ARROYOFRESNO STORM TANK

Canal de Isabel II

WHAT IS A STORM TANK?

Storm tanks are **large tanks whose purpose is to store rainwater**. In this way, we ensure that both the first drags from the washing of roads and the sediments from the collectors carried by rainfall are not discharged untreated. According to studies carried out, in some cases, **the first hour of water from urban drainage in the rainy season is more polluting than wastewater in dry weather**. Thus, thanks to the storm tanks, the pollutants are stored and can be treated before the water is discharged back into the river.

Canal de Isabel II manages more than 60 storm tanks that prevent the discharge of excess water into the different watercourses during periods of rainfall that cannot be treated immediately by the different treatment plants, thus reducing flows, as well as preventing possible flooding. **They can store more than 1.40 hm^3 of water**, equivalent to about 450 Olympic-size swimming pools.

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HOW DOES THE ARROYOFRESNO STORM TANK WORK?

The Arroyofresno storm tank **is one of the largest in the world with a capacity of almost 400,000 m³** of water, eight times more than the El Retiro pond. Although unnoticed by most citizens because it is an underground facility, it is a civil work of spectacular magnitude, with a surface area equivalent to five football pitches and a depth similar to a six-storey office building.

When there are prolonged rain episodes, the excess water collected during rainfall by the municipal collectors in the Fuencarral-El Pardo, Tetuán, Chamartín and Moncloa districts, which cannot be treated immediately by the Viveros treatment plant, is diverted to the storm tank via the Arroyofresno splitter.

And it is through the Arroyofresno collector that the water is channelled to the tank. Before it enters the tank, the water passes through a series of grids that retain any large solid waste that may be carried by the water.

Once the larger debris has been retained, the water is distributed through the inlet works, filling initially the zone 1, which has a smaller capacity but is sufficient for ordinary storms. Once it has passed into zone 2, it can even fill the inlet collector if necessary.

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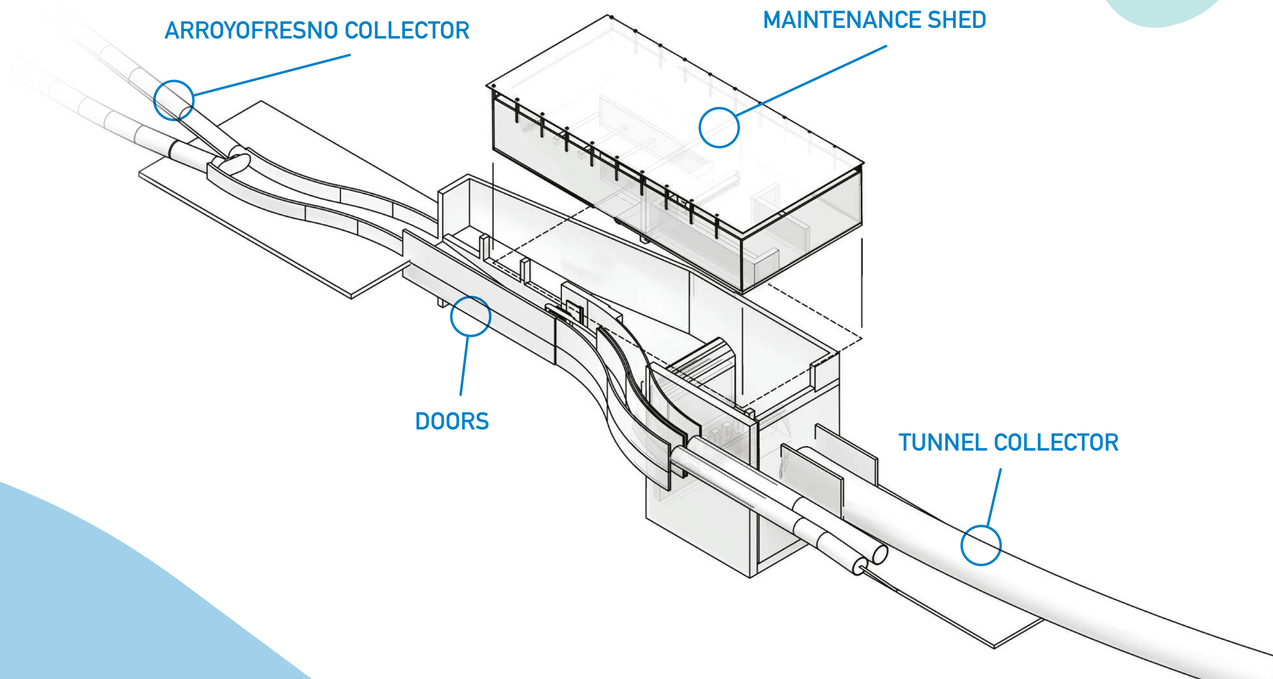
RELATED INFRASTRUCTURES

Spliter

It distributes the flow, letting its maximum admissible flow through the Arroyofresno bent collector to the treatment plant and diverting the rest to the tank through the tunnel collector.

Its dimensions are 70 m x 17 m in its lateral trunk, and 110 m x 7 m at the connection with the existing collectors. With a maximum depth of 16 m, it can divert a flow of 30 m^3/s in a normal situation and 70 m^3/s in an extreme situation.

