

# Fresh water on an island

## *Options and challenges*

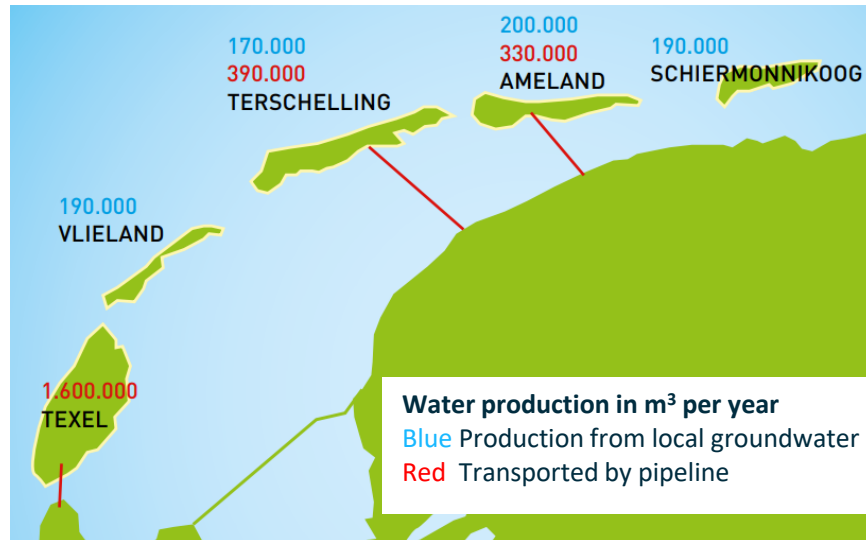
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8 april 2021

**Project related**

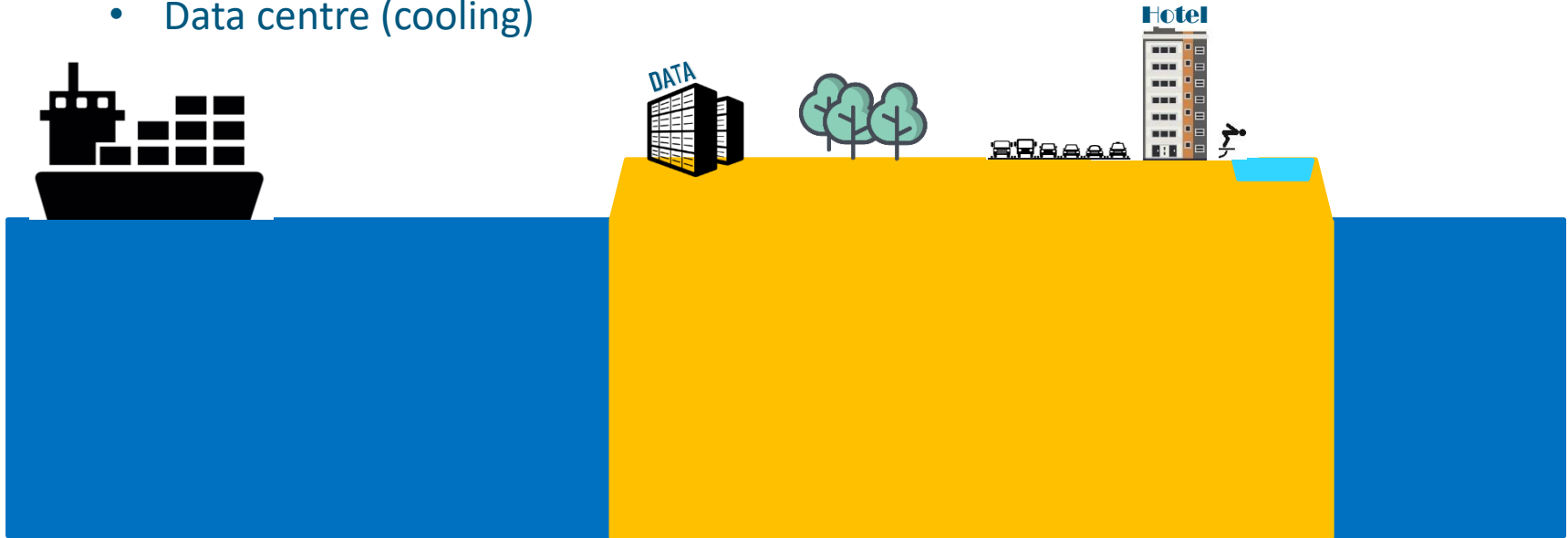
# Fresh water on an island; the four basic options

