the chapter is that fauna impacts are often assessed at individual infrastructure scale rather than as cumulative regional ecological pressures associated with simultaneous industrialisation, renewable energy expansion and infrastructure growth. Greater emphasis should therefore be placed on cumulative habitat fragmentation, ecological connectivity and avoidance-based strategic planning at SEA level.	**Bios Diversitas Consultants:** Addressed in response matrix only. Fauna impacts should be assessed cumulatively at regional and project levels, with particular attention to fragmentation, ecological isolation, roadkill/barrier effects and loss of SCC habitat. No amendment to the fauna report is required.
Elsabe Swart	124	Chapter 3	3-4		Footnote 3	Last sentence: "The modality of compensation is often aligned with that off offsets, but involve dissimilar biodiversity features" Propose: The modality of compensation is often aligned with that of offsets, but involve dissimilar biodiversity features.	**Conservation Strategy Tactics & Insight:** Implemented
Elsabe Swart	125	Chapter 3	3-12	18	3.1	Propose additional clarity on the meaning of the shades of red - e.g. the darker the red the greater overlap of spatial tools for planning i.t.o. biodiversity conservation occurs spatially	**Conservation Strategy Tactics & Insight:** Implemented
Elsabe Swart	126	Chapter 3	3-13	2	3.2	To update the figure subscript - the CBA map 2024 and Biodiversity Spatial Plan for the Northern Cape has been formally endorsed 21 Apr 2026. Consequently references to the draft CBA / BSP 2024 needs to be updated throughout the document (available on BGIS)	**Conservation Strategy Tactics & Insight:** Implemented
Elsabe Swart	127	Chapter 3	3-15	2-3		Propose naming those two ecosystems - ref "Only two ecosystems are LC on both RLE assessments, are well protected, and have >95% of their original extent intact, suggesting that no offsets should be required for impacts in them.	**Conservation Strategy Tactics & Insight:** Implemented
Elsabe Swart	128	Chapter 3	3-17		3.2	Systematic spatail planning use 100% conservation targets where less than 30% of an ecosystem is stil available for conservation. Consequently, I would argue that ratios of 1:30 does not apply, but should be regarded as a fatal flaw. Should ecological compensation be regarded an option, more detailed invetigations are needed on the ground and in spatial context. It is recommended to provide a bit more guidance on principles and guidelines in this framework due to the sensitivities within this regions, especially the western parts.	**Conservation Strategy Tactics & Insight:** Assume this relates to clause 2.7 on "Applicable Ratios" The text indicates what the reviewer is asking for, unless comment is misunderstood? National Guideline makes provision for punitive 30:1 ratio where overwhelming public interest or national economic priority can be demonstrated and the SEA cant over-ride this. In any event, showing unavoidability of impact of CR features would be hard due to low-impact location of infrastructure for BB GH2 being possible on the many degraded areas in the region. Province could, however, stipulate its own offset ratios for listed ecosystems or identified features.
Elsabe Swart	129	Chapter 3	3-17		Footnote 9	TO update in accordance to 2024 CBA / BSP Northern Cape	**Conservation Strategy Tactics & Insight:** Implemented
Elsabe Swart	130	Chapter 3	1	1		Error links to be corrected throughout the document	**Conservation Strategy Tactics & Insight:** CSIR to clarify - not in source document **CSIR:** Thank you for the comment. The document has been reviewed and all identified error links/references have been corrected throughout the report
Elsabe Swart	131	Chapter 3	3-21		Footnote 11	The effectiveness of 'set-aside' option is questioned, based on experience with the Gamsberg BOA where the set aside areas are encrouched on irreseptive of the intent of the set-aside areas. A more formal agreement would provide better confidence in my view.	**Conservation Strategy Tactics & Insight:** Presume this relates to Footnote 16? Concur that Setasides need greater protection through rezoning, conservation servitude imposition, and non-compliance administrative penalties. However, this is not a problem with the setaside concept, rather with its enforcement. Given the large land parcels and highly heterogenous spread of biodiversity priority areas in the region, it is unlikely that some form of set aside modality can be avoided.
Elsabe Swart	132	Chapter 3	3-22	15		Lat sentence of paragraph to start with "Mining".... And not "Mine ....."	**Conservation Strategy Tactics & Insight:** "Mine" is preferred usage.
Elsabe Swart	133	Chapter 3	3-29	9		CBA 2024 reference to be updated (has been endorsed)	**Conservation Strategy Tactics & Insight:** Implemented
Natural Justice	134	Chapter 3	3-2	3-10		The chapter correctly states that offsets "cannot be used to circumvent diligent and comprehensive adherence to the mitigation hierarchy". This should be carried through more explicitly in the recommendations by requiring avoidance and minimisation thresholds before any offset or compensation pathway is considered. This is consistent with section 2(4)(a)(i) to (viii) of NEMA and the DFFE National Biodiversity Offset Guideline issued under section 24J of NEMA.	**Conservation Strategy Tactics & Insight:** This is repeated regularly throughout WP1, and noted in several places. Would prefer that the cautionaries are elevated out of Chapter 3 into the overarching 'Summary for Policy Makers' as repeating them here isnt going to help. **CSIR:** Chapter 3 (Biodiversity Offset Framework) of WP2, as well as the WP2 Summary for Policymakers, already emphasise that biodiversity offsets and ecological compensation cannot substitute for avoidance and minimisation, and that demonstrable application of the mitigation hierarchy is required prior to considering offsets as a mechanism of last resort to address residual ipacts. This is specified in sub-section 3.4 of the Strategic Planning and Governance Recommendations section.
Natural Justice	135	Chapter 3	3-2	11-15		The thematic scope is limited to terrestrial ecosystems and vegetation types. This limitation should be more clearly reflected as a material constraint on the framework, especially given that the proposed Boegoebaai Port and associated infrastructure may have marine, estuarine, avifaunal and social impacts that cannot be addressed through a terrestrial vegetation offset framework alone	**Conservation Strategy Tactics & Insight:** This is exhaustively addressed in wp1. Agree that it is a constraint, and the scope of work clarified upfront. Would prefer that the cautionaries are elevated out of Chapter 3 into the overarching 'Summary for Policy Makers' as repeating them here isnt going to help. **CSIR:** This clarification is included upfront in Chapter 3 (Points of Departure & Assumptions section. The chapter title has also been updated to "Chapter 3: **Terrestrial** Biodiversity Offset Framework". Consideration in terms of biodiversity offsets as it relates to marine and coastal realms is included in WP1, Chapter 2: Marine Ecology.
Natural Justice	136	Chapter 3	3-2	14-23		The framework assumes that footprint projections are "reasonably accurate", while also acknowledging that large-scale infrastructure projects often underestimate ultimate impacts and that regional impacts are difficult to predict at the spatial resolution required for regulatory or lender-required offsetting. The SEA should therefore avoid presenting offset requirements as sufficiently knowable at this stage and should frame the current figures as minimum indicative estimates only.	**CSIR:** The SEA agrees that offset requirements cannot be treated as precisely knowable at this stage and that, at regional SEA scale, footprint projections and associated offset figures are indicative rather than definitive. The chapter should therefore make clearer that any offset calculations presented are preliminary, strategic estimates only, intended to illustrate the possible order of magnitude of residual impacts under large-scale development pathways. The governing recommendation from the SEA remains the mitigation hierarchy: avoid impacts first, then minimise, rehabilitate and only then consider offsets or ecological compensation for residual impacts that remain. Offsets are therefore not presented as a substitute for avoidance or as an automatic entitlement to develop. However, because the SEA is dealing with large-scale cumulative and systemic development pathways, it remains appropriate to consider offset and compensation issues at strategic level rather than postponing them entirely to project-by-project EIAs. **Conservation Strategy Tactics & Insight:** Agreed. Biodiversity offsets do not replace the application of the mitigation hierarchy. Offset estimates presented in the SEA are strategic, indicative estimates intended to inform regional planning rather than project specific offset requirements.
Natural Justice	137	Chapter 3	3-2	24-28		The chapter assumes that political will exists to resolve access, liability, illegal mining and equity concerns around coastal regions. This is a significant assumption that should be tested rather than presumed. The SEA should identify the institutional steps, responsible authorities and land-rights processes required to resolve these constraints before relying on damaged coastal land as a preferred development or offset strategy.	**Conservation Strategy Tactics & Insight:** It is not possible to test the political will for offset and land use facilitation in an SEA. Assumption was highlight to elevate the risk of pursuing offsets in this specific region. The political and administration/regulatory framework for implementation will need to address this as a priority, and Chapter 3 only sets out what items must be resovled. It cant test that resolution.
Natural Justice	138	Chapter 3	3-2 to 3-3	3-2: 38-43; 3-3:1-3		The chapter assumes that private and communal landowners can be co-opted as active stewards of offset receiving areas and that conservation agencies will have capacity to service these areas over the long term. This assumption requires substantiation. The SEA should address whether there is confirmed institutional capacity, funding and landholder consent to implement and maintain offset areas over the long term.	**Conservation Strategy Tactics & Insight:** Several other projects (including large infrastructure) have "co-opted" communal and private landowners as offset stewards. The SEA offset framework clearly articulates that institutional capacity and funding is constrained and a critical element of offset success. Landholder consent is not possible to pursue in an SEA over 5 million ha, but is stated as the first order of business for any development facilitation work if BB GH2 is approved.
Natural Justice	139	Chapter 3	3-3	4-9		The chapter expressly acknowledges that social implications of offset establishment are not covered and that no engagement with indigenous people, local communities or landowners has occurred. This is a material gap. Offset areas at the scale contemplated may affect grazing, farming, resource use and communal land rights. These implications should be assessed before any offset receiving area is proposed as feasible.	**CSIR:** The SEA agrees that the social implications of offset or compensation areas are material, especially where grazing, farming, resource use and communal land rights may be affected. Chapter 3 recognises that these issues were not assessed in detail and that no specific engagement with Indigenous people, local communities or landowners has yet occurred. Offsets remain a last resort under the mitigation hierarchy after avoidance and minimisation. At SEA scale it is still useful to identify possible receiving areas in principle, but any future reliance on such areas would require further social assessment, landholder engagement and lawful consultation in line with the SEA's consultation and FPIC-related recommendations. **Conservation Strategy Tactics & Insight:** Apart from the impossibility of engaging landowners at this scale, it was a deliberate choice not to pursue social implications of the offset, and this was flagged to the relevant specialist. Just the act of this engagement is dangerous for pre-empting expectations of offset (or BB GH2) benefits or alternatively hardening attitudes towards development. The WP2 framework expressly proposes a dedicated proactive offset scheme approach where these engagements happen at a fine scale with directly affected landowners/holders
Natural Justice	140	Chapter 3	3-3	10-14		The chapter correctly notes that hydrogen production with unacceptable impacts on threatened ecosystems, species or land-owning communities is unlikely to be tolerated by investors or markets. The SEA should strengthen this point by requiring transparent social and environmental safeguards, including meaningful consultation with affected communities before offset or compensation proposals are relied upon.	**CSIR:** The SEA agrees that investor and market tolerance is unlikely where development causes unacceptable impacts on threatened ecosystems, species or affected land-owning communities. This is already reflected in the SEA's recognition of international finance standards, critical habitat constraints and the reputational and viability risks associated with unacceptable biodiversity and social impacts. See SPM Section 3.4 (Strategic approach to biodiversity offsets and ecological compensation), Section 3.8 (Socio-economic strategic recommendations and governance principles), Section 3.9 (Effective consultation and negotiations), and Box SPM 28 (FPIC Principles). **Conservation Strategy Tactics & Insight:** Agreed.
Natural Justice	141	Chapter 3	3-4	3-13		The chapter states that biodiversity impacts associated with even modest GH_2 scenarios will be significant and difficult to define accurately due to current uncertainties. This uncertainty should trigger a stronger precautionary framing under section 2(4)(a)(vii) of NEMA. The SEA should not treat offsets as a solution to impacts that are not yet sufficiently quantified or spatially defined.	**CSIR:** The SEA and Biodiversity Offset Framework already adopt a precautionary approach by emphasising that biodiversity offsets and ecological compensation cannot substitute for avoidance and minimisation, and that impacts on irreplaceable or Critical Habitat features may constitute fatal flaws where impacts are unavoidable. The SEA aims to develop an integrated decision making framework to guide the planning (based on current knowledge and understanding). The governing recommendation from the SEA remains the mitigation hierarchy: avoid impacts first, then minimise, rehabilitate and only then consider offsets or ecological compensation for residual impacts that remain. Offsets are therefore not presented as a substitute for avoidance or as an automatic entitlement to develop. However, because the SEA is dealing with large-scale cumulative and systemic development pathways, it remains appropriate to consider offset and compensation issues at strategic level rather than postponing them entirely to project-by-project EIAs. **Conservation Strategy Tactics & Insight:** Agreed. It is hoped that no one could interpret this offset framework as not being (or requiring) strong precautionary recognition
Natural Justice	142	Chapter 3	3-4	14-18		The chapter records that the big GH_2 scenario would involve a footprint of more than 144 000 ha and the small GH_2 scenario more than 21 000 ha, with extensive impacts from transmission lines, rail and pipelines. The SEA should assess these as cumulative regional impacts rather than treating offset liability as primarily a project-level issue to be resolved later.	**Conservation Strategy Tactics & Insight:** Concur. Much of the offset framing and anticipatory impact signficance assessment is cumulative.
Natural Justice	143	Chapter 3	3-4	25-34		The chapter notes that 71% of the 5 million ha planning domain is sensitive and that complete offset avoidance is unlikely. This is a critical finding. The SEA should clearly identify whether this level of sensitivity indicates that certain development pathways, particularly the large GH_2 scenario, may be strategically inappropriate unless avoidance is demonstrated upfront.	**CSIR:** The governing recommendation from the SEA remains the mitigation hierarchy: avoid impacts first, then minimise, rehabilitate and only then consider offsets or ecological compensation for residual impacts that remain. The assessment does provide preliminary regional development guidance where it finds approximately 1 million hectares of comparatively lower environmental sensitivity w. In principle, this area could accommodate the renewable energy 2 (RE) inputs required under the two scenarios: ~10 GW (=52,000 ha) for Sc 1 and ~80 GW (=416,000 ha) for Sc 2. Although the areas exhibit relatively lower sensitivity at regional scale, all development must be subject to project-level environmental assessment and site-3 specific field verification, as these regions will still contain highly sensitive social and ecological features. See SPM Section 3.6 and Figure SPM 7. **Conservation Strategy Tactics & Insight:** The extent of biodiversity sensitivity within the planning domain is recognised as a key strategic finding of the SEA. However, the requirement for biodiversity offsets should not be interpreted as indicating that a development scenario is strategically inappropriate. Offsets are a measure of last resort, applied only after the mitigation hierarchy has been followed, and their appropriateness can only be determined through project-specific assessment.
Natural Justice	144	Chapter 3	3-4	35-40		The chapter acknowledges that some impacts may compromise national biodiversity targets and require ecological compensation if allowed to proceed at all. The SEA should make clear that ecological compensation is not equivalent to biodiversity offsetting and should not be treated as a routine mitigation tool. The DFFE National Biodiversity Offset Guideline distinguishes compensation as exceptional and requiring stringent justification.	**Conservation Strategy Tactics & Insight:** Concur. Note that this is explored in the Offset framework. But Ecological Compensation can only be triggered by specific spatial footprints - which are not available for WP2. It certainly applies to the Port development and layout of WP1
Natural Justice	145	Chapter 3	3-5	1-4		The chapter states that the density and distribution of species of conservation concern may present fatal flaws to individual project EIAs unless extensive avoidance occurs upfront. This should be elevated into a clear strategic recommendation that regional infrastructure planning must first demonstrate avoidance of high-sensitivity areas before project-level applications are advanced.	**Conservation Strategy Tactics & Insight:** Agreed. This is required in NEMA and EIA regulations.

