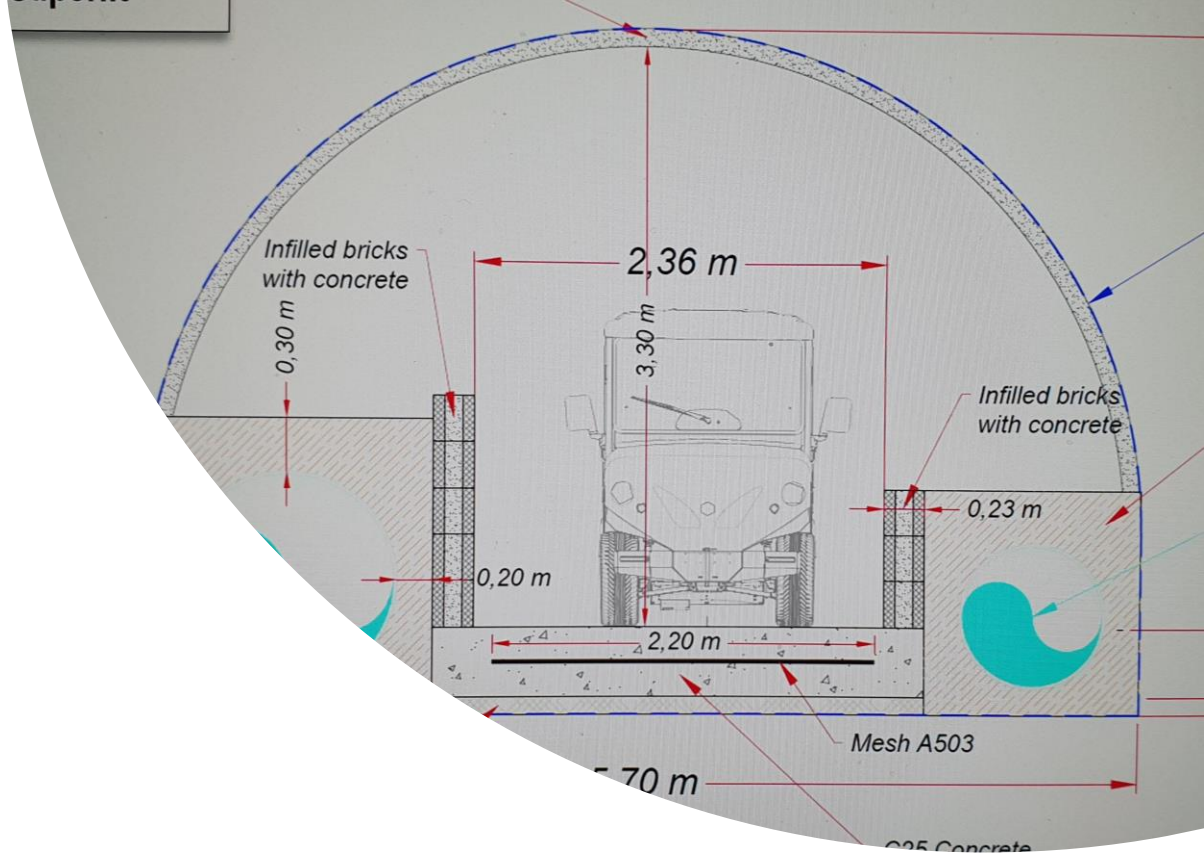


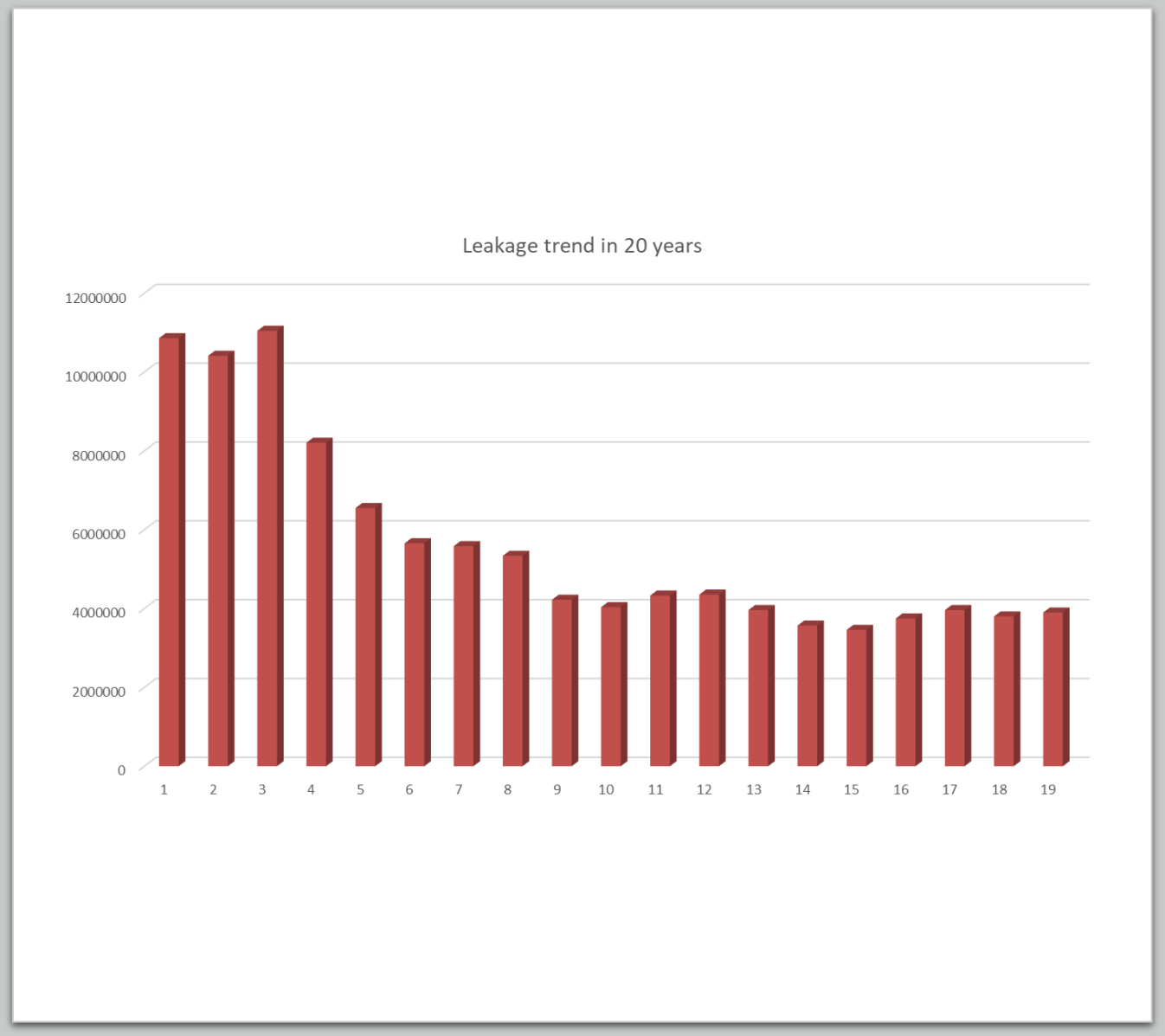
Towards a Net Zero Impact utility Project

A good look at the strategy behind this Major Project

Largest Energy saving initiative by far…

26 years of leakage management!

