

SWRO Desalination: Jaffna

Environmental Considerations in Desalination: Jaffna SWRO

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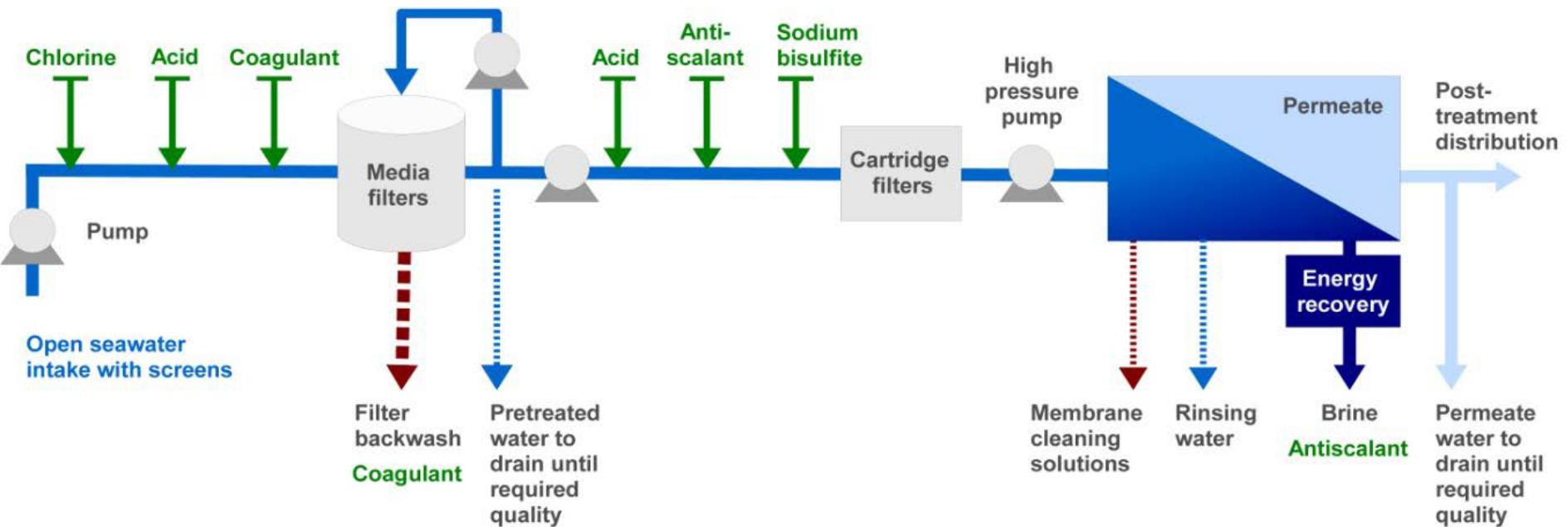
Discussion points

- Desal plants impacts
- Integration in project
- EIA approach
- EMP Implementation
- Lessons

