STATE EMERGENCY SERVICE

Adding real-time mapping to WebEOC to better inform emergency response planning

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Government of South Australia

SES RESCUE

Real time mapping informing SASES response

- Brief introduction to SA State Emergency Service (SASES)
- Overview of SESIIMS – incident management solution
- Building and integrating spatial capability to inform and improve response planning and operational decisions
- Future plans

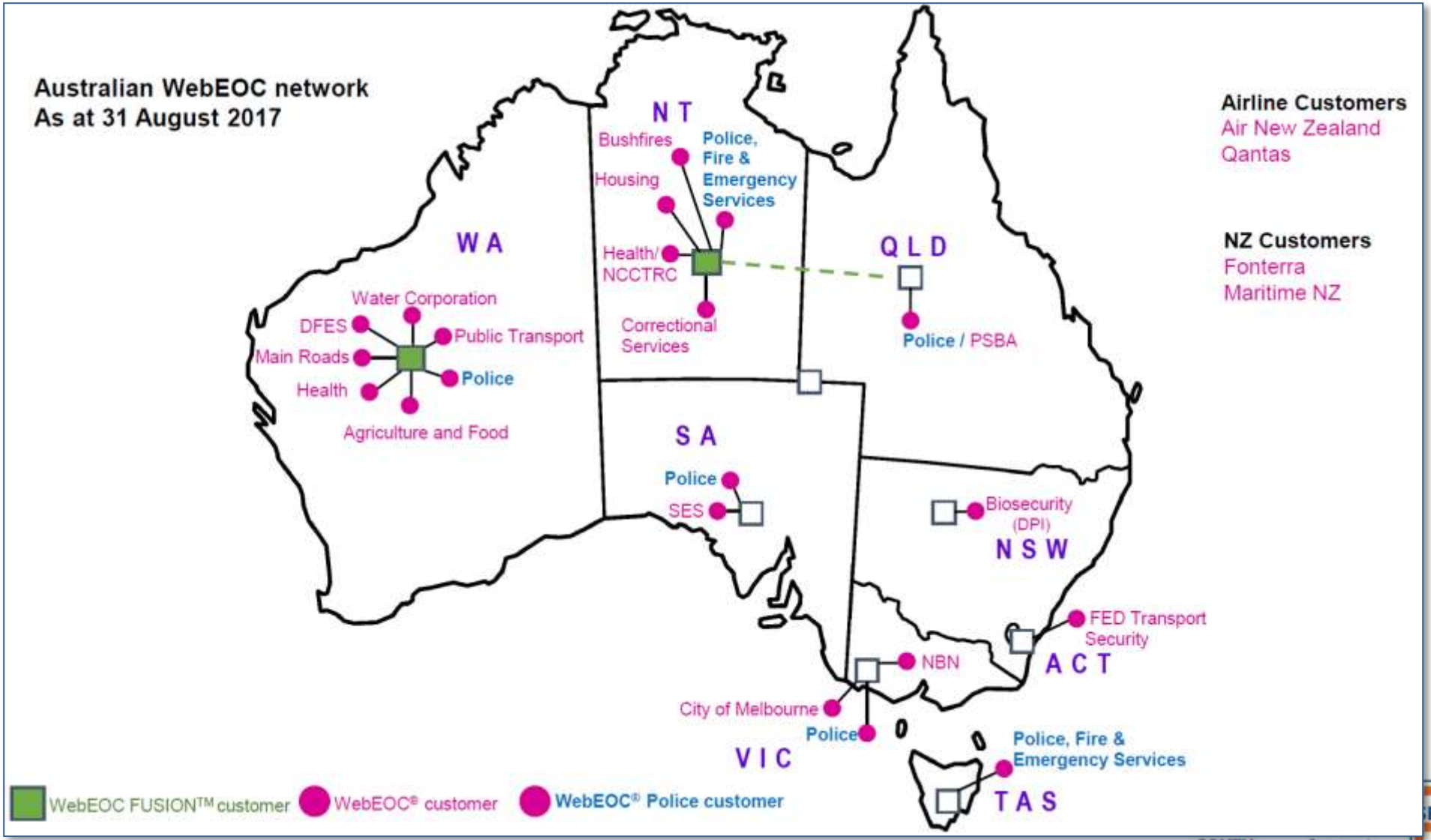
SA State Emergency Service

- Volunteer based organisation (originally known as Civil Defence) supporting community since the early 1960s
- Responding 24/7/365 to around 10,000 calls per year
- Control agency for Extreme Weather (including storm, flood and heatwave)
- Urban Search & Rescue (with MFS)
- Marine Rescue, through Volunteer Marine Rescue
- Support/surge capacity (CFS: basecamps, logistics, staging, SAPOL: evidence search)
- SES: 2 Regions, 10 Districts, 67 Units
- 50 staff and 1700 Volunteers
- VMR: 14 flotillas and 550 volunteers

SESIIMS – The SES Incident and Information Management System

- In 2012 SASES began a project to find a single replacement for a number of separate incident management and reporting systems
- Comprehensive RFI/Q process 2012/13
- Review of options -> WebEOC
- Purchased WebEOC licence June 2013
- Phase 1 (internal boards) live on 1st July 2014
- Phase 2 - live to volunteers 1st July 2015

