

Figure 7 Plan of Thangone Treatment Plant Construction: 40,000 m<sup>3</sup>/day for Alternatives T-2 & T-3

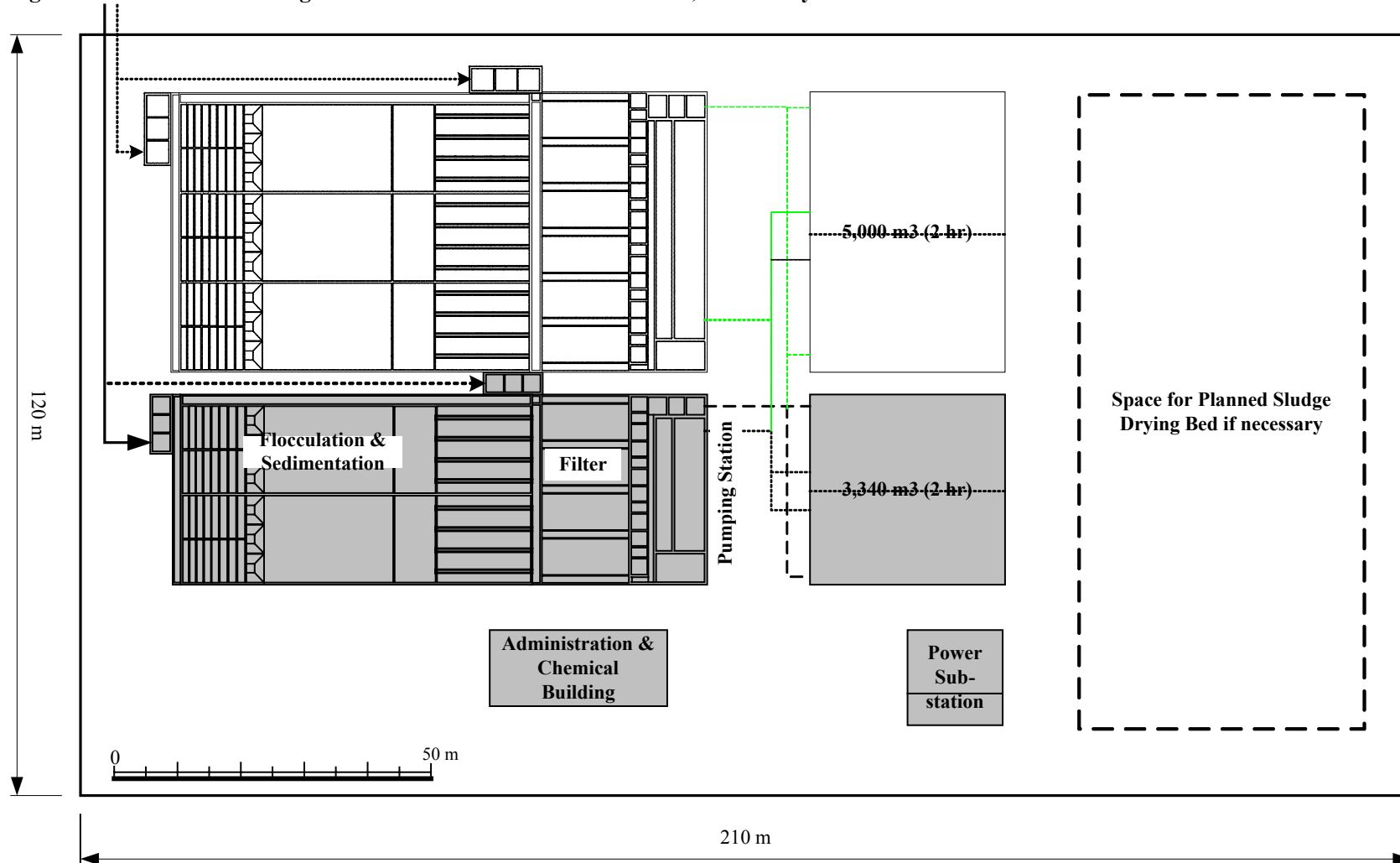


Figure 8 Plan of Thangone Treatment Plant Construction: 60,000 m<sup>3</sup>/day for Alternatives C-1 & K-1