1. Transport by ship (bottles and tanks) → Mainly for emergencies
2. Pipeline from shore → Texel
3. Production with groundwater on the island → Vlieland
4. Desalinization → Aruba



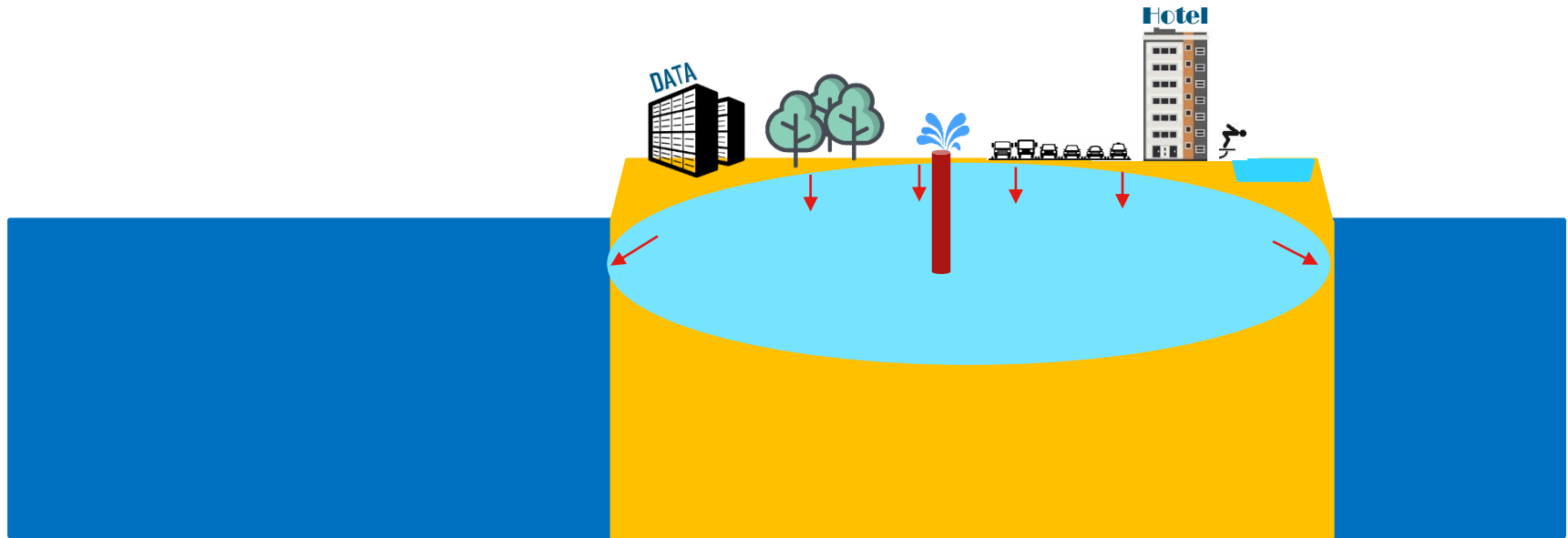
# Fresh water demand on the new island

- Drinking water in hotel
- Shower / Swimming pool / Laundry in hotel
- Vegetation
- Data centre (cooling)



