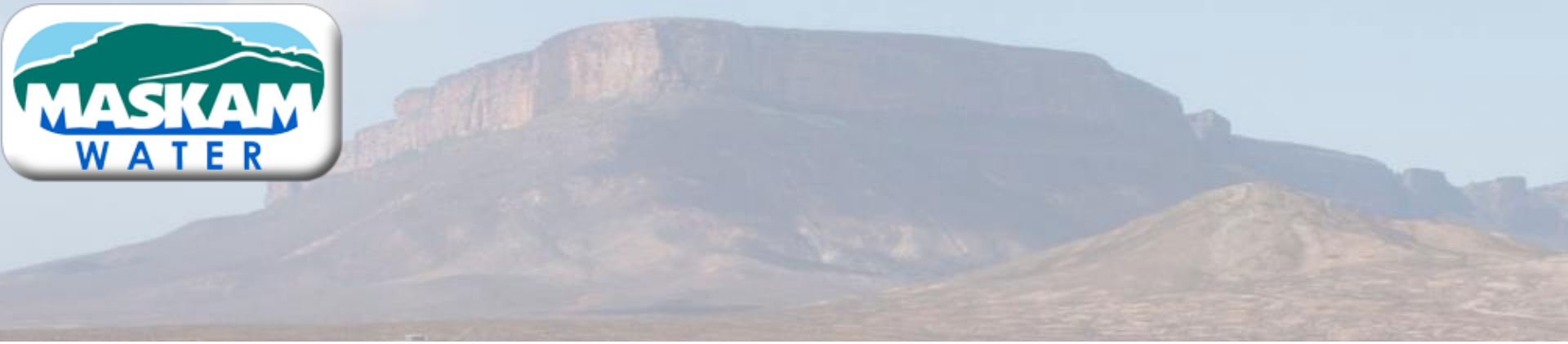


Maskam Water sold the first Clarus Fusion On-site Waste Water Treatment Plant in Africa in 2010. Since then we have sold and installed these systems in 9 countries on the African Continent.

The Clarus Fusion has proved to be a reliable, easy to install and easy to operate WWTP. In most installations, the treated effluent is being re-used on site, saving the customer water and saving money.

Water security is no longer a given. We all have to work together to save water where we can. Re-using is one of the most sustainable and most affordable ways of saving. It pays for itself!

We invite you to take the tour with us and see for yourself how easy it is to retrofit with a Clarus Fusion and start saving. An installation like this can be done in only two days….

Clarus Fusion On-site Waste Water Treatment Plant

The Clarus Fusion is a factory-built activated sludge waste water treatment plant.

It follows the exact same treatment process as municipal activated sludge plants, including denitrification and phosphate reduction.

It is **NOT** a typical package plant.

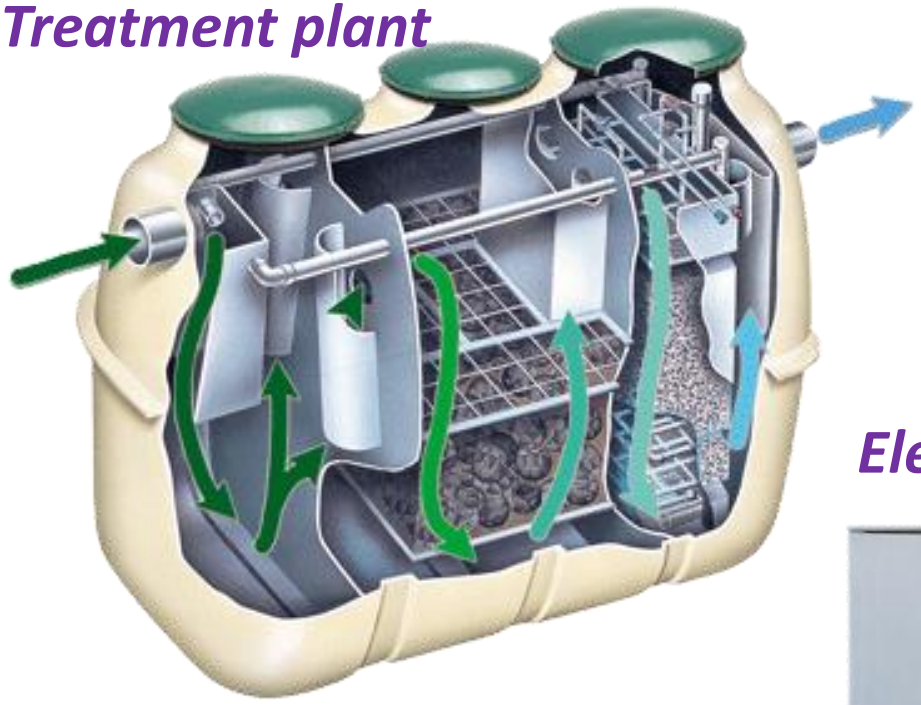
CLARUS ENVIRONMENTAL

MASKAM WATER

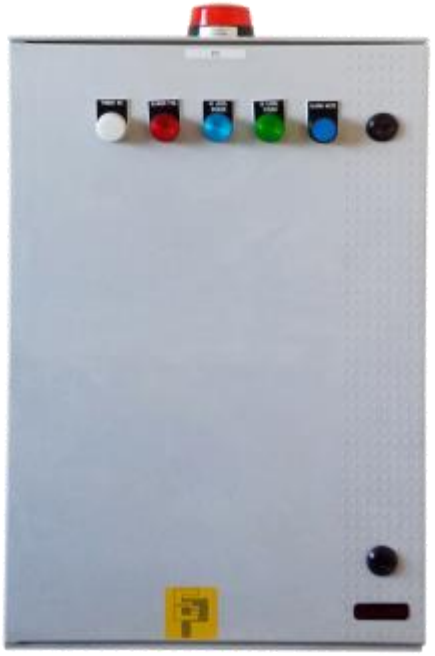
The Fusion System

Diaphragm air pump

Treatment plant



Electrical Panel



- Treat sewage from as little as 60 watts
- Solar options available.
- Different models available, from 1 person to small communities
- NO pumps in the system
- No electricity in the tank – only float switch
- Only Non-corrosive material used in tank
- No metal in tank
- Tank installation is completely underground

Disinfection

- Treated effluent from the plant needs to be disinfected to kill e-coli, faecal coliforms and other harmfull bacteria
- UV, Ozone or chlorine can be used for disinfection

