

ABSTRACT

Suikerbuurt Area is one of those neighbourhood areas in the Netherlands that has been subjected to a sustainable redevelopment due to the possible environmental issues. The inhabitants of the *Suikerbuurt* area have a lot of concerns in regards to their local environment and made a number of complaints to the *Stee Lande* as well as the *Gementee*. The *Gementee* along with several other parties have made some research to prove whether or not the area is facing those allegedly environmental issues. The author, together with *Kenniscentrum-Noorderuimte* were appointed by the *Gementee* to do some study of the water quantity activities in the area.

The research carried out in the neighbourhood done by the author includes the frequency analysis of extreme storm events, rate of evapotranspiration, calculation of required storage and drainage, daily discharge of groundwater, and groundwater rise analysis. The author used secondary data obtained from previous research and the weather station nearby. The calculations done in this research is the most common calculation used by the *Gementee* to assessed the hydrological conditions of an area.

From the records of the existing groundwater data, it shows that a very high level of groundwater is currently happening in the area. Because of that, the *Gementee* of Groningen have made a groundwater drainage plan. Second of all, the results of this research suggest that the area is indeed facing an extreme precipitation problems that will continue to happen in the following years because of the climate change issues. Lastly, the results of the drainage calculation have led us to believe that the area is in need of a new drainage system. Thus, the author also provides several sustainable redevelopment concept design in the end of this report.

Key words: Sustainable Development, Hydrological Analysis, Drainage,
Suikerbuurt Area