WEST COAST GREEN HYDROGEN MASTER PLAN

PHASE 1

FREEPORT SALDANHA INDUSTRIAL DEVELOPMENT ZONE

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February 2026

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Appendix A – Detailed scenario narratives informing the Master Plan

Themes	***Scenario 0 ('Dirt Track') (2025–2050)*** - *No GH2/PtX development occurs around Saldanha Bay*	***Scenario 1 ('Provincial Road') (2025-2050)*** ***0.5 MTPA GH2 equivalent with 70% export*** • *Projects within the SEZ: 1.2 mtpa green ammonia [0.2 mtpa GH_2e]* • *Projects east of the SEZ: 1.3 mtpa green methanol [0.2 mtpa GH_2e] and 1.8 mtpa DRI [0.1 mtpa GH_2e]* *These are supported by:* • *Electrolysers of 5 GW* • *Renewable energy of 10 GW* • *Desalination water supply of 35 MLPD*	***Scenario 2 ('National Highway') (2035-2050)*** ***1.5 MTPA GH2 equivalent with 75% export*** • *Projects within the SEZ: 4.6 mtpa green ammonia [0.9 mtpa GH_2e]* • *Projects east of the SEZ: 1.3 mtpa green methanol [0.2 mtpa GH_2e] and 1.8 mtpa DRI [0.1 mtpa GH_2e]* • *Projects north of the SEZ: 1.4 mtpa green ammonia [0.3 mtpa GH_2e]* *These are supported by:* • *Electrolysers of 15 GW* • *Renewable energy of 30 GW* • *Desalination water supply of 105 MLPD*
Global drivers	• **The global transition to GH2/PtX has been delayed with low exports from hydrogen producing countries.** In South Africa, an unattractive investor environment and policy uncertainty has stifled decarbonisation efforts, with only modest reductions in fossil-based energy. Some integration of renewables has continued, albeit driven mainly by private enterprise and wealthier households defecting from the grid, exacerbating inequality and reducing social cohesion. • Service delivery, investment and local governance in the Saldanha Bay region have remained relatively efficient compared to national averages, although development needs are still urgent. In 2030, of the 160 000 people living in the Saldanha Bay Municipality, one quarter are unemployed and 60% fall below the Upper Bound Poverty Line. Most people employed in the region are classified as low and medium-skilled labour and skills development opportunities are limited. Inequality, spread along racial lines, remains pervasive and persistent.	• Global momentum is building around transport and industrial efficiency, with the global GH_2 import market now at 20 mtpa. • The introduction of IMO carbon taxes on maritime shipping fuels from 2028 has accelerated the shift toward low-carbon alternatives such as green ammonia and methanol. • Funding for GH2 projects continues to rely heavily on international partners, particularly climate change agencies, EU, Germany and Japan, while local commercial financiers remain conservative and risk-averse, slowing the pace of domestic investment and scale-up.	• The global transition to decarbonised energy is well underway, with global GH_2 imports reaching 200 mtpa. • Initially reliant on international funding, GH_2 projects gradually gain traction with local financiers. As project viability improves and infrastructure matures, domestic funding increases, unlocking broader investment and scale-up potential.
National policy planning		• National decarbonisation targets are driving renewables uptake, though efforts remain largely uncoordinated. GH_2 features only modestly in national energy planning (IEP and IRP).	• South Africa has emerged as a key production hub, driven by coordinated, pragmatic leadership. • The country has implemented least-cost renewables supported by gas, storage, and a functioning power market. • Eskom's unbundling has introduced transparency, and an independent, state-owned transmission and market operator is in place. Government has ensured a just transition while fostering green manufacturing.
GH_2 production and Green Hydrogen equivalents (GH_2e)		• In Saldanha, GH_2 production has advanced significantly. A total of 1.2 mtpa green ammonia (0.2 mtpa GH_2e) is produced in and around the Saldanha SEZ; 1.3 mtpa of green methanol (0.2 mtpa GH_2e) 20km east of Saldanha Bay; 2.5 mtpa DRI (0.1 mtpa GH_2e) near the southeastern boarder of the Saldanha SEZ.	• From 2035, green production facilities islanded outside Freeport (a few hundred km north of the SEZ), come online, producing 1.4 mtpa green ammonia (0.3 mtpa GH_2e). • By 2035, the SEZ has been expanded and anchor projects within the expanded SEZ have scaled up production, raising total green ammonia production by 3.4 mtpa within the SEZ (from 1.2 mtpa in Scenario 1). • Due to the success of Phase 1 of the DRI production site, the producer scales up production to 1.8 mtpa (0.1 mtpa GH_2e).
GH_2 derivatives		• Derivatives produced: o 1.2 mtpa green ammonia (0.2 mtpa GH_2e); o 1.3 mpta green methanol (0.2 mtpa GH_2e); and o 2.5 mpta DRI (0.1 mtpa GH_2e). • The main derivative from the GH_2 being produced is green ammonia (used for export and sustainable bunker fuel at Saldanha Bay and Cape Town Harbour via a dedicated barge) and fertiliser. The IMO's 2025 carbon tax has significantly boosted demand for green shipping fuels (ammonia and methanol). • While some GH_2 is allocated to transport, uptake remains limited. Expected demand from heavy-duty transport has not materialised, as buyers favour battery electric trucks.	• Derivatives produced: o 6 mtpa green ammonia (1.2 mtpa GH_2e); o 1.3 mtpa green methanol (0.2 mtpa GH_2e); and o 1.8 mtpa DRI (0.1 mtpa GH_2e). • The green ammonia production facilities, islanded outside Freeport as well as the facilities within and surrounding SEZ, that come online from 2035, raise the total green ammonia produced from 1.2 mtpa to 6 mtpa (1.2 mtpa GH_2e). The green ammonia generated from this project will be transported by a combination of rail and pipeline. • Due to low risk and success of Phase 1 of DRI production southeast of the SEZ, a decision is taken to scale up DRI production by 1.8 mtpa which is exported to the EU due to continued low domestic demand.

Themes	***Scenario 0 ('Dirt Track') (2025–2050)*** - *No GH2/PtX development occurs around Saldanha Bay*	***Scenario 1 ('Provincial Road') (2025-2050)*** ***0.5 MTPA GH2 equivalent with 70% export*** • *Projects within the SEZ: 1.2 mtpa green ammonia [0.2 mtpa GH_2e]* • *Projects east of the SEZ: 1.3 mtpa green methanol [0.2 mtpa GH_2e] and 1.8 mtpa DRI [0.1 mtpa GH_2e]* *These are supported by:* • *Electrolysers of 5 GW* • *Renewable energy of 10 GW* • *Desalination water supply of 35 MLPD*	***Scenario 2 ('National Highway') (2035-2050)*** ***1.5 MTPA GH2 equivalent with 75% export*** • *Projects within the SEZ: 4.6 mtpa green ammonia [0.9 mtpa GH_2e]* • *Projects east of the SEZ: 1.3 mtpa green methanol [0.2 mtpa GH_2e] and 1.8 mtpa DRI [0.1 mtpa GH_2e]* • *Projects north of the SEZ: 1.4 mtpa green ammonia [0.3 mtpa GH_2e]* *These are supported by:* • *Electrolysers of 15 GW* • *Renewable energy of 30 GW* • *Desalination water supply of 105 MLPD*
		• A fertiliser plant, using green ammonia and locally sourced phosphate, has been established but exports its entire output to the EU due to weak local demand. Additional ammonia development takes place outside SEZ, without SEZ benefits. Development continues with delays in reaching financial close. Investigations into nodal expansion of the SEZ are underway. • A DRI producer adjacent to the SEZ is able to secure GH_2 to produce 2.5 mpta DRI (Phase 1 of its project). GH_2 is used to reduce iron ore to DRI using widely available scrap metal, replacing coking coal. Most of the green DRI is exported to the EU. Local green steel production is limited due to weak domestic demand. Approximately 15-20% of DRI product is supplied for national applications, such as for steel smelters supplying the motor industry in the Eastern Cape.	• Ammonia is widely available, supporting a growing methanol industry using Carbon from cement plants and seaweed cultivation (eventually Direct Air Capture). Bunker barges supply green fuels to vessels anchored in Cape Town Harbour. Local fertiliser production gains domestic uptake commitment, reducing CBAM risk for on high-value agricultural exports. • Hydrogen refuelling expands along the N7 and to rail via dual-fuel locomotives. • Electrolyser capacity reaches 15 GW, supported by 30 GW of renewables within an expanded SEZ east of Saldanha.
Shared infrastructure • ***Desalination*** • ***Ammonia storage*** • ***Port infrastructure***	• **Government-led regional infrastructure and land use programmes and projects have continued with some successes.** In addition to new roads, railways, landfills, Wastewater Treatment Works (WWTWs) and community projects, a 8.5 million litres per day (MLPD) seawater desalination facility, constructed near Danger Bay has alleviated some water scarcity. Road infrastructure has been over-specified relative to current demand, while rail operators continue to operate with limited capacity. This has constrained the scale of development in the region. Private sector access to the rail network has increased.	• Lack of coordination among Freeport, Eskom, Transnet, and industry has hindered shared infrastructure development. • Producers have embarked on constructing private storage within and around the SEZ boundaries on leased land. • The existing two port terminal operators have extended their licenses to cover transport and pass through of ammonia and chemicals in general allowing GH_2 producer to make use of these existing two terminal operators as prescribed by TNPA. • The already existing 8.5 MLPD Danger Bay (Saldanha) desalination plant has been expanded to 50 MLPD and runs predominantly on renewables. Of this, 35 MLPD is used for GH_2 production, 15 MLPD is sold locally. Brine is safely discharged offshore.	• Multi-stakeholder agreements enable shared hydrogen and ammonia storage being built. Policy certification and standards issues for shared storage has been developed and adopted enabling the efficient regulation of ammonia specifications. • TNPA has followed due process to enable additional new port terminal operators to be established at the port increasing capacity of ammonia transport to vessels. • Saldanha desalination plants are scaled up to 152 MLPD and runs entirely on renewables. Of this, 105 MLPD is used for GH_2 production, 32 MLPD is sold to local users, and some is stored in aquifers to raise water tables and counter saline intrusion. Brine is safely discharged via offshore diffusers.

Shared infrastructure
- ***Road***
- ***Rail***
- ***Pipeline***
- ***Power lines***
		• Road
		  ○ Constructing RE (WEF and PV) will require transport of project components.
		  ○ Operations: Transport of methanol from a project approximately 20km east of the SEZ, to the port.
		• Rail
		  ○ Rail infrastructure remains largely unchanged due to rail authorities' reluctance to invest new capital into constructing new rail lines.
		• Pipeline
		  ○ Water is piped in from Danger Bay (Saldanha) to the Besaansklip reservoir and fed into municipal distribution via a new 20km pipeline.
		  ○ No coordinated/shared ammonia pipelines to the port terminals are constructed. Instead, producers use trucks or dedicated pipelines to move product to the port.
			• Road
			  ○ Constructing RE (WEF and PV) will require transport of project components.
			  ○ Operations: Transport of methanol from a project approximately 20km east of the SEZ, to the port.
			• Rail
			  ○ Northern projects have invested private capital to improve rail capacity, their primary mode of transporting green ammonia, and to establish connections between project sites and the port. An eastern rail corridor to Coega SEZ and Mossel Bay is also being utilised for the transport of liquid fuels and other PtX products, enabling broader market access and provincial integration between the Westen and Eastern Cape strategic planning.
			• Pipeline
			  ○ Water continues to be piped in via the existing pipelines to appropriate storage facilities (e.g., Besaansklip reservoir).
			  ○ An ammonia pipeline is constructed from an offsite shared production and storage facility to the port (this reduces road transport impacts).

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		○ The envisioned Lüderitz–Boegoebaai–Saldanha cross-border pipeline is not constructed due to insufficient volumes. • Powerline ○ Lack of coordination results in separate transmission lines and hydrogen/ammonia storage facilities being built by producers.	○ A pipeline linking Saldanha renewable energy and GH2 production sites to the north as far as Namibia, reaches final investment decision and is commissioned, driven by strong bilateral cooperation and integrated market planning. Joint leadership and harmonised infrastructure investment unlock large-scale regional hydrogen trade., overcoming regulatory complexity and high capital costs. Phased pipeline development as project clusters emerge. • Powerline ○ Multi-stakeholder agreements enable the construction and planning of coordinated transmission infrastructure. Grid strengthening and new substations are prioritised by the transmission operator, allowing producers to sell excess renewable power and reduce hydrogen costs. ○ Electricity is transmitted via new and existing infrastructure across the Saldanha region and the Central and Western Corridors. GH_2 developers buy renewable power from third parties and wheel it through the national grid under new utility agreements.
Renewable energy and electrolysers	• **Some renewable energy development has continued in the agricultural flatlands west of the Cederberg, contributing 500 MW to the grid**. In the region east of Saldanha Bay, 700 ha have been used to construct solar PV facilities, and 1 500 ha have been dedicated to onshore wind. New renewable energy infrastructure has provided between 920 and 3 400 jobs (potential employment opportunities) to local people in the region.	• Electrolysers (5 GW) powered by 10 GW of renewables support GH_2 and supply excess electricity to the SEZ and the grid (local municipalities). • Renewable electricity is delivered through a mix of new and existing infrastructure across Saldanha and surrounding regions. • Wind and solar farms are developed by producers and third parties across the Western Cape. Majority of GH_2 producers are able to supply their production plants with direct feed renewable energy (co-located with electrolysers). • Developers oversize RE by 2x, initially building 1.5x capacity: excess to be sold to nearby storage facility. • The renewable energy for GH2 is 2x oversized to enhance self-consumption and enable the supply of electricity to the SEZ/Municipality and/or National grid. Fifty percent of the installed capacity is provided by solar PV, 50% by onshore wind. Large solar PV farms (totalling 5 000 MW) covering a total of 10 200 hectares, and large onshore wind farms (totalling 3 000 MW) extending over 15 300 hectares, have been developed within a 500 km radius of Saldanha Bay by third-party operators. The combined land-based spatial footprint of these facilities is approximately 17 000 hectares, equivalent to just over one-seventh the size of the Saldanha Bay Local Municipality. Offshore wind contributes an additional 2 GW of capacity without impacting the land footprint.	• A decrease in wheeling costs enables more GH_2 developers to buy renewable power from third parties and wheel it through the national grid under new utility agreements. • Electrolysers (15 GW) powered by 30 GW of renewables support GH_2 and supply excess electricity to the SEZ and the grid (local municipalities). • A vast expanse of regional renewable energy infrastructure now supports a burgeoning GH_2/PtX economy. Large solar PV farms totalling 15 000 MW and covering approximately 30 450 hectares, and large onshore wind farms totalling 9000 MW and spanning 91 200 hectares, have been constructed within a 500 km radius of the Saldanha Bay SEZ by third-party operators. With the technology split of 50% solar PV, 30% onshore wind, and 20% offshore wind, the combined land-based footprint of the renewable energy facilities totals roughly 121 647 ha, equivalent to about 45% of the City of Cape Town Municipality. Offshore wind contributes an additional 6 GW of capacity without occupying land.

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Appendix B – Summary of applicable legislation

Table 1: Primary legislation and policy pertaining to planning and related environmental sectors relevant for GH_2/PtX developments

Policy / Statute	Purpose	Mandated government bodies
Planning and Land Use Management		
Spatial Planning and Land Use Management Act (SPLUMA), 2013 (Act No. 16 of 2013)	Framework governing and delegating powers in terms of land use planning	Department of Agriculture, Land Reform and Rural Development
Western Cape Land Use Planning Act, 2014 (Act No. 3 of 2014) (LUPA)	Consolidates and regulates legislation in the Western Cape Province related to provincial and regional planning, urban and rural development, and municipal planning. Saldanha Port: Positioned to serve the oil and gas offshore extraction industry, focusing on importing oil and exporting iron ore and other minerals. The National Infrastructure Plan (NIP) 2012 includes the Saldanha Bay-Northern Cape corridor development; Road Freight: Predominantly carried by the N7, with expected volume doubling by 2043.	Department of Local Government, Environmental Affairs and Development Planning in the Western Cape Province
The Saldanha Bay Local Municipality (SBLM) Municipal Planning By-law	Governance of land use and the provision of municipal service	Local Municipality
The Land Survey Act, 1997 (Act No. 8 of 1997)	Supports land registration and securing property rights by ensuring accuracy and reliability of boundary surveys in the deeds registration system	Chief Surveyor-General
Infrastructure and Municipal Services		
Infrastructure Development Act, 2014 (Act No. 23 of 2014)	In order to expedite the implementation of national infrastructure of significant economic or social importance, the Presidential Infrastructure Coordinating Commission has designated 18 Strategic Integrated Projects (SIPs). The Saldanha Northern Cape development corridor is referred to as SIP 5. Furthermore, on July 24, 2020, two new subprojects for SIP 21 were gazette on transport, both of which are relevant to Saldanha: The Boegoebaai Port and Rail infrastructure Project and the Small Harbours development. They consist of: • Integrated rail and port expansion. • Back-of-port industrial capacity (including an IDZ). • Strengthening maritime support capacity for oil and gas along African West Coast. • Expansion of iron ore mining production and beneficiation.	Presidential Infrastructure Coordinating Commission (PICC)
Municipal Finance Management Act, 2003 (Act No. 56 of 2003) (MFMA)	Ensure sound and sustainable management of the financial affairs of municipalities	The National Treasury
Municipal Bulk Services Contribution Development Charges Policy	Framework used by municipalities to recover costs for the provision of bulk infrastructure needed to support new developments or increased service demands	Municipality
Water Services Act, 1997 (Act No. 108 of 1997)	Framework for water services institutions (municipalities and water boards) and intermediaries, setting national standards and norms for tariffs, water services development plans, and service conditions	Department of Water and Sanitation (DWS)
National Water Act, 1998 (Act No. 36 of 1998)	Governs the protection, use, development, conservation, management, and control of water resources. Implication on infrastructure such as desalination. Refer to the section below on “Environmental and Heritage Compliance” for additional information.	Department of Water and Sanitation
Electricity Regulation Act, 2006 (Act No. 4 of 2006)	Framework for electrical generation, transmission, distribution and trading. Dictates license to operate.	Department of Mineral Resources and Energy