MASKAM WATER

Case study

Retrofitting with a Clarus Fusion – replacing the conservancy tank

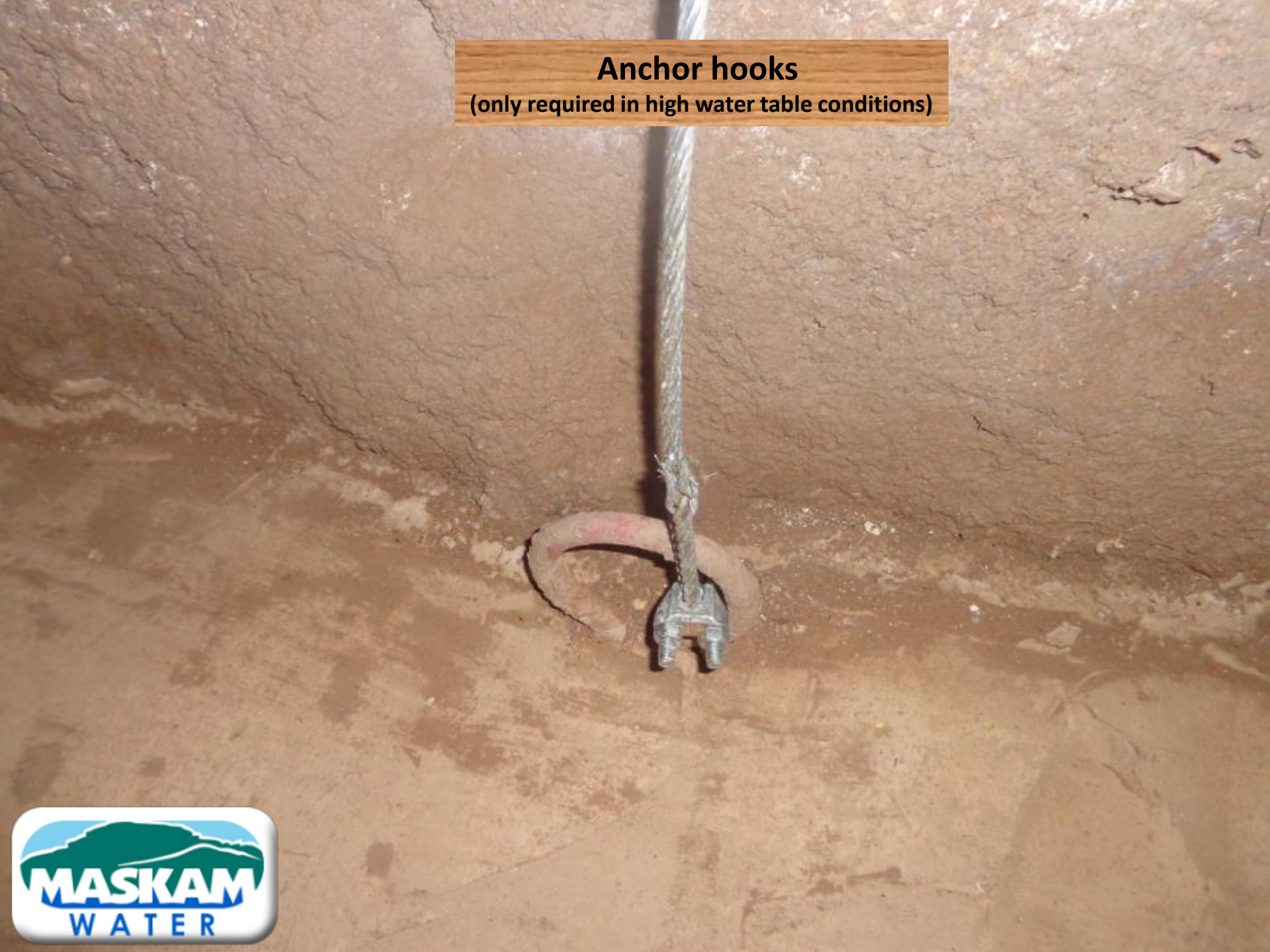

Old Concervancy tank is now used as a lifting station.
U282 Zoeller pump on timer dose sewage to the Clarus Fusion ZF2400 (9000 lpd)
CLARUS
ENVIRONMENTAL
MASKAM
WATER


Marking out the position of the Clarus Fusion
20
MASKAM
WATER
CLARUS
ENVIRONMENTAL


Installing electrical supply
MASKAM
WATER
CLARUS
ENVIRONMENTAL

Excavation


Stable base or concrete slab
(ensure 100% level)
MASKAM
WATER


Anchor hooks
(only required in high water table conditions)
MASKAM
WATER

Delivery

- Tank weighs 700kg
- Treatment capacity: 9000 lpd
- Footprint: 4.7m x 2m
- Wet weight: 13 537 kg
- Power: 261 watts

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Placement

- Ensure 100% level
- Fill with water

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CLARUS ENVIRONMENTAL


Secure tank
Only needed in high ground water conditions
Only use stainless steel cables and tensioners

Connect air line and high level float switch

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MASKAM
WATER
Backfill and compact
Vent pipe
CLARUS
ENVIRONMENTAL

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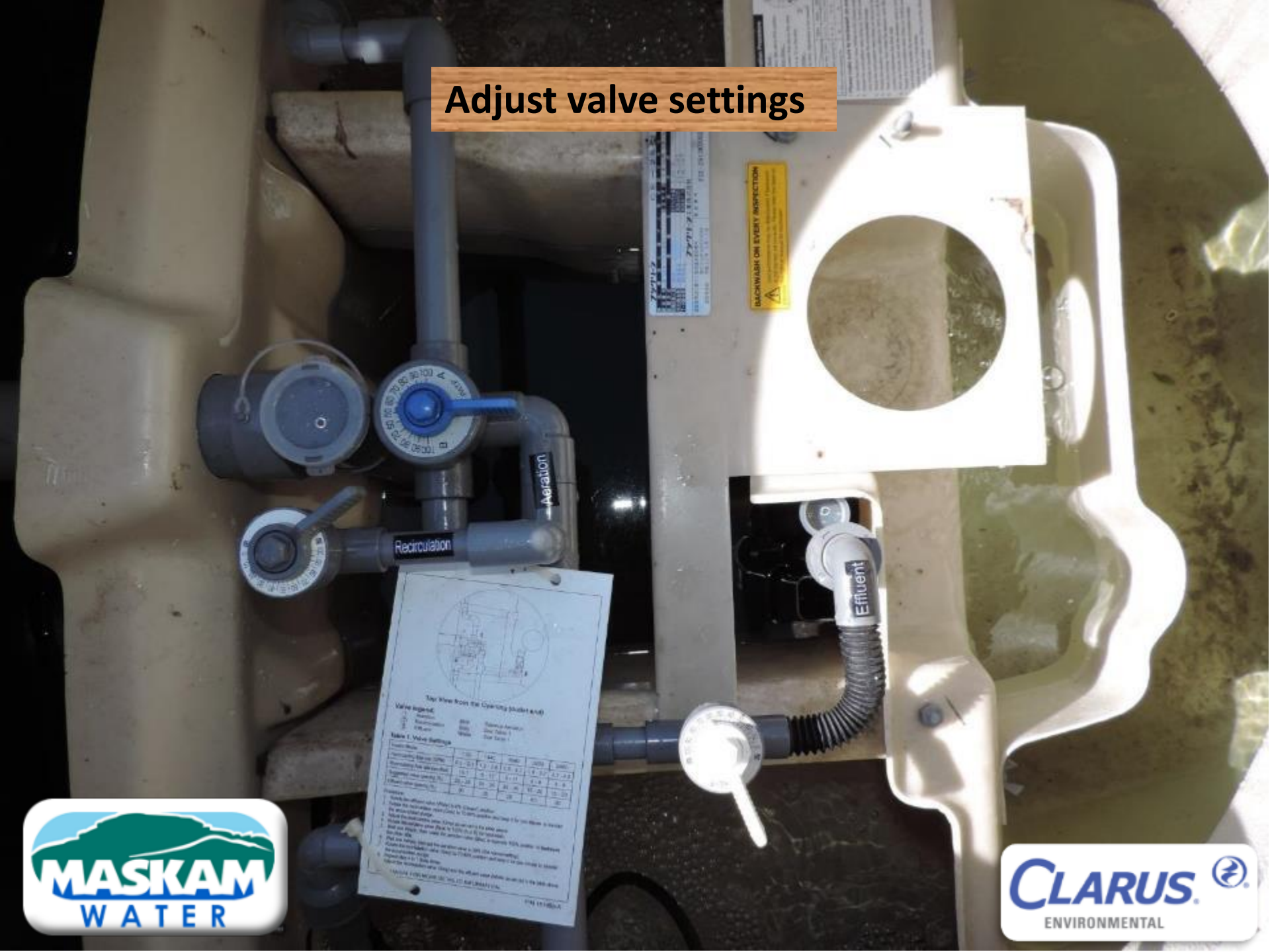
Air pump and electrical panel
(air supply and monitoring of plant)

