

An aerial photograph of a coastal road in Namibia. The road is a straight, dark line running parallel to the ocean on the right and a vast, orange-brown desert landscape on the left. The ocean has white-capped waves breaking against the shore. The sky is a pale, clear blue.

The case for an Independent Acid Plant in Namibia to serve multiple customers

9th Sulphur and Sulphuric Acid Conference | 2025

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Erongo Acid Plant – Stakeholders

Acid Off-takers

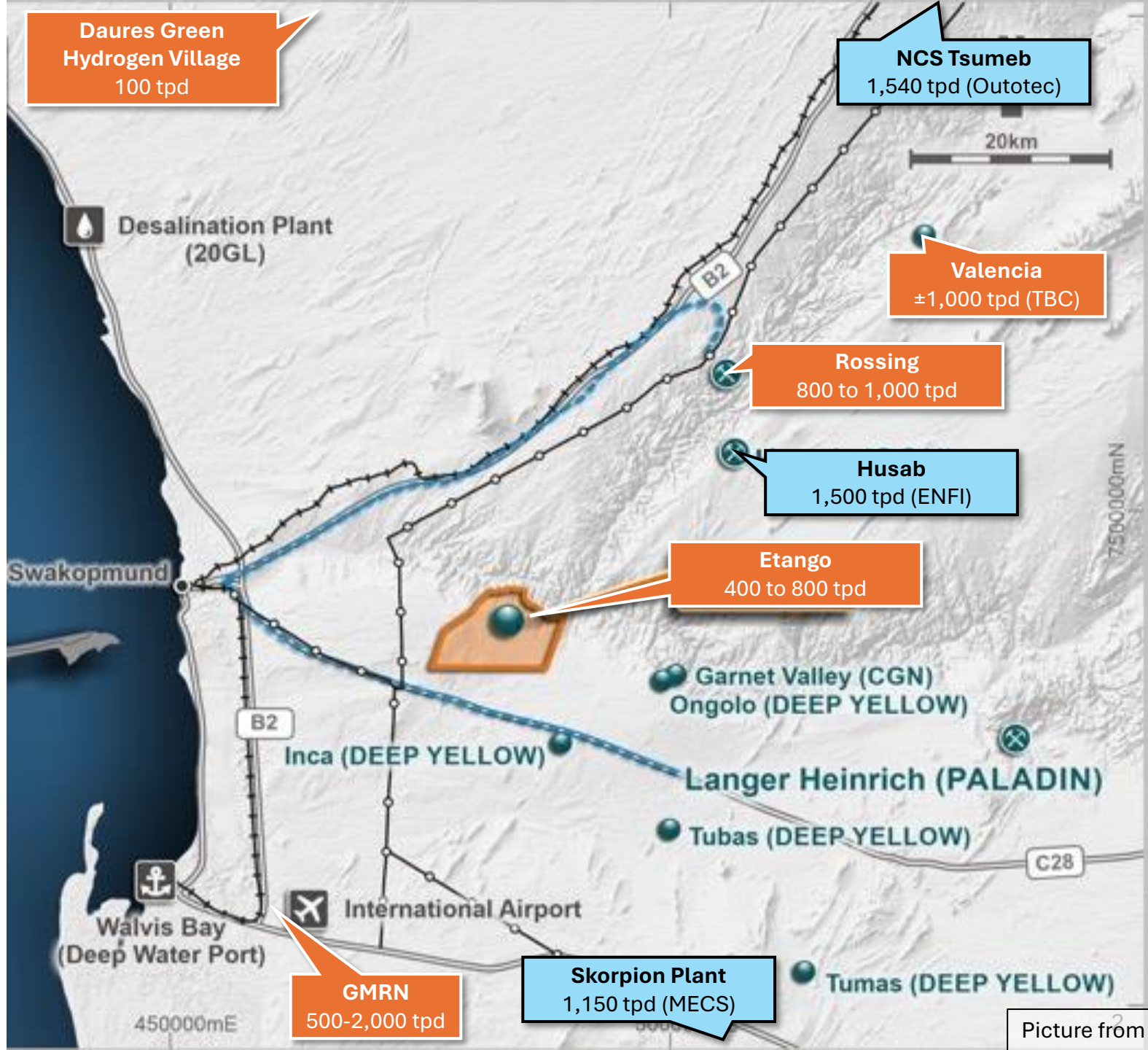
- GMRN
- Etango
- Rossing
- Valencia
- Daures Green

