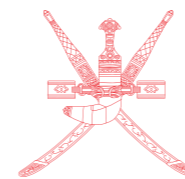


Sustainable Growth

Driven by a Clear Master Plan





Supplying Drinking Water to more than 95% of the Population

The Public Authority for Electricity and Water (PAEW) is committed to providing potable water to all residents, with the objective of supplying piped water to more than 95% of the population within the next two decades. Simultaneously, we have been experiencing a rapid and continuous growth of water demand in the last few years, almost 15% increase on average per year, as a result of the robust economic and demographic growth in Oman.

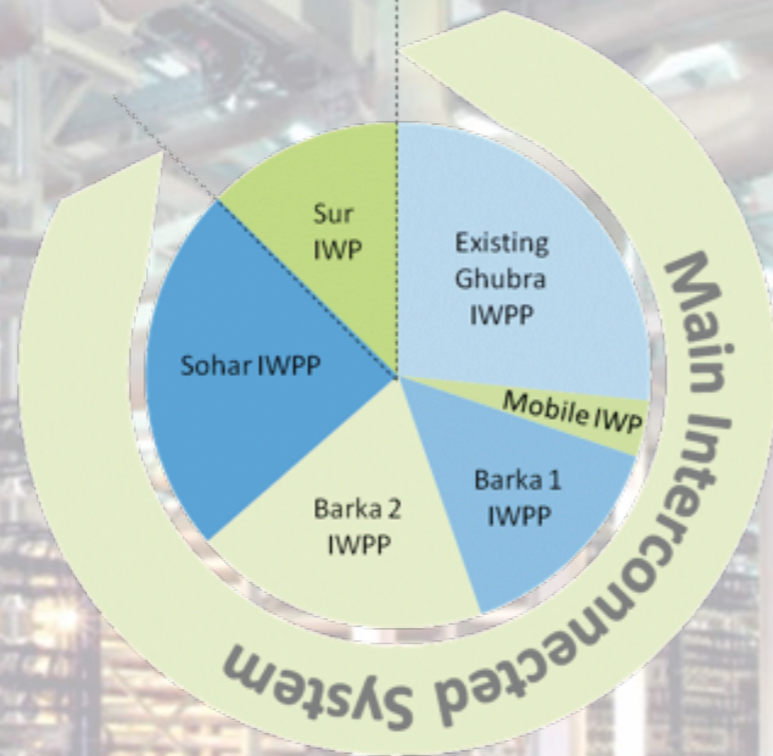
Our aim is to develop our water services to reach all the people in Oman. Meeting the rising demands is one of the challenges PAEW is working on every day.

150 million OMR Forecasted to be spend every year on Development Projects

In order to meet this demand, PAEW is significantly investing in extending the water network throughout the country, with an average of 150 million OMR spent every year for new water infrastructures.

A program for transmission line development and distribution network construction is under progress, resulting in a considerable growth in customer numbers. New reservoirs are also being built to provide more storage closer to customers and consequently improve the consistency of supply.

Finally, Reverse Osmosis water plant projects are underway to expand the water production capacity and fully fulfill our customer requirements.



Large Desalination Plants

PAEW continues to follow the Government's policy of reducing reliance on groundwater for drinking water and the plans continue to envisage increasing reliance on large scale desalination as the main source of drinking water in Oman. Currently water is taken from four major desalination sites - Ghubra, Barka, Sohar and Sur. The first three of these serve the Main Interconnected System (or MIS) which supplies the most heavily populated areas of Northern Oman, Sur serves the needs of customers in Ash Sharqiyah where there is a separate extensive water transmission system which is currently isolated from the Main Interconnected System (MIS).

At Al Ghubra, the oldest of the large desalination plants (Existing Ghubrah-IWPP) is coming to the end of its commercial and functioning life and it is planned to be decommissioned gradually until 2017. Construction of a new large scale Independent Water Project (IWP) using Reverse Osmosis (RO) technology is currently underway at the Al Ghubra site. This is expected to be in service by early 2015 and will largely replace the capacity of the old plant. Al Ghubra is also the site of a temporary PAEW mobile

desalination plant. Once the new plant is fully operational this is expected to be decommissioned and the units redeployed to other sites in Oman.

At Barka, of the two separate Independent Power and Water Projects (IWPP) which are in operation, Barka (I) has a water production capacity of 91,200m³/day and uses thermal desalination technology, and Barka (II) has a water capacity of 120,000m³/day and uses Reverse Osmosis technology. A new Reverse Osmosis desalination plant is also under construction at Barka with a nominal capacity of 45,000m³/day and will share some facilities with the existing plants.

