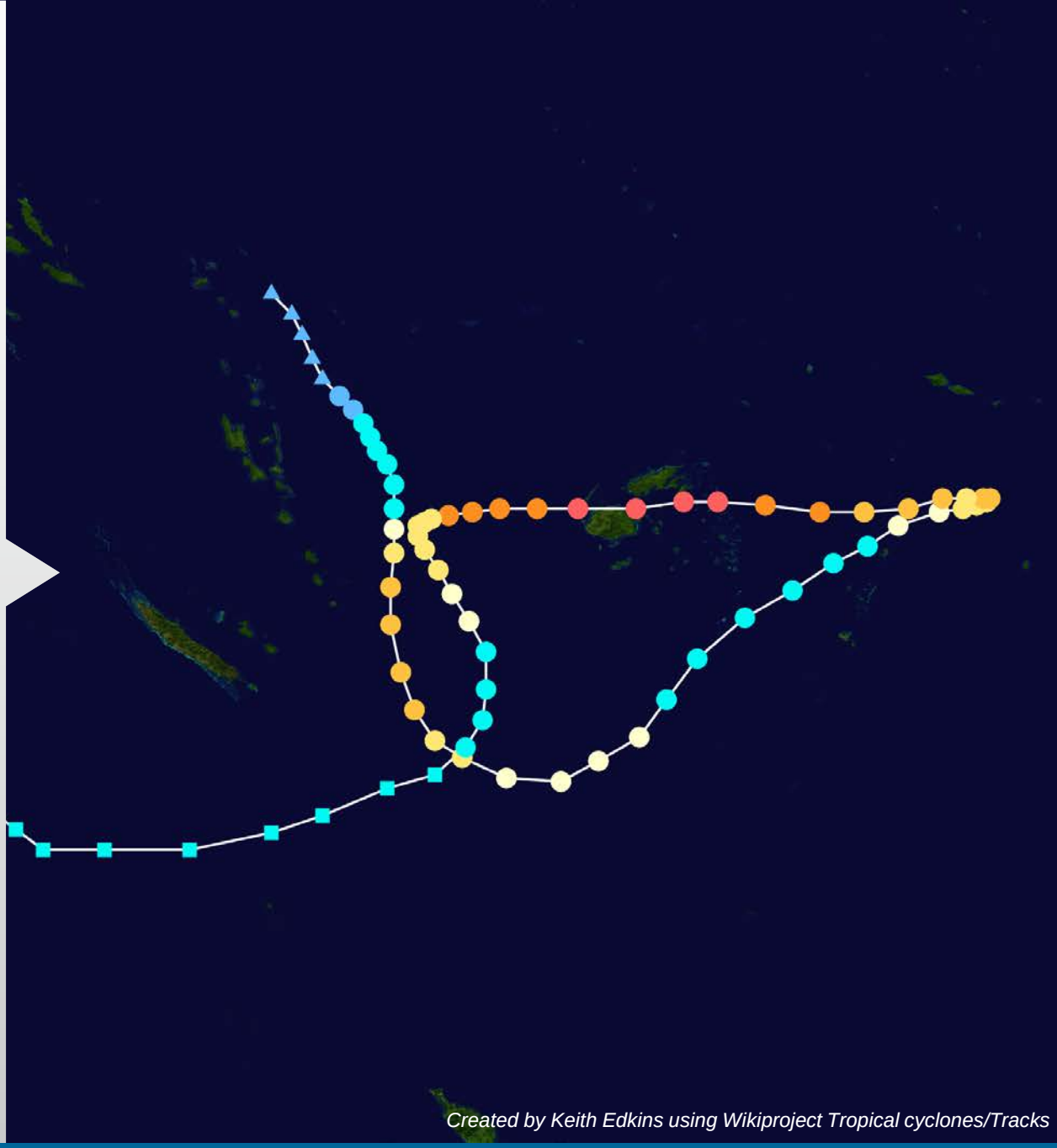
# VanuaGIS

## A Geospatial Response to Cyclone Winston

July 2017



*Created by Keith Edkins using Wikiproject Tropical cyclones/Tracks*

# Introductions

*CoreLogic New Zealand*

- CoreLogic New Zealand (CLNZ)
  - Part of the wider CoreLogic family, CLNZ was eestablished in 2014 by bringing two NZ companies, Terralink NZ and PropertyIQ together
  - Leading property information, analytics and services provider in the United States, Australia and New Zealand
  - Provide clients with leading property information, platforms and predictive analytics that allow them to acquire more customers, keep them longer and sell more
  - Clients in Banking & Finance, Insurance, Agriculture & Primary Industries, Real Estate, Property, Utilities and general commercial segments