Acid Plants

- Tsumeb
- Husab
- *Skorpion**

Infrastructure

- Namport
- Nampower
- Namwater
- TransNamib



Supply and forecast demand

Supply = c.600,000t per annum

Plant: Tsumeb Smelter
Type of plant: Metallurgical
Capacity¹: 1,540t per day
Supply: c.200,000t per annum
Year built: 2014
Owner: SinoMine Resources Group

Plant: Husab Mine Sulfur-Acid Plant
Type of plant: Sulfur-based
Capacity²: 1,500t per day
Supply: c.300,000t per annum
Year built: 2014
Owner: SWAKOP Uranium (Pty) Ltd

Plant: Imported
Type of plant: Metallurgical and Sulfur-based
Capacity³: 265,000,000t per annum
Supply: c.100,000t per annum
Year built: n/a
Owner: Global supply

Delta = 200kt – 500kt per annum

Plant: Existing Opportunity (seeking investors)
Type of plant: Sulfur-based
Capacity: 1,000t per day
Supply: c.200,000t per annum
Year built: 2026
Owner: Industrial investors

Status: Operational
Usage: Mineral leaching
Type of operation: Uranium Mining
Demand⁴: c.800t per day
Operations commencement: 1976
Life of Operation: 2036 (11 years)
Owner: CNNC Rössing Uranium Limited

Status: Operational
Usage: Mineral leaching
Type of operation: Uranium Mining
Demand²: 1,500t per day
Operations commencement: 2016
Life of Operation: 2036 (11 years)
Owner: SWAKOP Uranium (Pty) Ltd

Demand = c.800,000t per annum

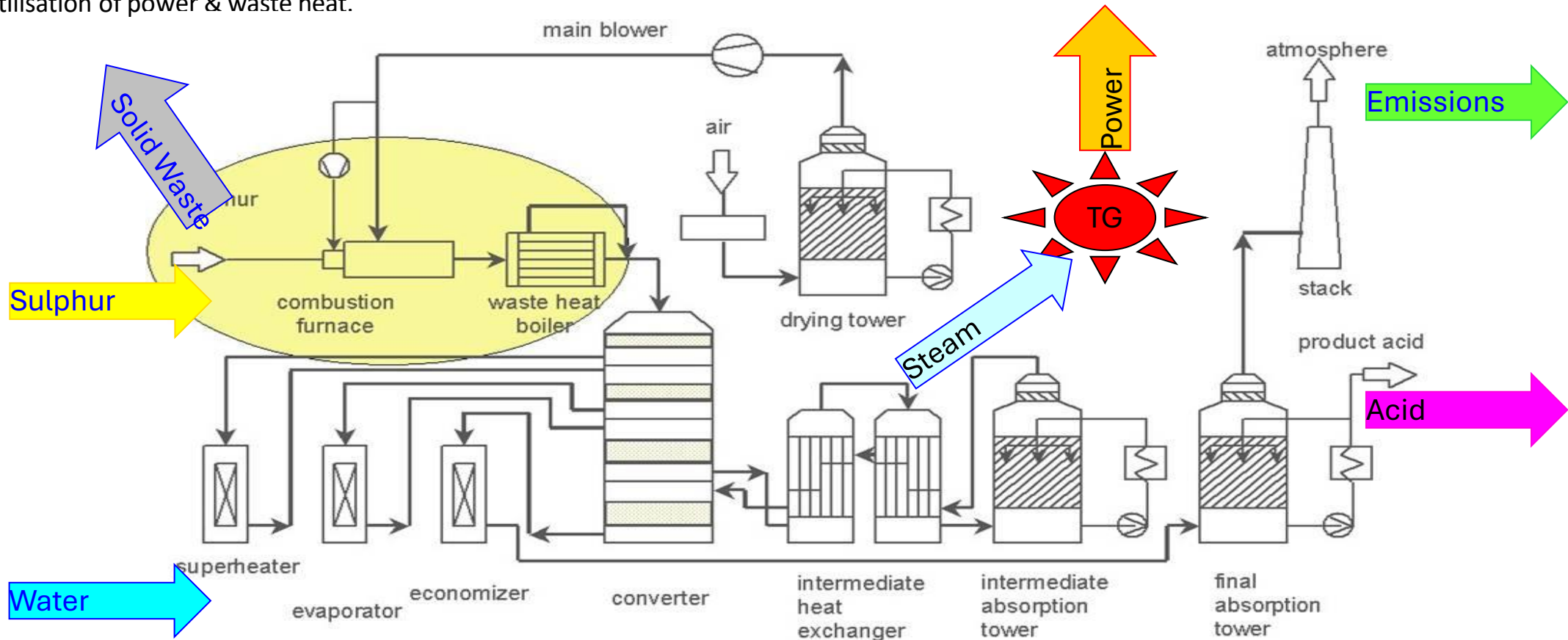
Status: Planned (envisioned)
Usage: Mineral leaching
Type of operation: Uranium Mining
Demand⁵: 400t per day
Operations commencement: e.2028
Life of Operation: 2043 (15 years)
Owner: Bannerman Energy