Adjust valve settings



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CLARUS ENVIRONMENTAL

Final Grade

Air pump covered with artificial rock to blend in with garden (ensure enough air flow to prevent overheating)

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Water sample after 4 weeks

Applications

- Sewage treatment – domestic,from single house to communities
- Farms, guest houses/lodges, function venues, schools
- New developments
- Retrofit for conservancy tanks
- Retrofit for septic tanks
- Suitable for both urban use and rural areas
- Re-use of water
- Pollution control – where raw sewage pollute water sources
- Secondary treatment of industrial effluent
- COD reduction of industrial effluent before discharging to municipal sewer line (prevent high COD penalties)
- Informal settlements
- Temporary installations
- Mobile ablution facilities (can be built into container)

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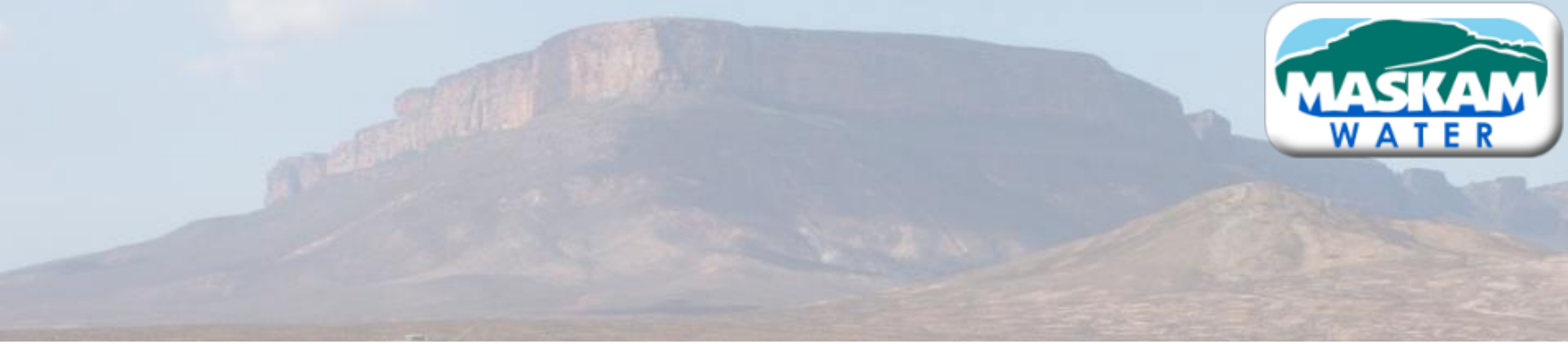
Different sizes to match any application

CLARUS ENVIRONMENTAL

MASKAM WATER



Case studies

Different applications where Fusions are used

Small holding, Upington

Air pump covered with artificial rock to blend in with garden (ensure enough air flow to prevent overheating)

MASKAM WATER

Commercial Buildings

(Barloworld Maputo)

Treated effluent is used for garden irrigation

Clarus Fusion Sewage Treatment Plant

Irrigation water pump and ozone system

Clarus Fusion and storage tanks

Final Grade

Guest Houses

Treated effluent is used for irrigation and to top up the dam

The View after installation

Pump & control room

Farms & private residences

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Old conservancy tank cost R9000 per month to empty

Saving Money

(Conservancy Tanks are not "green")

(Farm, Stellenbosch)

Clarus Fusion STP

Treated effluent is discharged to the pond

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Lodges and Tented Camps
(Camp Kanana, Botswana Delta)

Schools

(Oyster Bay, Eastern Cape)

Treated effluent is used for irrigating vegetable garden

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New developments (decentralised)

Treated water goes into storm water system which feeds a lake. Irrigation water is pumped from the lake

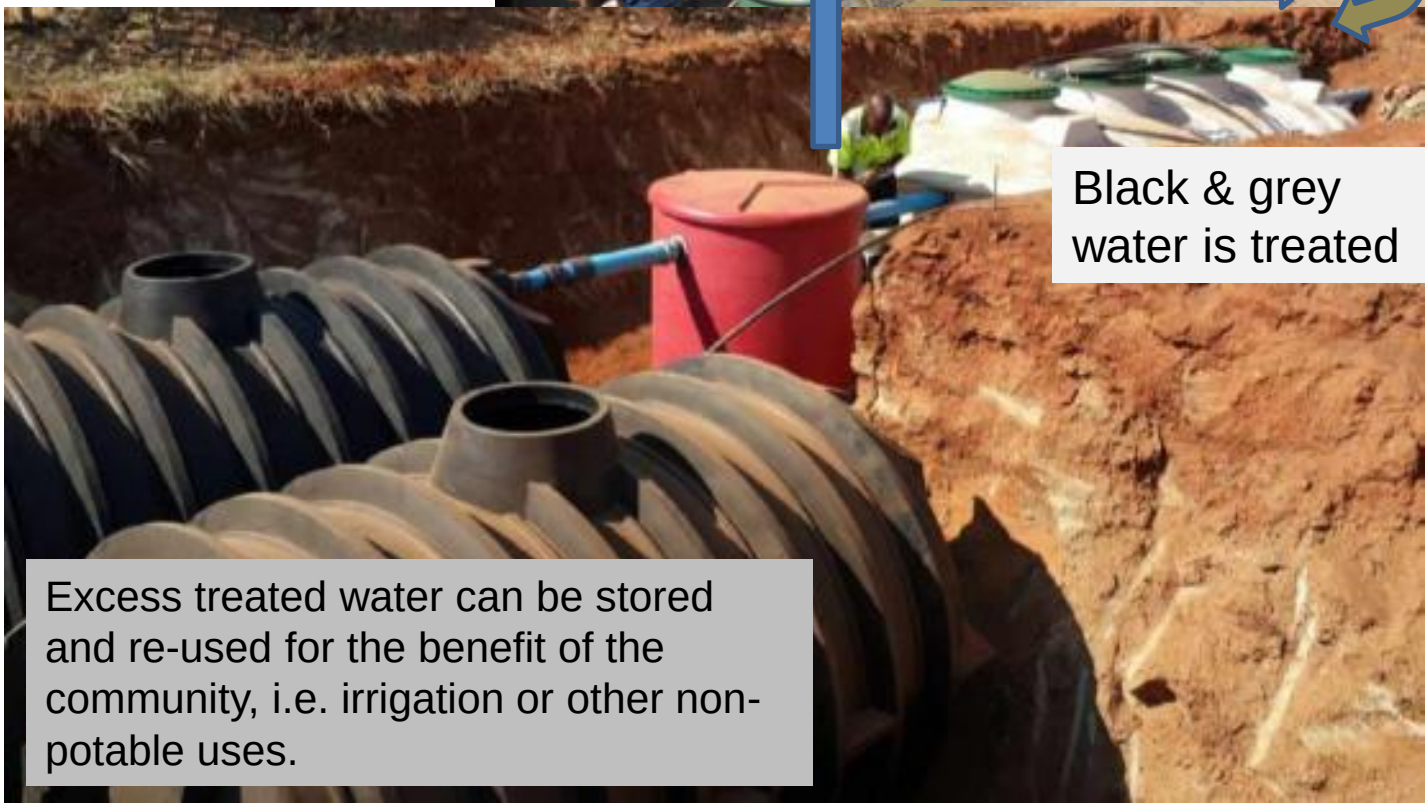
Lekki Island, Lagos

Settlements

Not a single drop of potable water is needed to give this community dignified sanitation!!!

