



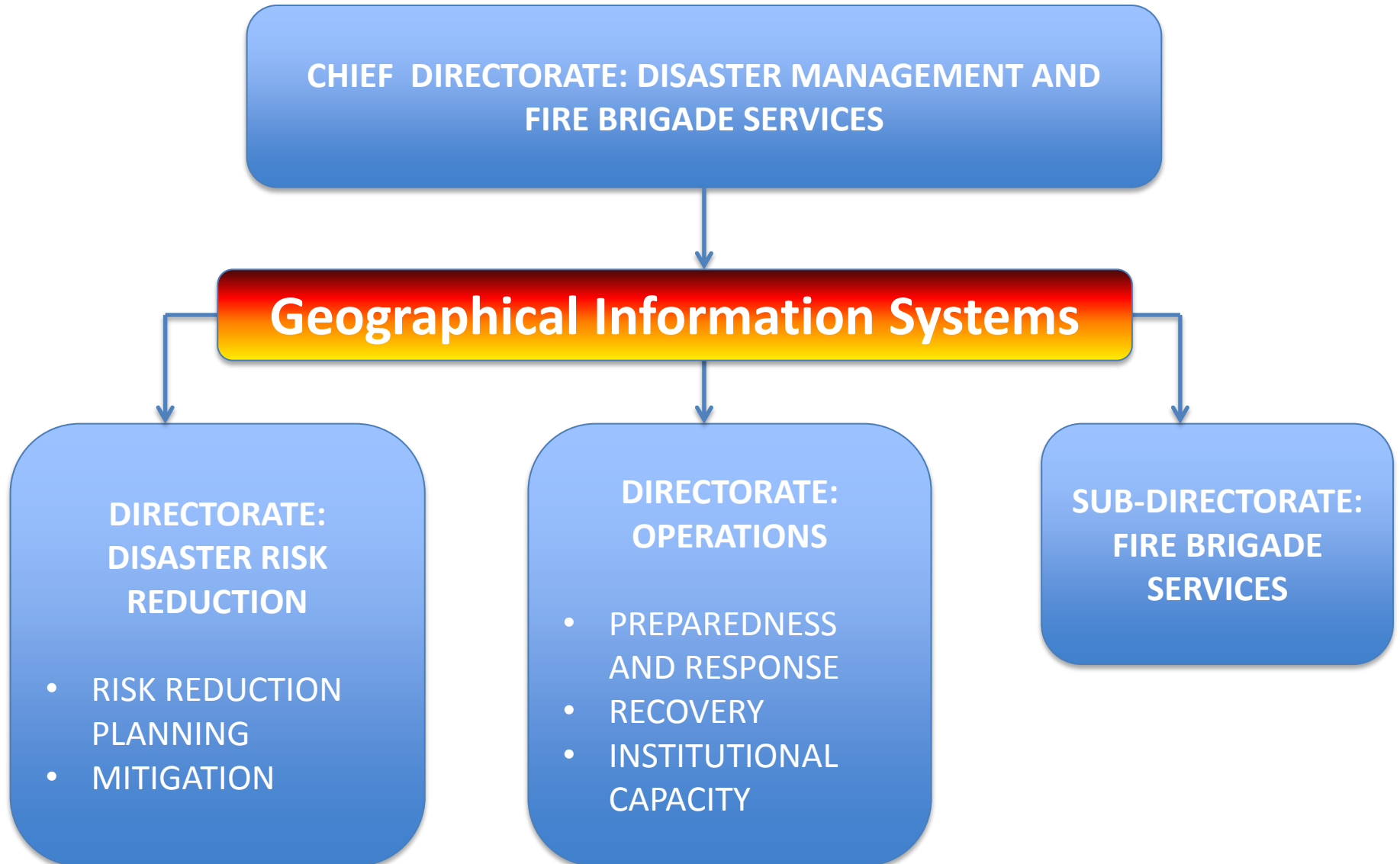
**Western Cape
Government**

Local Government

Western Cape Disaster Management

The use of GIS in community
fire risk reduction planning

WCDM Functions and Structure



Main Risks in the Western Cape

- **Flooding**
- **Fires**
- **Drought**
- **Human and Animal Diseases**
- **HAZMAT spill**



Risk Identification and Assessment:

UPDATE OF DISTRICT LEVEL RISK ASSESSMENTS

- Development of a standardised risk assessment methodology
- Review all existing risk assessments
- **3 year process to update all District Level Risk Assessments**
- **GIS used in Risk and Vulnerability mapping**

ASSISTANCE TO LOCAL MUNICIPALITIES:

- **COMMUNITY BASED RISK ASSESSMENT:**
 - Workshops throughout municipality
 - Stakeholders:
 - Ratepayers
 - CPF's
 - Politicians
 - General public
 - Hazard mapping during workshops
 - Identification of RR projects
- **Result: Complete Provincial Risk Profile**

Risk is...

Risk

The chance of harmful effects occurring due to the interaction between a hazard and vulnerable conditions. Dynamic nature of risk.



