

Orchard Hills Water Filtration Plant technical data

Water filtration

Equipment	Design criteria	Details
Automated screens	Number	1
	Type	Rotary fine screen
	Aperture	3 mm
	Cleaning cycle	20-minute flush every hour
Rapid Mix Tank 1	Number	1
	Detention time	13 seconds
	Mixer type	Paddle mixer
	Chemical added	Ferric (Iron III) Chloride
	Average dose rate	6.00 mg/L
	Number	1
Rapid Mix Tank 2	Detention time	10 seconds
	Mixer type	Paddle mixer
	Chemical added	Cationic polymer - PolyDADMAC
	Average dose rate	1.80 mg/L
Delay chambers	Number	4
	Detention time	53 – 214 seconds
Rapid Mix Tank 3	Number	1
	Detention time	10 seconds
	Mixer type	Paddle mixer
	Chemical added	Non-ionic polymer - Polyacrylamide
	Average dose rate	0.05 mg/L
Dual media filters	Number	10
	Type	Dual media gravity fed
	Dimensions (w x l x d)	4.6 x 18 x 1.8 m, each filter
	Filter media surface area	72 m ² , each filter
	Capacity	21 ML/d, each filter
Clear water tank	Volume (V)	80 kL
	Detention time	4 minutes

Backwashing and residual processing

Equipment	Design criteria	Details
Backwashing	Water flush rate	48 m/h
	Air scour rate	54 m/h
	Combined water and air flush rate	15 m/h
	Backwash flowrate	1200 L/s
	Total backwash time	30 minutes
	Backwash frequency	48 hours
	Backwash triggered by	Operator, head-loss, turbidity, run time
Residual lagoons	Number	3
	Volume	5170 m ³ , each lagoon
	Sludge depth	1 m
	Total depth	3 m
	Peak daily flow	81 mm/h
	Peak instantaneous flow	716 mm/h
	Capacity	9 ML/day, each lagoon

Chemical additions

Purpose	Design criteria	Details
pH adjustment	Chemical added	Calcium Hydroxide (Ca(OH) ₂ (aq))
	Type of mixing used	Weir
	Average dose rate	Pre-dose 11 mg/L Post-dose 2 mg/L (when in use)
Disinfection	Chemical added	Chlorine gas (Cl ₂)
	Type of mixing used	Inline
	Average dose rate	Pre-dose – 2 mg/L (oxidation only) Post-dose – 3 mg/L
Fluoridation	Chemical added	Hydrofluorosilic acid (H ₂ SiF ₆)
	Type of mixing used	Inline
	Average dose rate	1 mg/L
Oxidation	Chemical added	Potassium permanganate (KMnO ₄)
	Type of mixing used	Weir or inline
	Average dose rate	0.5 mg/L (when in use)