

# **New Water Pipeline**

# Feasibility study

15/03/2019



## Water Pipeline Route

To extend the cooling water and the FF water capacity, the Company intends to replace the existing water pipeline with a new one. The scope of this study is to provide a Feasibility Study of the new water pipeline.

The study will examine the following aspects:

- Hydraulic analysis;
- New water pipeline preliminary design;
- Pumping station preliminary design;
- Existing water intake verification;
- Cost estimation.



New Water Pipeline Route



Existing Water Pipeline Route



**River Water Intake** 



## **Sensitivity Analysis**



### SCOPE

To define the best geometrical configuration, several Pipeline characteristic curves have been drawn for four different diameters. For each diameter, the pipe has been considered in both clean (Ra=0.045mm) and dirty conditions (Ra=1mm).



### Conclusions



The selected diameter System curves are compared with the Pumps Characteristic curves.

The working point of the Pumping System, corresponds to the "Design Flowrate" condition of the DN12" in dirty conditions (Absolute roughness estimated = 1 mm);

For this stage of the project, the installation of new pumps have been considered and recommended. Minor works may be taken into account to fit the system to the new conditions.

For the calculation of the thickness of the pipeline, different materials were taken into consideration in order to check the hoop stress for three different thicknesses. In the first instance the use of a thickness that guarantees a safety coefficient higher than 1.3 is assumed.

The evaluation of the line pipe thickness is underway, subject to loads dictated by the laying conditions (soil, vehicular loads ...).