In Sohar, a single IWPP plant is in operation, this has the capacity to produce 150,000m³/day of water using thermal technology. This plant feeds into the Main Interconnected System (MIS) effectively, supplying mainly North Al Batinah and Burami.

Construction of New Pumping Station at Ghubrah Desalination Plant

Status: Implementation Stage

Main Features of the Project:

- ✈ Procurement, installation, testing and commissioning of complete Pumping System and related equipments.
- ✈ Procurement, installation, testing and commissioning of Discharge Pipes (Diameter Nominal) DN1200 from pumping station up to the interface point with new DN1600 transmission line.
- ✈ Detailed design and installation of new 33KV/11KV (Kilovolt) substation of 2x16MVA (Mega Volt Ampere) fed from 2x125MVA grid station at Al-Ghubrah plant by two 3cx300mm² High Voltage (HV) cables (~700meter distance) in accordance with Muscat Electricity Distribution Company (MEDC) standards.
- ✈ Construction of pump room, administration building with all services, control room with Main Central Control (MCC) panels and guard house along with plant boundary wall.

- ✈ To carry out a detailed surge analysis, verify surge protection arrangement and installation of surge protection vessels and pipe work as required by system.
- ✈ Installation of Electrical Power Supply, instrumentation and Supervisory Control and Data Acquisition (SCADA) System to control the Pumping Station operation including FM200 fire suppression system.
- ✈ Building services for administration, pump room, control room and guard house in addition to connection to the existing infrastructure services.
- ✈ Installation of 2-axis Bridge crane of 15 tones capacity with all related items.
- ✈ Construction of Internal roads and drainage system within the site.
- ✈ Operation and Maintenance of the works for 6 months.



Construction of Water Transmission Line from Ghubrah Desalination Plant to Muscat Water Reservoir

Bawsher to Seeb Transmission Pipeline in Muscat Governorate

Status: Implementation Stage

Main Features of the Project:

- Install (Diameter Nominal) DN1600 steel pipe from Ghubrah Desalination Plant plot boundary to plot boundary of Pumping Station at Wadi Adai.
- Install DN1600 steel pipe from Interchange at 18th November Street near Ghubrah Desalination Plant to Bawsher Water Reservoir and interface with pipe from Seeb Reservoir (part of Barka-Mawalleh-Bawsher transmission project).
- Install DN1000 pipe from plot boundary of Wadi Adai Reservoir Compound to Ruwi Reservoir.
- Install DN800 pipe from Ruwi Reservoir to new Wadi Kabir Reservoir.
- Install DN800 pipe from new Wadi Kabir Reservoir to Al Bustan Roundabout.
- Install DN600 pipe at Al Bustan roundabout interface point with existing DN600 pipe connected to Muscat Reservoir.

- Install DN900 pipe to existing Qurum Reservoir.
- Install chambers including isolation, wash out, air release and flow meter with valve fittings as per the detail design drawings.
- Installation of pipe through trenchless pipe installation method (Micro-tunneling) for various diameters as in the drawings and relevant sections of the specification.
- Construction of Ruwi Pumping Station house including excavation, backfilling, concrete works for base slab, foundation, wall, columns, beams and roof slab as in the drawings.
- Interface with existing pipe and reservoir to Wattayah Reservoir, New Al Amerat Pumping Station at Wadi Adai, near Muscat Reservoir, at Qurum Reservoir and Barka Network near Bawsher Reservoir.

Status: Tendering Stage

Main Features of the Project:

- This project involves laying of (Diameter Nominal) DN1600 Carbon Steel pipes of approximate length 29,200 meters.
- Cross connections at seven main locations in varying sizes to all the off-take pipelines from existing DN1000 transmission main leading to following compounds including connecting pipes, valves and motor operated valves.
 - Bawsher reservoirs and pump station
 - Ghala Air force - Ministry of Defence (MOD)
 - Ghala Reservoirs
 - Airport and The Wave Reservoirs
 - Ministry of Defence (MOD) Reservoir and Sultan Qaboos University (SQU) Reservoir
 - Mawallah Reservoir and Pump Station
 - Seeb Reservoir and Pump Stations
- A cross connection between the inlets of Air force and The Wave Reservoirs.

