# WATER MANAGEMENT IN A WATER SCARCE ENVIRONMENT THROUGH AN ESHSIA


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# OVERVIEW

- Project context
- ESHSIA context
- Water-related baseline overview
- Scoped issues (water)
- Addressing scoped issues

- Interesting water issues:

  Learnings for South African context

# Project location

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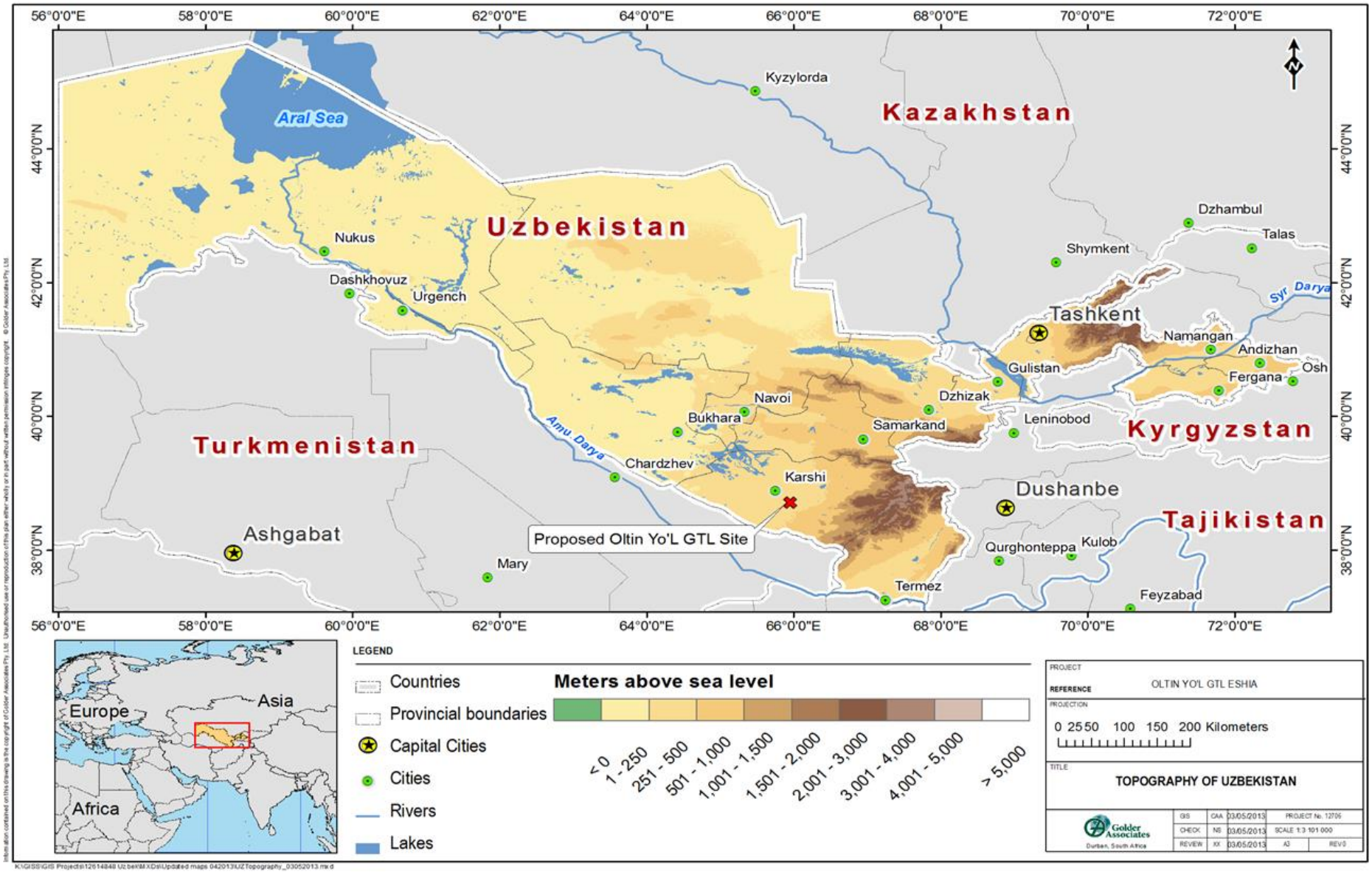
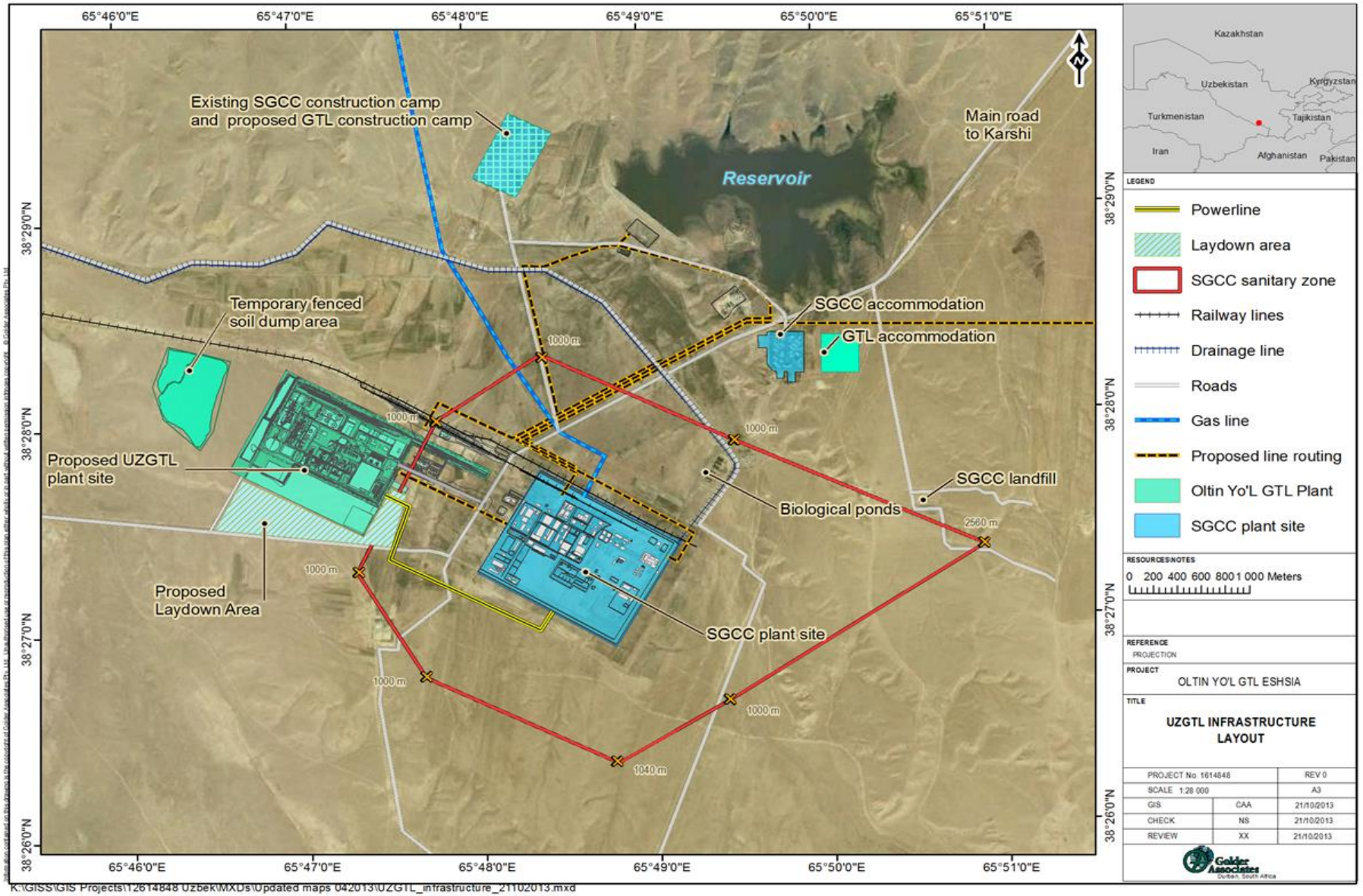
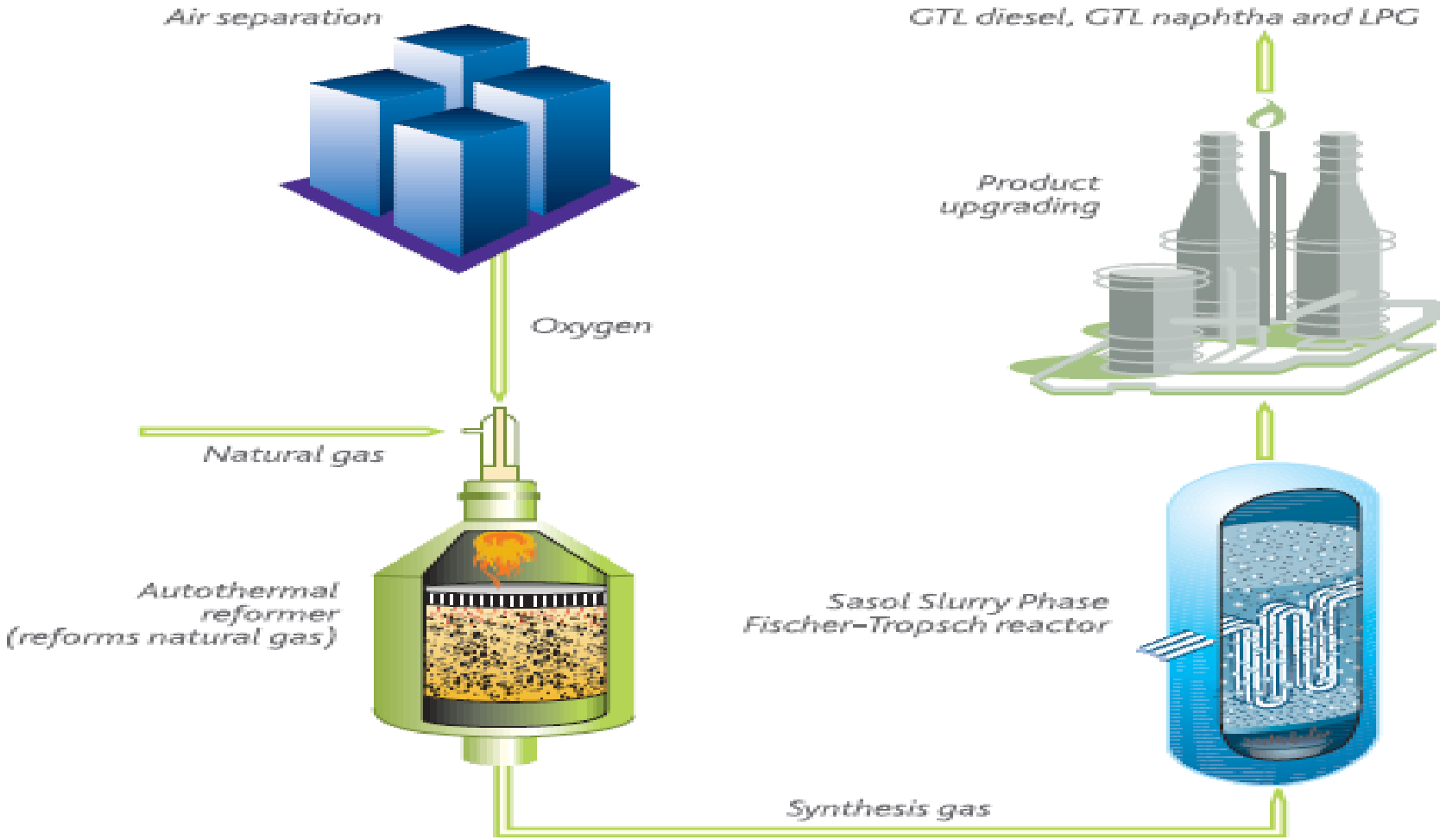