Status: Planned (envisioned)
Usage: Mineral refining
Type of operation: Manganese Refinery
Demand⁵: 500t per day
Operations commencement: e.2027
Life of Operation⁶: 2042 (15 years)
Owner⁷: Green Metals Refining Namibian

Status: Planned (envisioned)
Usage: Fertilizer manufacturing
Type of operation: Food production
Demand: 100t per day
Operations commencement: e.2027
Life of Operation⁶: 2042 (15 years)
Owner⁸: The Daures Green Hydrogen₃ Consortium

Erongo Acid Plant – Benefits vs Imported Acid

- **Security of Supply** – Reduced import volumes (1t sulphur makes 3t acid) and increased stockpile capacity;
- **Price** - Reduced volatility & exchange rate exposure;
- **Logistics** – Reduced pressure on existing port and rail facilities;
- **Safety** – Reduced risk of transporting & stockpiling Sulphur compared to Acid;
- **Location considerations** – distance to acid off-taker; proximity of infrastructure (rail, power, water); Space availability; Environmental impacts; utilisation of power & waste heat.



Capital, human and land

Capital

Source country: India
Cost: USD28 million
Capacity: 300t per day
Supply: c.100,000t per annum
Construction period: 720 to 900 days
Type: Engineering, Procurement & Construction Contract

Source country: Italy
Cost: EUR15 million
Capacity: 250t per day
Supply: c.90,000t per annum
Construction period: n/a
Type: Engineering & Procurement Contract

Source country: China
Cost: n/a
Capacity: 250t per day
Supply: c.90,000t per annum
Construction period: 540 days
Type: Engineering, Procurement & Construction Contract

Human

NIMT: Vocational and educational training provider feeding the industry with trade qualified artisans.



Source: <https://arandistc.com.na/>



Land

Arandis Town Council: 2024 – 2029 Strategic Plan encourages industrializations with affordable land.

