

# FlooBed® MBBR Process

Maynilad Paltok Sewage Treatment Plant,  
Quezon City, Philippines

# Maynilad, Paltok STP

## Design values, inlet

Inlet	Unit	Design Value	Min.	Max.
Q <sub>d</sub>	[m <sup>3</sup> /d]	4 900		
Q <sub>h</sub> (Q <sub>d</sub> /24)	[m <sup>3</sup> /h]	204,2		
Peak factor for hydraulic capacity		1,8		
COD	[mg/l]	400		
	[kg/d]	1 960		
COD soluble	[mg/l]	225		
	[kg/d]	1 103		
BOD <sub>5</sub>	[mg/l]	200		
	[kg/d]	980		
BOD <sub>5</sub> soluble	[mg/l]	150		
	[kg/d]	735		
Temperature	[°C]	20	20	30
pH		7,0	6,0	9,0
TSS	[mg/l]	250		
	[kg/d]	1 225		
TKN	[mg/l]	70		
	[kg/d]	343		
Ammonium (NH <sub>3</sub> )	[mg/l]	50		
	[kg/d]	245		
Phosphorus	[mg/l]	14		
	[kg/d]	69		
Total coliform	MPN per 100 ml	10 <sup>7</sup> - 10 <sup>8</sup>		

