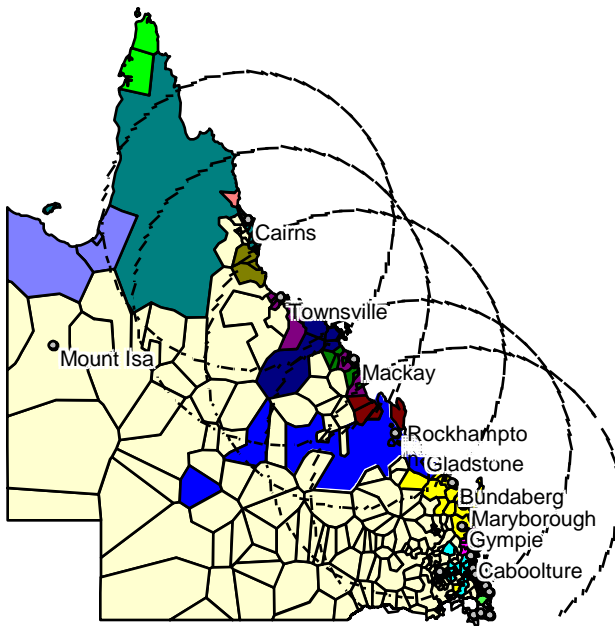


# INSURANCE LOSS ASSESSMENT QUEENSLAND: ICA ZONES 1 TO 12



COMMERCIAL UNION  
INSURANCE



## CLIENT:

Commercial Union Insurance  
Melbourne.

## LOCATION

Queensland Coast:  
Gold Coast to Cairns.

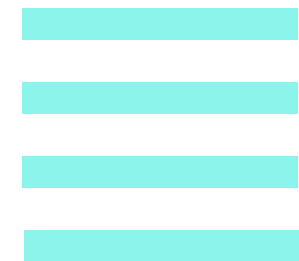
## SEA PERSONNEL PROVIDED

- Historical analysis of tropical cyclones in the region
- Development of regional risk assessment models for extreme winds and storm surge.
- Satellite data and GIS data analysis.
- Insurance portfolio analysis by postcode
- Prediction of long term catastrophic losses.

## PROJECT DESCRIPTION

The project involved the development of a series of insurance risk assessment models along the Queensland coastal region. An initial study completed by SEA personnel (formerly with Rust PPK Pty Ltd) considered the South East Queensland region encompassing ICA Zones 1, 2 and 3. This model was used to estimate long term catastrophic insurance losses due to the effects of tropical cyclone winds. A follow-up study by SEA considered the additional coastal zones 4 to 12, extending from Hervey Bay to Cairns. This later study also included estimates of storm surge induced losses for the major coastal centres of Cairns, Townsville and Mackay.

Topographic models of each region were overlaid with satellite image information which delineated areas of domestic housing. A complex terrain-sensitive wind model of tropical cyclone winds was then created which allowed street and suburb-level variation of peak winds. The regional tropical cyclone climatology was updated over earlier studies to provide a conceptual model of the occurrence, track and intensities of cyclones for each zone. The storm surge sub-model was based on extensive studies done for the Beach Protection Authority in the 1980's, combined with digital elevation data for the major cities. The risk model was then used to simulate long term estimates of insurance losses, separated into domestic, commercial and business interruption classes. The model was calibrated by comparison with long term wind records at a number of coastal locations and also recorded loss data from Townsville during Cyclone *Althea* in 1971.



Systems Engineering  
Australia Pty Ltd

ACN 073 544 439

Tel/Fax: +61 (0) 7 3353-0288

[www.uq.net.au/seng](http://www.uq.net.au/seng)