**Disaster
Risk**

=



Hazard

X



Vulnerability

Reduce or avoid



Capacity

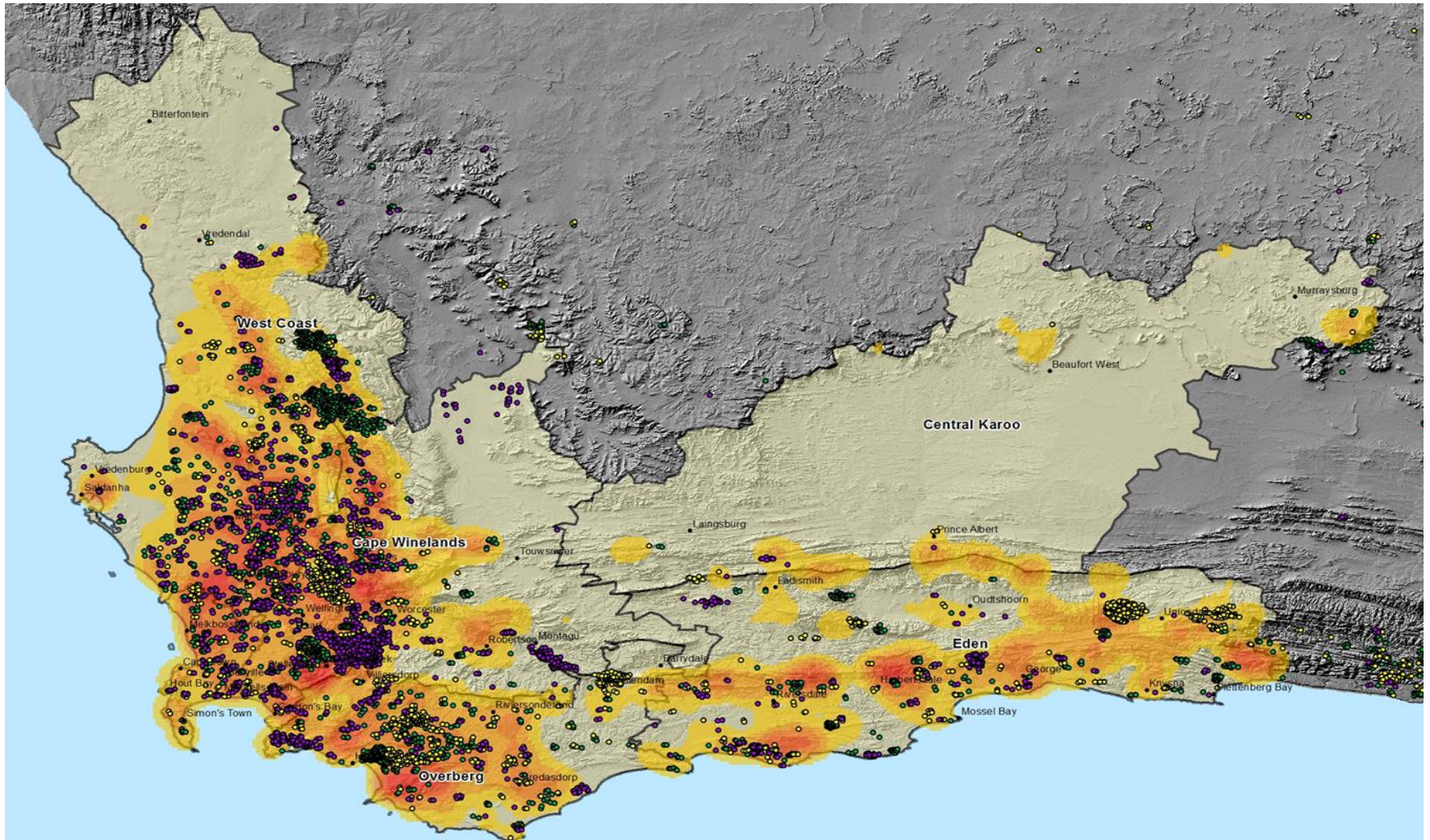


Increase



Western Cape Fire Brigade Services

Fire incidents from 2010 to 2013 as captured by AFIS

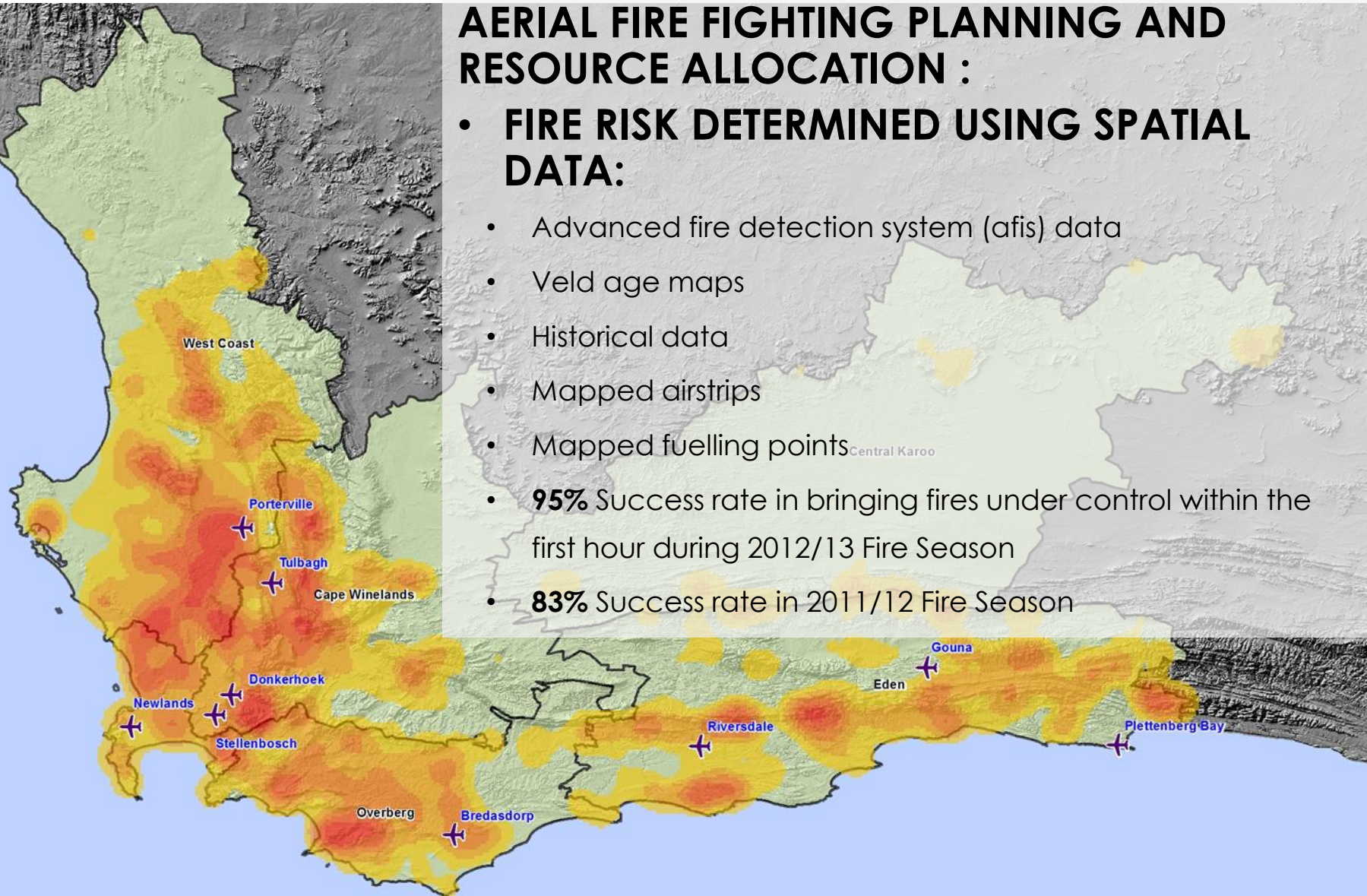


Western Cape Fire Brigade Services

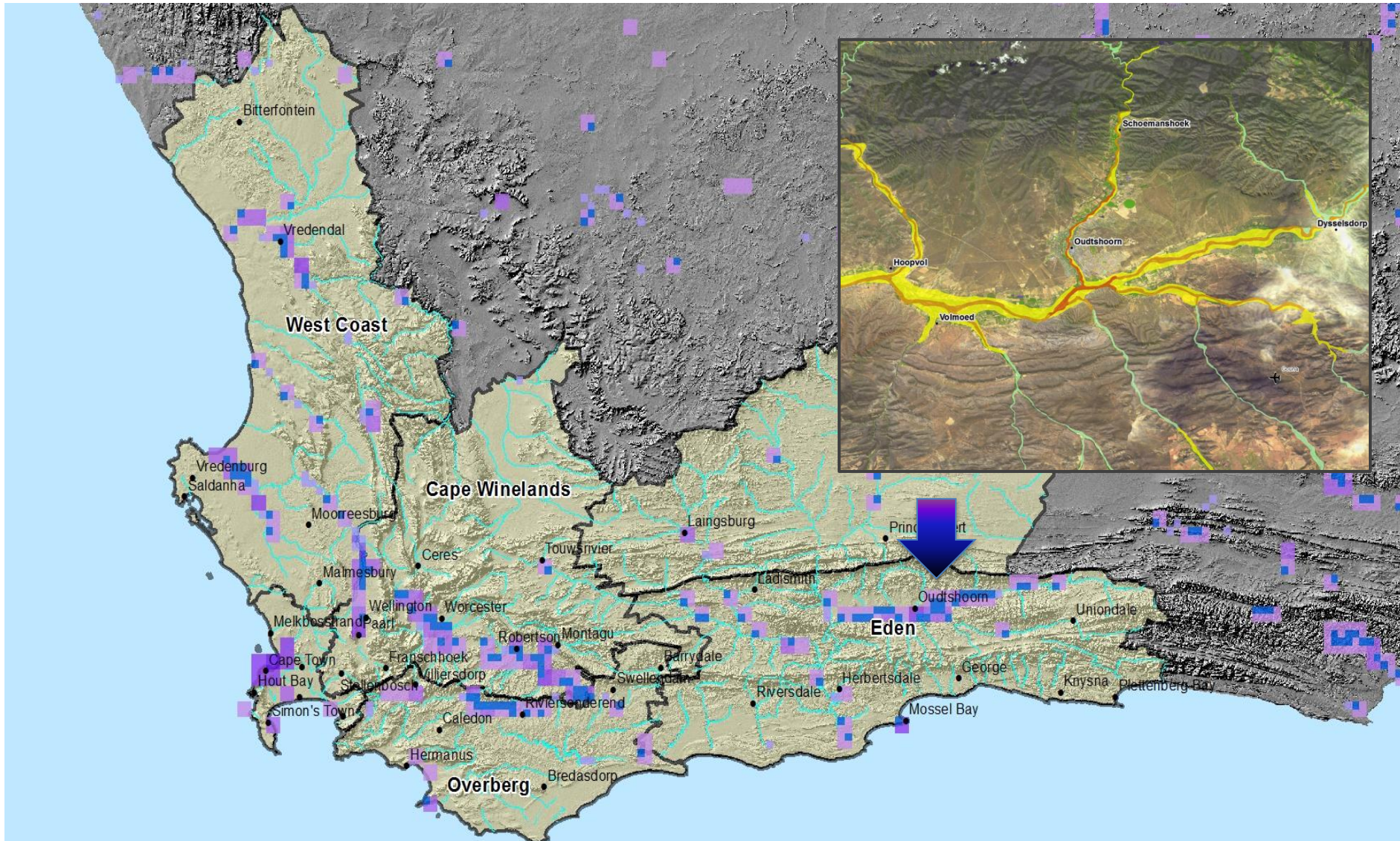
AERIAL FIRE FIGHTING PLANNING AND RESOURCE ALLOCATION :