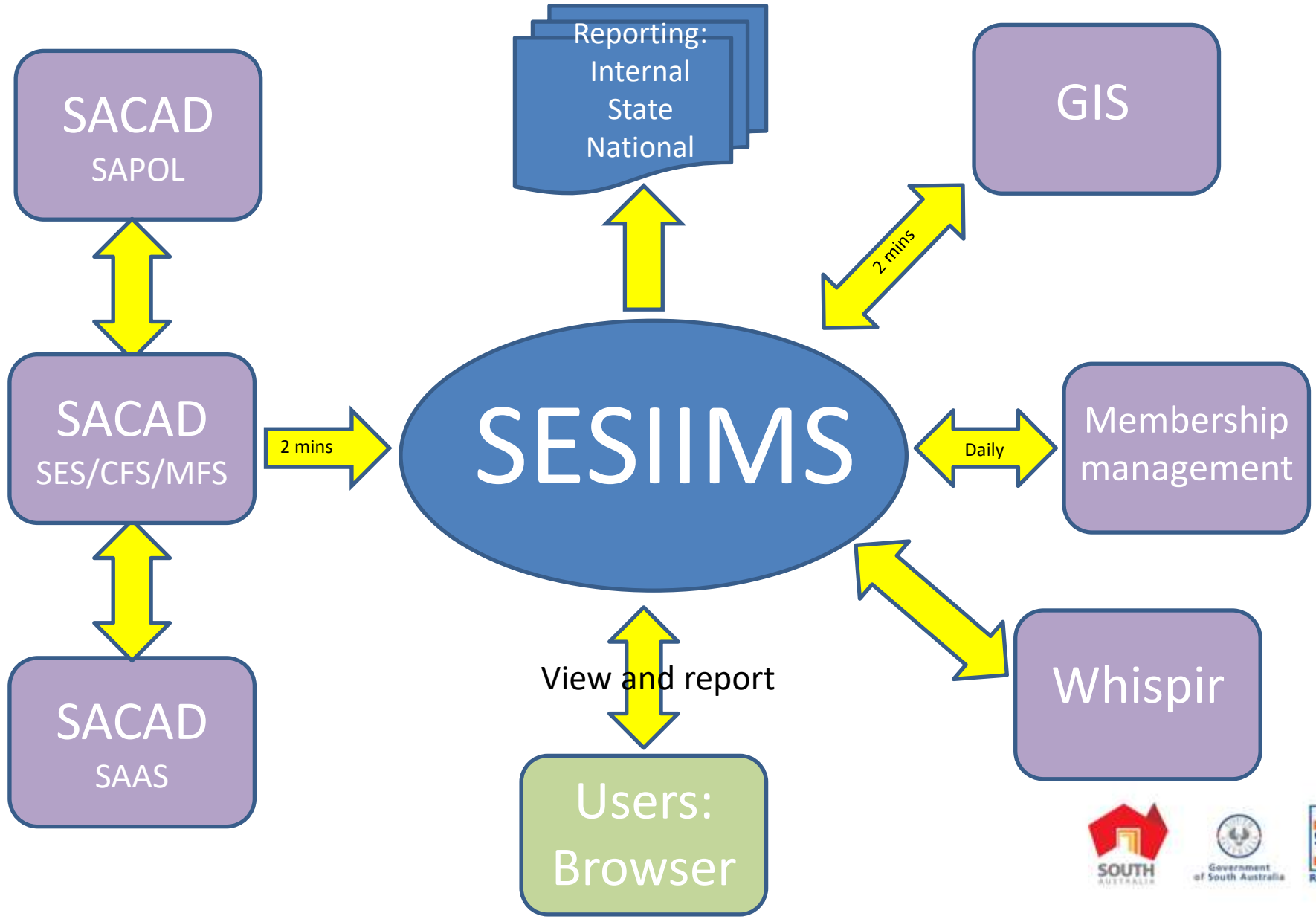
Why WebEOC?


Australian WebEOC network
As at 31 August 2017
N T
Bushfires
Police, Fire & Emergency Services
Housing
Health/ NCCTRC
Correctional Services
W A
Water Corporation
DFES
Public Transport
Main Roads
Police
Health
Agriculture and Food
Q L D
Police / PSBA
S A
Police
SES
Biosecurity (DPI)
N S W
FED Transport Security
A C T
NBN
City of Melbourne
Police
V I C
Police, Fire & Emergency Services
T A S
Airline Customers
Air New Zealand
Qantas
NZ Customers
Fonterra
Maritime NZ
WebEOC FUSION™ customer
WebEOC® customer
WebEOC® Police customer

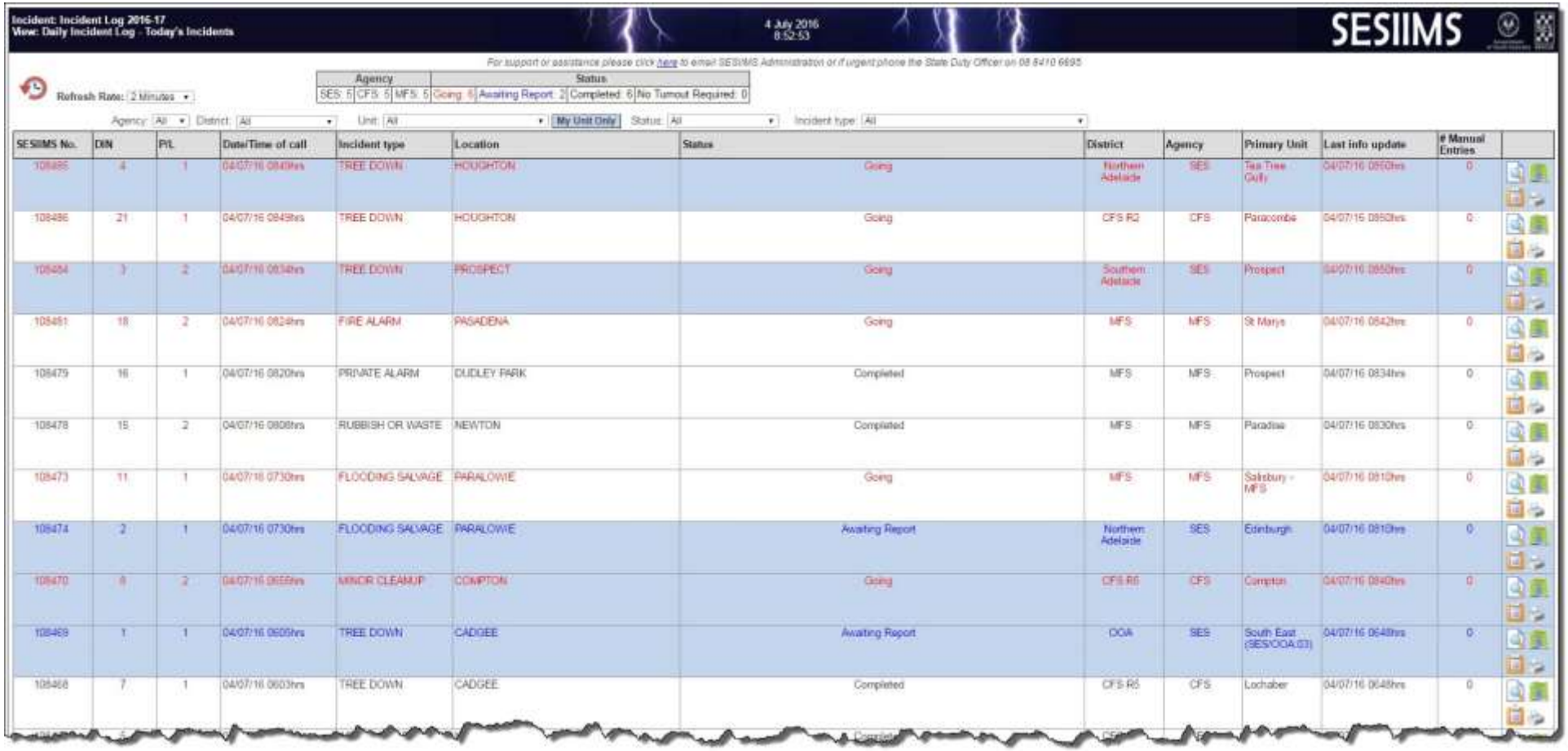
SESIIMS – in summary

- A system to share and manage information and provide incident intelligence – all in near real time
- Browser based: no client installation required
- Login via portal: SSO credentials for all SASES systems
- Designed to scale from BAU to significant event/incidents
- Integrated with a number of systems including SACAD, Whispir, TAS, AlertSA and GIS
- Supported by online (Moodle) training
- External agency access as needed – e.g. Extreme Heat, Major Event

