



**A STUDY ON PIPE NETWORK SYSTEM FOR THE  
MANAGEMENT OPTIMALIZATION  
(A Case Study On Coastal Area In Kualin Sub Distric  
Of Timor Tengah Selatan Distric)**

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**ABSTRACT**

*Being one of the most basic needs for human being, clean water must always be properly available on its quality, quantity and service punctuality. Clean water availability depends on the source and network capability to serve the people's need in general. Problems occurred in the existing network will consequently give direct influence to its service performance.*

*This research was carried out on the coastal area in Kualin Sub District of Timor Tengah Selatan District by studying the existing network system followed by analysis for the development to have the quantity and service punctuality suited to the people's demand. The people's economic and social condition was identified through questionnaire. The prediction on the operational aspect performance of the existing network was taken by comparing the PDAM of Timor Tengah Selatan District to the performance of the existing network being operated in Kualin District.*

*Results of WaterNet simulation showed that the node pressure head was above 300 m H<sub>2</sub>O. Therefore, by positioning PRV (Pressure Reducing Valve), the pressure head can be arranged based on the allowable pressure both for the existing and developed networks. Some of the pipes on the existing network in Kiufatu, Tuafanu and Toineke lines did not work optimally under the demand fluctuation. This condition required pipe diameter changing from 0,05 m to 0,15 m, 0,1 m and 0,075 m, respectively, during the network development. Operational performance evaluation for PDAM Kota SoE up to the year 2004 was 17,87 that indicated "poor" performance value (performance value > 12 – 18). Network management performance value for Kualin Sub-District up to the year 2004 was 8,51 that indicated "not good" value (performance value ≤ 12). Predicted operational performance of the developed network up to the year 2008, 2012, 2016 were 24,68, 25,53 and 25,53, respectively (performance value > 24 – 30). Operational performance value above 30 is the highest performance value for PDAM in providing its operation. Water source capacity up to the year 2016 for both existing and developed networks was only capable to serve 60 % of the people numbers within 24 hours service period.*

*Keywords: Pipe Network, Optimalization, Simulation, Operational Performance*