

02 / ENVIRONMENTAL SOLUTIONS — WATER
DIVISION

VANTERRA.

BY **APEX** — ONE PARTNER. TOTAL INTEGRATION.

Packaged RO • sewage & effluent treatment • process water • soil remediation •
environmental compliance — engineered for industries that can't afford to wait.

[APEXIS-GLOBAL.COM](https://apexis-global.com)

GLOBAL HQ • TORONTO — REGIONAL HQ • MUSCAT

§ 01 — THE DIVISION

ONE STANDARD FOR EVERY DISCHARGE.

Vanterra is the environmental division of Apex Integrated Solutions — designing, building and supporting the water, wastewater and remediation systems that industry and communities depend on, from a packaged RO plant to a complete treatment facility.

Headquartered in Toronto with a regional hub in Muscat, Vanterra brings Canadian engineering rigour to projects across Oman and the GCC — serving oil & gas, utilities, manufacturing, agriculture and development programmes where water performance is not negotiable.

Every system is specified, documented and supported by one accountable team — one process desk, one project schedule, one after-sales organisation.

"Treat the water you return as carefully as the water you take."

— APEX DOCTRINE



VAN TERRA

BY APEX · ENVIRONMENTAL DIVISION ·
REF VNT-26



FIG. 01 — CLARIFICATION & AERATION · STP

4→1

DIVISIONS, ONE
PARTNER

2

HUBS — TORONTO
· MUSCAT

1

POINT OF
ACCOUNTABILITY

VISION

Industry and communities in the region operating with water systems that meet every standard, every day.

MISSION

To design, build and support water and environmental systems that perform to spec — on time, documented, and backed for life.

§ 02 — WHAT WE DO

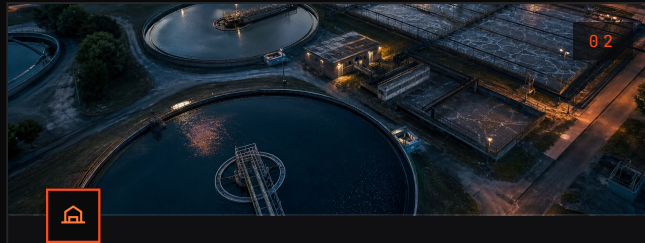
SIX SYSTEMS. ONE WATER STRATEGY.

Supply, design, build and aftercare across the full water and environmental envelope — modular packages that arrive pre-tested and become one working plant.

**PACKAGED RO**

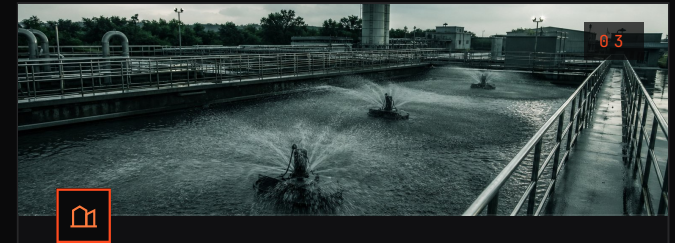
Skid-mounted and containerised reverse osmosis plants — pre-assembled, pre-tested and delivered site-ready.

SKID-MOUNTED • CONTAINERISED

**STP — SEWAGE**

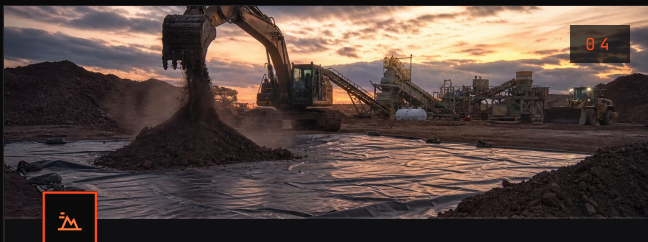
Sewage treatment for communities, camps and facilities — biological treatment engineered around the real load.

MBBR • SBR • MBR

**ETP — EFFLUENT**

Industrial effluent treatment that brings discharge inside consent limits — separation, biology and polishing.