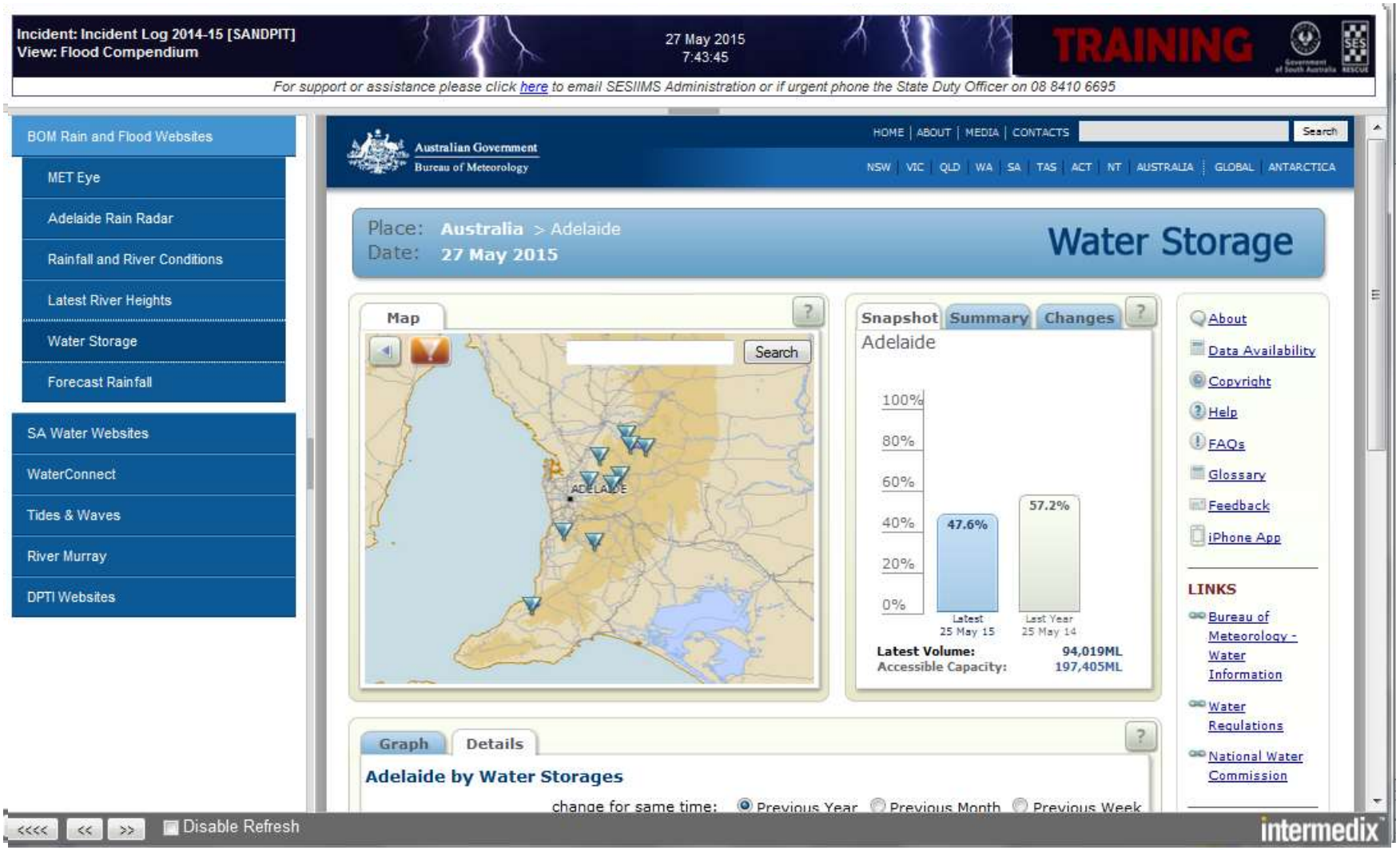
Information flow



Daily Incidents – landing page



Compendium Boards



Automated Reporting

Integrating spatial information

- Initial solution utilised WebEOC Mapper Pro
  - Licence and MATS in addition to WebEOC
  - Originally a third party plug-in solution
  - Adopted and integrated with WebEOC
  - Integration was via XML interface
- Successfully added mapping to a number of boards …

  … but then we encountered problems

Challenges with Mapper

- Worked fine for around 6 months, then performance deteriorated, couldn't cope after 9 months
- Designed to work with WebEOC in more typical EOC usage scenario 100's of entries in an incident
  - our 'incident' is a financial year 'bucket': ~ 40000 entries
- Other issue for us is that almost all input is via API – symbology is based around lists (manual data entry) so we could not symbolise as we wanted.
- Geocoder configuration didn't match Location SA requirements
- Really liked some tools and functionality, but forced eventually to abandon this solution

4 options considered

1. Special/duplicate view to use with Mapper
    - Didn't address symbology issues
    - Dual commit doesn't work with API so would have had to load up SACAD feed to double insert everything – storage
2. Google maps
    - Used in NT very successfully
    - Google licencing challenges
    - No in house expertise
3. ArcGIS Java script API
    - Limited in house expertise
    - Limited developer expertise
    - Need to write into each view that needs a map