• FIRE RISK DETERMINED USING SPATIAL DATA:

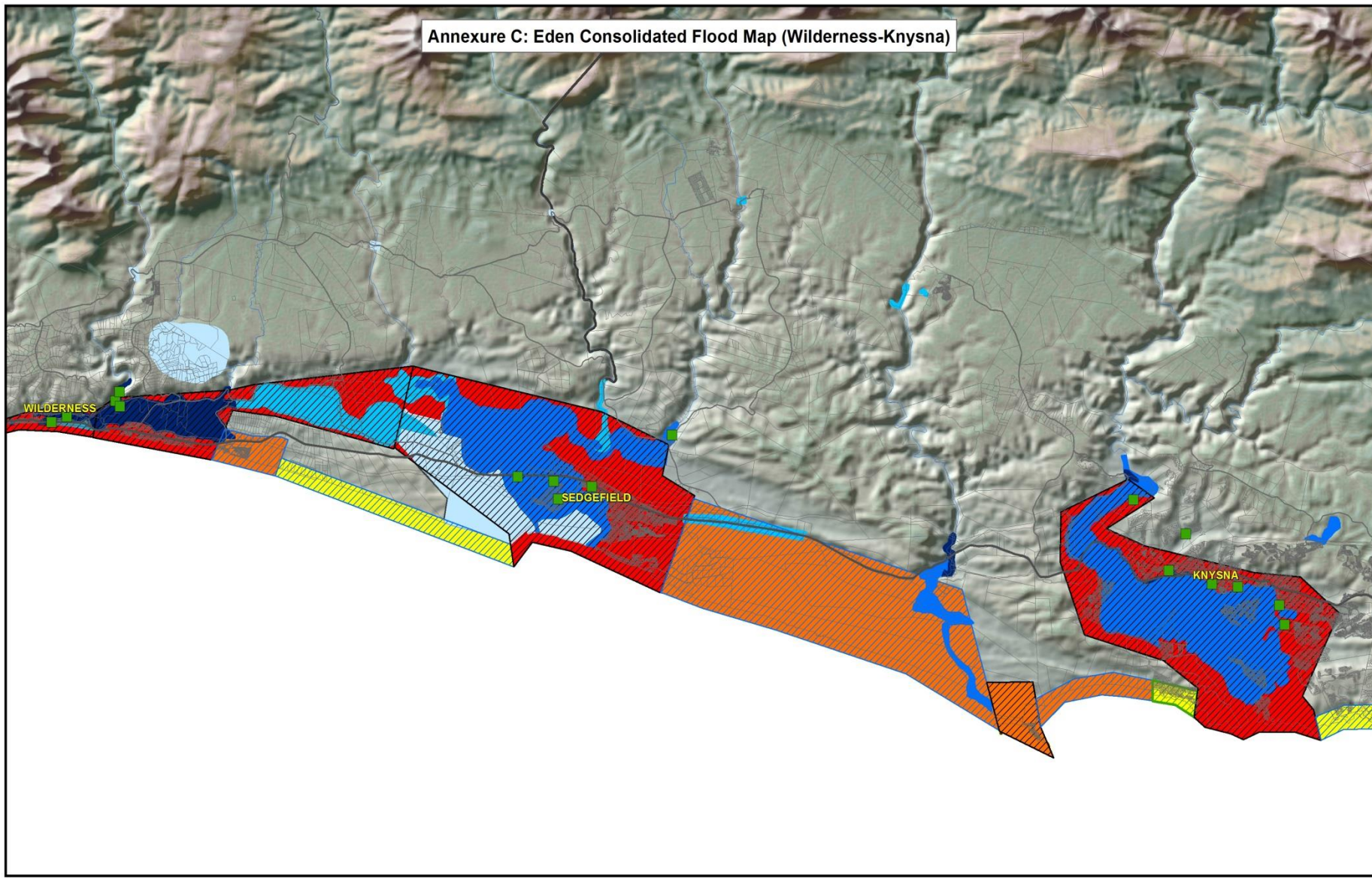
- Advanced fire detection system (afis) data
- Veld age maps
- Historical data
- Mapped airstrips
- Mapped fuelling points
- **95%** Success rate in bringing fires under control within the first hour during 2012/13 Fire Season
- **83%** Success rate in 2011/12 Fire Season



Flood Risk for Western Cape



Annexure C: Eden Consolidated Flood Map (Wilderness-Knysna)



Legend

- Flood Data - Workshop Results
- Rivers
- Highways
- Secondary Roads
- Eden District Boundary
- Cadastral
- Local Municipality Bnd
- Provincial Boundaries
- Dams

Legend

Eden Flood Severity Index

- Low
- Medium
- High
- Very High
- Dam Break Scenarios

Legend

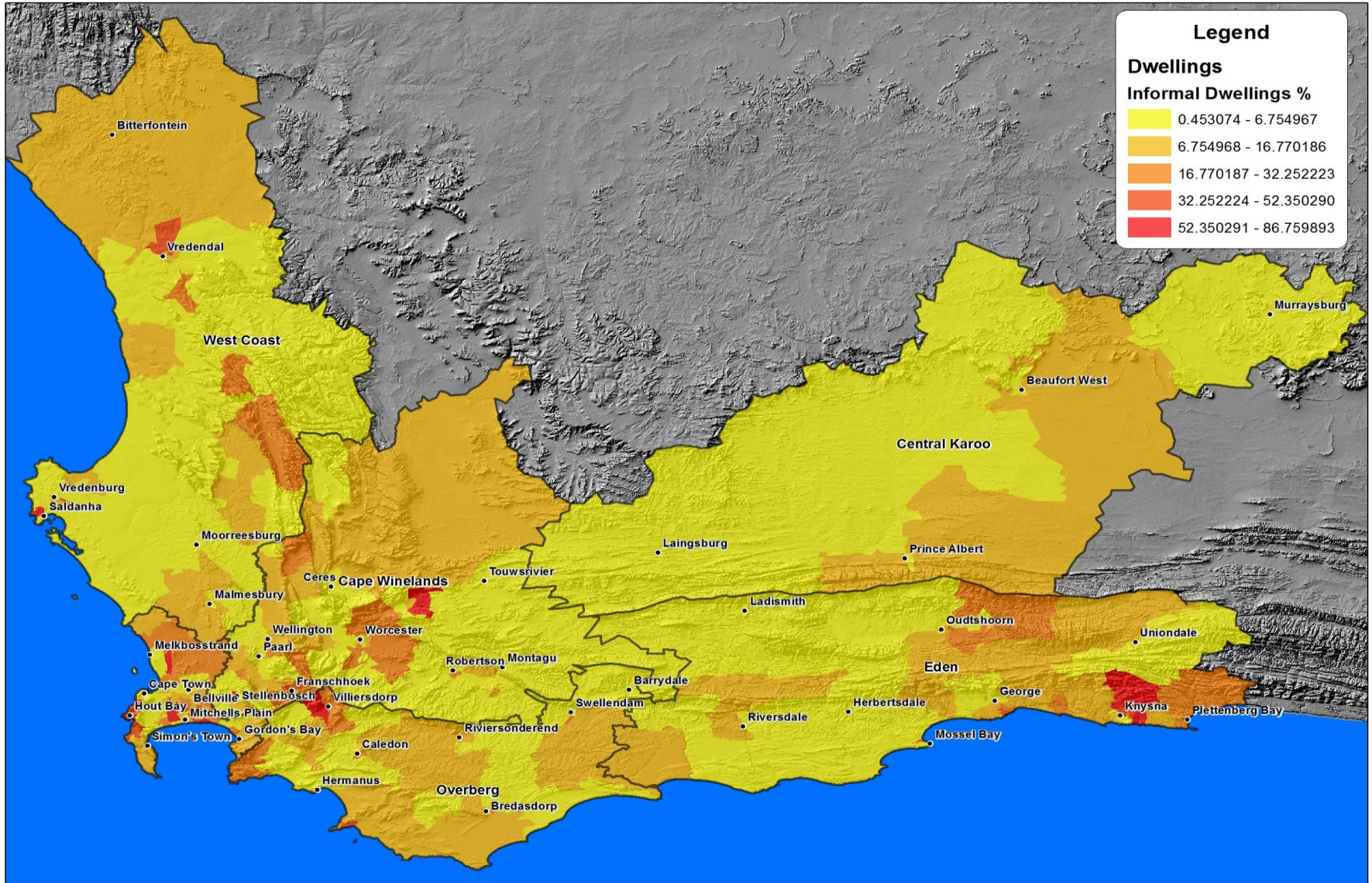
Eden sea level rise and flood risk assessment results (2010)