# Project description



# Oil and Gas – GTL process



# Project classification & Standards applied

**IFC Category A Project**: Expected to have significant adverse social and/or environmental impacts that are diverse, irreversible, or unprecedented.

IFC International Finance Corporation World Bank Group

ADB Asian Development Bank



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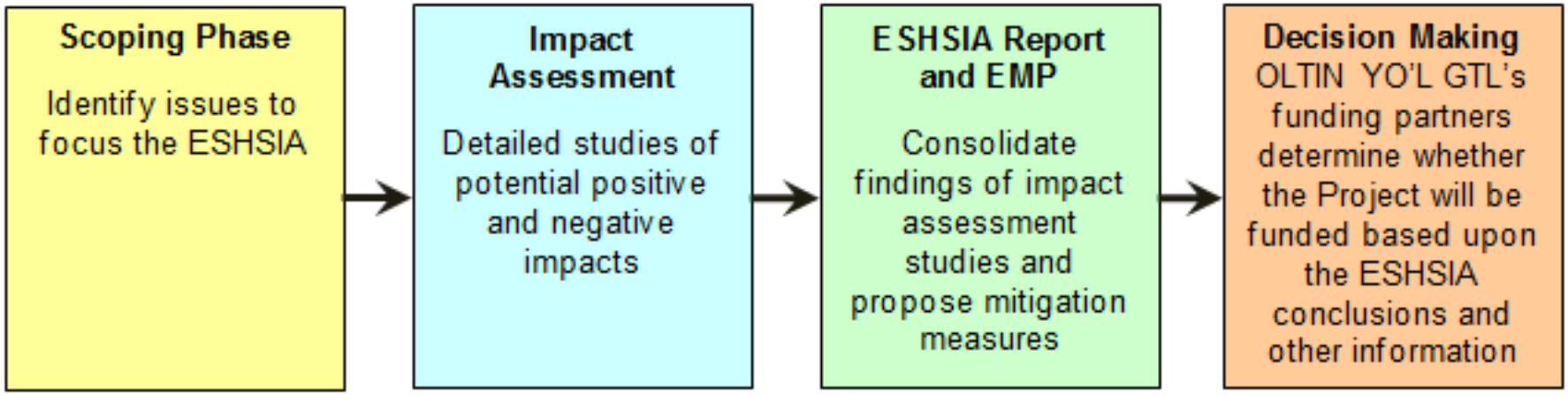
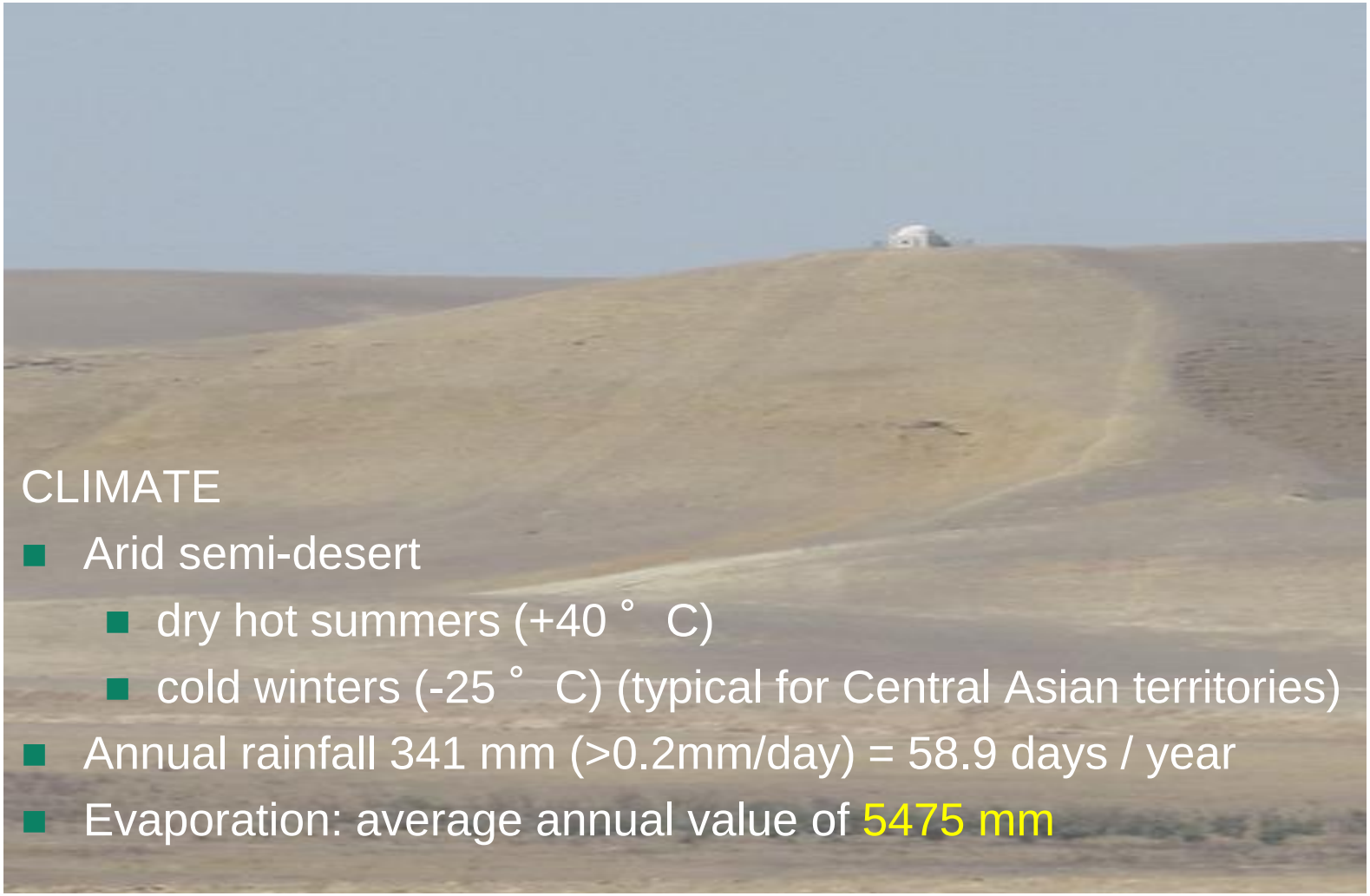
# The ESHSIA Process