Policy / Statute	Purpose	Mandated government bodies
Municipal Fiscal Powers and Functions Amendment Act, 2024 (Act No. 4 of 2024)	Regulates the power of municipalities to levy development charges, establishes permissible uses for income from these charges.	Minister of Finance to make regulations for effective implementation and also amends the Spatial Planning and Land Use Management Act, 2013.
SBLM Municipal Bylaws	Developed for municipal council to regulate specific issues	Municipality
Special Economic Zones		
Special Economic Zones Act, 2014 (Act No. 16 of 2014)	Framework for the designation, promotion, development, operation, and management of Special Economic Zones (SEZs). Includes SEZ nodes.	Department of Trade Industry and Competition
Building and Construction Regulations		
National Building Regulations and Building Standards Act, 1977 (Act No. 103 of 1977)	Permits to ensure structures adhere to safety and structural standards	Department of Trade, Industry and Competition
Occupational Health and Safety Act, 1993 (Act No. 85 of 1993)	Protecting Health and safety of workers. Dictates need for construction work permits. Electrical Installation MHI etc.	Department of Employment and Labour
Environmental and Heritage Compliance		
Environmental Impact Assessment (EIA) Regulatory Framework	**This legislation below provides a brief overview of the legal framework with respect to environmental related authorisations, permits, and licences that may be required for the Saldanha GH2/PtX technology system. The South African EIA Guideline for managing the impacts of a GH2/PtX economy (Schreiner *et al*, 2024[1]), and the Pre-Feasibility Study on Lighthouse Technology Methanol in South Africa (Kyriakarakos *et al*, 2024[2]) were used as the main reference for this section, along with EIA Reports compiled for GH2/PtX projects in South Africa.** **The Saldanha GH2/PtX developments will require an integrated approach to meet the legal requirements across several Acts. An integrated permitting process adds complexity and necessitates careful planning. Engagement with relevant authorities early in the authorisation process is crucial in determining the need for various licences and understanding the regulatory framework as it relates to an EIA.**	
National Environmental Management Act, 1998 (Act No. 107 of 1998, as amended) (NEMA)	The proclamation of the NEMA gives expression to an overarching environmental law. Various mechanisms, such as cooperative environmental governance, compliance and non-compliance, enforcement, and regulating government and business impacts on the environment, underpin NEMA. NEMA, as the primary environmental legislation, is complemented by many sectoral laws governing marine living resources, mining, forestry, biodiversity, protected areas, pollution, air quality, waste and integrated coastal management. Chapter 1, Section 2 of the NEMA sets out several principles to give guidance to developers, private landowners, members of the public and authorities.	Department of Forestry, Fisheries and the Environment (DFFE)
Environmental Authorisation and Listed Activities	Section 24 (1) of the NEMA, as amended states that "*In order to give effect to the general objectives of integrated environmental management laid down in this Chapter, the potential consequences for or impacts on the environment of listed activities or specified activities must be considered, investigated, assessed and reported on to the competent authority or the Minister responsible for mineral resources, as the case may be, except in respect of those activities that may commence without having to obtain an environmental authorisation in terms of this Act".* Based on this, any proposed development that triggers listed activities or specified activities will require an Application for Environmental Authorisation (EA), unless an exclusion from obtaining an EA applies. The South African EIA Regulations were promulgated under Sections 24(5) and 44 of NEMA. The purpose of the EIA Regulations (Government Notice (GN) 982, as amended) is to regulate the "*preparation, evaluation, submission, processing, consideration of, and decision on applications for environmental authorisations for the commencement of activities, subject to an EIA*", in order to avoid detrimental impacts on the environment and to mitigate impacts to an acceptable level when avoidance is not possible, and to enhance positive environmental impacts. The EIA Regulations were promulgated in GN R982, R983, R984 and R985 in Government Gazette (GG) 38282, dated 4 December 2014, which came into effect on 8 December 2014. The regulations were further amended as follows: ▪ GG 40772, GN 326, 327, 325 and 324 on 7 April 2017; ▪ GG 41766, GN 706 on 13 July 2018; ▪ GG 43358, GN 599 on 29 May 2020; ▪ GG 44701, GN 517 on 11 June 2021; and ▪ GG 45999, GN 1816 on 3 March 2022.	Relevant Competent Authority for the Application for Environmental Authorisation or Exclusion Process

[1] Schreiner, G., Snyman-van der Walt, L., Heather-Clark, S., Van den Berg, S., Abed, R., Strong, A., Claasen, L., Russo, V., Mqokeli, B., & De Wet, B. (2024). Managing the Impacts of a Green Hydrogen/Power-to-X Economy: An Environmental Assessment Guideline for South Africa. CSIR: Stellenbosch. Report No: CSIR/SPLA/SECO/IR/2024/0005/B

[2] Kyriakarakos, G., Swartbooi, A., Snyman-van der Walt, L., Uehlecke, H., Stoll, U., & Stocker, K., (2024). Pre-Feasibility Study on Lighthouse Technology Methanol: South Africa. GFA Consulting Group and CSIR.

<table>
<tr><th>Policy / Statute</th><th>Purpose</th><th>Mandated government bodies</th></tr>
<tr><td></td><td>
GN R326 contains the regulations for the Environmental Assessment Process, and three associated Listing Notices, as follows:

▪ Listing Notice 1 (GN 983, as amended) – Activities requiring a Basic Assessment (BA) process;
▪ Listing Notice 2 (GN 984, as amended) – Activities requiring a Scoping and EIA process; and
▪ Listing Notice 3 (GN 985, as amended) – Activities within specific geographical areas per province requiring a BA process.

The key identified activities that trigger the need for an EA and that are likely applicable to the Saldanha GH2/PtX projects are outlined in Table 1. Other identified activities may be relevant, depending on project design and specifications.

Table 1: Likely Listed Activities (non-exhaustive) which may be triggered for the Saldanha GH2/PtX projects, per technology type, across Listing Notices 1, 2 and 3[3]
<table>
<tr><th>Technology type</th><th>Listing Notice 1</th><th>Listing Notice 2</th><th>Listing Notice 3[4]</th></tr>
<tr><td>Onshore Wind
(Likely to be developed within the broader region, not confined to the SEZ [within a 500 km radius of Saldanha Bay i.e. Western Cape, Northern Cape and Eastern Cape])</td><td>Activity 12 (ii)[5]; Activity 14; Activity 19; Activity 24; Activity 28; Activity 48[6]; Activity 56</td><td>Activity 1; Activity 15</td><td>Activity 4 (a), (g), (i); Activity 12 (a), (g), (i); Activity 14 (a), (g), (i); Activity 18 (a), (g), (i); Activity 23 (a), (g), (i)</td></tr>
<tr><td>Solar PV
(Likely to be developed within the broader region, not confined to the SEZ [within a 500 km radius of Saldanha Bay i.e. Western Cape, Northern Cape and Eastern Cape])</td><td>Activity 12 (ii); Activity 14; Activity 19; Activity 24; Activity 28; Activity 48; Activity 56</td><td>Activity 1; Activity 15</td><td>Activity 4 (a), (g), (i); Activity 12 (a), (g), (i); Activity 14 (a), (g), (i); Activity 18 (a), (g), (i); Activity 23 (a), (g), (i)</td></tr>
<tr><td>Seawater RO
(likely to be developed in or outside the SEZ)</td><td>Activity 9; Activity 10; Activity 12; Activity 14; Activity 16; Activity 17 (i) (v) (e); Activity 19; Activity 19A; Activity 24; Activity 25; Activity 28; Activity 56</td><td>Activity 6; Activity 14; Activity 15; Activity 26</td><td>Activity 2 (i); Activity 4 (i); Activity 12 (i); Activity 14 (i); Activity 18 (i)</td></tr>
<tr><td>Hydrogen via electrolysis
(assuming development in the Western Cape)</td><td>Activity 12; Activity 16; Activity 19; Activity 24(ii); Activity 25; Activity 27; Activity 28(ii); Activity 48; Activity 56</td><td>Activity 4; Activity 7 (ii); Activity 15</td><td>Activity 4 (i); Activity 12 (i); Activity 14 (i); Activity 18 (i)</td></tr>
<tr><td>Ammonia via Haber-Bosch
(assuming development in the Western Cape)</td><td>Activity 12; Activity 16; Activity 19; Activity 24(ii); Activity 25; Activity 27; Activity 28(ii); Activity 48; Activity 56</td><td>Activity 4[7]; Activity 6; Activity 7 (ii); Activity 15</td><td>Activity 4 (i); Activity 12 (i); Activity 14 (i); Activity 18 (i)</td></tr>
<tr><td>Linear infrastructure (Roads, Pipelines, Powerlines)
(assuming development in the Western Cape, Northern Cape and Eastern Cape)</td><td>Activity 9; Activity 10; Activity 11; Activity 12 (ii); Activity 19; Activity 24; Activity 28; Activity 45; Activity 46; Activity 47; Activity 48 (i); Activity 56</td><td>Activity 9</td><td>Activity 4 (a), (g), (i); Activity 10 (a), (g), (i); Activity 12 (a), (g), (i); Activity 14 [ii] (a), (g), (i); Activity 18 (a), (g), (i); Activity 23 [ii] (a), (g), (i)</td></tr>
</table>
</td><td></td></tr>
<tr><td colspan="3">Solar PV and Wind Energy Development</td></tr>
</table>

[3] The listed activities outlined do not reflect the full list of activities that would be applicable to a specific GH2/PtX project in the Saldanha and wider regions. The full list of applicable activities must be identified on a case-by-case basis by the appointed Environmental Assessment Practitioner (EAP).
[4] The applicable Listing Notice 3 listed activities need to be identified on a case-by-case basis depending on the potential triggers with regards to the thresholds or geographical restrictions outlined therein. For Solar PV and onshore wind, it is assumed that such developments could take place in the Western Cape, Northern Cape and Eastern Cape (based on a 500 km radius from Saldanha).
[5] Note that Listed Activity 12 of Listing Notice 1 does not apply if activities listed in Activity 14 in Listing Notice 2 or Activity 14 in Listing Notice 3 are applicable.
[6] Note that Listed Activity 48 of Listing Notice 1 does not apply if activities listed in Activity 14 in Listing Notice 2 or Activity 23 in Listing Notice 3 are applicable.
[7] This includes storage of Ammonia. Additional standards may be required for storage of Ammonia due to its toxic nature.

<table>
<tr><th>Policy / Statute</th><th>Purpose</th><th>Mandated government bodies</th></tr>
<tr><td>Renewable Energy Development Zones</td><td><u>BA Process:</u>
Proposed onshore wind and solar PV developments that are required as electricity inputs for the electrolysis process, are likely to be developed by producers and third parties within the broader region, within a 500 km radius of Saldanha Bay. Therefore, it is likely that these proposed developments may occur in the Western Cape, Northern Cape and Eastern Cape provinces.

The Phase 1 and Phase 2 Wind and Solar Strategic Environmental Assessments (SEAs) resulted in the promulgation of 11 Renewable Energy Development Zones (REDZs). Eight REDZs were gazetted in GN 114 on 16 February 2018, and three additional REDZs were gazetted in GN 144 on 26 February 2021. If a proposed solar PV or wind project falls entirely within a REDZ, then a BA process can be followed, instead of a Scoping and EIA process, with a reduced decision-making timeframe from 107 days to 57 days. The REDZs within 500 km of the Saldanha Bay Special Economic Zone (SEZ) are noted in Table 2.

Table 2: Description of the REDZs within 500 km of the Saldanha Bay SEZ
<table><tr><th>REDZs Number</th><th>REDZs Name</th><th>Province</th><th>Renewable Energy Technology</th><th>Distance from Saldanha Bay SEZ</th></tr><tr><td>2</td><td>Komsberg</td><td>Western Cape</td><td>Wind and Solar PV</td><td>~190 km</td></tr><tr><td>1</td><td>Overberg</td><td>Western Cape</td><td>Wind and Solar PV</td><td>~200 km</td></tr><tr><td>8</td><td>Springbok</td><td>Northern Cape</td><td>Wind and Solar PV</td><td>~390 km</td></tr><tr><td>11</td><td>Beaufort West</td><td>Northern Cape, Western Cape and Eastern Cape</td><td>Wind and Solar PV</td><td>~490 km</td></tr><tr><td>7</td><td>Upington</td><td>Northern Cape</td><td>Solar PV</td><td>~590 km</td></tr></table>
Depending on the project planning and timing, if EAs for the renewable energy components of the Saldanha GH2/PtX projects are required expeditiously, there is the opportunity to capitalize on the benefits of the closest REDZs. However, if the renewable energy developments are not located entirely in the REDZs, it is most likely that a Scoping and EIA process will be required.

<u>Exclusion from the EA:</u>
The Department of Forestry, Fisheries and the Environment (DFFE) published the Solar Exclusion Norm for the exclusion of the development and expansion of Solar PV Facilities from the requirement to obtain an EA in GN 4558 on 27 March 2024. The Solar PV Exclusion Norm applies throughout the country and allows specific listed activities to be excluded from an EA if the solar PV development occurs in areas of verified low or medium sensitivity, and the provisions of the Norm are met. The process is more streamlined than an Application for EA, whereby relevant specialists are required, followed by the completion of specialist reports and an integrated Environmental Sensitivity Report that must be made available for public review. The Competent Authority is required to issue a registration number within a period of 10 days.

The benefits of the Solar PV Exclusion Norm can apply if the solar PV components of the Saldanha GH2/PtX projects target areas of verified low or medium sensitivity and meet the provisions of the norm.</td><td>Relevant Competent Authority for the Application for Environmental Authorisation or Exclusion Process</td></tr>
<tr><td>Strategic Transmission Corridors for Electricity Grid Infrastructure</td><td><u>BA Process:</u>
The Phase 1 and Phase 2 Electricity Grid Infrastructure (EGI) SEAs resulted in the promulgation of Strategic Transmission Corridors (STCs). Five STCs were gazetted in GN 114 on 16 February 2018, and two expanded EGI corridors were gazetted in GN 1637 on 24 December 2021 (as amended in GN 2716 on 04 November 2022). Applications for EA for large scale electricity transmission and distribution facilities within the STCs, that trigger Activity 11 of Listing Notice 1 or Activity 9 of Listing Notice 2 of the 2014 NEMA EIA Regulations (as amended), will be allowed to undergo a BA process with 57 day decision-making, instead of a full Scoping and EIA process. To realise the benefits of the STCs, the greater part of the EGI must fall within the STC corridors. A pre-negotiated route with all landowners must be formulated and submitted with the Application for EA. The STCs within 500 km of the Saldanha Bay SEZ are noted in Table 3.

Table 3: Description of the STCs within 500 km of the Saldanha Bay SEZ
<table><tr><th>STCs Name</th><th>Distance from Saldanha Bay SEZ</th></tr><tr><td>Western</td><td>Encompasses the SEZ</td></tr><tr><td>Central</td><td>~50 km</td></tr><tr><td>Expanded Western</td><td>~200 km</td></tr><tr><td>Northern</td><td>~400 km</td></tr><tr><td>Eastern</td><td>~590 km</td></tr></table></td><td>Relevant Competent Authority for the Application for Environmental Authorisation or Exclusion Process</td></tr>
</table>

Policy / Statute	Purpose	Mandated government bodies
	Similar to the REDZs, there is also the opportunity to capitalize on the benefits of the closest STCs. Conversely, if the greater part of the EGI development is not located in the STCs, it is most likely that a Scoping and EIA process will be required where higher voltage lines are proposed (i.e. more than 275 kV outside of urban areas or industrial complexes). **Exclusion from the EA:** The EGI Standard was published in GN 2313 on 27 July 2022, which allows for the exclusion from the need to obtain an EA for power line and substation development under certain conditions. If EGI developments fall within confirmed low or medium sensitivity areas within the STCs, and comply with the provisions of the EGI Standard, including triggering specified activities, then an EA is not required. The greater part of EGI development must be located within the STCs for the EGI Standard to apply. A pre-negotiated route of the EGI and proof of pre-negotiation is required by the Standard. The process mainly requires the appointment of relevant specialists, and completion of an Environmental Sensitivity Report, Registration Form and various supporting documentation that is made available for a minimum 30-day public comment period. The Competent Authority is required to issue the registration number within a 30-day period. There is also the opportunity to capitalize on the benefits of the EGI Corridor in relation to the STCs, which would result in exclusion from an EA.	
Other Permits, Approvals, And Licences **In this section, the following approval and license processes are briefly described. These are presented as examples and do not necessarily represent a comprehensive list.**		
National Environmental Management: Waste Act (Act 59 of 2008, as amended) (NEM: WA)	The National Environmental Management: Waste Act (Act 59 of 2008, as amended) (NEM: WA) was published with one of the main objectives to reform the law regulating waste management in order to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development. Section 19 of the NEM: WA allows the Minister to publish a List of Waste Management Activities that have, or are likely to have, a detrimental effect on the environment published. Such a list specifies the waste management activities that will require a Waste Management Licence (WML). The List of Waste Management Activities was originally published in GN 921 on 29 November 2013, and thereafter amended in GN 332 on 2 May 2014; GN 633 on 24 July 2015; GN 1094 on 11 October 2017; and GN 1757 on 11 February 2022. The List of Waste Management Activities include Categories A, B and C. If any waste management activities listed in Category A are triggered by a development, a BA process must be undertaken, as part of the WML application. Waste management activities in Category B will, however, require a full Scoping and EIA process, as part of the WML application. If any of the waste management activities in Category C are triggered, then the relevant Norms and Standards must be followed. Disposal (and storage) of waste (e.g. brine salt) generated by water treatment processes associated with the Saldanha GH2/PtX projects may require a WML. This application process should be integrated with the EIA process. There are various technologies that can transform liquid brine into solid (such as settlement tanks, cooling water circuits, and forced crystallization) (WSP, 2023[8]). The need for a WML depends on various factors, including the treatment process, capacity being treated and stored on site, and frequency of removal. Even if a WML is not required, Section 16 of the NEM: WA dealing with general duty of care regarding waste management, also needs to be considered by the Applicant, and potentially integrated into the Environmental Management Programme (EMPr). The EMPr needs to include reasonable measures for the prevention of pollution and best practice. Regulation 6(3) of the regulations regarding the exclusion of a waste stream or a portion of a waste stream from the definition of waste (GN 715, July 2018), allows the Minister of Forestry, Fisheries and the Environment to take decisions on applications received for the exclusion of a waste stream or a portion of a waste stream from the definition of waste for a certain beneficial use. This could potentially apply if the waste is used for a certain beneficial use.	Department of Forestry, Fisheries and the Environment (DFFE)
National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)	The National Environmental Management: Air Quality Act (Act 39 of 2004, as amended) (NEM: AQA) aims to protect the environment and prevent pollution and ecological degradation towards sustainable development. It contains a list of activities which require an Atmospheric Emissions Licence (AEL) as well as associated minimum emissions standards. Section 22 of the NEM: AQA deals with the consequences of listing, and it states that “no person may without a provisional atmospheric emission licence, or an atmospheric emission licence conduct an activity (a) listed on the national list anywhere in the Republic; or (b) listed on the list applicable in a province anywhere in that province”. Therefore, a Provisional AEL and/or AEL is required for any plant or proposed development that triggers a listed activity in NEM: AQA. While green hydrogen and ammonia production is generally cleaner than conventional methods, the process may still trigger the need for AEL under the NEM: AQA. Of interest is Category 7 of the listed activities: Inorganic Chemicals Industry, subcategory 7.1 on the “Production and/or Use in Manufacturing of Ammonia, Fluorine, Fluorine Compounds, Chlorine, and Hydrogen Cyanide”, which applies to all installations producing and/or using more than 100 tons per annum of any of the listed compounds.	Department of Forestry, Fisheries and the Environment (DFFE), as well as relevant provincial and municipal departments (in terms of AEL Authorities)

[8] WSP Environmental (2023). Hendrina Green Hydrogen and Ammonia Facility: Draft Environmental Impact Assessment Report.