Sea level rise induced coastal erosion and inundation risk

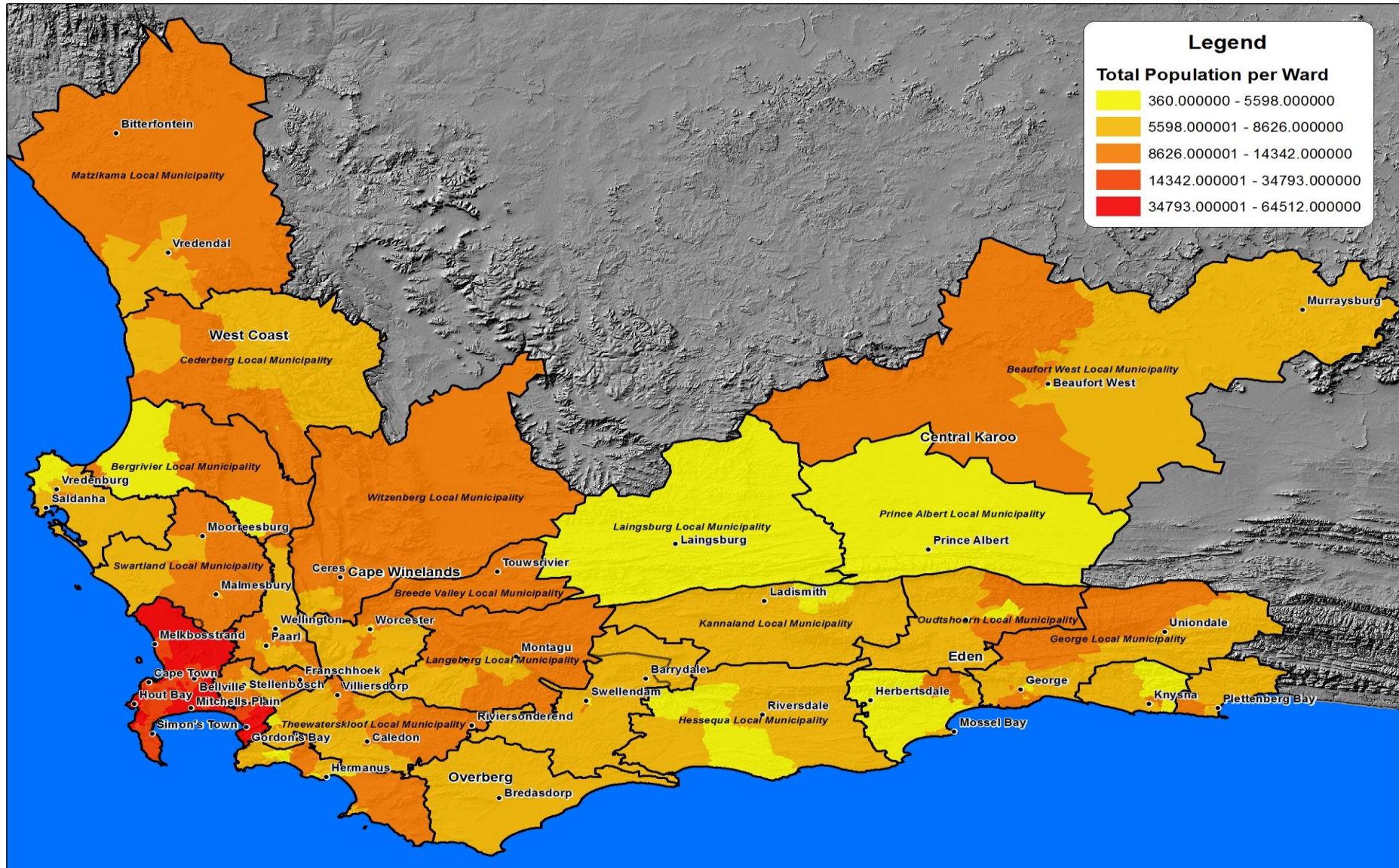
- Low
- Moderate
- High
- Extreme Events risk (storm surges of tsunamis) Low
- Moderate
- High

N

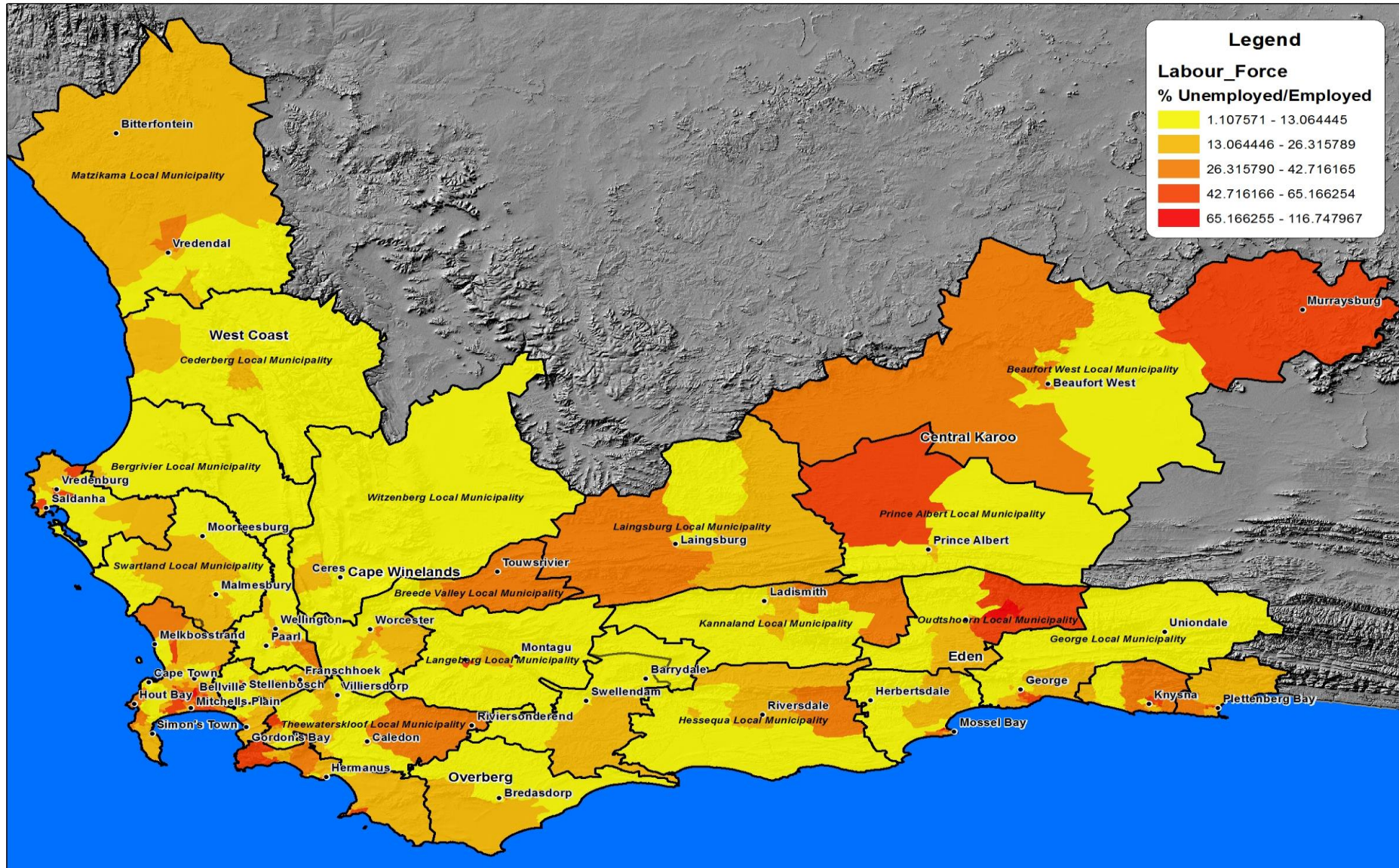
Informal Dwellings – Vulnerable Communities