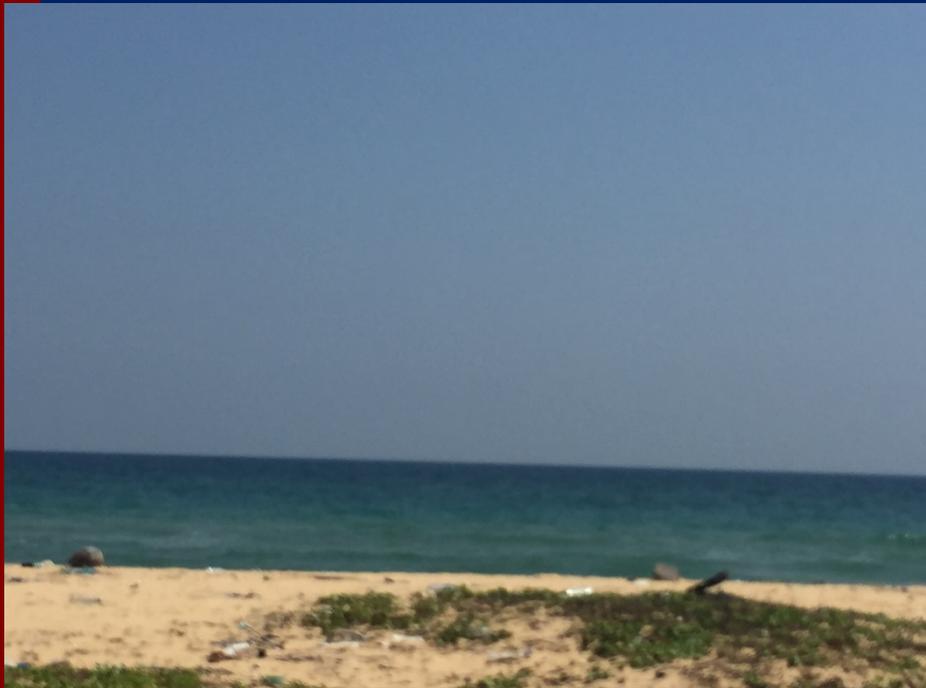
Desal Main Activities

- Sea water abstraction
- Pre treatment & RO
- Waste disposal
 - Brine
 - Spent chemicals
 - Solid waste
- Construction
 - Marine, beach
 - Inland

Chemical usage

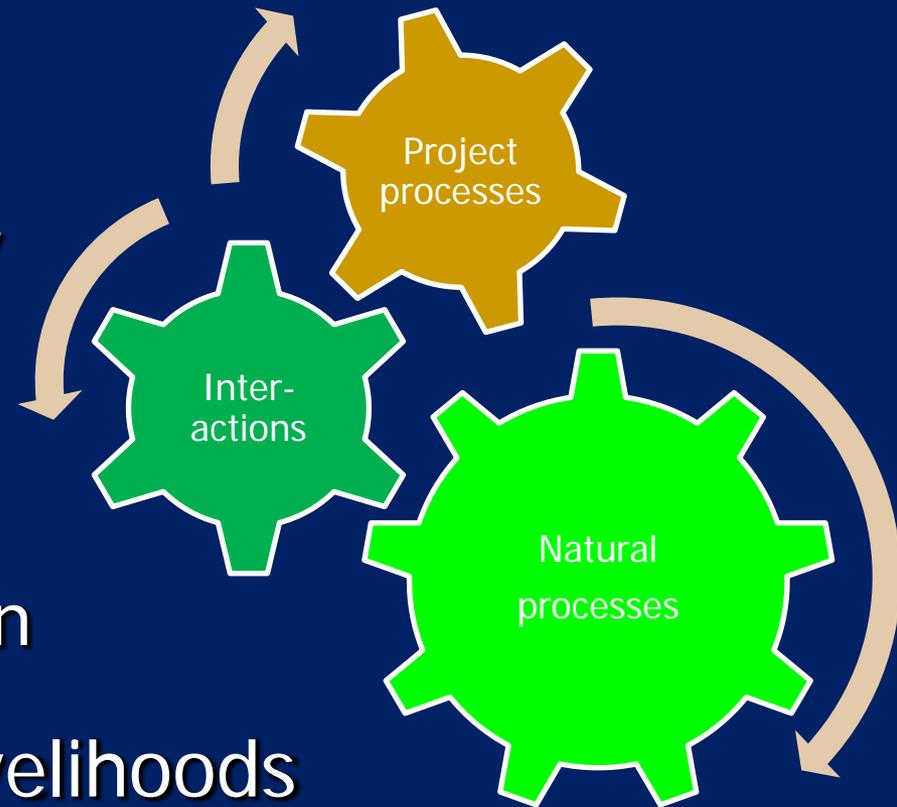


Source: UNEP (2008) Desalination Resource and Guidance Manual for Environmental Impact Assessments. United Nations Environment Programme, Regional Office for West Asia, Manama, and World Health Organization, Regional Office for the Eastern Mediterranean, Cairo



Potential Issues

- Impacts on:
 - marine productivity
 - sea water quality
 - marine habitat
 - Species composition
- Fish production & livelihoods
- Cumulative Impacts



Project Category

- Generally, Category A : SPS 2009
 - Why A?
 - Stringent ADB requirements
 - More scrutiny – inside & outside
 - Potential risks