Policy / Statute	Purpose	Mandated government bodies
	For green methanol, Category 6 of the listed activities is relevant, which deals with the Organic Chemicals Industry, "The production, or use in production of organic chemicals not specified elsewhere including acetylene, acetic, maleic or phthalic anhydride or their acids, carbon disulphide, pyridine, formaldehyde, acetaldehyde, acrolein and its derivatives, acrylonitrile, amines and synthetic rubber" which applies to all installations producing or using more than 100 tons per annum of any of the listed compounds. Other aspects, such as any residual atmospheric emissions from biomass combustion related to the carbon source must also be considered. The AEL application process should be integrated with the EIA process.	
National Heritage Resources Act, 1999 (Act No. 25 of 1999)	The National Heritage Resources Act (Act 25 of 1999) (NHRA) provides for the identification, assessment, management, and conservation of heritage resources in South Africa. Section 38 (8) of the NHRA stipulates that even when a Heritage Impact Assessment (HIA) is required in terms of legislation other than the NHRA (e.g. the NEMA), HIA requirements stipulated in the NHRA must still be fulfilled. The HIA is usually integrated into the EIA process. If an EA is not required, there are still certain activities stipulated in Section 38 (1) of the NHRA for which heritage approval is required. Any person who intends to undertake a development categorised in Section 38 (1) of the NHRA and listed hereunder must notify the South African Heritage Resources Agency (SAHRA) or the designated Provincial Heritage Resources Authority (PHRA) and furnish it with details regarding the location, nature, and extent of the proposed development at the very earliest stages of initiating such development. Development categories that could be relevant to the Saldanha GH2/PtX projects include: • Construction of a road, wall powerline, pipeline, canal, or any linear development or barrier exceeding 300 m in length; • Construction of a bridge or similar structure exceeding 50 m in length; • Any development or activity that will change the character of a site exceeding 5000 m2 in extent, involving three or more erven or subdivisions thereof; and • The re-zoning of a site exceeding 10 000 m^2 in extent. Where SAHRA is the responsible heritage resources authority, the notification above is done via the South African Heritage Resources Information System (SAHRIS), of which SAHRA is the custodian. For renewable energy projects associated with the Saldanha GH2/PtX projects, that may occur in the Northern Cape, Eastern Cape and Western Cape, the PHRAs also need to be consulted. Heritage Western Cape (HWC) is the responsible heritage resources authority in the Western Cape, and they have also recently migrated to SAHRIS. The Eastern Cape Provincial Heritage Resources Authority (ECPHRA) is the responsible heritage resources authority in the Eastern Cape, and they also require submissions via SAHRIS. SAHRA is the designated authority in the Northern Cape. It is recommended that SAHRA be contacted during the pre-application phase to confirm the requirements upfront.	South African Heritage Resources Agency (SAHRA) or the designated Provincial Heritage Resources Authority (PHRA)
National Environmental Management: Integrated Coastal Management Act (Act 24 of 2008) (NEM: ICMA)	The National Environmental Management: Integrated Coastal Management Act (Act 24 of 2008) (NEM: ICMA) provides relevant factors that must be taken into account for coastal activities that require an EA, including impacts on socio-economic activities, coastal environmental processes, the coastal protection zone, and coastal public property. Where effluent will be released into the ocean (e.g., brine from the proposed seawater desalination facility), a Coastal Waters Discharge Permit (CWDP) will be required from the DFFE Oceans and Coast Directorate in terms of Section 69 of the NEM: ICMA. NEM: ICMA defines effluent as "any liquid discharged into the coastal environment as waste, and includes any substance dissolved or suspended in the liquid; or liquid which is a different temperature from the body of water into which it is being discharged". It further defines waste as "any substance, whether or not that substance can be re-used, recycled or recovered - (i) that is surplus, unwanted, rejected, discarded, abandoned or disposed of; (ii) that the generator has no further use of, for the purposes of production, reprocessing or consumption; and (iii) that is discharged or deposited in a manner that may detrimentally impact on the environment". Of relevance is the Hive Hydrogen South Africa (Hive) Green Ammonia Project at the Coega SEZ in Gqeberha, Eastern Cape. The Hive project is located close to the Cerebos Saltworks. As part of the project, it is intended that desalinated water for hydrogen production and cooling will be supplied to Hive under a supply agreement with Cerebos, which produces fresh water as a by-product of its salt production operations and existing reverse osmosis (RO) plant at its Cerebos Sundays River site. All brine produced by the existing desalination and future required expanded desalination capacity will be utilised within the Cerebos salt production processes - discharge of surplus brine into the sea is therefore not required for the Hive project. In this case, because discharge into the sea will not be undertaken, a CWDP is not required. **<u>Use of Vehicles in a Coastal Area:</u>** The NEM: ICMA further contains regulations on the control of the use of vehicles in the coastal area. A permit must be obtained to use vehicles in the coastal area for the construction and maintenance of infrastructure. For example, this will include vehicles that need to access the coastal area for the proposed desalination facility and associated pipelines.	National Department of Forestry, Fisheries and the Environment (DFFE), and Provincial Coastal Departments, where relevant.
National Water Act, 1998 (Act No. 36 of 1998)	The National Water Act (Act 36 of 1998) (NWA) is concerned with the protection and sustainable management of South Africa's water resources. Section 21 of the NWA identifies certain land uses, infrastructural developments, water supply/demand and waste disposal as 'water uses' that require authorisation (Water Use Licence (WUL)) by the Department of Water and Sanitation (DWS). These activities encompass both consumptive and non-consumptive water uses. Consumptive uses include actions like extracting water from a watercourse, storing water, and discharging waste or wastewater into a water resource. Non-consumptive uses involve activities that affect the flow of water bodies, such as impeding or diverting the flow and modifying the beds or banks of watercourses. The authorisation could include a WUL or General Authorisation (GA). The GA for Section 21 (c) and (i) water uses as defined under the NWA were revised in 2016 (GN R509) and further revised in December 2023 (GN R4167). Determining if a Water Use Authorisation is	Department Water and Sanitation

Policy / Statute	Purpose	Mandated government bodies
	required for these water uses is associated with the risk of degrading the ecological status of a watercourse. A low risk of impact could be authorised in terms of a GA. The WUL/GA application process may be integrated / conducted concurrently with the EIA process.	
Mineral and Petroleum Resources Development Act (Act 28 of 2002, as amended) (MPRDA)	Section 53 of the MPRDA deals with the use of land surface rights contrary to objects of the MPRDA. This legislation could potentially be relevant if some of the project components (e.g. the Solar PV or Wind Facilities) are located in areas that have been mined and still have mining rights. The Mineral and Petroleum Resources Development (MPRD) Regulations were published in GN 527 in GG 26275 dated 23 April 2004 (as amended). Part VI deals with the application for use of the surface of land contrary to the objects of the MPRDA. Regulation 73B (1) states that an applicant who applies in terms of Section 53 of the MPRDA for the approval of the Minister to use the surface of land in a way which may be contrary to the objects as contemplated in Section 53 of the MPRDA, or is likely to impede any such object must submit an application for approval to the relevant Regional Manager. Regulation 73B (2) states that the application must provide the specific information in the format required in Form Z of the MPRD Regulations. Therefore, if the project components are viewed as using the surface of the land within the jurisdiction of the mining area, in a way which may be contrary to the objects of the MPRDA, contemplated in Section 2 of the MPRDA, then an application must be submitted (using Form Z) to the relevant regional manager of the DMRE. Discussions with the DMRE must be undertaken to confirm the applicability of Section 53 of the MPRDA in relation to the proposed projects, and the process to be followed in terms of Regulation 73B of the MPRD Regulations.	Department of Mineral and Petroleum Resources
National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)	The National Environmental Management: Biodiversity Act (Act 10 of 2004, as amended) (NEMBA) provides for "the management and conservation of South Africa's biodiversity within the framework of the NEMA, the protection of species and ecosystems that warrant national protection, and the use of indigenous biological resources in a sustainable manner, amongst other provisions". The Act states that the state is the custodian of South Africa's biological diversity and is committed to respect, protect, promote and fulfil the constitutional rights of its citizens. Overall, the NEMBA focuses on the protection of national biodiversity through the regulation of activities that may affect biodiversity including habitat disturbance, culture of and trade in organisms, both exotic and indigenous. Lists of threatened ecosystems (Sections 52 (1) (a)), threatened and protected species (Sections 56 (1)), and alien invasive organisms (Section 97 (1)) have been published and maintained in terms of NEMBA. Chapter 1 sets out the objectives of the Act, and they are aligned with the objectives of the Convention on Biological Diversity, which are the conservation of biodiversity, the sustainable use of its components, and the fair and equitable sharing of the benefits of the use of genetic resources. The Act also gives effect to CITES, the Ramsar Convention, and the Bonn Convention on Migratory Species of Wild Animals. The State is endowed with the trusteeship of biodiversity and has the responsibility to manage, conserve and sustain the biodiversity of South Africa. This Act therefore serves to control the disturbance and land utilisation within certain habitats, as well as the planting and control of certain exotic species. Effective disturbance and removal of threatened or protected species encountered on or around the sites, will require specific permission from the applicable authorities. Furthermore, NEMBA states that the loss of biodiversity through habitat loss, degradation or fragmentation must be avoided, minimised or remedied. The loss of biodiversity includes inter alia the loss of endangered, threatened or protected plant and animal species.	Department of Forestry, Fisheries and the Environment (DFFE)
Environmental Management Framework for the Greater Saldanha Area, 2021.	Guidance to protect environmental resources in the Saldanha area. Identified areas of no development and offsets.	Western Cape Government's Department of Environmental Affairs and Development Planning (DEA&DP) in collaboration with the Saldanha Bay Municipality (SBM).
Expropriation, Land Reform and Land Development **[**Development of industrial facilities on land zoned for agriculture or any other unrelated land use requires rezoning to an applicable category (e.g., commercial or industrial). Rezoning applications are usually considered and decided by the relevant local municipality in terms of its applicable land-use planning by laws]		
Expropriation Act, 2024 (Act No. 13 of 2024)	Framework for compulsory acquisition of property by organs of state or authorized expropriating authorities for a public purpose or in the public interest.	Organs of state designated as expropriating authorities
Restitution of Land Rights Act, 1994 (Act No. 22 of 1994)	Restitution of rights in land to persons or communities who were dispossessed	Department of Agriculture, Land Reform, and Rural Development (DALRRD) through the Commission on Restitution of Land Rights and the Land Claims Court.
Prevention of Illegal Eviction from and Unlawful Occupation of Land Act, 1998 (Act No. 19 of 1998) (PIE)	Preventing arbitrary and unlawful evictions	PIE Act is enforced mainly by the courts

Policy / Statute	Purpose	Mandated government bodies
Agriculture Protection		
Subdivision of Agricultural Land Act, 1970 (Act No. 70 of 1970)	The Subdivision of Agricultural Land Act (Act 70 of 1970, as amended) (SALA) is concerned with the sustainable and productive use of agriculturally zoned land. Two approvals are required from the National Department of Agriculture, Land Reform and Rural Development (DALRRD) if a proposed renewable energy facility is located on agriculturally zoned land. This includes a No Objection Letter for the change in land use. This No Objection Letter is one of the requirements for receiving municipal rezoning, and requires a motivation supported by good evidence (e.g., an opinion from an agricultural specialist) that the development will not significantly compromise the future agricultural production potential of the development site. It is advisable to apply for this as early in the process as possible. A positive EA will not necessarily assure a No Objection from the DALRRD. The second approval is consent for long-term lease in terms of the SALA. SALA approval can only be applied for once the EA and a Municipal Rezoning Certificate have been obtained. If the DALRRD approval has already been obtained in the form of the No Objection Letter, then SALA approval is likely to be readily forthcoming. Note that SALA approval is not required if the lease is over the entire farm portion.	Department of Agriculture, Land Reform and Rural Development
Preservation and Development of Agricultural Land Act, 2024 (Act 39 of 2024)	Managing and preserving agricultural land sustainably while promoting long-term food security and economic viability	Department of Agriculture, Land Reform and Rural Development
Hydrogen development		
Gas Act Amendment Bill, 2024	Governance of Piped gas development. Dictates the need for a licence to operate gas. Relevant for pipelines. **<u>New technical and carbon intensity benchmarks (SANS 2176)</u>** SANS 2176 is described as a forthcoming South African national standard that will set “Green and Low Carbon Hydrogen criteria for production, conditioning, and transport of hydrogen to the consumption gate”, and is indicated as being under development with planned publication around 2025–2026. In essence, it will play a similar role locally to ISO/TS 19870 and emerging international “low carbon hydrogen” standards: defining system boundaries (well /source to gate), greenhouse gas intensity thresholds, and sustainability criteria that hydrogen projects must meet for their product to be classified and certified as green or low carbon in South Africa. For ports, pipelines or hub projects, you can expect NERSA licences and Ministerial regulations issued under the Gas Act to require compliance with SANS 2176/SATS 19870 (or equivalent) if a project wants its product treated as green or low carbon hydrogen for tariff, incentive or certification purposes South African Bureau of Standards (SABS). Once published as a standard it can be referenced by other entities (DMRE, NERSA, DFFE, DTIC, etc.) in regulations, licensing conditions or certification schemes	Department of Mineral Resources and Energy
Transportation		
National Road Traffic Act (Act No. 93 of 1996)	Governance of vehicles and operators transporting goods	Department of Transport, SANRAL, RTMC
South African National Roads Agency Limited (SANRAL) Act, 1998 (Act No. 7 of 1998)	Governance of structures and work over or below roads	Department of Transport, SANRAL
National Ports Act (Act No. 12 of 2005)	Governance and the provision of ports services and facilities and use of land.	Department of Transport
Civil Aviation Act (Act No. 13 of 2009)	Framework for security and safety of aircraft and airports	SA Civil Aviation Authority
Hazards & Risk		
Major Hazard Installations (MHI) Regulations (2022) of the Occupational Health and Safety Act (Act 85 of 1993, as amended) (OHSA)	A list of dangerous substances and quantity thresholds, beyond which MHI must be registered or licenced, is provided in the MHI Regulations (2022) of the Occupational Health and Safety Act (Act 85 of 1993, as amended) (OHSA). Exceeding the quantities of ammonia anhydrous, hydrogen and methanol (as shown in Table 4) at any establishment is subject to the requirements of the MHI Regulations. The MHI Regulations apply to establishments with the prescribed quantity of substances listed in Chapter 1 or 2 of Annexure A of the said regulations. The regulations define a prescribed quantity, “in relation to a given dangerous substance or a category or categories, as a quantity equal to the value set out in Annexure A”. Therefore, it is understood that the quantities provided In Table A below refers to the maximum stored amount on-site / at an establishment, and not an annual production or throughput. **Table A: Named Dangerous Substances to which the MHI Regulations Apply**	Department of Employment and Labour

<table>
<tr><th>Policy / Statute</th><th>Purpose</th><th>Mandated government bodies</th></tr>
<tr><td></td><td>
<table>
<tr><th>Hazard</th><th colspan="3">Quantities in Tonnes</th></tr>
<tr><th></th><th>Ammonia anhydrous</th><th>Hydrogen</th><th>Methanol</th></tr>
<tr><td>Low Hazard</td><td>15</td><td>2.5</td><td>50</td></tr>
<tr><td>Medium Hazard</td><td>50</td><td>5</td><td>500</td></tr>
<tr><td>High Hazard</td><td>200</td><td>50</td><td>5000</td></tr>
</table>

GH2/PtX projects involve risks such as hydrogen explosions, fires or ammonia leaks, which must be addressed during the EIA process. A quantitative risk assessment and emergency response plan will be required. It is recommended to consult with a Risk Assessment specialist during the pre-application phase of the Scoping and EIA process, to confirm the level of information required to inform the EIA process, as well as the subsequent MHI process.