Natural Justice	146	Chapter 3	3-5	5-11		The chapter acknowledges that linear disturbance and permanent infrastructure may compromise ecological corridors and ecosystem processes. The SEA should require that ecological corridors and landscape-scale connectivity be mapped and treated as avoidance constraints, not merely as features to be compensated for through offsets.	**CSIR:** The governing recommendation from the SEA remains the mitigation hierarchy: avoid impacts first, then minimise, rehabilitate and only then consider offsets or ecological compensation for residual impacts that remain. Offsets are therefore not presented as a substitute for avoidance or as an automatic entitlement to develop. However, because the SEA is dealing with large-scale cumulative and systemic development pathways, it remains appropriate to consider offset and compensation issues at strategic level rather than postponing them entirely to project-by-project EIAs. **Conservation Strategy Tactics & Insight:** Concur. **EcosolGIS:** Ecological connectivity is explicitly considered in the sensitivity analysis. The CBA maps and the protected area expansion plans inputs consider and map landscape level ecological corridors. Therefore landscape-scale connectivity is represented in the sensitivity analysis and is avoidoided where possible. As both human and ecological linear infrastructure (powerlines, roads, etc vs ecological corridors) by their nature are linear features connecting nodes in the human and ecological networks, it is inevitable that they will intersect and therefore avoidance is not always possible. Therefore, mitigation of human linear infrastructure on ecological corridors needs to be an important mitigation strategy. Also, it is in certain landscape / land use contexts very difficult to compensate for lost ecological corridors especially where these are constrained by human development which emphasises the importance of mitigation strategies in this regard.
Natural Justice	147	Chapter 3	3-5	12-19		The chapter identifies damaged and mined coastal land as a preferred location for infrastructure where available. The SEA should require a clear comparative assessment of degraded land options (including the differentiation of mined or otherwise degraded land) against greenfield sites. The SEA identifies that damaged and mined land "if used efficiently, … is potentially sufficient to meet half the WEF footprint requirement for even a Big GH2 scenario". However, it is not clear whether the use of this land for offsetting is technically, contractually or practically possible. Notably, the mining companies, and those responsible for the degradation of that land, are under NEMA in any event legally responsible for remediation and rehabilitation of the land, and should be held so accountable. It should therefore not be available for offsetting of harm that has occurred in respect of the Boegoebaai development, which would have the effect of transferring responsibility for rehabilitation and result in a net loss. Further, clarity is needed on what the author refers to in stating "Resolving rehabilitation liabilities on these mine scars and sterilising mineral and petroleum rights to accommodate the new energy economy will take nimble regulators and effective administration".	**Conservation Strategy Tactics & Insight:** Agree that any project level EIA (especially the Port) is required to perform a comparative assessment of brownfield vs greenfield sites, and justify extensively if any biodiversity loss on a green field site is necessary. However, comment appears a misconception - the damaged land would be used for development - and NOT the offset. I disagree that the mining damanged land should not be available for development. Most of the mining rights have been sold or transfered to new owners, and historcial enforcement of rehabilitation provisions by DMPR has been weak or non-existent. Using the land for infrastructure development would be economicaly (and ecologically) efficient and force a clarification of liabilities and enforcement gaps. The sentence intends to convey the above regualtory complexity, and also that any development on BB related infrastructure would first need to clarify with the Mining Rights holder and the Regulator that the development can proceed, or that the right be sterilised so as to avoid land use conflict down the line.
Natural Justice	148	Chapter 3	3-5	20-28		The chapter states that PV facilities could be constructed on poles above intact vegetation and that this "should be required" for any PV site supplying a green hydrogen plant. This recommendation should be strengthened as a minimum design requirement in the SEA management framework, with deviations requiring project-specific justification.	**Conservation Strategy Tactics & Insight:** Agreed. It should apply to most PV installations in the country
Natural Justice	149	Chapter 3	3-5	29-37		The chapter estimates that the big GH_2 scenario may require over 183 000 ha of offset land and that even the small GH_2 scenario may require up to 40 000 ha. These figures should be presented as indicative minimums, especially because indirect and induced impacts are not fully quantified. The SEA should explain whether offset land at this scale is legally, socially, financially and institutionally achievable.	**Conservation Strategy Tactics & Insight:** It would be impossible for the SEA to confirm if that scale of land is legally, socially achievable. Financial viability is up to project proponents to investigate - the SEA has no insight into this. The capital costs of the BB GH2 project and anciliary PV and WEF and Rail are such that the offset costs are almost certainly going to be a rounding error. Institutional achievability was explored with national and provincial conservation authorities - and this was confirmed feasible ONLY if significant budget, time and resources were made available.
Natural Justice	150	Chapter 3	3-6	2-5	Figure S.2	Figure S.2 notes that the proposed receiving areas do not necessarily create landscape-scale ecological corridors required for long-term biodiversity persistence. This limitation should be addressed directly in the framework. Offset receiving areas that fail to secure ecological connectivity may not achieve no-net-loss or net-gain outcomes.	**Conservation Strategy Tactics & Insight:** Acknowledged. However, an explicit recommendation in the framework is that proactive schemes be established to focus on large landscape biodiversity outcomes to facilitate BB GH2 implementation. There is little point in the Offset chapter (which is not a spatial planning tool) identifying landscape-scale corridors that cannot be implemented by authorities, would conflict with existing rights holders, and may be vastly in excess of spatial requirements. Already the N Cape Biodiversity Spatial Plan does not identify these landscape corridors sufficiently.
Natural Justice	151	Chapter 3	3-6	7-15		The chapter proposes proactive offset schemes, including areas up to 200 000 ha. The SEA should clarify potential governance, financing, declaration status, management responsibility and enforcement arrangements for such schemes. Without these, the proposal remains conceptual and cannot be relied upon to reduce biodiversity risk.	**Conservation Strategy Tactics & Insight:** Acknowledged. However, this level of granularity goes way beyond the scope of an SEA (and the author's TORs) and requires detailed engagements with implementers, firm funding arrangements and commitment to enforcement arrangements. Each of these topics would all have to be negotiated in the proposed schemes. This is up to the project proponents and conservation authorities.
Natural Justice	152	Chapter 3	3-6	16-19		The chapter states that communal land and grazing systems could possibly be incorporated into offset schemes if compatibility with biodiversity maintenance is demonstrated and compensation arrangements agreed. This must be treated as a substantive rights issue. The SEA should require early engagement with affected communities and landholders before identifying communal land as a feasible offset option.	**Conservation Strategy Tactics & Insight:** Agreed - there is a requirement to obtain FPIC before any communally-governed land be included as a feasible option. Given the extent to CPA land holdings across many range-restricted ecosystems, it is difficult to see how the requisite offsets could be achieved without CPA buy in from the start. This is a key departure point.
Natural Justice	153	Chapter 3	3-6	20-28		The chapter acknowledges that ecological compensation is difficult to calibrate, may affect CBAs, SCC and highly mobile species, and risks violating additionality if it displaces existing state expenditure. These concerns should be reflected as threshold limitations. The SEA should identify categories of impact that are not offsetable or compensable and should therefore require avoidance.	**Conservation Strategy Tactics & Insight:** It is unclear if the SEA (as a non-decision making instrument) can categorically set these threshold limitations. They are repeatedly alluded to throughout the chapter. The point of itemising and elaborating on them is precisely to elevate them to potential fatal flaws. This was done effectively in WP1 for those affected features.
Natural Justice	154	Chapter 3	3-7	1-8		The chapter acknowledges that cumulative, indirect and induced impacts are unclear and difficult to quantify for offset purposes. This significantly weakens the ability to assign offset liability and calculate adequate offset requirements. The SEA should require further cumulative impact assessment before any offset framework is treated as sufficient for strategic decision-making.	**Conservation Strategy Tactics & Insight:** Agreed. To note, the offset framework presented in Chapter 3 is not designed or intended to be used for decision-making. It is done to frame prudent approaches to project-level EIA offset investigations, and require SEZ establishment minimum requirements to include Proactive Offset scheme negotiation, delineation, consultation and financial provision on behalf of the future tenants.
Natural Justice	155	Chapter 3	3-7	9-12		The chapter correctly states that ecological sustainability is only likely if biodiversity is catered for upfront and not reactively after developments have been approved. This should be converted into a clear SEA requirement that no project-level approval should rely on future offsets unless avoidance, minimisation and site selection alternatives have first been demonstrated.	**Conservation Strategy Tactics & Insight:** Agreed **CSIR:** The SEA already recommends proactive, aggregated and regionally coordinated approach to biodiversity offsets. It is important to note that the SEA is intended to guide downstream planning and decision-making processes, including EIAs, EMFs, SDFS and related authorisation processes. The SEA therefore includes strategic spatial guidance and recommendations for downstream planing and decision-making, **but** it does not itself impose legally binding project approval conditions in the same way that an Environmental Authorisation does.
Natural Justice	156	Chapter 3	3-8	8-36		The chapter structure covers development impacts, biodiversity features, ratios, offset receiving areas, implementation options, ecological compensation and streamlining. However, it does not include a dedicated section on the social, tenure and governance implications of offset establishment despite acknowledging this as a gap. A separate section should be added to address land rights, communal land, grazing, compensation, governance and community participation.	**CSIR:** The SEA and Biodiversity Offset Framework already adopt a precautionary approach by emphasising that biodiversity offsets and ecological compensation cannot substitute for avoidance and minimisation, and that impacts on irreplaceable or Critical Habitat features may constitute fatal flaws where impacts are unavoidable. The SEA aims to develop an integrated decision-making framework to guide planning based on current knowledge and understanding. The governing recommendation from the SEA remains the mitigation hierarchy: avoid impacts first, then minimise, rehabilitate and only then consider offsets or ecological compensation for residual impacts. Offsets are therefore not presented as a substitute for avoidance or as an automatic entitlement to develop. Because the SEA addresses large-scale cumulative and systemic development pathways, it is appropriate to consider offset and compensation issues at a strategic level rather than resolving them through the SEA. Detailed social, land tenure, governance and community participation considerations associated with the establishment of specific offset sites would need to be addressed during project-level offset planning and implementation, in consultation with affected stakeholders and in accordance with applicable legal and policy requirements.
Natural Justice	157	Chapter 3	3-9	3-17	Tables 3-1 to 3-4	The tables propose ratios, offset receiving areas and impact quantifications. The SEA should expressly state that these figures are indicative and cannot replace project-specific offset assessments required under the DFFE National Biodiversity Offset Guideline. The tables should also clarify uncertainty ranges and assumptions behind the ratios and footprint projections.	**Conservation Strategy Tactics & Insight:** This caution is stated in several places throughout the chapter. Note that Table 3-1 has explicit reference to the ratios aligning to the Guideline, and 3-2 notes that ratios are increased if a spatial planning category is also triggered. Further, the first recommendation is for the regulatory authorities to confirm these (or higher) ratios prior to any project level EIA. It is not useful to clarify uncertainty ranges at this regional scale - the uncertainty is dictated by the scale of analysis. Assumptions are set out throughout the Chapter. This framework is not replacing local/site investigations and EIA, which is the approrpate scale at which to admit uncertainty ranges and assumptions.
Natural Justice	158	Chapter 3	3-11	4-10		The chapter identifies extensive impacts from HV transmission lines, rail, access roads and gas pipelines across vegetation types, ecological corridors and vulnerable species. These impacts should be assessed cumulatively with Chapter 6 Infrastructure and Planning, as the offset implications cannot be meaningfully understood without integrated infrastructure routing and spatial planning.	**Conservation Strategy Tactics & Insight:** Agreed, noting that most routes are still notional. Cumulative impacts are the main concern with this scale of development in a fragile landscape
Natural Justice	159	Chapter 3	3-11	24-30		The chapter states that offsets will "almost certainly be needed" at the envisaged scale of infrastructure and PV construction. This statement should be accompanied by a clear caution that offset need does not imply offset feasibility or acceptability. Under the mitigation hierarchy, avoidance remains the first requirement.	**CSIR:** The governing recommendation from the SEA remains the mitigation hierarchy: avoid impacts first, then minimise, rehabilitate and only then consider offsets or ecological compensation for residual impacts that remain. Offsets are therefore not presented as a substitute for avoidance or as an automatic entitlement to develop. However, because the SEA is dealing with large-scale cumulative and systemic development pathways, it remains appropriate to consider offset and compensation issues at strategic level rather than postponing them entirely to project-by-project EIAs. **Conservation Strategy Tactics & Insight:** The comment misunderstands the statement. Given the scale of impact, even if the mitigation hierarhcy is followed, and avoidance prioritised, it is difficult to see HOW some kind of offsetable impact could not be triggered.
Natural Justice	160	Chapter 3	3-11	31-37		The chapter notes that extensive additional grid expansion would be required and that additional regional powerlines would increase difficult-to-mitigate avifaunal impacts. The SEA should clarify whether offset ratios based on vegetation types sufficiently capture avifaunal collision, displacement and electrocution impacts. If not, separate avifaunal compensation or avoidance rules should be identified	**Conservation Strategy Tactics & Insight:** Agreed. Note that this Chapter 3 explicitly states that vegetation type offsets and ratios cannot cater for SCC and collision impacts - but possibly could address habitat displacement impact for commoner and more widespread species.
Natural Justice	161	Chapter 3	3-12	3-10		The chapter states that no definitive map of damaged areas with no remaining natural habitat is available, apart from the coastal zone. This is a material knowledge gap. A regional map of degraded, transformed and low-conflict areas should be prepared before the SEA recommends development siting or offset strategy at regional scale.	**CSIR:** Potential "low conflict areas" have been determined (Figure SPM7 "potentially lower environmental sensitivity with lower offset implications"). This is based on existing spatial data, often derived from satellite imagery (e.g. land cover) which is inherently and could never be "divinitive", hence no single definitive regional map of all damaged or transformed areas with no remaining natural habitat is currently available.The SEA used the best available existing regional datasets and specialist informants, including biodiversity planning layers, protected area expansion priorities, and the specialist sensitivity layers developed for birds, bats, fauna and aquatic ecosystems, to identify avoidance areas and comparatively lower-sensitivity opportunity areas. The SEA does not recommend final project siting or treat these areas as impact-free. Rather, it recommends avoidance of HIGH and VERY HIGH sensitivity areas, directing development toward comparatively lower-conflict areas where feasible, co-locating infrastructure in existing disturbance corridors where possible, and requiring project-level environmental assessment and site-specific field verification for all future development.
Natural Justice	162	Chapter 3	3-26	17-24		The chapter correctly states that compliance with the mitigation hierarchy is imperative and that streamlined offsets must not shortcut avoidance, minimisation or rehabilitation. This should be made a binding recommendation in the SEA guidance framework. Streamlining may assist administration, but it cannot lawfully dilute the sequential application of the mitigation hierarchy under NEMA.	**Conservation Strategy Tactics & Insight:** Concur
Natural Justice	163	Chapter 3	3-26	25-36		The proposal to use an Environmental Management Framework or similar instrument to clarify offset rules upfront is useful. However, such an instrument should include enforceable avoidance areas, exchange rules, governance arrangements, funding mechanisms, monitoring duties and public participation requirements, otherwise it risks creating procedural efficiency without substantive biodiversity protection.	**Conservation Strategy Tactics & Insight:** Agreed. This is beyond the scope of an SEA, but could be done IF the decision to proceed with any substantive aspect of BB GH2 is taken.
Natural Justice	164	Chapter 3	3-28	16-29		The conclusion states that low sensitivity areas are available and that proactive offset schemes could be established, but also acknowledges that CR vegetation types and SCC may be impacted beyond acceptable thresholds where offsets are not suitable. The SEA should expressly identify such impacts as potential fatal flaws requiring avoidance, not merely as matters for ecological compensation.	**Conservation Strategy Tactics & Insight:** The SEA is not able to state what fatal flaws are (that is a decision makers/competent authority prerogative). While every effort at avoidance should be made, it is not possible to avoid Ecological Compensation triggering impacts given the scale, linear nature and indirect and induced impacts from BB GH2 if the current port site is fixed.
Samantha Ralston-Paton	165	Chapter 3	3-5 to 3-6	20–28		Section 3.4 notes that highly mobile species, particularly large bustards and raptors, cannot be effectively offset through habitat protection alone. The evidence base and policy framework to support compensation or offsetting for fatalities of these species is also lacking. The implication is that, in some circumstances, the only responsible planning response is avoidance. However, it is not clear if this will be possible in the overall low sensitivity areas identified.	**Conservation Strategy Tactics & Insight:** Concur with the inference. The Avifauna chapter 2a is best placed to address mitigation and the low sensitivity areas. **AfriAvian Environmental:** This comment is noted. The terrestrial avifaunal assessment recognises that for highly mobile, collision-prone species, particularly large bustards and raptors, traditional offset mechanisms based on habitat protection or enhancement are not effective or scientifically defensible. As noted, there is currently no robust evidence base or policy framework in South Africa to support mortality-based offsets or compensation for these species, and fatality risks associated with linear and energy-related infrastructure cannot be reliably counterbalanced through habitat-based measures. In line with this, the avifaunal assessment emphasises that for certain species and impact pathways, avoidance is the only responsible and ecologically defensible planning response, consistent with the mitigation hierarchy under section 2(4)(a) of NEMA. This applies particularly where collision and/or electrocution risk, displacement, or fragmentation could result in irreversible population-level consequences. The identification of "low sensitivity" areas within the SEA study area does not imply that avoidance will be unnecessary or unachievable. Rather, these areas represent relative sensitivity at a regional scale and still require project-level site-specific sensitivity verification, impact assessment, micro-siting, and risk screening. Within these lower-sensitivity zones, avoidance remains feasible where localised high-risk features (e.g., movement corridors, topographic features, or species-specific use areas) are identified during subsequent planning stages. The SEA's sensitivity mapping and scenario-level risk ratings therefore provide a framework that: (1) highlights where avoidance is mandatory due to unacceptable or non-mitigable risks i.e., very high sensitivity areas; (2) identifies lower-sensitivity areas where development may be feasible but still subject to species-specific constraints i.e., low to medium sensitivity areas; and (3) ensures that planning decisions for highly mobile/ migratory species are grounded in precaution and ecological realism rather than reliance on offsets that cannot address fatality risk.
Samantha Ralston-Paton	166	Chapter 3	3-5 to 3-6	20–28		Biodiversity offsets may be appropriate for habitat specialists (e.g. endemic larks), although appropriate offset ratios would need to be determined.	**Conservation Strategy Tactics & Insight:** Ratios are not an appropriate way to deal with most species offsets. These require a population viability analysis and far more attention to current threats and design of conservation action plans. A focus on ratios distracts from this necessary work
Samantha Ralston-Paton	167	Chapter 3	3-20 to 3-25	All	Table 3-3; Figure 3.5	BirdLife SA supports the proactive offset scheme concept (Section 3.3.3). We suggest that the identification of suitable offset receiving areas be refined, based on a more in-depth assessment of the risks to biodiversity in the areas identified as being of lowest sensitivity overall/cumulatively.	**Conservation Strategy Tactics & Insight:** Agreed. This needs to be done through an appropriate instrument such as an EMF and supported by municipal Land Use Management Schemes