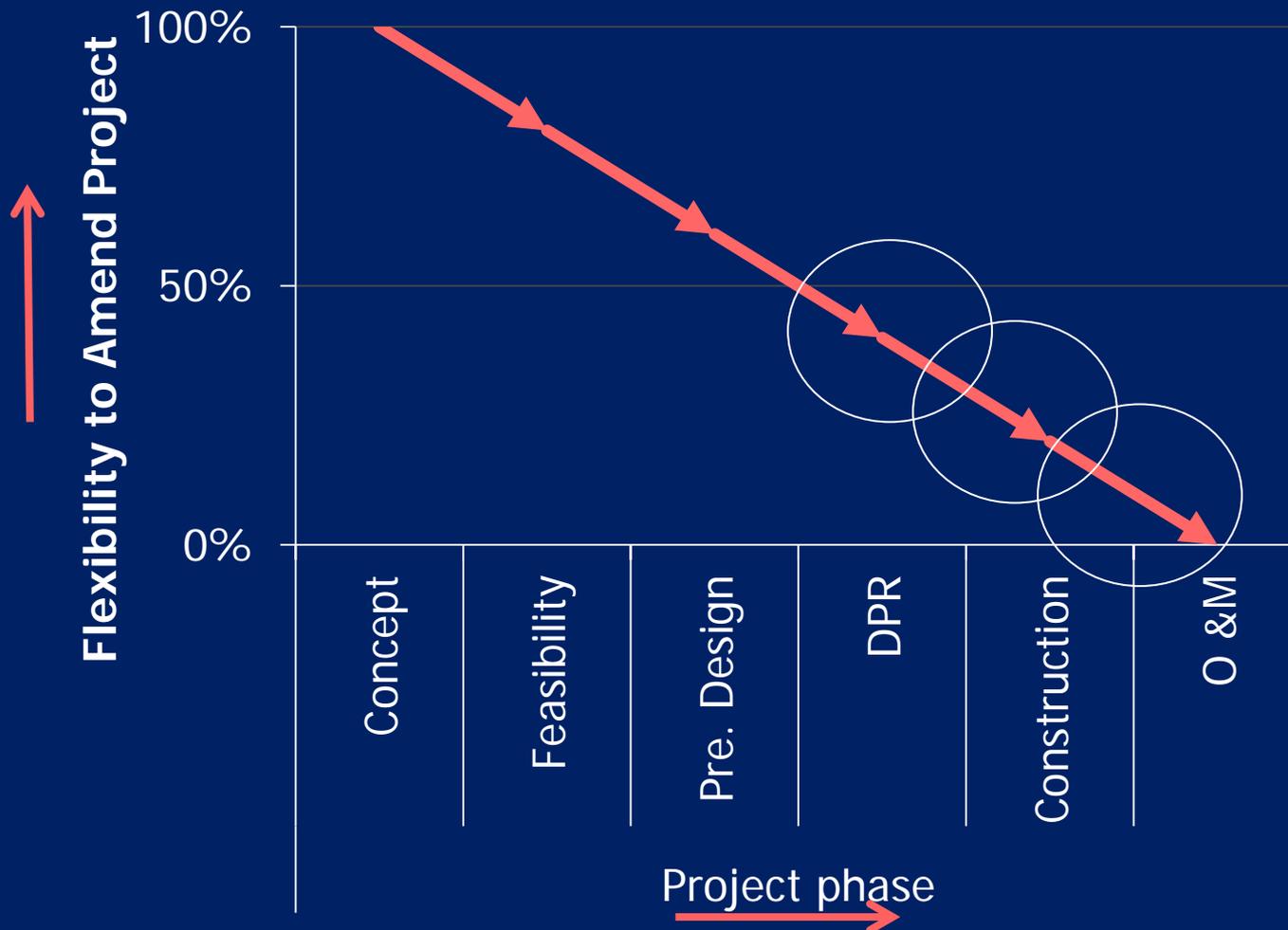
Critical Site Parameters

- Sea water quality, depth
- Marine sensitivity
- Marine productivity
- Socio-economic dependence
- Accessibility, Infrastructure