The classification of a facility as an MHI can be confirmed once the expected quantities of chemicals are known, and usually this classification can be done during the EIA process. An initial MHI Risk Assessment and Safety Case for notification and registration must be completed by an Approved Inspection Authority, prior to the commencement of construction and based on final design. This should be initiated during the EIA process and can be updated once the design is confirmed. A license to operate, in terms of Regulation 13 of the 2022 MHI Regulations, must be obtained prior to commissioning, by updating the Safety Case to justify that the facility will be managed safely (D Mitchell. 2025. Pers. Comm.).</td><td></td></tr>
<tr><td>Hazardous Substances Act (Act No. 15 of 1973)</td><td>Governance of substances hazardous to humans</td><td>Department of Health</td></tr>
<tr><td>National Explosives Act (Act No. 26 of 1956)</td><td>Governance of substances that can cause an explosion</td><td>South African Police Service (SAPS)</td></tr>
</table>

February 2026

Appendix C - Proposed infrastructure developments

Table 2: Authorised renewable energy proposals within and around the Saldanha Bay Local Municipality (Source: DFFE Quarter 2 Renewable Energy Environmental Authorisation database, 2025)

No.	DFFE Reference	Project title	Applicant	Local Municipality	Technology	Megawatt	EA Status
1	14/12/16/3/3/2/2436	The Sunveld Solar PV & BESS Facility and associated infrastructure on Farm Kruispad 120 and Farm Doornfontein 118	Sunveld Energy (Pty) Ltd	Bergrivier Local Municipality	Solar PV	600	Approved
2	14/12/16/3/3/2/2503	The Velddrif Solar PV Energy Facility and Associated infrastructure	Salika South Africa (Pty) Ltd	Bergrivier Local Municipality	Solar PV	600	Approved
3	14/12/16/3/3/2/2020	Proposed renewable energy generation project on the remainder of portion 4, remainder of portion 9 and portion 11 of the farm Langeberg 187 Malmesbury rd, and remainder of portion 1 of the farm Uyekraal 189 Malmesbury rd	Vortum Energy (Pty) Ltd	Saldanha Bay Local Municipality	Solar PV	400	Approved
4	14/12/16/3/3/2/2504	The proposed Dwarskersbos Solar PV Energy Facility and Associated infrastructure	Salika South Africa (Pty) Ltd	Bergrivier Local Municipality	Solar PV	400	Approved
5	14/12/16/3/3/2/2383	The proposed Gemini Solar Power Plant near Vredendal	Gemini Solar Power Plant (RF) (Pty) Ltd	Matzikama Local Municipality	Solar PV	350	Approved
6	14/12/16/3/3/2/1140	The proposed establishment of Doornfontein photovoltaic solar energy facility with an electricity output of up to 230mw located near the town of Velddrif	Doornfontein Solar (Pty) Ltd	Bergrivier Local Municipality	Solar PV	230	Approved
7	14/12/16/3/3/2/1144	The establishment of the 150 MW Kruispad photovoltaic solar energy facility (PVSEF) located near the town of Velddrif	Kruispad Solar (Pty) Ltd	Bergrivier Local Municipality	Solar PV	150	Approved
8	14/12/16/3/3/2/1031	The construction of the Honingklip PV Solar Energy Facility near Vredenburg	Honingklip Solar (Pty) Ltd	Saldanha Bay Local Municipality	Solar PV	150	Approved
9	14/12/16/3/3/2/2540	Proposed Development of a 90MWp Solar Photo-Voltaic Renewable Energy Power Station on Klipfontein Farm RE/139, Driehoeksfontein Farm RE/176 & Klipfontein Farm RE/6/139	SPV RENFIELDS (PTY) LTD	Saldanha Bay Local Municipality	Solar PV	150	Approved
10	14/12/16/3/3/2/2053	Proposed Development of a 115 MWp (AC) Solar Photo-Voltaic Renewable Energy Power Station	SPV Renfields (Pty) Ltd	Saldanha Bay Local Municipality	Solar PV	115	Approved
11	12/12/20/2126	Proposed Establishment Of Two 75mw Commercial Solar Electricity Generating Facilities And Its Associated Infrastructures On Farms 183 (Soventix Sa Saldanha 1) And 190/0 (Soventix Sa Saldanha 2)	Soventix South Africa (Pty) Ltd	Saldanha Bay Local Municipality	Solar PV	75	Approved
12	12/12/20/2636	Proposed Orlight SA solar PV plant on Portion 1 of the Farm Graafwater 97 RD and the remaining extent of the Farm Bueroskraal No. 220, near Graafwater	Orlight SA (Pty) Ltd	Cederberg Local Municipality	Solar PV	75	Approved
13	12/12/20/2178	The Construction Of The 30MW Photovoltaic Solar Energy Facility, Northwest Of Vredendal	INCA Vredendal Pty Ltd	Matzikama Local Municipality	Solar PV	30	Approved
14	12/12/20/2560	The Proposed Construction Of The Ie 25mw Photovoltaic Solar Facility At Ratelfontein	IE Graafwater Solar (Pty) Ltd	Cederberg Local Municipality	Solar PV	25	Approved
15	14/12/16/3/3/1/2599	The Proposed SERE Solar Photovoltaic Plant Phase 1A and associated infrastructure	Eskom Holdings SOC Ltd.	Matzikama Local Municipality	Solar PV	20	Approved
16	12/12/20/2393	Proposed Establishment Of 9.5mw Photovoltaic Solar Facility On The Farm Diepkuil 531 Near Darling	Carmelo Investment 416 Solar Park (Pty) Ltd	Swartland Local Municipality	Solar PV	19,5	Approved
17	12/12/20/2384	Proposed establishment of a 19MW photovoltaic solar farming facility on the farm Tygerfontein	Ventura Engineering Equipment cc	Swartland Local Municipality	Solar PV	19	Approved
18	12/12/20/2626	Dunes solar energy generation development project on a portion of portion 2 of the farm Ongegund No. 132	Clifton Dunes Investments 238 (Pty) Ltd	Saldanha Bay Local Municipality	Solar PV	13,07	Approved
19	12/12/20/2625	Mystic solar energy generation development project on a portion of portion 4 of the farm Yzervarkensrug No. 127	Mystic Blue Trading 314 (Pty) Ltd	Saldanha Bay Local Municipality	Solar PV	12,55	Approved
20	12/12/20/2109	Proposed Construction Of A Photovoltaic Solar Project Proposed By New Symphony Energy On The Farm Uitspan 1103	New Symphony Energy	Swartland Local Municipality	Solar PV	10	Approved
21	12/12/20/2677	The Proposed Construction Of A 10mw Photovoltaic (Pv) Solar Energy Facility On The Remainder Of The Farm De Duinen No 258 Near Van Rhynsdorp	Roma Energy Van Rhynsdorp (Pty) Ltd	Matzikama Local Municipality	Solar PV	10	Approved

No.	DFFE Reference	Project title	Applicant	Local Municipality	Technology	Megawatt	EA Status
22	14/12/16/3/3/1/1049	Proposed Romano 10MW PV facility on Portion 334 of Farm 292 Vredendal	Romano Sustainable Solutions	Matzikama Local Municipality	Solar PV	10	Approved
23	14/12/16/3/3/1/422	Proposed Construction Of A 10 Mw Photovoltaic (Pv) Solar Energy Facility On The Farm Onder Rietvlei (Portion 3 Of Farm 18) Near Aurora	Solaire Direct Southern Africa (Pty) Ltd	Bergrivier Local Municipality	Solar PV	10	Approved
24	12/12/20/2033	Proposed solar Energy Facility on onder Rietvlei Farm	Aurora-Rietvlei Solar Power (RF) Pty Ltd	Bergrivier Local Municipality	Solar PV	9	Approved
25	12/12/20/2401	Proposed Construction Of A 8.5mw Photovoltaic (Pv) Solar Facility On A Site Near Eendekuil	Sunspot SA (Pty) Ltd	Bergrivier Local Municipality	Solar PV	8,5	Approved
26	12/12/20/2400	The Proposed Solar Power Facility At Riebeek Kasteel, Swartland Local Municipality, Western Cape Province	Sunspot SA (Pty) Ltd	Swartland Local Municipality	Solar PV	8	Approved
27	16/3/3/1/F1/11/3055/21	Proposed development of a 7MW AC Solar Photovoltaic (PV) Plant (referred to as De Hoek Solar Park) and associated infrastructure adjacent to PPC De Hoek Factory, located on Portion 10 of 184, Farm Rietfontein, Piketberg.	Sturdee Energy Proprietary Limited	Bergrivier Local Municipality	Solar PV	7	Approved
28	14/12/16/3/3/1/1099	Proposed Hopefield community farm near Hopefield	Friedshelf 1481 (Pty) Ltd	Saldanha Bay Local Municipality	Solar PV	5	Approved
	Total MW solar energy authorised: 3 661,62 MW						
29	12/12/20/1781	Proposed development of a wind and solar energy facility at Nooitgedacht	Mainstream Renewable Power Nooitgedacht Pty Ltd	Saldanha Bay Local Municipality	Wind	271	Approved
30	14/12/16/3/3/2/961	EA for The 160 MW Hartebeest WEF and its associated infrastructure near Moorreesburg	Hartebeest Wind Farm (Pty) Ltd	Swartland Local Municipality	Wind	160	Approved
31	14/12/16/3/3/1/1973	Proposed electrical grid connection and associated infrastructure for the 140 MW Juno wind energy facility	AMDA Juliet (Pty) Ltd	Matzikama Local Municipality	Wind	140	Approved
32	14/12/16/3/3/322	The proposed establishment of 140mw zen wind farm near Saron	Zen Wind Farm (Pty) Ltd	Drakenstein Local Municipality	Wind	140	Approved
33	14/12/16/3/3/2/2105	The proposed Bergriver Wind Farm	FE Bergriver (PTY) LTD	Drakenstein Local Municipality	Wind	140	Approved
34	14/12/16/3/3/2/1057	Proposed development of the Boulders Wind Farm	Vredenburg Windfarm (Pty) Ltd	Saldanha Bay Local Municipality	Wind	140	Approved
35	14/12/16/3/3/2/1074	The proposed 140 MW Juno Wind Energy Facility	AMDA Developments (Pty) Ltd	Matzikama Local Municipality	Wind	140	Approved
36	14/12/16/3/3/1/1974	Proposed Juno 140MW wind energy facility	AMDA Juliet (Pty) Ltd	Matzikama Local Municipality	Wind	140	Approved
37	14/12/16/3/3/2/322	The proposed establishment of 140 MW Zn wind energy facility on a site near Gouda	Zenaphan trading (Pty) Ltd	Drakenstein Local Municipality	Wind	140	Approved
38	12/12/20/1582	Proposed construction for the proposed construction of the Rheboksfontein wind energy facility	Moyeng Energy (Pty) Ltd	Swartland Local Municipality	Wind	129	Approved
39	12/12/20/1932	Proposed Establishment Of A Wind Farm On Land Owned By Exxaro	Exxaro Resources (Pty) Limited	Matzikama Local Municipality	Wind	100	Approved
40	12/12/20/913	Construction of the Eskom Sere wind energy facility and its associated infrastructure	Eskom Holdings SOC Limited	Matzikama Local Municipality	Wind	100	Approved
41	12/12/20/2638	Environmental Authorisation For The Establishment Of 56mw Groene Kloof Wind Energy Facility Near Mamre	Dassenberg Wind Energy (Pty) Ltd	City of Cape Town Metropolitan Municipality	Wind	56	Approved
42	12/12/20/1650	Proposed wind generation facility, Namaqualand	Longyuan Mulilo Namaqualand Wind Power Pty Ltd	Matzikama Local Municipality	Wind	50	Approved
43	12/12/20/1964	The Proposed Klawer Wind Farm	Klawer Wind Power Pty Ltd	Matzikama Local Municipality	Wind	36	Approved
44	12/12/20/2157	Proposed 30MW St Helena Community Wind Energy Facility And Its Associated Infrastructure On The Farm Langeklip (Erf 47) Near St Helena Bay	Electrawinds Seeland Pty Ltd	Saldanha Bay Local Municipality	Wind	30	Approved
45	12/12/20/2255	Proposed Inca Vredendal 30mw Wind Energy Facility On The Farm 293 Groot Draaihoek Near Vredendal	INCA Vredendal Wind (Pty) Ltd	Matzikama Local Municipality	Wind	30	Approved

No.	DFFE Reference	Project title	Applicant	Local Municipality	Technology	Megawatt	EA Status
46	12/12/20/1928	The Kerriefontein And Darling Phase 2 Wind Farm On Kerriefontein 555/0 And Slangkop 552/3	Oelsner Group Pty Ltd	Swartland Local Municipality	Wind	21	Approved
47	12/12/20/2364	Proposed Construction Of A 19.2 Mw Wind Energy Facility And Its Associated Infrastructure On The Remainder Of Oliphant's River Settlement Farm No 629 Near Koekenaap	Koekenaap Energy (Pty) Ltd	Cederberg Local Municipality	Wind	19,2	Approved
48	12/12/20/2339	The Isivunguvungu Wind Energy Facility Arcelormittal South Africa: Saldanha Works (Amsa) Steel Manufacturing Plant), Near Saldanha Bay	Isivunguvungu Wind Energy Convertor (Pty) Ltd	Saldanha Bay Local Municipality	Wind	12,5	Approved
49	12/12/20/2217	The Construction Of The Clover Valley Wind Energy Facility On Portions Of Farm 725 And The Farm Klaver Valley 727 Malmesbury Rd	Clover Valley Wind Energy (Pty) Ltd	Swartland Local Municipality	Wind	4	Approved
	Total MW onshore wind energy authorised: 1 998,7 MW						

Table 3: Planned developments for Saldanha Bay[9].

No.	Project	Participant	Implementation Period (Status)	Source
1	Desalination plant at Danger Bay	WCDM, FPSEZ, TNPA	2027 +	(Freeport Saldanha SEZ, 2024) (Toefy, 2022)
2	Development of Industrial Park	FSSEZ, WCDM	Concept	(Freeport Saldanha SEZ, 2025)
3	Liquified Natural Gas (LNG) import and storage (with subsequent pipeline to Ankerlig Powerstation, (could also supply AMSA plant for DRI production?)	TNPA, FPSEZ, CEF, WESGRO, SLM	Feasibility, 2029	(Freeport Saldanha SEZ, 2025)
4	Gas to Power (G2P) facility (1400MW, 55-84 ha) to support AMSA steel plant with possible power evacuation line connecting to ESKOM grid (evacuation), and 4600m pipeline from port	AMSA, ESKOM, WESGRO, SEZ	GRID connection +LNG import needed (EIA authorization lapses 2027)	IDC, (Volco Power, 2025)
5	Gas to Power (G2P) facility (1000MW), Portion 1 of Farm Uyekraal, No. 189. (25ha)	Assegai Power (Pty) Ltd. and Avedia Terminals	Unclear, IEA when approved valid for 10 yrs. EIA submitted	(Legacy Environmental Management Consulting, 2025)
6	Cement manufacturing expansion	SBLM, Afrisam	--	(Enterprises University of Pretoria, 2025)
7	Gas pipeline network	TNPA	--	
8	Logistics Hub (AMSA), warehousing - 14,000m²	AMSA, Bidvest	2025/6	(Ramawa, 2025)
9	Manganese transport and storage	DAEDT	Short term	(Lavin, 2025)
10	Petroleum storage and Pipelines	SBLA, SEZ	2025/26	(Creamer Media, 2025) (Freeport Saldanha SEZ, 2025)
11	Lubricant recycling plant	SEZ		(Freeport Saldanha SEZ, 2025)
12	Ship Recycling	SEZ	Feasibility	(Freeport Saldanha SEZ, 2025)
13	Solar PV (only within Ind Area)	AMSA, Soventix	Short Term	IDC, Global Energy Monitor
14	Expanding the SEZ	SEZ (Various)	Current onwards	Saldanha Bay IDP 2022–2027
15	Port Infrastructure (Multiple projects)	TNPA	Feasibility	See section 4 .4

[9] Note: The table provides a representative selection of projects referenced across multiple sources and does not include the archetype green hydrogen projects

Table 4: Road and rail infrastructure projects in and around the Saldanha Local Municipality[10]

No.	Project	Project scope and outcome	Implementation Period (Status)	Reference
1	N7 Corridor Upgrades – Matzikama Municipality	**Enhance the efficiency and security of freight movement along this crucial agricultural and logistics corridor.** The enhancement of road infrastructure through the expansion and resurfacing of existing roadways and improvements to interchanges. The construction of new carriageways and road-over-road overpasses. The reconstruction and expansion of interchange ramps and the development of road-over-rail bridges. The demolition and replacement of aging bridges that are insufficient to accommodate heavy vehicles. The establishment of retaining walls and the implementation of traffic infrastructure.	2021-2024	(Western Cape Government, 2024)
2	Saldanha Bay Industrial Access Roads	**Road infrastructure supporting the Saldanha Bay Industrial Development Zone (IDZ).** Improve access to ports and logistics centers; promote green hydrogen efforts and export projects. The roads were built according to heavy-duty specifications to handle substantial trucks and loads common to industrial and maritime activities.	2030	(Western Cape Government, 2024)
3	Malmesbury Bypass Project	**The newly constructed road is set to link the R45 road corridor with both the N7 and R46 roads.** The initiative entails the development of a 6.7 km road link from the Hopefield Interchange on the N7 highway to the crossroads of the R45 (leading to Wellington) and the R46 (heading towards Riebeek Kasteel) near Malmesbury. This project features the erection of five new bridges and a grade-separated interchange at the R45/R46 junction aimed at improving traffic efficiency and safety.	2025	(Western Cape Government, 2025)
4	Bergrivier Rural Road Rehabilitation	**The upkeep and reconditioning of both gravel and paved roads in Piketberg, Porterville, and Velddrif.** Enhance the connectivity of rural areas and facilitate agricultural transportation. Focus: Infrastructure that can withstand climate challenges and the refurbishment of bridges.	-	(Western Cape Government, 2024)
5	N7 Upgrades	**The upgrading to freeway standards of the N7 between Potsdam and Melkbosstrand.** The plans for elevating TR11/1 to freeway standards have been finalized, and the project has moved into the early design phase. At this point, it is considered feasible to execute the project over a span of 10 uninterrupted years. Meeting freeway standards will require that several at-grade intersections be closed and new interchanges be constructed. These upgrades are expected to boost the safety, mobility, and accessibility of the N7 and neighbouring regions.	2023-2026	(Western Cape Government, 2024)
6	Cape Corridor Rail Freight (new Train Operating Companies):	Two additional Train Operating Companies (TOCs) have been assigned to operate in the Western Cape along the Cape Corridor. Their role will involve handling the transportation of manganese rail freight from mining areas in the Northern Cape to the Port of Saldanha, which is South Africa's leading bulk export port. Enhance the manganese rail transportation from the Northern Cape to Saldanha Port by boosting rail capacity and alleviating road freight congestion.	2025	(Western Cape Government, 2025)
7	Hazardous goods network plan	Develop a hazardous goods network plan for the Western Cape	2025-2027	(Western Cape Government, 2025)
8	OREX line bridge to TR85/1 removal	The railway track running through Vredenburg from the span of the OREX line bridge to TR85/1 is set for removal, with a new connecting line planned to be built between OP764 and the Duferco siding.	2027	(Saldanha Bay Municipality, 2022)

[10] The projects included in this is not exhaustive and is based on information acquired through review and interview processes conducted in 2025

Table 4: SEZ focus areas

Activity	Description
Marine sector	Marine services hub Boat building and repair Vessel decommissioning Offshore supply base
Energy sector	Bulk fuels storage Manufacturing hub Services hub Integrated logistics facility
Maintenance and repairs services	Maintenance, repair, upgrade and conversion of rigs and other vessels
Fabrication services	Structures, subsea manifolds Spare parts
Communal Services	Property development Customs clearance Marketing and administrative functions Security, medical, food and retail Utilities, waste management and transport Road and quay access
Supply and other services	Bonded warehouse/ storage Scheduling and forecasting Logistics and transport Lifting, stacking, moving Pipe coating and upsetting Tugging / Piloting
Exploration and maintenance	Drilling companies, Petroleum companies, Oilfield service companies
Support Services	Knowledge workers, shipping agents, insurance agents, ICT, fuel bunkering, waste disposal, security, food and retail, medical, diving, and trainers and inspectors.