- Connection at the starting point to the DN1600 Carbon Steel pipeline from Ghubrah to Bawsher currently constructed under another project.
- A By-pass of DN400 Ductile Iron (DI) to Sultan Qaboos University (SQU) booster pump station, which is located midway on the DN400 off-take pipeline from DN1000 pipeline to SQU reservoir.
- Installation of motorized isolation valves including chambers along DN1600 Carbon Steel transmission main at seven (7) locations.
- Supply and installation of pressure transducers at chambers where Motorized Valves (MOVs) are installed on DN1600 pipeline for the purpose of leak detection, compatible with those currently installed by Public Authority for Electricity and Water (PAEW) elsewhere.
- Supply and laying of a parallel Fiber Optic Cable (FOC) along the new transmission main and connecting the pressure transducers and MOVs to the SCADA Control Centre at Bawsher, including required interfaces and updating of existing screen configurations.



Quriyat New Desalination Plant Tie-In to Wadi Dayqah System

Water Treatment Plant of Wadi Dayqah Dam at Mazari in Wilayat Quriyat to Deem Reservoir in Muscat Governorate (134/2012)

Status: Design Stage

Main Features of the Project:

Public Authority for Electricity and Water (PAEW), together with Oman Procurement of Water and Power (OPWP), anticipates covering the growing water demand in Muscat through a number of projects. They are spread up along the Eastern Coast line and inland as well. Those located to the East of Muscat are:

- Wadi Dayqah - 90 Million Liters per Day (MLD) capacity
- Quriyat (Phase I) - 200 Million Liters per Day (MLD) capacity

Both these sources being created on the Eastern side of Muscat but located at some distance and in different direction, requires a joint network of transmission system for supplying the treated water to Al-Amerat (Deem reservoir) and from there further to the rest of the Muscat Governorate.

A separate project already in tender stage covers the transmission system from Wadi Dayqah

plant to an intermediate Booster Pumping Station (BPS2a) specific of Wadi Dayqah flow, and the common transmission line (1600 mm) between BPS2a and Deem reservoir.

This separate project shall cover all assets required between the treated water reservoir in the future Quriyat Independent Water Project (IWP) and the connection to the joint (Wadi Dayqah / Quriyat) 1600 mm transmission pipe. Expected outcomes are:

- A pumping station in the IWP
- A 1400 mm pipe (~13 km)
- A pumping station or Booster Pumping Station (BPS2b) in the same site as BPS2a

Status: Evaluation of Bids

Main Features of the Project:

It is the first of its type in Oman. Drinking water treatment plant from surface water at Wadi Dayqah. It is mainly Design, Build and Operate Contract (DBO). It further includes:

Pumping station 1: Building 48 m x 20.7 m, six numbers of pumps

Raw water pipeline: 2.3 km of rising main, 1200 mm bore, maximum working pressure 10 bars, 4.3 km of gravity main, and maximum working pressure of 7 bar

Aerator: aeration structure with 125 MI/d (Million Litres per day) flow rate

Water treatment works: Maximum input 125 MI/d, Maximum throughput 134MI/d

Treated water tank: Storage capacity 70,000 m³, Booster chlorination facilities

Branch Pipelines-Mazara: 6.5 km of 250 mm bore, maximum working pressure of 6 bar

Operation of the Scheme: Period of 10 years from Completion of Section 1

Defects Liability Period: 365 days from completion of each section of the works



Transmission Pipeline from Wadi Dayqah Treatment Plant to Deem Reservoir (135/2012)

Status: Awarding Stage

Main Features of the Project:

✿ This Transmission facility will deliver water to Muscat and will have interface with other transmission projects which are currently under construction.

✿ Treated water pipeline to Pump Station 2: 14.5 km of 1200 mm bore, maximum working pressure of 16 bars.

✿ Pumping station 2: Building 35 m x 65 m, 6 Nos. booster pumps, each for maximum lift of 270 m at 362.5 l/s (Litre per second), Water tanker loading facilities.

✿ Treated water pipeline: 32.6 km of 1600 mm bore, maximum working pressure of 35 bars.

Main Branch Pipelines:

- Hayl-al-Ghaf: 4.8 km of 400 mm bore, maximum working pressure of 10 bars
- Qarib: 4.4 km of 700 mm bore, maximum working pressure of 12 bars
- Quriyat: 3.7 km of 600 mm bore, maximum working pressure of 12 bars

- Daghmar transfer: 2.7 km of 600 mm bore, maximum working pressure of 12 bars

- Daghmar irrigation distribution: 4.5 km of 600, 3.0 km of 400 mm, 6.6 km of 300 mm, maximum working pressure of 6 bars

✿ Daghmar irrigation (break head) tank: Storage capacity 3,700 m³ with 292 l/s input/output flow rate

✿ Daghmar irrigation Distribution Network: 37.1 km of 50 - 315 mm HDPE pipes to some 350 properties

✿ Defects Liability Period: 365 days from completion of each section of the works