# Introductions

*CoreLogic – International  Areas of Focus*

# Introductions

*Fiji Ministry of Lands and Mineral Resources*

*"For the vibrant, equitable and dynamic management of our lands and mineral resources for a sustainable environment and economic future."*

- Fiji's Ministry of Lands & Mineral Resources (MLMR)
  - 6 Primary Functions:
    - Surveying
    - Valuation
    - State Land Administration and Management
    - Land Use
    - Geospatial Analytics and Services

# CoreLogic New Zealand & Fiji's Ministry for Land and Mineral Resources

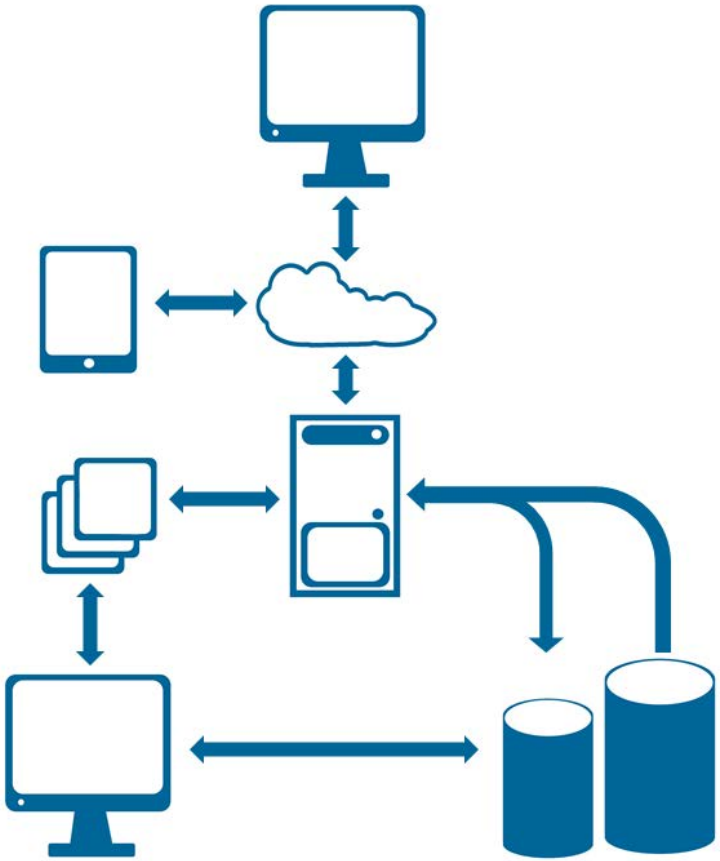
*…a short history*

- VanuaView
  - Media based Property/Land Information application
  - Hardware locked
  - Used primarily by:
    - *Property Developers*
    - *Real Estate Agencies*
    - *Surveyors*

- VanuaGIS
  - Web based Property/Land Information application
  - Government Spatial Data Portal
  - Used within all Ministries to view Government Spatial Assets
  - Architecture investment led to significant productivity gains
  - Will be made commercially available soon to:
    - *Property Developers*
    - *Real Estate Agencies*
    - *Surveyors*

# Architecture

*Designed for with disaster in mind (not necessarily cyclones)…*



- High Availability Configuration
  - 2x Esri Application Servers
  - 2x Microsoft SQL Database Servers
  - ArcGIS Online
  - F5 Load Balancer