Appendix D- Transport and distribution questionnaire

1. Transport Modes and Greening in Supply Chain Operations

a. Current Transport Methods

- What modes of transportation are currently used for importing precursors/feedstock and delivering finished products within your supply chain (e.g., road, rail, sea, pipeline)?
- Are there any regions or legs in the supply chain where mode-switching is prominent (road to rail as an example)?

b. Greening Transport Operations

- How important is the reduction of the carbon footprint in your company's transportation operations?
- Are there specific sustainability goals or regulations influencing your transport decisions?

c. Future Transport Modes

- Which transportation modes are you considering or envisioning if the uptake of hydrogen and its power-to-x (PtX) derivatives increases for your operations in the west coast region?
- How do you anticipate the introduction of surplus hydrogen or its derivatives would change your transport strategy?

d. Adoption of Methanol/Ammonia

- Is there current or anticipated demand for methanol or ammonia in your supply chain, either as feedstock or energy carriers?
- If so, what would be required to integrate methanol or ammonia supply into your existing logistics network?
- Are there barriers or enablers for incorporating these chemicals into your supply chain if surplus becomes available?

2. Shared Infrastructure and Supply Chain Collaboration

a. Shared Infrastructure and Technology

- Do you see opportunities for using shared infrastructure (e.g., multi-user pipelines, terminals, refueling stations) to reduce costs or improve efficiency in your supply chain?
- Do you see your company owning infrastructure on your supply chains for sole purpose or shared infrastructure use?
- How do you evaluate the risks and benefits of shared infrastructure for your operations?

b. Multi-Modal and Low-Carbon Supply Options

- Are you considering integrating alternative energy vehicles (e.g., hydrogen trucks, Hydrogen trains, ammonia-powered ships) into your transportation modes?
- What factors would drive adoption of new vehicle or transport technologies for precursor or product delivery?

c. Strategic Outlook

- Do you foresee a shift in preferred transportation modes for precursor supply or product delivery if new energy carriers (like hydrogen, methanol, ammonia) become more widely available?
- How do you anticipate client expectations, carbon taxations or market demands influencing your future logistics and transport choices?
- If nothing changes and transportation stays as it is today, how will this influence your production and market demands?

February 2026

Appendix E- Stakeholder Communication Plan and Records

Table 5: Comments received from Working Group members on the Draft Phase 1 Master Plan and responses from the specialist team

The table below include the comments raised by members of the Working Group and/or Project Steering Committee, together with the responses from the specialist team, following the release of the draft Phase 1 Master Plan for a 30-day comment period. Please note that the comments are verbatim as provided by the stakeholders.

NO.	DATE OF COMMENT, FORMAT OF COMMENT, NAME OF ORGANISATION/ WORKING GROUP MEMBER	COMMENT	RESPONSE FROM THE SPECIALIST TEAMS
A.1	KAHRE Renewable Energy Group Received from: Dominic Kahre Received on: 11/11/2025	**Assessment and Overall Conclusion** The Phase 1 report provides a solid foundation for a regionally integrated GH2/PtX hub along South Africa's West Coast centred around Saldanha. Positively, it defines clear scenario trajectories, outlines shared infrastructure concepts, confirms port governance under TNPA, establishes desalination as a critical enabler, and openly identifies regulatory gaps. For our four integrated projects - KTE.energy, GreenLink, Velddrif Water & Power, and EcoVision Velddrif - this creates a direct point of alignment. However, the report lacks prioritised corridors, binding milestones for 2027–2035, and early liquid bulk port options, which are essential to secure first export volumes by 2029. **Strengths of the Report from Our Perspective** 1. Ambitious hub development scenario with 15 GW of electrolysis, 30 GW of renewable energy, about 121,650 ha of land requirement including offshore wind and grid wheeling logic. This sets the necessary scale for a globally competitive export cluster. 2. Desalination as a bottleneck solution with clear scaling: 8.5 MLPD in the entry scenario, 50 MLPD in the medium scenario, and 152 MLPD in the high coordination case, of which 105 MLPD are allocated to GH2 production and offshore brine diffusers are foreseen. 3. Port governance, common-user infrastructure (CUI) and wayleave mechanisms are well described, including Section	This comment is noted with thanks. The overall objective of this Phase 1 of the Master Plan was to identify the most salient strategic, technical and regulatory questions facing GH_2/PtX development, frame the critical issues, and highlight knowledge gaps necessary to support sustainable rollout across the West Coast region. Identifying prioritised corridors, binding milestones or early liquid bulk port options fall outside of this Phase 1 and will be considered for inclusion in the scope of work for subsequent phases of the Master Plan.

NO.	DATE OF COMMENT, FORMAT OF COMMENT, NAME OF ORGANISATION/ WORKING GROUP MEMBER	COMMENT	RESPONSE FROM THE SPECIALIST TEAMS
		56/79 procedures, MHI regimes, SAMSA/IMO references, and the requirement for terminal roles in pipeline connections. 4. Shared infrastructure is properly conceptualised: nodal assets such as NH3 storage, terminals, and desalination, as well as linear assets such as rail, roads, pipelines, and transmission, are presented as a coordinated CUI system. 5. The report transparently identifies regulatory gaps along the value chain, in particular missing permitting pathways for electrolysis and large-scale storage, with environmental authorisation durations of 200-500 days.	
A.2.		**Weaknesses and Risks for Achieving 2029–2035 Targets** 1. Liquid bulk expansion is scheduled too late, with new berths for LNG and GH2 derivatives only planned after 2052. Without interim solutions, this could jeopardise the corridor's ramp-up phase. 2. Currently no GH2-ready pier or pipeline infrastructure exists, OSSB not suitable, GH2 feasibility only planned for 2025/26, and full bunkering operations not before 2035. 3. Risk of fragmentation in transport: continued dominance of road freight for hazardous materials due to limited rail capacity and lack of coordinated ammonia pipelines in the medium scenario. 4. Land availability and environmental sensitivity (Besaansklip/SEZ) without a clear land banking roadmap for CUI sites, storage, and corridor alignments.	• Comments 1 and 2: The issue of alignment of plans has been reflected in the report, and it has also been raised in the project Working group meeting of 14 November. Discussions have been initiated between the TNPA and the Western Cape Government (Herman Jonker) to address planning alignment. • Comment 3: The subsequent phases of the master plan is proposed to provide clarity on the preferred transport mode for an optimal or simulated transport network. These could be in the form of scenarios such as network operating if rail reliability increases and/or the inclusion of a Pipeline network. These models could reveal the road freight fluctuations (either increasing or decreasing) if other modal options are incorporated. • Comment 4: Land availability and environmental sensitivity within the Besaansklip IDZ and the SEZ is addressed in Section 2 (Characterisation of the Receiving Environment) of the Phase 1

NO.	DATE OF COMMENT, FORMAT OF COMMENT, NAME OF ORGANISATION/ WORKING GROUP MEMBER	COMMENT	RESPONSE FROM THE SPECIALIST TEAMS
			West Coast Green Hydrogen Master Plan. Phase 1 is focused on establishing the strategic baseline by identifying key constraints, information gaps and priority issues to be addressed in subsequent phases. Subsequent phases will build on this foundation to provide greater clarity on how these constraints can be managed or resolved (e.g., environmental restrictions in the Besaansklip IDZ). One of the outcomes from Phase 1 is the need to align spatial and municipal planning frameworks with emerging GH_2/PtX infrastructure requirements. This includes consideration of land consolidation approaches, land banking, and potential multi-nodal SEZ configurations to support production, storage and corridor development. It should also progress to identify - with relevant stakeholders - possibilities to secure land. Land banking refers not only to obtaining land but also to earmarking land within planning instruments, as well as establishing servitudes to keep land open (especially considering access to linear infrastructure features). Accordingly, the development of a land banking roadmap and related planning mechanisms is proposed for investigation in Phase 2 of the Master Plan.
A.4.		**Where the Report Directly Supports Our Four Projects** 1. KTE.energy: The high electrolysis and renewable energy scenario confirms the need for large-scale, modular upstream generation outside the SEZ with export focus from 2029. This aligns perfectly with our phased rollout of 6 GW by 2030 and >20 GW by 2039. 2. GreenLink: The document validates central pipeline and electricity corridor concepts, referencing possible Namibia connections and the efficiency of shared water, GH2/NH3, and power transmission. This reinforces our 450 km Northern Cape-Velddrif-Saldanha energy and molecule corridor.	The alignment of the Phase 1 assessment findings with KAHREs four projects are noted with thanks and will be considered in detail during the subsequent phases of the Master Plan.

NO.	DATE OF COMMENT, FORMAT OF COMMENT, NAME OF ORGANISATION/ WORKING GROUP MEMBER	COMMENT	RESPONSE FROM THE SPECIALIST TEAMS
		3. Velddrif Water & Power: The desalination allocations and offshore diffusers substantiate our role as the water backbone for both electrolysis and port operations. 4. EcoVision Velddrif: The report's demand for socio-ecological modules (LCA, cumulative assessments, skills development) finds a concrete implementation model in our 2,700 ha city concept combining industry, education, and sustainability.	
A.5.		**Our Recommended Additions for Phase 2** 1. Prioritised CUI roadmap for 2026–2035, defining responsibilities, CAPEX windows, and interfaces between port, grid, rail, and pipeline systems. 2. Advancement of liquid bulk options: temporary or repurposed berths, offsite storage connected to selected jetties via pipeline, and barge bunkering as interim solution. 3. Dedicated ammonia pipeline backbone from offsite storage to the port, with standardised wayleaves and safety distances. 4. Quantified water milestones: 50 MLPD by 2030, 150 MLPD by around 2035, clear allocation between GH2 and municipal supply, aquifer management, and offshore diffusers. 5. Regulatory fast-tracks: defined EA process for electrolysis/storage, national certification compatible with EU schemes, clarification under Gas Act and Pipelines Act, and new MHI distance guidelines. **Specific Text Anchors for Our Later Commentary** 1. Inclusion of GreenLink as the prioritised energy and molecule corridor between Northern Cape, Velddrif, and Saldanha with a phased plan through 2035. 2. Designation of Velddrif Water & Power as the water backbone of the hub with binding expansion pathways.	The recommendations for the Phase 2 scope are appreciated, some of which have already been identified by the specialist team (such as the need to identify routings for linear infrastructure. Additional aspects of Phase 2 scope mentioned in this comment, that were not already identified by the specialist team have been incorporated where possible in Section 7 of the Phase 1 Master Plan.

NO.	DATE OF COMMENT, FORMAT OF COMMENT, NAME OF ORGANISATION/ WORKING GROUP MEMBER	COMMENT	RESPONSE FROM THE SPECIALIST TEAMS
		3. Binding port milestones before 2035 despite the long-term 2052 framework, including Section 56 operator arrangements.	
A.6.		**Assessment and Overall Conclusion** The Appendices expand on the scenarios, legislation, planned infrastructure, and stakeholder engagement. They confirm the scaling logic to 5/15 GW electrolysis, 10/30 GW renewable energy, and 35/105 MLPD desalination, and they further detail the shared infrastructure framework. At the same time, they reveal missing coordination of ammonia pipelines in the medium scenario and the need for additional terminal operators and certification standards. These points are crucial for our project integration and should be concretely defined in the next version. **Strengths of the Appendices** 1. Clear scenario metrics: 0.5 mtpa GH2e for 5 GW/10 GW/35 MLPD and 1.5 mtpa GH2e for 15 GW/30 GW/105 MLPD, including derivatives for ammonia, methanol, and DRI. 2. Detailed desalination expansion to 152 MLPD in the high case, with 105 MLPD for GH2, 32 MLPD for municipal use, including aquifer recharge and offshore brine diffusion. 3. Further development of CUI: introduction of additional terminal operators through TNPA due process and establishment of common storage and technical standards.	KAHREs assessment and overall conclusion following review of the Appendices are noted with thanks.
A.7.		**Gaps and Constraints from Our Perspective** 1. Lack of coordinated ammonia pipeline networks in the medium scenario, reliance on trucking or individual pipelines increases cost, risk, and public acceptance issues. 2. Limited readiness of rail infrastructure authorities to upgrade capacity, maintaining road dominance for hazardous goods and raising safety concerns. 3. Dependence on later port development phases without explicitly securing interim export capacities.	• Comment 1 and 2: The gaps and constraints associated with the lack of coordinated ammonia pipeline networks and the limited readiness of rail infrastructure were discussed in detail during the development of the bottom-up scenario narratives. These constraints have been captured in the narratives as factors that may hinder GH_2/PtX development, based on current authority decisions and engagement trends.

NO.	DATE OF COMMENT, FORMAT OF COMMENT, NAME OF ORGANISATION/ WORKING GROUP MEMBER	COMMENT	RESPONSE FROM THE SPECIALIST TEAMS
			• Comment 3: The issue of port planning not aligned to timelines of GH_2 producers was raised during the second working group engagement which took place on 14 November 2025. It was noted that the Western Cape Government is engaging with the TNPA on this item. The outcome of these engagements will be considered in detail as they relate to the GH_2/PtX ambition of the West Coast
		Where the Appendices Support Our Projects 1. KTE.energy: The quantified demand scenarios confirm the role of a largescale upstream anchor from 2029, providing benchmarks for electrolysis, energy, and water allocation. 2. GreenLink: The identified need for an integrated network of pipelines (for water, ammonia, and potentially GH2) and regional corridors aligns perfectly with our 450 km backbone concept. 3. Velddrif Water & Power: The 50/105/152 MLPD scaling steps validate our function as a water backbone with parallel municipal co-supply. 4. EcoVision Velddrif: The emphasis on skills, community benefits, and cumulative impact assessments fits our urban-industrial concept as a demonstrator.	The alignment of the Phase 1 Master Plan framework with KAHREs four projects are noted with thanks and will be considered in detail during the subsequent phases of the Master Plan.
A.8.		**Our Recommended Additions to the Appendices** 1. Explicit reference to "GreenLink" as a prioritised phased pipeline and transmission corridor with standardised wayleaves and MHI safety buffers. 2. Inclusion of an "Ammonia Pipeline Backbone" connecting offsite storage to the port as a mandatory common-user infrastructure element under the high coordination scenario to reduce road impacts.	If "GreenLink" refers to strategic gas pipeline routes and electricity transmission corridors designed to support energy infrastructure development, including gas distribution and power transmission, then the Greenlink pipeline and transmission corridors in South Africa have been defined at a strategic level with broad corridor alignments, but not with exact detailed alignments. These corridors were identified through a Strategic Environmental Assessment process, which mapped wide corridor zones—often around 100 km wide—to consider environmental, social, and technical constraints. Within these broad corridors, further detailed studies, engineering

NO.	DATE OF COMMENT, FORMAT OF COMMENT, NAME OF ORGANISATION/ WORKING GROUP MEMBER	COMMENT	RESPONSE FROM THE SPECIALIST TEAMS
		3. Definition of near-term port transition capacities before 2035: temporary berths, additional operator licences, offsite storage connections, and barge bunkering. 4. Water pathway milestones and allocations between GH2 and municipal use, including aquifer management and offshore diffusers as environmental standard. 5. Regulatory action plan: EA fast-track for electrolysis and storage, certification aligned with EU schemes, clarification of Gas/Pipelines Act status, and MHI guidance.	designs, and route optimizations are required to finalize precise alignments that minimize impacts and address local conditions.
A.9.		**Final Next Steps for Our Comment Submission** 1. Anchor KTE.energy as the upstream reference project with defined milestones for 2030 and 2039, serving as an early supplier of green molecules from 2029. 2. Position GreenLink as the central connector between Northern Cape generation, Velddrif industry, and Port Saldanha for electricity, water, NH3, and GH2 transport. Establish Velddrif Water & Power as the regional water backbone with an expansion path of 50–150+ MLPD and integrated municipal supply. 3. Present EcoVision Velddrif as a socio-ecological demonstrator for skills, employment, community acceptance, and industrial-urban value creation. **Alignment with the Green Shipping Corridor** The identified risks and enablers overlap with those highlighted in the ZA-EU Green Shipping Corridor Report: CUI pipeline links to the port, certification frameworks, NERSA adjustments, bunkering standards, and accelerated permitting. These items should be adopted as joint early-stage tasks in Phase 2 of the Master Plan to ensure timely implementation and alignment with South Africa's national hydrogen strategy.	Phase 1 acknowledges these proposals but does not assign priority to specific projects or proponents. Phase 2 will assess project readiness, verify timelines, and test corridor, utility and port requirements including those linked to the Green Shipping Corridor before confirming which initiatives should be advanced.