Treated water is used for toilet flushing

Black & grey water is treated



Excess treated water can be stored and re-used for the benefit of the community, i.e. irrigation or other non-potable uses.

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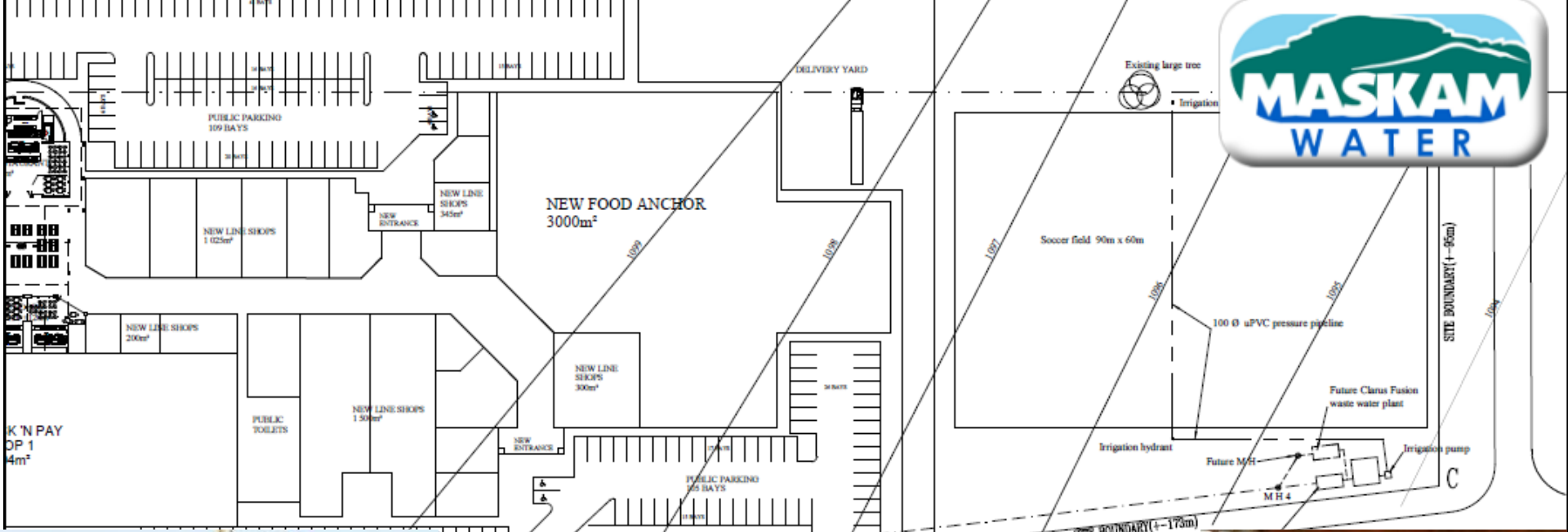


Shopping centres

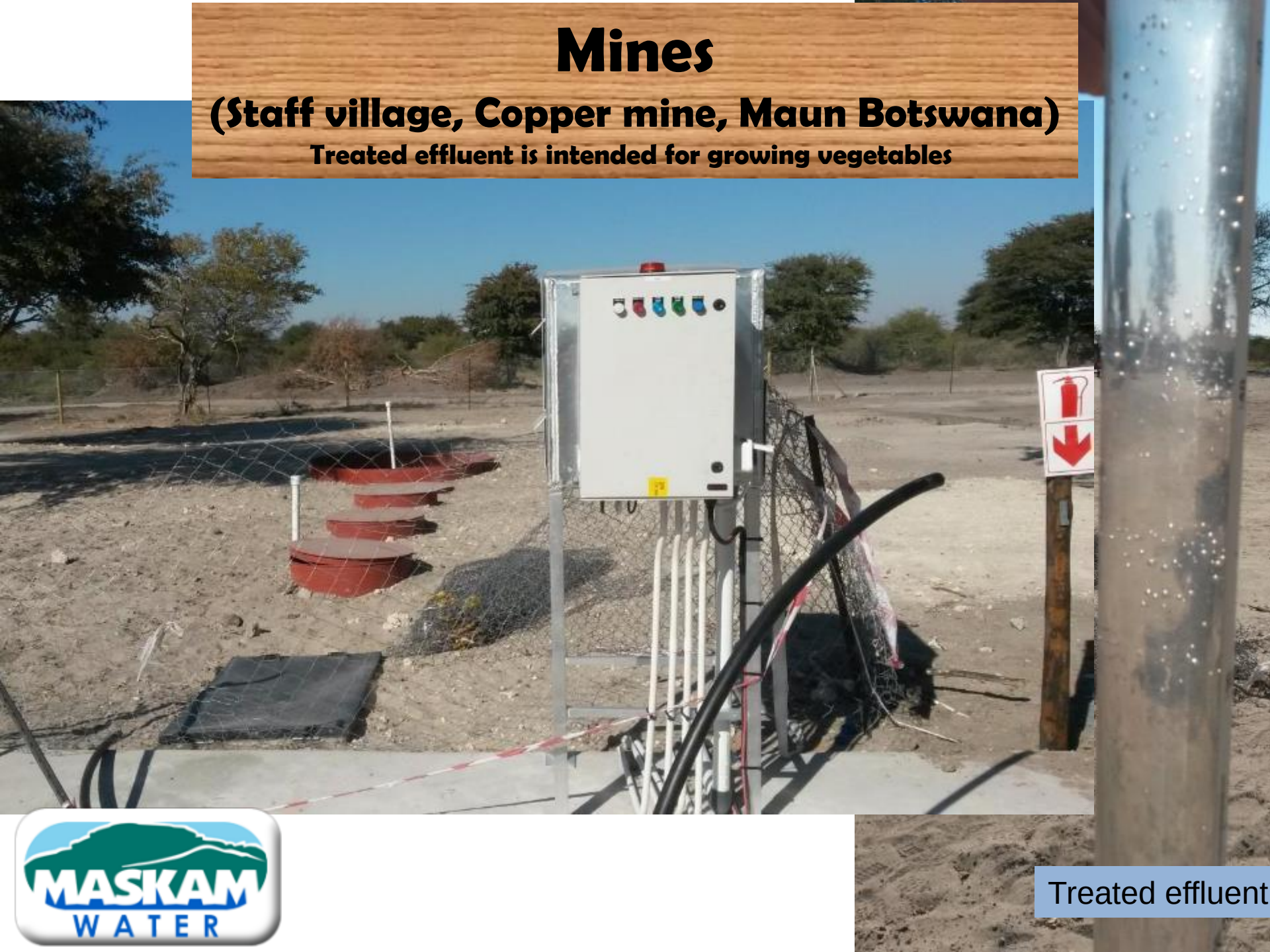
(Treated effluent is used for irrigation)