# ESHSIA Specialist studies

- Air quality
- Surface water
- Downstream water users study
- Groundwater
- Noise
- Biodiversity
  - Terrestrial
  - Avifauna
  - Ecosystem goods & services
- Socio-economic
- Radiation
- Risk assessment
- Cultural heritage
- Health risk assessment
- Landscape / visual
- Soils
- Waste management
- GHG emissions

# Baseline conditions



CLIMATE

- Arid semi-desert
  - dry hot summers (+40 ° C)
  - cold winters (-25 ° C) (typical for Central Asian territories)
- Annual rainfall 341 mm (>0.2mm/day) = 58.9 days / year
- Evaporation: average annual value of 5475 mm

# Baseline conditions



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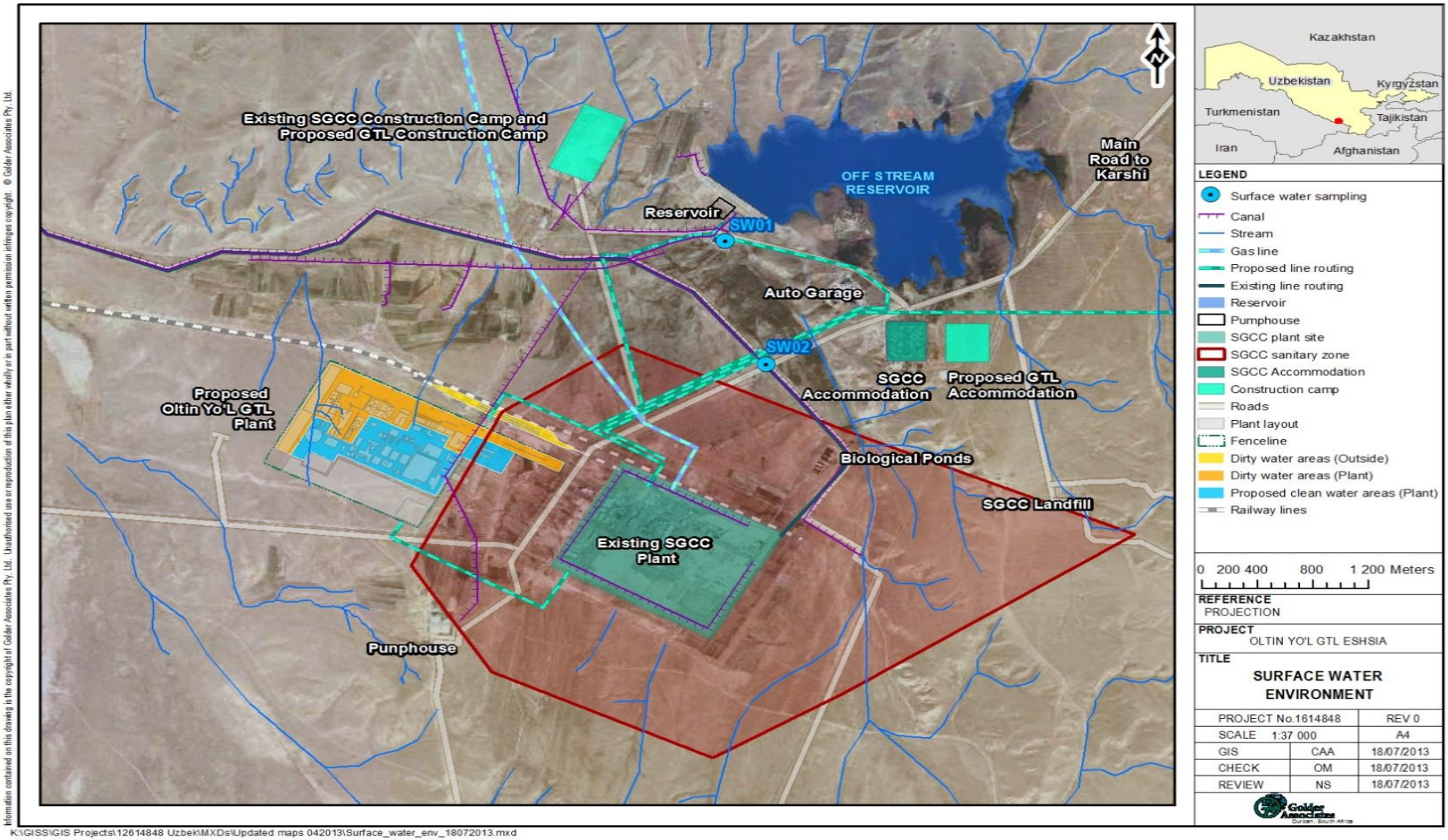
# Baseline conditions

- Amu Darya Basin - The upper Amu Dayra River Basin has a catchment area of 309 000 km$^2$ and is shared by Tajikistan (72.8%), Afghanistan (14.6%), Uzbekistan (8.5%), Kyrgyzstan and Turkmenistan.
- Karshi pump stations supplying the Talimardjan Reservoir
- Feeds the Karshi Main Canal: supplies water to irrigators, towns + industry


http://www.flickr.com/photos/zoienvironment/7525832184/in/photostream

# Water resources



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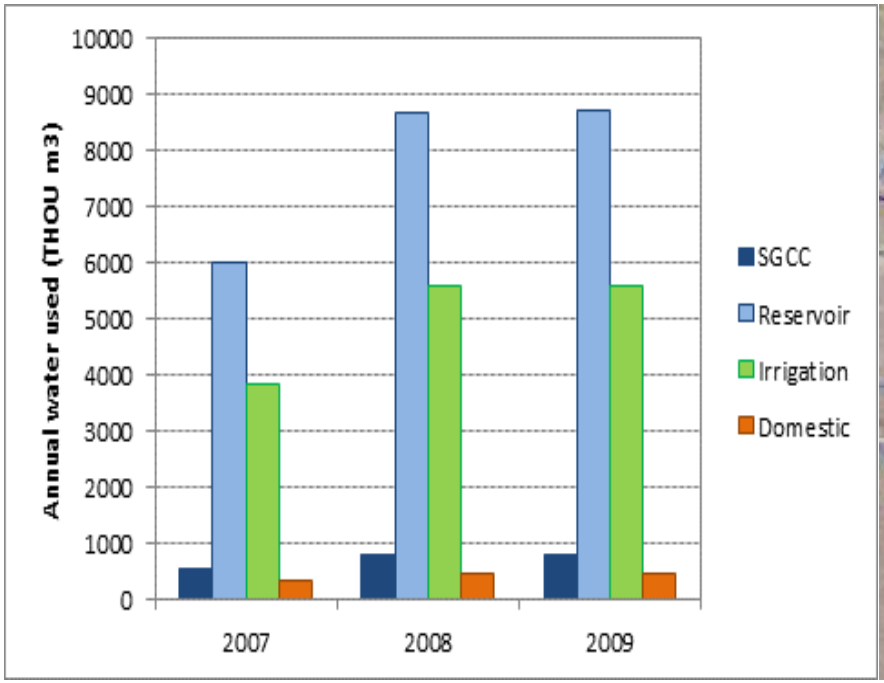
# Water management issues scoped

