

**ANNEX D**  
**COMPREHENSIVE LIST OF EQUIPMENT**

## Annex D: Comprehensive list of equipment

A comprehensive list of equipments of phase I + possible upgrade as well as the phase IIa equipments is presented in

	PHASE I	PHASE IIa
<b>Inlet</b>		
Number of turbines	2 Pelton turbines of 846 kWe Electric production	No additional unit
<b>Pre aeration and oil removal</b>		
Number of unit	2 units of 4,600 m <sup>3</sup>	No additional unit
Grit washer	2 units of 60 m <sup>3</sup> /hr	
<b>Primary settlers</b>		
Number of unit	4 rectangular of 67 m length and 25 m width	1 rectangular of 80 m length and 25 m width
<b>Biological treatment</b>		
Number of unit	8 basins of 26,200 m <sup>3</sup> each Upgraded with addition air diffusers Change the localization of the sludge recycling	3 basins of 26,200 m <sup>3</sup> each
Aeration: blowers	8+2 turbo blowers of 19,573 Nm <sup>3</sup> /hr unit flow rate	3+1 turbo blowers of 19,573 Nm <sup>3</sup> /hr unit flow rate
Air diffusers	aeration zone 1: 4,048 diffusers aeration zone 2: 672 diffusers + 672 new diffusers	aeration zone 1: 4,048 diffusers aeration zone 2: 1,344 diffusers
<b>clarification</b>		
Number of unit	8 units of 54 m diameter	3 units of 54 m diameter
<b>Disinfection</b>		
Number of unit	6 tanks of 1,165 m <sup>3</sup> each	3 tanks of 1,000 m <sup>3</sup> each
<b>Turbines</b>		
Number of turbines	Number of turbines 2 turbine Francis of 837 kWe Electric production	1 turbine Francis adapted to the phase IIa flow
<b>Primary sludge thickening</b>		
Number of unit	3 units of 23 m diameter	3 units of 23 m diameter
<b>Biological sludge thickening</b>		
Number of unit	3 units of 18 m diameter	2 units of 18 m diameter
<b>Anaerobic digestion</b>		
Thickened sludge mixing tank	1 unit of 98 m <sup>3</sup>	1 unit of 98 m <sup>3</sup>
Number of digester	4 units of 15,900 m <sup>3</sup> each	3 units of 15,900 m <sup>3</sup> each
Digested sludge storage tank	No storage tank	1 units of 3,500 m <sup>3</sup>
Number of gas holder	2 membrane units of 5,000 m <sup>3</sup> capacity	2 gas holders of 4,000 m <sup>3</sup> capacity each
Biogas H <sub>2</sub> S removal units	2 biological units of 3.5 m diameter	Other type of treatment
Biogas burner	2 burners of 5,200 Nm <sup>3</sup> /hr	1 burner same capacity

	<b>PHASE I</b>	<b>PHASE IIa</b>
Cogeneration	5 +1 units of 1,070 KWe electric production	4 units
Lime dosing facility	Lime dosing facility Installation of 500 kg Ca(OH) <sub>2</sub> /tDS	No additional installation
<b>Sludge dewatering</b>		
Number and type	54 hectares of sludge drying basins	All sludge dewatered by band filters (3 meters width) 14 +2 standby units
<b>Odor control and treatment</b>		
Bioway scrubbers	3 units of 3.6 m diameter	3 new units of 3.6 m diameter
Chemical scrubber	1 unit of 1.9 m diameter	2 new units (1.9 m and 3,2m diameter)
Biological scrubber	6 units of 4.5 m diameter	4 new units of 4.5 m diameter