Environmental Traits	168	Chapter 4				**Water & Infrastructure** The WP places emphasis on maintenance and expansion of infrastructure. However, it does not sufficiently address long term sustainability, systems capacity or equitable access. 1. Key issues • Lack of clarity on groundwater sustainability and extraction limits • No clear governance responsibility for infrastructure management • Existing infrastructure already poorly maintained • Risk of industrial prioritisation over community access • Increased dust, noise, accidents, and road degradation • Cumulative pressure from simultaneous infrastructure expansion 2. Critical questions • Who will control and manage water systems long-term? • How will communities be consulted in infrastructure siting decisions? • What compensation mechanisms exist for aRected land users? • What happens when infrastructure fails? 3. We recommend • Clear, enforceable water allocation priorities that prioritise communities • Independent, publicly accessible water monitoring systems • Defined maintenance responsibilities and funding mechanisms • Full cumulative impact assessment across all infrastructure developments • Strengthening of infrastructure before project implementation	**Liz Day Consulting:** These are critical issues that have been considered in the Water Resources chapter, albeit briefly, given the space limitations imposed on all authors. We do however agree with your recommendations, which are included in our chapter. The details of impact mitigation and management would need to be addressed in individual EIA applications if this project were to proceed beyond SEA level, and it would be critical for the control and management of water systems in the area to be efficient and well-governed. We have strengthened recommendations in the chapter in this regard.
Natural Justice	169	Chapter 4	4-1 to 4-2	5-18		The chapter correctly identifies water availability as a strategic constraint within the Namakwa Region. However, the SEA should more clearly assess whether the scale of industrialisation contemplated under the Small and Large GH_2 scenarios is fundamentally compatible with the hydrological carrying capacity of the region.	**Liz Day Consulting:** This is acknowledged under section E8 Conclusions (page 4-10; lines 4 - 7), including the following statement: "Overall, it must be stressed that while solar and wind energy sources in the study area may be amply available, the limited availability of water resources and the high sensitivity of aquatic ecosystems in this particular region is a major constraint for such development at the outset, taking into account current and future demands and projected climate change impacts".
Natural Justice	170	Chapter 4	4-2	8-19		The chapter acknowledges that the region is characterised by arid conditions, limited rainfall and climate variability. These baseline constraints should be treated as foundational strategic limitations rather than challenges assumed to be manageable through future technological intervention and infrastructure expansion alone.	**Liz Day Consulting:** Noted. Water availability is agreed to be a foundational strategic threshold and believed to be treated as such in this chapter. Additional points regarding the risks of the mitigation measures have been added on pages 4-69, 80 and 93.
Natural Justice	171	Chapter 4	4-3	6-22	Figure 4-1	The SEA should clarify the assumptions used to estimate future industrial, settlement and construction-phase water demand under both GH_2 scenarios, including assumptions relating to population growth, desalination yield, losses and infrastructure reliability.	**CSIR:** In the SPM, the scenario quantification includes indicative desalination requirements for GH_2 production (approximately 35.7 ML/day for Scenario 1 and 285.7 ML/day for Scenario 2), together with the associated port, SEZ and linear infrastructure assumptions. The SEA also recognises that future industrial, settlement and construction-phase demand will depend on uncertain factors such as population growth, in-migration, infrastructure performance and service-delivery capacity See Chapters 6 & 7).
Natural Justice	172	Chapter 4	4-4 to 4-5	4-18		The regional hydrological context should be integrated more directly with the infrastructure and settlement growth projections discussed in Chapter 6. Water availability cannot be assessed independently from projected population growth, freight infrastructure, renewable energy expansion and associated industrialisation.	**Liz Day Consulting:** Chapter 4 does align with the projections considered in Chapter 6, and assumes substantial ppulation growth in the event of increased reasl or perceived employment opportunities. Chapter 4 makes it clear that water is a critically scarce resource - see Conclusions on page 4-93, including: "Overall, it must be stressed that while solar and wind energy sources in the study area may be amply available, the limited availability of water resources and the high sensitivity of aquatic ecosystems in this particular region is a major constraint for such development at the outset, taking into account current and future demands and projected climate change impacts".
Natural Justice	173	Chapter 4	4-5	10-25		The groundwater assessment should more explicitly evaluate cumulative abstraction pressure under simultaneous industrial, settlement and agricultural demand scenarios. The SEA presently assesses groundwater largely in sectoral terms rather than as a shared regional constraint.	**Liz Day Consulting:** An addition has been made to section 4.8.3.2 (page 4-69: lines 23-26) highlighting this as a concern, however, this cannot be qualitatively assessed at this time. This would be investigated under the EIA stage of the project.
Natural Justice	174	Chapter 4	4-6	5-17		The chapter refers to uncertainties regarding recharge rates and long-term aquifer sustainability. Given the acknowledged uncertainty and climate vulnerability of the region, the SEA should adopt a more precautionary approach consistent with section 2(4)(a)(vii) of NEMA.	**Liz Day Consulting:** It is noted that groundwater resources are incredibly strained in the area. The unmitigated risks to groundwater resources are classified as high to very high with the presented development scenarios. Further, we have noted that risks to groundwater in highly sensitive areas remain high, even with mitigation - which is a conservative approach. It has been noted that the development has no positive impacts to water resources resources without any intervention. With intervention, these opportunites are only classied as moderate.
Natural Justice	175	Chapter 4	4-6 to 4-7	8-24		The SEA relies heavily on desalination as a strategic water supply intervention. However, the chapter should more critically assess the cumulative ecological, energy and operational implications of large-scale desalination infrastructure, including brine discharge, marine ecological effects, energy demand and long-term climate resilience.	**CSIR:** Refer to the Marine ecology assessmentc chapter in WP1. https://www.csir.co.za/sites/default/files/2025-12/Chapter%202%20Marine%20ecology_Final.pdf **Liz Day Consulting:** The authors agree with the need for a critical assessment of the implications of large-scale desalinatiom infrastructure, which would be the only means by which further development in this area could occur from a water resource perspective. Chapter 4 identifies the ecological and supply risks associated with this. Note however that brine discharges and impacts to marine ecosystems are outside of the scope of this chapter, which focuses on inland water resources (surface and groundwater).
Natural Justice	176	Chapter 4	4-7	12-24		The chapter should assess the implications of desalination dependence during periods of energy disruption, prolonged drought, marine ecosystem stress or infrastructure failure. Strategic water planning should include failure and contingency scenarios.	**Liz Day Consulting:** This point has been added: Page 4-69 (Section 4.8.3.2). Note however that Chapter 4 does not deal with marine ecosystems.
Natural Justice	177	Chapter 4	4-8 to 4-9	6-20	Figures 4-3 and 4-4	The aquatic ecology baseline should more clearly distinguish between systems capable of recovery and systems characterised by slow regeneration and ecological fragility. This is particularly important in arid environments where hydrological disturbance may have long-term consequences	**Liz Day Consulting:** This is already covered in Section 4.7.4 - Page 4-60-61. Also Section 4.7.3.1 (lines 15-18).
Natural Justice	178	Chapter 4	4-9	4-19		The SEA should clarify whether seasonal ecological surveys and long-term hydrological monitoring data were available across all identified aquatic systems. The absence of seasonal and long-term data may affect the reliability of ecological sensitivity conclusions.	**Liz Day Consulting:** This has been expanded on in Section 4.1.4 - Page 4-18 (Lines 33-35).
Natural Justice	179	Chapter 4	4-10 to 4-11	5-21		The assessment of wetlands and river systems should include stronger analysis of cumulative disturbance associated with roads, pipelines, transmission corridors and settlement expansion. These impacts may interact over time and extend beyond direct footprint areas.	**Liz Day Consulting:** These issues are already discussed in Section 4.8.4.2. The cumulative impacts have however now been emphasized (See page 4-73: line 27).
Natural Justice	180	Chapter 4	4-11	6-18		The chapter should more clearly identify aquatic systems that should be treated as strategic avoidance areas due to hydrological sensitivity, ecological importance or limited resilience.	**Liz Day Consulting:** All aquatic ecosystems are classified as Very High or High sensitivity (see Table 4.7.6 (Page 4-63) and Figure 4.7.3 (Page 4-65). Avoidance of all of these areas is recommended - Section 4.9.8 (Page 4-92: Lines 14-19).
Natural Justice	181	Chapter 4	4-12	7-21		The SEA should assess the cumulative implications of construction runoff, wastewater generation, hydrocarbon contamination, brine discharge and industrial pollution under both GH_2 scenarios. Water quality impacts are presently discussed too narrowly and should be integrated regionally.	**Liz Day Consulting:** Section 4.9.5.1 (page 4-85) does discuss these impacts. This chater is already much longer than the prescribed page limits so detailed impact descriptions were not possible. Construction phase impacts have however now been highlighted in that section as a particular issue.
Natural Justice	182	Chapter 4	4-13	11-26		The chapter should clarify the thresholds used to determine acceptable water quality impacts and whether these thresholds account for cumulative industrialisation and climate-related stressors.	**Liz Day Consulting:** Long-term site specific data are required to set thresholds of concern for different water quality variables. This chapter qualitatively raises changes in water quality (salinity, nutrients, hydrocarbons, other potential toxicants etc) as potentially harmful impacts that could damage aquatic ecosystems and impact on the fitness for use of water. However, defining long-term RQOs and setting thresholds of concern would need to be undertaken as part of the detailed studies that would need to be carried out at EIA level if these projects proceeded to that stage.
Natural Justice	183	Chapter 4	4-14 to 4-15	8-23		The SEA should integrate the aquatic ecology assessment more directly with marine ecological concerns associated with desalination, increased shipping activity and port infrastructure expansion. Coastal and marine systems are hydrologically and ecologically interconnected.	**CSIR:** Refer to the Marine ecology assessmentc chapter in WP1. https://www.csir.co.za/sites/default/files/2025-12/Chapter%202%20Marine%20ecology_Final.pdf **Liz Day Consulting:** This chapter does not deal with marine ecosystems.
Natural Justice	184	Chapter 4	4-16	5-20		The chapter acknowledges uncertainty regarding future climate conditions and hydrological variability. The SEA should therefore avoid presenting future water security as sufficiently predictable or controllable through infrastructure expansion alone.	**Liz Day Consulting:** Noted. Water availability is agreed to be a foundational strategic threshold and believed to be treated as such in this chapter. Additional points regarding the risks associated with some of the mitigation measures have been added in Section 4.9.3.2 (page 4-80) and Section 4.9.4.2 (Page 4-83).
Natural Justice	185	Chapter 4	4-17 to 4-18	6-24	Figures 4-8 and 4-9	The SEA should identify which proposed water infrastructure components are conceptual, which are planned and funded, and which remain speculative. This distinction is necessary to assess whether projected mitigation measures are realistically achievable.	**Liz Day Consulting:** All infrastructure would need to be supplied, managed and maintained - the study area does not have adequate water or sanitation infrastructure for present communities. An important assumption is that infrastructure (including upgrading of roads, transmission lines, bridges, power supplies, water treatment and reticulation works; and sewage treatment and disposal) would all need to be supplied in line with expanding populations and industry. This is raised as a threat in Section 4.9.5.1 (page 4-85).
Natural Justice	186	Chapter 4	Page 4-18	13-27		The chapter should more clearly assess whether existing municipal water and sanitation systems possess sufficient reserve capacity to support projected worker influx and industrial demand during peak construction periods.	**Liz Day Consulting:** See inclusion in Section 4.10 (final paragraph); also Section 4.6.6 (page 4-53).
Natural Justice	187	Chapter 4	Page 4-19 to 4-20	7-23	Tables 4-5 and 4-6	The risk assessment should explain how uncertainty, climate variability and mitigation failure were incorporated into risk ratings. Risks should not be downgraded purely on the assumption that future infrastructure upgrades will occur successfully and on time	**Liz Day Consulting:** The risks ARE downgraded with effective management and/or mitigation. However. If these cannot be implemented, then the risks effectively remain unmitigated. However, the point you are making I think is that there cannot be a tick-box exercise of assuming that mitigation measures are actually implementable within the municipal and other structures of the region This is agreed with, and the report has been modified (as already noted elsewhere) to highlight these risks further.
Natural Justice	188	Chapter 4	4-20	7-18		The SEA should clarify whether cumulative water demand from mining, settlements, agriculture and hydrogen production was assessed together or in separate sectoral assessments. Water allocation pressure must be evaluated cumulatively at regional scale	**Liz Day Consulting:** See Section 4.6 (page 4-60 onwards). The demand of different segments is considered there - the cumulative pressure is what points to the conclusions of the chapter ("Overall, it must be stressed that while solar and wind energy sources in the study area may be amply available, the limited availability of water resources and the high sensitivity of aquatic ecosystems in this particular region is a major constraint for such development at the outset, taking into account current and future demands; and projected climate change impacts; and the existing capacity constraints of water, sanitation and other services in the region." (Section 4.10: page 4-93))
Natural Justice	189	Chapter 4	4-21 to 4-22	8-24		Many mitigation measures rely on future governance coordination, desalination rollout, monitoring systems and infrastructure expansion. The SEA should identify responsible authorities, implementation sequencing, funding sources and enforcement mechanisms for each major mitigation intervention.	**Liz Day Consulting:** This is beyond the scope of this chapter of the SEA, but it is agreed that it would need to be a critically important aspect of planning, if this project were to proceed beyond SEA level.
Natural Justice	190	Chapter 4	4-22	10-24		The SEA should distinguish between mitigation measures that reduce impacts and mitigation measures that merely transfer risk spatially or temporally. Desalination, for example, may reduce freshwater abstraction pressure while increasing marine ecological and energy-related impacts.	**Liz Day Consulting:** This is a valid comment; and has been acknowledged in Section 4.9.3.2 on page 4-80 (lines 17 - 22).
Natural Justice	191	Chapter 4	4-23 to 4-24	6-21		The cumulative impact assessment should more explicitly integrate water availability with biodiversity loss, settlement expansion, infrastructure development and socio-economic vulnerability. Water stress is likely to intensify multiple other risks identified throughout WP2.	**Liz Day Consulting:** See Section 4.10 (lines 9-21); Section 4.8.4.2 (page 4-73).
Natural Justice	192	Chapter 4	4-25	5-19		The chapter should assess whether there are strategic thresholds beyond which additional industrial water demand becomes incompatible with ecological sustainability and municipal water security.	**Liz Day Consulting:** The chapter has noted that the only way that the proposed project could continue from a water demand perspective is with large-scale roll-out of desalination, and that would bring with it other risks, particularly to sensitive ecosystems. ("Overall, it must be stressed that while solar and wind energy sources in the study area may be amply available, the limited availability of water resources and the high sensitivity of aquatic ecosystems in this particular region is a major constraint for such development at the outset, taking into account current and future demands; and projected climate change impacts; and the existing capacity constraints of water, sanitation and other services in the region." (Section 4.10: page 4-93)).
Natural Justice	193	Chapter 4	4-26 to 4-27	7-22		The SEA should include stronger requirements for long-term hydrological monitoring, adaptive management and cumulative water accounting across the Namakwa Region. Monitoring should occur at regional rather than solely project level.	**Liz Day Consulting:** See addition in Section 4.9.8 (page 4-91).
Natural Justice	194	Chapter 4	4-28	6-18		The SEA should clarify whether all relevant water use authorisations, discharge requirements and regulatory approvals have been considered strategically, particularly in relation to cumulative abstraction and desalination infrastructure.	**Liz Day Consulting:** Regulatory approvals would be a requirement for many aspects of the proposed development if it proceeded - these would need to be addressed in EIA stage, but should be informed by Resource Classification, conservation planning and other strategic plans for the area - this chapter has referred to these, and the Aquatic Biodiversity sensitivity map includes reference to strategic Conservation Planning data. See also additions in Section 4.10 (page 4-94: lines 29-32).
Natural Justice	195	Chapter 4	4-29 to 4-30	8-24		The chapter acknowledges several knowledge gaps relating to hydrology, climate projections and aquatic ecological response. The SEA should identify which uncertainties are material enough to affect strategic suitability conclusions and which require resolution before future project approvals proceed.	**Liz Day Consulting:** See additions in Section 4.10 (page 4-94: lines 29-32).
Natural Justice	196	Chapter 4	4-31	5-18		The conclusion should more clearly acknowledge that water availability may constitute a limiting factor to development intensity within portions of the Namakwa Region. This should be reflected in the SEA's strategic recommendations and scenario evaluation.	**Liz Day Consulting:** This is acknowledged under section E8 Conclusions (page 4-10; lines 4 - 7) and Section 4.10 (page 4-94).
Natural Justice	197	Chapter 4	4-32 to 4-35	6-22		The SEA should ensure that all hydrological modelling assumptions, climate datasets, abstraction estimates and ecological thresholds are transparently disclosed and reproducible. Strategic planning conclusions should be capable of independent verification.	**Liz Day Consulting:** All of these datasets have been referenced in-text and full citations are available in the reference list.
Natural Justice	198	Chapter 4	4-36 to 4-40	7-24		The appendices should be integrated more directly into the main chapter analysis. Several important constraints and technical assumptions appear confined to appendices rather than being fully reflected in the strategic conclusions and risk ratings.	**Liz Day Consulting:** The appendices were used because of tight constraints on the length of the chapter - originally required to be no longer than 40 pages including Executive Summary but excluding appendices.
Natural Justice	199	Chapter 4	4-1 to 4-40	Whole chapter		A recurring concern throughout Chapter 4 is that severe regional water constraints are repeatedly acknowledged but ultimately treated as manageable through future mitigation, desalination and infrastructure expansion. The SEA should adopt a more precautionary and constraint-led approach. Given the scale of development contemplated, water availability should be treated as a foundational strategic threshold rather than a challenge assumed to be solvable through future intervention alone.	**Liz Day Consulting:** Water availability is agreed to be a foundational strategic threshold and is believed to have been treated as such in this chapter. It was, however, in the scope of the project to identify mitigation measures. Although the authors are in agreement that the water constraints are not easily overcome, chapter contraints did not allow for full development of the evaluation into the proposed mitigation measures at this stage as this will be assessed in much greater detail in the EIA stage. Additional discussion regarding the risks of desalination and the dependency of the project on upscaling infrastructure have however been highlighted, as already described above.

