

DURBAN'S BIOPHYSICAL FLOOD RISK PROFILE



INACCT
Resilience

DURBAN'S VULNERABILITY TO FLOODS

KwaZulu-Natal Province and the coastal city of Durban, administered by eThekweni Municipality, have **high flood risk**, which is likely to intensify with climate change. The city is vulnerable to intense storms, flooding and sea-level rise due to climate change.

The city has relatively **high annual rainfall**, particularly during the summer months, as a result of its location on the east coast of South Africa. It is significantly impacted by cut-off low pressure systems, which have been responsible for major floods in the city. This weather phenomenon is where a low-pressure area becomes isolated or "cut off" from the primary jet stream, allowing it to remain over a region for several days. The city has experienced flooding almost every year during recent decades, and these floods are likely to increase in the future under a changing climate. In the 2022 floods, soils were already inundated due to a prolonged La Niña event in the same year.

The impacts of high rainfall events are exacerbated by the physical environment (steep slopes, soft soils and unstable geology that **increases the likelihood of slippage and landslides**), the degraded state of the natural environment in catchments (including increased prevalence of **invasive alien plants**), rapid urbanisation and challenges with city infrastructure, planning and disaster response.



The city of Durban is at **high risk of flooding**.



Durban is known as a **city of rivers**, with 18 major river systems with 7400km of rivers.



Average annual rainfall is between 550 mm to 1200 mm.



Frequency of flooding has doubled over the last century.



Steep slopes and unstable geology increase the **likelihood of landslides**.



Informal settlements are highly susceptible to flooding.



Rapid urbanisation and infrastructure challenges **exacerbate the effects of flooding**.



Multiple collaborative initiatives are underway in the city of Durban, led by both the municipality and community members. These include an increasing emphasis on developing **flood resilient infrastructure**, community based flood **early warning systems**, and ecosystem-based **adaptation**.

THE IMPACT OF FLOOD EVENTS

In April 2022, extreme rain of just over 300 mm fell on a single day over parts of the KwaZulu-Natal province in South Africa, with Durban being significantly impacted.

The resultant floods caused significant **damage that amounted to more than R25 billion** across the province, with more than **450 lives lost**, an estimated **13 500 houses damaged or destroyed**, **40 000 people displaced**, and **630 schools affected**. Significant damage to infrastructure and the environment was also recorded and disruptions were experienced in major economic sectors.

Informal settlements, often located in low-lying areas or on steep slopes, are **highly susceptible to flooding**. For example, in Durban's Quarry Road West informal settlement, which is located within a river floodplain, more than 250 households were displaced and 80 families lost both their house and land. Poor drainage infrastructure exacerbates flood risks, leading to property damage, displacement, and health issues due to water contamination.

This was not an isolated event. For example, extreme rainfall and flood-producing events occurred in November 2020, April and November 2019, May and October 2017 and March 2012.

"We lost our houses and our land. It altered the landscape which led to very small spaces. Because of the change of landscape no one could retrieve the houses and we had to start afresh. Losing everything disturbs your mind, not knowing where to start. Your health deteriorates, you are traumatised, angry and confused. This whole situation affects children as well. It shattered our independence and took away our rights to land."

Nomandla Nqanula, resident of Quarry Road West Informal Settlement.



1. La Niña is a climate pattern marked by cooling sea surface temperatures in the central and eastern tropical Pacific, part of the El Niño-Southern Oscillation (ENSO) cycle. In Durban, it typically brings higher rainfall and increased flood risk.