OIL & GREASE REMOVAL • POLISHING

**SOIL REMEDIATION**

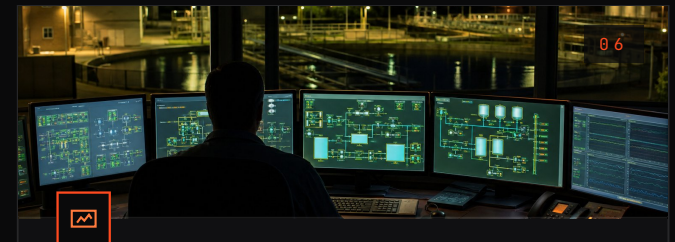
Contaminated soil and groundwater treated and verified — excavation, treatment and clean-up to an agreed standard.

EX-SITU • IN-SITU

**PROCESS & UTILITY WATER**

Filtration, softening, demineralisation and storage — water treated to the specification each process demands.

FILTRATION • SOFTENING • DEMIN

**O&M & COMPLIANCE**

Operation, maintenance and monitoring — sampling, analysis and reporting so performance is proven, not assumed.

SCADA • SAMPLING • REPORTING

§ 03 — SYSTEMS & PACKAGES

BUILT IN MODULES. DELIVERED AS ONE SYSTEM.

From a single skid to a complete plant — each package is assembled, tested and documented before it ships, then commissioned by the same team that designed it.

01 — WATER

TREATMENT TRAINS

- Media & multimedia filtration
- Activated carbon & softening
- RO / NF membrane systems
- Dosing & chemical skids
- Disinfection & chlorination

02 — WASTEWATER

BIOLOGICAL & PHYSICAL

- MBBR / SBR / MBR reactors
- Clarifiers & aeration systems
- Sludge thickening & dewatering
- Oil – water separation
- Tertiary polishing

03 — ENVIRONMENT

REMEDIATION & CONTROL

- Soil remediation & treatment pads
- Groundwater extraction & treatment
- Odour & air control
- Waste minimisation studies
- Sampling & compliance reporting

01

SURVEY

Site survey, water analysis and load assessment.

02

DESIGN

Process design, P&IDs, layout and equipment selection.

03

BUILD

Package fabrication, assembly and factory testing.

04

COMMISSION

Installation, commissioning and operator training.

05

SUPPORT

O&M, spares and performance monitoring.



FIG. 02 — CONTAINERISED STP • FACTORY-BUILT MODULE

PACKAGE DELIVERY

Site-ready packages • Pre-tested • Documented • Installed & commissioned

§04 — SOLUTIONS IN DEPTH

WHERE THE ENGINEERING GETS SPECIFIC.



01

PACKAGED RO & STP

Skid-mounted and containerised RO and sewage treatment packages built around the site's actual water analysis — pretreatment, membranes and biology designed as one train, not collected from a catalogue.

CONTAINERISED STP

PACKAGED RO

POTABLE



02

SOIL & GROUNDWATER REMEDIATION

Contaminated sites assessed, treated and verified — excavation and treatment pads for soil, extraction and treatment for groundwater, with the evidence trail to close the site.

EX-SITU

IN-SITU

VERIFICATION



03

MONITORING & COMPLIANCE

Sampling, laboratory analysis and reporting — with Labvance instrumentation behind the numbers and one desk accountable for the result.

SAMPLING

ANALYSIS

REPORTING

DESIGN . BUILD . COMMISSION . OPERATE .

ONE CONTRACTOR FROM FIRST SAMPLE TO FINAL REPORT

§ 04 — SPECIFICATIONS

ZERO LIQUID DISCHARGE.

5–500 m³/day

CAPACITY ENVELOPE

90%+

MVR ENERGY REDUCTION

3

EVAPORATOR VARIANTS

ZLD

RECOVER · CONCENTRATE · CLOSE

Evaporative concentration that recovers distillate and reduces waste to a handleable solid — specified from 5–500 m³/day, factory-built and commissioned as one train.



FIG. 03 — MULTI-EFFECT EVAPORATOR



FIG. 04 — MECHANICAL VAPOUR RECOMPRESSION

01

MULTI-EFFECT EVAPORATOR

Steam heat is reused across a sequence of vessels so each effect boils at a lower pressure than the last — less live steam for the same evaporation duty.