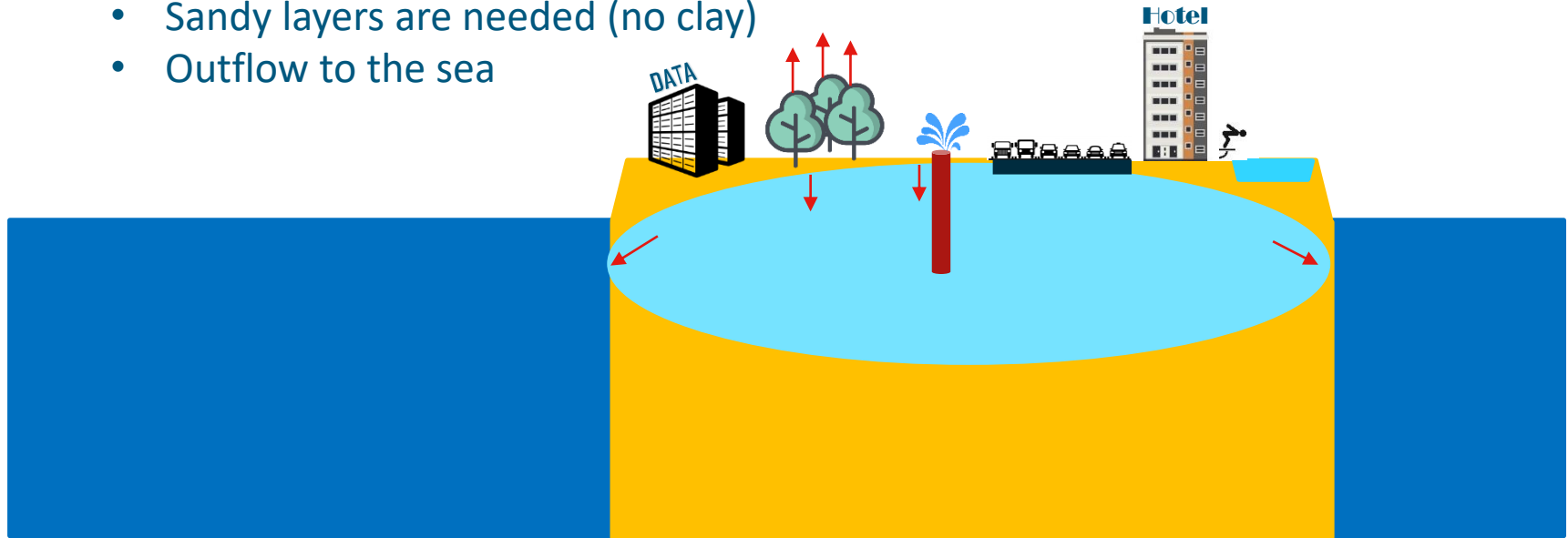
# Rain water will generate a natural groundwater lens

- 60.000 m<sup>3</sup> of rainwater will infiltrate naturally every year
- And flows out into the sea
- And can partially be extracted and used to produce (drinking)water