Location of Arandis



About Arandis

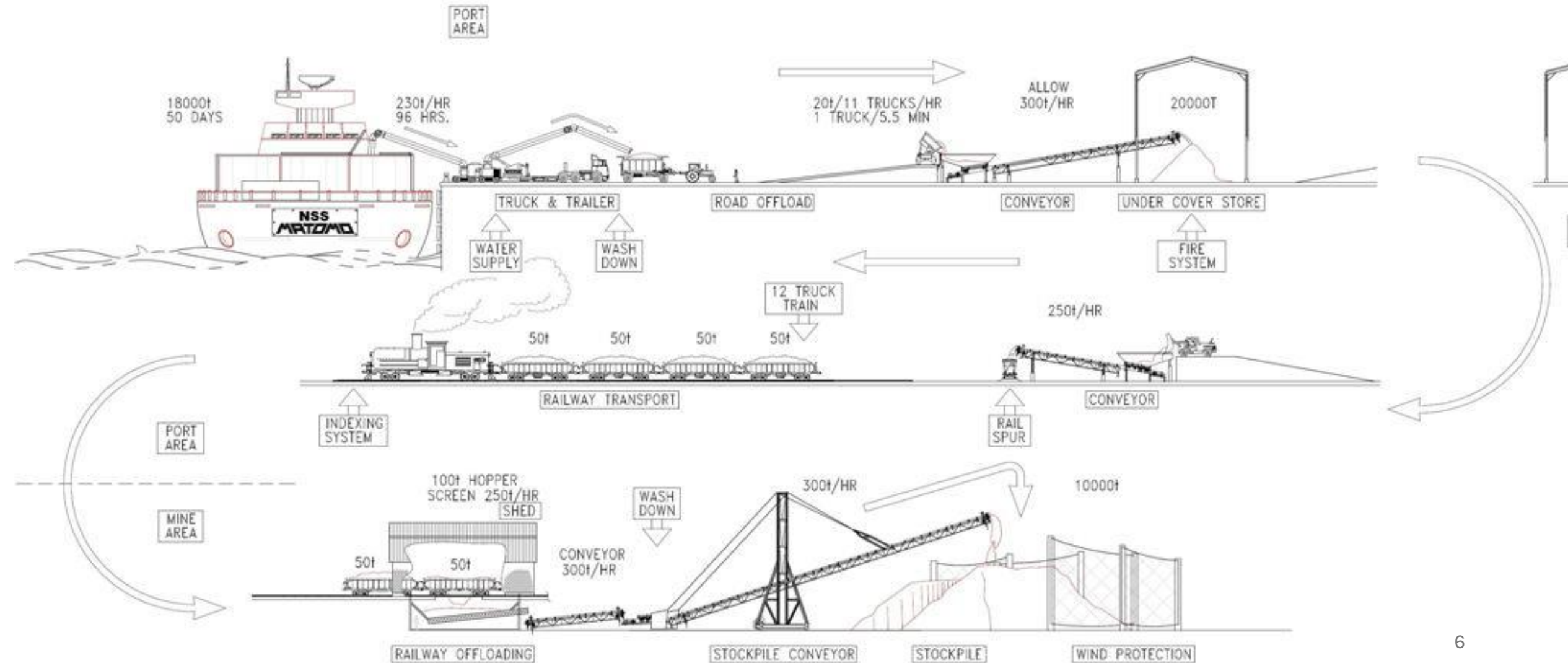
A mining town about 100km from the harbor and coastal town of Walvis Bay, and close to Uranium Mines.

Typical land cost

Area: 5,000m²
Rate: R200 per m²
Price: R1,000,000

Erongo Acid Plant – Sulphur Imports

- Logistics in place and well understood at the Walvis Bay port.



Erongo Acid Plant – Design Concept & Value Proposition

Design Concept

- **Independent Owner/Operator:** *Any interested party*
- **Capacity:** initial 1,000 tpd to cover new demand from GMRN and Etango with the option to expand as required.
- **Location:** adjacent to new offtake and Infrastructure (Rail, Road, Power & Water) - either WVB (Farm 58) or Arandis.
- **Power:** net generation of 5 to 10 MW from 1,000 tpd plant plus low grade steam for process heat
- **CAPEX:** circa US\$200M for a 1,000 tpd plant with sulphur handling (TBC)
- **AISC:** target US\$120/t Acid net of power credit and including profit margin and capital recovery
- **Schedule:** Bankable Feasibility Study by end 2025 followed by 2 years construction/commissioning to start in Q1 2028
- **Strategic Partners:** Namibia Custom Smelters (Tsumeb) plus RMB, DBN and EOS Capital
- **Financing:** raise initial funds for BFS on the strength of LOI's from GMRN and Etango.