Project Preparation

- Selecting project site
- Choosing project design
 - Intake
 - Pre treatment
 - Brine discharge
- Implementation modality

Project Preparation



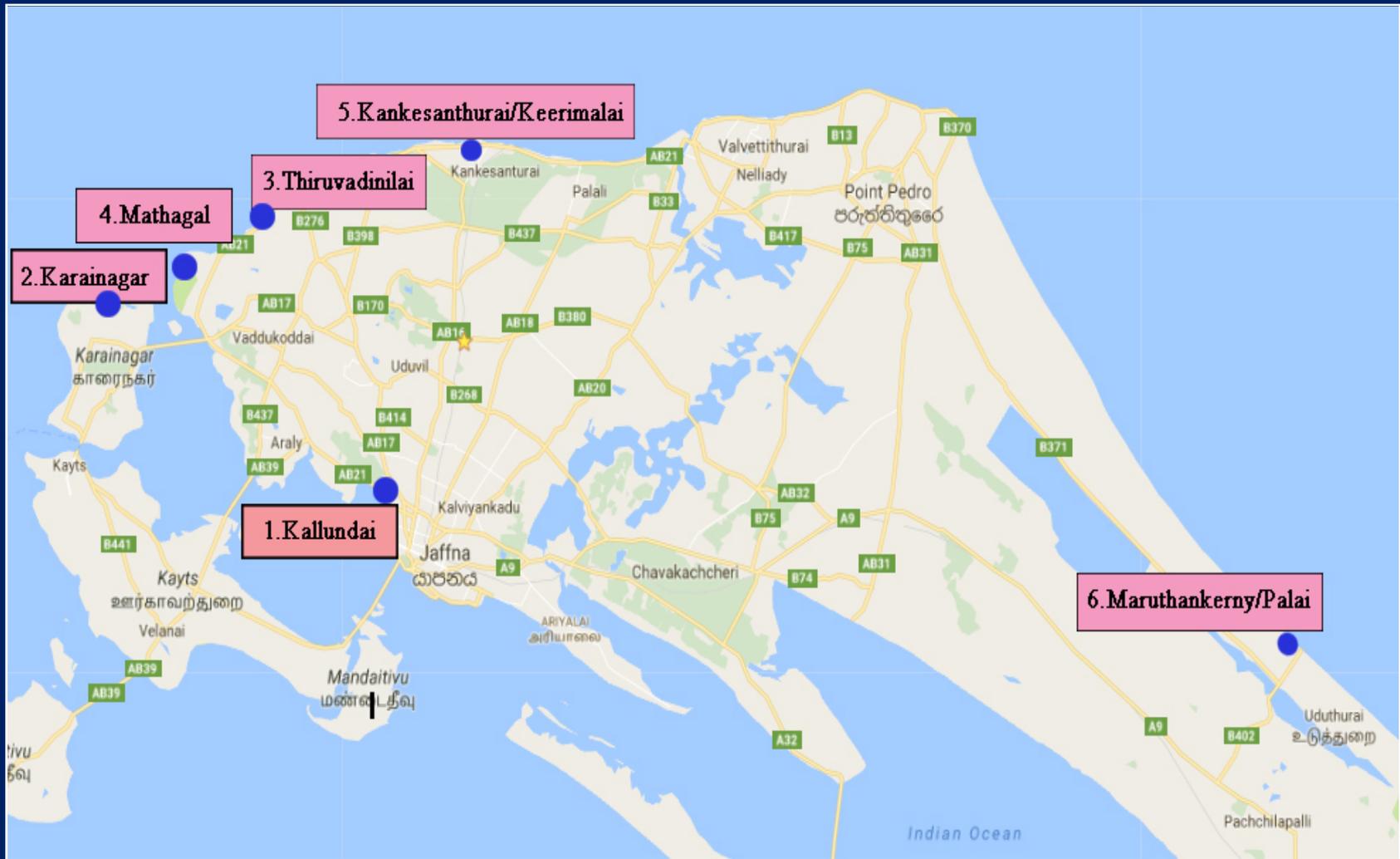
Approach to EIA

