Port Developments & Investments

Strategic Port Masterplanning: Positioning Ports for Energy Transition & Industrial Growth

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1st September 2025

About Haskoning

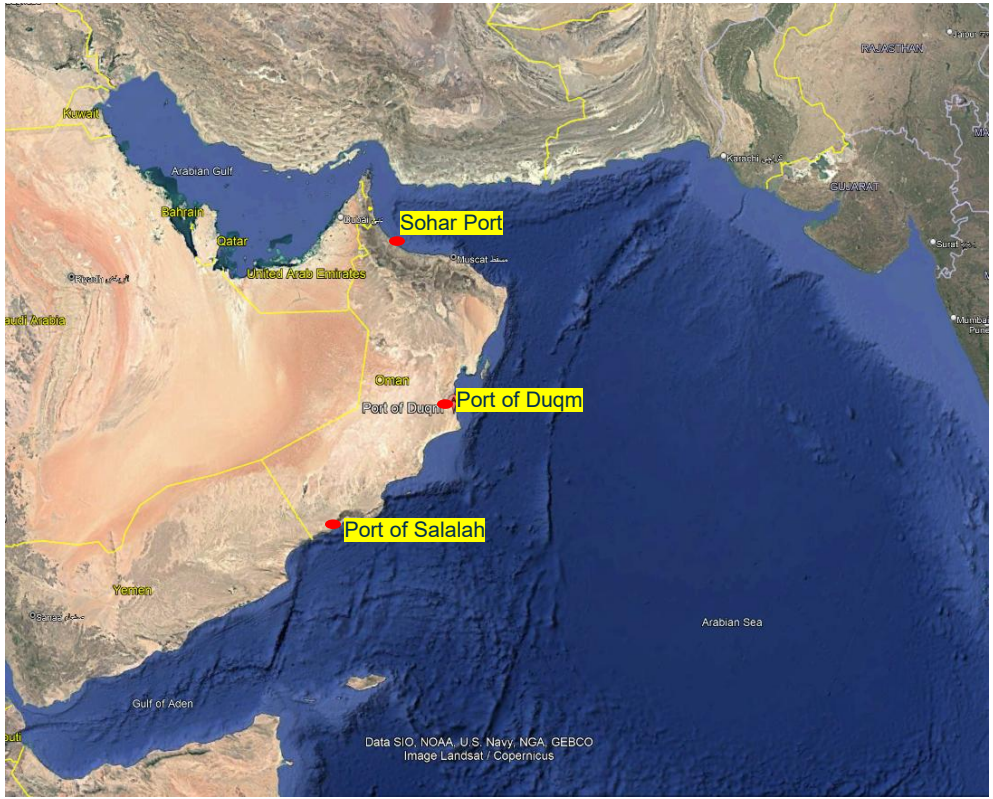
- Haskoning is an independent and employee-owned company which integrates 140 years of engineering expertise with digital technologies and software solutions. Our head office is in the Netherlands, and we have offices across Europe, Asia, Africa, Australia and the Americas

2nd in **ENR** Global Sourcebook Marine and Port Facilities **2024**

Oman Ports Landscape

- Oman sits on the main East-West shipping lanes, outside Strait of Hormuz – offer direct access to ocean trades
- Oman has three complementary gateways:
  - Sohar Port: gateway for manufacturing, petrochemicals and GCC markets
  - Duqm Port: emerging industrial and energy hub port
  - Salalah Port: global transshipment hub on the mainline Asia- Europe route.