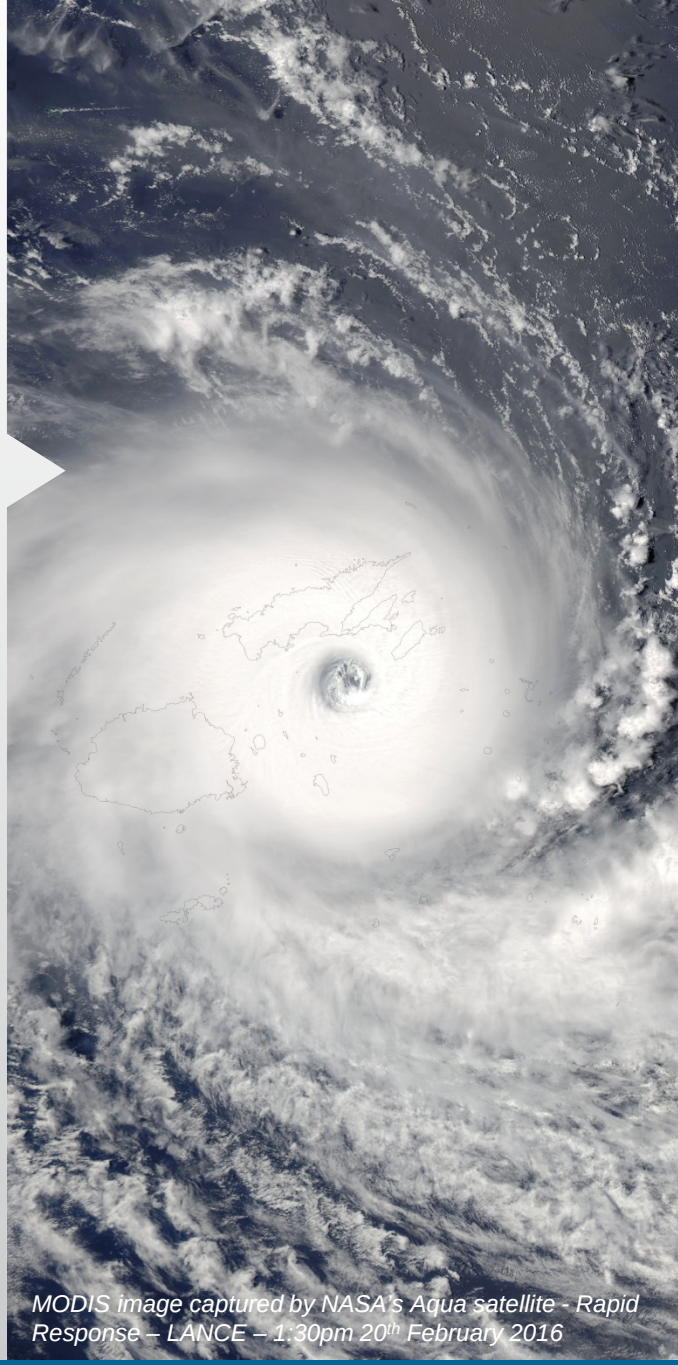
# VanuaGIS

*Government Spatial Data Portal*

- Cadastre
- State Land
- Tenements/ Mining
- Soil
- Climate
- Points of Interest
- Roads
- Land Classification
- Land Use
- Geology
- Administration

# February 20th 2016 Saturday

Severe Tropical Cyclone, Winston



*MODIS image captured by NASA's Aqua satellite - Rapid Response – LANCE – 1:30pm 20th February 2016*

# Severe Tropical Cyclone, Winston

*…largest cyclone to make landfall in the South Pacific*

- Formed in the Pacific near Port Vila, Vanuatu on February 7th 2016
- Made landfall in Fiji, February 20th 2016
- Winds up to 230 km/h (145mph)
- est. $1.4b (USD) damage to property and infrastructure
- 44 people killed
- Affected Countries:
  - Australia
  - Fiji
  - Nuie
  - Vanuatu

# …Monday

## Initial challenges and issues

- Ad-hoc Mapping
  - Numerous requests for maps
  - Limited management
  - Multiple organisations with varying priorities
- Data Quality
  - Incomplete, inaccurate and out of date
  - Data collection methods varied
  - No defined attribution
- Operations
  - NDMO uninformed of role GIS could play in response and recovery
  - Uncoordinated requests for mapping