Petrol stations (Shell Ultra City Lobatse, Botswana)

Mines

(Staff village, Copper mine, Maun Botswana)

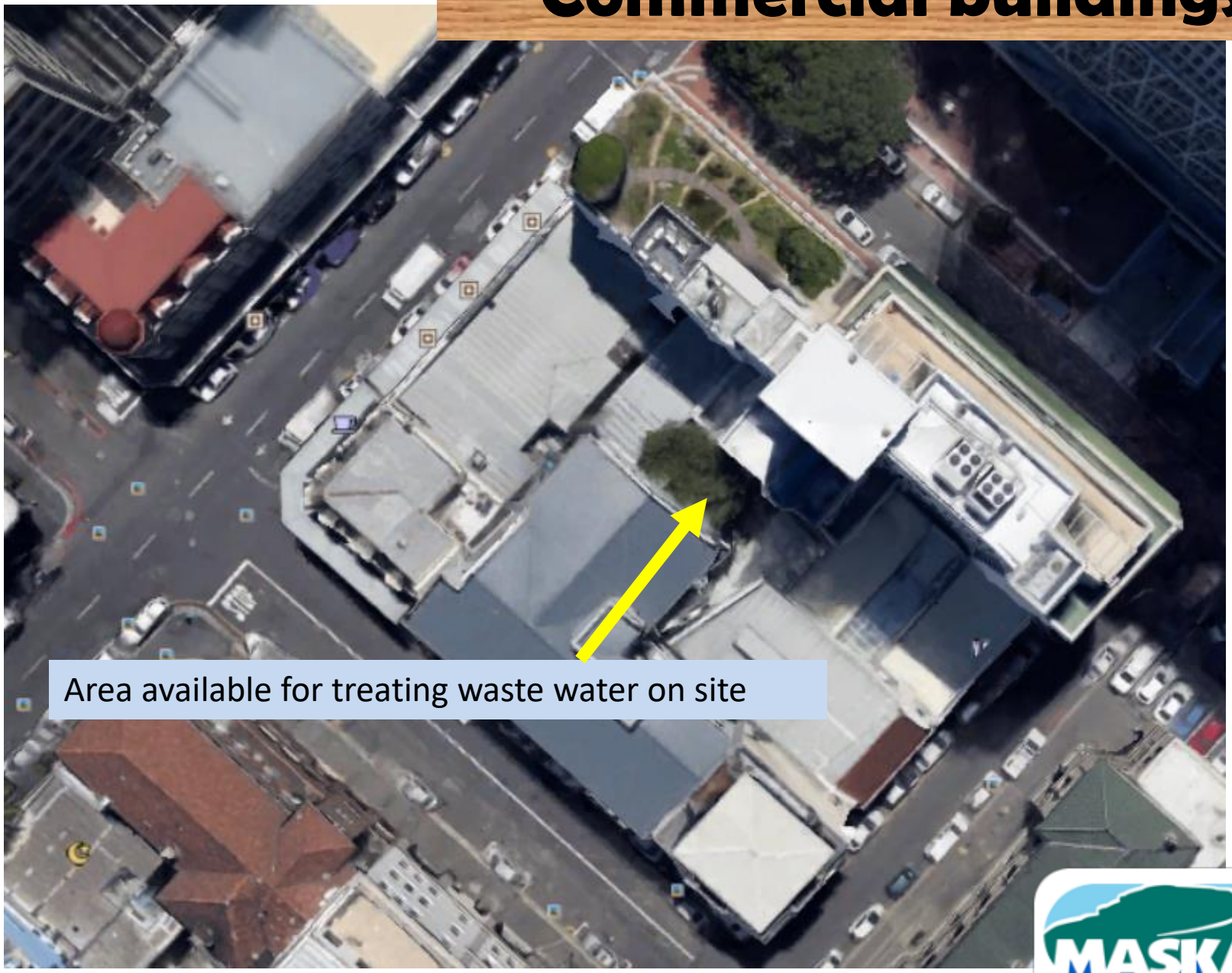
Treated effluent is intended for growing vegetables



Treated effluent

Commercial buildings – Cape Town CBD

Commercial buildings



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Commercial buildings (Cape Town CBD)

Treated effluent is used for toilet flushing, saving 1 million litres of potable water per year

Commercial buildings (Cape Town CBD)

Treated effluent is used for toilet flushing, saving 1 million litres of potable water per year

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Agriculture

Treated effluent from offices, restaurant and tasting room goes to irrigation dam, saving 1,5 million litres per year

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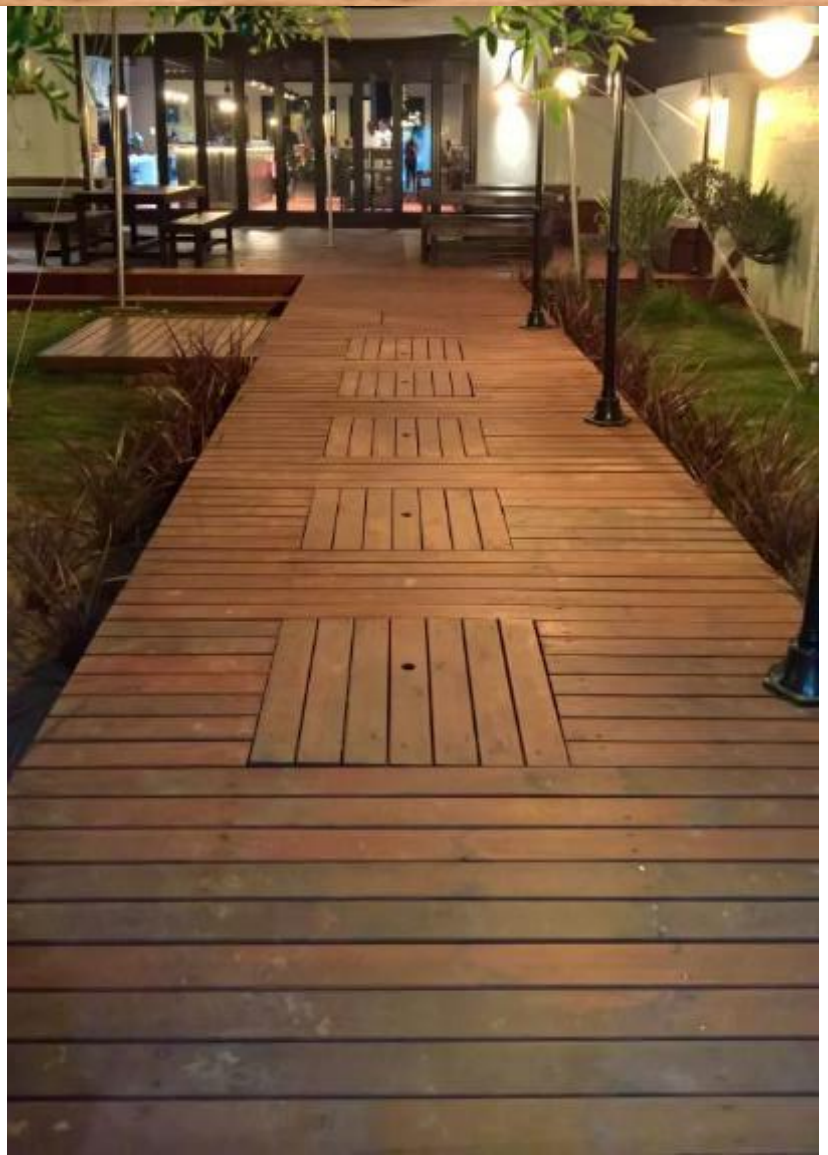
Restaurant

(Synergy Grove, Mc Gregor)

Customers walk over the Fusion to the ablution facilities and the garden is being irrigated, using treated effluent, while the guests are eating.