Environmental Traits	200	Chapter 5				**Heritage** The current approach to heritage is overly technical and does not adequately recognize livingheritage or community-defined cultural significance 1. Key issues • Over-reliance on external experts (e.g. palaeontologists) • InsuRicient recognition of: • Sacred sites • Burial grounds • Cultural landscapes • Risk of irreversible damage • Lack of community authority in defining heritage Our heritage here in Richtersveld is not purely scientific or archeological. It is lived, daily. It is spiritual. And it is deeply tied to our land. 2. We recommend • Early-stage, community-led heritage mapping • Establishment of no-go areas, including: • Richtersveld World Heritage Site (including buRer zones) • Sacred and burial sites • Legal protection mechanisms that go beyond documentation • Inclusion of communities as decision-makers, not just informants	**ASHA Consulting:** The purpose of the Heritage Resources SEA is to evaluate the opportunities and constraints of the Boegoebaai large scale strategic development at the regional and national scale. Since it involves assessing environmental considerations at a broad scale, it typically involves the use of specialists. The Public Participation phase during the SEA, provides for communities and stakeholders to identify significant gaps. The importance of involving communities in the recording of burial grounds, cultural landscapes, sacred sites, etc is recognized. This process will occur during the Environmental Authorization phase when Heritage Impact Assessments are undertaken for each component of the project. The commentator calls for the "Early-stage, community-led heritage mapping (including sacred and burial sites)" and this is endorsed. The Richtersveld World Heritage Site, including the buffer zone, are considered as no-go areas and reflected as such in the SEA. The Heritage Resources SEA recognises that heritage significance is not determined solely through scientific or technical assessment, but also through community memory, customary practice, spiritual association and lived experience. Specialist studies and community-based knowledge systems should therefore be understood as complementary rather than competing forms of heritage knowledge.
Natasha Higgitt	201	Chapter 5	5-6	22		Discussions must also be held with SAHRA in this regard	**ASHA Consulting:** Corrected
Natasha Higgitt	202	Chapter 5	5-12	11		Living heritage landscape may be graded and declared as formally protected sites i.e. Sec 27, 28, 30	**ASHA Consulting:** Added
Natasha Higgitt	203	Chapter 5	5-24	33		As per above comment	**ASHA Consulting:** Added
Natasha Higgitt	204	Chapter 5	5-36	9		As per comment for page 5-5 line 20	**ASHA Consulting:** Added
Natasha Higgitt	205	Chapter 5	5-48	2		As per comment for page 5-5 line 38-40	**ASHA Consulting:** See relevant response below (comment ID 214)
Natural Justice	206	Chapter 5	5-6	19-24		The SEA acknowledges that spatial sensitivity mapping for graves is impractical because many graves are unmarked, undocumented or located in dynamic environments such as coastal dunes. However, the implications of this observation are not followed through with sufficient clarity. Recognising that graves may occur almost anywhere confirms that land disturbance activities within these areas may present significant heritage risks. The SEA should therefore adopt a stronger precautionary approach to spatial planning where grave occurrence and heritage sensitivity remain uncertain. The SEA should also clarify the role of competent authorities and applicable heritage processes where graves may be encountered or affected.	**ASHA Consulting:** The SEA therefore recommends that areas characterised by mobile dune systems, historical occupation or known burial occurrence should be treated as areas requiring heightened precaution during project planning and site selection. Risk also includes a measure of probability. Probability is almost always very low with regards to graves. However, the main concern remains coastal dunefields and the coastal zone has been indicated as of high sensitivity.
Natural Justice	207	Chapter 5	5-24 to 5-25	24-31; 1-6		The SEA recognises living heritage as an ongoing and dynamic system of practices, knowledge and relationships to land, rather than a collection of sites. This includes Nama pastoralism, transhumance and the inseparability of cultural practices from land and natural resources. However, this acknowledgement remains largely descriptive. The SEA should further explain how living heritage considerations will influence strategic planning pathways, infrastructure siting and cumulative impact assessment.	**ASHA Consulting:** The Heritage Resources SEA acknowledges that the Living Heritage component is presently based primarily on desktop review and existing literature. Detailed field-based engagement with affected communities (potentially as a collaboration with social impact assessors) will be required during subsequent project-level assessments in order to understand how seasonal grazing systems, stockposts, mobility routes and culturally significant landscapes may be affected by proposed developments. Further planning of developments and infrastructure can only then take place. Cumulative impacts will need to be considered in each EIA as development applications progress.
Natural Justice	208	Chapter 5				There is a need to articulate the roles of competent authorities for decisions regarding graves under the NHRA, and that reburial cannot occur without the consent and meaningful involvement of affected Indigenous communities, in line with customary law and emerging FPIC standards.	**ASHA Consulting:** Chapter 5 has addressed the sensitivity of human remains, as per Section 36 of the NHRA. It has described how human remains may occur anywhere across the landscape, spanning the period of human settlement up to the present. Since burials cannot be identified in advance of development, the NHRA provides strict requirements when human remains are accidentally uncovered (Section 36 (3) (a) to (c)). Any graves accidentally uncovered must be reported to the South African Police Service, as well as the relevant heritage authority (SAHRA). Section 36(5) provides for consultation with communities and individuals who have an interest in the grave or burial ground. Any decisions regarding relocation or reburial would require consultation with affected families, communities and relevant authorities in accordance with Section 36 of the NHRA and applicable customary practices.
Natural Justice	209	Chapter 5				To address the implication that the inability to map graves reduces sensitivity, the SEA may increase the level of precaution applied in spatial planning.	**ASHA Consulting:** Inability to map graves does NOT reduce sensitivity. However, where there is a low likelihood of graves being found, the sensitivity is low. This applies through most of the study area, but the coastal strip is clearly more sensitive and has been mapped as such in the SEA.
Natural Justice	210	Chapter 5	5-24	24-31		The SEA recognises living heritage as an ongoing, dynamic system of practices, knowledge and relationships to land, rather than a collection of sites. This includes Nama pastoralism, transhumance and the inseparability of cultural practices from land and natural resources. However, this acknowledgement remains largely descriptive.	**ASHA Consulting:** The Heritage Resources SEA acknowledges that the Living Heritage component is presently based primarily on desktop review and existing literature. Detailed field-based engagement with affected communities will be required during subsequent project-level assessments (Heritage Impact Assessments) in order to understand how seasonal grazing systems, stockposts, mobility routes and culturally significant landscapes may be affected by proposed developments.
Natural Justice	211	Chapter 5				The SEA should clarify that where living heritage is present, FPIC is a prerequisite for any development pathway, consistent with National Heritage Resources Act 25 of 1999 and Section 2 of the National Environmental Management Act principles, and the UN Declaration on the Rights of Indigenous Peoples.	**ASHA Consulting:** While FPIC is not expressly prescribed within the NHRA, the SEA recognises the importance of meaningful, culturally appropriate and early engagement with affected Indigenous communities, consistent with constitutional principles, NEMA participation requirements, and evolving international best practice relating to indigenous heritage and living cultural landscapes. FPIC may need to be obtained prior to the initiation of EIA studies. It is not the role of an impact assessor to obtain consent from land owners or custodians for development.
Natural Justice	212	Chapter 5	5-35	32-35		The SEA recommends participatory and consultative approaches, including PDIA and enhanced forms of engagement of consent. We recommend establishing an explicit link between the recognition of living heritage and the binding requirement for PDIA-led planning processes that extend beyond project-level engagement.	**ASHA Consulting:** Noted. The SEA supports iterative and participatory engagement approaches that enable ongoing dialogue with affected communities throughout planning and assessment processes.
Nokukhanya Khumalo	213	Chapter 5	5-5	20		The sentence reads as incomplete. Not all Heritage sites are tourist sites	**ASHA Consulting:** Additional word added.
Nokukhanya Khumalo	214	Chapter 5	5-5	38-40		Just include that every development related to this SEA that triggers section 38(8) requires a heritage assessment. If this leads to exclusion zones, then it would be more clearer to EAPs on the heritage requirements.	**ASHA Consulting:** The SEA recognises that project-level HIAs may identify heritage exclusion or no-go areas where impacts cannot be acceptably mitigated.
Nokukhanya Khumalo	215	Chapter 5	5-6	4-20		The same comment above applies for PIA studies	**ASHA Consulting:** Noted.
Nokukhanya Khumalo	216	Chapter 5	5-13	13-15		We note that the area has very high significance for scenic routes and we are concerned that this is not included as a chapter in the SEA report.	**ASHA Consulting:** The SEA acknowledges the importance of scenic routes and visual landscape character within the Namaqua region. While a dedicated visual specialist chapter was not included in the SEA (which is seen as a limitation), visual sensitivity mapping informed the heritage assessment, and we note that detailed visual impact assessments will be required during subsequent project-level EIAs where visual impacts may arise.
Nokukhanya Khumalo	217	Chapter 5				In general this report does not include possible mitigation measures for the identified potential impacts for each scenario	**ASHA Consulting:** At SEA scale, mitigation measures are necessarily strategic rather than site-specific. The purpose of the SEA is to identify broad constraints, sensitivities and planning principles that should guide future development pathways and subsequent project-level assessments. The broad-based mitigation measures include: •Avoidance of high sensitivity landscapes •Heritage buffers •Phased assessment •Community consultation.
Natural Justice	218	Chapter 6	6 -2	3-7		The chapter evaluates infrastructure and governance risks under separate thematic categories, namely "Development Planning and Regulatory Capacity", "Settlement Infrastructure Development and Management" and "Construction of Economic Infrastructure". However, the SEA does not sufficiently assess the cumulative interaction between these systems as interdependent regional pressures. Given the strategic nature of the SEA, greater emphasis should be placed on integrated cumulative impact assessment in line with section 24O(1)(b) of NEMA, which requires consideration of all relevant factors and information before environmental decision-making.	**CSIR Infrastructure & Planning Authors:** This executive summary delineates the principal risk domains. Several potential impacts could not be examined in detail, as such analysis would require more granular, project-specific information to enable precise quantification of the associated requirements. Consequently, only high-level implications could be derived from the information currently available (particularly with respect to individual projects). The methodological characteristics of the Strategic Environmental Assessment (SEA) constrain the assessment to approximately three risks per thematic area. As a result, only aggregated, high-level, and most significant risks could be articulated. This aggregation approach similarly necessitated the clustering of related impacts into broader categories.
Natural Justice	219	Chapter 6	6 -2	10 -17		The chapter acknowledges that "without new capacity, institutions will be unable to manage high volumes" and that risks remain "severe without mitigation". However, the SEA does not sufficiently assess whether municipalities presently possess the institutional, financial and technical capacity necessary to absorb industrialisation at the scale contemplated. The reliance on future institutional strengthening without demonstrated implementation pathways or secured resources renders the mitigation approach speculative.	**CSIR Infrastructure & Planning Authors:** Information available to the team, including the DBSA Partner a District assessment, indicated significant deficiencies in municipal institutional and technical capacity. These capacity constraints are also documented in Chapter 5. Future resource availability remains uncertain, particularly given the existing fiscal and human-resource limitations within municipalities. Consequently, existing implementation pathways must be reinforced, while planning support and evidence-based decision-making processes require substantial enhancement. The precise institutional or procedural mechanisms through which these improvements will be operationalised cannot be prescribed within the SEA. Instead, it will be the responsibility of municipalities, supported by the District and Provincial authorities, to design, adopt, and implement workable, context-appropriate mechanisms.
Natural Justice	220	Chapter 6	6 -2	18 -24		The proposed mitigation measures rely on a strengthened planning support mechanism, dedicated municipal planners and coordinated servitude processes. These recommendations require more detail on responsible authorities, funding, implementation timeframes and enforceability. Without this, the mitigation remains aspirational.	**CSIR Infrastructure & Planning Authors:** There is a recognised gap between economic development project planning (where NCEDA operates) and statutory spatial planning (Where the PSDF and NCPS operates). There is need for improved cross-sectoral policy and project implementation for a more cohesive development approach. Spatial planning in the boegoebaai region is the responsibility of the local municipalities, supported by provincial and national government. The TNPA are responsible for port planning. NCEDA as the lead implementing agency must work within the planning system.One possiblility is to enhance NCEDA's ability to coordinate project implementation, address funding, ect. However local planning capacity needs to be strengthened considering the high level of pressure on local planning decisionmaking and enforcement.
Natural Justice	221	Chapter 6	6 -2 to 6 -3	25 -4		The chapter acknowledges that multiple simultaneous projects, including the port, SEZ, pipelines, transmission and renewable energy infrastructure, will create severe pressure on transport, land and resource systems. The SEA should include an integrated cumulative infrastructure map showing where these systems overlap spatially and where combined impacts are likely to be highest.	**CSIR Infrastructure & Planning Authors:** Agreed. A map showing infrastructure elements is provided in the Summary for Policymakers document (Figure SPM 7). It should be noted, however, that not all projects are displayed, as some, such as green energy developments, are not yet known.
Natural Justice	222	Chapter 6	6 -3	15 -21		The mitigation measures for road maintenance, construction camps, servitudes and construction water demand are too high-level. The SEA should specify minimum requirements for construction camp planning, municipal service protection, borehole licensing, water-use authorisation and monitoring.	**CSIR Infrastructure & Planning Authors:** The specific requirements for construction camp layout, municipal service provision and protection, borehole permitting, and water use authorisations will be defined once detailed project planning has been completed and the relevant design information is available. The responsible municipalities, in coordination with the competent regulatory authorities, should address and resolve these requirements prior to the commencement of project implementation.
Natural Justice	223	Chapter 6	6 -3	22 -29		The chapter concludes that risks may be reduced if institutional, financial and infrastructure measures are sequenced before peak development. This should be framed as a condition precedent, not a general recommendation. If these measures are not in place before development, the SEA's own logic suggests the project would carry moderate to severe risks.	**CSIR Infrastructure & Planning Authors:** The final paragraph of the executive summary was revised to present it as more as a condition precedent.
Natural Justice	224	Chapter 6	6 -4 to 6 -5	9-26		The table of contents confirms that the chapter deals with municipal planning, settlements, water, sanitation, roads, electricity, renewable energy, land ownership, rail, ICT, gas pipelines, risk assessment, management guidelines and annexures. The chapter should therefore include a clearer concluding synthesis drawing these systems together instead of treating them mainly in separate sections.	**CSIR Infrastructure & Planning Authors:** The chapter follows a fairly standard sequence of tasks that needs to be covered. The final chapter Management Guidelines and Monitoring requirement has been adjusted to reflect a more concluding synthesis.
Natural Justice	225	Chapter 6	6-8 to 6-10	Whole definitions section		The definitions section usefully defines IDPs, SPLUMA, MSDFs, REDZs, EGI corridors, SEAs, SIPs and sustainable settlement development. However, the chapter should connect these definitions more explicitly to the legal duties arising under SPLUMA, the Municipal Systems Act and NEMA, particularly in relation to spatial justice, sustainability, intergovernmental coordination and environmental decision-making.	**CSIR Infrastructure & Planning Authors:** The comment is noted. Additions is made in text to reinforce these issues where applicable. Definition of IPILRA added.
Natural Justice	226	Chapter 6	6 -11	5-23		The chapter describes the region's arid climate, water scarcity, limited services, outmigration and social challenges, while also presenting the port and SEZ as an opportunity to unlock growth. The SEA should more clearly test whether the scale of proposed development is compatible with these baseline constraints, rather than assuming that investment will resolve them.	**CSIR Infrastructure & Planning Authors:** The chapter highlights that in the absence of interventions to address the baseline constraints, the scale of the proposed developments places these projects at significant risk and exposes them to additional implementation challenges. Specifically, it emphasizes the necessity of first resolving local constraints-such as water scarcity and limited service provision-before the successful realization of these projects can be ensured.
Natural Justice	227	Chapter 6	6-11	19-23		The chapter notes that the project is designated as a SIP and that feasibility studies are being led by Sasol under an MoU with NCEDA, while Transnet has undertaken port investigations. The SEA should clarify how these pre-existing institutional commitments affect the independence of strategic alternatives assessment and whether the "no-go" or lower-intensity development pathway remains genuinely available.	**CSIR Infrastructure & Planning Authors:** The comment is noted and the concern regarding the influence of existing Strategic Integrated Project (SIP) designation and feasibility work on the independence of the SEA is acknowledged. Addition to the text to note this issue.
Natural Justice	228	Chapter 6	6-11	24-29		The chapter states that a broad regional perspective is applied where possible. Given that WP2 is intended to assess broader cumulative risks, this should be strengthened into a consistent regional cumulative assessment across all infrastructure components, including induced settlement growth and secondary development.	**CSIR Infrastructure & Planning Authors:** The comment is noted and the more explicit regional cumulative framing is provided in the respective section.
Natural Justice	229	Chapter 6	6-12 to 6-13		Figures 6-1 and 6-2	The figures identifying the receiving environment and land-use change applications should be used to identify spatial areas where development pressure, land-use conversion and environmental sensitivity overlap. The SEA should convert this into clear spatial guidance on where development should be avoided, discouraged or subjected to heightened scrutiny.	**CSIR Infrastructure & Planning Authors:** The authors agree in principle that the intersection of development pressure, land-use change, and environmental sensitivity should guide strategic spatial planning. However, the main spatial sensitivity and avoidance mapping is presented in other WP2 chapters (such as ecology, avifauna, and heritage), which supply the detailed "no-go" and "heightened scrutiny" layers. The purpose of the map (figure 6-1) is simply to illustrate the heterogeneity of the region by showing land cover patterns. The inclusion of the focal area – the Boegoebaai site – serves only to situate it within the broader regional context. Figure 6-2 doesn't attempt to catalogue every activity that might trigger land development or land use change applications in the study area. Instead, it brings together a targeted set of examples that showcase the complex, multidimensional nature of land development and land use change.
Natural Justice	230	Chapter 6	6-14 to 6-15	Section 6.1.3	Figure 6-3	The chapter recognises the importance of integrated intergovernmental planning. It should identify the specific legal and institutional mechanisms through which this coordination will occur, including IDPs, SDFs, SPLUMA processes, provincial planning and NEMA section 24K coordination. Without this, intergovernmental planning remains a general principle rather than an implementation tool.	**CSIR Infrastructure & Planning Authors:** The comment is noted. Edited the caption of figure 6-3. Added a paragraph to section 6.1 to empasise the importance of integrated intergovernmental planning.
Natural Justice	231	Chapter 6	6-16 to 6-17	Section 6.2.2	Table 6-1	The baseline discussion on municipal planning and management should assess whether the current District Municipal Tribunal and municipal planning systems can lawfully and practically process the expected scale of land-use applications. If not, this should be recorded as a strategic constraint, not only a capacity issue.	**CSIR Infrastructure & Planning Authors:** For the baseline scenario, the existing district municipal tribunal and current municipal planning systems appear sufficient, given the present scale of development and the relatively low volume of land use applications. In contrast, Section 3 shows that, in light of the pressures associated with the anticipated developments, the municipal planning and management systems will be unable to cope, which would, in turn, create a significant strategic constraint. Added text to 6.2.1.
Natural Justice	232	Chapter 6	6-17 to 6-19	Section 6.2.2	Table 6-2 and Figure 6-4	The settlement dynamics section identifies existing informal structures and settlement growth. The SEA should assess how the project may intensify existing housing backlogs, informal settlement expansion and service delivery pressure, particularly in Port Nolloth, Alexander Bay, Sanddrift, Steinkopf and Springbok	**CSIR Infrastructure & Planning Authors:** Section 6.3.4 seeks to capture the effects on settlements arising from the developments described in the Small and, subsequently, the Large green hydrogen scenarios. Furthermore, Section 6.5.5 intends to present high-level population projections, while noting that more detailed forecasts of town growth and regional service requirements will be essential to inform planning, budgeting, and the construction or upgrading of existing infrastructure and associated service provision. (This section reflects the baseline scenario.)