From 4000m3/hr to 360m3/hr



Infrastructure Leakage Index

Down to 1.8 from a staggering 20 in 1995

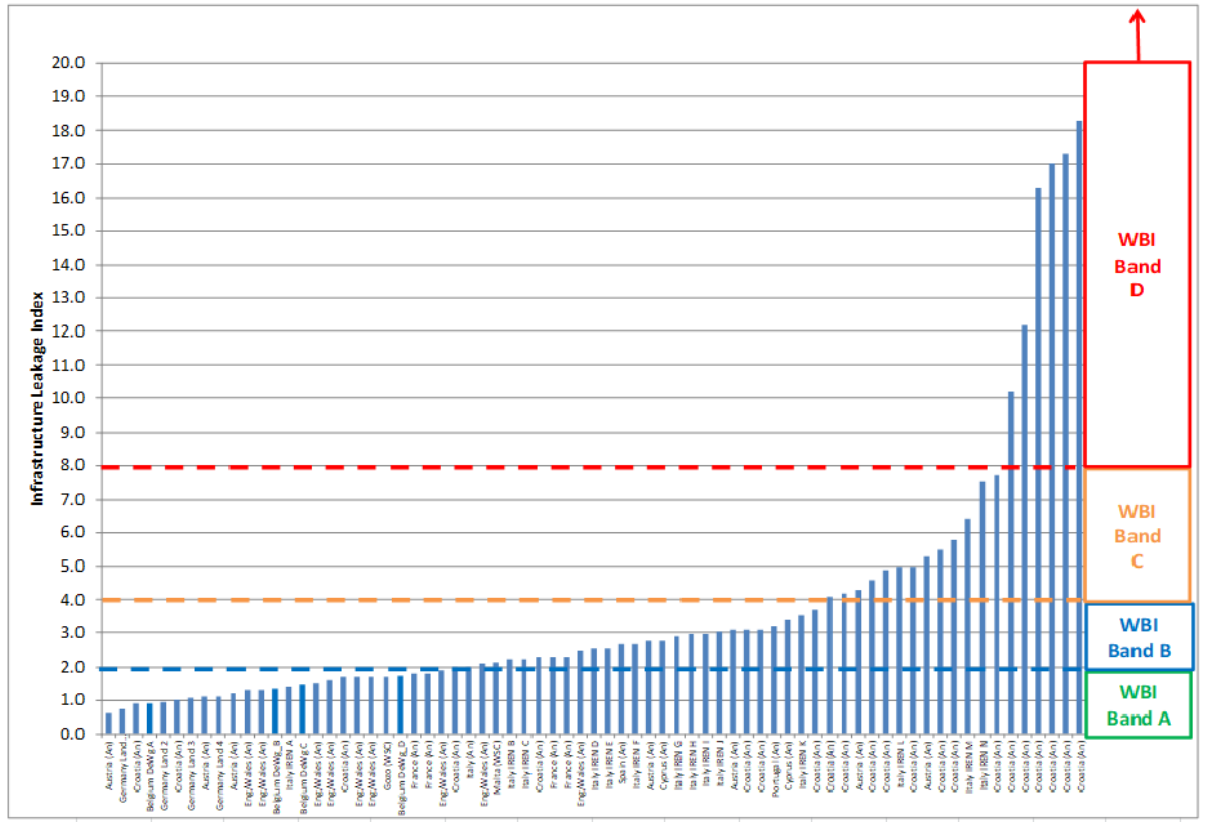
Benefits?