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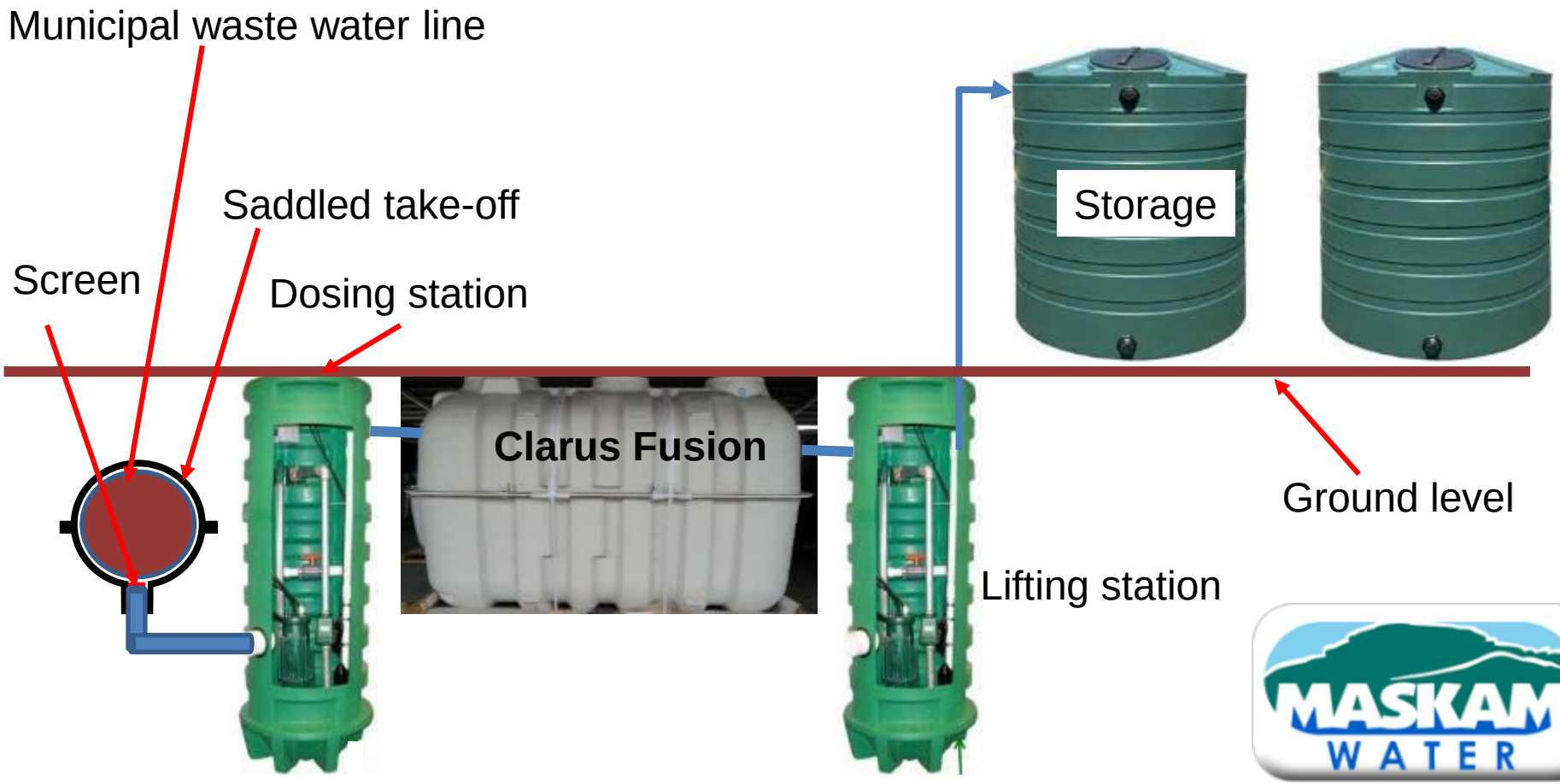
Campsites

Heritage Sites – Cango Caves

Heritage Sites – Cango Caves

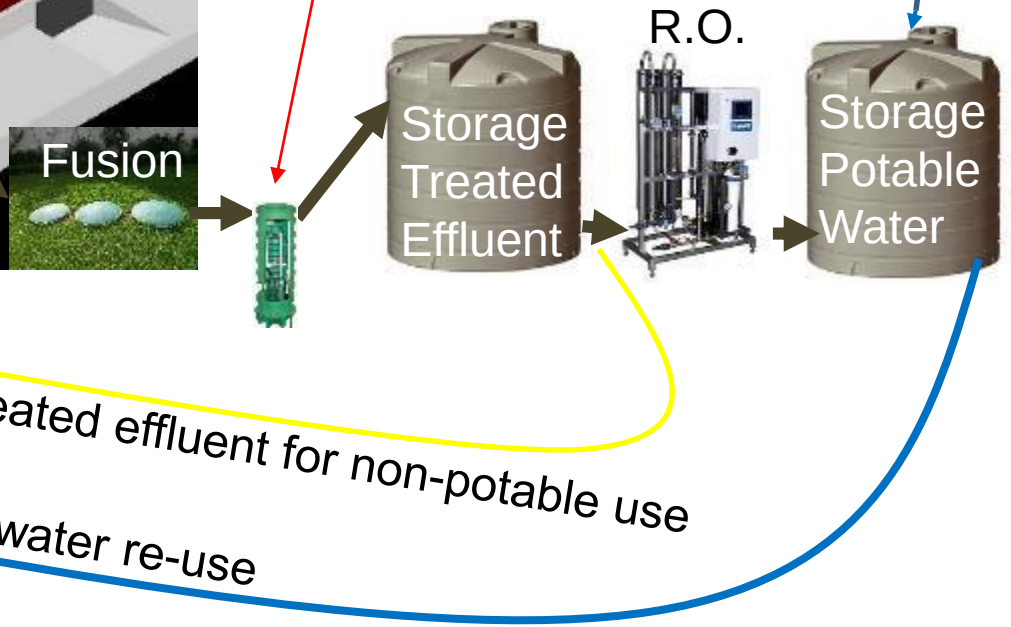
Alternative supply: Municipal sewer system

Irrigate sports fields and parks with reclaimed water



Taking waste water out of the municipal network saves potable water, reduces the load on municipal WWTWs and WW networks. It frees up space for new development to take place.

