Wisata Bahari Lamongan is one of tourism area in Lamongan which is a lot of tourism come to that place every year. But, in Wisata Bahari Lamongan still has a low quality of fresh water. Therefore, seawater in Wisata Bahari Lamongan will be treated into fresh water to increase the quality of fresh water. Treatment plan in this study is using Reverse Osmosis system.

This Reverse Osmosis system is based on fresh water demand, total tourism, and the result of raw water quality in Wisata Bahari Lamongan. Through this projection calculation using Minitab 16 Software, total fresh water requirement is 30,200 m$^3$/day, with total tourism who always increase in every year, also the result of quality with TDS 24,200 mg/litre, chlorida 19,500 mg/litre Cl$^-\text{,}$ with temperature 25°C. With that result, treatment is using Reverse Osmosis type BETAQUA RO-SW8-15 with debit of raw water 29,31 m$^3$/hour, debit of fresh water 10,26 m$^3$/hour, and debit of reject water 19,05 m$^3$/hour. Water reject is using as a nigrarin water and float pool in Wisata Bahari Lamongan.

The analysis that used for this treatment plan are technical analysis and economical analysis. Technical analysis in this treatment plan is feasible because the equipment can fulfill the treatment, such as pressure in Reverse osmosis is about 12 bar, debit for raw water and fresh water which are fulfill the need. And for economical analysis, is divided into three conditions, there are: treatment using conventional system, treatment using reverse osmosis with individual ticketing method,
and treatment using reverse osmosis with continue ticketing method. From those conditions, the third condition is selected because number of NPV is Rp 9,710,530,215, IRR value is 21% which is the value is bigger than MARR value with 13,5%.

Key word : IRR, NPV, Reverse Osmosis, Wisata Bahari Lamongan,