All of these only serviced SESIIMS, not the bigger picture

Fourth alternative adopted

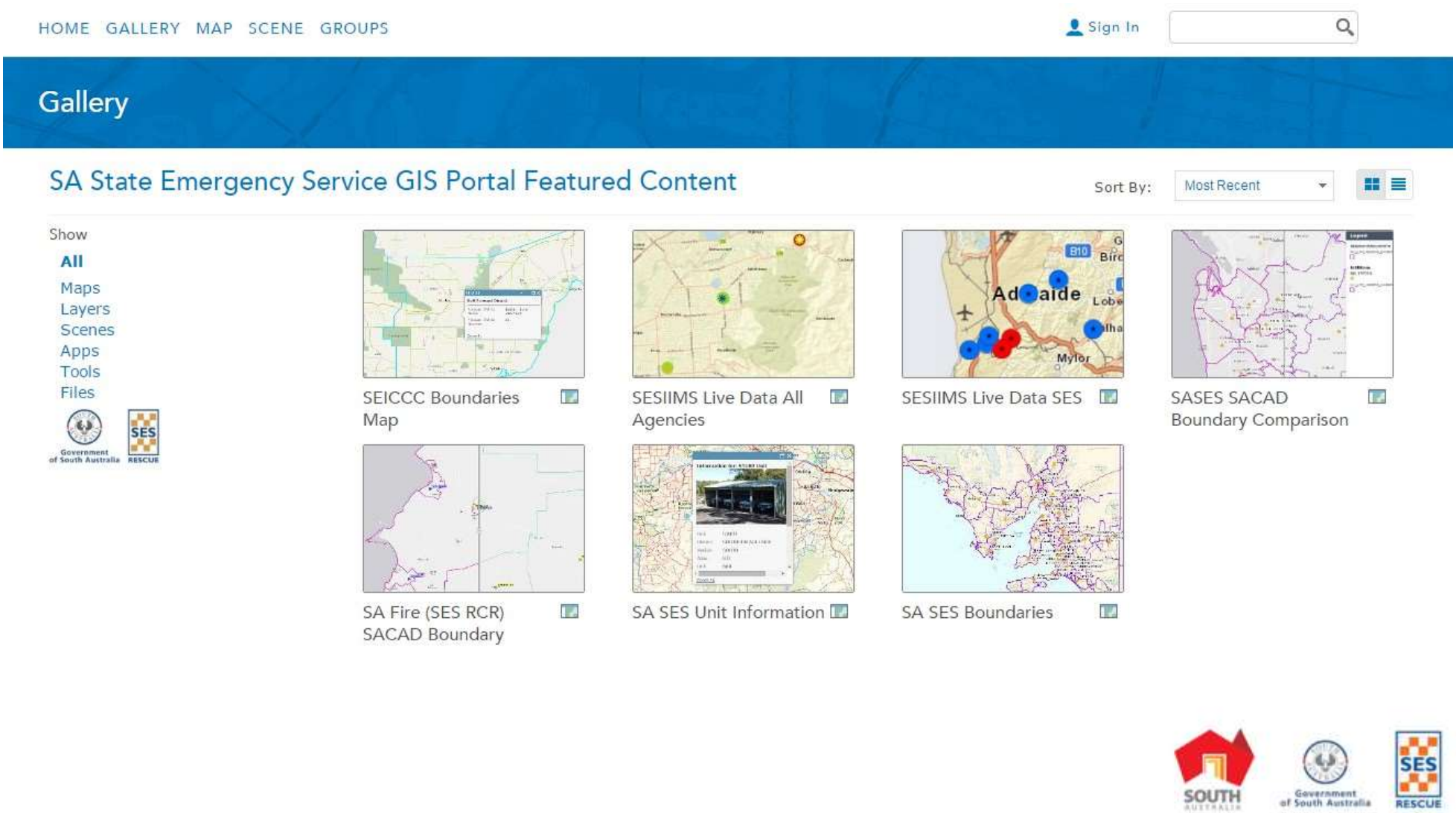
Working with Esri Adelaide Office:

- Developed a Python service which interrogates WebEOC DB and adds new/changed entries to GDB on ArcGIS server
- Create map service(s) – internal and now on AGOL too
- Create WebMap ->WebApp and embed in boards or open in separate window as required

Why this option?

- In house expertise to create and publish map services and maps/apps so we can create/edit/maintain these ourselves
- Easy to use definition queries and ArcMap settings to fine tune visible content in each map service
- Full control of symbology
- Quickly produce maps/apps tailored to specific requirements
- Can add parameters to app call to set extent, centre point, additional markers etc., so can use same app for different requirements
- One change to app is propagated through all uses – no need to edit in several views
- All SESIIMS data is now available in GDB – spatial analysis on historical data without impact on SESIIMS DB performance
- Can use data to produce maps/apps outside of SESIIMS – SASES GIS Portal and AGOL