*NDMO, Monday 22nd February 2016*

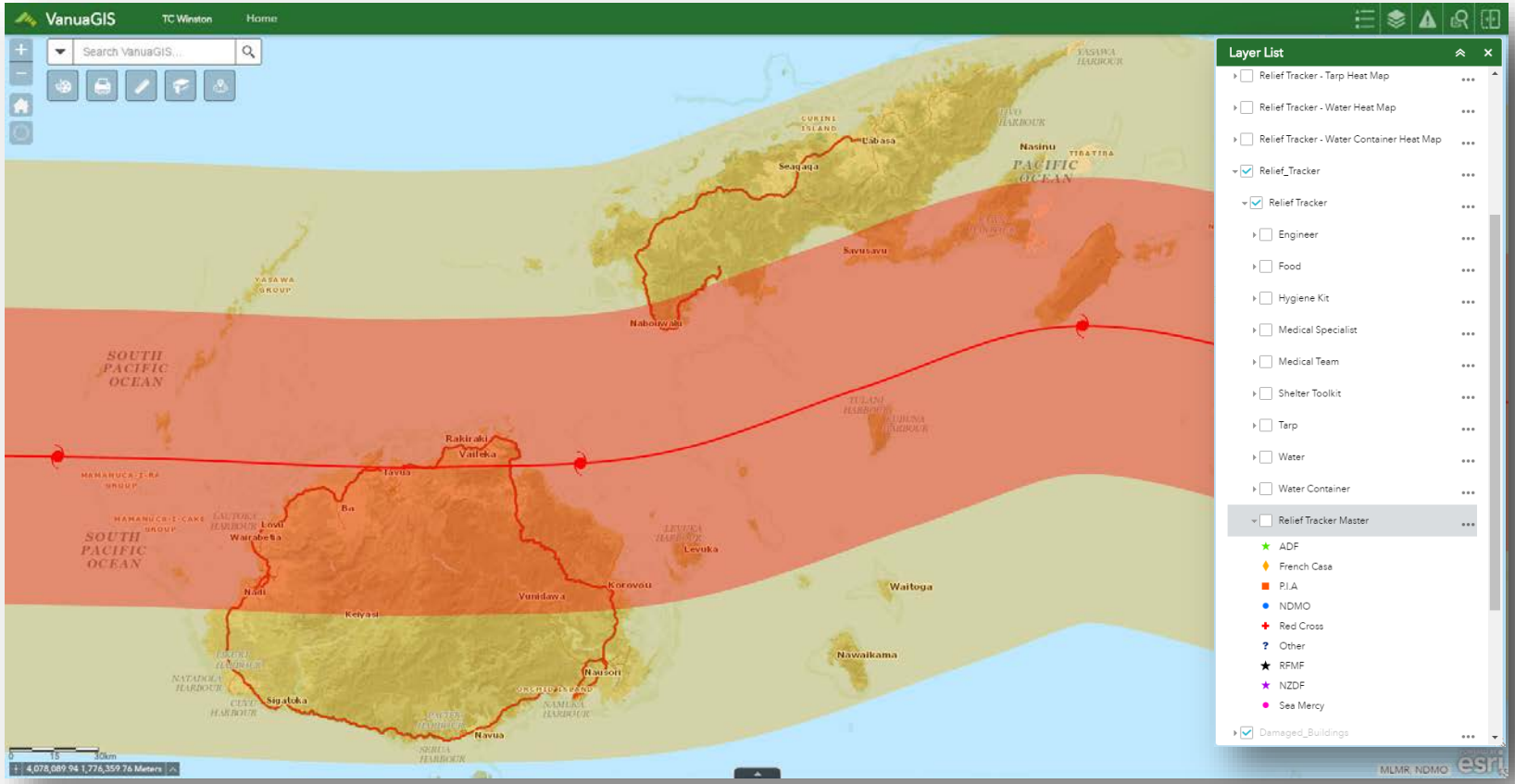
# Priority Data

## Critical Datasets

- Schools
  - Used as Evacuation Sites and to estimate village & town population size
- Churches, Temples and Community Centres
  - Used as Evacuation Sites
- Medical Facilities
  - Provided aid where possible
- Buildings
  - Attributed with condition status in worst hit areas
- Roads
  - Attributed with condition and access