Natural Justice	233	Chapter 6	6-19	7-13		The chapter states that municipal incomes are inadequate to meet infrastructure needs and that municipalities rely on transfers, sector projects or private investment. This is a central feasibility concern. The SEA should identify which infrastructure upgrades are publicly funded, which are developer-dependent and which remain unfunded.	**CSIR Infrastructure & Planning Authors:** The authors partially agrees. Chapter 6 recognises that municipal revenue bases are limited and that municipalities depend on intergovernmental transfers, sector programmes and private investment; however, not all project-level funding decisions are finalised at SEA stage.
Natural Justice	234	Chapter 6	6-19	14-32	Tables 6-3 and 6-4	The chapter records poor water reliability and critically low Blue Drop scores, including Richtersveld at 21.94%, Khai-Ma at 15.19%, Nama Khoi at 36.61% and Kamiesberg at 8.02%. Given that scores below 31% are classified as critical, the SEA should treat water and sanitation capacity as a threshold constraint to development sequencing. No substantial construction or worker influx should proceed without prior service upgrades.	**CSIR Infrastructure & Planning Authors:** The comment is noted and the concern about water and sanitation performance is acknowledged. Section 6.2.3.1 edited - sentence added to reflect that water and sanitation capacities act as critical limiting factors for settlements and must be improved before they can accommodate incoming and expanding populations, which are likely to result from major regional projects. Also edited Table 6-13 to indicate that substantial construction activity and associated worker influx should be sequenced to follow, or be conditional upon, secured upgrades and sustainable operation of core water and sanitation infrastructure.
Natural Justice	235	Chapter 6	6-20 to 6-21	6.2.3.2	Figure 6-5	The road infrastructure section should assess not only road condition, but the cumulative public safety, dust, noise and maintenance impacts of heavy freight movement on communities along the R382, N7 and N14. These impacts should be integrated with Chapter 7's socio-economic analysis.	**CSIR Infrastructure & Planning Authors:** This section reflects the current status of roads. Section 6.3.3.1 mentions the Noise and publich safety issues resulting from major road projects, especialy those near or in settlements. Recommended that the construction of a rail line to to port be undertaken sooner that what was indicated in Transnet pre-studies. repeated tha same reccomendation in section 6.4.1.3. this also aligns with what is proposed in section 7.
Natural Justice	236	Chapter 6	6-21 to 6-22	6.2.3.3 and 6.2.3.4	Figures 6-7	The electricity and renewable energy baseline should clarify whether the proposed energy infrastructure is intended primarily to serve local energy poverty and municipal resilience or the export-oriented GH_2 value chain. If local benefits are anticipated, the SEA should specify how they will be secured.	**CSIR Infrastructure & Planning Authors:** The enegy baseline as reflected in 6.2.3.3 only reflects the current planning to strenghten the electricity infrastructure to support current growth in demand and to facilitate electricfication of new develoments. It does not account for the considerable impact on demand brought about by the proposed port, SEZ and related developments. Section 6.3.3.5 reflects the implications related to the Small and Big Green hydrogen scenarios.
Natural Justice	237	Chapter 6	6-23	6.2.3.5	Figure 6-7	The land ownership section should go further than mapping ownership. It should assess legal and social risks arising from communal land, CPA governance, historical dispossession, servitudes and benefit-sharing. These matters should be treated as central to project feasibility and procedural fairness	**CSIR Infrastructure & Planning Authors:** The authors acknowledge the sensitive issue of land ownership. The chapter identified it as a critical issue, and given its histroy and sensitivity needs. Edits were introduced to clarify that strategic backing for the Boegoebaai Port and SEZ is contingent on transparent, lawful and inclusive governance of the restituted communal land, in line with IPILRA, the restitution outcomes and the decision-making requirements of the CPA.
Natural Justice	238	Chapter 6	6-24	6.2.3.6 to 6.2.3.8		The baseline sections on rail, ICT and gas pipelines are brief relative to their importance. The SEA should provide more detail on whether these systems are speculative, planned, funded or already subject to feasibility assessment. Their status affects the reliability of the cumulative impact assessment.	**CSIR Infrastructure & Planning Authors:** This section provides an overview of the baseline conditions, that is, the current state of the system. Section 6.3 examines these aspects in greater depth in the context of the implications associated with both the small-scale and large-scale green hydrogen scenarios.
Natural Justice	239	Chapter 6	6-25	6.2.4	Figure 6-9	The regional development opportunities section should balance opportunity framing with risk distribution. It should identify which communities and municipalities are likely to receive benefits and which are likely to carry infrastructure, environmental and social burdens.	**CSIR Infrastructure & Planning Authors:** The comments have been acknowledged. The section addressing the impacts generated through regional initiatives has been expanded to incorporate comments.
Natural Justice	240	Chapter 6	6-26	1-7		The chapter states that the port, SEZ and linked infrastructure will result in a "myriad of impacts both locally and in the wider region". This statement supports the need for a consolidated cumulative impact assessment across planning, settlement and infrastructure systems.	**CSIR Infrastructure & Planning Authors:** With the exception of regional development occurring outside the study area and not functionally associated with the port and Special Economic Zone (SEZ), this section is intended to capture the impacts explicitly related to SEZ and port development as identified in the Strategic Environmental Assessment (SEA) guideline document. These impacts constitute the primary focus of the subsequent analysis of potential effects. The section seeks to characterise the principal impacts on settlement patterns, spatial planning frameworks, and infrastructure systems.
Natural Justice	241	Chapter 6	6-26	8-20	Figure 6-10	The chapter states that affected municipalities and all spheres of government need to be prepared to support and guide the port, SEZ and infrastructure components. The SEA should assess current preparedness against required capacity and identify capacity gaps as preconditions to development.	**CSIR Infrastructure & Planning Authors:** The baseline conditions described in Section 6.2.1 adequately reflect the existing levels of planning and institutional capacity within the affected municipalities. Section 6.3.1 examines the potential impacts in relation to spatial and development planning, land use management, and governance. The overarching message on this aspect, reiterated in subsequent sections, is that the capacity required beyond the established baseline under both the "Small Green" and "Big Green" scenarios is inadequate to meet the projected demands.
Natural Justice	242	Chapter 6	6.27 to 6-28	6.3.1.1 to 6.3.1.3		The baseline, Small GH_2 and Large GH_2 scenario discussion should be linked to clear decision thresholds. If planning pressure becomes severe without new capacity, the SEA should recommend that development approvals be sequenced only after municipal planning support mechanisms are operational.	**CSIR Infrastructure & Planning Authors:** Please see the previous comment (Comment ID 241)
Natural Justice	243	Chapter 6	6-28 to 6-34	6.3.2	Table 6-5 and Fifure 6-11	The settlement development section should include clearer analysis of who will bear the cost of new housing, water, sanitation, schools, clinics and waste services. The SEA should not assume that municipalities can absorb these costs without secured fiscal commitments.	**CSIR Infrastructure & Planning Authors:** The comment has been noted, and a sentence highlighting that local municipalities are unable to absorb the costs without additional external fiscal support has been added to the text in section 6.3.2.2.
Natural Justice	244	Chapter 6	6-29		Figure 6-11	Figure 6-11 depicts visible infrastructure decline in Alexander Bay, including abandoned buildings, a damaged hospital, decaying streets and rubble. This supports a stronger conclusion that existing settlement infrastructure is fragile and that significant pre-investment is required before major construction-phase population growth occurs.	**CSIR Infrastructure & Planning Authors:** The authors concur that frequently providing visual evidence further reinforces the corresponding explanations. To strengthen the message, a text revision was carried out in Section 6.3.2.
Natural Justice	245	Chapter 6	6-31		Table 6-5	The estimated direct settlement implications linked to the port and SEZ should be accompanied by sensitivity analysis for different household sizes, family relocation patterns, informal settlement growth and non-local labour inflows. Without this, population projections may understate social service demand.	**CSIR Infrastructure & Planning Authors:** The specific settlement impacts associated with demographic factors-such as household size and composition, in-migration, and the formation of informal settlements-cannot be described in detail without project-level data, which was not available at the time of the SEA. This information would be particularly important for planning settlement expansion, bulk infrastructure, and social facilities.
Natural Justice	246	Chapter 6	6-34 to 6-40	Section 6.3.3.1	Tables 6-6 to 6-8 and Figures 6-12 to 6-14	The assessment of road pressure should more explicitly assess cumulative truck traffic, road safety, air quality, dust, emergency response and community health impacts. Heavy freight impacts should not be reduced to road maintenance concerns only.	**CSIR Infrastructure & Planning Authors:** Some of the aspects are raised in section 6.3.3.1 however an addition was made to the text (Small Green Hydrogen Scenario) to empasise the wide impacts brought about by increased road pressure.
Natural Justice	247	Chapter 6	6-37 to 6-39		Tables 6-7 and 6-8	The commodity demand and projected truck traffic tables should clarify assumptions, including commodity volumes, truck capacity, frequency, routing and whether rail alternatives were assessed. This is necessary to evaluate whether road-based freight is environmentally and socially acceptable.	**CSIR Infrastructure & Planning Authors:** Section 6.3.3.1 describes the substantial quantity of ore that would be hauled to the port, while Table 6-8 presents estimates of the number of truck trips per year, month, day, and hour. Together, these indicate an extremely high volume of truck traffic carrying ore to the port. Pre-feasibility studies, however, showed that a rail line would only become viable once road haulage volumes reach 10 MTPA. A potential rail corridor was therefore examined and included in a preliminary study for Transnet. The social acceptability of such extensive road-based freight is a major concern, particularly in light of the tourism and environmental importance of the area.
Natural Justice	248	Chapter 6	6-40 to 6-43	Section 6.3.3.2	Figures 6-15 and 6-16	The proposed rail line is presented as a future infrastructure option. The SEA should clarify its status, feasibility, routing uncertainty, land acquisition implications and environmental authorisation requirements. If rail is necessary to reduce road impacts, this should be treated as a critical mitigation requirement rather than a future option.	**CSIR Infrastructure & Planning Authors:** The development of the rail connection between the Sishen–Saldanha line and the Boegoebaai port depends on road freight volumes surpassing 10 MTPA. The rail link is only economically feasible once this threshold is reached (based on Transnet pre-study). The final route alignment (still to be confirmed) will dictate land acquisition requirements and associated environmental implications (authorisations). Rail will only begin to divert freight from road once volumes exceed 10 MTPA, implying that the road network will continue to bear the majority of freight traffic along the Northern Cape mining belt for many years to come.
Natural Justice	249	Chapter 6	6-43 to 6-48	Section 6.3.3.3	Figures 6-17 to 6-21	The pipeline corridor section should assess land rights, servitude width, construction disturbance, rehabilitation, biodiversity fragmentation, heritage impacts and cumulative effects with roads and transmission lines. Pipeline corridors should not be assessed only as engineering corridors.	**CSIR Infrastructure & Planning Authors:** The 2019 SEA carried out for a natural gas pipeline network provides a strong basis for issues applicable to the development of green hydrogen pipelines. Edited text has been included in Section 6.3.3.3. Detailed pipeline route investigations should be conducted to determine the land impacted, associated environmental effects, and interactions with roads and transmission lines.
Natural Justice	250	Chapter 6	6-48 to 6-49	Section 6.3.3.4	Table 6-9	The green energy projects section should integrate biodiversity, avifauna, bat and water constraints from other WP2 chapters. Renewable energy infrastructure linked to GH_2 cannot be treated as low-impact merely because it is renewable.	**CSIR Infrastructure & Planning Authors:** Renewable energy infrastructure linked to GH_2 is not considered low-impact merely because it is renewable. Given environmental constraints only a few areas within the region are suitable as reflected in Annexure E. Project-specific EIAs are the process of identifying, predicting, assessing, and reducing the biophysical, social, and other relevant impacts of development proposals before any major decisions are made.
Natural Justice	251	Chapter 6	6-49 to 6-50	Section 6.3.3.5	Figure 6-22	The electricity transmission section notes the importance of EGI corridors and transmission planning. The SEA should clarify whether all required transmission infrastructure falls within existing strategic corridors and, if not, what additional environmental assessment and cumulative impact risks arise.	**CSIR Infrastructure & Planning Authors:** (Comment adressed in text) Strategic transmission corridors span much of the region and encompass all current transmission infrastructure. Any new transmission infrastructure expected to be located within these corridors is also included within their coverage. Any development outside these corrodors will require a full scoping and IEA pocess.
Natural Justice	252	Chapter 6	6-50	Lines 4-14	Figure 6-22	The chapter states that transmission infrastructure within gazetted corridors may follow a Basic Assessment rather than a full Scoping and EIA process and that new EGI projects outside corridors may take five to ten years. The SEA should assess whether fast-tracked processes are appropriate where cumulative biodiversity, avifaunal and land rights impacts remain unresolved.	**CSIR:** The SEA recognises that the gazetted EGI corridors are legally identified geographic areas intended to support streamlined environmental processes for electricity transmission infrastructure, based on prior SEA work and associated standards/procedures. However, the existence of a gazetted corridor does not remove the need to address cumulative biodiversity, avifaunal, social and land-rights risks. The SEA's governing logic remains the mitigation hierarchy: avoidance first, then minimisation and rehabilitation, with any residual impacts considered thereafter.
Natural Justice	253	Chapter 6	6-50	Lines 15-24		environmental considerations hamper renewable energy development and that mining interest north of Springbok increases electricity demand. The SEA should distinguish between electricity demand for community needs, mining expansion and GH_2 exports to avoid conflating different development justifications.	**CSIR Infrastructure & Planning Authors:** This section describes the baseline (current situation) and trends such as the development of mining activity north of Springbok. This does not feature proposed developments related to the port of SEA. Eskom's development plan including transmission only considers the strengthening of infrastructure predominantly to transport green energy out of this region. Figure 6-22 updated.
Natural Justice	254	Chapter 6	6-53 to 6-54	Section 6.3.3.6	Table 6-10 and Figure 6-24	The port and SEZ site implications should more clearly assess the interaction between land-use zoning, existing land uses, environmental sensitivities and cumulative infrastructure expansion. The SEA should indicate whether any proposed SEZ zones are unsuitable or require redesign.	**CSIR Infrastructure & Planning Authors:** Work package 1 presents a more detailed description of the SEZ site and its associated environmental sensitivities. This report also identifies preferred areas for development within the SEZ zones. (Text edits to this section have been made to include a reference to work package 1)
Natural Justice	255	Chapter 6	6-56 to 6-59	6.3.4	Tables 6-11 and 6-12	The project timelines and employment projections should be treated as uncertain estimates, not fixed benefits. The SEA should clarify assumptions relating to financing, approvals, labour sourcing, skills availability, construction phasing and market demand.	**CSIR Infrastructure & Planning Authors:** Corrected reference to Table 6.11 and edited sentence refering to estimates in figure 6-12 as conservative. The projections are used to illustrate potential orders of magnitude and timing of pressures (such as basic labour numbers) due to multiple simultaneous projects.
Natural Justice	256	Chapter 6	6-57	Lines 1-30	Table 6-12	The chapter projects direct employment rising to 6,538 in 2029 and notes that this would attract workers into the area. It also estimates large population increases in Alexander Bay and Port Nolloth when households are included. This should trigger a stronger assessment of housing, water, sanitation, schooling, healthcare, policing and municipal finance impacts before construction begins.	**CSIR Infrastructure & Planning Authors:** The authors agree however it should be emphasized that these figures are derived from preliminary estimates based on pre-study analyses. Comprehensive project planning is required to determine more precise population and household projections; such refined estimates are, in turn, essential for the planning and financing of housing, the design of bulk infrastructure, and the provision of social services.
Natural Justice	257	Chapter 6	6-58 to 6-59		Tables 6-11 and 6-12	The construction timeline and employment estimates show construction boom periods concentrated in the Richtersveld LM. The SEA should identify binding mitigation measures for boomtown risks, including construction camp standards, local procurement requirements, skills development, worker conduct protocols and municipal service protection.	**CSIR Infrastructure & Planning Authors:** Indicated in section 6.5.6 that minimum standards should be established jointly by national regulators and the lead project proponent responsible for worker accommodation and camp management, and all major contractors must adopt formal worker-accommodation plans, apply codes of conduct to minimize tensions with local communities and vulnerable groups, and ensure that camp design explicitly accounts for potential impacts on local water, sanitation and solid-waste systems.
Natural Justice	258	Chapter 6	6-60 to 6-62	Section 6.4 and Table 6-13	Table 6-13	The risk and mitigation table should identify whether each mitigation measure is within the control of the proponent, municipality, provincial government, national department or private investor. Without responsible entities, the mitigation framework is not operationally meaningful.	**CSIR Infrastructure & Planning Authors:** Table 6-13 was edited. The Lead and key institutions for the relspective mitigation measure example indicated.
Natural Justice	259	Chapter 6	6-63 to 6-64	6.4.1.1 to 6.4.1.3		The reflection on development planning, settlement infrastructure and economic infrastructure risks should include a clear statement that the project is not strategically sustainable unless institutional and infrastructure upgrades precede peak development.	**CSIR Infrastructure & Planning Authors:** Comment noted - text edited to emphasis that institutional and and ifrastructure upgrades are require prior substantial development takin place in the region.
Natural Justice	260	Chapter 6	6-65 to 6-74	Section 6.4.2	Tables 6-14 to 6-17	The risk and opportunity methodology should explain how uncertainty, implementation failure and funding gaps were weighted. A risk should not be downgraded on the assumption that mitigation will occur unless that mitigation is secured, funded and enforceable. This is especially important under the precautionary principle in section 2(4)(a)(vii) of NEMA.	**CSIR Infrastructure & Planning Authors:** In a SEA uncertainty, implementation failure and funding gaps are usually handled qualitatively within the risk-rating logic (and through conservative assumptions),rather than via a seperate numeric'weight', they are built info how likelyhood and cosequence are judged, and how precautionary the overall assessment is. Uncertaintly about data, future condition or implementation is then reflected by; inflating likelyhood (because failure is morelikely), Inflating consequence (because worst-case outcomes cannot be ruled out), or by explicityl assigning a more conservative risk class when confidence is low. Edited text and added footnotes on this issue.
Natural Justice	261	Chapter 6	6-75 to 6-76	Section 6.5.1	Figure 6-25	The proposed planning support unit/function is important, but the SEA should define its legal status, host institution, budget, staffing, decision-making authority and relationship to municipal planning powers under SPLUMA	**CSIR Infrastructure & Planning Authors:** The comment is noted and the importance of clarifying the envisaged planning support unit/function is recognised. Editions to the text 6.5.1 implemented to adress these comments.
Natural Justice	262	Chapter 6	6-77	Sections 6.5.2 to 6.5.4		The recommendations on land use management, combined planning and financial support should be converted into measurable commitments. The SEA should identify minimum requirements before development proceeds, including updated IDPs/SDFs, funded infrastructure plans and land access protocols.	**CSIR Infrastructure & Planning Authors:** The authors agree with the comments. This section has been revised to address the issues related to the requirements that must be met before undertaking major development.
Natural Justice	263	Chapter 6	6-78	Sections 6.5.5 to 6.6		The recommendations on settlements, roads and knowledge gaps should be strengthened. The knowledge gaps section should identify which gaps are material enough to affect strategic conclusions and which require resolution before EIAs or infrastructure approvals proceed.	**CSIR Infrastructure & Planning Authors:** The authors acknowledge the comments and concur. This section has been revised to elaborate on the subsections and describe the gaps in greater detail.
Natural Justice	264	Chapter 6	6-84		Annexure A	The settlement population projections should be integrated into the main chapter's risk conclusions. If projected population growth depends on construction timing, labour sourcing and household relocation assumptions, this uncertainty should be reflected in the risk ratings.	**CSIR Infrastructure & Planning Authors:** The population projections in this annexure reflect only the baseline scenario's population size and growth. They do not account for any additional growth that may result from the implementation of the proposed projects. Apart from a small number of settlements—namely Springbok, Aggeneys, Vioolsdrift, Kleizee, Poffadder, Soebatsfontein and Koringnaas—the remaining settlements exhibit a low population growth rate.
Natural Justice	265	Chapter 6	6-87		Annexure B	The gazetted notice for the Namakwa District Municipal Planning Tribunal is relevant to capacity assessment. The SEA should assess whether the tribunal has sufficient staffing, technical support and specialist input to process the scale and complexity of expected applications.	**CSIR Infrastructure & Planning Authors:** The annexure provides evidence of the existence of the Namakwa District Municipal Tribunal. The chapter notes that this body, in its current form, is unlikely to be able to handle a substantial rise in the number of planning matters to be administered.
Natural Justice	266	Chapter 6	6-88		Annexure C	The project priority list for water and sanitation constraints should be incorporated into the main chapter as mandatory enabling infrastructure. The SEA should clarify which water and sanitation projects must be completed before construction-phase growth is permitted.	**CSIR Infrastructure & Planning Authors:** A SEA can be quite clear and directional about what type of capacity needs to be in place, and by when, but it normally does this through strategic requirements, thresholds and decision-support tools rather than naming specific individual projects in a legally binding way. A SEA is intended to be "policy-relevant but not policy-prescriptive": it provides evidence-based guidance and conditions for future decisions, but the actual approval of specific projects and budgets remains with the competent authorities and project-level EIAs
Natural Justice	267	Chapter 6	6-88		Annexure D	The priority road projects should be linked to projected truck traffic and construction sequencing. The SEA should identify whether road upgrades are required before freight movement begins and who will fund them.	**CSIR Infrastructure & Planning Authors:** The SEA highlights the importance of upgrading the roads, while section 6.2.3.2 notes that even though SANRAL has taken over the R382, it is only being maintained for current traffic volumes. Planned future maintenance projects on the R328, as well as the N7 and N14, do not take into account the anticipated developments at Boegoebaai or the resulting increase in traffic.