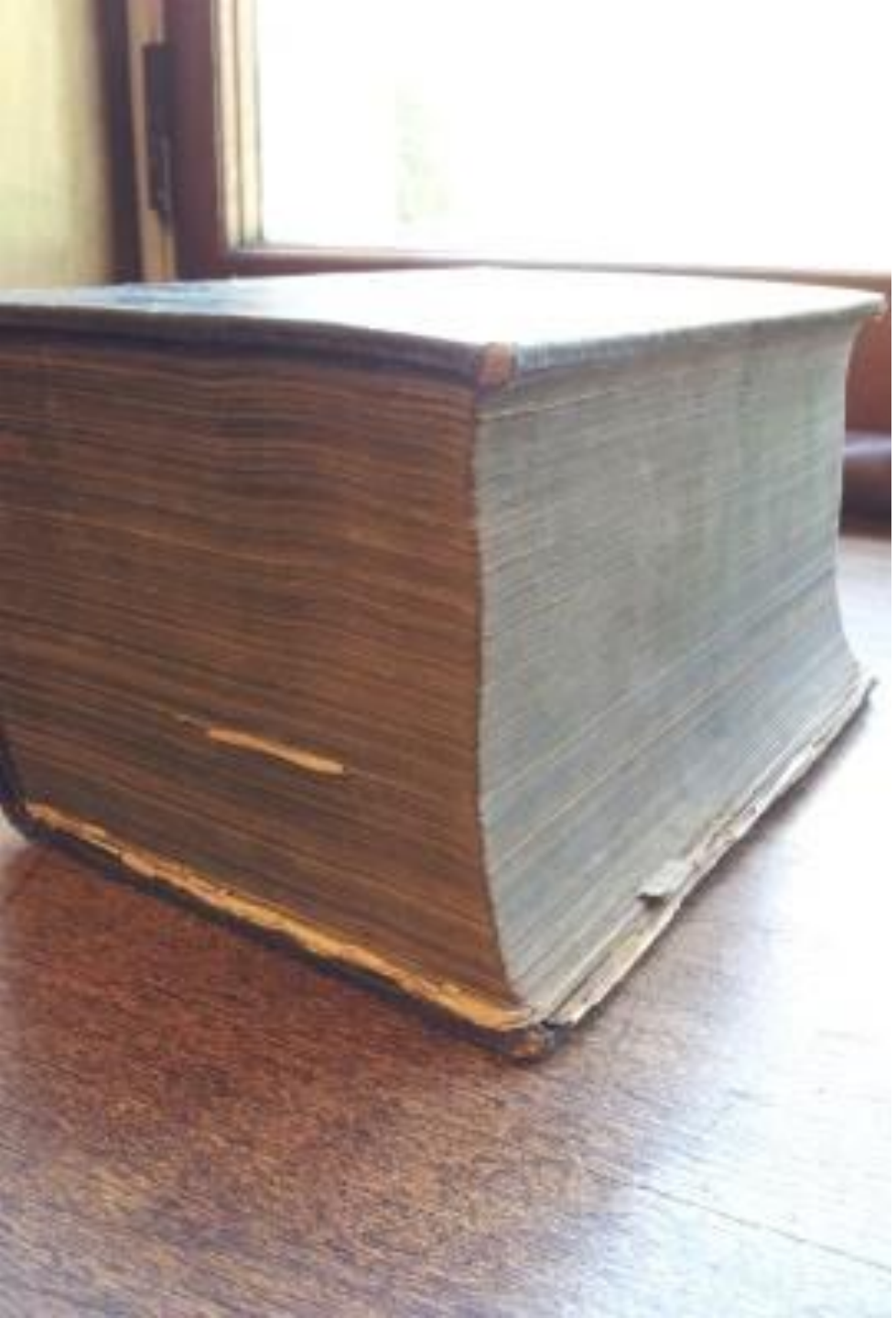
Plan for 6th RO scrapped

2 RO's decommissioned

3 RO's at half load.

Overall Savings to date – Eur750M





Misconceptions

- ‘Net Zero’ has been interpreted in many creative ways.

Purpose:

All initiatives address the following:

- To improve the quality and quantity of potable water WITHOUT increasing recurrent costs to achieve a Net Zero financial impact

Scope:

- To Maximise the blending potential of all RO water produced.
- To safeguard and use ground water sensibly
- To reduce all recurrent specific costs

Technical concepts to clarify:

- RO water - low chlorides, significant Boron
- Ground water - high chlorides, high nitrates.
- Untreated RO - very negative LSI (AGGRESSIVE!)
- High ground water abstraction rates increase chloride levels, reduces Nitrates, increases Boron
- Same abstraction can be achieved from multiple boreholes, hence the concept of spatial abstraction
- Aquifer is not a huge bucket of water. Should be used up to economic and sustainable limit.
- Industry abstracts what we do not.

Objectives

1 Upgrade all RO plants to increase capacity and reduce specific power consumption

- Latest energy recovery devices, better efficiency motors, latest membrane technology, increase sea wells draw.

