KAHRAMAA
كهرماء
المؤسسة العامة القطرية للكهرباء والماء
Qatar General Electricity & Water Corporation

District Cooling Workshop

Wednesday 18/6/2014

Towards Cooperative District Cooling Society

www.km.qa

better living لحيـاة أفضـل

METITO

Commitment to a
Cleaner Environment

PRESENTATION
ON
TSE TREATMENT

JUNE 18TH 2014

METITO

COMPANY BACKGROUND

- OVER 55 YEARS EXPERIENCE IN THE WATER INDUSTRY
- PRESENT IN 12 COUNTRIES WORLD WIDE
- GLOBAL HEADQUARTERS IN DUBAI, UAE
- STAFF STRENGTH : 2500 + WORLD WIDE
- 10 YEARS IN QATAR
- FULLY FLEDGED OFFICE : 425 + STAFF
- PLANTS : RO / SEWAGE TREATMENT
  (PLANTS AND CHEMICALS)

Commitment to a Cleaner Environment

METITO

TECHNOLOGIES OFFERED FOR DISTRICT COOLING

1) R. O. PLANT

2) PRE TREATMENT

   A) 2 STAGE FILTRATION (CONVENTIONAL), OR

   B) ULTRAFILTRATION

3) CHEMICAL TREATMENT PROGRAM

4) OPERATION AND MAINTENANCE

Commitment to a Cleaner Environment

METITO

Design Basis:

Source : Either Ground Water/ Sea Water or Treated Sewage Effluent (TSE)

Feed TSE water quality (Typical):

TSS = 5 mg/l TDS = 1,500 mg/l

BOD = 5 mg/l COD = 50 mg/l

Temperature = 22 – 35 C pH = 6.5 – 7.5

Actual TSE water quality at tap off point:

TSS = 7 mg/l TDS = 2,000 mg/l

BOD = 7 mg/l COD = 65 mg/l

Temperature = 22 – 35 C pH = 6 – 8

Commitment to a Cleaner Environment

METITO

Achievable Treated Water Quality:

(Equivalent to Kahramaa Potable water quality):

1. pH = 6.5 – 7.5

2. TDS = 100 - 200 mg/l

2. TSS = Negligible

Applications/ End -use:

1. District Cooling make up water
2. Toilet Flushing
3. Industrial use

Commitment to a Cleaner Environment

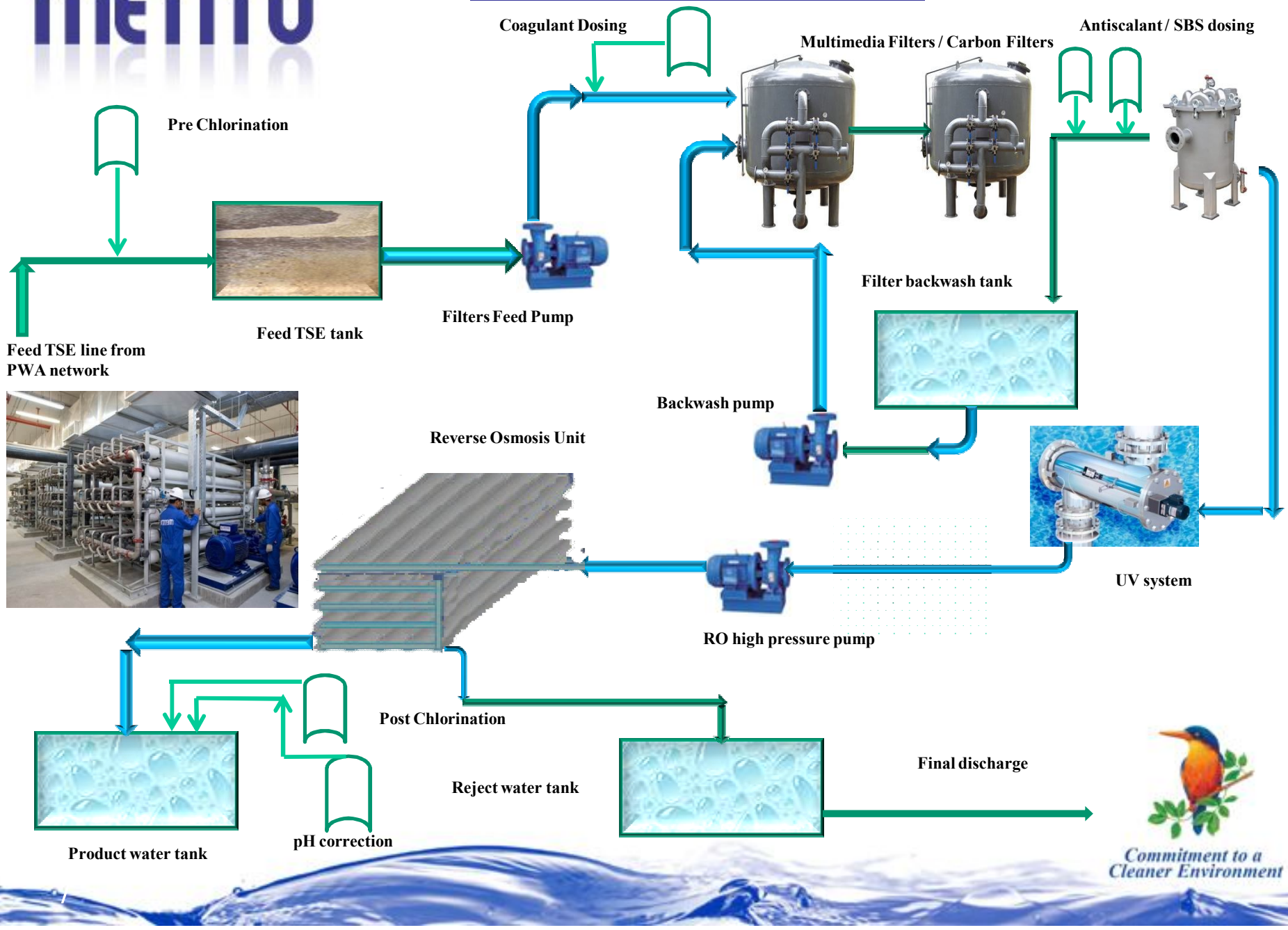
METITO

BASIS OF TREATMENT & EQUIPMENT`SELECTION:

1) Hypochlorite dosing : Primary disinfection
2) Multimedia Filters : TSS / BOD removal
3) Activated Carbon Filters : COD removal
4) Cartridge Filters : Fine filtration
   (Or Ultrafiltration skids replacing 2, 3,& 4)
5) Acid / Antiscalant dosing : Minimize scaling
6) SBS chemical dosing : De chlorination
7) Ultraviolet disinfection(UV) : Disinfection
8) Reverse Osmosis (R.O.) : TDS removal
9) Caustic dosing : pH correction

Commitment to a Cleaner Environment

Schematic Block Diagram

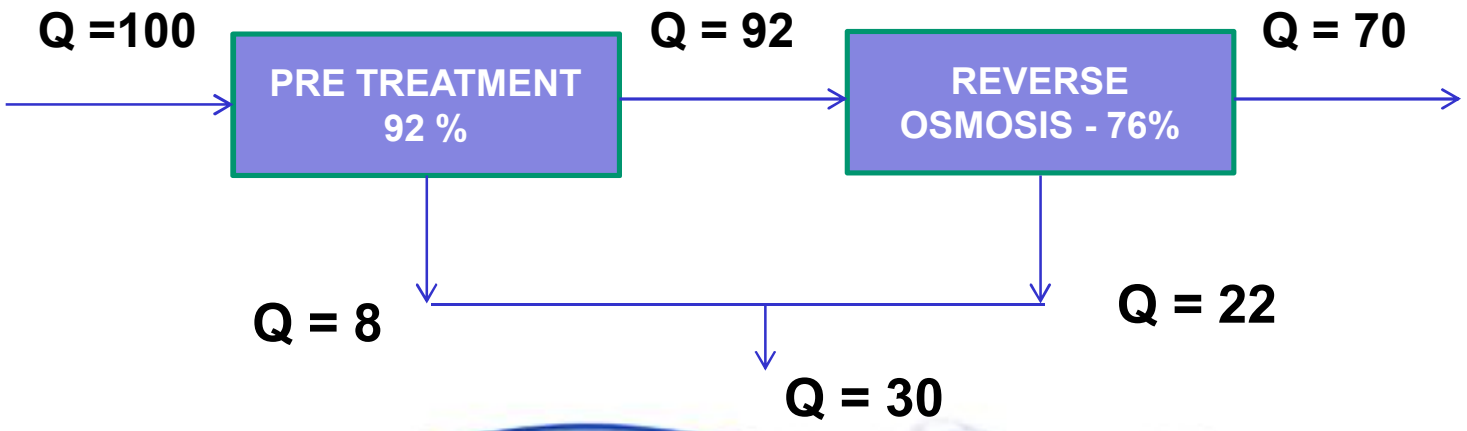


WATER BALANCE

TYPICAL RECOVERIES:

1) PRE TREATMENT : 92 %
2) R.O. : 76 %

OVERALL RECOVERY : 70 %
BALANCE WASTE WATER : 30%

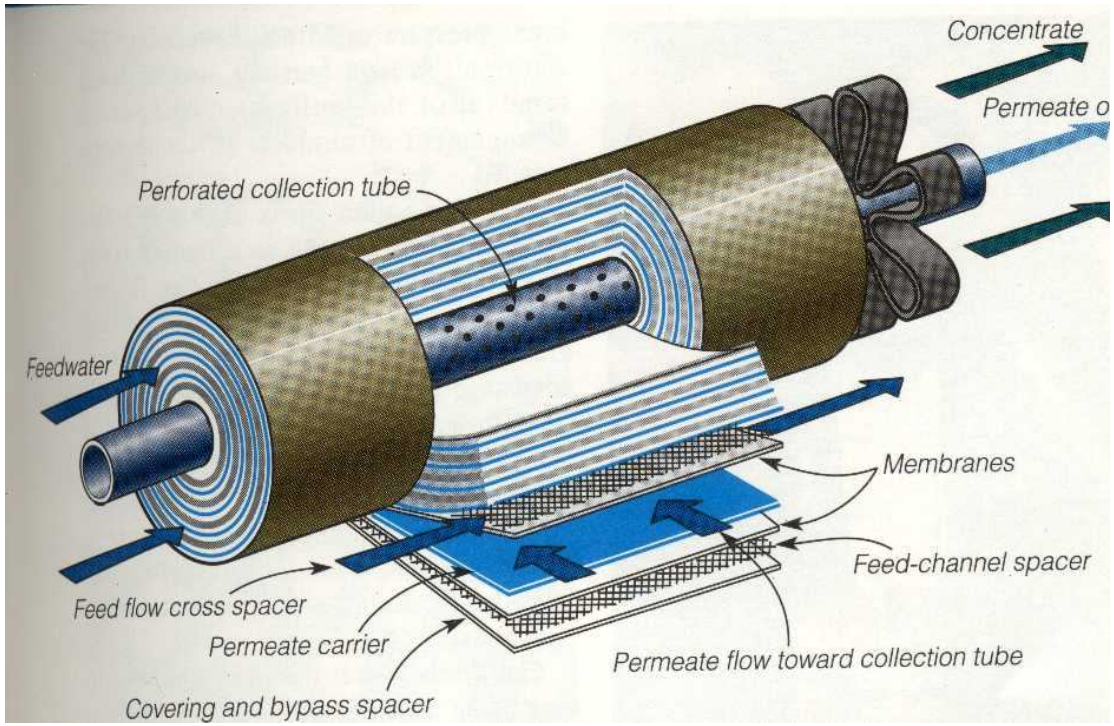


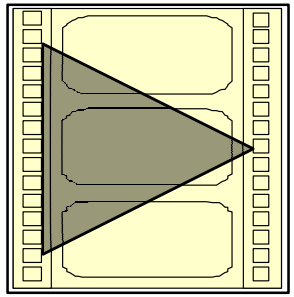
Commitment to a
Cleaner Environment

METITO

Membranes Types

Spiral Wound Design





Commitment to a Cleaner Environment

METITO

MATERIAL OF COSNTRUCTION OF EQUIPMENT

• FEED TANK (TSE TANK)	- RCC/ GRP
• CENTRIFUGAL PUMPS	- SS 316
• FILTERS	- GRP / CARBON STEEL
• UF MEMBRANE	- PES / PVDF
• RO MEMBRANE	- POLY AMIDE
• RO PRESSURE TUBE	- GRP
• UF- RO SKIDS	- CARBON STEEL
• UV STERILZIER UNIT	- SS 316
• CHEMCIAL DOSING TANKS	- GRP
• TREATED WATER TANK	- RCC/ GRP

Commitment to a Cleaner Environment

WASTE WATER DETAILS

Sources within the RO plant:

From RO reject / Pre-treatment backwash waste / Membrane cleaning & Flushing / Over flows

Typical quality:

TSS : Less than 50 mg/l

BOD : Less than 50 mg/l

COD : Less than 150 mg/l

TDS : 8,000 – 10,000 mg/l

pH : 6.5 to 7.5

Disposal - Permits from MOE/ Ashghal need to be obtained

Commitment to a Cleaner Environment

METITO

OPERATION & MAINTENANCE:

1) MANPOWER
2) CHEMICALS
3) MEMBRANES
4) CONSUMMABLES
5) SPARES

Commitment to a Cleaner Environment

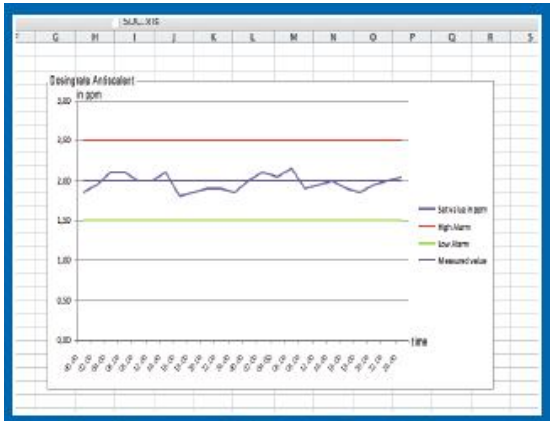
STANDARD KEY REQUIREMENTS

- Compliance with all requirements for equipment defect liability period / warranty maintenance
- High degree of automation to ensure all key parameters are logged and normalisation data is available real-time for RO
- For District Cooling, a full automation offering focussed on Operational Results; Risk Management
- Full support 24/7

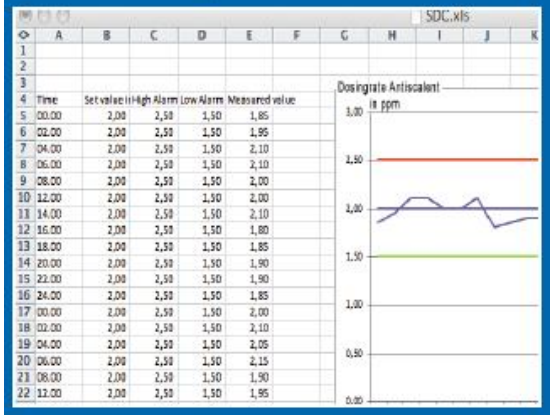
METITO

MOL Chemicals Total Membrane Solutions

- Inhibitor Management System
- Normalisation Data
- Data Utilisation
  - Internet Access
  - Graphic Representation
  - Online Sensors
  - Real-Time Data
  - Advance Notices
  - Alarm Messages
  - Trend Graphs
  - Consumption - water/chemical