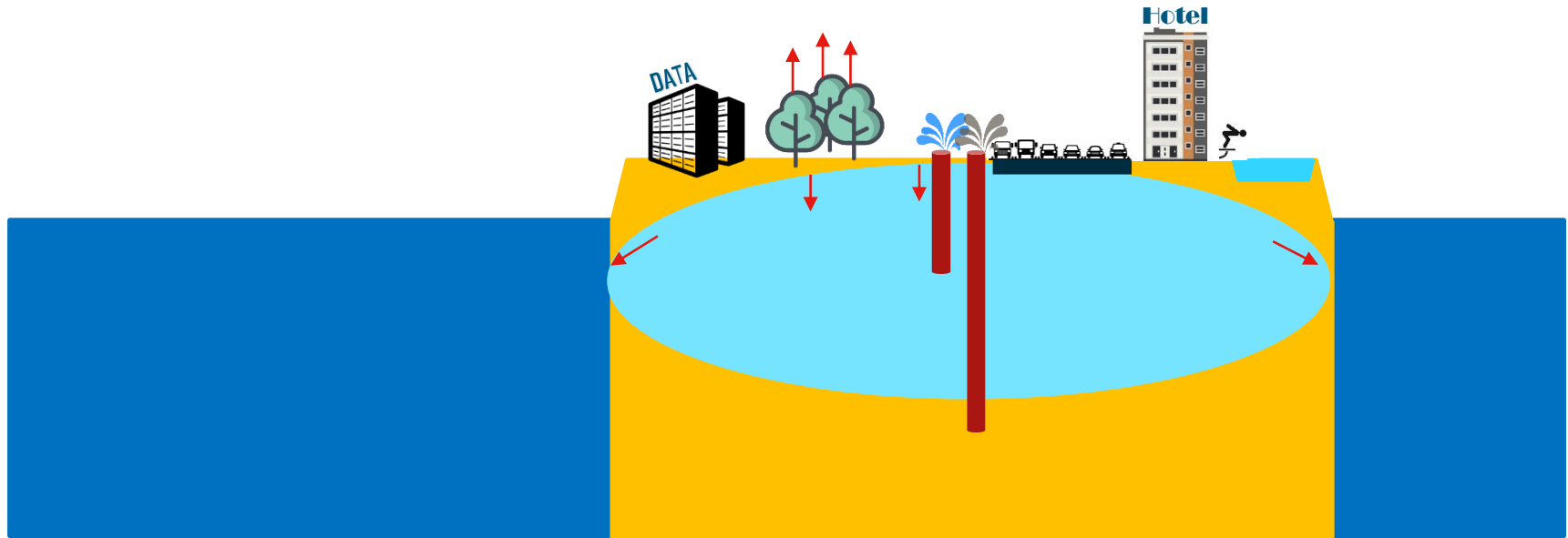
# But attention is needed

- Paved area impedes infiltration to groundwater
- Groundwater protection is needed to prevent contamination
- Vegetation consumes fresh water
- Sandy layers are needed (no clay)
- Outflow to the sea



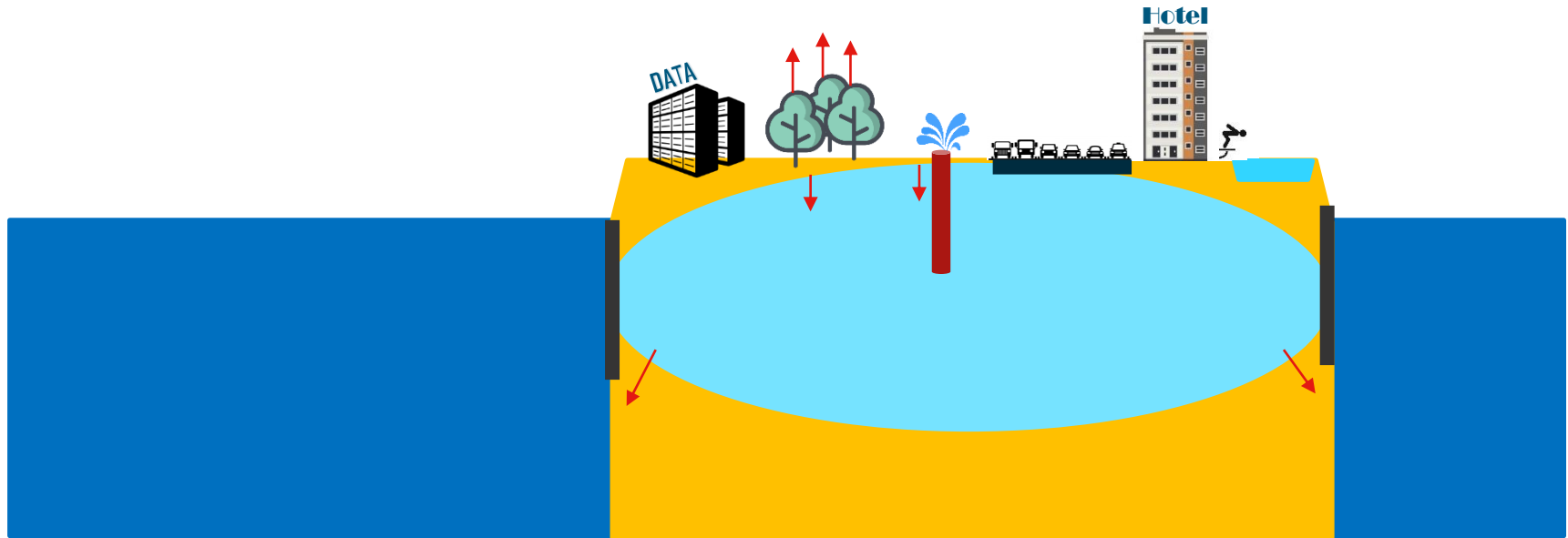
# Innovations to enlarge the freshwater lens

- Extraction of salt water below the lens



# Innovations to enlarge the freshwater lens

- Sheet piles to prevent horizontal outflow to the sea



# Alternative is to use desalinization

- Reverse osmosis techniques are evolving
- Much energy is needed
- Heat from data center can be an energy source