CAPACITY

5 – 500 m³/day

Feed · site-specific design

VARIANTS

- Falling film evaporator
- Forced circulation evaporator
- Agitated thin-film dryer

SPECIFIED FOR

- Lower installed cost vs. MVR
- Robust, flexible duty
- Higher concentration ratio
- Lower specific electricity
- Longer service life

02

MECHANICAL VAPOUR RECOMPRESSION

Vapour that would otherwise be lost is compressed and returned as the heating medium — evaporation energy cut by 90% or more, with a pure distillate and a concentrated residue.

CAPACITY

5 – 500 m³/day

Feed · site-specific design

VARIANTS

- Falling film evaporator
- Forced circulation evaporator
- Agitated thin-film dryer

SPECIFIED FOR

- Very low operating cost
- No cooling tower or boiler
- Compact footprint
- Simple operation & low maintenance
- Closed-loop energy recovery

§ 04 – SPECIFICATIONS

EFFLUENT & SEWAGE TREATMENT.

Industrial effluent and municipal sewage treated to consent — biology sized to the real load, not a catalogue average. Packaged or civil, with reuse as a design option from day one.



FIG. 05 – ETP · CLARIFICATION & AERATION



FIG. 06 – STP · BIOLOGICAL REACTORS

03

EFFLUENT TREATMENT PLANT

Industrial wastewater with oil & grease, organics, metals, VOCs or nutrients — primary separation, biology and polishing brought inside discharge limits.

CAPACITY

5 – 500 m³/day

Industrial effluent

PROCESS OPTIONS

- MBR — membrane bioreactor
- SBR — sequencing batch reactor
- MBBR — moving-bed biofilm
- ASP — activated sludge

SPECIFIED FOR

- Robust, flexible duty
- Lower O&M cost
- Recycle & reuse of treated water
- Compact, quiet packages
- Consent-ready discharge

OIL & GREASE REMOVAL

POLISHING

PACKAGED OR CIVIL

04

SEWAGE TREATMENT PLANT

Domestic and municipal sewage treated for safe discharge or reuse — communities, camps, developments and facilities sized for the population that arrives.

CAPACITY

5 – 10,000 m³/day

Municipal · camp · facility

PROCESS OPTIONS

- MBR — membrane bioreactor
- SBR — sequencing batch reactor
- MBBR — moving-bed biofilm
- ASP — activated sludge

SPECIFIED FOR

- Robust, flexible duty
- Lower O&M cost
- Irrigation / utility reuse
- Smallest practical footprint
- Silent packaged operation

CONTAINERISED STP

MBBR · SBR · MBR

REUSE READY

§ 04 – SPECIFICATIONS

RECYCLE & PACKAGED RO.

Treated effluent polished through UF then RO — or raw water desalinated on a skid — so product water meets the duty, not a generic TDS target.



FIG. 07 – RECYCLE TRAIN • MEMBRANES IN SERVICE

05

WASTEWATER RECYCLING

Secondary effluent is conditioned, ultrafiltered, then reverse-osmosed to bring fluctuating salinity reliably below reuse or potable limits. High-recovery membranes where organics and salt load allow it. Product water buffered and pumped to users.

CAPACITY

5 – 10,000 m³/day

Post-STP / ETP polish

TRAIN OPTIONS

- UF + low-fouling RO
- MBR + low-fouling RO
- NF + low-fouling RO

SPECIFIED FOR

- Reuse below drinking-water salinity
- High recovery on organic feeds
- Compact, quiet packages
- Lower O&M vs. once-through

UF • NF • LFRO

HIGH RECOVERY

BUFFER + PUMP STATION



FIG. 08 – PACKAGED RO SKID • FACTORY-TESTED

06

REVERSE OSMOSIS PLANT

Pressure-driven desalting through a semi-permeable membrane — up to 99%+ of dissolved salts, particles, colloids and organics removed. Skid-mounted or containerised, pre-tested, delivered site-ready.

CAPACITY

5 – 5,000 m³/day

Skid • container • plant

DUTY OPTIONS

- SWRO — seawater desalination
- BWRO — brackish water
- CSRO / HSRO — compact / high-recovery
- LFRO — low-fouling membranes

SPECIFIED FOR

- 99%+ salt rejection
- Potable, process or boiler feed
- Smallest practical footprint
- Pre-assembled, pre-tested

SKID-MOUNTED

CONTAINERISED

POTABLE • PROCESS

§ 04 – SPECIFICATIONS

NANOFILTRATION & ULTRAFILTRATION.