Oman is positioning itself as the logistics backbone of the region



Port of Duqm: Strategic masterplanning

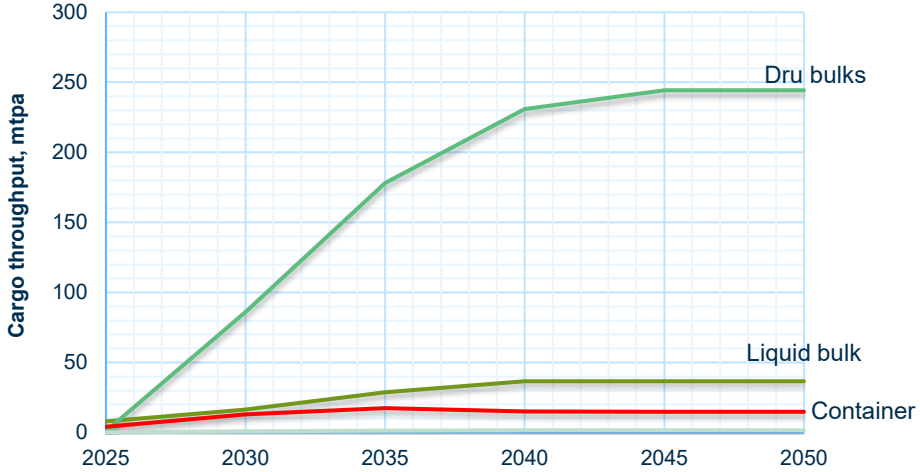
- The original vision for Duqm port was centric round the container industry – but global dynamics shifted

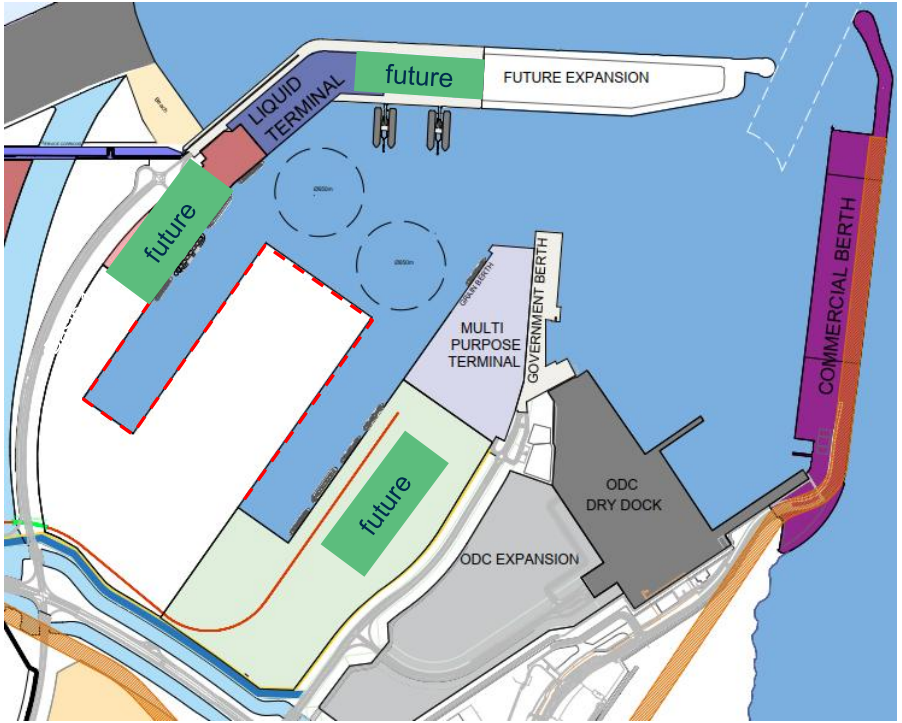
- In recent years, Duqm started to gain attention from investors in the heavy industries i.e. steel industries but also becoming the center for the development of the green hydrogen and alternartive energy industries.

- For Duqm, updating the masterplan is not just technical- its about future proofing investment

Port of Duqm: Terminal Planning

- To cater for the growth from the liquid/ energy and heavy industries we have took a deeper look into the existing master plan which was centric around container.

