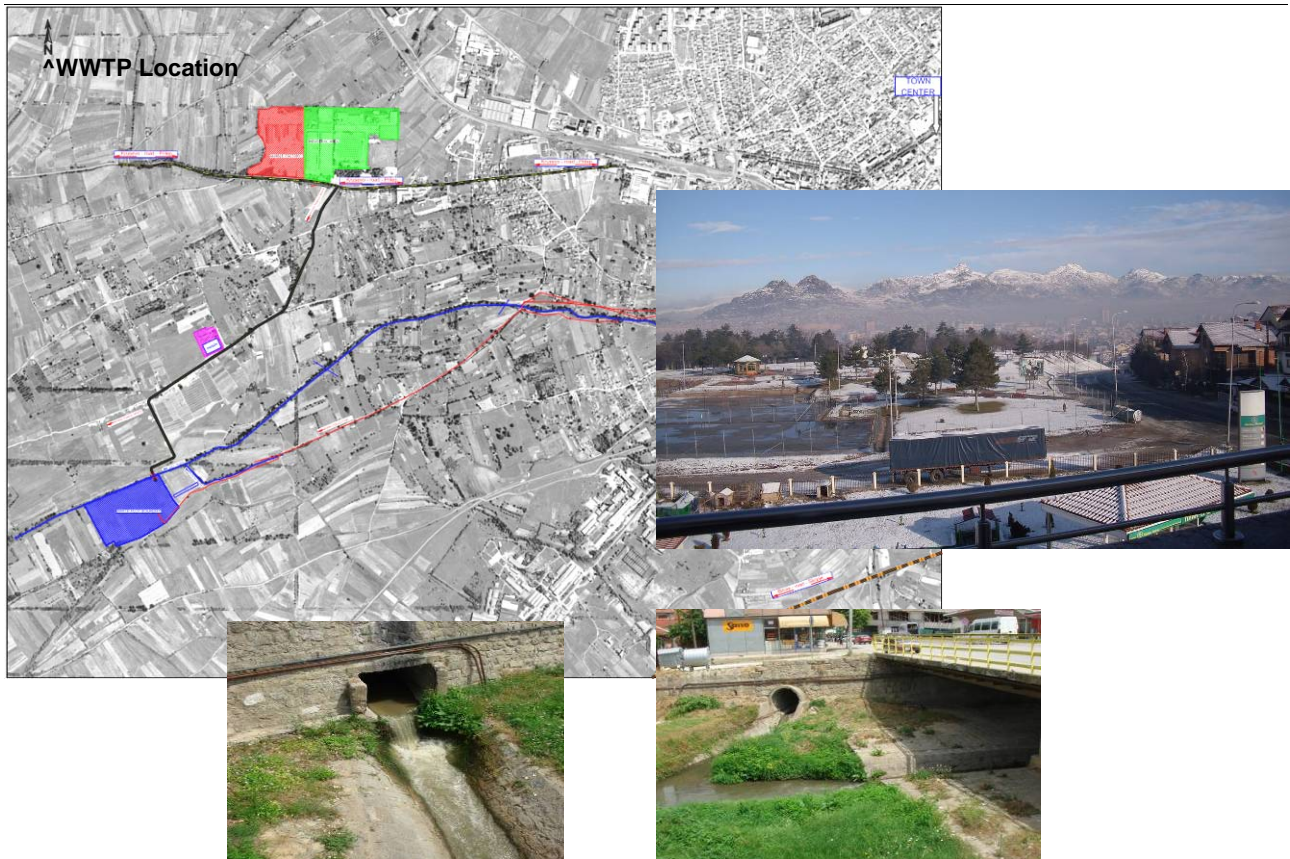




MACEDONIA

TECHNICAL ASSISTANCE FOR PREPARATION OF INVESTMENT PROJECT FOR WASTEWATER COLLECTION AND TREATMENT IN PRILEP



Client Delegation of the European Commission to the Former Yugoslav Republic of Macedonia