Membrane separation either side of RO — NF for divalent softening and partial desalting, UF for suspended solids and colloids at low transmembrane pressure.



FIG. 09 – NANOFILTRATION SKID



FIG. 10 – ULTRAFILTRATION · PRESSURISED TRAIN

07

NANOFILTRATION PLANT

Pressure-driven membrane separation between RO and UF. NF rejects divalent and larger monovalent ions while passing more of the smaller salts — used for softening, colour/organic removal and partial desalting at lower pressure than RO.

CAPACITY

5 – 5,000 m³/day

Softening · partial desalting

TYPICAL DUTY

- Divalent / hardness removal
- Colour & organic reduction
- RO pretreatment or standalone
- Plug-and-play skid packages

SOFTENING PARTIAL DESALTING PLUG & PLAY

- SPECIFIED FOR
- Lower pressure than RO
 - Higher product-water quality vs. UF
 - Easy install & operation
 - Compact footprint

08

ULTRAFILTRATION PLANT

Low-pressure membrane barrier for suspended solids, colloids, bacteria and viruses. Used as pretreatment to RO/NF or as a standalone polish on surface and treated waters.

CAPACITY

5 – 5,000 m³/day

Pretreatment · polish

CONFIGURATIONS

- Pressurised ultrafiltration
- Submerged ultrafiltration

PRESSURISED SUBMERGED RO PRETREATMENT

- SPECIFIED FOR
- Higher fibre strength
 - Longer life, minimum CIP
 - Easy install & operation
 - Plug-and-play packages

§ 04 — SPECIFICATIONS

ION EXCHANGE & FILTRATION.

Softening, demineralisation, mixed-bed polishing and media filtration — 5–15,000 m³/day — specified to the conductivity, hardness and solids the process actually needs.



FIG. 11 — SOFTENER VESSELS

09

SOFTENING

Ca²⁺ and Mg²⁺ exchanged for sodium — hardness removed before boilers, RO or process. Dealkalisation available on the same train.

CAPACITY

5 – 15,000 m³/day

- Ion-exchange softening
- Dealkalisation option
- Plug-and-play packages



FIG. 12 — SOFTENER / MULTI-GRADE TRAIN

10

DEMINERALISATION

Cations exchanged for H⁺, anions for OH⁻ — mineral-free water for high-pressure boilers and process make-up.

CAPACITY

5 – 15,000 m³/day

- Two-bed cation / anion
- Dealkalisation option
- High product-water quality



FIG. 13 — MIXED-BED POLISHER

11

MIXED BED

Cation and anion resins in one vessel. Last traces of TDS and silica removed — polish to below 1.0 µS/cm.

CAPACITY

5 – 15,000 m³/day

- < 1.0 µS/cm conductivity
- Silica & residual TDS polish
- After DM or RO



FIG. 14 — MULTI-GRADE & CARBON FILTERS

12

FILTRATION

Sand and carbon media — macro particles, chlorine and odour taken out before membranes, exchange or use.