SES GIS Portal



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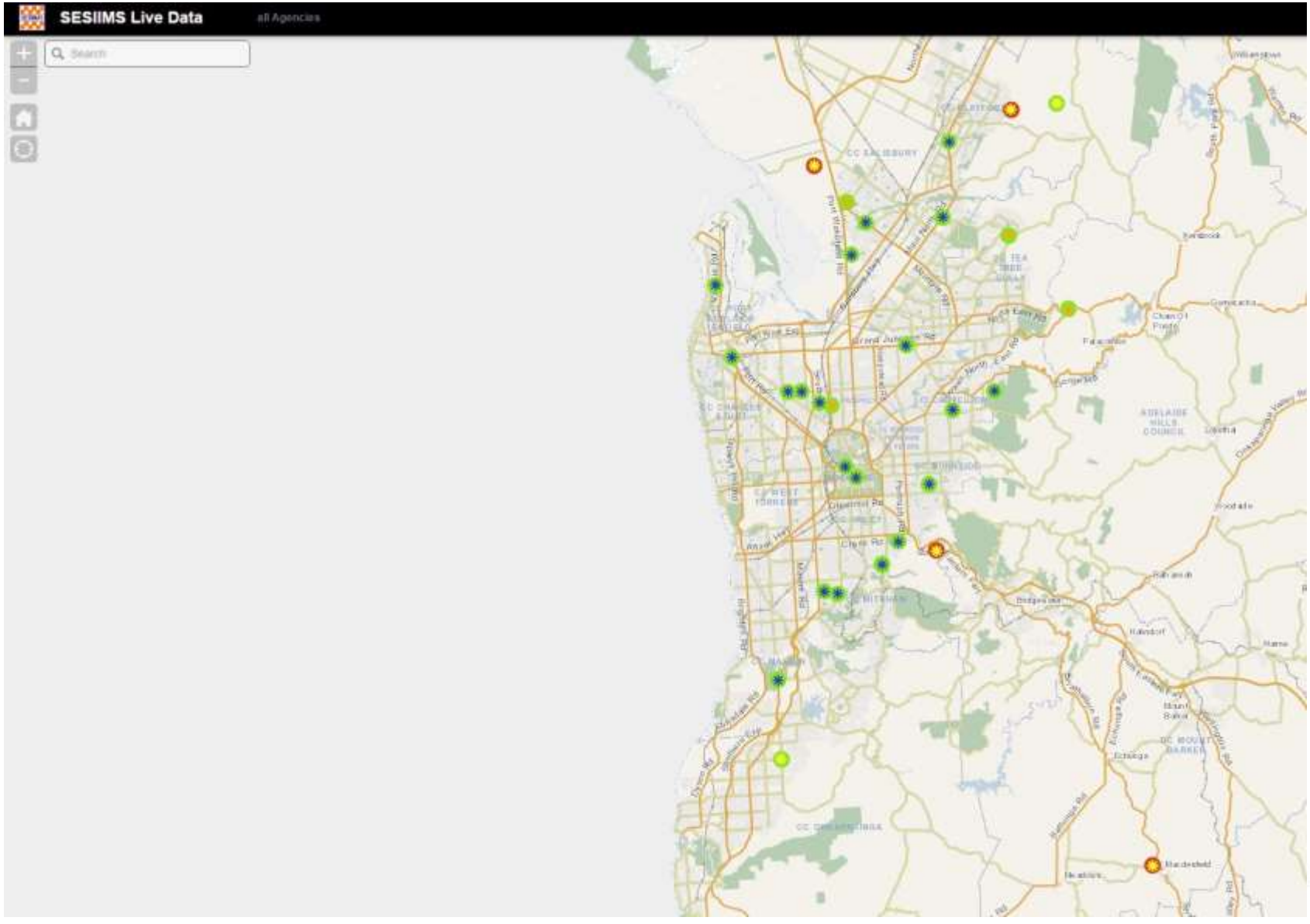
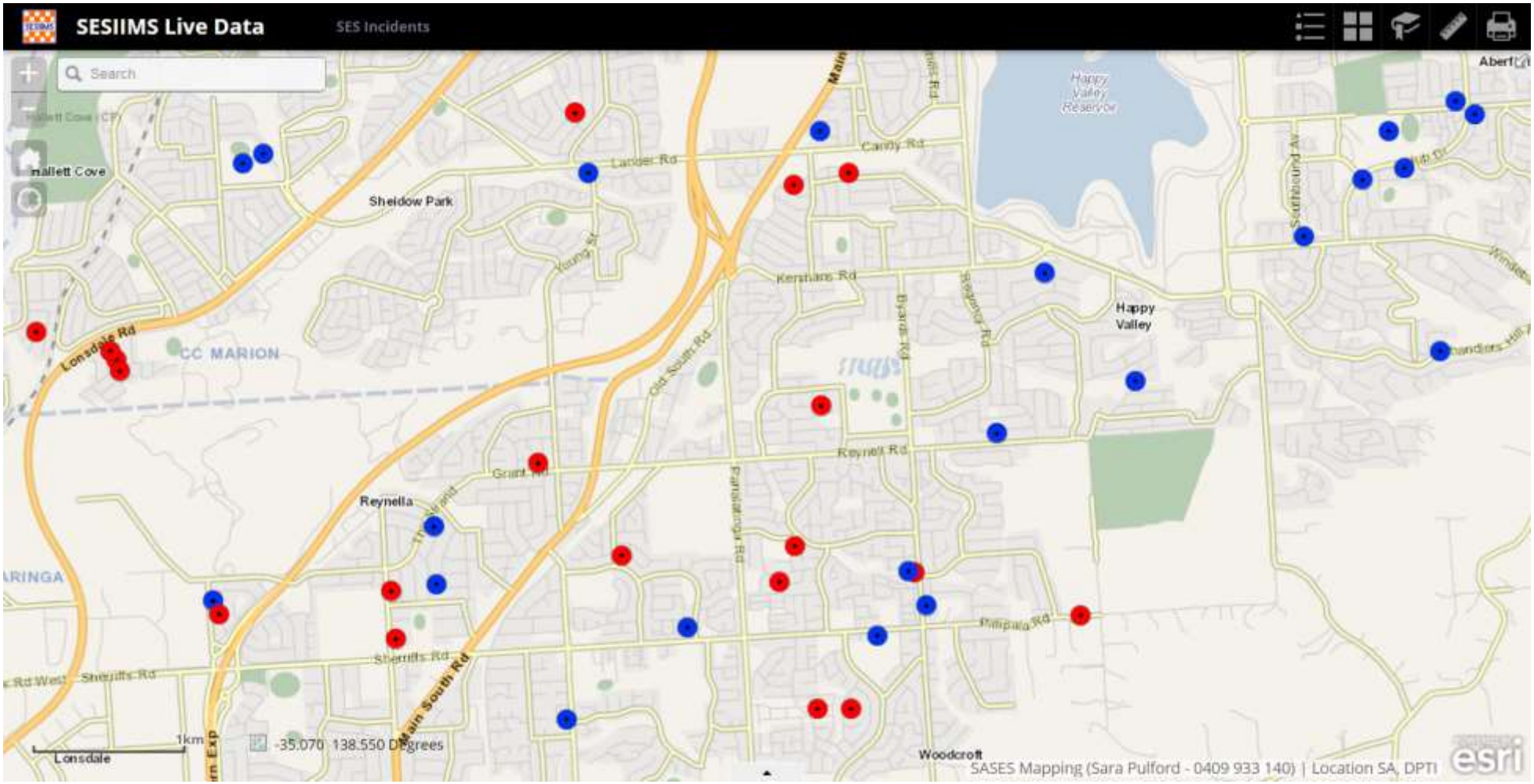
Example: WebApp all agencies