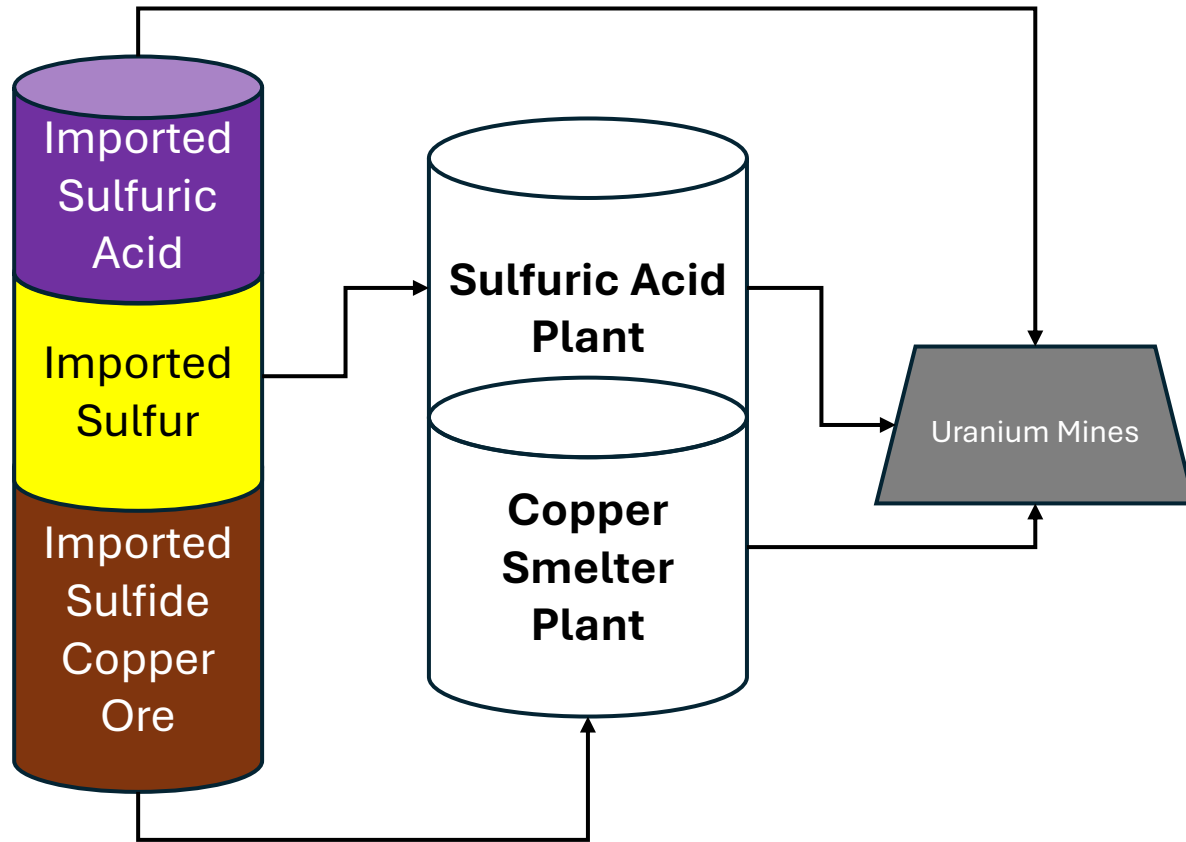
Value Proposition

- **Security of Supply:** through partnerships with NCS (Tsumeb) and Etango (imports) to cover periods when the plant is down for maintenance
- **Economies of Scale:** lower acid prices than possible with a smaller dedicated plant
- **Local knowledge/relationships:** to facilitate aspects outside of the core business of the off-taker
- **NIMT:** Vocational and educational training provider feeding the industry with trade qualified artisans.
- **Financing** – remove the capital burden of building a dedicated Acid Plant
- **Industrial land availability** – through Arandis Town Council, offering an affordable and centrally located site from the prospective off-takers.