Commercial buildings
(Maximising re-use of water)



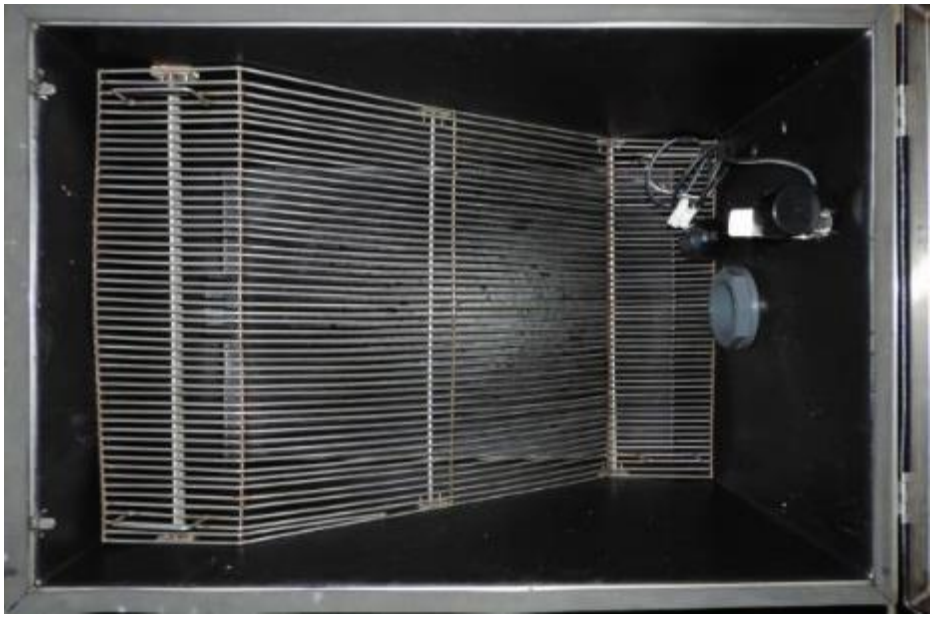
Example:
30% Non-potable re-use
70% to RO
60% RO recovery
Total amount of water recovered is 30% for non-potable plus (70%*60%) 42% from RO= 72%

ZOELLER PUMP COMPANY

Supplementing products

MASKAM WATER

Hand rake screen



Basket type screen

(available in half round and full round)

Pre-screening

Protects waste water pumps and extends intervals of Fusion desludging

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UV in underground UV Chamber

(Gravity applications)

Disinfection of treated effluent

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Lifting stations

When gravity flow is not possible...

Applications:

- Sewage removal from locations lower than gravity sewer mains
- Sewer main is not accessible
- Lifting sewage into Clarus Fusion STP (if gravity not possible)
- Dewatering
- Lifting grey water or rain water into surface tanks

Features:

- Durable polyethylene basin
- Cast iron pump with non-clogging vortex impeller
- Gasket on cover reduce odours
- Screw-down lid
- Wide range of pumps available, from dewatering to 50mm solids handling
- Wide range of basins up to 2m deep
- Rail systems optional

Multizone Valve

Mechanical diaphragm valve change to new zone each time pump starts

2 – 6 zone

Rail System

Easy installation and removal of pumps in deeper sumps, auto disconnect

Quick Disconnect

For easy removing and installing pumps in a shallow sump, no tools needed to remove pump for servicing

Low pressure / domestic use, 40mm

ZOELLER PUMP COMPANY

Full bore check valves

Threaded, high pressure,
40mm, 50mm & 63mm
Flanged 75mm+

Clamp-on, low
pressure 50mm

Clamp-on spring loaded,
40mm, reduce water hammer
(also ideal for pool pumps)

MASKAM WATER

Dewatering, effluent & evaporative cooling

Engineered sump pumps – delivery in two weeks from order

Zoeller pumps

All Zoeller pumps up to 2kW fits into the plastic lifting stations

ZOELLER® PUMP COMPANY

Grinder pumps, single directional and auto reverste

Thermal overload built-in

Solids handling 19mm – 100mm. Cast iron, brass or bronze impellers

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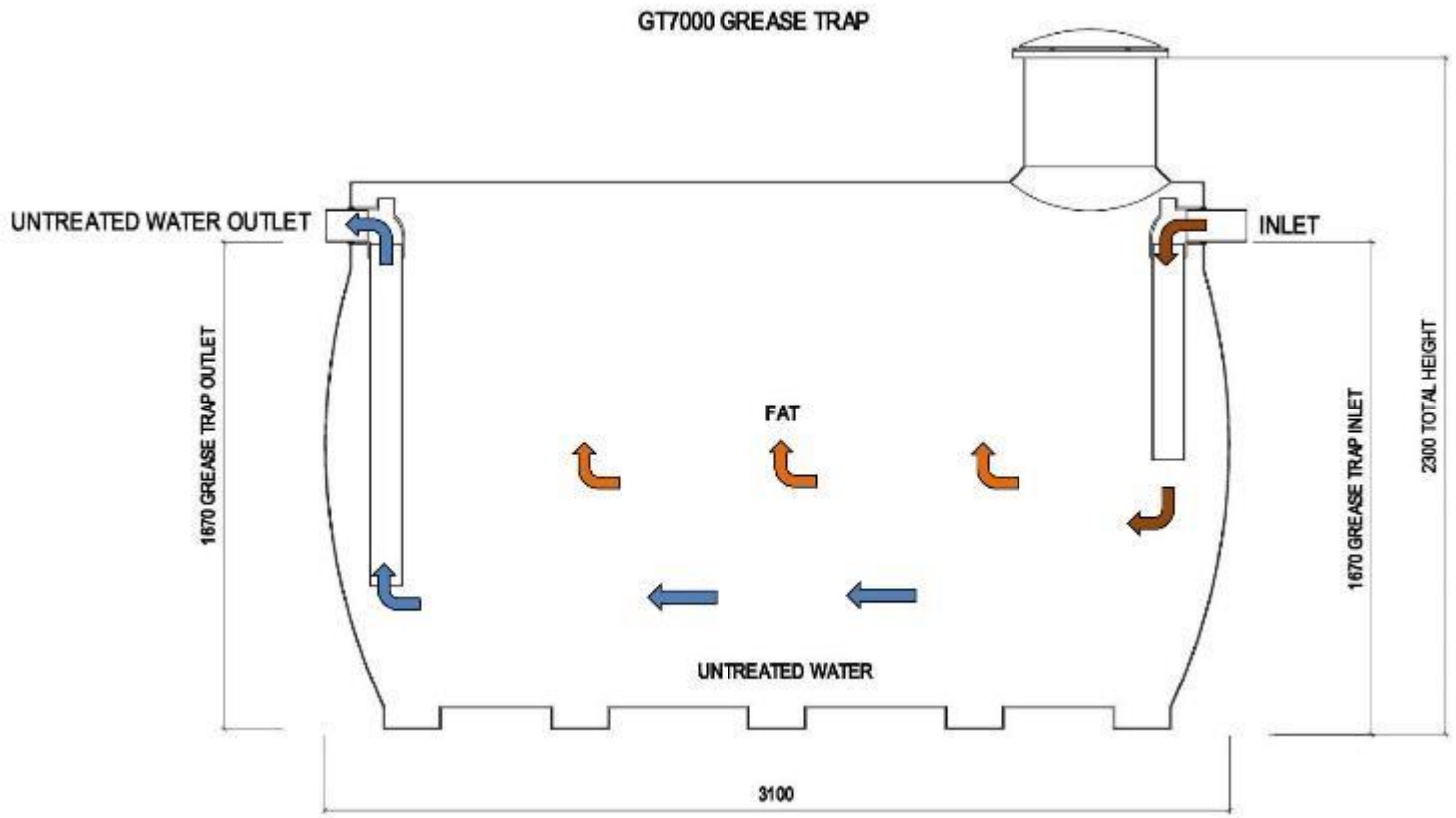
Grease traps



Grease traps need a 6 hour retention for grease, oils and fats to separate from the water. Don't try to size grease traps according to the litres per second that can flow through it!