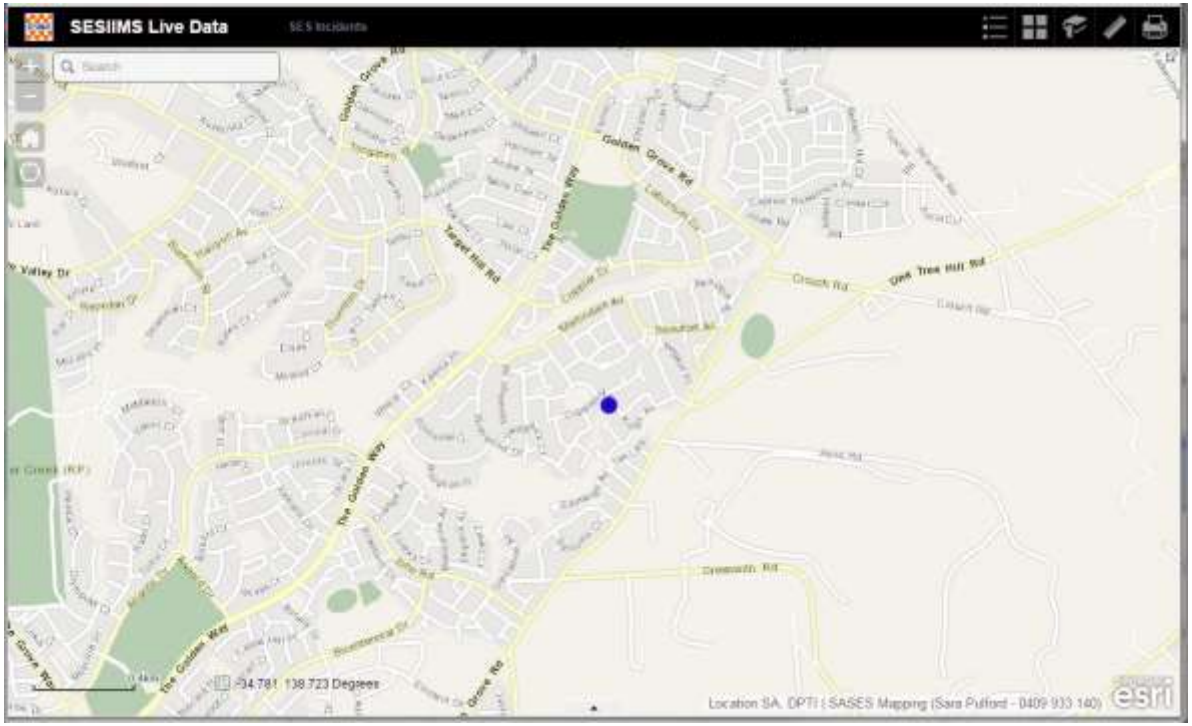
Example: WebApp SES only



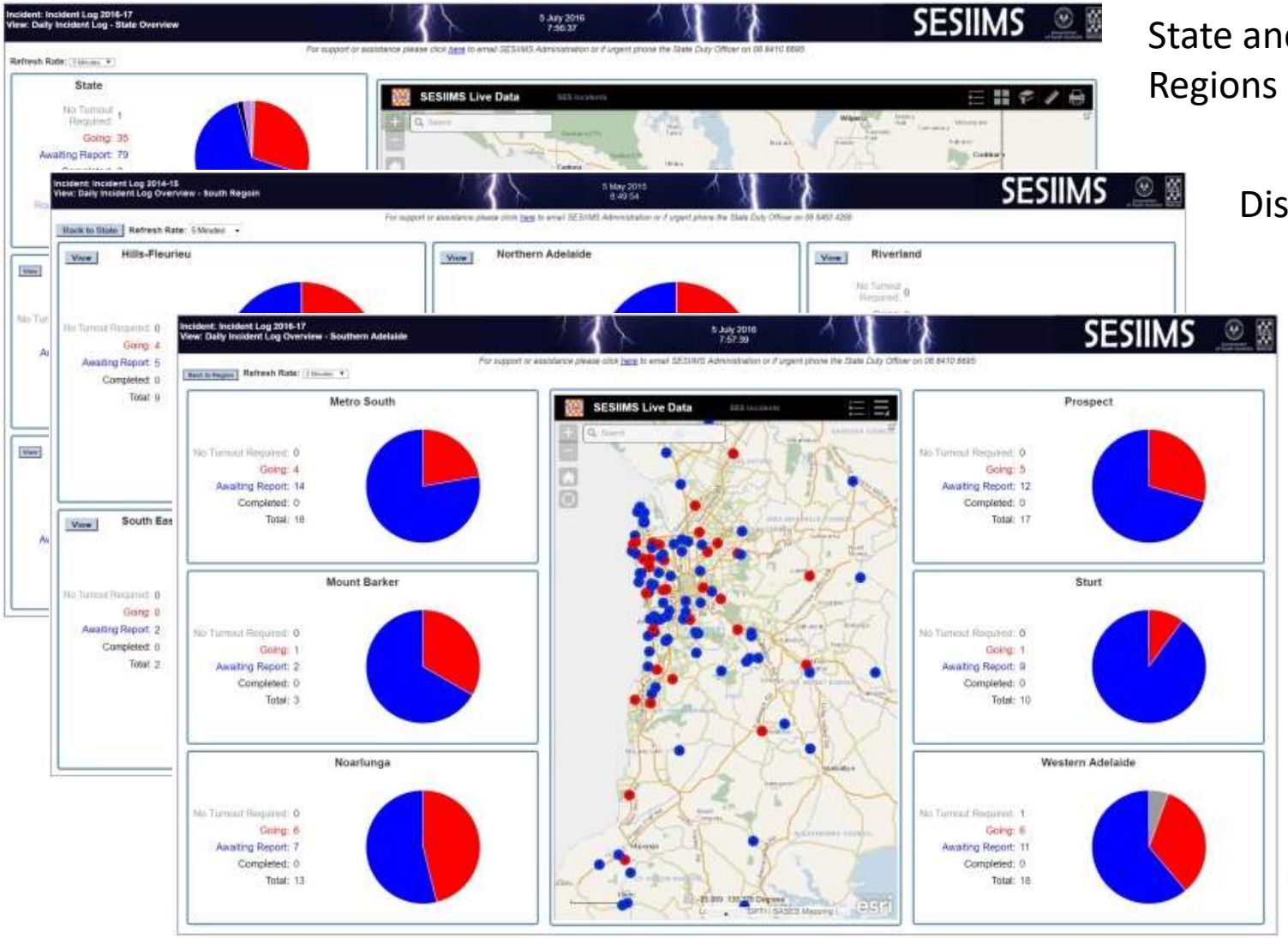
Example: Daily Incidents

Individual incident view

RESCUE GENERAL	GOLDEN GROVE	Awaiting Report	Northern Adelaide	SES	Tea Tree Gully	04/07/16 1136hrs	0	