Natural Justice	268	Chapter 6	6-89		Annexure E	The analysis identifying potential sites for wind and solar parks should be cross-referenced with the biodiversity, avifauna and bat chapters. Low-conflict energy siting cannot be confirmed without integrating ecological sensitivity and cumulative infrastructure impacts.	**CSIR Infrastructure & Planning Authors:** The purpose of this annexure is to reflect work undertaken previously to investigate the extent of where potential sites for wind and solar could still be possible within the region. It demonstrates that there are very few sites still possible considering a range of restrictions (Study by L Snyman vander Walt: High-level environmental constraints analysis for preliminary renewable energy resource assessment for Boegoebaai and Saldanha Bay green hydrogen/ zero-carbon bunker fuel planning)
Natural Justice	269	Chapter 6	6-90		Annexure F	The services needed to construct the solar energy project should be assessed cumulatively with other construction demands. The SEA should evaluate whether concurrent construction of energy, port, pipeline and transport infrastructure will exceed available service, water and road capacity.	**CSIR Infrastructure & Planning Authors:** Annexure F is intended to illustrate the types of services needed to construct a solar energy project the SEA reflects that the combined occurrence of energy, port, pipeline and transport infrastructure projects will without intervention and timely planning exceed the present water, service and road (R328) capacities .
Natural Justice	270	Chapter 6	6-93		Annexure G	The typical activities in powerline construction should be integrated into the assessment of biodiversity, land access, servitudes, heritage and avifaunal impacts. Powerline construction is not merely technical infrastructure delivery; it has spatial, ecological and social consequences.	**CSIR Infrastructure & Planning Authors:** Annexure G is intended to illustrate the scope of services needed to establish a solar energy project. According to the SEA, if proactive action and adequate planning are not undertaken, the combined development of energy, port, pipeline, and transport infrastructure projects will surpass the existing capacities of water supply, public services, and the R328 road.
Natural Justice	271	Chapter 6	6-2 to 6-93	Whole chapter		The chapter repeatedly identifies severe risks, including institutional incapacity, settlement pressure, infrastructure strain, water and sanitation constraints, road deterioration, land access complexity and construction boom impacts. However, it often assumes these risks can be reduced through future mitigation, coordination and investment. The SEA should adopt a more precautionary and constraint-led conclusion: the Boegoebaai Port and SEZ development pathway is not strategically supportable unless enabling infrastructure, municipal capacity, land governance processes and service delivery upgrades are demonstrably secured before implementation.	**CSIR Infrastructure & Planning Authors:** The comments have been noted. Various adjustments and edits have been made based on the feedback received throught the chapter, which the authors appreciate. In addition, substantial revisions were undertaken in section 6.5, which now indicates that constraints can be identified under the three main impact themes. In particular, the following matters should ideally be resolved, or at least advanced to a point where they are clearly fundable and implementable, before major development approvals are issued or peak construction periods begin: • Identification of funded and phased bulk infrastructure upgrades for water, sanitation, electricity and key roads; • Establishment of an operational planning support mechanism and related municipal support arrangements; • Agreement on land access and servitude protocols in affected areas, including communal land; and • Preparation of coordinated settlement and service plans for Alexander Bay, Port Nolloth and other key affected settlements. Additionally the text in the executive summary has been edited to reflect this.
Environmental Traits	272	Chapter 6, Chapter 7, General				Across all themes of the WP, the following systemic concerns emerge: • System capacity is already insufficient • Governance structures lack the capacity to manage large-scale development • Participation remains consultative rather than decision making • Cumulative impacts or not given nearly enough attention and needs to be adequately addressed Environmental Traits requests that: 1. System capacity (water, governance, infrastructure) be strengthened prior to development 2. Communities be included in co-governance structures 3. All monitoring data be publicly accessible 4. Binding commitments established with clear accountability mechanisms 5. Cumulative impacts be formally assessed and addressed 6. Development prioritises community benefit over external extraction.	**CSIR Infrastructure & Planning Authors:** The authors acnowledge the observations such as system capacity and governance as it also depicted in chapter 6 as a concern. Chapter 6 also indicated the importance of not seeing the proposed development and projects as seperate items but as combined themes that should be viewed cumulatively. The authors further note the requests - some of which would be part of the overall project principles - such as community benefit and inclusion prioritised with binding commitments, data accessand transparency. **Karoo Development Foundation: INSTITUTIONAL CAPACITY**: These are important concernss, with which we agree. At this early stage, while project parameters have not been decided, the best one can do for any new project is to highlight these challenges and emphasise the need for this to be given due attention and effort in the process of preparation and implementation. This requires political will, institutional effort and technical skill. The advantage of the SEA process is that these needs are placed front and centre for the consideration of policy makers. Many other large projects have been undertaken in osuth Africa without such considerations being highlighted before implementation. The SEA provides proposals for policy-makers and implementers. The SEA is a strong step forward in highlighting the need for rigour in project implementation. The most crucial intervention would be a system of inter-governmental collaboration, whereby national and provincial sectoral knowledge and options are shared with District and Local Municipal councillors and staff. One can envisage a series of sectoral task teams, dealing with land use planning, housing, skills training, transport, health,and disaster management, in a shared learning process. Private consortium members need to be part of these multi-level planning mechanisms, so that the realities of the projects are matched with policy choices in each sector. (See, for example, Voets, J.J.; Brandsen, T.; Verschuere, B.; Koliba, C., "Collaborative Governance", in in Peters, G.; Thynne, I. (ed.),2021, Oxford Research Encyclopedia of Politics, https://doi.org/10.1093/acrefore/9780190228637.013.1419) - INCORPORATED. **CUMULATIVE IMPACTS:** These are intrinsically difficult to address before any project is implemented. These are likely to be a combination of unintended or unanticipated positive and negative impacts, and these in turn, can have further unintended or unanticipated positive and negative impacts. The most effective response is to build institutional capacity to deal with unforeseen impacts and choices. That, in turn, requires the political will and institutional effort referred to above. There are no shortcuts to progress. It is always risky. **"COMMUNITY BENEFITS" vs "EXTERNAL EXTRACTION":** The harbour and energy projects are not "extraction" in the same sense as mining, where resources are removed from the ground, leaving nothing behind, so if the mine closes, there is a vaccuum in the economy. The port and green hydrogen projects have significant backward and forward multipliers, to create new rounds of investment, which will benefit local communities. The real question is whether deliberate and effective steps will be taken to maximise beneficial impacts, such as technical training, employment, and corporate social responsibility. This will be up to national, provincial and municipal policy-makers, who are ultimatelly responsible to the electorate. For example, it will be the responsibility of the local communities to vote for parties and candidates that express useful opinions about community benefits, and appear to have the capacity to make a meaningful contribution.
Environmental Traits	273	Chapter 7				**Local Economy** The projected economic benefits do not adequately account for existing governance fragility, social inequality and the local economic vulnerability. 1. Key issues • Fragile governance within the Richtersveld CPA • Risk of elite capture of benefits • Tourism threatened by: • Loss of remoteness • Increased congestion, dust, and noise • Agriculture at risk due to: • Water insecurity • Land degradation • Boomtown dynamics: • Housing shortages • Rising cost of living • Social tension 2. We recommend • Clear benefit-sharing frameworks for local communities • Protections against cost-of-living increases • Strengthening of local governance institutions • Safeguards for tourism and agriculture as existing economic pillars	**Karoo Development Foundation: INSTITUTIONAL FRAGILITY OF THE RICHTERSVELD CPA:** This is a matter of great concern. This requires a sustained process of government support (from provincial level), with experienced and skilled facilitators, on a medium-term contract. We agree that the proposed measures for public participation about the project will be insufficient. Note, however, that it is not clear which Provincial Department should take responsibility for it. Given the workload already with COGTA, we would suggest that this be managed from the Premier's office, either directly, or through NCEDA. This would leave COGTA to focus on municipal support. WE WILL ADD THIS TO THE RECOMMENDATIONS. **DANGERS TO TOURISM:** The dangers to tourism are real, due to the industrialisation that will come with the harbour and green hydrogen projects. One can have mitigation of traffic congestion, and in particular, WE ARGUE STRONGLY FOR A RAIL LINK DURING PHASE 1, to manage the ore shipments. This will also help to mitigate against dust and noise. The only way to mitigate against the loss of the sense of remoteness ("sense of place") would be through careful road and rail spatial planning, to direct traffic as directly as possible to Boegoebaai, and not via the outskirts of Port Nolloth. The only way that such a rail link will be fnancially feasible will be by private capital. Currently, Transnet is in the process of bringing private railroad operators into South Africa. This is a massive shift in policy, and it may mean that a privately-owned railway link becomes possible. It is not clear whether Transnet or the private party will build the actual railway line. That will depend on the demand and price of manganese, copper, zinc and lead. All of these seem to be robust into the medium term. One should also ask: is the project likely to create more local jobs and incomes than tourism? The answer is almost certainly Yes; but one does not want to undermine the tourism sector at all. RISKS AND BENEFITS TO AGRICULTURE: Agriculture (crop farming) could benefit at household level by enhanced desalination facilities linked to Green Hydrogen; some of this water would be available for household use, which can then be used as grey water for local household agriculture. The crop agriculture along the Orange River is unlikely to be affected. Land degradation is not a significant risk for livestock farming; however, ecosystem degradation may be negatively affected, by noise and dust along the highways. Once again, a RAIL LINK would reduce impacts. Local communities could raise the importance of this matter in negotiations. **MANAGING BOOMTOWN CONDITIONS**: Boomtown dynamics are almost inevitable, and would require an effective multi-sectoral municipal team (with District and provincial support) to manage. There will be a housing shortage; however, it is important to identify new residential land, and to service it (provide water, electricity, sewerage etc) for new housing construction, to take the pressure of housing demand (as was the case in Kathu, for example). This requires municipal policies and skills regarding land acquisition, servicing, and sales - which the Namakwa District Municipality could assist. Targeted Provincial funding needs to be mobilised in a variety of sectors (housing, transport, health and education), but Government may also (and should) require private consortium members to provide key services (such as adequate worker housing and community programmes). WE WILL ADD THIS TO THE RECOMMENDATIONS. **SOCIAL TENSIONS:** Social tensions are likely to increase, often in unexpected ways. However, many of these communities currently have high levels of underlying social tensions already, which are not very visible, because the status quo remains intact. With a new project, the same tensions, or new tensions, will emerge. That is always the case in any form of material progress or change. Again, the crucial challenge is to ensure that institutional capacity is improved to deal with it, e.g. additional police (and better police management); more social workers; more family and community health facilities (e.g. better staffed clinics for family planning, HIV/AIDS management); new youth training and enrichment facilities to prevent delinquency and teenage pregnancy, etc. WE WILL EMPHASISE THIS POINT IN THE REPORT. **COST OF LIVING:** The cost of living will increase, as new demand for housing and commodities work through the local economy. However, this will be balanced by local employment (on the projects or secondary industries), which will increase people's cash resources. However, this will, in turn, cause the cost of living to increase even further. The important policy principle is to increase the diversity of opportunities for local people to earn these new wages, so that they can afford more expensive goods and services. It is also likely that the local economic growth will lead to investments that may reduce local prices, e.g. chain stores (with competitive prices) opening their doors in Port Nolloth. As more money circulates in the economy, new niches will open for informal and semi-formal occupations, such as child-minding, catering, vehicle maintenance and caring for the elderly. Local economic multipliers are likely to increase opportunities, although in a context of higher prices, and possibly an increase in social inequality.
Natural Justice	274	Chapter 7	7-3	5-18		The chapter correctly identifies high levels of unemployment, inequality and socio-economic vulnerability across the Namakwa Region. These baseline conditions should be treated as strategic constraints to development planning rather than merely contextual indicators.	**Karoo Development Foundation: SOCIO-ECONOMIC VULNERABILITY:** This is indeed an important concern, but we should keep in mind that such vulnerability is urrently severe, even without the proposed projects. The projects are likely to strengthen some people and challenge others, in a wide variety of ways. There would be vulnerability for people with skills and jobs (e.g. being away from home, on the job, and the family is split), and those without jobs and skills (e.g those who cannot afford training). There is no one-size-fits-all remedy. A range of sectors such as social welfare, health, education and training need to be mobilised simultaneously.. RECOMMENDATION: Our report should strengthen our emphasis on the MULTIPLICITY OF SKILLS which will be required, and to establish a wide range of institutions to create more training opportunities.it isand our RECOMMENDATION: This will require pre-emptive institutional effort and capacity. See KDF response in comment ID 273. **INEQUALITY:** Inequality is often associated with (and confused with) severe poverty experienced by some strata of the community. Inequality can be either exacerbated or reduced by these projects, depending on how proactively local systems of empowerment (e.g. technical training) are undertaken. It is possible that the multiplier effects of the projects may entail greater levels of prosperty for almost all social strata, but that high levels of inequality may remain (everyone is somewhat richer). For example, the projects would pay local rates and taxes, which can ploughed into improved housing schemes and recreation facilities; however, inequality will remain because people with high-level jobs and skills will earn more than before. This is the principle of "the tide lifting all the boats", whereby everyone's situation is improved, but in comparison with one another, there may still be a significant degree of income inequality.
Natural Justice	275	Chapter 7	7-4	7-21		The SEA should clarify the extent to which affected communities directly informed the socio-economic assessment methodology and findings. Strategic planning at this scale requires meaningful engagement with communities likely to experience cumulative social and economic change.	**Karoo Development Foundation: COMMUNITY CONSULTATION AS PART OF THE SEA**: There was no consultation with communities in the compilation of the SEA. The SEA relies on secondary sources, scholarly literature and consultants' reports, across several disciplines. The SEA argues strongly for a robust community participation process, not to "sell" the insights of the SEA, but to obtain communities' views on proposed projects and policy measures. WE WILL STRENGHTEN OUR RECOMMENDATION to emphasise that there must be opportunity for repeated iterations of community engagement, to obtain diverse views, preferences and options; to compile practical proposals around them; and to consult yet again about the usefulness of those suggestions, and further options.
Natural Justice	276	Chapter 7	7-6	8-24	Figure 7-1	The chapter refers to potential economic opportunities linked to the GH_2 economy. However, the assessment should distinguish more clearly between temporary construction employment and long-term sustainable employment opportunities available to local communities.	**Karoo Development Foundation: TEMPORARY CONSTRUCTION JOBS AND MORE LONG-TERM OPERATIONAL JOBS:** It is difficult to be more specific with regards to construction and operations. Typically, construction continues well into the operations phase, as new rounds of construction take place. Also, even in early stages, the inflow of money into the community will stimulate secondary and tertiary rounds of economic activity, ranging from accommodation and catering to vehicle maintenance and childcare. Every aspect of economic activity stimulates the circulation of money (through wages), which stimulates further economic activity. Furthermore, rapid on-the-job training and more formal training will be important for both the construction and operations phases. It is likely that employees on construction projects (e.g. doing metalwork) may find jobs in the operations phases. Consequently, there are no clearly distinct pipelines of cause-and-effect of Construction and Operations; they tend to have reciprocal interactions and impacts.
Natural Justice	277	Chapter 7	7-8	10-27		The SEA should clarify assumptions underlying employment projections, including labour sourcing, automation, skills requirements and the extent to which specialised employment opportunities are realistically accessible to local residents.	**Karoo Development Foundation: EMPLOYMENT IMPACTS**: These are difficult factors to specify at this stage, since they will depend on public policies (at national, provincial and municipal level), as well as corporate policies on the two projects, and no private partners have been identified. At this stage, there is not yet an in-principle government decision to proceed with these projects. Once such decisions are made (with the GH2 and port, respectively), a great deal will depend on the window period involving the creation of consortia and securing of capital. During this window period, government institutions could (and should) be planning rapidly and dynamically for various aspects of the projects, notably fast-tracking training opportunities and land acquisition for real estate expansion (to manage a possible housing boom). A great deal depends on the conditions which governmetn sets for private partners, e.g. the level of local, regional, and national sourcing of skills and supplies. If government agencies let this window go by, and the projects are implemented without adequate government service readiness, the scenarios will look very different. For example, there will be insufficient local skills, and skilled workers may well have to be sourced from elsewhere. RECOMMENDATION: We can strengthen our argument about the rapid policy and programme changes that will need to be adopted by governments at all levels, in the light of an in-principle green light for the projects.
Natural Justice	278	Chapter 7	7-10	6-20		The chapter should more explicitly assess the risk of "boomtown" dynamics associated with rapid industrialisation, including rental inflation, informal settlement growth, social fragmentation and increased pressure on public services. Mitigation measures are recommended, but it unclear who will be responsible for their implementation and no sanctions or penalties are proposed in instances of non-compliance.	**Karoo Development Foundation: MANAGING BOOMTOWN CONDITIONS:** Boomtown dynamics are almost inevitable, and would require an effective multi-sectoral municipal team (with District and provincial support) to manage. There will be a housing shortage; however, it is important to identify new residential land, and to service it (provide water, electricity, sewerage etc) for new housing construction, to take the pressure of housing demand (as was the case in Kathu, for example). This requires municipal policies and skills regarding land acqusition, servicing, and sales - which the Namakwa District Municipality could assist. Targeted Provincial funding needs to be mobilised in a variety of sectors (housing, transport, health and education), but Government may also (and should) require private consortium members to provide key services (such as adequate worker housing and community programmes). WE WILL ADD THIS TO THE RECOMMENDATIONS.
Natural Justice	279	Chapter 7	7-12	9-24	Figures 7-2 and 7-3	The SEA should assess the cumulative implications of population influx for housing demand, water supply, sanitation, healthcare, schooling and municipal fiscal sustainability. These impacts may persist beyond construction phases.	**Karoo Development Foundation: MANAGEMENT OF POPULATION INFLUX:** It is impossible to provide such specific details. The influx of population can be managed in many different ways (e.g. different kinds of neighbourhood planning and land management systems). These will depend particularly on municipal policies (Richtersveld LM, but probably strongly influenced by the Namakwa DM, as well as provincial sectoral departments. The new situation of a rapid influx of investment capital and new levels of salaries will raise challenges, options and opportunities that the local policy-makers have never experienced before.The important challenge is to ensure that such policy-making will and capability is available to the LM and DM, and that they are presented with clear and relevant policy alternatives. Sectoral specialists will need to provide advice to all levels of government. One key policy choice will be the level of fly-in-fly-out technical staff, or whether family accommodation should be encouraged. International examples offer benefits and challenges of different options; for this reason, the policy-making process must be informed by specialist advice, at a higher level than is currently available in Namakwa.
Natural Justice	280	Chapter 7	7-14	5-18		The chapter should identify whether municipalities presently possess sufficient institutional and financial capacity to manage large-scale industrial transformation while maintaining equitable service delivery and social stability.	**Karoo Development Foundation:** See response in comment ID 272 above.
Natural Justice	281	Chapter 7	7-16	7-22		The assessment should more critically evaluate the extent to which projected economic benefits depend on uncertain global hydrogen markets, export demand, infrastructure rollout and financing assumptions.	**Karoo Development Foundation: HYDROGEN MARKET DYNAMICS:** This is indeed a matter of great uncertainty. However, there is broadly an international concern with energy production and markets, highlighted spectacularly by the Iranian war. Research on hydrogen technologies is widespread and ongoing (including in South Africa), and it is likely that this production sector will continue to grow, possibly at an exponential pace. At this stage, Government is awaiting the SEA in order to make the policy decision whether to proceed with Boegoebaai or not; and this decision will entail a wide range of variables which cannot be assessed at this stage. Only once the opportunities are advertised to secure investment partners, will the project parameters become clear - in the light of the fact that different investor applications will make different project proposals. Another set of variables will affect the potential construction of the port, which will include matters such as mineral exports (markets and prices), potential private sector rail investors, and potential private sector harbour investors. The two sectors (hydrogen and port) may entail different sets of investors, which would then have to be synchronised into one project location. One cannot speculate about these markets at this stage. With any capital projects, there is a risk that they eventually prove unviable, due to unanticipated factors. They may also not be profitable initially, and then gradually gain traction. The best one can assess, at this stage, is that international energy and mineral markets (particularly iron, manganese, copper and zinc) are likely to grow in future, in the light of factors such as AI, increased defence expenditure, and measures to mitigate climate change.