NO.	DATE OF COMMENT, FORMAT OF COMMENT, NAME OF ORGANISATION/ WORKING GROUP MEMBER	COMMENT	RESPONSE FROM THE SPECIALIST TEAMS
B.1	TÜV SÜD South Africa & LBST Received from: Thomas Frohn Received on: 24/11/2025	The West Coast Green Hydrogen Master Plan is an exciting approach to the roll-out of green hydrogen in three phases: 1. a high-level analytical review to identify strategic, technical, and regulatory gaps, 2. the development of decision-making tools and engagement platforms to strengthen institutional readiness and translate plans into spatially grounded actions; and 3. implementation planning with compliance and monitoring to establish governance and drive coordinated green hydrogen projects. The identified gaps and recommendations appropriately address the key aspects. However, we would like to offer the perspective of a potentially relevant import market (Europe) and raise additional questions that are pertinent from an international and local standpoint:	The submission of comments from TÜV SÜD is well received and appreciated. Please refer to cells below of detailed responses to comments raised.
B.2		**Related to chapter 1.2** FuelEU Maritime is a relevant driver, but note that fuel offtake i.e. via the revised RED II may reach even larger orders of magnitude (e.g. in Germany ~ 60% of ~3 Mtpa grey ammonia will need to be replaced towards 2030). Further note that the IMO decision will likely not materialize, but still there are committed transport operators active without international framework and often driven by EU targets (→ Do these shipping operators approach Saldanha Bay, e.g. Hoegh Autoliners (pioneers for ammonia), or Maersk (pioneers for methanol)).	This comment is noted with thanks. The relevant section of the Phase 1 Master Plan has been updated to reflect recent international policy developments.
B.3		**Related to chapter 3.3** We need to highlight that jurisdictions around the world handle the carbon content of the hydrogen derivatives differently and e.g. the European	Section 3.3 of the Phase 1 Master Plan has been updated to clarify that jurisdictions apply differing rules to the carbon accounting and sustainability requirements of hydrogen derivatives, with direct

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		Union allows using industrial sources only towards around 2040. Further note that ammonia may be especially relevant for ships with "fixed" routes, such as RoRo-Carriers for cars (today mostly handled in Durban) thus reducing the risks associated with ammonia.	implications for export eligibility, market access, and long-term offtake certainty. This includes recognition that some markets, such as the European Union, may permit the use of industrial or transitional feedstocks only over a limited time horizon (e.g. to around 2040). The Master Plan also notes that ammonia is likely to be most relevant for applications with fixed or well-defined routes, such as certain maritime segments, where fuel supply, bunkering, and safety risks can be more readily managed. While Phase 1 of the Master Plan does not seek to resolve detailed market-specific standards or fuel certification rules, these issues are flagged as critical considerations for subsequent phases, particularly where they affect Common User Infrastructure (CUI) design, compliant production pathways, and long-term export positioning of the West Coast hydrogen hub.
B.4		**Related to chapter 3.4.2.** Infrastructure and especially pipelines require heavy risk bearing by public authorities, which needs strategic and policy backing. European pipeline planning is therefore an important multi-stakeholder consultation process.	This observation is noted. The relevant section has been updated to reflect learnings from comparable infrastructure planning processes, including those undertaken in Europe.
B.5		**Related to Chapter 4** *(1) Paragraph 1* Instead of derivate processing, we'd suggest using the wording "conversion" since this includes processing steps like liquification, etc. (2) Paragraph 2 *"Instead, hydrogen projects currently rely on a regulatory baseline framework informed by a combination of existing laws and standards that partially cover aspects of the hydrogen production value chain but were never designed specifically for it."*	• Comment 1: The suggested changes from "derivative processing" to "conversion processing" has been implemented. • Comment 2: The comment is noted. The paragraph has been updated to reflect South Africa's long-standing experience in the chemicals and synthetic fuels industry, including grey hydrogen production, storage and transport. The enabling nature of the existing regulatory baseline framework, which supports these established hydrogen-related activities, has been highlighted, while also

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		The existing regulations go beyond production, and in general we would highlight the following: South Africa has extensive experience in the chemical industry, including decades of (grey) hydrogen production, storage, and transport. While green hydrogen production using technologies such as electrolysers, and emerging end applications like hydrogen-powered vehicles and refuelling infrastructure, are relatively new with limited local experience, the storage and transport of hydrogen are well-established both globally and in South Africa. These activities are largely independent of hydrogen's "colour," which is reflected in a mature regulatory framework and a robust national and international standardisation base. Much of the relevant standardisation and regulatory work does not address hydrogen explicitly; instead, hydrogen is covered under broader classifications such as chemical substances or flammable gases, owing to shared technical requirements and safety considerations. Hydrogen storage systems are also regulated as pressure equipment, typically involving Type III or Type IV containers. As a result, many existing SANS standards are incorporated or gazetted under OHSA regulations.	acknowledging that gaps remain for emerging green hydrogen technologies and applications.
B.6		**Related to chapter 4.1** (1) Paragraph 2 With large volumes of hydrogen storage, authorities usually require MHI studies, HAZOPs, etc. Our questions would be: Is there an emergency response plan and on-site firefighting infrastructure defined? (2) Paragraph 2 *"Site-specific conditions and environmental considerations from the Integrated Zoning Scheme and municipal by-laws would apply."* Globally, we experienced plenty of challenges on land-use approvals when the land is intended to be used for hydrogen production (industrial) and	Comments 1 and 2: The Saldanha Bay Municipal Integrated Zoning Scheme By-Law, does indicate preferences and controls on land parcels. It sets out development parameters and land use rights for different zones, which include specified primary uses and "consent uses" that require special permissions. Although this provides guidance the best approach is to engage the municipality when seeking to change current land sue scheme use. As part of the outcomes of this Phase 1, it is recommended to consult with the Saldanha Bay Municipality to review the land use scheme. Given that GH_2 is an emerging commodity, municipalities may require additional guidance to appropriately integrate it within existing zoning frameworks.

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		hydrogen refuelling station (retail) because the whole site becomes an industrial facility (high-risk). Municipal planning schemes often did not allow industrial-process zoning on sites intended for retail use, especially near urban areas. Is there any position from Saldanha which could be added here?	
B.7		**Related to chapter 4.3** Paragraph 3: Driver training requirements are rather minimal in our opinion; however, maintenance and inspection personnel require specialized training for hydrogen and gas systems.	This comment is agreed with, and the relevant paragraph has been adjusted accordingly to include these workforce personnel.
B.8		**Related to chapter 4.5** (End User Application) South Africa is a contracting party to the UN 1958 Agreement and therefore should accept UN ECE Regulations, including UN Regulation No. 134 concerning the approval of hydrogen-powered road vehicles, which primarily addresses onboard hydrogen storage systems. While this regulation is generally applicable to special vehicles such as mining trucks, these vehicles are not explicitly included within its scope.	This comment is noted with thanks. Additional text has been included in the Section 4.5 of the Phase 1 Master Plan as needed.
B.9		**On Sustainability certification (in general and related to chapter 4)** We would like to clarify the following: The certification of renewable hydrogen requires no domestic scheme to reach recognition in the target markets such as Europe. However, to avoid project developing risks a domestic scheme and associated quotas can significantly bolster the offtake for hydrogen. Hydrogen certification from a European perspective requires knowledge on the quality of energy used, which needs to be proven by an established guarantee of origin system (non-EU: EACs). Therefore, South Africa and the West Coast should consider supporting project developers in this regard	This clarification is noted with thanks. Relevant text on sustainability certification and associated risks has been incorporated into the Master Plan where applicable. Emerging guidance from CertifHy regarding uncertainties related to SEZ support for renewable energy production will be considered in detail as part of the Phase 2 scope of work.

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		(note that direct line project in principle also need to cancel EACs to proof the origin as renewable). Derisking of international scale production projects (aiming at international financing opportunities) must ensure that their product is eligible i.e. via pre-certification. The West Coast and related policy can support this via making available and granting access to relevant information from official sources as required by EU RED II requirements. An additional uncertainty needs to be clarified: Special economic zones are a form of support also to renewable energy production. Since RFNBO-production (renewable hydrogen in Europe) requires the electricity to come from non-supported sources (additionality requirement), this uncertainty requires clarification. We have insights that the CertifHy Voluntary Scheme will soon provide clarification via a communication dedicated to the topic.	
B.10		**Related to Executive Summary** *Reference to: Strengthening regulatory clarity and adaptive permitting pathways* Off-take requirements are determined by the offtaker region, e.g. EU RED III RFNBO requirements. There is no direct need for clear guidance from South African entities or authorities. Perhaps a link to the relevant global information (e.g. link to the EU Directives) could be helpful?	The comment is noted. The outcome is not intended to duplicate or reinterpret off-take requirements, which are indeed determined by importing jurisdictions (e.g. EU RED III RFNBO criteria). Rather, it focuses on regulatory clarity, coordination, and permitting certainty within South Africa, as these directly affect project timelines, bankability, and infrastructure delivery at the hub level. While existing regulations may be broadly adequate in principle, evidence from the literature review (Section 4.5) and repeated developer engagements indicates that regulatory fragmentation, unclear mandates, and inconsistent permitting processes remain material constraints in practice. This has resulted in differing perceptions between authorities and project developers regarding the adequacy of the current regulatory environment. Accordingly, Phase 2 of the

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			Master Plan is framed around improving clarity and alignment rather than introducing new regulations, with emphasis on: • Streamlined and coordinated permitting pathways across spheres of government; • Institutional alignment and governance arrangements relevant to hub-scale development; • Explicit linkage to relevant international standards and market requirements (e.g. EU directives) to support compliant production and export readiness.
B.11		**Related to Appendix B – Summary of applicable legislation** (1) Section Hazards and Risk It's worth mentioning that the "low-hazard" threshold for dangerous substances (such as 2.5 tonnes for hydrogen) refers to the maximum stored amount on-site, not an annual production or throughput. (2) Section Hazards and Risk The Occupational Health and Safety Act, 1993 (Act No. 85 of 1993) is mentioned under the building and construction regulations. In this context, it is worth highlighting the Pressure Equipment Regulations (PER) in addition to the correctly referenced MHI Regulations. The PER set out key requirements for the design, manufacture, and operation of pressure equipment, critical for hydrogen process equipment, storage tanks, pipelines, and other related systems. These requirements are relevant across almost the entire hydrogen value chain, except for on-board hydrogen storage in the automotive sector. It includes approved standards such as:	With regards to the MHI Regulations (2022), the prescribed quantities referred to have been clarified by stating that these refer to the maximum stored amount on site, and not the annual production or throughput. In addition, Appendix B of the Phase 1 Master Plan has been updated to include reference to the 2009 PER.

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		- SANS 347: Categorisation and conformity assessment of pressure equipment (defines categories I–IV and conformity procedures). - EN13445: Unfired Pressure Vessels is a standard that provides rules for the design, fabrication, and inspection of pressure vessels - ASME Section VIII: Pressure vessel design and fabrication	
B.12		*Remark:* We offer our support in achieving regulatory clarity and refer to the ongoing assistance provided to GIZ and CSIR on infrastructure modelling and cost-optimisation for multimodal transport in South Africa. In addition, TÜV SÜD South Africa is already in the advanced stages of qualifying local auditor(s) to conduct RFNBO certification and plans to further expand local capacity by training and qualifying additional auditors.	Support from the TÜV SÜD is greatly appreciated and noted.
C.1	Gesellschaft für Internationale Zusammenarbeit (GIZ) Received from: Thabo Chauke Received on: 24/11/2025	Dear Dhiveshni, I hope the email finds you well. Below are the inputs relating to the above-mentioned document: • While we find the Explorative Scenario Approach adopted in the development of the Masterplan to be quite instructive, however, it will be helpful to explain certain parameters. For instance, it is not immediately apparent what informs the renewable energy assumption: 70% solar versus 30% wind energy mix is considered the only optimal configuration.	The 70% solar / 30% wind split is not presented as a globally "optimal" configuration, but as a plausible, conservative, and regionally grounded planning assumption used to bound infrastructure, land-use, water, and grid implications across scenarios. The scenarios do not assume this mix to be fixed over time, nor do they preclude alternative configurations (e.g. higher wind penetration, offshore wind, or increased storage) should they materialise.
C.2		• Similarly, under the Provincial Road scenario the 70% export/30 domestic assumption is used while the ratio for the National Highway scenario is 75% export versus 25% domestic market segmentation. Indeed, South Africa has to juggle the demands of exporting green hydrogen (GH2) and PtX (offensive interest) and	The assumed export–domestic splits in the Provincial Road (≈70% export / 30% domestic) and National Highway (≈75% export / 25% domestic) scenarios are not intended as a policy preference, but as scenario structuring assumptions reflecting differences in demand timing, scale, and absorptive capacity. In the period to the mid-

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		decarbonising some of the hard to abate sectors (defensive interest) lest it lose market access as the latter (the list will expand over time) will be slapped with CBAM from 2026. Against this background it warrants an explanation why, a priori, a stance is taken that suggest that the share of export of GH2 & PtX will preponderate over domestic market consumption of these products for the policy horizon spanning from 2024 until 2050.	2030s, international markets—particularly those subject to CBAM—are expected to provide earlier and more bankable demand signals for GH_2 and PtX than most domestic hard-to-abate sectors, where uptake is constrained by capital stock turnover, infrastructure readiness, and policy instruments still under development. Export-oriented production is therefore treated as an early enabler of scale, learning, and common-user infrastructure, which in turn supports progressive expansion of domestic GH_2/PtX use over time. The scenarios do not assume a fixed export dominance across the full 2024–2050 horizon, nor do they preclude higher domestic uptake as sectoral decarbonisation pressures intensify.
C.3		• Under the **5.2 Infrastructure component constraints**: It would be imperative to consider the role of competition policy. In particular, section 10(10) of the Competition Act of 1998, offers a flexible and expedient mechanism for advancing economic policy and assisting industries facing a myriad of challenges. This provision empowers the Minister of Trade, Industry and Competition, after consulting the Competition Commission, to exempt a category of agreements or practices in order to give effect to the purposes of the Act. An exemption is a regulatory tool that allows firms to conclude agreements or engage in practices that would otherwise be prohibited under the Act, to advance competition objectives. For example, the Energy Suppliers Block Exemption was granted in May 2023 to enable collaboration among energy suppliers to ease constraints on the national electricity grid. See other comments on page 66,67 and 68 (highlighted in yellow) in the document attached herewith.	This comment is noted with thanks. An additional subsection has been added to Section 5.2 of the Phase 1 Master Plan to describe the role of Competition Policy.

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C.4		Note from the CSIR: The comments received on the Phase 1 Master Plan have been extracted verbatim (bolded for emphasis). References to the source or context of each comment are included below. 1. Section 4.4.1; point 4: "**Does the current amendment of the Gas Act not adress this?**" 2. Section 4.5; point 2: **"SABS TC63 developed for establishing standards."** 3. Section 4.5; point 3: **"The Gas Act amendment bill adresses this point, perhaps it could mentioned that it is already there."**	Comment noted with thanks. Phase 1 included a high-level regulatory review. In response to these comments, references to the relevant Gas Act amendments and applicable standards have been added where appropriate. A more detailed and comprehensive regulatory review is proposed as part of the Phase 2 scope of work.
D.1	Cederberg Local Municipality Received from: Gerrit Matthyse (Municipal Manager) Received on: 23/11/2025	**25 Critical Questions for Hydrogen Project Submissions** 1. Provide a detailed demand model: list of confirmed offtake contracts (volume, price, tenor, buyer credit quality) and a 10-year demand forecast. 2. Show the expected Levelised Cost of Hydrogen (LCOH) under each scenario (Sc0–Sc2) — include sensitivity to electricity price, electrolyser CAPEX, capacity factor and discount rate. 3. Provide power-flow and grid impact studies (transmission & distribution) for the proposed electrolyser clusters and RE capacities, including reinforcement costs and timing, and SAWEM market participation impacts. 4. Show the renewable energy (RE) procurement strategy: owned RE vs wheeling vs PPAs vs guarantees of origin — and how green electrons will be credibly traced. 5. Provide detailed electrolyser sizing & modularity plan (MW blocks), ramping strategy and maintenance schedule.	Please refer to Section 1 of the Phase 1 Master Plan, which outlines the objectives of this phase and provides an overview of the intended focus areas for subsequent phases. The comments received relate to detailed project-specific requirements that may be relevant to individual GH_2 developments along the West Coast; however, they fall outside the scope of the Phase 1 strategic master planning process. While certain topics raised such as life-cycle assessment are recognised and will be incorporated at a high level where relevant, the detailed analysis and technical, commercial and permitting work associated with these requirements are planned for Phase 2 and beyond, where project-level evaluation and implementation frameworks will be developed.

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		6. Provide water security analysis: desalination siting, brine management, freshwater alternatives, permitting timeline, and water OPEX per kg H_2. 7. Produce a Life-Cycle Assessment (LCA) conformant to a defined protocol (ISO/EU) showing GHG/kg H_2 and for downstream PtX products. 8. Provide a cumulative environmental impact assessment (biodiversity + land-use thresholds) and a compensation/offset plan. 9. Provide a full land availability schedule (ownership, timelines, compensation costs) and contingency siting strategy, including SEZ node viability. 10. Provide the offset pipeline (location, cost, legal status) where biodiversity offsets are required. 11. Provide quantitative risk assessments for Major Hazard Installations (MHI), proposed safety distances, and emergency response arrangements. 12. Provide modal cost analysis (road, rail, pipeline, ship) per ton-km for H_2/ammonia/methanol for small, medium, and large throughput, including corridor justification. 13. Provide port handling & storage design for back-of-port storage and deepwater ship loading plans. 14. State which sustainability certification standard will be targeted (CertifHy/ISO/EPD/etc.) and the method for emissions accounting and verification. 15. Identify required permits and provide projected permit timelines, including critical-path risks. 16. Propose the delivery vehicle/entity for coordinated infrastructure, including governance, authority, and funding.	

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		17. Provide the procurement/contracting strategy (phased EPC, risk allocation, incentives, step-in rights). 18. Provide a bankability checklist (offtake, land title, grid connection agreement, permits, insurance, EPC & O&M contracts). 19. Provide CAPEX/OPEX/IRR ranges and the proposed financing structure (equity/debt/grants) including sensitivity to interest rates. 20. Provide a local content, supply-chain and jobs plan, including training, procurement, and community benefit programmes. 21. Define sustainability, safety, economic and delivery KPIs (GHG $gCO_2e/kg\ H_2$, % renewable electricity, water $m^3/kg\ H_2$, jobs/MW, schedule adherence). 22. Provide the plan for data integration and the monitoring platform for real-time sustainability and project progress metrics. 23. For methanol and SAF routes: provide a sustainable carbon feedstock availability study (volumes, cost, land-use impacts, transport). 24. Provide an integrated project timeline with 'date of readiness' milestones for RE, electrolysers, water, pipelines and the port to avoid stranded assets. 25. Provide a decommissioning and circularity plan for end-of-life equipment, including recycling/reuse routes.	
E.1	SECAVIO Engineering and Project Managers Received from: Seaton Carolus (Managing Director) Received on: 15/11/2025	Note from the CSIR: The comments received on the Phase 1 Master Plan have been extracted verbatim (bolded for emphasis). References to the source or context of each comment are included below. 1. Glossary of Terms; "GH_2" "**Shall this also include other technologies? As there is not only one type of technology. e.g., SMR, STEAM CRACKING, GASIFICATION, METHANE PYROLYSIS**"	• Comment 1: Green hydrogen refers to hydrogen produced exclusively using renewable energy sources (such as wind, solar, or hydro). While it is envisaged that production in the West Coast region will mainly occur via electrolysis, the glossary entry has been amended to read: "Hydrogen produced using renewable energy sources (such as wind, solar, or hydro), with minimal or no greenhouse gas

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		2. Appendix A (Detailed Scenario Narratives): "**Additions to consider, PER - Pressure Equipment Regulations"** 3. Appendix A; Gas Act Amendment Bill "**SANS 2176 "Green and Low Carbon Hydrogen criteria for production, conditioning, and transport of hydrogen to consumption gate under development, publication 2025-2026. Adopted standards by South Africa,- SATS 19870**"	emissions. While production in the West Coast region is expected to mainly use electrolysis, other production methods exist". • Comment 2 and 3: Relevant additions regarding PER and new technical and carbon intensity benchmarks (SANS2176) have been added to Appendix B of the Phase 1 Master Plan.

STAKEHOLDER COMMUNICATION PLAN FOR PHASE 1 OF THE WEST COAST GREEN HYDROGEN MASTER PLAN IN SUPPORT OF THE ESTABLISHMENT OF THE SALDANHA HYDROGEN HUB IN THE WESTERN CAPE PROVINCE.