CAPACITY

5 – 15,000 m³/day

- Rapid sand / multi-grade
- Activated carbon
- Pretreatment to RO / IX

01 — WASTEWATER CHEMICALS

Coagulant & flocculant
Lime
Bio-culture & nutrient
Defoamer

02 — WATER-TREATMENT CHEMICALS

RO antiscalant
RO descalant
Chlorination / dechlorination
Acid dosing

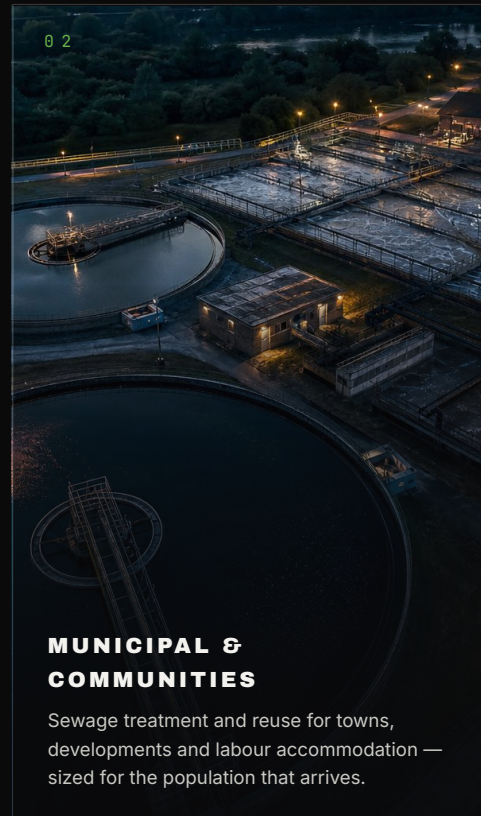
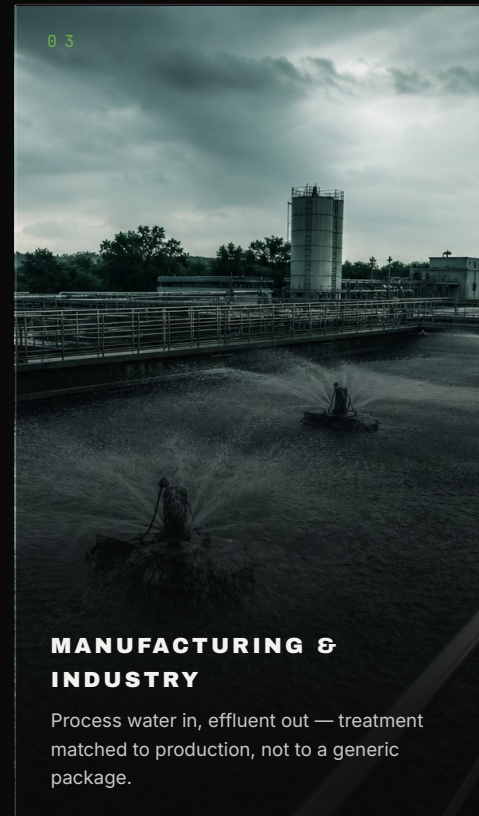
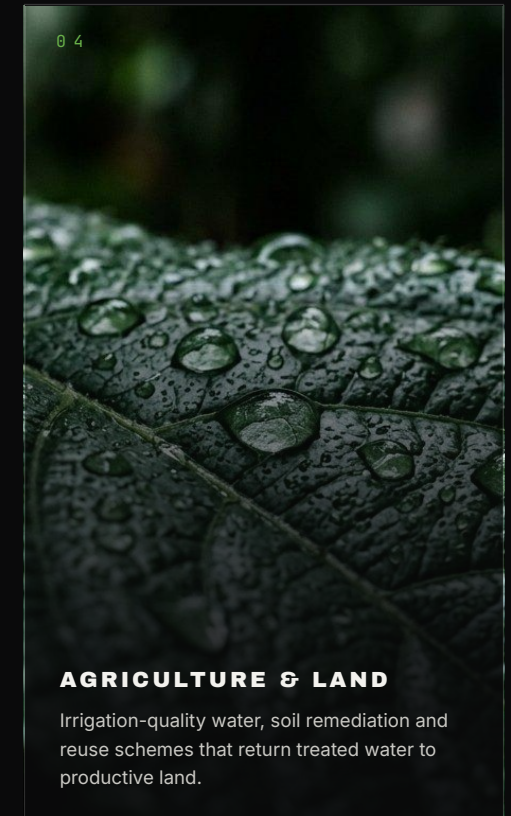
03 — BOILER & COOLING-TOWER CHEMICALS

Oxygen scavenger · pH booster
Boiler antiscalant
Cooling-tower antiscalant
Biocide

§ 05 — INDUSTRIES

WHEREVER WATER HAS TO PERFORM.

Oil and gas, utilities, manufacturing and land development — each has its own water problem, consent limits and uptime reality.

**WATER REUSE & SECURITY**

Treated water returned to irrigation, utilities or process — reducing draw on scarce supply and cutting discharge volume.