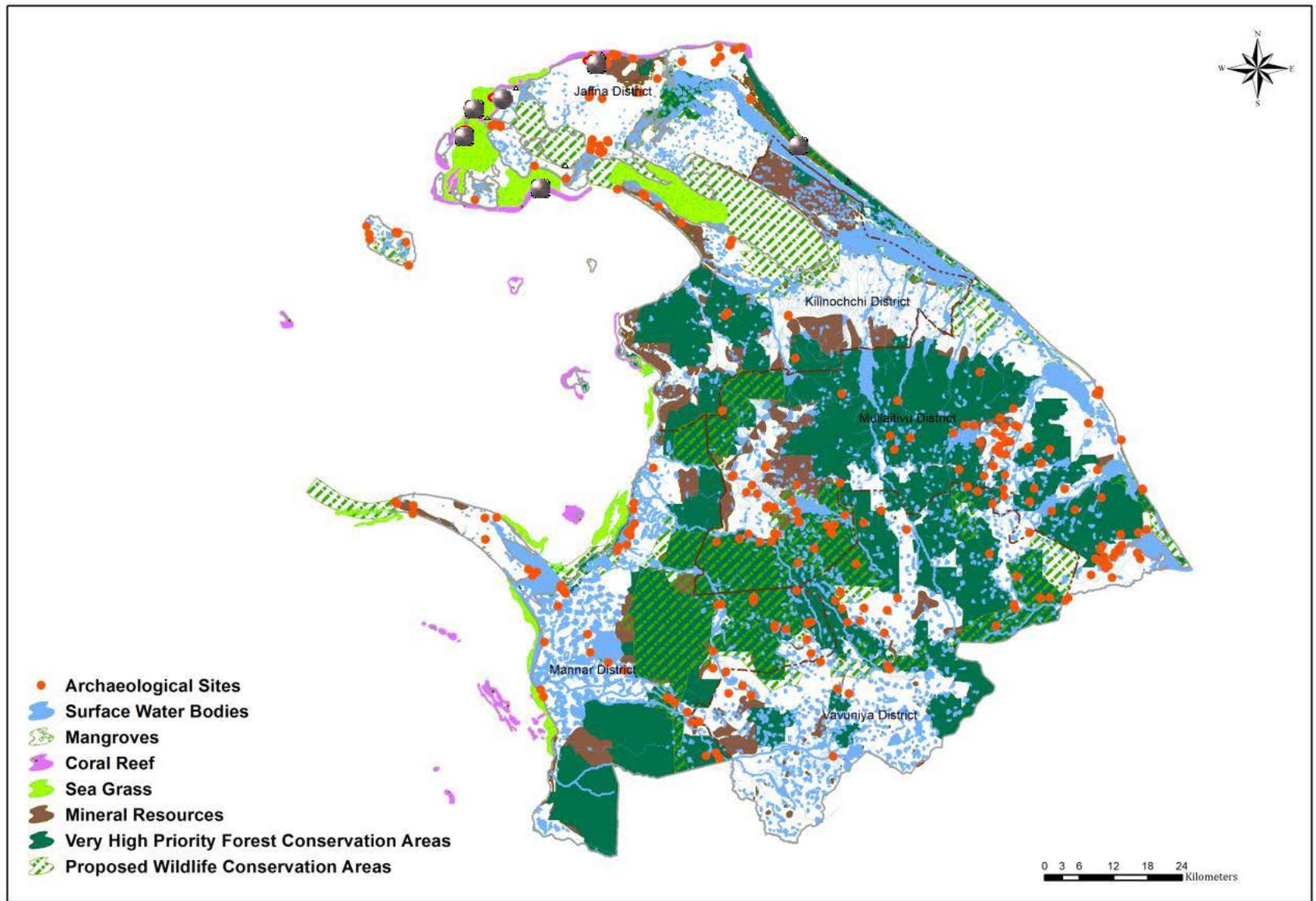
- Project / EIA schedule & study team
- Alternative sites
- Baseline studies, data
- Impacts analysis, modeling, EMP
- Consultation & disclosure
- EIA review & finalization