The splitter is operated by 2 Taintor floodgates. During the rainy season, the floodgates regulate the flow to both the Viveros treatment plant and the Arroyofresno storm tank.



Tunnel collector

With a circular section of 6.7 m inside diameter and a length of 3,028 m, it collects the water derived from the splitter and conducts it to the storm tank.

It is the largest in diameter of those existing in Madrid, with a maximum capacity of 112 m³/s.

Arrival work

Its purpose is to dissipate the energy of the flow to limit erosion.

It consists of a transition from a circular to a rectangular section, a basin, and a hydraulic shoulder.

Tank body

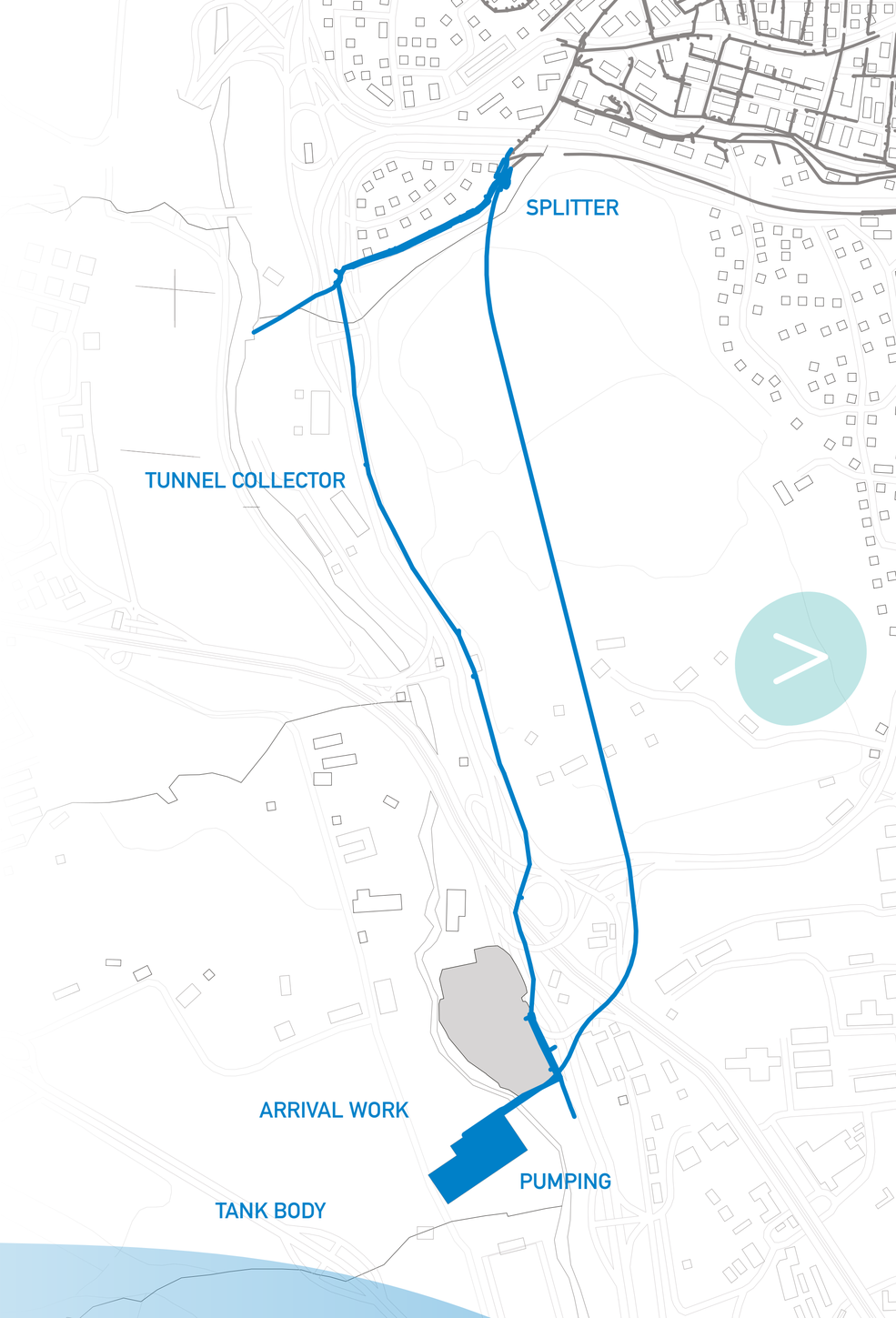
Its maximum capacity is about 400,000 m³, and it can store water in two zones for easy maintenance and cleaning.

The two zones are separated by 246 m of wall with 30 m of spillway and 3 hydraulic gates.

Pumping

There is the possibility of pumping to collectors on the right and left banks of the river for emptying and restitution of flows to the different treatment plants.

The total pumping capacity is 15.3 m³/s and the tank is capable of emptying completely in 14.5 hours.



Discover the Arrofresno storm tank

Enjoy this installation also in virtual reality

Click to watch VR video of the collector

Click to watch VR video of the tank

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