- Water supply and availability
- Discharge management (volume & quality)
- Downstream use (local and transboundary)
- Ecosystem goods and services
- Social related issues

# Scoped issues: Supply

- Water requirements:
  - No impact on KMC downstream users as - water requirements are included in the present water supply to SGCC
- Through negotiation water allocation was made through RUz decree




# Scoped issues: Availability

| Description | Raw water ($m^3$/hr) | % KMC flow |
|---|---|---|
| New Plant - summer case | 171.5 | 0.066 |
| New Plant - winter case | 163.0 | 0.063 |
| New Plant - start up case | 303.0 | 0.117 |
| Average Himki reservoir | 890.6 | 0.345 |
| Existing plant - irrigation | 572.5 | 0.221 |
| Existing plant - production | 79.5 | 0.031 |
| Existing plant - domestic | 47.7 | 0.018 |
| Average KMC flow | 258,494.9 | 100.0% |

# Scoped issues: Discharge (volume & quality)

- ESHSIA team actively involved with FEED team
- Resulted in zero discharge scenario in summer (evap cooling towers)
- Winter = 250 $m^3/h$

- Discharge shall meet:
  - Industry specific IFC effluent discharge guidelines (IFC, 2007);
  - WHO drinking water quality guidelines (WHO, 2011); and
  - Uzbek Wastewater Discharge Specifications for domestic use.

# Downstream Water Users Study Findings

- No impact the KMC downstream users
- Water use insignificant compared to the irrigation water requirements. Therefore, no mitigation required.
- ESHSIA concluded: Project will not impact significantly on irrigation water users in Uzbekistan or trans boundary.
- Discharge quality could potentially improve the water quality of the water conveyed in the channel.

# Ecosystem Goods and Services Study Findings

- Beneficiaries do not source water in the same way as for Project
- Trucked into the settlements or collected from rainfall.

# Scoped issues: Social

- Issues raised by ADB relating to Water
- Social implications of water use - “hoops and loops” (ECAR & SCAR)
- PP process – no local requirement

# Mitigation Measures

- ESHMP was developed to address impacts identified in the ESHSIA
  - Living document
  - Lists design criteria and standards
  - Grievance mechanism
  - Social management (including management of construction camp)
  - EMS requirements
  - Performance monitoring of ESHMP implementation (annually, by independent enviro consultancy)
  - Monitoring and measurement requirements (listing parameters to be measured, frequency etc.)
  - Contractor management
  - Environmental, Social, Health and Safety awareness plan
  - Emergency Response Plan
  - General duty of care principles applicable to Proponent

# Interesting water issues: Learnings

- Under developed regulatory environment – development at all cost
- Good legislation in SA governing water resource management – e.g. catchment based approach, reserve and flow considerations.
- Our team followed SA-type approach in order to address IFC+ADB requirements
  - ADB quite different focus to standard IFC (demanding)
- Reviewed by IFC+ADB = ESHSIA found to be adequate
- Designing with environment and people in mind:
  - In arid environment, the zero discharge approach combined with limited discharge during winter (where water is treated to drinking standards before discharge) was committed to by the Proponent through the ESHSIA process/FEED interaction
- Local EIA not focussed on the social component – e.g. our PP process was the first of its size in the history of Uzbekistan (former Russian territory, limited freedom of speech, child labour)
- 2 Real different regulatory environments – with a hybrid approach very workable approach for projects in developing countries.

# End