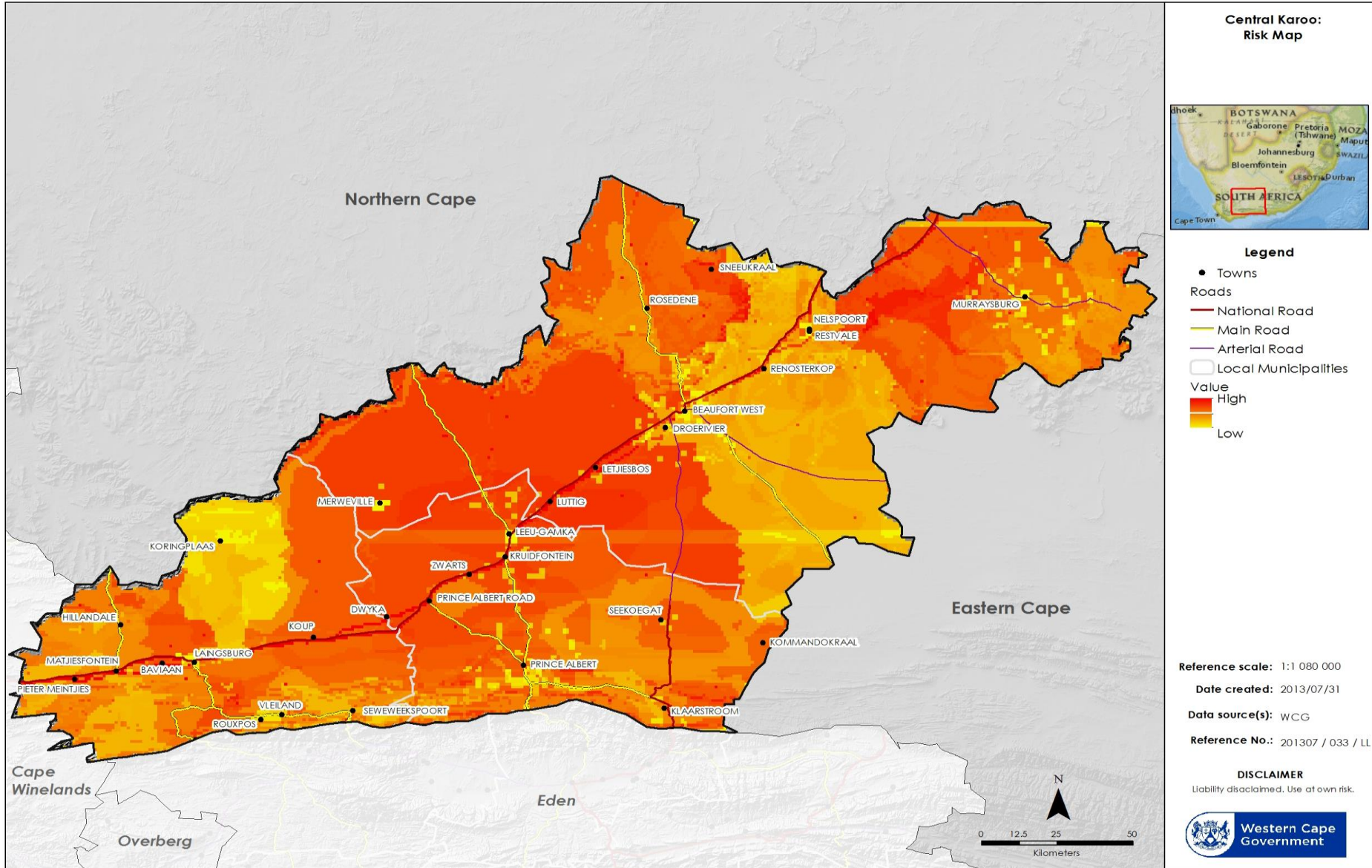
High Density Areas– Vulnerable Communities