State Overview Dashboard

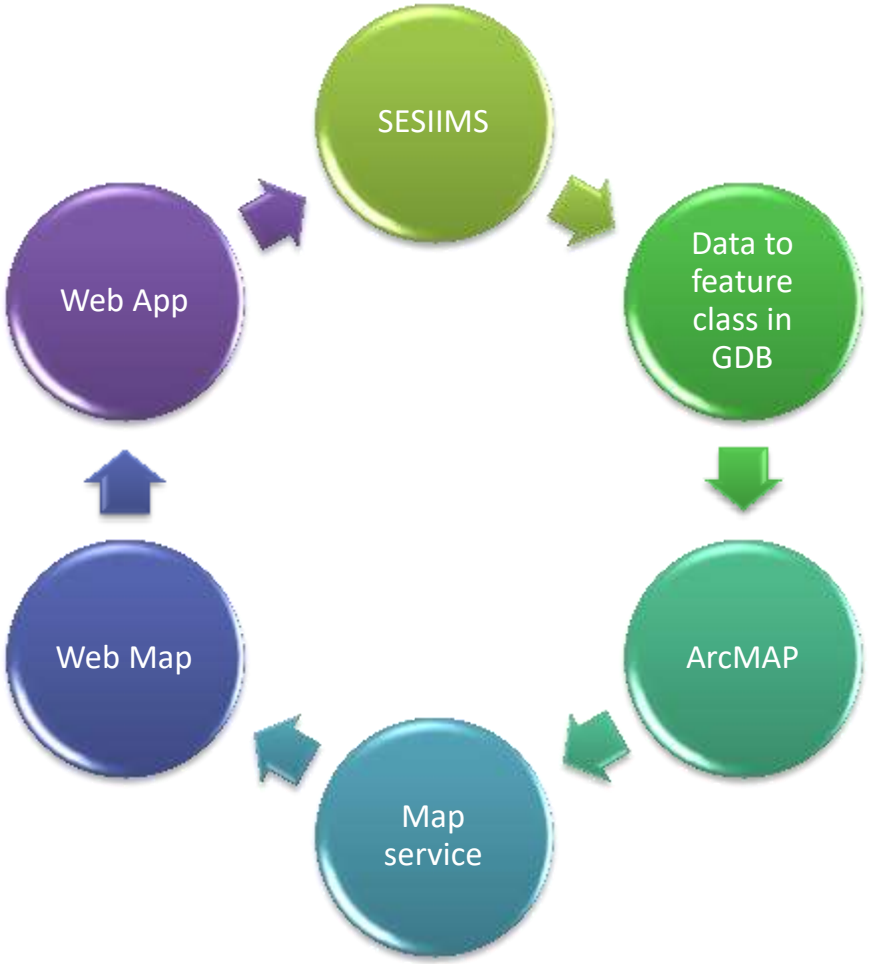


State and Regions

Districts

Units

SA SES WebEOC - ArcGIS Integration



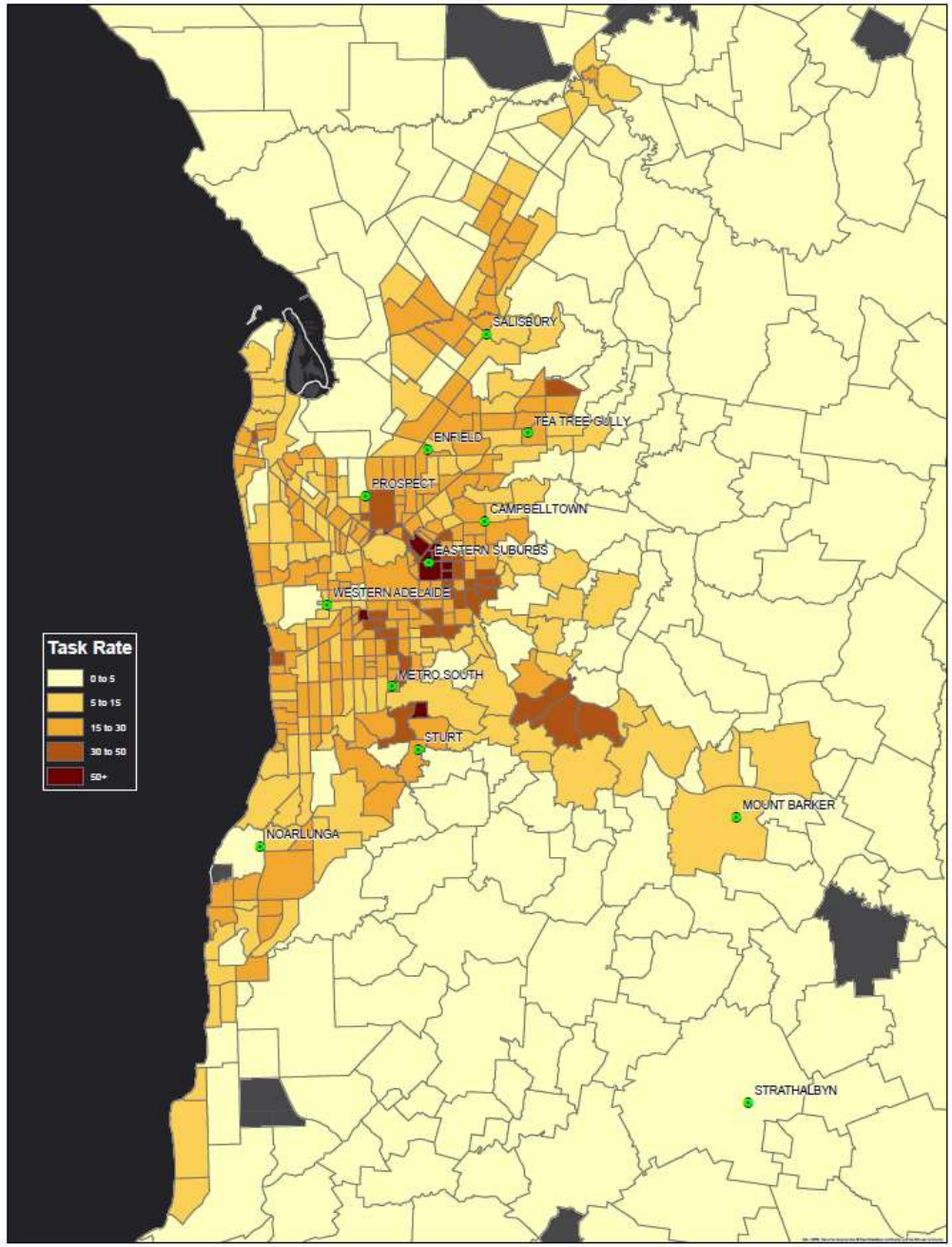
Improved emergency management through the use of spatial information

Spatial Analysis

In addition to the operational applications, having the response data in a stand alone GDB allows us to:

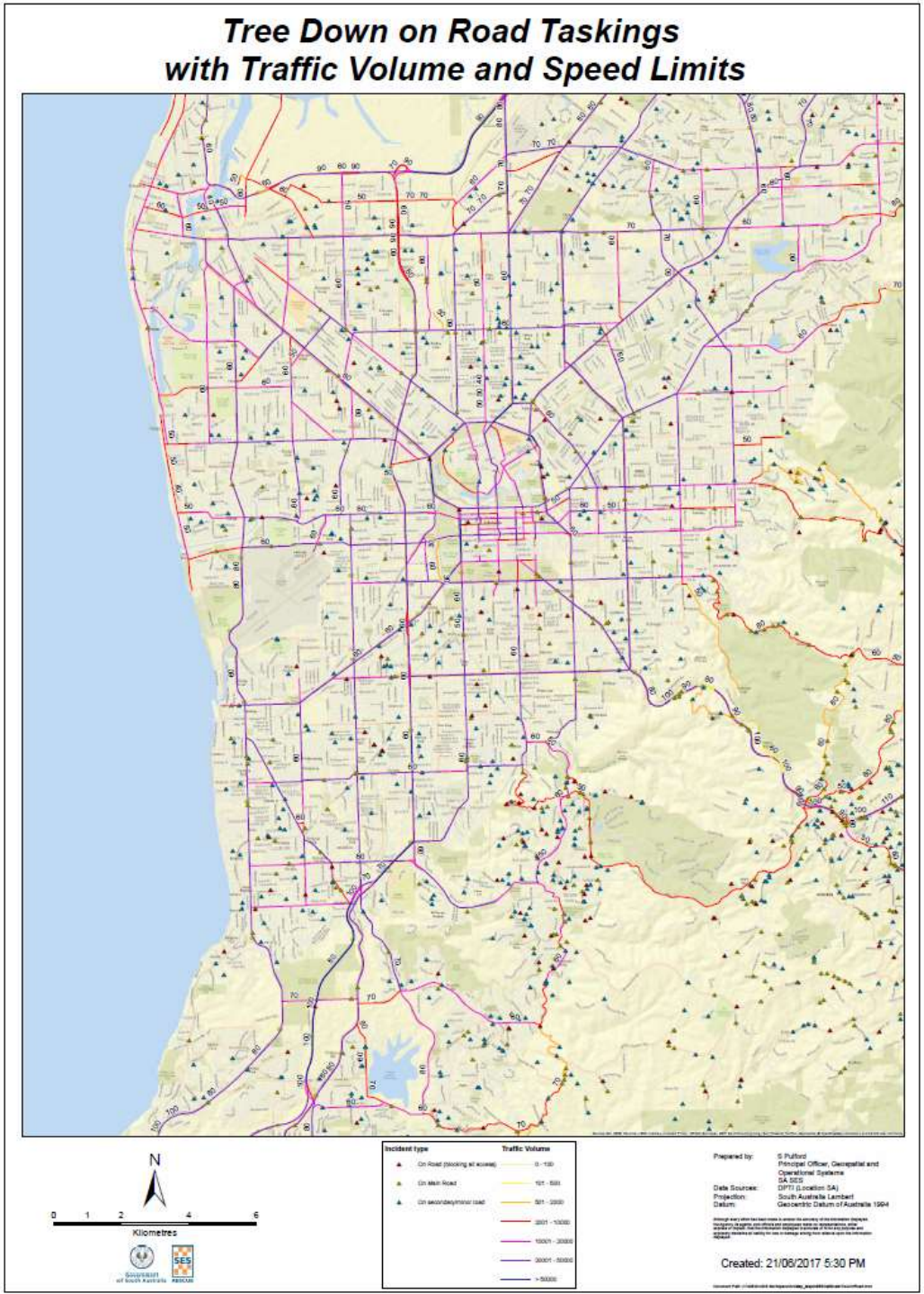
- analyse it for patterns, coverage gaps etc.
- combine it with other data to inform decisions