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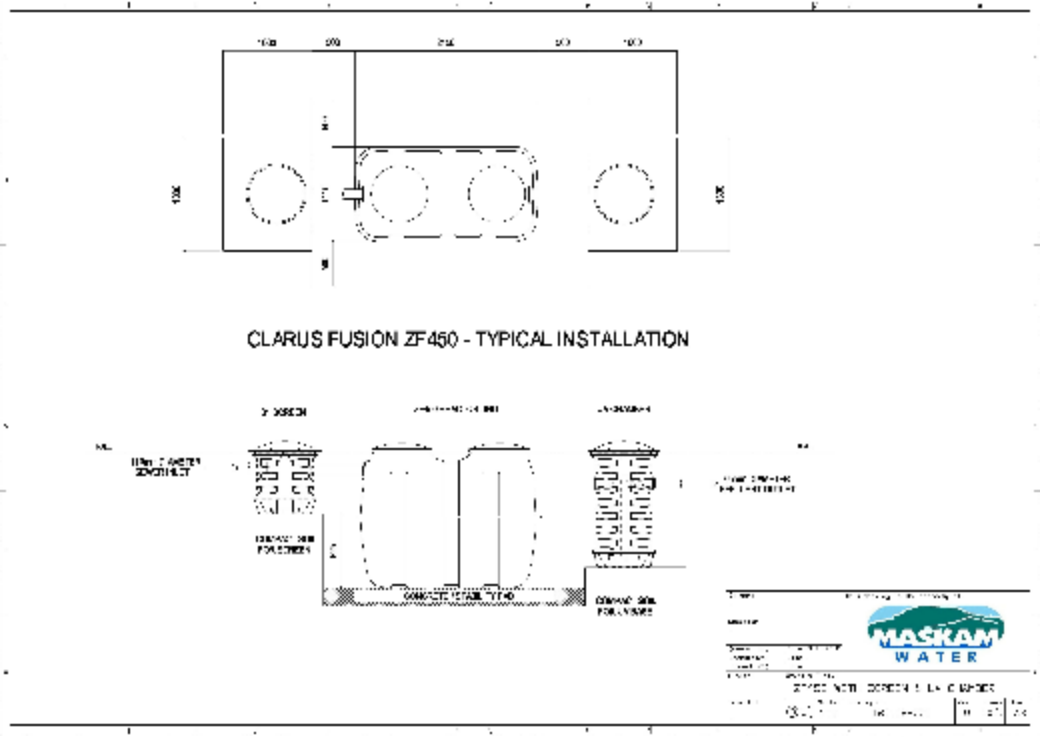
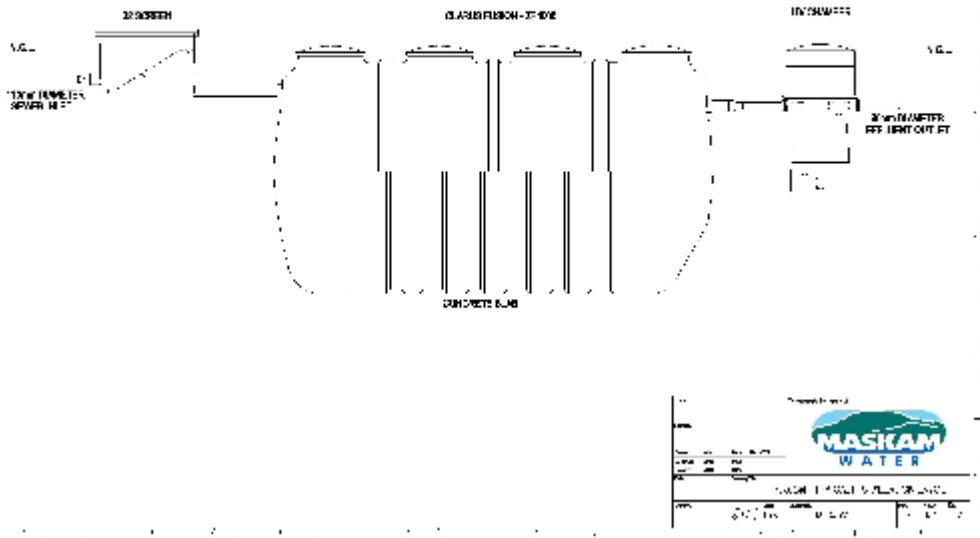


Typical installations with pre-screen and UV for disinfection



Operating cost and payback

Financing available

The saving in your water bill can cover the monthly installments

No big capital layout needed

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Level 1 water tarriffs, City of Cape Town, Domestic 2019/20

Monthly water consumption in Kl.	Fixed charge	Cost of municipal water			Cost of on-site treatment for **non-potable** re-use	
		Water per kl	Waste Water cost per kl water used (calculated at 70% of consumption)	Total cost per kl	Single residential, based on 40% use of system	Grouped housing / gated communities of 20 households or more
6	R 115.00	R 17.15	R 13.82	R 30.97	R 25.88	R 2.30
10.5	R 115.00	R 24.39	R 19.67	R 44.06	R 25.88	R 2.30
20	R 115.00	R 34.63	R 29.43	R 64.06	R 25.88	R 2.30
35	R 115.00	R 76.04	R 52.96	R 129.00	R 25.88	R 2.30

This saving is financeable!
The saving can cover the instalment

*Cost is for treatment only, excluding pumping

MASKAM WATER

Level 1 water tarriffs, City of Cape Town, industrial and commercial 2019/20

Monthly water consumption in Kl.	Cost of municipal water	Sewage charge @ 95% of consumption	**Total cost of water**	**Cost of on-site treatment for non-potable re-use**
20	R 628.20	R 536.18	**R 1 164.38**	**R 368.00**
40	R 1 256.40	R 1 072.36	**R 2 328.76**	**R 414.00**
60	R 1 884.60	R 1 608.54	**R 3 493.14**	**R 621.00**
80	R 2 512.80	R 2 144.72	**R 4 657.52**	**R 644.00**
100	R 3 141.00	R 2 680.90	**R 5 821.90**	**R 805.00**
300	R 9 423.00	R 8 042.70	**R 17 465.70**	**R 1 380.00**
1000	R 31 410.00	R 26 809.00	**R 58 219.00**	**R 4 600.00**

This saving is financeable!

The saving can cover the instalment

*Cost is for treatment only, excluding pumping

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- On-site treatment is a game changer in the economy, especially now (given the drought that seems to be never ending).

- There can be more jobs created in manufacturing, selling, installation and maintenance of these kinds of systems.

- **The bigger advantage is for the communities, though.** They have the benefit of the water for generations to come. That can sustain small scale farming, sports facilities, etc, etc.

- Businesses can remain open because there will be water for toilet flushing. Garden services may continue because there is water for irrigation.

- (Remember many of the smaller towns don't have piped sewage, others have evaporation ponds so all of that water goes to waste.)

- We need to look at this more inclusively. **If we look at one fraction – the plant – only, we miss the bigger picture.**

MASKAM WATER

086 12 WATER
sales@maskam.co.za

We can Help!

- Energy efficient water pumps
- Energy efficient pond pumps
- Booster sets
- Effluent pumps
- Dewatering pumps
- Sewage pumps
- Lifting Stations
- UV for water disinfection – pool, household, commercial
- UV for air disinfection
- Grey Water Systems
- Rain water harvesting
- On-site waste water treatment
- **Saving water through on-site recycling**
- **Designing water wise buildings**