Thank you

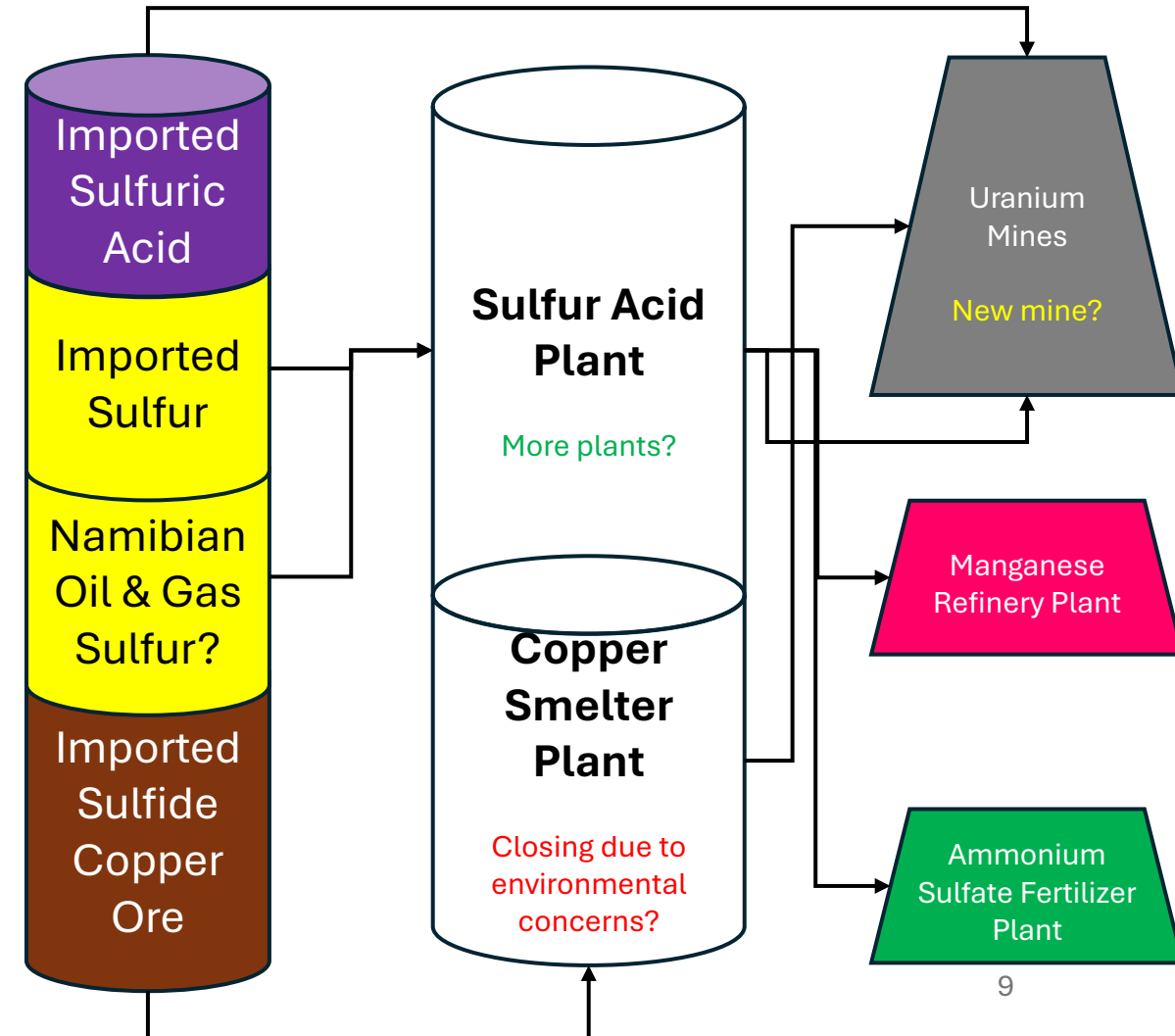
The Namibian sulfuric acid ecosystem

Current - 2025



NB: Relative graphic dimension represents size.

Future – 2030?