Registration, graphics and trends



Registration, graphics and trends

Commitment to a Cleaner Environment

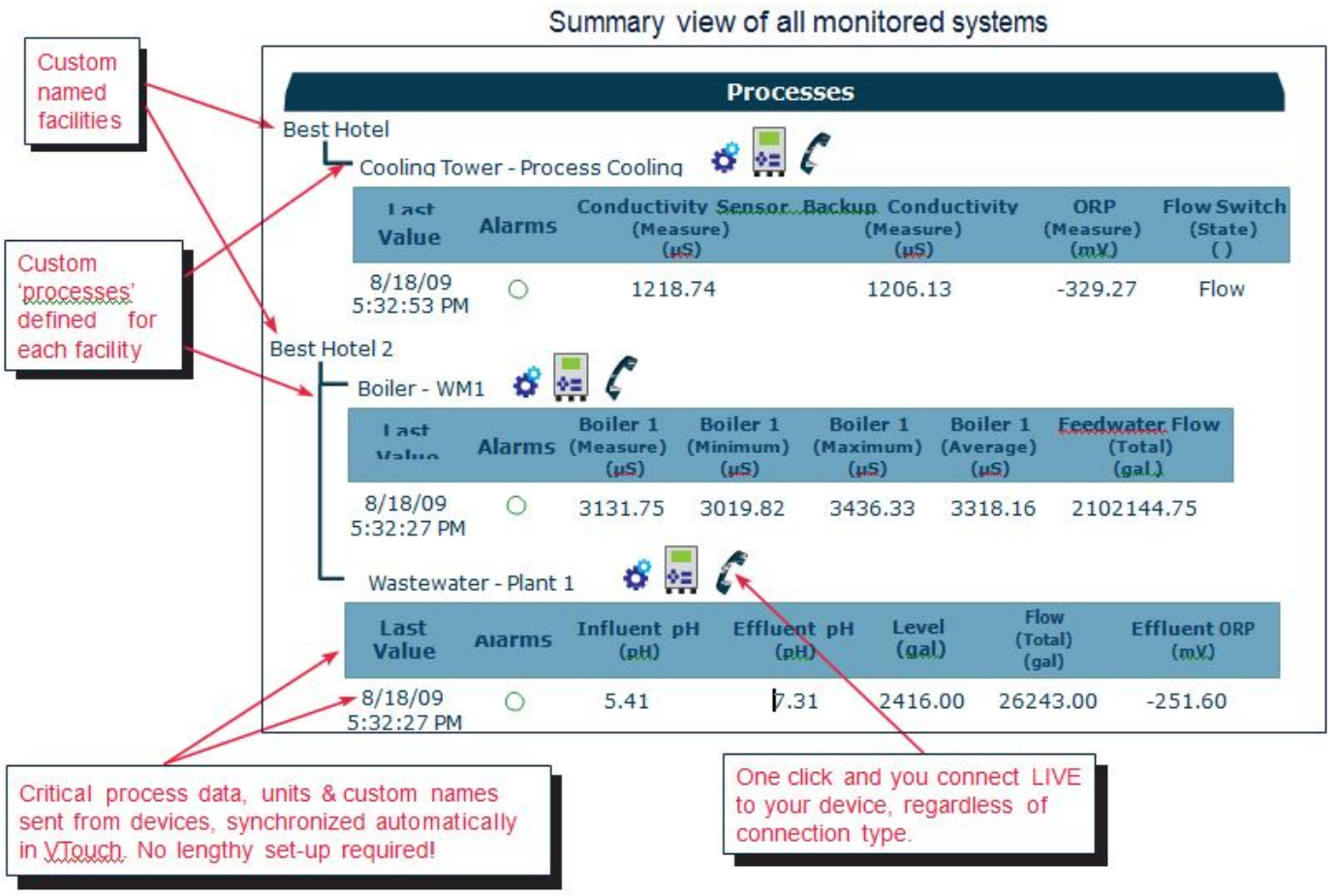
METITO

MOL Chemicals Total Cooling Solutions

- Chemistry, Equipment, Software and Communications technology
- **Award-winning technology focussing on corrosion (pitting/general) and biofilm / scale monitoring**
- Web-based summary of account status based on 24/7 monitoring
- **One-click to any device in the field for full view and reconfiguration**
- “Access” and “permissions” options
- **Open System**
- Boilers, Cooling, Closed, RO

Commitment to a Cleaner Environment

MOL Chemicals Total Cooling Solutions – Data Management



Commitment to a Cleaner Environment

METITO

METITO'S R.O. POLISHING FOR DISTRICT COOLING

- PALM JUMEIRAH , DUBAI (TSE) - 18,000 M3/DAY (2009)
- EMAAR DOWNTOWN , DUBAI (TSE) - 20,000 M3/DAY (2013)
  (UNDER EXECUTION)
- HOTEL FOUR SEASONS , DOHA (TSE) - 50 M3/DAY (2006)
- HOTEL ST. REGIS, DOHA (TSE) - 1,700 M3/DAY (2012)
- PEARL RO , DOHA - 35,000 M3/DAY (2013)
  (SEA WATER TO FOR DISTRICT COOLING)

Commitment to a Cleaner Environment

SAMPLE
RO PLANT PHOTOGRAPHS

Commitment to a Cleaner Environment

Temporary Containerised SWRO Plants – Multi-media Filters

Commitment to a Cleaner Environment

METITO

SWRO – 3000 m3/day

Commitment to a Cleaner Environment

TSE Polishing RO – 18,000 m3/day

Commitment to a Cleaner Environment

Ghuzlan Island SWRO – 4 X 1,000 m3/day + 1 X 500 m3/day

Commitment to a Cleaner Environment

METITO

Thank you

Terima Kasih

Danke

감사합니다

Tashakkur

Salamat

Gracias

Grazie

Dank u

ありがとう

شكرا

Merci

Commitment to a Cleaner Environment