



# Expansion of wasteWater Treatment Plant in the municipality of L'Horta Nord

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Location	<b>Pobla de Farnals - Valencia</b>
Employer	<b>Conselleria de infraestructuras y transportes Generalitat Valenciana</b>
Duration	<b>26 months</b>
Capacity	<b>30,000 m<sup>3</sup>/day</b>
Population	<b>150,000 eq-inhabitants</b>
Budget	<b>9,861,225 €</b>

Work on Wastewater Treatment Plant expansion in the municipality of L'Horta Nord is located in the Municipal Area of Pobla de Farnals, on the plot of ground where the existing Wastewater Treatment Plant is located, and on plots 34, 43, 42 and 41 of Industrial Estate 6, which have been added to the existing area.

Raw water arrives at the Wastewater Treatment Plant via two pipelines, one from Puzol and the other one from Pobla de Farnals and Massamagrell, which are connected to the existing pumping pit.

The water parameters at the input and the outlet of the WWTP are as follows:

	Input	Outlet	Effluent water with Tertiary Treatment
BOD <sub>5</sub>	<b>300 mg/l</b>	<b>&lt; 20 mg/l</b>	<b>&lt; 10 mg/l</b>
TSS	<b>350 mg/l</b>	<b>&lt; 25 mg/l</b>	<b>&lt; 5 mg/l</b>
N-NTK	<b>60 mg/l</b>		
Total P	<b>16 mg/l</b>		
N-NH <sub>4</sub>		<b>&lt; 5 mg N/l</b>	
N-NO <sub>3</sub>	<b>&lt; 4 mg N /l</b>		
Turbidity			<b>≤ 2 NTU</b>
Faecal			<b>≤10NMP/100 ml</b>
Coliforms			

Effluent water treated at the Waste Water Treatment Plant is sent to the off-shore sewage outlet when tertiary treatment does not work, thereby ensuring that water is released at a height of more than +4.20.

This project proposes expansion of the WWTP from 18,000 m<sup>3</sup>/day to 30,000 m<sup>3</sup>/day, the inclusion of biological treatment for the whole flow (30,000 m<sup>3</sup>/day) and tertiary treatment for 1.000 m<sup>3</sup>/h (which may be increased to 1,500 m<sup>3</sup>/h).

Effluent water from this new tertiary treatment phase is pumped to the Moncada Irrigation Channel for reuse. This pumping and driving does not form part of this project, although it has been taken into account for the purposes of implementation and hydraulic connections.



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The work included in this project is broadly the following:

- Expansion of the Wastewater Treatment Plant for an additional 12,000 m<sup>3</sup>/day capacity which will make a total of 30,000 m<sup>3</sup>/day.
- Biological Treatment for 30,000 m<sup>3</sup>/day.
- Improvements to existing Wastewater Treatment Plant.
- New sludge line with the possibility of treating primary sludge and excess sludge together or separately.
- Tertiary treatment for 24,000 m<sup>3</sup>/day.

## Water Line

The present WWTP has pre-treatment, physical-chemical primary treatment and treatment of primary sludge. The aim of the work is to adapt the present facilities to the new flow rates and pollutant loads, as well as to current legislation and the growing demand for water for irrigation.

That is why existing treatment (pre-treatment and primary treatment) is being increased and new biological treatment and tertiary treatment areas are being built.

Fine and thick solids screening has been increased in pre-treatment, but grit and grease removal does not need to be modified, being capable of suitably dealing with the flow rates designed.

Sedimentation has been increased in primary treatment, the mixing and flocculation chambers being sufficient.

A lifting pump has been adopted for biological treatment that makes it possible for the tertiary treatment flow to circulate by gravity, as well as ensuring gravity evacuation by the off-shore sewage outlet for sewage not treated in the tertiary stage.

The **biological treatment** adopted has been equipped with an anoxic area and internal re-circulation in order to prevent uncontrolled denitrification in subsequent treatment stages. A process has been designed with a sludge age high enough to ensure a stable nitrogen removal performance over the year.

The new **tertiary treatment** assures the quality demanded of water for irrigation, being formed by 2 mixing and flocculation lines, lamella sedimentation with sludge thickening, sand filtration and disinfection.

## Sludge Line

The sludge treatment line consists of the following elements:

- An excess secondary sludge digester.
- A buffer tank for controlling the sludge flow to be treated.
- Another sludge storage hopper similar to the two existing ones.
- A gas-holder for storing gas at low pressure

The following three buildings are planned to complete and serve the facilities:

- Blower and conversion building, where the blower engine rooms, electrical panels, transformers and power plant are located.
- Tertiary treatment building with electrical control room, air blowers for the filtration process and for reagent storage and dosage for the mixing and flocculation process.
- Thickening, digestion and deodorization building, where all the equipment needed for these operations are included, together with an electrical control room.