# VanuaGIS for Cyclone Winston

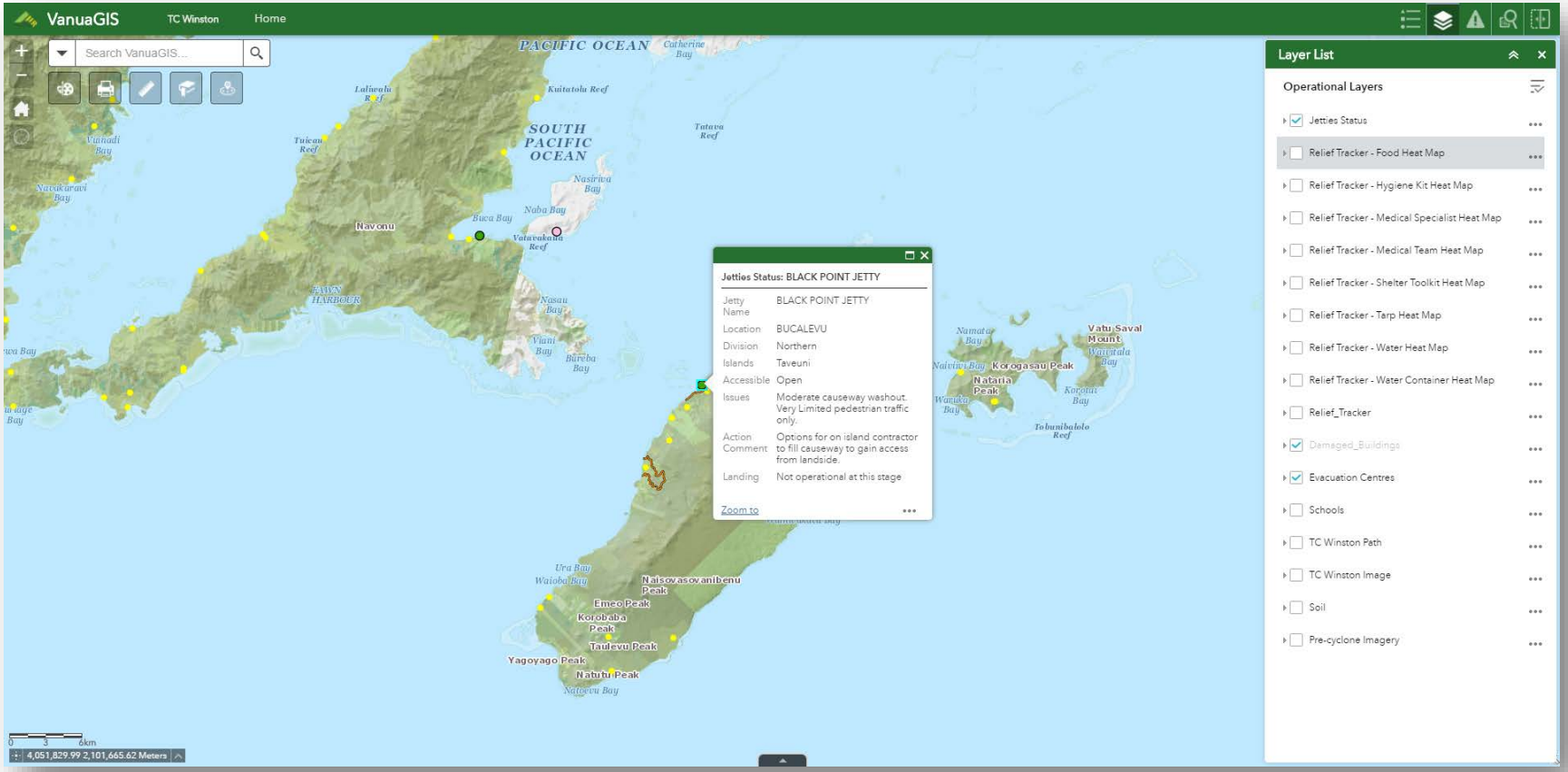
*Pulling it all together*




***VanuaGIS** – Cyclone Winston.*
*50km and 100km affected areas*

# VanuaGIS for Cyclone Winston

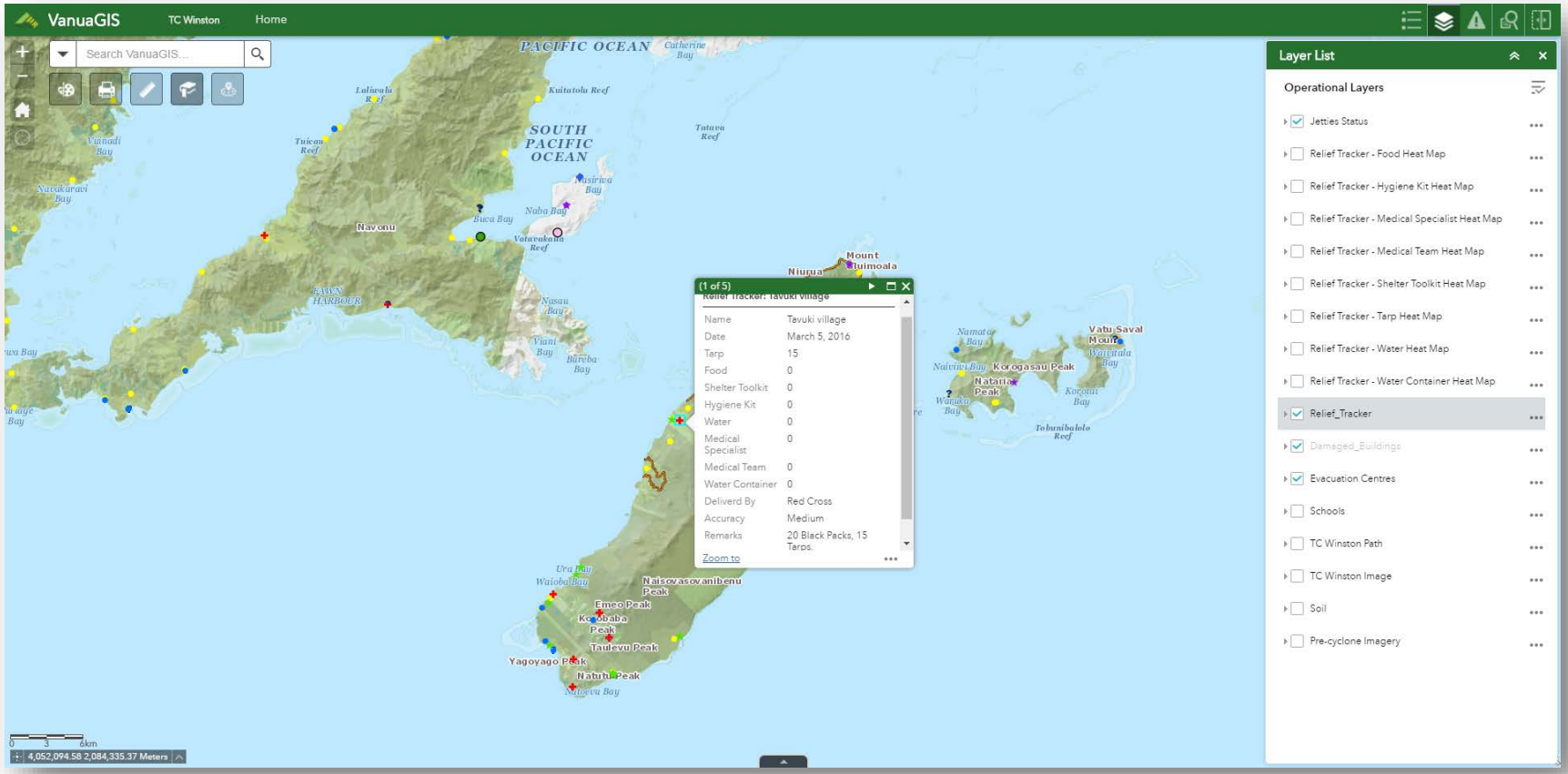
*Pulling it all together*




***VanuaGIS** – Jetty Status*

# VanuaGIS for Cyclone Winston

*Pulling it all together*




***VanuaGIS –*** *Red Cross Aid to Tavuki Village*

# End Users

*Responding agencies*

- UNICEF
  - Utilised school data to estimate village sizes and coordinate response
- Relief Tracking
  - Hosted aid tracking data from:
    - *Red Cross*
    - *French Casa*
    - *NDMO*
    - *RFMF*
    - *NZDF and ADF*
    - *PIA*
- National Disaster Management Office (NDMO)
  - Communication tool

# Lessons Learnt

*…it wasn't perfect but we learnt a lot*

- Centralising relief activities was important
  - Limited duplication of effort
  - Provided consistency and clarity of information
  - Limited need for paper outputs
- Education
  - Need for responding agencies to be informed of Situational Awareness applications
  - Coordinate activities between responding geospatial experts
- Technology
  - Build infrastructure as resilient as possible