ENVIRONMENTAL IMPACT ASSESSMENT TO CONSTRUCT AND OPERATE A DESALINATION PLANT ON THE REMAINDER OF ERF 4585, WALVIS BAY, ERONGO REGION

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Merlus Properties (Pty) Ltd

PROGRAM:

- Rules of Meeting
- Purpose of this Meeting
- Background on Project
- Methodology
- Comments, questions and answers
- Way Forward
- Conclusion / Closing Remarks

Rules of the meeting:

- One question/speaker at a time
- Speaker to identify himself/ herself and state point of interest
- Play the ball not the man

Purpose of this Meeting

- **Develop an understanding** of the proposed project and how it's related activities may potentially impact on the surrounding environment.
- **Role of the Environmental Practitioner**
  - **Identify relevant authorities and Interested and Affected Parties (IAPs)** to engage in the Public Participation Process (PPP).
  - **Facilitate the dissemination of information** to the relevant authorities and I&APs and provide them with an opportunity to raise issues or give advice related to the project.
  - **Assess the significance** of the potential environmental impacts identified.
  - **Describe and investigate alternatives** that have been and/or could be considered.
  - **Provide feasible mitigation measures** to address any significant impacts identified.
  - **Develop an Environmental Management Plan** for the project – to ensure avoidance, minimizing and mitigation of impacts take place.

The Proponent

The Merlus Group operates various seafood processing facilities including the Merlus, Abroma, Cormorant and Seagull companies situated in Walvis Bay with factories located next to each other.

Listed Activities

WATER RESOURCE DEVELOPMENTS

- *8.1 The abstraction of ground or surface water for industrial or commercial purposes.*
- *8.6 Construction of industrial and domestic wastewater treatment plants and related pipeline systems.*
- *8.12 The release of brine back into the ocean by desalination plants.*

INFRASTRUCTURE

- *10.1 The construction of any structure below the high-water mark of the sea.*

Need for the project

- Current water usage - 15 000 m^3/month
- Consumption is expected to increase
- Recently experienced interruptions of the supply of potable water due to municipal infrastructure failures (pipe bursts and breakages)
- Interruptions in bulk water supply by NamWater to the Municipality.
- Water pressure issues form municipal network
- High cost off trucking in water for continued operations

Project Site in Walvis Bay:

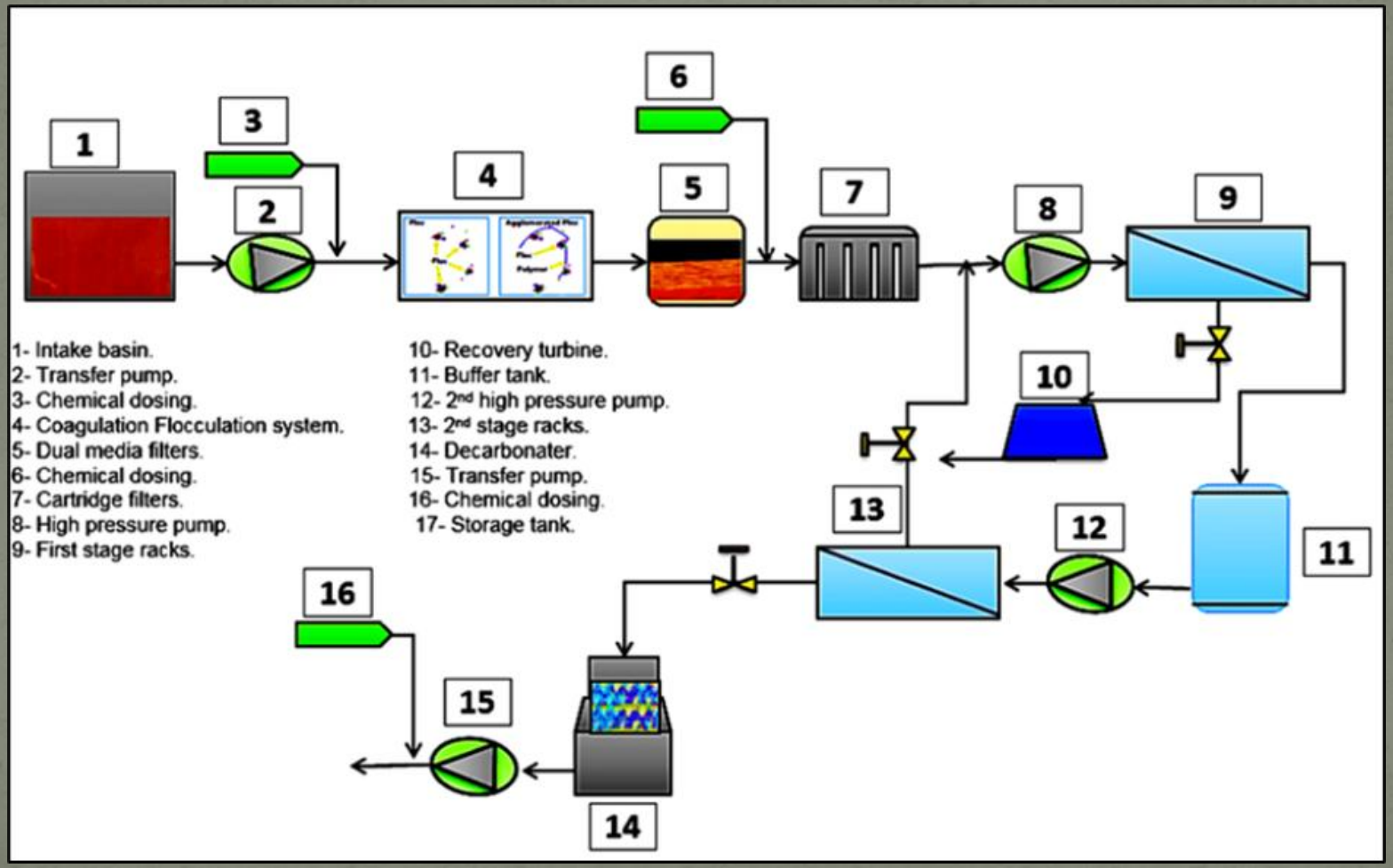
Remainder Erf 4585, Walvis Bay:

Process description:

- Raw seawater to be extracted directly from the sea
- Treatment to potable water quality using desalination by reverse osmosis (RO) treatment.
- Intent to produce ±400 m^3/day or ±10 400 m^3 per month of potable water
- The plant to be positioned in an existing warehouse
- Seawater will be abstracted from a point at one of the available jetties.
- The wastewater (brine) produced during the desalination as well as the backwash water for the cleaning of the system will be released back into the ocean.

Engineers and Project Managers Aquarius Consult CC.

See below a simple process flow schematic showing the water treatment process to be implemented for the proposed Merlus desalination plant:



Possible negative environmental impacts:

The key negative environmental impacts

- Brine discharge which may harm marine ecosystems
- Potential entrapment of plankton and larvae.
- High energy consumption contributing to greenhouse gas emissions,
- Chemical pollution from treatment processes.

Brine Discharge

Nature of discharge:

- Highly concentrated saltwater (± 23 m^3/h) returned to the ocean.

Environmental impact:

- Minimal due to rapid dilution and tides.
- No net increase in salts (they originate from seawater itself).
- Chemicals present (mainly ferric chloride at 5–20 mg/l) are in very low concentrations compared to seawater salinity (± 35,000 mg/l).
- Chemicals used are food-industry certified, non-toxic, and heavy metals are avoided.
- Wave action and tides prevent stagnant zones, maintaining oxygen levels.

Marine Ecosystem Protection

Intake risks: Potential entrapment of plankton and larvae.

- Mitigation: Basket screen on intake line, manually cleaned to prevent buildup.

Discharge risks: Altered salinity/temperature could stress species.

- Mitigation: Temperature unchanged, salinity unaffected due to rapid dilution.

Long-term biodiversity:

Unlikely to be impacted, as brine volumes are small and harbour waters are already influenced by other pollutants.

Energy Demand

Challenge: Reverse osmosis desalination is energy-intensive.

Mitigation:

- Energy recovery unit reduces consumption by ±50%.
- Continuous power use limited to 65 kWh.
- Solar power integration reduces greenhouse gas emissions.
- Latest low-energy membranes further minimize carbon footprint.

Chemical Pollution

Risk: Cleaning/fouling-prevention chemicals (e.g., chlorine, coagulants) could leak.

Mitigation:

- Chemicals stored in tanks within bunds to contain leaks.
- Only food-industry certified, non-toxic chemicals used.
- Harmful substances avoided; biodegradable options preferred.

Possible positive environmental impacts:

The positive environmental impacts of desalinating seawater for use in the Proponent's operations are as follows:

- It will reduce pressure on freshwater resources in Walvis Bay.
- It will support sustainable fish processing operations. As the Proponent will be partly self-sufficient regarding potable water supply, it will ensure that crucial production operations can carry on even when the Municipality cannot supply water. A one-to-two-day supply interruption from the municipal water network should then not affect the Group's operations/production at all.
- It will reduce the cost of water used in the operations. Municipal water costs can be expected to increase which will probably be more that the increase in costs of the desalinated water.
- It will enable water reuse pathways inside the plant - desalinated water is easier to recycle within the processing facility for secondary cleaning, cooling water, or non potable applications. This reduces total water consumption and minimizes wastewater volumes.
- It will decrease ecological pressure on surface water ecosystems.
- The proponent will integrate the desalination activity with renewable energy sources (the onsite solar installation) which will reduce the overall carbon footprint.

Comments/Questions/ Discussions

The way forward:

- Completion of assessment of receiving environment
- Drafting of the EIA
- Drafting of the EMP
- Submission of EIA and EMP to Commissioner
- Await Commissioner's resolution
- Time Frame ± 4 months

Conclusion