Natural Justice	282	Chapter 7	7-18	10-25		The SEA should more clearly distinguish between projected economic outputs and guaranteed socio-economic benefits. Increased regional investment does not necessarily translate into improved local livelihoods or reduced inequality.	**Karoo Development Foundation: SOCIO-ECONOMIC BENEFITS:** There can unfortunately be no *guaranteed* socio-economic benefits, as these depend on policy choices by government institutions (local and district munipality, influenced by provincial and national government). To some degree, it also depends on private sector consortium partners' approach to corporate social responsibility and community empowerment - although Government (at all levels) can provide guidance to private consortium partners on specific choices. The most directly relevant socio-economic benefit will be employment (ranging from manual to white-collar and technical jobs) and associated technical training or on-the-job upskilling. This is the most direct factor, since the projects (green hydrogen and port) will *require* such workers and skills as a *sine qua non* . The key question is the extent to which Government will require local recruitment and training effort, or whether jobs and skills will be mainly provided by in-migrants from elsewhere. This, in turn, will be affected by Government contract requirements. In addition, it will be influenced profoundly by the degree of co-investment by Government departments (e.g. Higher Education and SETAs), as a supply-side strategy. This will require political will at all levels, for example at National (higher education and training), Provincial (providing land for training institutions), District and Municipal (facilitating transport and housing for Namaqualand workers and trainees). In each sector, such a multi-sphere sectoral collaboration will be required, within the context of the philosophy of "collaborative governance".
Natural Justice	283	Chapter 7	7-24	7-23	Figures 7-4 and 7-5	The chapter should more clearly assess the implications of industrialisation for existing livelihood systems, including grazing, agriculture, tourism, small-scale and subsistence fisheries and informal economic activities.	**Karoo Development Foundation: IMPACTS ON VARIOUS LIVELIHOOD SYSTEMS:** This will depend profoundly on how the projects (Green Hydrogen and Port, and possibly associated railway) are designed, and also how they implemented. At this early stage, one can only provide broad themes, which should be taken on board by policy-makers at all levels.
Natural Justice	284	Chapter 7	720	6-19		The chapter should assess whether existing education, training and technical skills systems possess sufficient capacity to enable meaningful local participation in specialised hydrogen and industrial sectors.	**Karoo Development Foundation: SKILLS TRAINING:** The existing skills training system is definitely not adequate, as indicated in the text. Providing relevant technical skills for local or regional inhabitants will require a major expansion of the TVET College, as well as additional specialised training institutions, such as Disaster Management, Traffic Management, Construction and Community Health.
Natural Justice	285	Chapter 7	7-22	8-21		The SEA should assess the risk that highly skilled employment opportunities may predominantly benefit external labour markets while local communities remain concentrated in low-skilled or temporary employment categories.	**Karoo Development Foundation:** The chapter dealt with this important concern extensively. **See also Note KDF comment ID 282 above.**
Natural Justice	286	Chapter 7	7-24	7-23	Figures 7-4 and 7-5	The chapter should more clearly assess the implications of industrialisation for existing livelihood systems, including grazing, agriculture, tourism, fisheries and informal economic activities.	**Karoo Development Foundation:** Comment repitition - see responses to comment ID 283.
Natural Justice	287	Chapter 7	7-26	5-18		The SEA should identify whether existing economic sectors were evaluated in terms of long-term compatibility with industrial expansion scenarios. The assessment presently places stronger emphasis on prospective economic opportunities than on cumulative livelihood disruption risks.	**Karoo Development Foundation: LONG-TERM SECTORAL COMPATIBILITY WITH GREEN HYDROGEN AND THE PORT:** The chapter considers the main sectors (except fisheries, which were analysed sparately). The main conclusions are: Crop agriculture (along the Orange River) is likely to benefit, if a harbour is utilised for agricultural exports; livestock agriculture will not be much affected, except in the immediate vicinity of highways; mining is likely to benefit, particularly copper, due to improved transport and the port; the transport sector is likely to expand significantly; the business sector will expand by providing support services to the port and Hydrogen projects; and tourism faces a significant challenge, due to the loss of a rural desert ambience, in certain areas of Namaqualand. The greatest negative impacts will be on tourism. To minimise the negativei mpacts on tourism will require strong spatial planning, and in particular, an emphasis on rail transport of ore and goods, rather than a road-based system. **If a road-based system is maintained, the worst affected is likely to be Kai !Garib Municipality in the Kakamas/Keimoes area, with the narrow road along the river; unless a major new highway is built.**
Natural Justice	288	Chapter 7	7-28	9-25		The chapter should more clearly assess the distribution of anticipated benefits and burdens between municipalities and communities. Regional industrialisation may exacerbate existing inequalities where investment and employment opportunities are spatially concentrated.	**Karoo Development Foundation: SPATIAL DISTRIBUTION OF IMPACTS:** The report does emphasise that the main impacts will be on the Richtersveld LM (along the coast), and in Nama Khoi LM (Springbok as regional hub). The other municipalities are likely to be less affected, although bulk transport systems are likely to affect small towns on the main routes.
Natural Justice	289	Chapter 7	7-30	7-20		The SEA should assess the implications of land-use change, servitudes and industrial expansion on communal land users, rural settlements and traditional land-use systems within the Namakwa Region.	**Karoo Development Foundation: IMPACTS ON LAND USE:** The main direct impacts are likely to be in the Boegoebaai, Alexander Bay and Port Nolloth areas. This zone is likely to become industrialised, modernised and face heavy traffic and housing pressures. Daily commuting from Port Nolloth and Alexander Bay to Boegoebaai will be intensive. Road traffic from Springbok will be heavy, to transport materials for construction, as well as project staff. More remote communities will experience indirect impacts, such as community members travelling to Boegoebaai, probably on a weekly basis, as well as improved transport systems and social services, due to improved municipal financial resources.
Natural Justice	290	Chapter 7	7-32	5-17		The chapter should more explicitly assess how rapid industrialisation and population influx may affect social cohesion, cultural continuity and community identity within smaller settlements.	**Karoo Development Foundation: SOCIAL COHESION:** The chapter does address this important issue. However, it is difficult to predict, since social identities may change rapidly. For example, the local people who do get jobs on the new projects may soon develop a new identity for themselves, based on place and circumstances of work. Other cultural identities may take longer to change, or may even become reinforced (e.g. traditional-minded people who share a common dislike of the new developments). The strongest driver of new identities will be new workplace experiences, including blue collar workers (and trade unions), white-collar employees and sectoral service providers (eg. transport contractors). We can draw attention to this in the chapter.
Natural Justice	291	Chapter 7	7-34	8-22		The SEA should clarify whether social vulnerability indicators informed strategic spatial planning recommendations and infrastructure sequencing decisions.	**Karoo Development Foundation: SOCIAL VULNERABILITY INDICATORS:** The SEA has not undertaken strategic spatial planning as such. We reported on what the projects are likely to look like, how large they may be (different scenarios), and what socio-economic consequences may be. Such vulnerability metrics (such as housing conditions, demographics, and health status) must be assessed thoroughly as part of the project planning process. For example, if there is already a housing shortage, this must influence municipal spatial planning *before* operational plans are finalised. IDPs should already include such metrics; however more specific details may be required for strategic planning purposes. This, however, is not part of the SEA process. As a general principle, some of the social vulnerability indicators are likely to change quite rapidly during the construction and operations phases, e.g. caused by more widespread wages and salaries (which reduces vulnerability) and increasing house prices and rentals (which increases vulnerability). Other indicators take longer to shift in either a positive or negative direction, but will require proactive planning (e.g. social workers and health facilities) to prevent people from experiencing increased vulnerability.
Natural Justice	292	Chapter 7	7-36	6-20		The chapter refers to social upliftment opportunities. The SEA should distinguish between legally secured commitments and aspirational development objectives dependent on future investment and coordination.	**Karoo Development Foundation: SOCIAL UPLIFTMENT OPPORTUNITIES:** Legally required commitments presumably refer to goals and targets set forth in sectoral government policies. These are usually fairly uncontroversial. Typically, it would refer to adequate housing, health, education, safe environments, and safe transport. Within each sector, there may be policy debates, such as the NHI in health; the proportions of rental housing units and home ownership; the proportions of municipal transport and taxi operators, etc. Municipalities are entitled to make key decisions for their localities; in the case of the Richtersveld LM, it would be influenced substantially by District-level policies and provincial funding systems. The aspirational values would also be decided primarily by municipal governments, with provincial and national support and input.
Natural Justice	293	Chapter 7	7-38	7-23		The SEA should identify which proposed social infrastructure upgrades are publicly funded, privately funded or presently unfunded. This distinction is necessary to assess the realism of mitigation assumptions.	**Karoo Development Foundation: FUNDING OF SOCIAL INFRASTRUCTURE:** This is impossible to determine at this stage. National and provincial governments, who are spearheading this inquiry, will first need to determine sectoral priorities and programmes, and then to examine the budgetary implications. This will be influenced profoundly by private sector consortium partners' approach to construction and operations (which would determine, for example, locational strategies such as worker housing).
Natural Justice	294	Chapter 7	7-40	10-26	Tables 7-3 and 7-4	The cumulative implications of simultaneous infrastructure expansion, labour migration, housing demand and environmental change should be assessed regionally rather than primarily at project level.	**Karoo Development Foundation:CUMULATIVE IMPLICATIONS OF PROJECT DIMENSIONS:** The SEA currently provides certain "lines of inquiry" regarding possible impacts. These will guide programme priorities and local policy options at the level of Richtersveld LM and Namakwa DM. Significant variations can take place once pre-construction and construction takes place; for example, the uptake of technical and manual jobs by local people, or the availability of technical training (at fairly short notice), and the location of such training facilities. This will affect demand for housing and transport, which in turn will affect the extent of urban expansion at Port Nolloth and Alexander Bay. Currently, we cannot provide more specificity.
Natural Justice	295	Chapter 7	7-42	6-18		The chapter should more clearly assess the implications of increased freight movement, industrial traffic and construction activity on public safety, community wellbeing and local transport systems.	**Karoo Development Foundation:IMPACTS OF TRAFFIC ON LOCAL CONDITIONS:** This is a very serious concern. Local traffic, scholar transport, medical transport, agricultural goods freight, tourism and other current road traffic will be severely impacted. We argue strongly for a rail link (Postmasburg to Boegoebaai) to be considered as an intrinsic component of the port project.
Natural Justice	296	Chapter 7	7-44	7-21		The SEA should assess whether projected development trajectories remain compatible with municipal planning instruments, including IDPs and SDFs, and whether municipalities possess sufficient planning capacity to absorb large-scale growth.	**Karoo Development Foundation: MUNICIPAL PLANNING CAPACITY:** This is a real constraint on the management of the entire project. There are no inherent difficulties with IDPs and SDFs, and the real challenge consists of the intellectual leadership of such planning efforts, knowing what questions to ask, what information to obtain, and what options to present to policy-makers. The Namakwa DM will play a crucial role in this regard, overseeing planning for the entire region. The DM should proactively employ suitable municipal planners; however, it should also obtain support from universities, provincial government, SALGA, and knowledge institutions such the HSRC and the CSIR. This does not mean that these institutions should actually write the IDPs; but they can be involved in steering the work of private consultants, e.g. by scoping the questions to be addressed, evaluating and supporting research methodologies, accessing useful data from various project participants, and devising coherent policy options for policy makers. **This support and guidance should be provided to all four Local Municipalities in Namakwa. In addition, the impacts of road traffic in the Dawid Kruiper LM (Upington area) and the Kei !Garip LM (Keimoes area)** should be drawn into regional discussions, spearheaded by the Namakwa DM and the ZF Mgcawu DM.
Natural Justice	297	Chapter 7	7-46	5-19		The assessment should more clearly evaluate the implications of uneven municipal capacity across the region, particularly where smaller municipalities may struggle to manage rapid development pressure and infrastructure demand.	**Karoo Development Foundation:** See KDF response in Comment ID 296 above.
Natural Justice	298	Chapter 7	7-48	8-24		The chapter should more explicitly assess the implications of industrialisation for vulnerable groups, including low-income households, women, youth and communities already experiencing limited access to services and employment opportunities.	**Karoo Development Foundation:**See KDF response in Comment ID 291 above. Also KDF response in Comment ID 272, Comment ID 274 and Comment ID 274 (Inequality)
Natural Justice	299	Chapter 7	7-50	6-21		The SEA should clarify how cumulative social risks were weighted relative to projected economic opportunities in the scenario analysis methodology.	**Karoo Development Foundation: METHODOLOGY OF THE RISK AND OPPORTUNITY ASSESSMENT:** The methodology is impressionistic at this stage, given the lack of current information about the shape and size of the proposed projects. The purpose of the risk and opportunity assessment is not to achieve exact findings, but to guide policy makers and programme managers about the likely scale of trade-offs that should be investigated as part of their planning processes.
Natural Justice	300	Chapter 7	7-52	5-18		The assessment should identify thresholds beyond which population growth and infrastructure demand may exceed municipal carrying capacity and service delivery capability.	**Karoo Development Foundation: CARRYING CAPACITY OF POPULATION:** This is an important question to flag. There are at least two dimensions to this question: Environmental carrying capacity and institutional capability. The latter has been explored above (e.g. KDF 1 and KDF 31). Environmental carrying capacity refers to the level of population which can be supported on available land and water resources. This, in turn, depends on the way in which people make a living. Some livelihoods are more environmentally intensive than others. Agriculture faces real environmental limiting factors, and can support a fairly limited number of people. An industrial strategy can support a much greater number of people, who live in concentrated communities, and whose incomes are generated by the sale of concentrated goods at fairly high prices, which in turn can support higher levels of material welfare. This welfare, in turn, can place more or less pressure on the environment, depending on the policies which are used to manage people's use of the environment (e.g. investment in natural parks, preventing overfishing or hunting for recreation, using large amounts of water for private gardens, etc). Limited resources can support a large number of people, but this puts a premium on management capability, which has been flagged above.
Natural Justice	301	Chapter 7	7-54	8-23		The chapter should more critically assess whether projected economic benefits remain sustainable under changing international hydrogen markets, infrastructure delays or financing uncertainty	**Karoo Development Foundation: PROJECT SUSTAINABILITY:** The financial viability of the projedts will be determined by investors. If the market conditions are not positive, then investment simply won't happen. However, there are two limits to this argument. Firstly, if the projects have a borderline level of profitability, the aspirant investors may be unwilling to spend significant amounts of money on corporate social responsibility, local empowerment, and training. Secondly, if the project started out as profitable, and then market conditions changed rapidly and unexpectedly, and the projects were to grind to a halt, then significant numbers of people would be left stranded in the Namakwa area. The SEA will flag this issue more strongly. It will be up to National Government policy makers (e.g. DTI, Treasury, Energy) to determine the financial robustness of different bidders' proposals. The National Government will need to determine its own risk appetite on this far-reaching project. It should be remembered that, if the projects fail the test of time, and cease operations, that all three spheres of government will need to contribute to the costs of local upheaval, uncertainty and losses.
Natural Justice	302	Chapter 7	7-56	7-20		The SEA should integrate social vulnerability findings more directly into strategic infrastructure sequencing and regional planning recommendations.	**Karoo Development Foundation:** See KDF response in Comment ID 291
Natural Justice	303	Chapter 7	7-58	6-19	Tables 7-6 and 7-7	The SEA should more clearly explain how uncertainty, implementation failure and uneven benefit distribution were incorporated into social and economic risk ratings.	**Karoo Development Foundation: RISK RATINGS:** With each variable, there is a wide margin of error regarding uncertainty (e.g. different policy choices by municpalities), implementation failure (on the part of private companies or governments) or uneven benefit distribution (e.g. due to different types of responses by local communities to work and training opportunities). Each variable could have been analysed in much greater detail, and this must be done at a finer-grain stage of planning (e.g. if the project is improved in principle, and different sectoral agencies gear up to assess the implications for their particular mandate). The SEA is a higher-order analytical instrument, which will be available to guide sectoral experts in their more detailed scoping and analysis.
Natural Justice	304	Chapter 7	7-60	9-25		Several mitigation measures rely on future coordination, investment and institutional strengthening. The SEA should identify responsible authorities, funding mechanisms and implementation timelines necessary to operationalise these measures.	**Karoo Development Foundation:** The SEA is not suitable for such detailed proposals, since the entire inter-departmental management structure still needs to be created, bids have to be advertised, and actual bids have to be evaluated. We will insert a recommendation for a strong focus on Collaborative Governance, across all three spheres of Government, and including non-governmental stakeholders. See KDF response in Comment ID 272 (Institutional Capacity)
Natural Justice	305	Chapter 7	7-64	7-22		The chapter should clarify whether cumulative social impacts associated with simultaneous infrastructure construction phases were assessed regionally or only at sectoral level.	**Karoo Development Foundation: SECTORAL AND REGIONAL ANALYSIS:** As a multi-sectoral study, covering several regional concentric circles, the study is in essence a matrix approach. Each element of each sector could, in principle, be analysed for each regional entity, ranging from communities, towns, and municipalities to an entire district and region. While this may have been intellectually satisfying, it would not necessarily add much value to the current approach. We focused primarily on sectors, and within each of these, highlighted certain spatial points of concern or emphasis.
Natural Justice	306	Chapter 7	7-68	6-20		The SEA should more clearly assess whether projected economic growth is compatible with long-term social sustainability, particularly in relation to inequality, housing, public services and local governance capacity.	**Karoo Development Foundation: LONG-TERM ECONOMIC GROWTH AND SOCIAL IMPACTS:** At this stage, the SEA can pinpoint the main "lines of inquiry" and possible trends. The longer the time period, the more hazardous any proposed trends may be, due to inherent instability of economic conditions, markets, demographic shifts, and political priorities. The risk analysis emphasises the points of concern (for mitigation) and possible benefits (which could be maximised by deliberate policy choices). We can, however, confidently state that these projects (Green Hydrogen and Port) would have a significant impact on social conditions, because of more investment, money and jobs, which would benefit some people more than others, and some people may face increased vulnerabilities (e.g. due to boomtown conditions). One can also state confidently that more tax revenue would be available to municipalities and the Provincial government, which could be used not only to provide safety nets, but also to enhance local people's ability to engage with the projects (e.g. by providing technical training and transport). There is never any guarantee that such tax revenue would be used constructively. At best, one can assert that the chance for constructive use if funds would be greatly improved if there is adequate oversight by other spheres of government, as well as participation of specialist organisations (e.g. SALGA, engineering bodies, etc). In a democracy, there is ultimately uncertainty about the quality of public representatives that would be elected. One additional point of reassurance is that the proposed public participation process should **include political parties**, so that they develop experience and appreciation of technical, economic and management issues and options.
Natural Justice	307	Chapter 7	7-72	8-23		The assessment should identify which social and economic assumptions remain speculative and which are supported by secured infrastructure, funding or policy commitments	**Karoo Development Foundation:** There are currently no commitments to the project, other than an in-principle Government interest in investigating its feasibility.
Natural Justice	308	Chapter 7	7-76	5-18		The SEA should adopt a more precautionary approach where significant uncertainty exists regarding long-term socio-economic benefits, municipal capacity and cumulative social impacts associated with industrialisation at the contemplated scale.	**Karoo Development Foundation:** Agreed. See KDF response in Comment ID 306 (Long-term economic growth and social impacts).
Natural Justice	309	Chapter 7	7-80	7-21		The chapter should more clearly assess whether projected labour influx may intensify inequality between local residents and incoming skilled labour populations, particularly in smaller settlements with limited economic resilience.	**Karoo Development Foundation: IMPACTS OF LABOUR INFLUX:** This important matter needs more detailed investigation once project specifications have been drafted by a consortium. It will be a result of Supply factors (types and numbers of jobs), Demand factors (uptake of jobs and training opportunities by local people - at different geographic distances from the project, and with different levels of skills and experience), and Government interventions (training programmes).
Natural Justice	310	Chapter 7	7-84	6-20		The SEA should assess the implications of long-term dependence on export-oriented economic activity and whether regional economies may become vulnerable to external market volatility associated with the hydrogen sector.	**Karoo Development Foundation: FUTURE OF HYDROGEN MARKET:** There is general agreement that non-fossil forms of energy are on an upward trajectory over the long term. However, there may be fluctations in the short term. The proposal to develop a Port alongside the Green Hydrogen project would help to reduce vulnerability to market fluctations, in hydrogen and minerals markets. As always, a global economic collapse remains a risk, due to unforeseen economic or political events.
Natural Justice	311	Chapter 7	7-88	8-24		The assessment should more clearly evaluate whether projected economic opportunities are equitably distributed across gender, youth and historically marginalised communities within the region.	**Karoo Development Foundation: DISTRIBUTION OF ECONOMIC OPPORTUNITIES:** There is a *prima facie* argument that benefits will not be distributed *equally,* due to factors such as geographic distance, average age of community populations, previous job experience, technical skills, and willingness to take on training. Another question is whether benefits will be distributed *equitably* , i.e. reasonably accessible to communities and demographic categories. Young people who are willing to enter training programmes will benefit significantly; older people without technical skills may be willing to take on manual labour jobs (also at different levels of skill). Some people will benefit more from on-the-job training and promotions than others. Individuals with an entrepreneurial mindset may work for other sectors (e.g. business services, catering or transport). It is likely that a small number of people in distant communities will respond to these opportunities, thereby increasing remittances to their communities. Some people will not benefit directly at all (e.g may not have skills, or have health to do manual work), but may enter the economy by home-based or local support services (e.g. childcare). To enable such an economic ecosystem to be *equitable* , as many points of entry should be made available as possible (e.g. by backward and forward linkages), and many types of support should be provided (e.g. childcare training). The more imaginative the private companies and the government agencies are, and the more they can spend CSR funding effectively, the more equitable the outcome will be.