Date:
13 May 2025

Prepared by:
Dhiveshni Moodley and Paul Lochner (CSIR)
Shanon Neumann (Freeport Saldanha)

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1. Introduction, purpose and objectives

As part of South Africa's ambition to become a key player in the global green hydrogen market, the Saldanha Bay port along the West Coast is envisaged as a central hub for green hydrogen production and export activities. The proposed Saldanha Green Hydrogen Hub is positioned within the Freeport Saldanha Special Economic Zone (SEZ). It is anticipated that the proposed hydrogen hub will capitalise on the strategic location of Saldanha Bay with its surrounding renewable electricity generation, potential hydrogen midstream processing potential, and import and export potential. In addition, the hub will support the goals of the Western Cape Energy Resilience Programme by facilitating accelerated rollout of large-scale renewable energy generation and through green hydrogen's grid balancing properties. It is therefore prudent that a comprehensive, strategic road map be applied to support and guide the planning of sustainable development of the port, SEZ and Green Hydrogen Hub. The CSIR has been appointed by Freeport Saldanha to prepare Phase 1 of the West Coast Green Hydrogen Master Plan.

The objectives of Phase 1 of the Master Plan include facilitating the alignment of infrastructure development, regulatory incentives, and environmental sustainability, to enable the success of the hub as a thriving centre for private sector-driven green hydrogen projects. Developing this Master Plan for the Saldanha Hydrogen Hub requires an evidence-based collaborative, stepwise approach to site and regional scale decision-making as well as inclusive, transparent, and structured stakeholder engagement.

An additional objective of the Master Plan is to conduct stakeholder communications in a manner that:

- Provides a platform for stakeholder involvement, allowing participants to voice concerns, promote transparency, and foster collaborative relationships; and
- Identifies and manages potential risks and uncertainties throughout the planning and development process.

This communication plan outlines the strategic approach to stakeholder engagement and communication throughout the duration of Phase 1 of the Master Plan. It defines key stakeholder groups, communication objectives, engagement methods, and governance structures required to support meaningful participation and ensure legitimacy, trust, and coordination.

The objectives of this communication plan include -

- Facilitate effective and inclusive stakeholder engagement at all levels.
- Ensure alignment and coordination between the project partners and stakeholders.
- Support a co-produced approach to knowledge generation in line with best practice.
- Maintain transparency, trust, and accountability in decision-making processes.
- Ensure that communication is timely, relevant, accessible, and documented.

2. Governance and stakeholder engagement

The stakeholder engagement process comprises a tiered approach, ranging from: close collaboration with the authorities involved in commissioning the Master Plan; to engagement with representatives of key bodies representing sectors of government, industry and civil society.

The Master Plan process will consist of one governance group and one key stakeholder group:

Tier 1: Direct Collaboration with Commissioning Authorities [Project Steering Committee]	

Composition	• Freeport Saldanha, Western Cape Department of Economic Development and Tourism (DEDAT), Wesgro, South African National Energy Development Institute (SANEDI), Eskom, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), Industrial Development Cooperation of SA (IDC), Department of Science, Technology and Innovation (DSTI), Transnet, and the Council for Scientific and Industrial Research (CSIR).
	  ○ The Project Steering Committee (PSC) will be constituted during the project to provide oversight to the project and will be chaired by Freeport Saldanha and the CSIR.
	  ○ The CSIR will provide a secretariat function, by arranging meetings, providing meeting notes and recording the meetings.

Role and Responsibilities/ Function	• Oversight, strategic decision-making, and direct project input information sharing and project feedback.
	  ○ Provide strategic oversight and ensure alignment with broader green hydrogen policy goals.
	  ○ Review project deliverables and guide direction.
	  ○ Resolve any project implementation challenges.

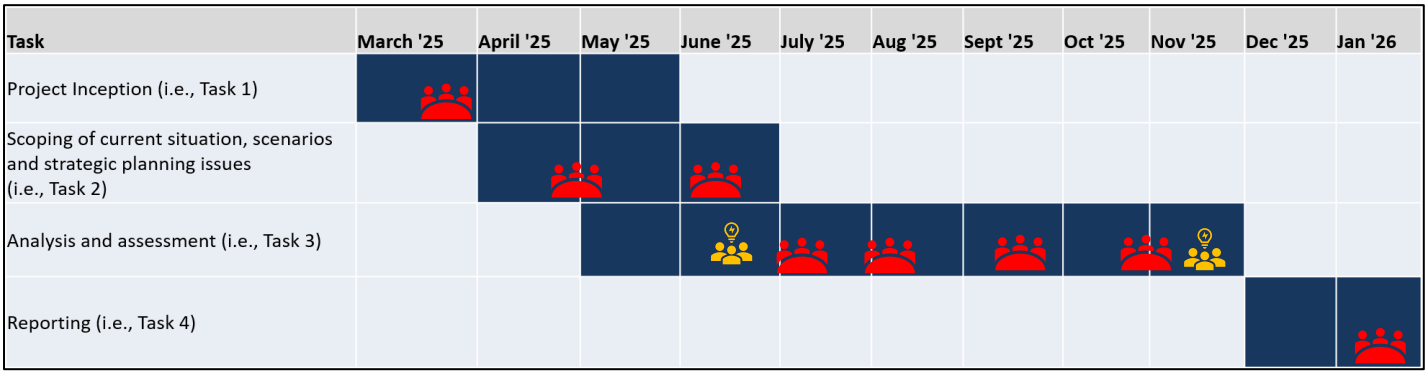
Engagement Method	Monthly virtual meetings via the Microsoft Teams online platform and direct consultations
Tier 2: Engagement with Sectoral Bodies [Working Group] *Best-practice science-policy processes nowadays steer way from rote public participation and stakeholder engagement exercises that add little value. Instead, they adopt coproduction models of knowledge production. Coproduction means iterative and collaborative processes involving diverse types of expertise to produce context-specific knowledge.*	
Composition	• ~30 representatives from a mix of NGOs, CBOs, academia, research institutions, private sector entities, and government departments. • An initial list of members to be nominated by the PSC and CSIR project team. • At the first Working Group meeting, the members will have the opportunity to recommend potential additional members not included in the initial list of nominations, while staying adhering to the proposed limit of ~30 members.
Role and Purpose	• Input into technical and sector-specific elements, ensuring diversity of perspectives. • To act as a pool of experts with technical expertise and in-depth sectoral and local knowledge which can be drawn upon at certain intervals. • To enable the coproduction of content, ensure the quality of content, and to make sure that project deliverables are of benefit to a broad range of stakeholders and audiences.
Functionality:	• The Working Group (WG) will operate as a non-decision-making, reference and advisory group. • Participation is voluntary but governed by a mutually agreed Code of Conduct to ensure professionalism and inclusivity.

Engagement Method	• Two structured WG convenings and document reviews.
	  ○ First Meeting: During mid-project to provide input on preliminary findings and draft outputs.
	  ○ Second Meeting: Near project end to validate outputs and ensure alignment with stakeholder needs.
	
	The CSIR will perform the Secretariat function which includes scheduling and convening meeting, preparing and circulating agendas and meeting notes and recording and archiving sessions.

Additional notes	The WG is not a decision-making, mandated body. It is a reference group, providing an important forum for robust, inclusive stakeholder deliberation on the essential issues driving the Phase 1 of the Master Plan. All participation in the WG will be governed by a code of conduct. The secretariat of the WG (CSIR), in consultation with the Chair and PSC, reserves the right to develop and enforce the code of conduct.

3. Key Communication Milestones

The below timeline provides an overview of the key communication activities and milestones throughout the Phase 1 Master Plan.



4. Code of Conduct and Ethics

1. Members of the WG and/or PSC are encouraged to closely engage with their constituencies and the project team, to provide bidirectional feedback between all interested parties.
2. Members will be provided an opportunity to raise issues or ask questions. The Chairperson will ensure this happens in a fair and balanced way. Hands need to be raised, and acknowledged by the Chairperson, before the speaker proceeds.
3. Members of the WG may be called upon from time to time (on a voluntary basis), to give presentations of relevant data or information which could assist the master planning process.
4. Instances of dissensus on issues/topics are perfectly acceptable. All views and opinions will be noted and duly reported to the PSC, and within relevant reports.
5. The Chairperson will discourage long-winded presentations or repetitive discussions in a kind and respectful way, ensuring that meetings remain within the proposed scope and time constraints.
6. Members can step down from the WG and/or PSC at any time and make nominations for their replacement.
7. In instances of repeated interruptions or process manipulation, the Chairperson, in consultation with the PSC and Secretariate, can ask a member to step down from the WG at any time.
8. Where appropriate, sensitive information shared during engagement activities will be treated confidentially and used only for the purposes of advancing the Master Plan.
9. All parties involved are expected to honour commitments made during engagement processes.
10. Feedback from stakeholders will be acknowledged and, where possible, incorporated into planning and decision-making.

5. Record of Working Group Engagement

MINUTES

Working Group Meeting for the West Coast Green Hydrogen Master Plan (Phase 1)

MEETING NOTES

Meeting:	Establishment of the Working Group with Freeport Saldanha
Date of Meeting:	19 June 2025
Meeting Platform:	Microsoft Teams
Duration:	1h20m
Attendees:	Forty-six Working Group representatives attended the meeting. Please refer the Appendix A of these meeting notes for the attendance register
Apologies:	xxx

1. Purpose of Meeting and Agenda

The first Working Group meeting was held between Freeport Saldanha, the confirmed working group members and the Council for Scientific and Industrial Research (CSIR) on 19 June 2025 to present the approach to the Phase 1 of the West Coast green hydrogen Master Plan, outline the objectives and scope and introduce all members discuss the progress to date.

The meeting was chaired by GS and took place according to the agenda below:

Time	Topic

10:30 – 10:45 (15 mins)	• Welcome and introductions [CSIR, all]
	  • *Meeting objectives*
	  • *Role of the working Group in this Phase 1*

10:45 – 11:00 (15 mins)	• Need for Green Hydrogen [Western Cape Government] • National and regional context

11:00 – 11:15 (15 mins)	• Saldanha Green Hydrogen ambitions [Freeport Saldanha]
	  • Need for the Master Plan
	  • Strategic vision and objectives and objectives of the Master Plan (Phase 1)

11:05 – 11:45 (40 mins)	• Approach to the Phase 1 Master Plan [CSIR]
	  • Approach, tasks, outputs, roles and schedule
	  • Governance structure, stakeholder engagement and communications

11:45 – 12:25 (30 mins)	• Group discussion and feedback [All]
	  • Reflections and suggestions
	  • Gaps, opportunities, and collaboration
	  • Input on priority areas and alignment

12:25 – 12:30 (5 mins)	• Closure and next steps [CSIR]

2. Presentation: Background context and rationale on phasing; envisaged approach, workstreams and outputs; proposed schedule and way forward

SN opened the meeting by welcoming attendees and outlining the objectives and house rules. GS followed with an overview of the purpose of the working group and expectations for the session. HJ then presented the global and regional green hydrogen context, underscoring its importance for decarbonization, the Western Cape's 2035 production and export targets, and the rapid growth of hydrogen projects globally emphasizing the need for integrated planning aligned with national strategies. SN outlined the strategic objectives of the master plan and Saldanha Bay's green hydrogen ambitions. GS introduced the master plan's study area and scenario framework, followed by DM, who outlined the workstreams, scope of the master plan, project schedule, and key deliverables. DM conveyed that is planned for the draft findings to be presented to the working group in August 2025, with a draft master plan circulated for comment by the end of September 2025. The final Phase 1 master plan is scheduled for completion in January 2026. Two discussion prompts were posed to participants, and the meeting concluded with a Q&A session and formal closing remarks from DM. A copy of the presentation and the full list of attendees are available via the link shared with these meeting notes.

The table below provides insight into the discussions that took place during the meeting:
:

Agenda Item	Queries or Comments Raised	Responses/Action items (bolded)
Need for Green Hydrogen [WCG]	○ TR noted that producing low-carbon maritime fuel is a key near-term opportunity, given the IMO's new global carbon tax (effective April 2025) of $100–$480/tonne for non-compliant vessels. South Africa's location and renewable potential position it well for bunkering, despite financing challenges. He suggested including this as part of the strategic angle presented	○ This was noted with thanks
Approach to the Phase 1 Master Plan: Scenarios framework [CSIR]	○ LC welcomed the progress in the Western Cape, noting alignment with their work at Freeport Saldanha focused on the port and SEZ. He found the scenario work valuable and mentioned efforts to align it with their own. He asked whether the most ambitious scenario falls within the Green Hydrogen Commercialisation Strategy, noting his team explored more ambitious projections, similar to those proposed by Sasol.	○ GS confirmed the scenarios align with the Green Hydrogen Commercialisation Strategy and were kept within realistic bounds, based on national projections with allocations to Saldanha and other hubs. He noted the process is iterative and subjective but grounded in data, with the goal of ensuring the scenarios are seen as reasonable by experts. ○ LC agreed, noting they used a similar approach in a separate hydrogen logistics project. He added that while not within this project's scope, a national-level supply and demand analysis would be valuable going forward.
	○ AM requested clarity on two points: 1. Whether the volumes referenced in the presentation refer specifically to hydrogen, not ammonia. 2. Whether the land requirements mentioned include only energy generation, or also infrastructure for handling final products, such as pipelines, storage, and loading/discharge facilities. ○ KC enquired about associated infrastructure that may be required, such as new transmission lines and roads, to support the various scenarios.	○ GS clarified that volumes are expressed in green hydrogen equivalents. He confirmed that land requirements include not just energy generation but also transport and supporting infrastructure, such as roads, pipelines, and power corridors. The challenge lies in realistically mapping out what a green hydrogen economy could look like in Saldanha Bay across scenarios, factoring in infrastructure scale and scope.

	○ EC enquired if there is a specific reason for allocating more capacity to solar PV than wind in the scenarios, considering the region's strong wind resource and higher capacity factors?	○ TR explained that, based on techno-economic analysis for the region, the lowest-cost green hydrogen is achieved with a mix of approximately 70% solar PV and 30% wind. ○ PL added that over the past five years, solar PV has become cheaper than wind and tends to face fewer challenges in environmental approvals—particularly around visual impact and effects on birds and bats. However, wind does have the advantage of generating power at night.
	○ PM asked whether the scenarios assume co-location of solar PV and wind, or if they consider separate siting based on optimal resource availability (e.g., solar inland, wind along the coast).	○ PL confirmed that colocation has not been assumed. Wind and Solar PV can each be located at the optimal site (ito of resource, grid, enviro sensitivity and land availability)
	○ EVS enquired whether desalination is included in the water supply plans and, if so, noted its footprint should be reflected and tracked over time	○ GS confirmed that desalination is included in the plans. A designated site north of Saldanha Bay at Danger Bay already has environmental authorisation, with land owned by the municipality. The infrastructure including intake, pipeline, and brine discharge has been planned, and this is being factored into the master plan.
	○ NU enquired about the spatial footprints presented and if the size for electrolysers vary for each scenario.	○ GS acknowledged the question as an important one. He noted that while renewable energy requirements have been quantified, electrolyser sizes have not yet been calculated. These will be determined based on the different scenarios, as scaling from 0.5 to 1.5 mpta will significantly impact land and infrastructure requirements.
Approach to the Phase 1 Master Plan: Workstreams, stakeholder engagement and schedule [CSIR]	○ LN raised a question about the interdependence of topics, noting that transport routes depend heavily on the location of production and electrolysis facilities. He asked how the planning process will account for this and ensure coordination across working groups, given that they cannot operate in isolation. ○ AA enquired asked if there is an overview distinguishing project-developed infrastructure from government-supported elements, and whether a strategy exists to guide project facilitation and enablement.	○ GS noted that the master plan is a multi-year process, with the current phase focused on identifying key questions and knowledge gaps to guide future technical work. Early efforts will assess existing infrastructure and potential needs for large-scale green hydrogen production. He emphasized that common-user infrastructure is a core theme, to be addressed across all workstreams and likely featured as a dedicated discussion point
	○ EV clarified that Heritage Western Cape's role is limited to commenting under the National Heritage Resources Act and asked if the team expects HWC to act solely as an advisor on heritage processes. She also requested information on prior engagements or applications to align with HWC's mandate and avoid role conflicts.	○ GS explained that Heritage Western Cape's role in the working group is to provide strategic input early on helping to consider heritage issues well before downstream EIAs for large-scale projects in sensitive areas like west of the Cederberg. He emphasized that this is a government-mandated strategic plan, not a private sector project, so there are no conflicts of interest. DM further confirmed that no case applications have been lodged.

	○ NU enquired about the format of the infrastructure and land use planning spatial file mentioned, and how mining activities will be incorporated into the listed developments, given the challenges in obtaining accurate mining data.	○ GS responded that a landscape suitability model will be developed using the latest GIS data available. ○ JM explained that the team has established a data structure and gathered the latest spatial information relevant to the region and municipality, including land ownership and infrastructure. ESRI software is being used to build spatial databases to share with the client. These databases will be regularly updated as new data becomes available. They are also considering an online platform, pending client discussion.
Progress on Task one [CSIR]	○ LC noted the Western Cape is working with the World Bank and Meridian Economics on a clean energy roadmap focused on achieving net zero electricity, with potential inclusion of hydrogen. He suggested coordinating to align this project with that roadmap and offered to facilitate introductions. He also raised concerns about import logistics for large components affecting port and road infrastructure and highlighted the impact of a potential Northern-to-Western Cape hydrogen pipeline amid shared renewable zones and project delays.	○ Project team noted this with thanks.
	○ SC enquired whether the strategic master plan will address certification schemes or initiatives for the product or infrastructure.	○ GS confirmed that certification is important but still uncertain at this stage and noted that it will be addressed briefly in this first phase but expect it to become much clearer and more concrete in phases two and three, over the next few years, allowing for more substantive guidance.
	○ FF enquired if the Master Plan scope is limited to landside or if port precinct will also be considered.	○ GS noted that the first phase won't focus in-depth on the port and asked LC if his group's port reports are publicly available or shareable within the working group. ○ LC replied that he'll check but confirmed they're doing transaction advisory work on the port precinct and waterside issues. Their timeline is more aggressive, and they will share information, when possible, possibly via Freeport.
Group discussion and feedback [All]	○ Prompt 1: Are there any stakeholders that are missing? Any gaps in the current participation?	○ The following suggestions were provided by attendees. ▪ Cape Nature ▪ SANRAL ▪ SAPVIA ▪ IDC ▪ DBSA ▪ NCEDA
	○ Prompt 2: What do you see as the most critical local enablers or constraints for green hydrogen development on the West Coast?	○ AM raised concerns about misaligned timelines between rail and pipeline infrastructure planning and developers' production schedules. He noted the port cannot yet commit to pipeline availability needed for exporting product starting as early as 2025.

