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TITLE OF PROJECT:

Designing a stormwater drainage network for Dhenkanal town using SewerGEMS

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ABSTRACT:
Urbanization and climate change have resulted in flood-prone situations occurring in many cities worldwide. Dhenkanal is a town situated in the Indian state of Odisha that has undulating topography and hillocks consisting of a highest elevation of 240m and a lowest elevation of 60m that receives an annual rainfall of 1421.1 mm. Dry weather flow (DWF) was found in the existing network. The existing network also shows the disposal of solid waste in it due to which problems such as choking of the drain arises, making it inefficient to carry out the stormwater during heavy rainfall events. Thus resulting in the formation of waterlogged areas. In this study, Bentley software will be used for the sufficiency analysis and designing of the stormwater network. Based on a detailed survey, the existing and proposed network, streams, and waterlogged areas were identified. The flow markings and catchment delineation are done on QGIS to determine the outfall locations for draining the stormwater. Rainfall data is analyzed to draw Intensity Duration Frequency (IDF) curves to calculate rainfall intensity which is used for estimation of stormwater runoff. Hydraulic analysis is done to design channels/conduits to convey stormwater runoff for a return period of once in 2-year. This solution of designing a new network will drain out the stormwater and make the network efficient.

KEYWORDS:
Stormwater, drainage network, SewerGEMS, QGIS, Urban flood

CATEGORY:
Architecture, Infrastructure, and Urban Science