High Unemployment – Vulnerable Communities



Risk Mapping



Community based hazard mapping



Community based hazard mapping



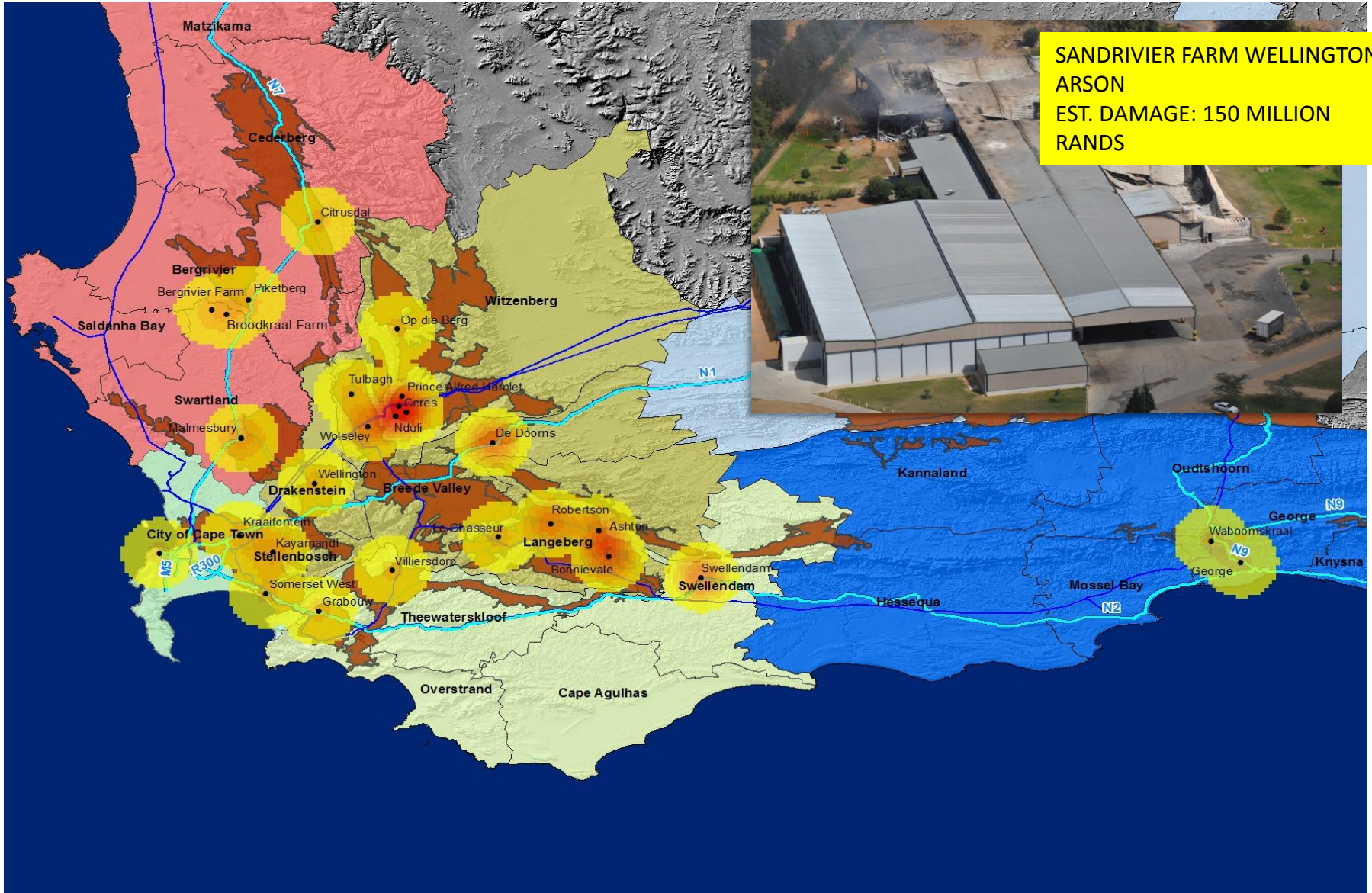
Alien Vegetation Mapping and Clearing



Risk Reduction Project Identification



Farmworker Unrest in the Western Cape



Fire and Flood Awareness Campaigns

- Raises awareness primarily on fire and flood safety throughout the Province
- Delivered as industrial theatre shows at schools:
 - Content is fun, educational and realistic

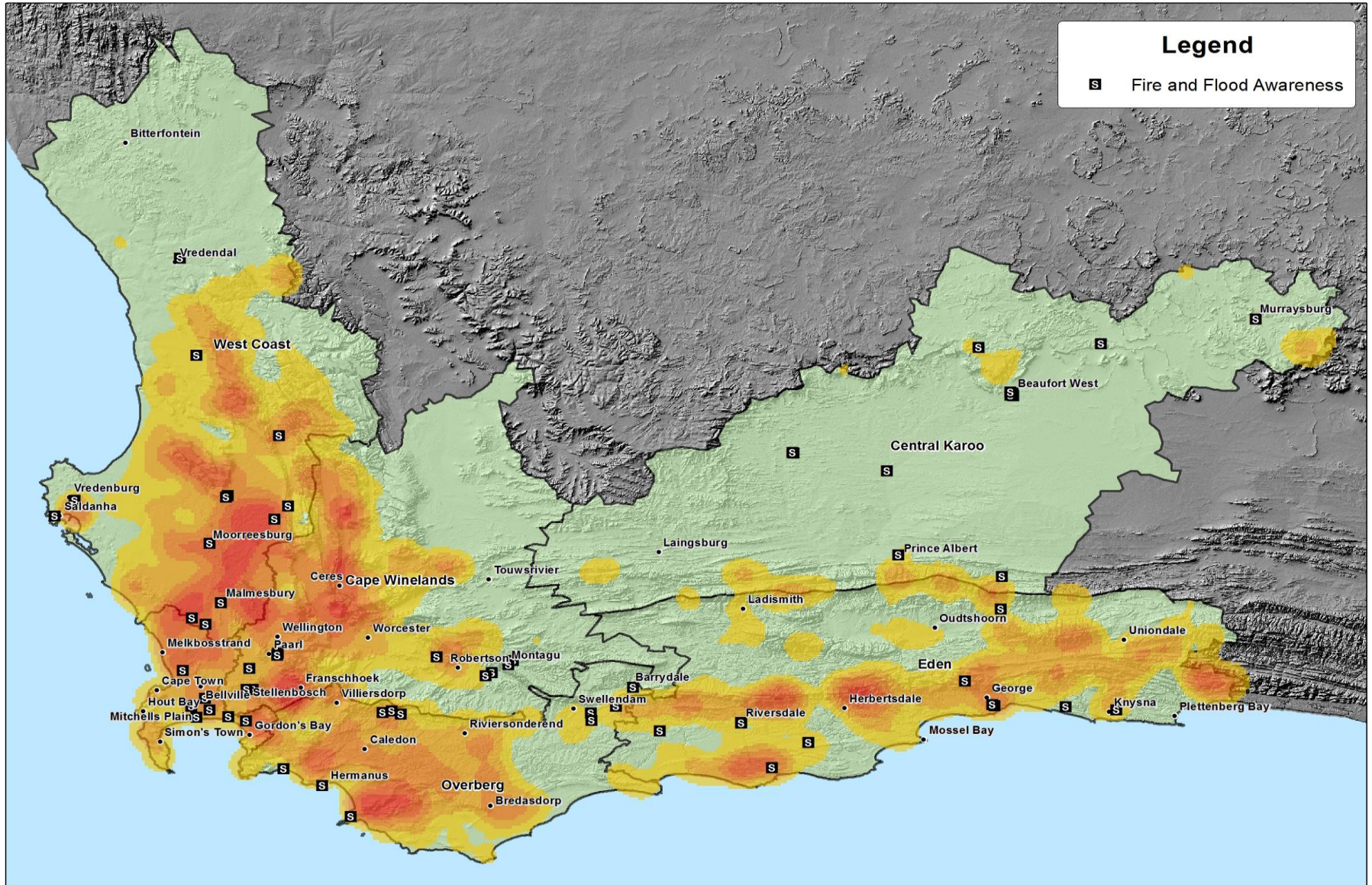


Why the emphasis on schools??

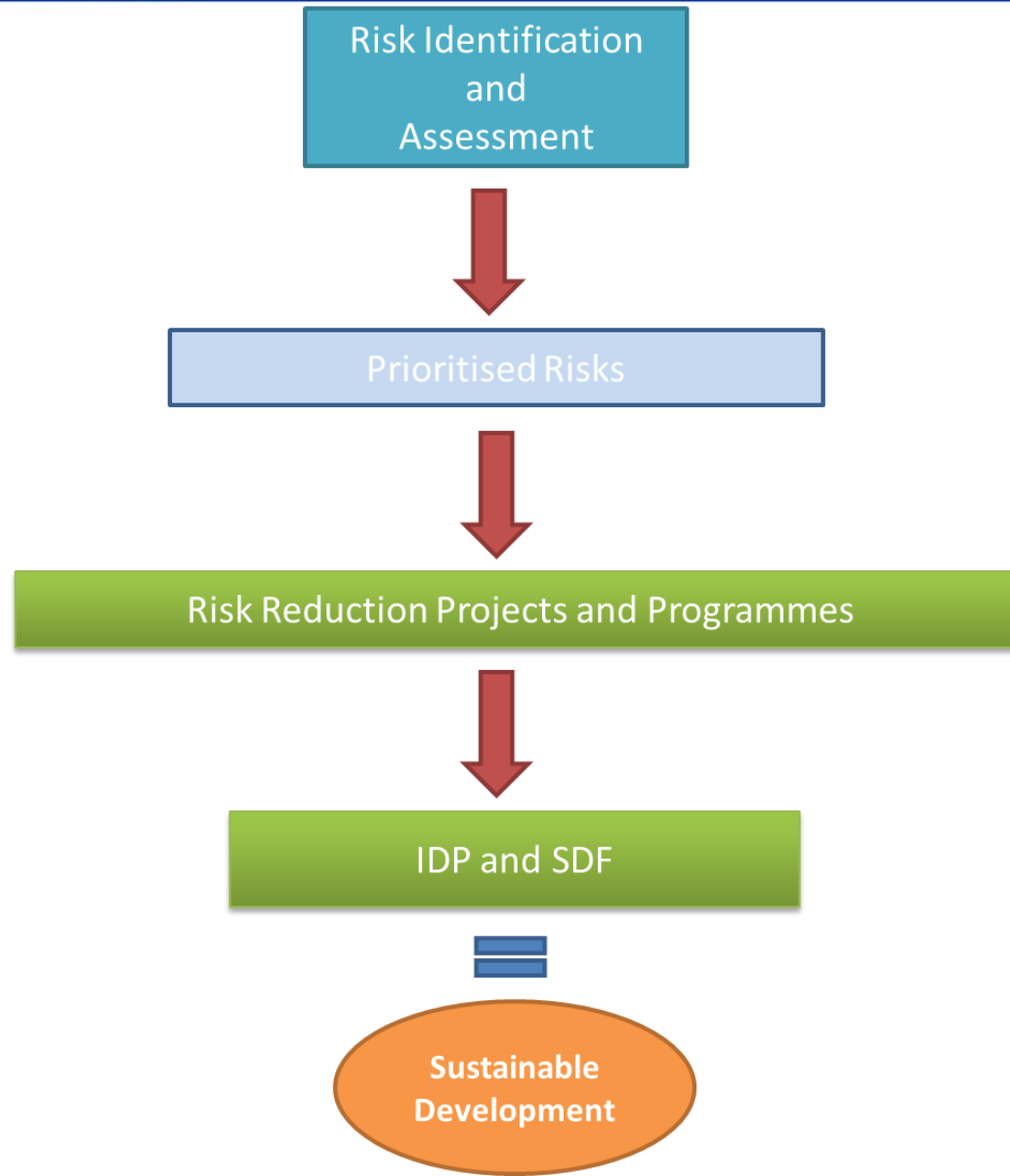
- Easier to cultivate risk avoidance behaviour in children
- To date we have reached about 11 000 (2012) and 18 000 (2013)