		○ KC shared the following as critical enablers - Policy and regulatory support across the value chain including subsidies and incentives for the renewable energy sector; transmission grid availability. ○ FF raised the need for a framework for competing projects present on the Working Group to meaningfully share information in the group without compromising their commercial cases and at the same time does not appear to be engaging in anti-competitive behaviour. ○ LC confirmed this issue is part of ongoing work with Shannon and urged developers to share specific infrastructure needs. He also highlighted discussions on expanding the SEZ with off-site tank farms to address safety and capacity concerns, though these plans are still preliminary. ○ TR noted concerns that the SEZ is too small and poses safety risks if all storage is onsite. Stakeholders are considering a multinodal SEZ with an off-site tank farm on non-sensitive inland land, connected by pipeline to the berth, reducing risks and accommodating more players. These ideas are still under discussion.
	○ Prompt 3: What data, tools, or lessons from similar initiatives would best support informed decision-making in the Working Group?	○ LN shared experience from developing the hydrogen backbone in the Netherlands, emphasizing the need to focus more on demand analysis alongside production. He suggested using similar tools to support this process. He also asked what is expected from organizations like his in joining the working group. ○ GC shared that the MIMS / OCIMS database and user tool of the DFFE: Oceans and Coast could be a useful data source. ○ DM and GS emphasized the importance of strong industry representation in the working group to ensure the master plan is practical and implementable. This will translate into 2x 2 hour meetings over the course of this project.
Next steps [CSIR]	○ LN enquired who will lead each working group and be the main point of contact to clarify expectations for participants.	○ DM confirmed that Shannon Newman (Freeport) chairs the working group, which encompasses all three workstreams. A brief stakeholder communication plan detailing roles and responsibilities will be shared with the Working Group. Queries can be shared with SN, DM or GS.

3. Way Forward, Closure and Summary of action items

DM thanked all participants for attending and contributing to the first working group meeting. As immediate next steps, the slide pack and meeting notes will be shared with all attendees. If there are additional colleagues who should be included in future meetings, participants are encouraged to send their contact details to DM to be added to the invite list and avoid access issues. It was noted that follow-up discussions may be held with some participants to further unpack specific comments raised. The team looks forward to continued engagement as the process moves forward.

The meeting concluded at 12H01

Appendix A: Attendance register

	Name	Affiliation
1	Shanon Neumann (SN)	Freeport Saldanha
2	Xola Sithole (XS)	Freeport Saldanha
3	Kgethi Molemane (KM)	Freeport Saldanha
4	Dhiveshni Moodley (DM)	Council for Scientific and Industrial Research
5	Anieke Swanepoel (AS)	Council for Scientific and Industrial Research
6	Greg Schreiner (GS)	Council for Scientific and Industrial Research
7	Rohaida Abed (RA)	Council for Scientific and Industrial Research
8	Johan Maritz (JM)	Council for Scientific and Industrial Research
9	Paul Lochner (PL)	Council for Scientific and Industrial Research
10	Jabulani Jele (JJ)	Council for Scientific and Industrial Research
11	Thomas Roos (TR)	Council for Scientific and Industrial Research
12	Olivia Fransman (OS)	Swartland Local Municipality
13	Liezl Jo Ann Wales Du Plessis (LJAWDP)	Swartland Local Municipality
14	Sindiswa Dlomo (SD)	DFFE
15	Trisha Rene Pillay (TP)	DFFE
16	Coenrad Agenbach (CA)	DFFE
17	Milicent Solomons (MS)	DFFE
18	Emily Vowles (EV)	Heritage Western Cape
19	Herman Jonker (HJ)	Western Cape Government
20	Dhiresh Ramklass (DR)	Government Technical Advisory Centre
21	Kish Chetty (EWT)	Endangered Wildlife Trust
22	Sakib Khan (SK)	Enerleq
23	Karel Rautenbach (KR)	Salika
24	Tommie Potgieter (TP)	Salika
25	Caroline Lötter (CL)	South African Bat Assessment Association
26	Fergus Feltman (FF)	Atlanthia
27	Grace Mortimer (GM)	Phelan Green Energy
28	Luca Guerrini (LG)	Phelan Green Energy
29	Gerhard Cilliers (GC)	DFFE: Oceans & Coast
30	Jeffrey Manuel (JM)	SANParks
31	Monique Sham (MS)	SANParks
32	Louis, Aldrich AC (LA)	Arcelor Mittal
33	Mangold, Paul (External)	Fraunhofer HySecunda Project (Stellenbosch University: Visiting Researcher)
34	Laurens Cloete (LC)	Rebel Group
35	Natalie Uys (NU)	Department of Agriculture, Environmental Affairs, Rural Development and Land Reform
36	Anna Rosenberg (AR)	Global Maritime Forum
37	Judith Musau (JM)	Global Maritime Forum
38	Emir Çolak (EC)	Agora Industry
39	Elsabè Swart	Department of Agriculture, Environmental Affairs, Rural Development and Land Reform
40	Hlengiwe Mtshali (HM)	South African National Biodiversity Institute

41	Dewidine Van Der Colff (DVDC)	South African National Biodiversity Institute
42	Lycklama a Nijeholt (LN)	Gasunie
43	Ann Abherdien (AA)	Gasunie
44	Arthur Martin (AM)	Benguela
45	Kelly Slaffa (KS)	KfW
46	Seaton Carolus (SC)	SECAVIO

MINUTES

Working Group Meeting for the West Coast Green Hydrogen Master Plan (Phase 1)

MEETING NOTES

Meeting:	Presentation of draft findings from the Phase 1 West Coast Green Hydrogen Master Plan
Date of Meeting:	14 November 2025
Meeting Platform:	Microsoft Teams
Duration:	1h20m
Attendees:	Forty-one Working Group representatives attended the meeting. Please refer the Appendix A of these meeting notes for the attendance register
Apologies:	Amanda Makgoga (TNPA); Aldrich Louise (AMSA); Olivia Fransman and Liezl Jo Ann Wales Du Plessis (Swartland Local Municipality); Mandy Mlilo (DSTI); Shawn Modise (NCEDA);

1. Purpose of Meeting and Agenda

The second Working Group meeting was held between Freeport Saldanha, the confirmed working group members and the Council for Scientific and Industrial Research (CSIR) on 14 November 2025 to present the draft findings from the assessments undertaken for the Phase 1 of the West Coast green hydrogen Master Plan.

The meeting was chaired by GS and took place according to the agenda below:

Time	Topic
10:30 – 10:40 (10 mins)	• Welcome and introductions [CSIR, all]
10:40 – 10:55 (15 mins)	• Refresher on approach and need for the master plan [CSIR and Freeport]

10:55 – 12:25 (90 mins)	• Presentation of the Phase 1 draft findings and key recommendations [CSIR]
	  ○ Infrastructure and land-use planning workstream
	  ○ Transport and distribution workstream
	  ○ Sustainability workstream
	• Group discussion and feedback

12:25 – 12:30 (5 mins)	• Closure and next steps [CSIR]

2. Presentation: Refresher on the strategic context and approach; key findings and recommendations from workstreams; envisaged scope for future phases

GS opened the meeting by welcoming attendees and outlining its objectives. SN then set out the strategic context informing the development of the Phase 1 Master Plan. DM provided a refresher on the Phase 1 approach and clarified the role of the Working Group in the process.GS presented the scenarios framework, explaining its development and summarising the key outcomes. JM, RC and LSvdW each followed with presentations on their respective workstreams, highlighting key findings and recommendations. After each presentation, attendees were invited to ask questions, and brief discussions took place.GS concluded the meeting by outlining the proposed scope for Phase 2 and reminding attendees that the comment period for the Master Plan closes on Monday, 24 November.

He encouraged participants to submit written comments before the deadline. A copy of the presentation and the full list of attendees are available via the link shared with these meeting notes.

The table below provides insight into the discussions that took place during the meeting:
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Agenda Item	Queries or Comments Raised	Responses/Action items (bolded)
Scenarios [CSIR]	○ TP emphasised need for clear definitions of green ammonia and green hydrogen, recommending a direct comparison of criteria to identify potential limitations. He also noted wind energy constraints and restrictions linked to the Langebaan Airport. ○ TR cautioned that defining green ammonia is complex, as customer requirements vary. Under RED, only renewable electricity is required, which is challenging from an engineering perspective. The IMO, however, requires renewables only for the electrolyser, allowing the Haber–Bosch unit to use grid power. ○ TP added that relying on Eskom's distribution licence creates risks: once connected to the network, control over supply is reduced, and Eskom could introduce fossil-based electricity into the system. He emphasised that clear definitions are essential because they highlight these practical constraints.	○ GS noted the importance of including a detailed glossary upfront and being explicit about all key definitions. ○ LC noted widespread misconceptions about sustainability certification, clarifying that only the electricity for electrolysis must be renewable. For other energy inputs, the key considerations are whether total greenhouse gas emissions increase and whether the project stays within required thresholds. ○ TR explained that past work on the Langebaan Air Force Base issue showed that wind developers were willing to fund a modern radar system to prevent false alarms. However, procurement challenges arise when private entities fund equipment tied to national security. Attempts to initiate discussions between Defence, the Department of Energy and Electricity, and the Presidency have been unsuccessful. He emphasised that a technical solution exists and there are no conceptual barriers to implementing it.
	○ LC reiterated that scenarios serve to support planning under uncertainty and commended the team's treatment of demand-related uncertainty. He requested clarification on how infrastructure uncertainty, particularly potential pipeline development has been incorporated. He noted that a future pipeline could enable large-scale hydrogen evacuation from the Northern Cape to Lüderitz or Saldanha, whereas in the absence of such a pipeline, Boegoebaai would become the primary evacuation and export route.	○ GS noted that the West Coast pipeline was not explicitly modelled in the scenario development but was implicitly considered through the top-down approach and bottom-up narratives that reflect proposed regional projects. He added that if Boegoebaai and Northern Cape projects were to come online at scale, they could reduce potential demand through Saldanha Bay. He emphasised that external, unpredictable macro-regional developments can be accommodated within the existing quantitative ranges.
	○ AA shared that it is first necessary to develop hubs and then address connections between them if they reach sufficient scale. She also highlighted that having multiple ports provides system resilience and fallback options ad asked which scenarios in engagements did developers consider most likely.	○ TR observed that developers are primarily focused on their own projects and achieving internal alignment; broader system-level implications are not their core concern. ○ DM explained that more concrete or near-term developer actions were incorporated into the provincial road scenario, while more optimistic or longer-term actions were included in the national highway scenario.

	○ JB asked whether off-taker requirements have been analysed, noting that smaller national scenarios may fall below the minimum export volumes needed for vessel shipments. He suggested that aggregating multiple projects could enable offtake and strengthen bankability. He also questioned who would operate the export terminal, noting that minimum throughput levels are essential for viability and that this affects which scenarios are realistically feasible.	○ AM addressed the potential for aggregating green ammonia at the Port of Saldanha. Based on discussions with ship owners, he noted that exporting around 1.2 million tons per year (about 40,000 tons per month) is economically viable. Given projected offtakes, this volume represents only a small share of global ammonia demand, including bunkering. AM concluded that there is sufficient volume from Saldanha, and potentially from co-developers, to make green ammonia exports commercially viable.
	○ AA asked whether the financial estimates for all plans and scenarios were considered in the analysis, noting that in several phases they may not have been fully accounted for.	○ GS noted that Phase Two would focus on translating the scenarios into concrete infrastructure and financing plans, including detailed cost estimates and scaling implications for Scenario 2.
Planning and infrastructure workstream [CSIR]	○ TP noted that he has engaged with TNPA, and while timing alignment between TNPA's plans and most developers' schedules is proving challenging, TNPA has been cooperative. He suggested revisiting the TNPA master plan and its timelines, as the current dates make alignment with project planning difficult.	○ JM noted that, based on engagements with TNPA, TNPA recognises that timing is a critical issue and is looking to accelerate progress. ○ AM added that TNPA has acknowledged that their current timelines are not aligned with developer needs or market requirements. He noted that the Acting CEO is aware of this misalignment and that there is momentum toward revising timelines. ○ GS thanked TR for the link and confirmed that the team will review it.
	○ TR commented that LNG infrastructure could align well with renewable hydrogen development. LNG requires energy-intensive regasification; using ambient air for this process cools the air, which could support green ammonia production, where air liquefaction is a major energy demand. TR emphasised the need for careful land-use planning to accommodate LNG terminals alongside ammonia and methanol tank farms and suggested further discussion to optimise co-location.	
Socio-ecological workstream [CSIR]	○ TR enquired why the projected future wind opportunity is so low. He asked whether this is due to weaker wind resources in non-restricted areas, expected stakeholder resistance relative to solar, or other constraints. ○ TR noted that while the assumptions are appropriate for grid-connected wind, hydrogen production can still benefit from lower-quality wind when combined with solar, as it increases electrolyser utilization. He cautioned that signalling "no further wind opportunity" may be accurate for electricity planning but overly pessimistic for hydrogen developers and suggested this may need further discussion.	○ LSvdW noted that the limited wind potential identified is mainly due to the techno-economic thresholds used in the modelling. Relaxing these thresholds would expand the opportunity. The GIS analysis also prioritised contiguous, less complex land parcels over fragmented sites, further reducing the footprint. She added that high-tourism areas may implicitly face more opposition, even though this was not modelled. A relatively high power-density threshold of 4 W/m² may also have excluded viable sites. ○ LSvdW proposed that future modelling assume hybrid renewable energy clusters. For example, each site could be modelled as a 70/30 or 60/40 wind–solar mix, which may provide a more realistic view of carrying capacity.

	○ TM asked whether species information was considered within the *Open Category*, and whether additional water-related features—beyond rivers and wetlands—were included, such as Surface Water Supply Areas (SWSAs) and Groundwater SWSAs. TM noted that DWS is currently refining the groundwater SWSA dataset.	○ LSvdW noted that this was a high-level screening exercise and did not include detailed species assessments; the intention was only to estimate theoretical renewable energy potential, not assess specific project sites. Any actual projects would undergo full environmental authorisation. She added that only physical watercourse features were included at this stage, not Strategic Water Source Areas, and will monitor the updated SWSA datasets as they are refined.
	○ GC highlighted that offshore renewable energy development may conflict with key biodiversity features, including unique humpback whale feeding groups along the West Coast.	○ LSvdW noted curiosity about potential public reaction to offshore wind and referenced work with the World Bank on a South African offshore wind roadmap, which considers environmental and social impacts as well as mitigation measures.
	○ PM noted that the Northern Cape Green Hydrogen Master Plan assumes a 60% wind and 40% solar PV share	○ LSvdW confirmed that for the West Coast study, a 70:30 solar-to-wind ratio was assumed. ○ DK added that in the KTE.energy project covering 85 000 ha in the Northern Cape, with up to 20 GW of hybrid PV + wind + BESS by 2040, FEL studies indicate that an 80:20 PV-to-wind ratio, rather than 60% wind would likely achieve the lowest LCOE.

3. Way Forward, Closure and Summary of action items

GS thanked all participants for attending and contributing to the second working group meeting. As immediate next steps, the slide pack and meeting notes will be shared with all attendees. DM encouraged colleagues to review the notes to ensure their comments from the meeting have been accurately captured and to submit any written feedback by 24 November 2025 for consideration in the Phase 1 Master Plan. GS added that the Working Group constituted in Phase 1 will be kept informed and involved in subsequent phases of the project.

The meeting concluded at 12H38

Appendix A: Attendance register

	Name	Affiliation
1	Shanon Neumann (SN)	Freeport Saldanha
2	Xola Sithole (XS)	Freeport Saldanha
3	Luanita Snyman Van der Walt (LSvdW)	Council for Scientific and Industrial Research
4	Dhiveshni Moodley (DM)	Council for Scientific and Industrial Research
5	Greg Schreiner (GS)	Council for Scientific and Industrial Research
6	Rohaida Abed (RA)	Council for Scientific and Industrial Research
7	Johan Maritz (JM)	Council for Scientific and Industrial Research
8	Paul Lochner (PL)	Council for Scientific and Industrial Research
9	Jabulani Jele (JJ)	Council for Scientific and Industrial Research
10	Thomas Roos (TR)	Council for Scientific and Industrial Research
11	Rigardt Coetzee (RC	Council for Scientific and Industrial Research
14	Sindiswa Dlomo (SD)	DFFE
15	Trisha Rene Pillay (TP)	DFFE
16	Coenrad Agenbach (CA)	DFFE
17	Gerhard Cilliers (GC)	DFFE: Oceans & Coast
18	Emily Vowles (EV)	Heritage Western Cape
19	Herman Jonker (HJ)	Western Cape Government
20	Domitilla Claudia Raimondo (DCR)	South African National Biodiversity Institute
21	Hlengiwe Mtshali (HM)	South African National Biodiversity Institute
22	Dewidine Van Der Colff (DVDC)	South African National Biodiversity Institute
23	Sakib Khan (SK)	Enerleq
24	Tommie Potgieter (TP)	Salika
25	Fergus Feltman (FF)	Atlanthia
26	Jeffrey Manuel (JM)	SANParks
27	Monique Sham (MS)	SANParks
28	Mangold, Paul (PM)	Fraunhofer HySecunda Project (Stellenbosch University: Visiting Researcher)
29	Laurens Cloete (LC)	Rebel Group
30	Abigail Links (AL)	Western Cape Government
31	Lize Jennings (LJ)	Western Cape Government
32	Dominic Kahre (DK)	KAHRE Renewable Energy Group
33	Monika Bosil (MB)	Thyssenkrupp
34	Mahandra Rooplall (MR)	International Development Corporation
35	Karen Shippey	Western Cape Government
36	Judith Musau (JM)	Global Maritime Forum
37	Ann Abherdien (AA)	Gasunie
38	Arthur Martin (AM)	Benguela
39	Stefan Hediger (SH)	KfW
40	Akhil Woodraj (AW)	PNE Group
41	Khavharendwe Rambau (KR)	DSTI
42	Johannes Bochdalofsksy (JB)	SeaH4

43	Thabo Chauke (TC)	GIZ
44	Sebekedi Motlhabane Koloi (SMK)	WesGro
45	Tsamaelo Malebu (TM)	South African National Biodiversity Institute
46	Aletta Stitter (AS)	KAHRE Renewable Energy Group
47	Kyle Abrahams (KA)	KAHRE Renewable Energy Group
48	Thomas Fruhn (TF)	TÜV SÜD