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# **Waste Water Treatment in Rural Areas of the UAE**

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- Current Situation of sewage disposal
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# Current Situation

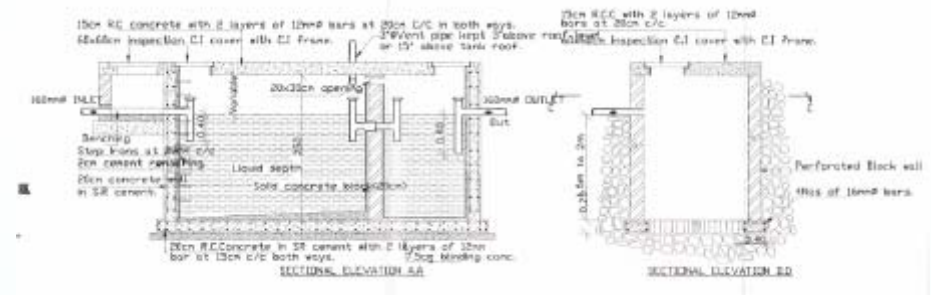
## Septic tanks with soak-away

- Each villa equipped with septic tank
- Pre-treated Sewage soaks into the ground
- Sludge disposed by tankers



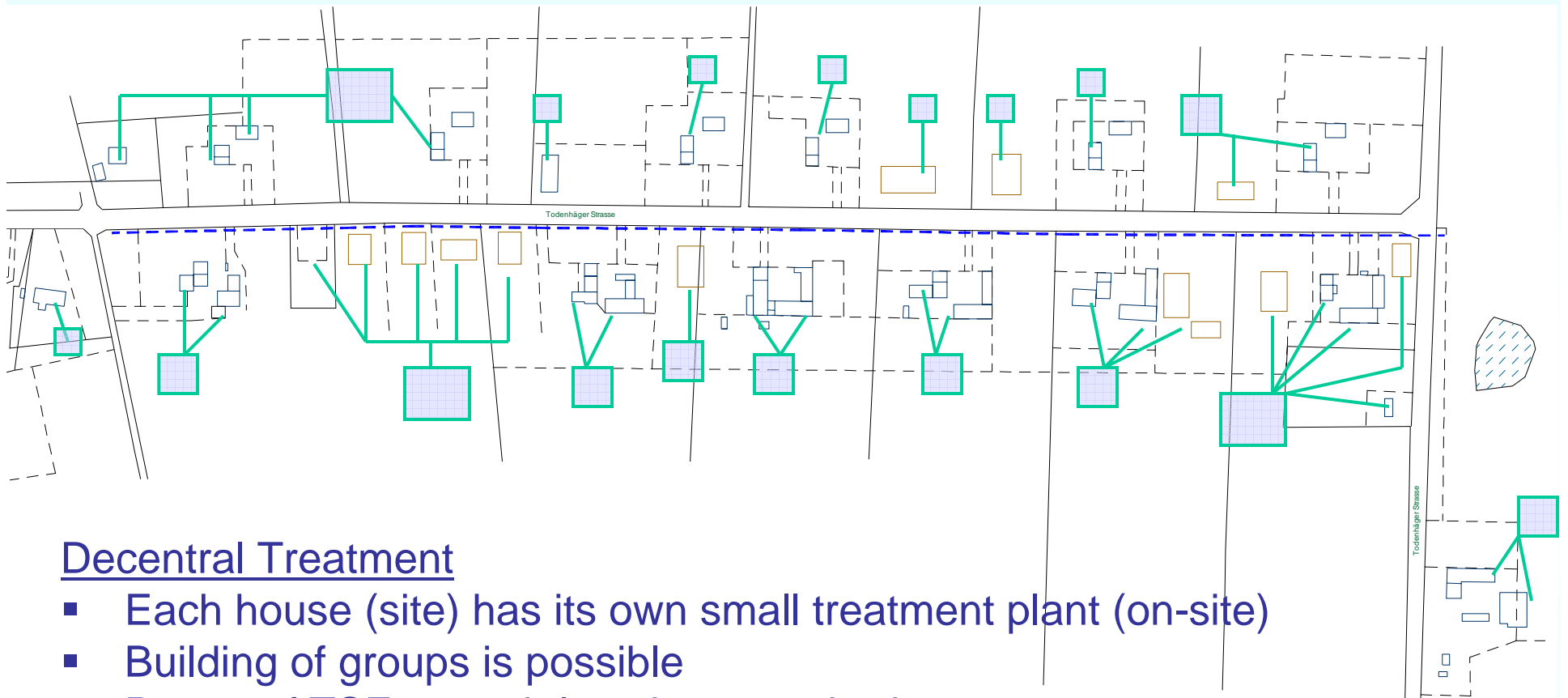
### Disadvantages:

- Contamination of ground water
- Waste of water, no reuse
- Health risk
- Disturbance of tenants (odour, spills, trucks)
- Out-of-date technology



=> Sewage Treatment and Reuse

# Central – De-central sewage treatment

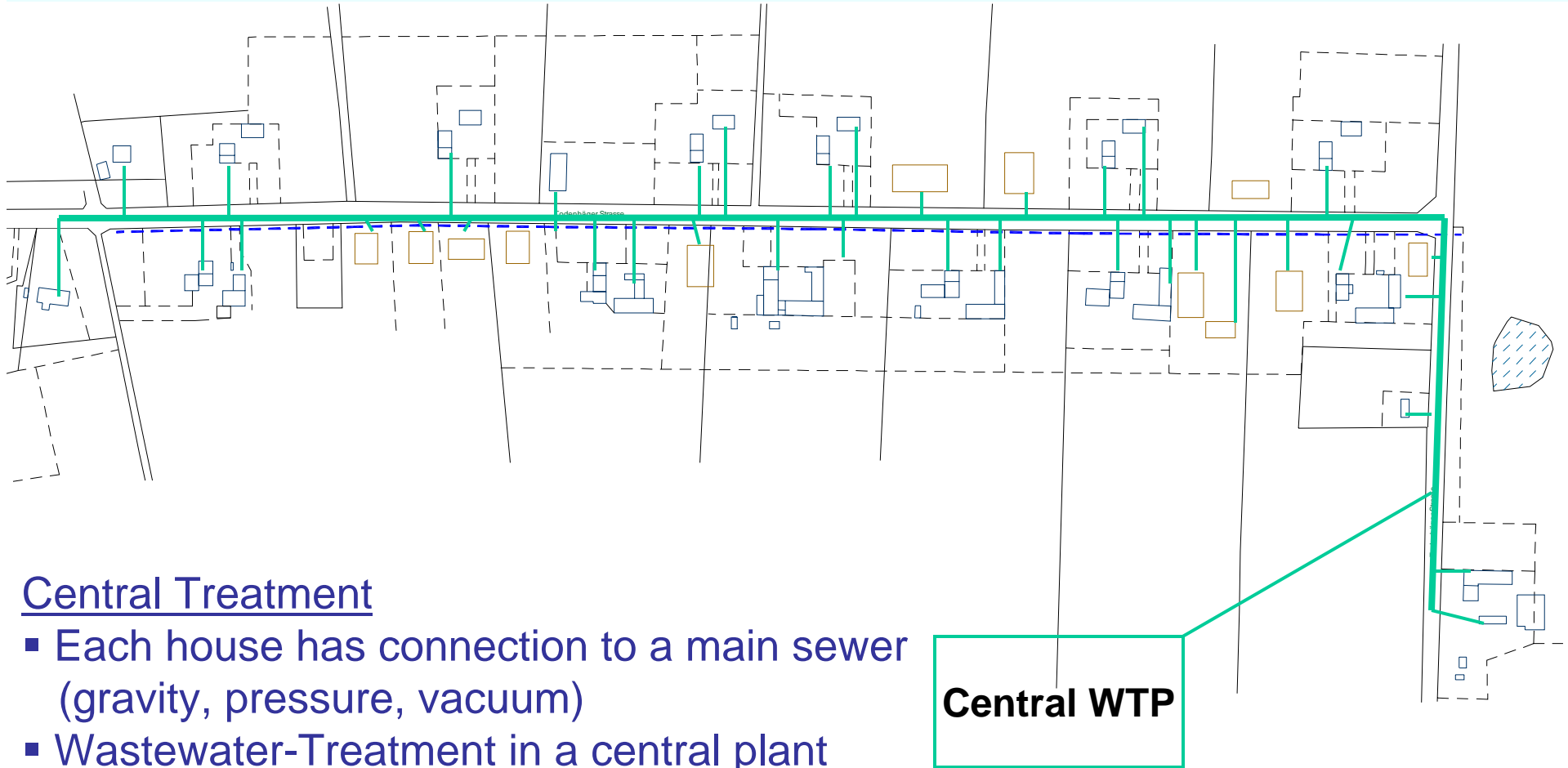


## Decentral Treatment

- Each house (site) has its own small treatment plant (on-site)
- Building of groups is possible
- Reuse of TSE at each locations required
- Sludge still to be disposed by tankers
- Health risk by failure of systems