Sulfuric acid plant and process flow diagram

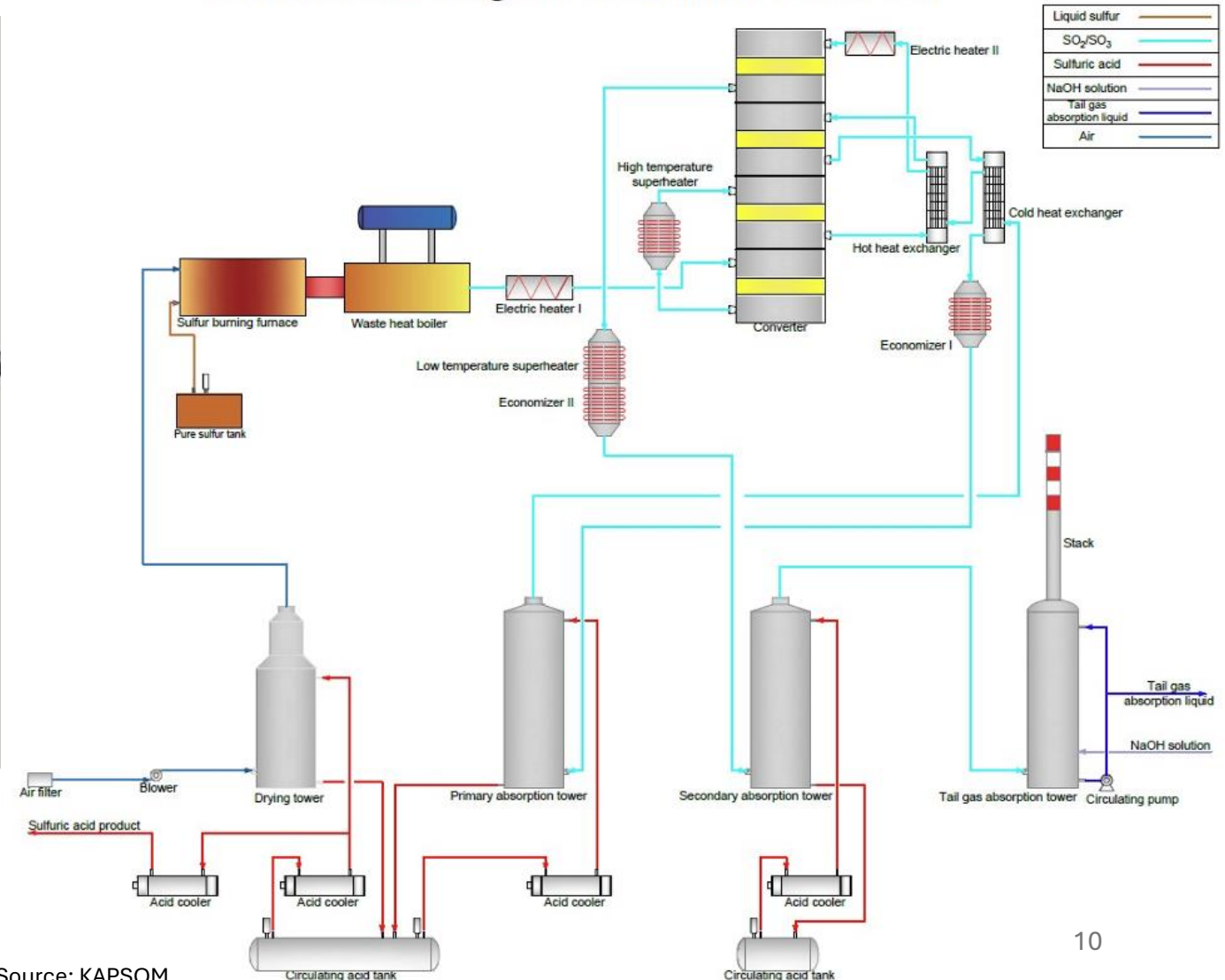
3D Schematic of a sulfuric acid plant



Benefits of a sulfur-base acid plant

1. Simple and safe operation
2. Generate energy, increase revenue
3. Environmental friendly
4. Sulfur storage aid input cost management
5. Modular build

Process Flow Diagram Of Sulfuric Acid Plant



Source: KAPSOM

The opportunity

Sulfur-based acid plant & Power generation (use IPP framework to sell power)

Plausible demand

1. Bannerman Etango Project acid off-take agreement
2. Additional imported acid by CNNC Rössing Uranium Limited
3. Daures Green Village ammonium fertilizers
4. Manganese refinery optionality to outsource acid source

Government Policy

1. New government focusing on: Unemployment, Agriculture, Mining
2. NIPDB to facilitate investors and developers' journey to ensure speedy realization of the opportunity

Available infrastructure

1. Land from Arandis municipality
2. Skills from NIMT
3. Roads, rail-way, harbour and air facilities
4. Desalination plant for industrial water provision

Namibia as an investment destination

1. Stable jurisdiction
2. Respect for the rule of law and independence of powers
3. Functioning financial system and foreign exchange controls
4. Uranium oxide hub with three (3) projects awaiting investment decision