Benefits:

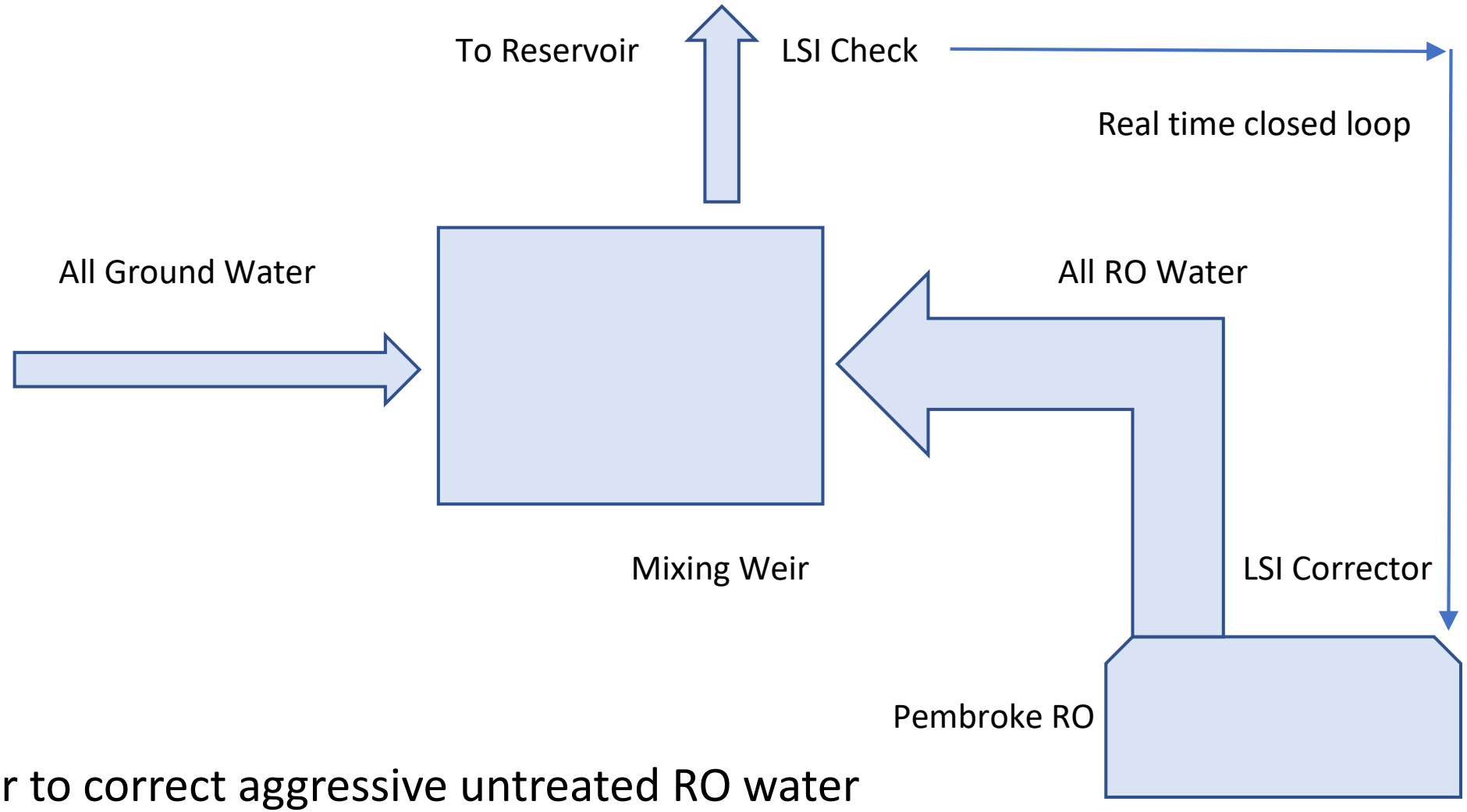
- To allow for increased consumption
- To reduce energy costs
- To acquire better blending potential

Objectives

2 Pump RO water from Pembroke directly to ta Qali group of reservoirs.

- Reduce unnecessary friction due to restricted pipe diameters
- Reduce head due to unnecessary elevations
- Gain full blend potential
- Stop in situ treatment

Rationale



GAINS:

- Ground water to correct aggressive untreated RO water
- Closed loop LSI check prior to discharge in reservoir and correction @ Pembroke.
- Minimise Lime injection and improve Ph

Objectives

3 Pipeline from Ta Qali towards San Gwann

- Uninterrupted water supply
- Stable parameters (Ph, Boron, Chlorides, TDS)
- No more lime in pipework
- Reduced stopped/slow meters
- Create hub to supply water by gravity /pumping

Objectives

4 Pipeline from Ta Qali towards St Catherine Hospital

- By pass 100 years old supply pipe in old tunnel.
- Improve supply pressure up to Valletta
- Improve water quality
- Allow possibility to replace old pipe

Objectives

5 Siggiewi mains replacement

- Supply households with potable water
- Stop all pilfering
- Remove all leakages
- Collect all ground water and add unused and good quality boreholes (spatial)

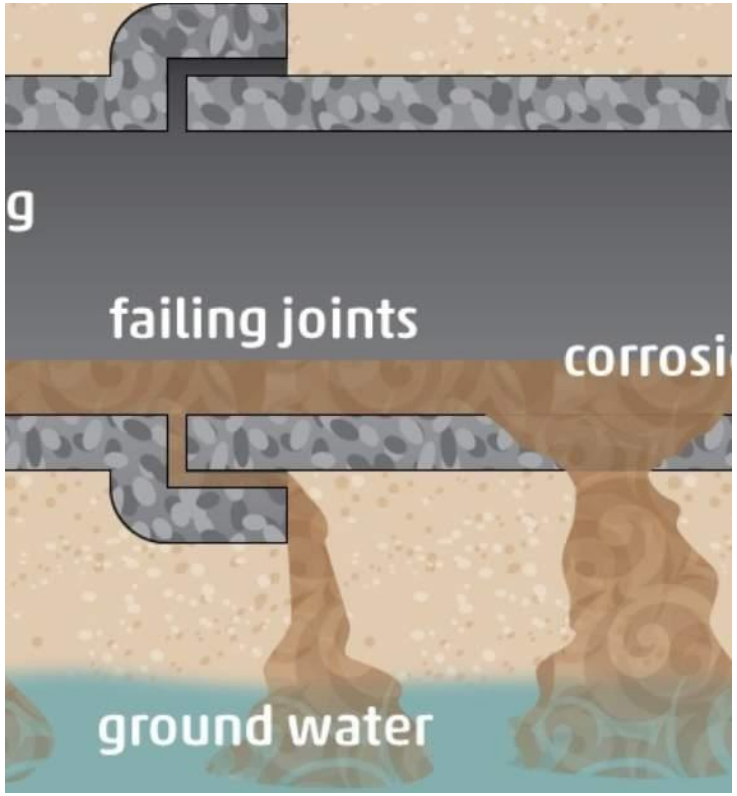
Objectives

6a Install new sewer network to replace cesspits

6b Replace old leaking sewer networks

6c Increase sewer capacity to reduce exfiltration

- Reduce emptying costs
- Reduce exfiltration to safeguard aquifers



Objectives

7 Extension of new water supply to the farming community

- Reduce pressure on aquifer
- Offer alternative supply to industry
- Improve groundwater quality potential for WSC hence less RO water
- Less energy needed to produce this water

Objectives

8 Discharge points and monitoring stations

- Watch carefully what is being discharged into sewers
- Improve treatment to safeguard environment
- Reduce specific costs of treatment (energy and chemicals)
- Apply polluters pay principles.