Alternative Examination

- Avoid → minimize → mitigate → compensate
- Location
- Design / technology

Jaffna Alternative Locations





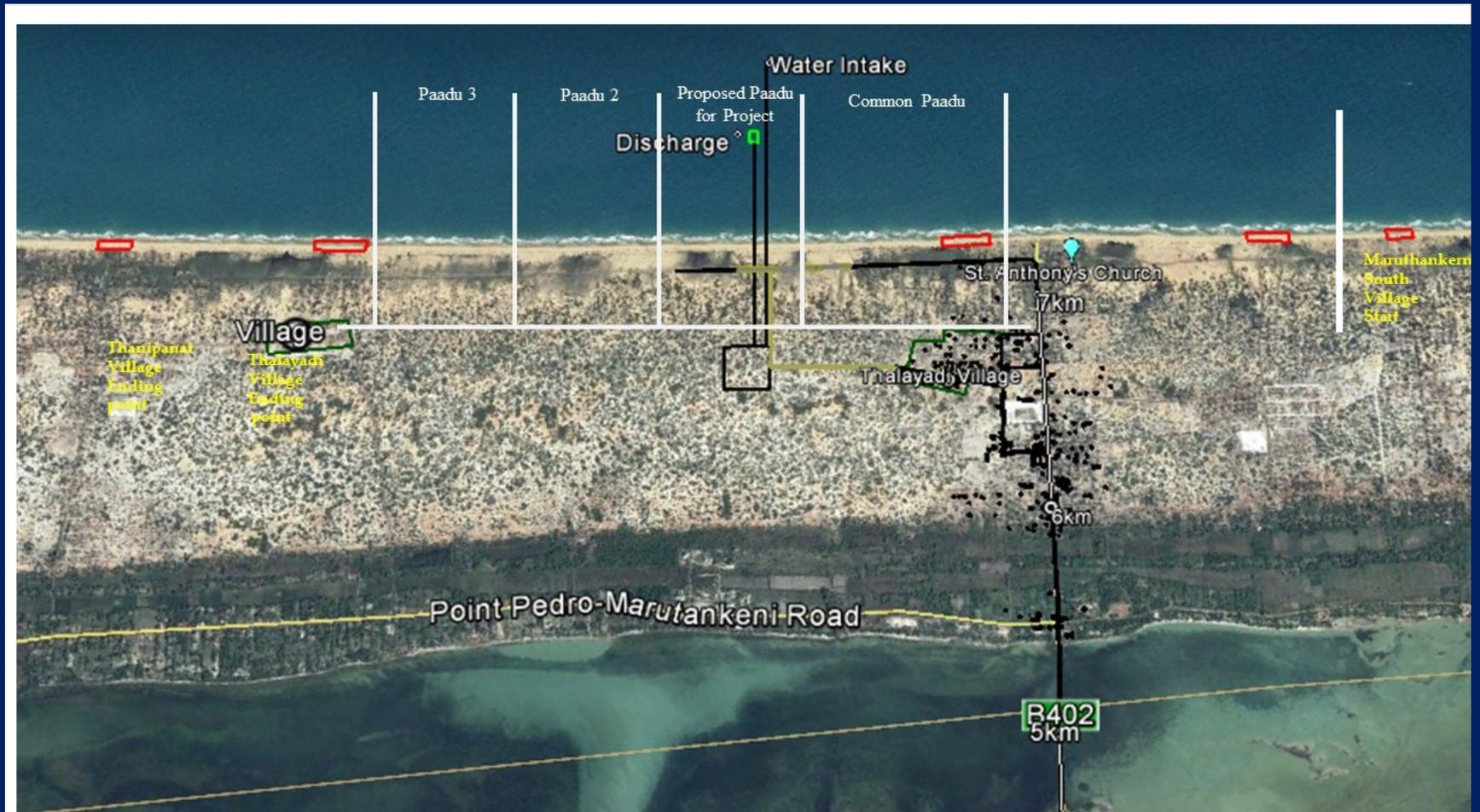
Integrated Strategic Environment Assessment of the Northern Province of Sri Lanka (2014). Central Environmental Authority & Disaster Management Centre of Sri Lanka. (This report is an output of a "A Multi-agency approach coordinated by the Central Environmental Authority and by the Disaster Management Centre, supported by the United Nations Development Programme (UNDP) and the United Nations Environment Programme (UNEP)"