Fire and Flood Awareness Campaigns



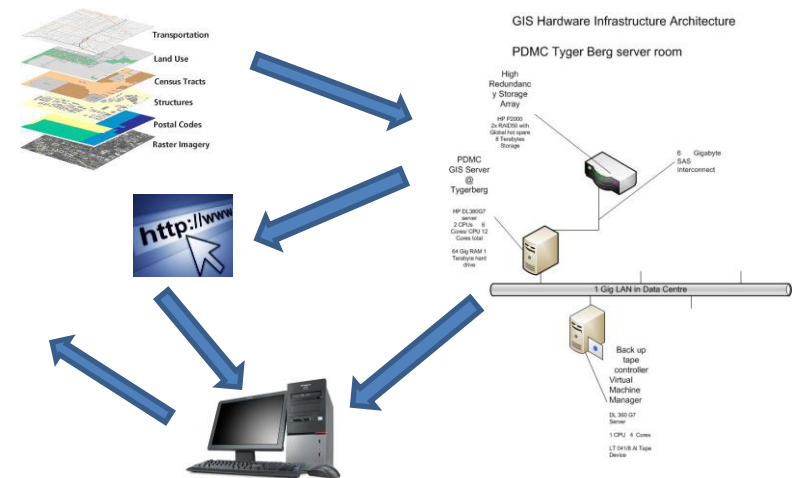
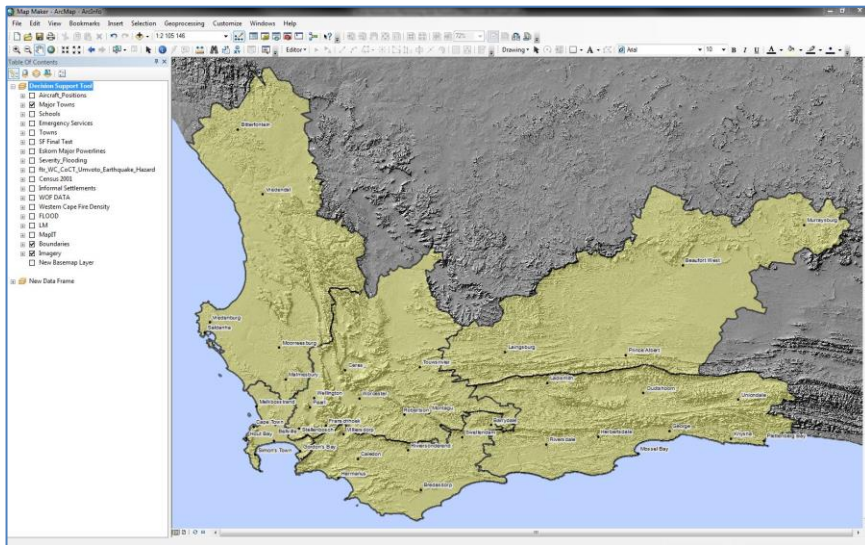
Risk Reduction Process Map



GIS Functionality at WCDM

Establishing and maintaining a Spatial Information System

- Development of a Strategic Roadmap for the Development of a Spatial Data Repository
- Installation and deployment of a an Enterprise GIS Solution
 - ArcGIS Server and SDE
 - Web publishing capability
- **WCDM updates and maintains base and operational datasets:**
- Mapping of risk reduction projects.
- Updating flood related data for Eden DM.
- **Providing strategic information to decision makers.**



GIS Functionality at WCDM

- Strategic Roadmap for the Development of a Spatial Data Repository



Figure 4 - Legislative influence

The National Disaster Management Framework of 2005 as well as the Province of the Western Cape Provincial Gazette 6698: The Western Cape Disaster Management Framework are legal publications that provide input into the function of the SDR. The SDR discussed in this document is specific to the PDMC and in itself the SDR is in response to a legal requirement as referenced below.

*Chapter 4 : Provincial Disaster Management
Part 2: Provincial disaster management centres
32. Assistance to National Centre*

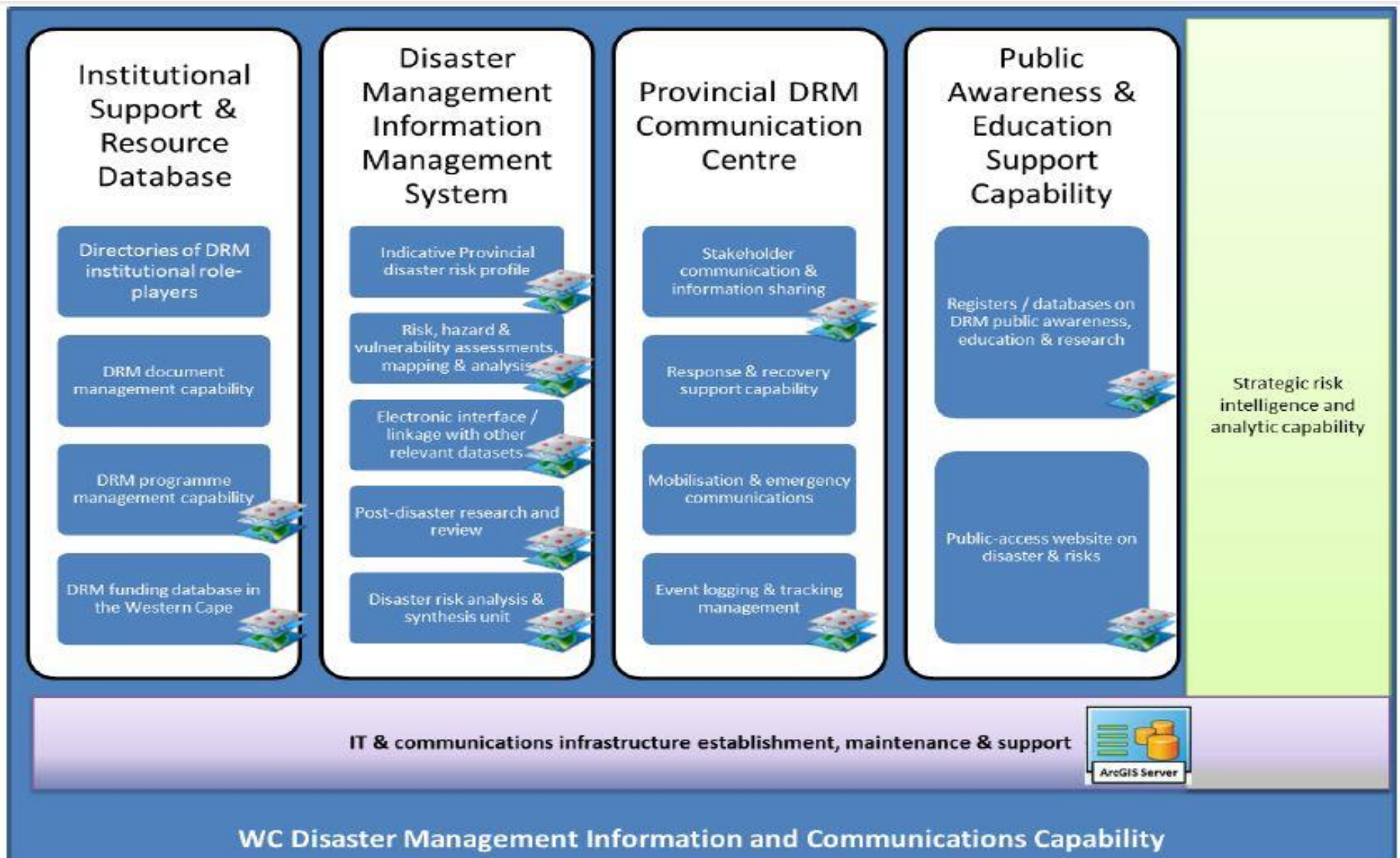
- "b) *develop and maintain the disaster management electronic database envisaged in section 17 in so far as the database applies to the province"*