Natural Justice	312	Chapter 7	7-92	5-19		The SEA should assess whether proposed governance and coordination mechanisms are sufficiently institutionalised to manage cumulative social impacts over the long term.	**Karoo Development Foundation:** See KDF response in Comment ID 272 (Institutional capacity) and Comment ID 296 (Municipal Planning Capacity).
Natural Justice	313	Chapter 7	7-96	7-22		The chapter should more explicitly assess the relationship between infrastructure pressure, service delivery failure and potential social instability under rapid industrialisation scenarios.	**Karoo Development Foundation:** This raises the key question of effective government and governance, and building government capacity for policy design, decision-making and implementation. See KDF responses in Comment ID 272 (Institutional capacity, Cumulative Impacts, Community benefits vs External extraction), Comment ID 273 (Managing boomtown conditions, Social tensions), Comment ID 274 (Socio-economic vulnerability, Inequality) and Comment ID 296.
Natural Justice	314	Chapter 7	7-100	6-20		The SEA should clarify whether regional carrying capacity assessments incorporate cumulative social infrastructure demand associated with simultaneous housing, transport and industrial growth.	**Karoo Development Foundation:** See KDF response in Comment ID 300.
Natural Justice	315	Chapter 7	7-104	8-24		The assessment should more clearly distinguish between short-term economic stimulation during construction phases and long-term sustainable regional development outcomes.	**Karoo Development Foundation:** The SEA cannot provide more fine-grained detail, as it is an overarching study of possible trends.
Natural Justice	316	Chapter 7	7-108	5-19		The chapter should more explicitly assess whether projected industrialisation trajectories remain compatible with existing municipal governance and planning frameworks across the Namakwa Region.	**Karoo Development Foundation:** See KDF response in Comment ID 272 (Institutional capacity) and Comment ID 296.
Natural Justice	317	Chapter 7	7-112	7-22		The SEA should identify whether cumulative impacts on vulnerable settlements and low-income households were assessed under worst-case infrastructure and service delivery failure scenarios.	**Karoo Development Foundation: SERVICE DELIVERY FAILURE:** The risk analysis did not postulate such an extreme scenario. We focused on the risks presented by the Green Hydrogen and Port projects, and the potential complete lack of mitigation, which would mean that the risks would be at their most extreme. At a conceptual level, this means that the level of government functionality would be similar to current levels (i.e. not very effective, particularly in the Richtersveld). This raises the possible worst-case scenario: That the presence of the projects create such pressure on local municipalities, political parties, and agencies such as police and health that there is a virtual collapse of services, possibly accompanied by profound politicla conflict. We will mention this possibility in the final version. However, one should also keep in mind that the presence of the projects will focus national and provincial attention on this region in a way never before experienced, and this would presumably work to undergird the current local government system.
Natural Justice	318	Chapter 7	7-116	6-21		The chapter should more clearly assess the cumulative implications of industrialisation for regional social cohesion, community identity and long-term demographic change.	**Karoo Development Foundation:: REGIONAL SOCIAL COHESION:** This is likely to change markedly, with the regional economic centre of gravity moving to Port Nolloth, and also Springbok, as the key government centre. The northern part of Namakwa will become more populated, and function as a locus of economic energy and innovation. The southern parts will remain more oriented to tourism, livestock agriculture, and small-town lifestyle.
Natural Justice	319	Chapter 7	7-120	8-24		The SEA should explain whether social mitigation measures are enforceable through future planning approvals, municipal agreements or project-level authorisation conditions.	**Karoo Development Foundation: PLANNING REGULATORY MEASURES:** With the approval of these projects, the SPLUMA-based system of planning regulation will need to be implemented in earnest. The risk, in this regard, is that local municipalities are not familiar with these legal measures, and this may delay approvals. Municipal regulatory capacity will need to be built; in the interim, the District Municipality and Northern Cape COGTA may play a suppprt role. Where municipal agreements with private and non-government organisations are entered into, these will need to be evaluated for effectiveness and fairness. Project-level authorisation conditions may be laid down by National and Provincial Government. In all these cases, a strong level of Collaborative Governance will need to be established, to protect municipalities' role in decision-making and to prevent national and provincial domination of the municipal sphere.
Natural Justice	320	Chapter 7	7-124	5-18		The assessment should identify whether cumulative socio-economic risks may exceed acceptable thresholds under the Large GH_2 scenario, particularly where municipal systems are already constrained.	Karoo Development Foundation: See KDF respose in Comment ID 306. The period of "Small GH2" will be an important institution-building phase for government, business and non-government agencies.
Natural Justice	321	Chapter 7	7-128	7-21		The chapter should more explicitly assess how cumulative environmental degradation, water stress and infrastructure pressure may interact with socio-economic vulnerability and inequality.	**Karoo Development Foundation:** See the issue of "carrying capacity", KDF response in Comment ID 300
Natural Justice	322	Chapter 7	7-132	6-20		The SEA should identify which proposed socio-economic benefits are dependent on assumptions that remain uncertain, including export demand, infrastructure delivery and international hydrogen market growth.	**Karoo Development Foundation: Uncertain variables:** All variables are uncertain. The somewhat less uncertain variables are the pressures for more sustainable forms of (non-fossil) energy, as well as pressures for energy market diversification. The growth of demand for minerals (and therefore the Port as an export node) can also be regarded as relatively certain, although it could be impacted by a temporary global economic recession or depression. The combination of the GH2 project and Port will contribute to spreading and mitigating economic risks. The most uncertain variables are those related to governmental dynamics, as these are massively impacted by factors such as elections, political party dynamics, intergovernmental relations, and municipal-community relationships.
Natural Justice	323	Chapter 7	7-136	8-23		The assessment should more clearly integrate cumulative social vulnerability findings into strategic recommendations and scenario conclusions.	**Karoo Development Foundation:** We will consider strengthening this component, to highlight the policy importance of taking timeous steps to build social capacity in the local communities. See KDF responses in Comment ID 291, Comment ID 292 and Comment ID 306.
Natural Justice	324	Chapter 7	7-140	5-20		A recurring concern throughout the chapter is that projected economic opportunities are frequently presented with greater certainty than the associated governance, inequality, municipal capacity and cumulative social vulnerability risks. Greater emphasis should therefore be placed on cumulative social impacts, distributive justice and long-term sustainability before development pathways are strategically endorsed.	**Karoo Development Foundation:** Comparison of positive and negative cumulative social impacts: Noted. The reason for this feature is that economic opportunities, following an economic logic, can be predicted with some confidence, although one should remember the challenges that may occur. In the political sphere, there is much more uncertainty, not the least being that municipal, provincial and national government elections are held every five years, which change the personalities and political profiles of government agencies. To mitigate against this risk, we will argue for the principle of Collaborative Governance, to build a multi-sphere decision system within each sector, as well as the district-level and local-level processes of sectoral integration (IDPs and SDFs). Municipalities should not be bypassed; where they lack technical skills and political will, a support system of collaborative governance should assist local leaders to grapple with local realities, policy options and implementation requirements. This is the best that can be done in a democracy, where ultimately, the voters decide on who should staff the government. Teh question is: Given such uncertainty, should large projects be put on hold indefinitely? Or would such large projects precisely become the spur to focus local leaders' minds on key decisions? That is itself a normative decision which can have competing answers.

Work Package 1: Strategic Environmental Assessment for the pr

Guideline: How to provide comments on SEA chapters

Dear Reviewer

You are invited to provide written comments on the Strategic Environmental Assessment for the proposed Boegoebaai Port, Special Economic Zone (SEZ) and Namakwa Region.

The Assessment chapters are numbered, and each has been formatted to include page numbers. Each page has line numbers on the left margin of the page. Line numbering is not continuous throughout the document but restarts at number 1 on each page.

In order for the chapter authors to be able to respond to your comments, they need to be as clear and specific as possible. For this reason, a comment template form is provided (as an Excel Spreadsheet). Clearly indicate the chapter number and name in the first row of the spreadsheet. Begin your comment by specifying the exact passage of text to which it refers, by giving the page number and line number for the beginning and end of the text. If you have a general comment which applies to the whole chapter, you can mark it with page 1 line 1 to last page last line.

The authors are not able to respond to generalised comments such as "I don't like this". Where you disagree with the information provided by the authors or their interpretation, you need to provide an alternative or point to a traceable source where evidence can be found. For example, an actionable comment might say "The values suggested for the ize of the seal colony are likely to be underestimated, see Smit 2013 SA J of Marine ecology (4)1-8" This allows the authors to follow up on your comment effectively. Every comment requires a response by the authors, which is documented and in the public domain (so don't make comments which you would be unhappy to see in print, associated with your name or organisation!) (See example in table below).

Example of a filled-out SEA chapter review spreadsheet >

oposed Boegoebaai Port and Special Eco

EXAMPLE ONLY

SEA WP1 Report Chapter	Page range	Line/s	Table/Fig/Box
2 Marine ecology	5	3-6	
3a Aquatic ecology	12	16-20	
5 Heritage	20		Fig 8

nomic Zone.

Note that comments received during the comment period will be considered and addressed by the relevant authors. The comments and responses will be captured and published.

Comment	*Response from autor*
The values suggested for the size of the seal colony are likely to be underestimated, see Smit 2013 SA J of Marine ecology (4)1-8.	There are more recent estimates published, see Barry 2025 SA J of Marine ecol 10(2):1-15. This is the latest current knowledge and was kept as is in the chapter. A note was made to cite the older values and indicate how the population size has changed over the last 10+ years.
Arkeology' is spelled incorrectly in this section.	This has been corrected.
The legend to Figure 8 is illegible.	This has been corrected.

Protection of Personal Information

In accordance with the Protection of Personal Information Act (No. 4 of 2013), CSIR will conduct itself responsibly when collecting, processing, storing and sharing any personal information collected for the purpose of the Strategic Environmental Assessment of the Boegoebaai Port, Special Economic Zone and Namakwa region. By registering as stakeholder and / or submitting information and comments on the project, you consent to the collection, collation, processing, and storing of such information, as well as

Beskerming van Persoonlike Inligting

Volgens die Wet op die Beskerming van Persoonlike Inligting (No. 4 of 2013) sal die WNNR verantwoordelik optree in terme van die versameling, verwerking, stoor en deel van enige persoonlike informasie wat vir die doeleindes van die Strategiese Omgewing Assessering vir die Boegoebaai Hawe, Spesiale Economiese Sone en Namakwa Streek ingesamel word. Deur u belangstelling te registreer en / of informasie en kommentaar op die projek in te dien, stem u toe tot die versameling, verwerking, stoor en deel van die inligting, asook die gebruik en

CHAPTE

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R LIST

Comment stats

Row Labels	Count of Comment
Chapter 1	4
Chapter 2	5
Chapter 2a	31
Chapter 2b	12
Chapter 2c	11
Chapter 3	44
Chapter 4	32
Chapter 5	18
Chapter 6	54
Chapter 6, Chapter 7, General	1
Chapter 7	52
General	36
SPM	24
Grand Total	**324**