Objectives

9 Stop Sea water infiltrations into sewers

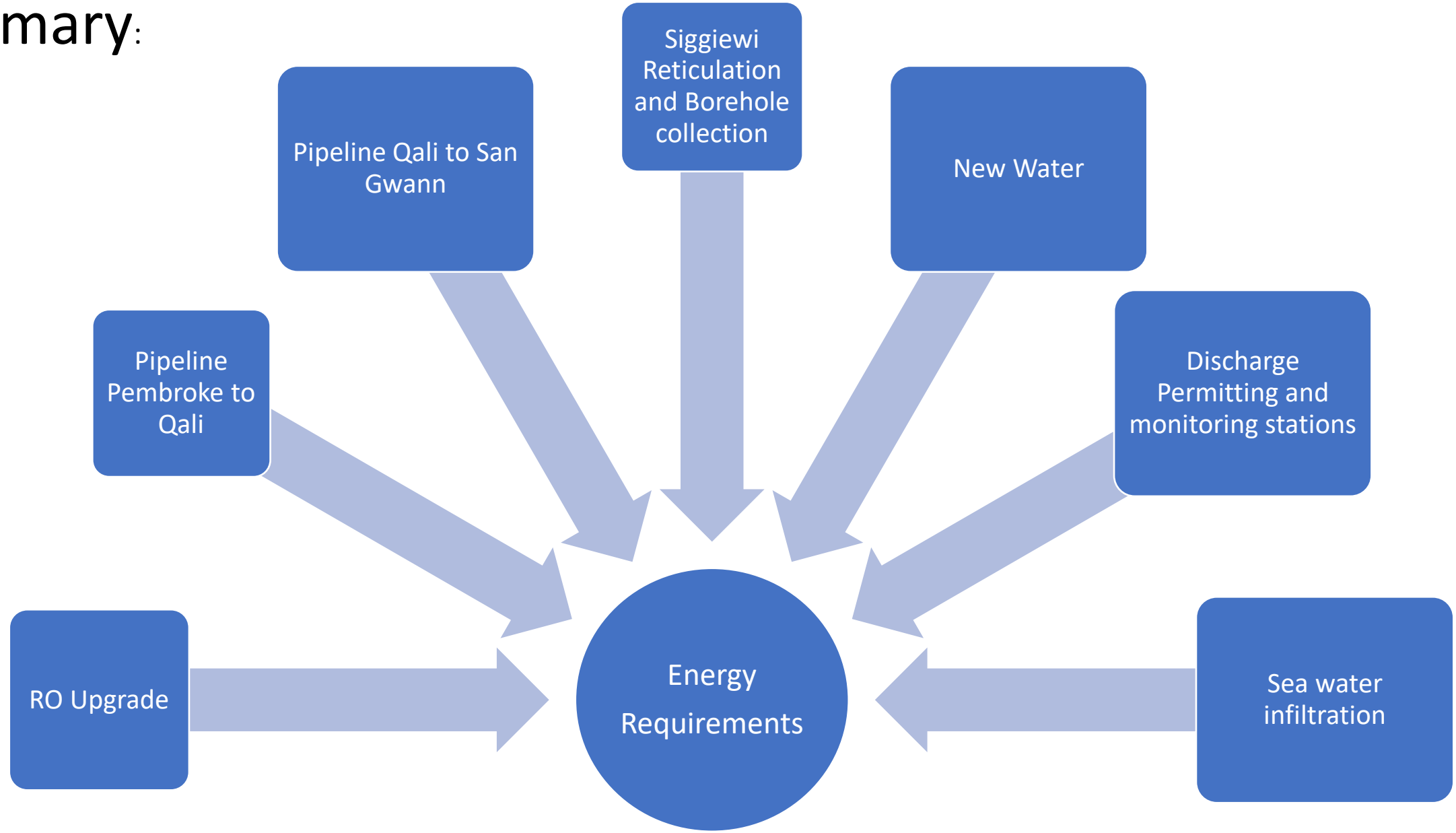
- Reduce salinity in pumping stations
- Improve pump and ancillaries lifetime
- Reduce pumping costs
- Improve treatment efficacy
- Reduce treatment costs
- Reduce new water production costs

Two other projects of significant importance

- Hondoq RO
  - Lower production costs
  - Lower pumping costs

- Sant Antnin Upgrade
  - Treatment energy reduction
  - Economy and population growth

Summary:



All initiatives lead to a reduction in energy consumption

Summary:

All initiatives lead to an improvement in quality and Quantity

International recognition

- Water Innovation Europe Award 2019

  Prize in Water governance