# Maynilad, Paltok STP

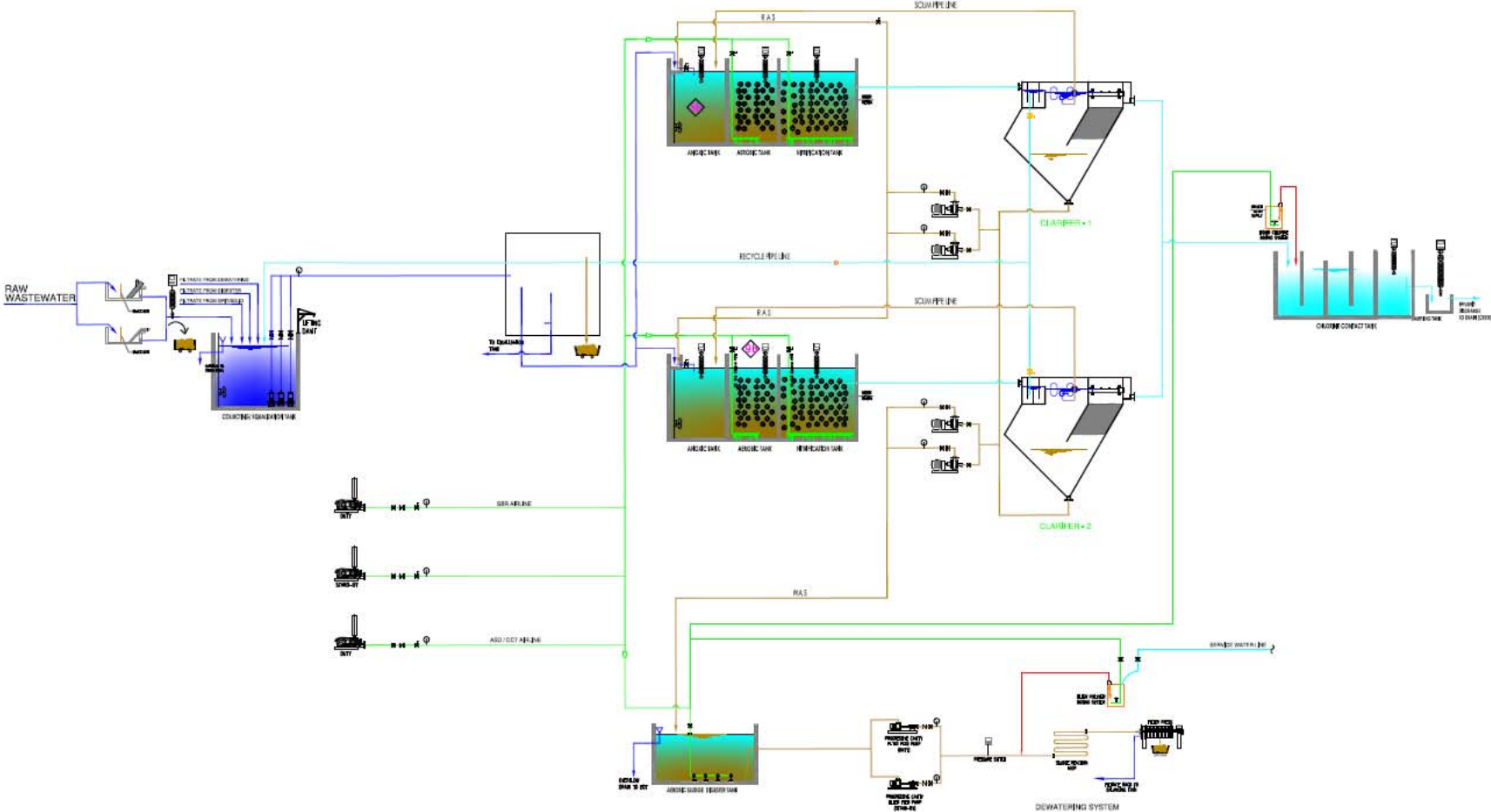
## Design values, treated effluent

Treated effluent	Unit	Value
COD	[mg/l]	60
	[kg/d]	294
BOD <sub>5</sub>	[mg/l]	20
	[kg/d]	98
TSS	[mg/l]	50
	[kg/d]	245
Oil and Grease (Petroleum Ether Extract)	[mg/l]	5
	[kg/d]	25
NO <sub>3</sub> -N	[mg/l]	10
	[kg/d]	49
PO <sub>4</sub> -P	[mg/l]	1
	[kg/d]	4,9
Total coliforms	MPN per 100 ml	1 000
pH		6,0 – 9,5

# Maynilad, Paltok STP Process

- Flootech Oy delivered the biological process for Maynilad's Paltok STP in Quezon City, Philippines in 2011
- Biological process is based on MBBR technology
- Key challenge for the process design was biological nitrogen removal
- Equipment:
  - Two parallel treatment lines
  - In both lines two MBBR reactors in series preceded by anoxic suspended growth reactor
  - First MBBR is designed for BOD removal and the second one is for nitrification
  - After nitrification reactor effluent is recycled back to the anoxic reactor for denitrification
  - Reactor sizes:
    - MBBR 1: 2 x 155 m<sup>3</sup>
    - MBBR 2: 2 x 310 m<sup>3</sup>
    - Anoxic: 2 x 425 m<sup>3</sup>

# Maynilad, Paltok STP Flow sheet



# Maynilad, Paltok STP Realized values, Feed

- Flow 980 m<sup>3</sup>/d
- COD 169 mg/l
- BOD<sub>5</sub> 85 mg/l
- TSS 30 mg/l
- Oil & Grease 50 mg/l
- Color 27 PCU
- NH<sub>3</sub>-N 20 mg/l
- NO<sub>3</sub>-N < 0,5 mg/l
- TKN 33,1 mg/l
- PO<sub>4</sub> 12,6 mg/l
- P<sub>tot</sub> 4,1 mg/l
- Coliforms 5,8 x 10<sup>6</sup> MPN/100ml
- Temperature 28,2 °C
- pH 7,5



# Maynilad, Paltok STP

## Realized values, Treated effluent

- COD 33 mg/l
- BOD<sub>5</sub> 14 mg/l
- TSS 4 mg/l
- Oil & Grease 2 mg/l
- Color 9 PCU
- NH<sub>3</sub>-N < 0,2 mg/l
- NO<sub>3</sub>-N < 0,5 mg/l
- TKN 0,4 mg/l
- Coliforms < 1,8 MPN/100ml
- Temperature 29 °C
- pH 7,6