Selected Site: Jaffna

- Open sea
- Sandy seabed; limited silt
- Low species density
- Low fish productivity
- Low-form sand dunes
- Scrubland

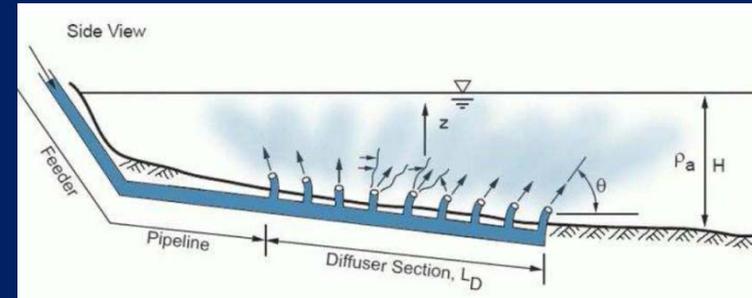
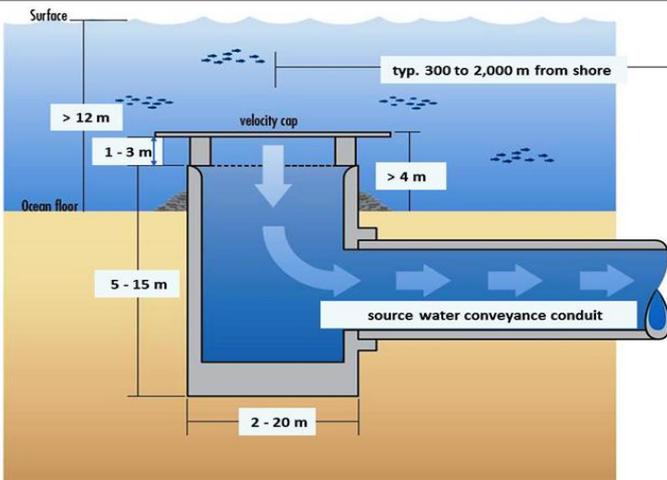
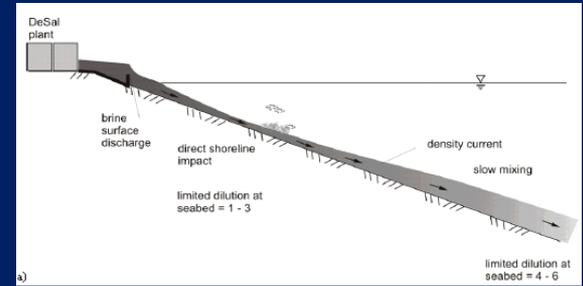
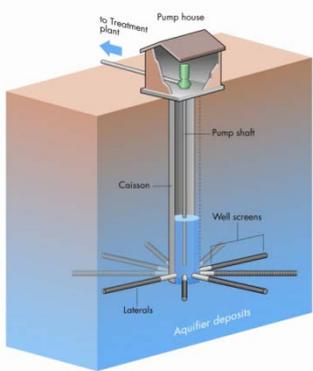