EVIDENCE & COMPLIANCE

Sampling, analysis and reporting that stands up to regulators, auditors and clients — documented from day one.

LOCAL SUPPORT & SPARES

Backed from the Muscat regional hub — spares, service and technical response across Oman and the GCC.

§ 0 6 — THE APEX SYSTEM

ONE OF FOUR. NEVER ON ITS OWN.

Vanterra is one of four specialist divisions. Each solves a different industrial problem — together they are engineered, scheduled and delivered as **one programme, under one contract, by one team.**

0 1 LABVANCE

Laboratory & process analytical instrumentation, calibration and technical support.

0 2 VAN TERRA

Water & wastewater treatment systems, process design and environmental compliance solutions.

THIS DIVISION**0 3 PETROVIA**

Oil & gas and energy equipment supply — wellhead, process and power packages built to spec.

0 4 SILVERFIN

Freight forwarding, heavy-lift transport and port-to-site delivery for equipment worldwide.

FOUR DIVISIONS. ONE SCHEDULE.

ENGINEERED, DELIVERED AND SUPPORTED AS ONE PROGRAMME

DESIGNED & BUILT IN-HOUSE

Process design, fabrication and commissioning under one roof — no split responsibility between vendors.

SHIPPED WITH SILVERFIN

Packages move on Apex logistics — port-to-site delivery without a third-party handover.

INSTRUMENTED BY LABVANCE

Analytical instrumentation and calibration supplied by the group's own laboratory division.

§ 07 — DELIVERY MODELS

MULTIPLE MODELS. ONE ACCOUNTABLE PARTNER.

Whatever the commercial structure, one team designs, builds and stands behind the system — from a single package to a complete operated plant.



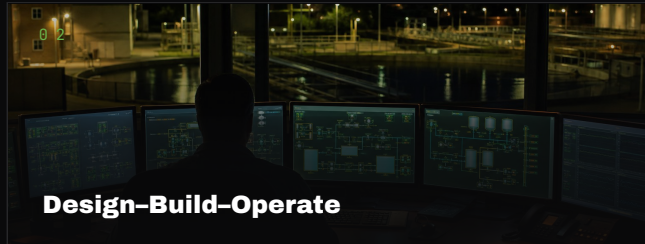
01

Design-Build

SINGLE CONTRACT • CONCEPT TO START-UP

Full scope under one contract — survey, design, fabrication, installation and commissioning, with one schedule and one point of responsibility.

SINGLE-CONTRACT DELIVERY



02

Design-Build-Operate

PERFORMANCE-BASED SUPPLY

Vanterra delivers the plant and operates it to an agreed performance — you pay for treated water, not for equipment.

PERFORMANCE-BASED SUPPLY



03

Retrofit & Upgrade

CAPACITY • EFFICIENCY • COMPLIANCE

Upgrades for plants already in service — assessed, engineered and installed with minimum disruption to operations.

EXISTING PLANT UPGRADES



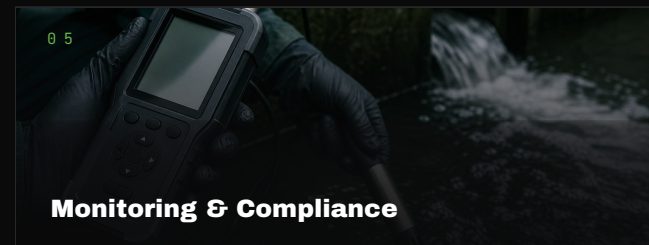
04

Operations & Maintenance

LONG-TERM SERVICE

Routine and preventive maintenance, spares, consumables and on-call technical response from the Muscat hub.

LONG-TERM SERVICE



05

Monitoring & Compliance

EVIDENCE & REPORTING

Sampling, laboratory analysis and reporting — with Labvance instrumentation and one desk accountable for the numbers.

EVIDENCE & REPORTING

S O S — C O N T A C T

BRING US YOUR WATER CHALLENGE.

Specify a plant, a package, or a single problem — one partner answers.



E M A I L

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Specifications, quotations & programmes



P H O N E

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Regional hub — Muscat, Oman



O F F I C E

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Sultanate of Oman



W E B

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All four divisions, one system entry

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