 Decentral WTP

# Central – De-central sewage treatment



## Central Treatment

- Each house has connection to a main sewer (gravity, pressure, vacuum)
- Wastewater-Treatment in a central plant
- Water reuse in farms or public areas

# Technologies for sewage treatment

## Reed Bed, single villa



# Technologies for sewage treatment

## Reed Bed, small village



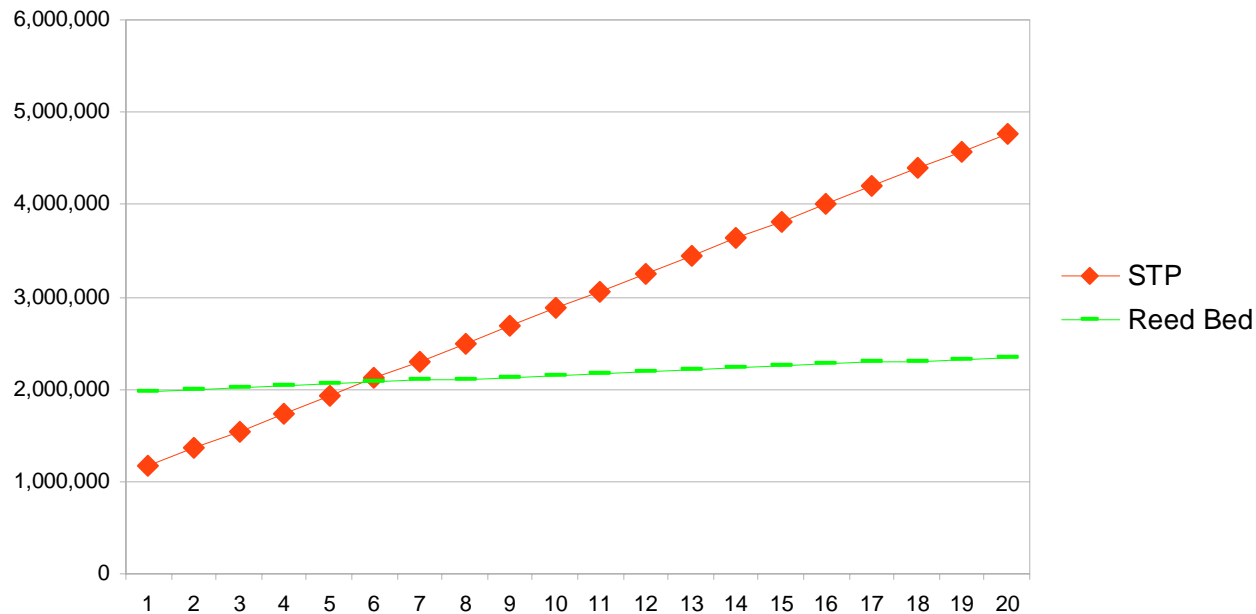
# Comparison of Technologies

## MBR, 60 Villas

- Invest: 1.000.000 AED
- Reinvest: 50.000 AED/year
- Running: 140.000 AED/year

## Reed Bed, 60 Villas

- Invest: 1.900.000 AED
- Reinvest: 10.000 AED/year
- Running: 10.000 AED/year





# Advantages Reed Beds

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- Easy to maintain (Operator job for local people)
- Long lasting system (>25 years)
- Use of local material/local plants (Conservation)
- Low or no energy consumption
- No problems by pause times or under loading
- Creation of greenery/habitat
- If several systems, central reuse of biomass
  
- **BUT: 2-5 m<sup>2</sup>/PERSON**

## Proposal for a village (60 villas, 130 m<sup>3</sup>)

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- Gravity sewer network (PVC-U, DN 150, 0.75%)
- Grinder Pump Station (RCC, 20 m<sup>3</sup>)
- Reed Bed Treatment System (3200 m<sup>2</sup>, 8 basins)
- TSE pump station (RCC, 20 m<sup>3</sup>, solar PV)
- Farm/roadside Irrigation (500 Palm trees)

Any Questions?

Thank you !