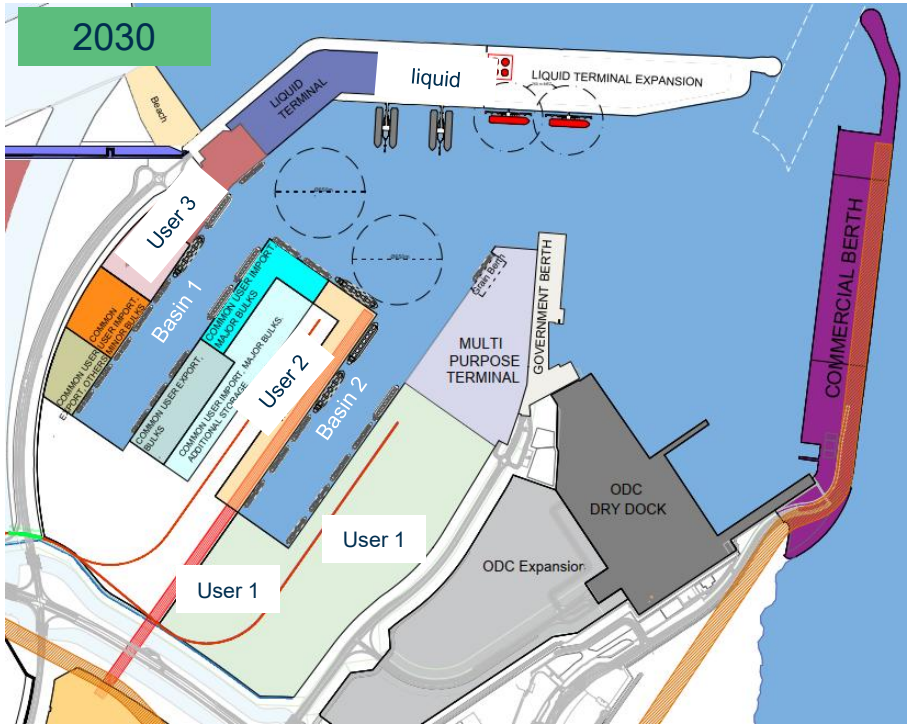




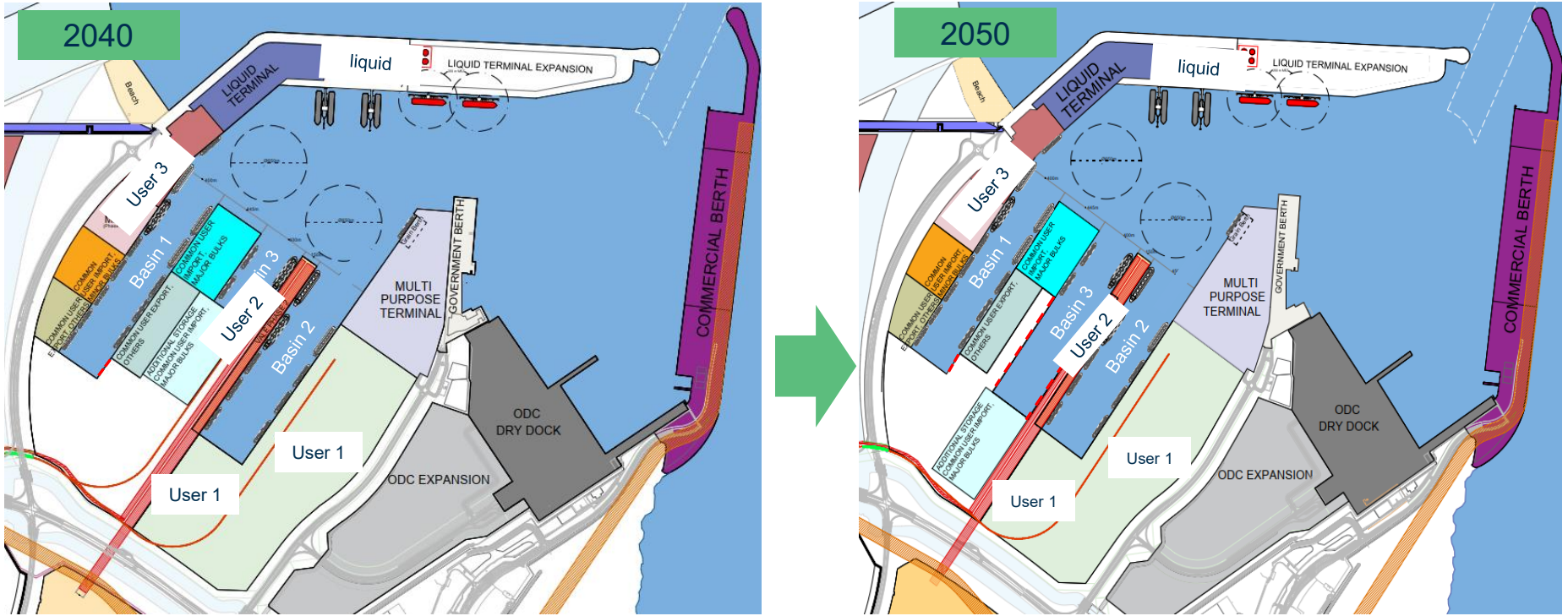
Port of Duqm: Terminal Planning

- Shared Common User Terminals to handle bulk imports and exports of steel products, fertilizers and other general cargo.
- Large available terminal area for providing storage capacity near the berths where required.
- Common user bulk imports terminal not so far into the basin, easier for the large vessels.