*Chapter 3 : National Disaster Management
Part 1: National Disaster Management Centre
Powers and duties of National Centre
17. Disaster management information system*

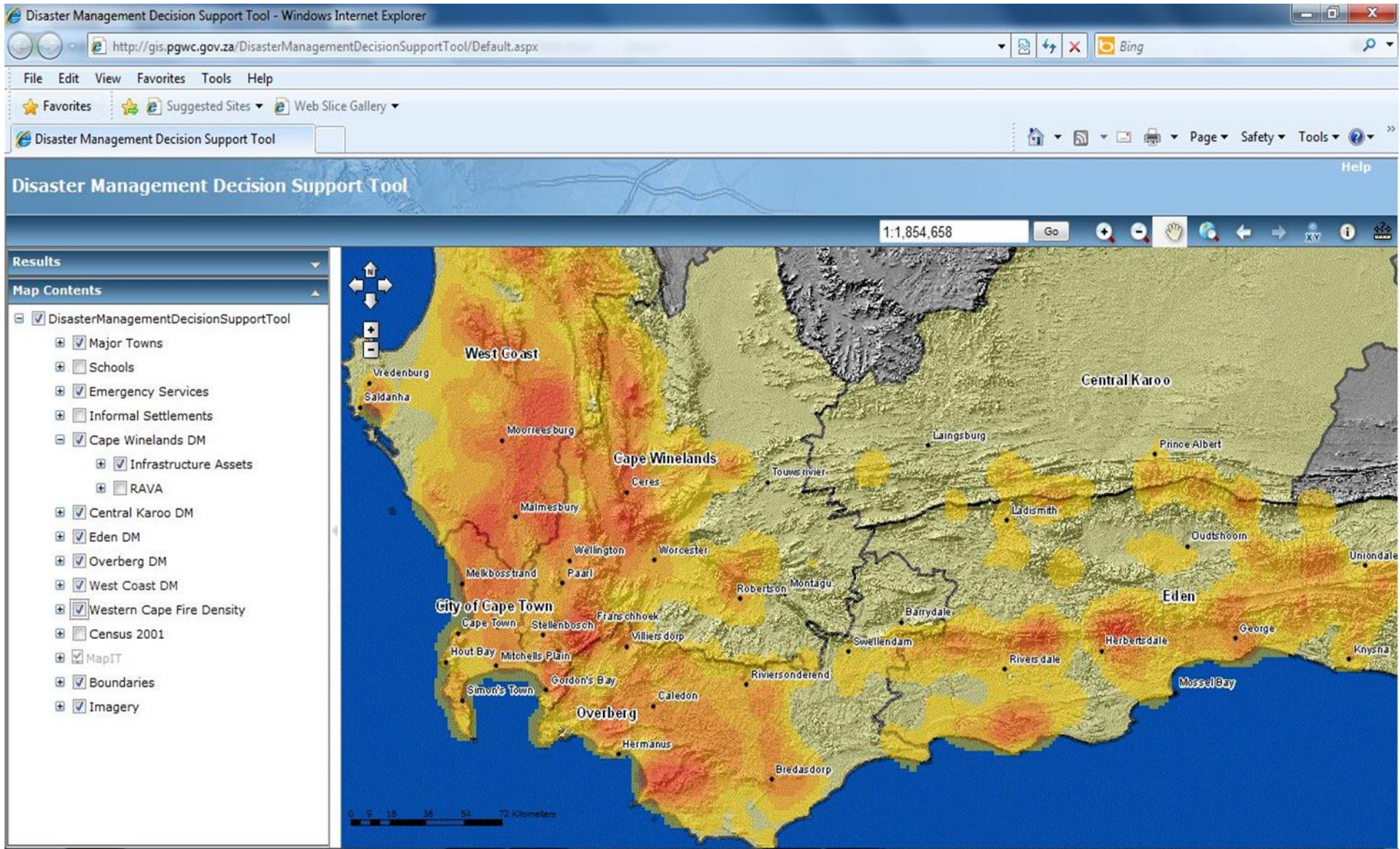
- "1) *The National Centre must act as a repository of, and conduit for, information concerning disasters and disaster management, and, must for this purpose –*
- a) *collect information on all aspects of disasters and disaster management;*
 - b) *process and analyse such information;*



GIS Functionality at WCDM



Disaster Management Decision Support Tool



Disaster Management Decision Support Tool

Disaster Management Decision Support Tool - Windows Internet Explorer

http://gis.pgwc.gov.za/DisasterManagementDecisionSupportTool/Default.aspx

File Edit View Favorites Tools Help

Disaster Management Decision Support Tool

Disaster Management Decision Support Tool

1:14,490

Results

Map Contents

- DisasterManagementDecisionSupportTool
 - Major Towns
 - Schools
 - Emergency Services
 - Ambulance Stations
 - Fire_Stations
 - Medical_Facilities
 - Police
 - Informal Settlements
 - Cape Winelands DM
 - Infrastructure Assets
 - RAVA
 - Central Karoo DM
 - Eden DM
 - Overberg DM
 - West Coast DM
 - Western Cape Fire Density
 - Census 2001

Disaster Management Decision Support Tool

Disaster Management Decision Support Tool - Windows Internet Explorer

http://gis.pgwc.gov.za/DisasterManagementDecisionSupportTool/Default.aspx

File Edit View Favorites Tools Help

Disaster Management Decision Support Tool

Disaster Management Decision Support Tool

1:7,245

Results

Map Contents

- Emergency Services
- Informal Settlements
- Cape Winelands DM
 - Infrastructure Assets
 - Breede Valley
 - Drakenstein LM
 - HV Substation
 - MV Ground Mounted
 - MV Mini Substation
 - MV Pole Mounted Tra
 - MV RMU
 - MV Switching Substat
 - Bridge
 - Taxi Rank
 - Sanitation PumpStati
 - Sewerage Treatment
 - Solid Waste Disposal
 - WS BS Dam
 - Water Pump Station
 - Water Reservoir
 - Water Treatment Wo

Carolina Str.107 (MV Mini Substation)

OBJECTID	108
GIS_ID	MS-0108
LEVEL_1	Electricity
LEVEL_2	Medium Voltage
LEVEL_3	Mini Sub-Station
LEVEL_4	11kV
LEVEL_5	With RMU
CONSTITUEN	315kVA
GRID_NUM	N4/209
NAME	Carolina Str.107
LOCATION	Drakenstein
LOCATION_T	Local Municipality

DisasterManagementDecisionSupportTool > MV Mini Substation

[Add to Results](#)

Future plans

- Based of Strategic Roadmap for development of Spatial Data Repository:
- Scenario planning software
- Risk modelling software e.g. Oil Spill modelling
- Incident capturing tool (Web based and Mobile)
- Etc.



**Western Cape
Government**

Local Government

Thank you