

Melamchi Water Supply Project Underground structures

2014



NEPAL - Melamchi

Client

CMC GRUPPO

Project owner

Nepalese State

Miscellaneous

Tunnel 26 km long,

3 adits,

River diversion structures



Description of the project

This project is intended to provide a safe and effective drinking water supply in the Katmandu valley, to improve sanitary conditions there and thus to help the economic development of the valley. It includes a tunnel about 26 km long, three access tunnels (adits) and structures for diverting the river upstream of the valley.

Key features

- Expertise of the existing tunnel section ;
- Recommendations for the excavation completion.

Description of the mission

The tunnel and the adits are excavated using explosives in the Precambrian massif of the Himalayan complex, characterized by rock formations with high metamorphism. The strata concerned by the tunnel excavation are the gneiss, quartzites and schists. The support selected by the Project Manager consists mainly of radial bolts and shotcrete. Steel arches are to be considered in the areas where the rock is most degraded.

Works began in April 2010 with a first contractor, but were suspended in September 2012. In June 2013 a new contract was signed with CMC (Cooperativa Muratori e Cementisti di Ravenna).

CMC requested the engagement as consulting expert of Marc PANET, who asked TERRASOL to assist him in his on-site assessment in April 2014. The aims of this assessment were to analyze the structures already completed (a total of about 6 km of adits and part of the main tunnel) and to put forward recommendations for the completion of the sections still to be excavated.

The assessment concluded that the short-term stability of the completed tunnel sections was satisfactory. However, works must be scheduled to improve the existing tunnel support in order to ensure the long-term integrity of the structure. In particular, systematic checking of the thickness and the quality of the shotcrete was recommended. Other recommendations covered the management of the geological difficulties likely to be encountered during the remaining excavation, and the optimization of the works cycle and the support/lining to be installed.