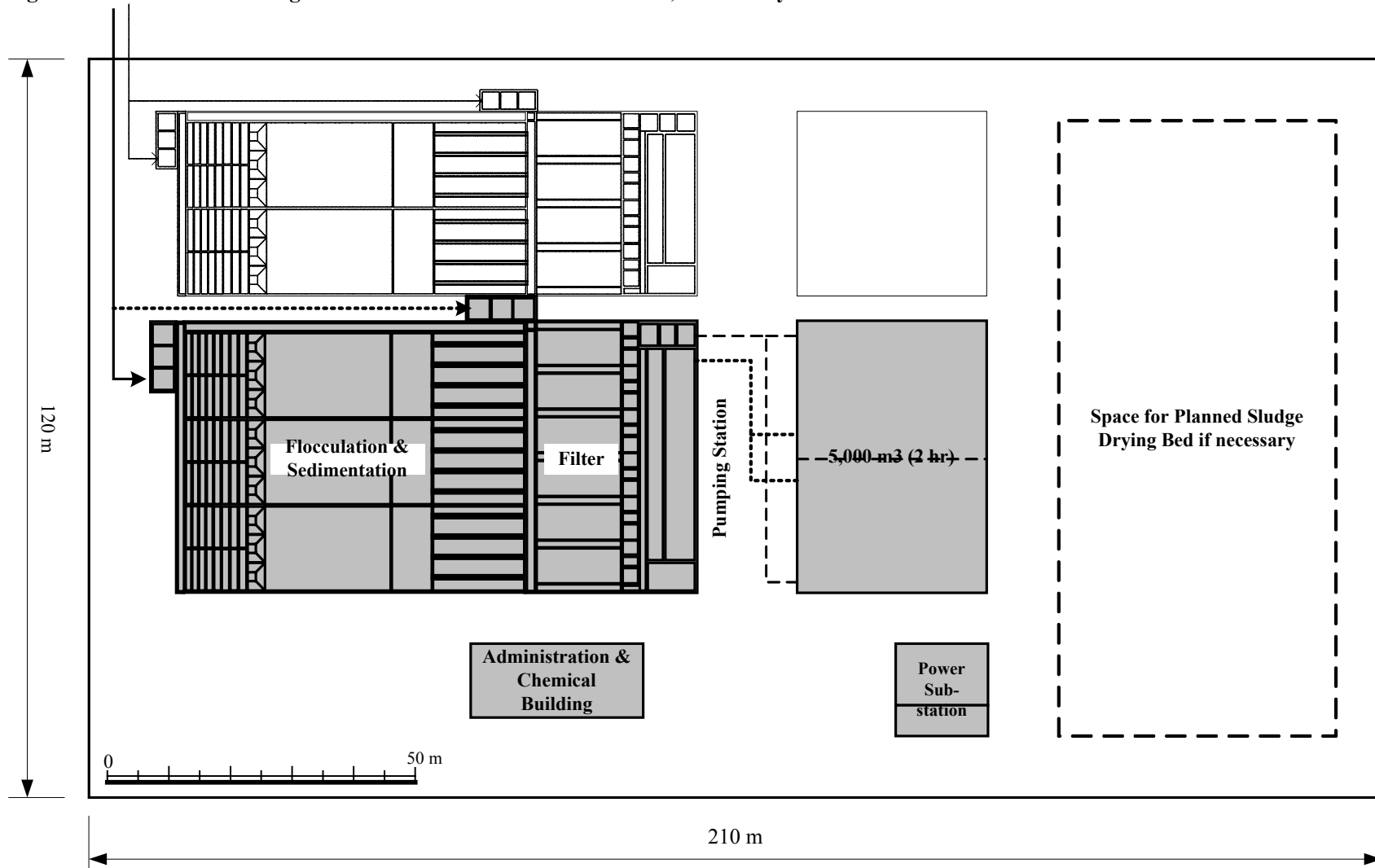
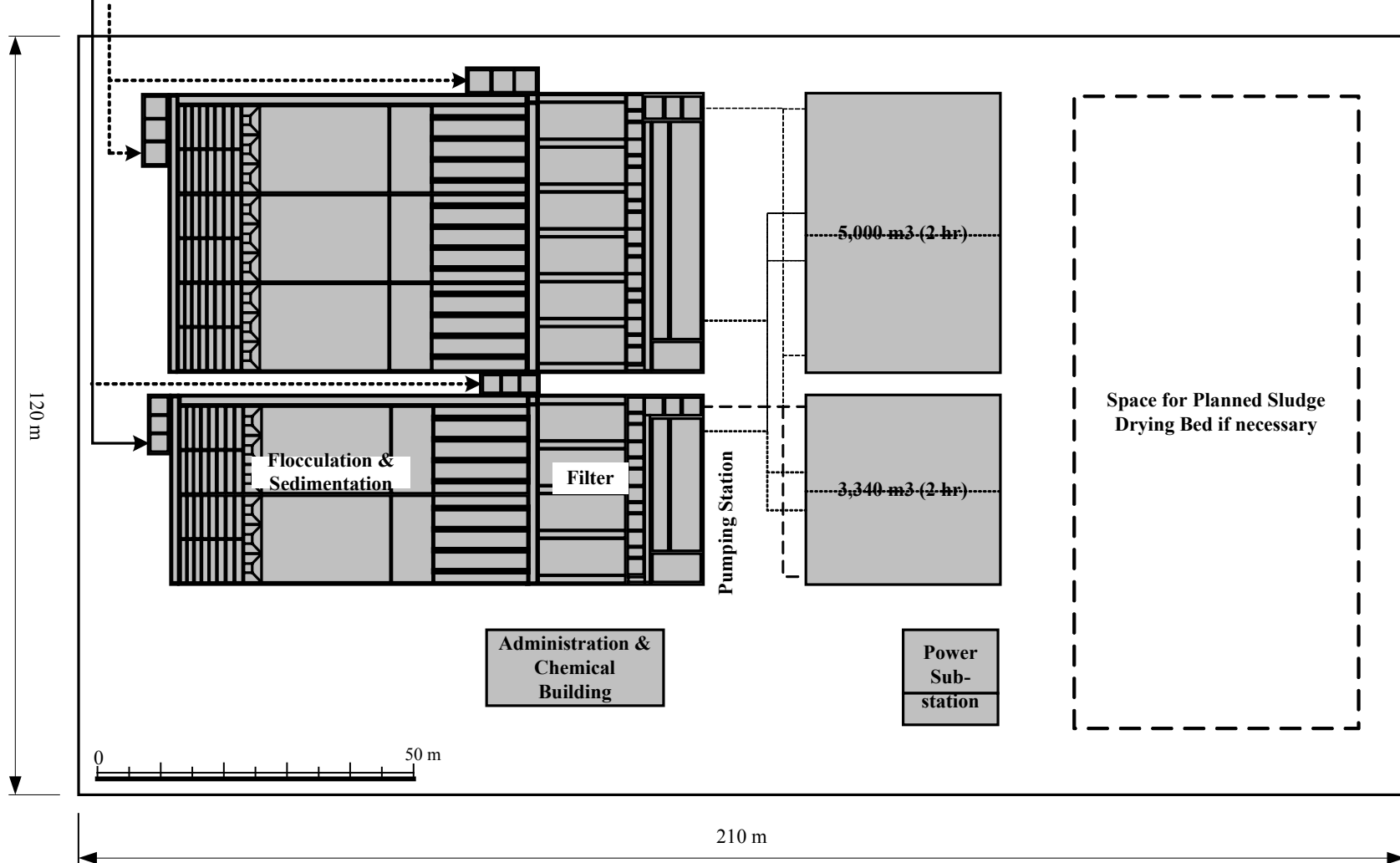