All without any impact to the live Incident Management system

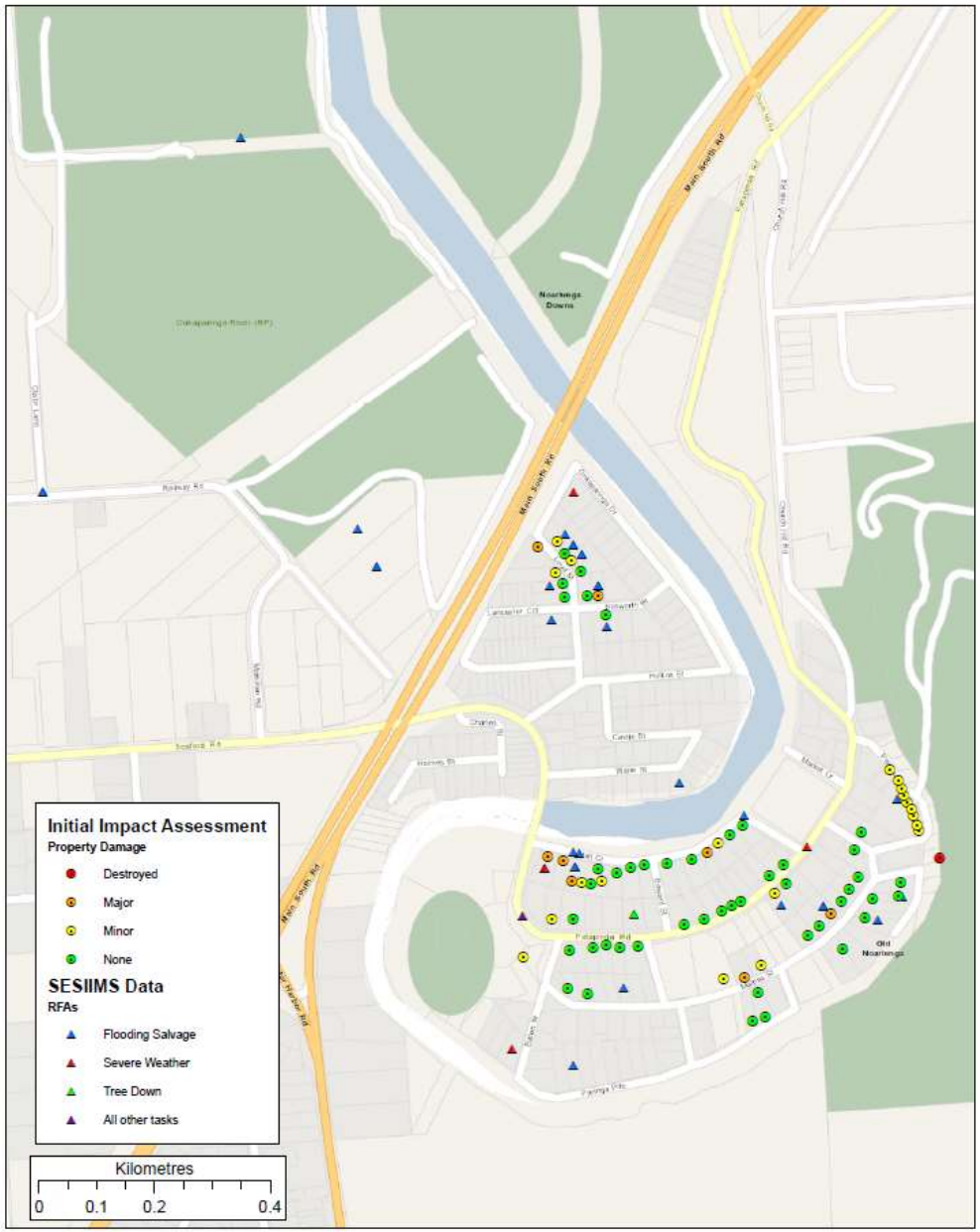


SES All Tasks Heat Map

Example: coverage gap analysis



Example: response planning



SES Taskings and Initial Impact Assessments
Old Noarlunga
Flood Event 14th to 17th September 2016

Printed on: 19 September 2016
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Prepared by: Dr S Pulford, Communications and Operational Systems Officer, SA SES
Document Path: C:\GIS\ArcGIS Workspace\ArcMap_Maps\IIA\IIA20160914-17.mxd

Example: post event impact analysis

What next?

- Integration of content of two portals (internal and AGOL) into one portal leveraging WofG ELA and Location SA services
- Upgrade of Python scripts to support new symbology
- Public incident and warning maps for SASES website

Summary

- Integration of spatial data into operational boards was vital to intelligence based operational decision making
- Additionally, enabling historical spatial data analysis facilitates organisational data driven decision making

*Note: Mapper Pro has now been superseded by an WebEOC/Esri alternative comprising three separate components:

Maps (included in WebEOC licence) – limited configuration options
Maps + and ArcGIS - two separately licenced plugins

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