Financing EU

Duration of Services 10/2009 - 10/2010

Cost of Implementation 40 Mio. €

Scope of Services

- Review of existing documents
- Planning and specification of field investigations (flow measurements, water analyses, CCTV sewer inspection)
- Preparation of detailed design for sewer network
- Analysis of WWTPs in the country and the region
- Analysis of proposed treatment solutions
- Outline design for preferred solution to WWTP
- Preparation of Tender Dossiers (FIDIC Red Book) for the sewer and storm water network
- Preparation of Tender Dossiers (FIDIC Yellow Book) for the WWTP

Brief Project Description

The City of Prilep is situated in the central part of the southern region of the country. The Prilepska river flows through the city. There is no existing waste water treatment plant in Prilep. The urban domestic and industrial sewage from the entire Prilep catchment is currently discharged untreated into the Prilepska River at a location approximately 3.5km South West of the centre of Prilep. The existing drainage network in Prilep was designed in 1973 as a separate system. Construction of the sewerage networks was carried out in the 1970's and 1980's and covers approximately 70% of the town. Although the storm and foul sewers are designed to be separate, there is substantial interconnection of the two systems.



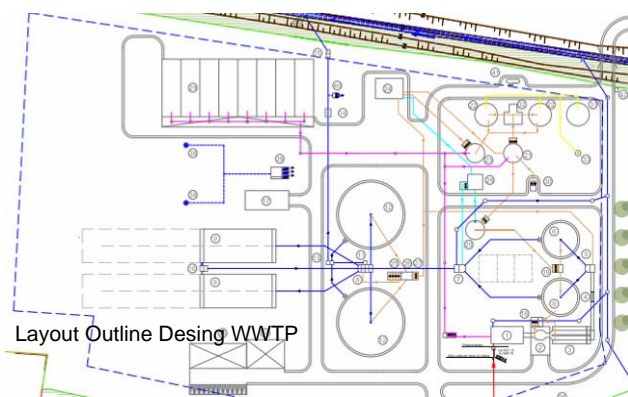
In order to solve the problems with raw wastewater in Prilep a two phases implementation was chosen: Phase 1: Rehabilitation and extension of the most priority sewerage system and construction of new WWTP. Phase 2: Remaining rehabilitation works necessary, mainly aligned to structural and hydraulic upgrades and rehabilitation of the existing drainage network.

The project was focussed on the implementation of Phase 1: Rehabilitation and extension of the most priority sewerage system and construction of new WWTP with primary and secondary treatment and sludge treatment facilities to reduce pollution loads to the receiving Prilepska River observing the target effluent quality standards as per requirements of relevant EU Directives

The proposed treatment process of the WWTP took into account the possibility to incorporate a tertiary treatment of raw wastewater for future easy and cost effective upgrading of process units within actual plot boundary. A population equivalent of 95.000 PE to be treated should be achieved in 2033 (25 year design horizon).

During the called Preparatory Phase the existing documentation and current situation was reviewed, and design parameter were updated on the light of measurements in chosen spots in the city as well as on operating results of municipal and industrial WWTP in the country. The proposed solutions included pre-anoxic activated sludge, extended aeration activated sludge and SBR. Under the selection criteria applied played a special role the results obtained in the analysis of experiences gathered in similar WWTPs the Balkan region.

For sewerage network tender documents according to FIDIC Red and BoQ according to CESMM3 were prepared. For WWTP the tender documents were focussed on FIDIC Yellow and corresponding schedules.



Implantación de la nueva PTAR El Cañal. Primera fase incl. 8 reactores UASB

Results obtained:

- Rehabilitation, replacement or extension of 23 km collectors from DN 200 until DN 700.
- Design of 1.4 km of new collectors for phase 2.
- Implementation of 736 new house connections.
- New WWTP as conventional activated sludge for carbonaceous elimination considering place requirements for upgrading to tertiary treatment (nutrient removal) for 95,000 PE and MWWF 600 l/s
- Sludge treatment means heated digesters including energy recovery. Sludge disposal strategy