We developed a masterplan that is flexible and can accommodate future scenarios

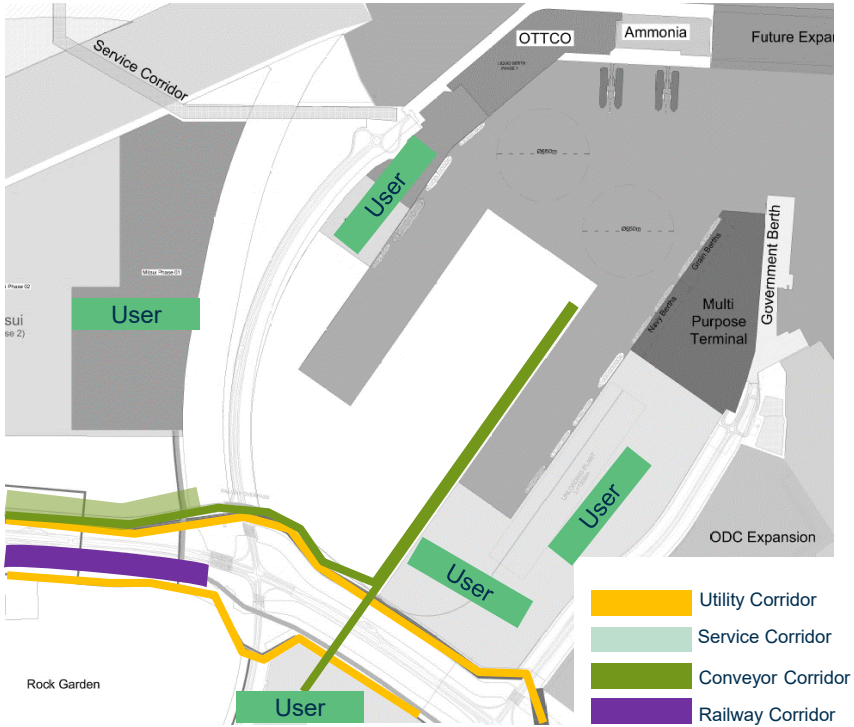


Port of Duqm: Terminal Planning (continued)



Corridors Assessment

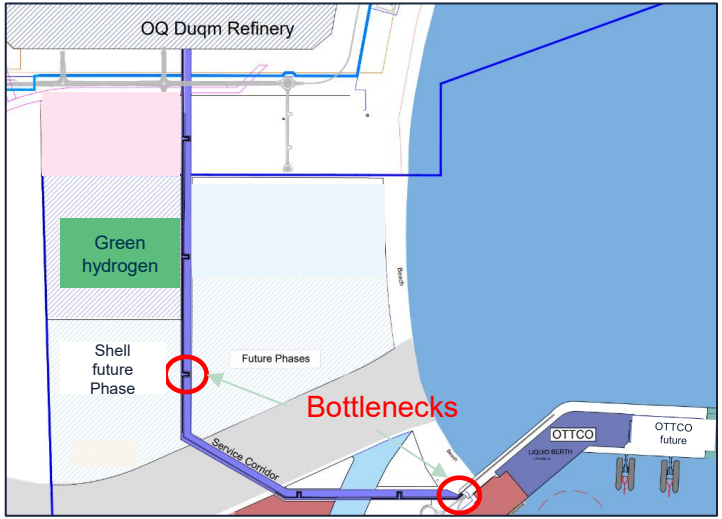
Corridor	Products
Service corridor	• Refined products • Future petrochemicals and green hydrogen derivates
Utilities corridor	• High Voltage (HV) lines • Water • Natural Gas and Hydrogen
Conveyor corridor	• Heavy industries products • Bulk materials future bulk industries in SEZAD.
Railway Corridor	Container