Site Selection: Fishing Areas



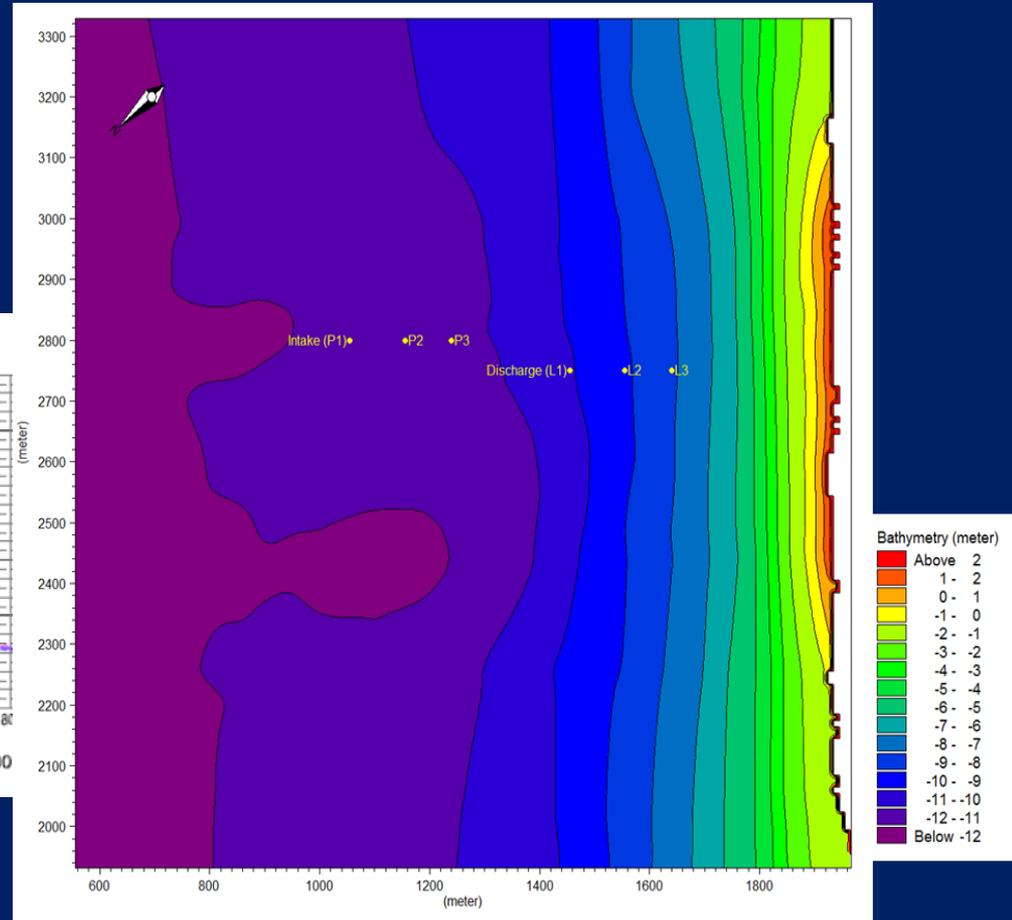
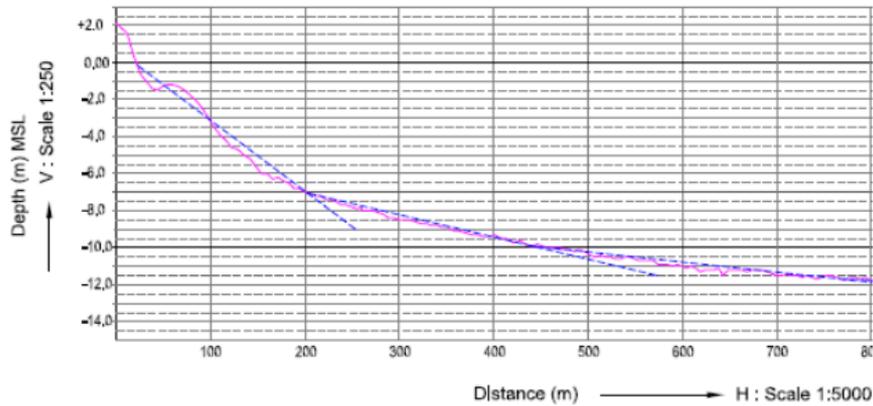


Alternatives: Intake & Outfall



Intake & Outfall Location

Section Profile of Line No, 9



Climate Change Aspects

- Water security: negligible climate risk
- Energy usage  GHG emissions
- Design adaption  Sea level rise
 Tsunami
 Sea water quality

Energy usage: 3.2 to 3.84 kwh/m³

GHG emissions: 30,443 – 60,886 tCO₂/year

Location: Beyond tsunami risk zone

Contracting & Implementation

- EMP implementation
- Define roles: contractor & employer
- EMP → Bid conditions & clauses
- Implementation: design to operation
- Compliance & Monitoring
- Grievance redress

Lessons Learnt

- Early integration in project
- Mainstreaming & team orientation
- Data gaps – survey needs
- EIA team – composition & guidance
- Stakeholders & agencies - Consult
- EMP implementation – contract type

Thank You

Questions / Comments???