

## Chapter – 6

### Domestic Water Supply

#### 6.1 Introduction

Due to continuous improvement in the living standards of the people, increase in urban population and the pace of industrial and other development, many of our Metropolitan cities will face acute shortage of water for domestic and industrial purposes. The rate of population growth of Metropolitan City of Greater Mumbai over the decades is unprecedented. Mumbai being the capital city of the state of Maharashtra, is also the commercial and financial capital of the country. With population more than 18 million, it is one of the ten largest mega cities of the world. With the present pace of development of Greater Mumbai, it is anticipated that there would be acute shortage of domestic water by the year – 2050 as such sources for supply of water to meet the prospective shortage of water needs to be explored.

As per the assessment of Municipal Corporation of Greater Mumbai (MCGM), the present domestic water demand for Mumbai City (year 2012) is 4529 MLD ( $1653 \text{ Mm}^3$ ) and the cumulative water supply from all the sources is 3675 MLD ( $1341 \text{ Mm}^3$ ). The projected domestic water demand for Greater Mumbai by the year – 2041 will be 6680 MLD ( $2438 \text{ Mm}^3$ ) and the supply will be 4980 MLD ( $1818 \text{ Mm}^3$ ) (on completion of Gargai and Pinjal projects) leaving a shortage in supply of 1700 MLD ( $620 \text{ Mm}^3$ ). The shortage in water supply will further increase as the demand will reach to 7000 MLD ( $2555 \text{ Mm}^3$ ) by the year - 2060 and the cumulative water supply from various sources including from middle Vaitarna, Bhatsa and Gargai projects will remain 4980 MLD ( $1818 \text{ Mm}^3$ ) only. Damanganga-Pinjal link project will bridge the deficit to a greater extent.

Damanganga-Pinjal link project envisages construction of : a dam at Bhugad across river Damanganga near village Bhugad in Trimbak taluka of Nasik district in Maharashtra State ; A dam at Khargihill across river Vagh (a tributary of Damanganga) near village Behadpada in Jawhar taluka of Thane district in Maharashtra State ; a tunnel of about 17.488 km long connecting Bhugad and Khargihill reservoirs ; another tunnel of about

25.224 km long connecting Khargihill and Pinjal reservoirs; a Power house at the toe of Bhugad dam with installed capacity of 2 MW ; and another Power house at the toe of Khargihill reservoir with installed capacity of 3 MW.

## **6.2 Domestic Water Supply**

To fix quantity of water that can be diverted from proposed Bhugad and Khargihill reservoirs in Damanganga basin to Pinjal reservoir in Vaitarna basin for augmentation of domestic water supply to Greater Mumbai city, the simulation study considering the proposed Bhugad, Khargihill, Pinjal reservoirs and existing Madhuban reservoir has been carried out. The details of simulation study are discussed in “Chapter – 3 Hydrology”. As per the simulation study about 210 Mm<sup>3</sup> of water at 100% dependability can be transferred from proposed Bhugad reservoir and 369 Mm<sup>3</sup> of water at 100% dependability can be transferred from proposed Khargihill reservoir to proposed Pinjal reservoir for augmentation of domestic water supply of Mumbai city. It can be seen that a total of 579 Mm<sup>3</sup> of surplus Damanganga waters at 100% dependability available at proposed Bhugad and Khargihill reservoirs will be transferred through Damanganga-Pinjal link to the Pinjal reservoir through the tunnels from where the combined waters of Damanganga and Pinjal rivers will be further taken to Mumbai city for augmentation of its domestic water supply, as per the plans of Mumbai Metropolitan Rural Development Authority (MMRDA).

In addition, a quantity of about 316 Mm<sup>3</sup> water annually will be available at Pinjal dam for augmentation of domestic water supply of Mumbai City, making total quantity of water diversion from proposed Bhugad and Khargihill dams in Damanganga basin and proposed Pinjal dam (proposed by Government of Maharashtra) as 895 Mm<sup>3</sup>. The Pinjal dam has been proposed by the Government of Maharashtra to divert surplus water available at Pinjal dam to augment domestic water supply of Mumbai city. The DPR of Pinjal dam was prepared by Water Resource Department, Government of Maharashtra during the year 1981, which is being revised by Municipal Corporation of Greater Mumbai. The surplus Damanganga waters will be made available at Pinjal dam from where the combined

surplus waters of Damanganga and Pinjal basins will be taken further through the conveyance system being developed by MCGM. As such the cost of Pinjal dam has not been considered while working out the cost of Damanganga – Pinjal link, also the benefits for Damanganga-Pinjal link project has been considered only for 579 Mm<sup>3</sup> water to be diverted from Damanganga basin and delivered in Pinjal reservoir.

### **6.3 Revenue from Domestic Water Supply**

Damanganga-Pinjal link project will provide 579 Mm<sup>3</sup> of water annually (1586 MLD) with constant rate of discharge throughout the year. The Municipal Corporation of Greater Mumbai has notified the rates for domestic and non-domestic purposes for the year 2013 vide notification no. MGC/F/923 dated 5<sup>th</sup> Jun 2013 (Annexure – 6.1 in Volume - II). Considering these rates the revenue that is likely to be collected from 1586 MLD (579 Mm<sup>3</sup>) of Damanganga waters have been worked out to be Rs. 725. 328 Crores annually (Annexure – 6.2 in Volume - II). Considering the increase in the water charges @ 8% annually the annual revenue has been projected up to the year 2050 and is furnished in Annexure – 6.3 in Volume - II.