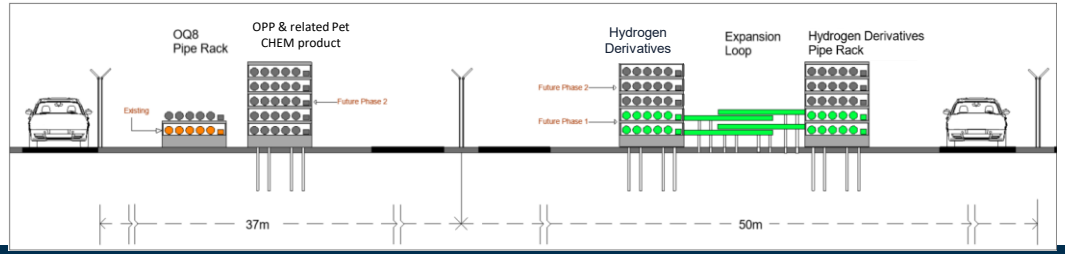
Service Corridor

- Within existing OQ8 corridor, the new multi-layer rack will serve petrochemical industries north of the refinery.
- Alongside, a new 50 m wide corridor will host pipelines for future petrochemical industries and hydrogen projects (i.e. ammonia, methanol). The second pipe rack is built for redundancy.
- It is essential that these two corridors are operated and maintained by a single qualified party.
- Near the port, the available space for the corridor reduces significantly. The future corridors will be stacked vertically.
- Two bottlenecks that need further study in the concept design:
  - Narrowing of corridor entering the Liquid Bulk Terminal.
  - Overlap of proposed petrochemical pipe racks and existing OQ8 expansion loops.

Layout of Service corridor

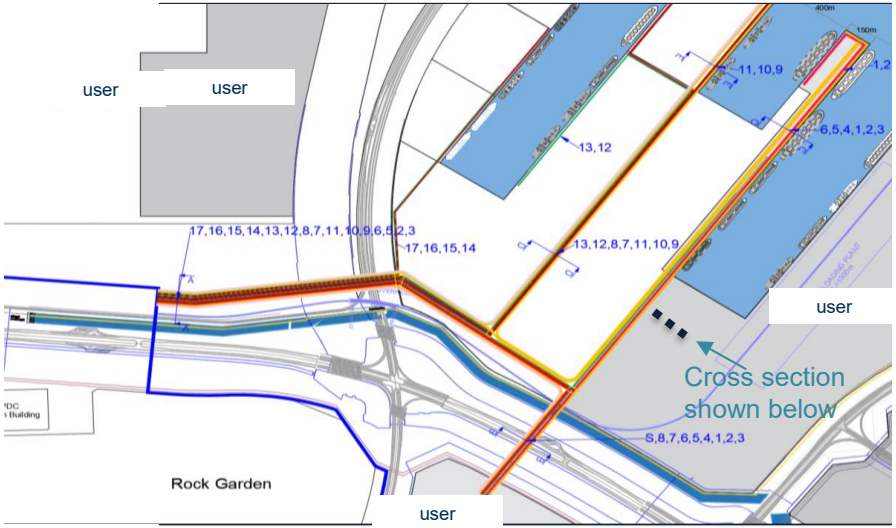


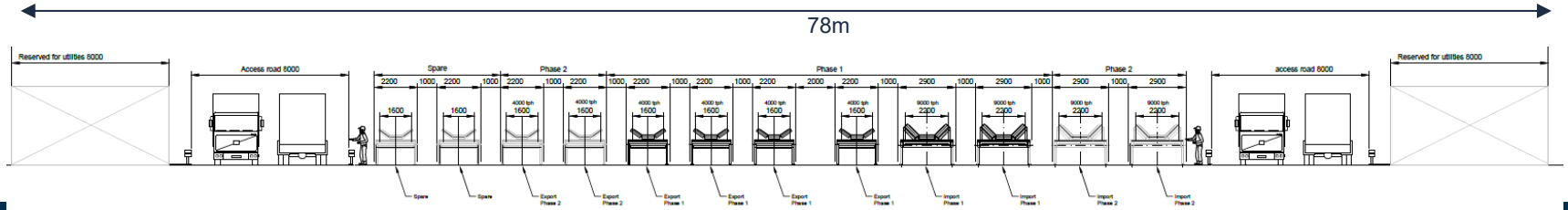
Typical cross section of Service corridor (existing 37 m on the left and future 50 m on the right)



Conveyor Corridors

- Berths connect with landside plots with conveyor belts for the material import.
- Each berth needs its own dedicated line(s).





Central conveyor corridor at ground level

Thank you