Figure 9 Plan of Thangone Treatment Plant Expansion: 60,000 m<sup>3</sup>/day for Alternative T-3



## **(2) Clear Water Transmission and Distribution Trunk Mains**

### **1) Conditions for Network Analysis**

Pipe network models for each stage and for each alternative were developed and hydraulic analyses were conducted using WaterCAD. Conditions of the hydraulic network analyses are as follows:

- Formula for friction loss calculation : Hazen-Williams Formula
- C value for all pipes: 110
- Velocity Range: 1.0 m/s – 1.5 m/s
- Minimum Residual Pressure at junction: 1.5 kg/cm<sup>2</sup> (15 m)
- Hourly peak factor for domestic demand is estimated at 1.4. Half of non-domestic demand is assumed to be the same hourly peak factor as domestic. For the remaining non-domestic demand, hourly peak factors are not applied since non-domestic customers have their own reservoir.

The basis of calculations of the hourly peak factor are shown in Annex-15. The overall hourly peak factor, the average of domestic and non-domestic demand is calculated as 1.3.

### **2) Demand Allocation to the Junctions**

Domestic water demand is allocated to each junction based on the location of villages near the junction. The population, service ratio, served population and water demand for each village is calculated as described in the previous section.

Non-domestic water demand is allocated to junctions in three different ways. First of all, the major large 50 consumers which consume water at a rate of more than 2,000 m<sup>3</sup>/month were identified and plotted on the map. From the map, water consumption of these large consumers was allocated to junctions nearby. As a second step, 20 % of the remaining non-domestic water demand is allocated to the junctions which are located in the future industrial areas. In the third step, the remaining non-domestic water demand is allocated to all junctions correlating to the population covered by each junction.