



NSW RURAL FIRE SERVICE

Integrating ESRI Web API's into RFS Business Systems

Overview



- Background
- RFS Spatial Technology
- Problem
- Options
- Solution
- Challenges
- Results and Benefits
- Live Demo

NSW Rural Fire Service

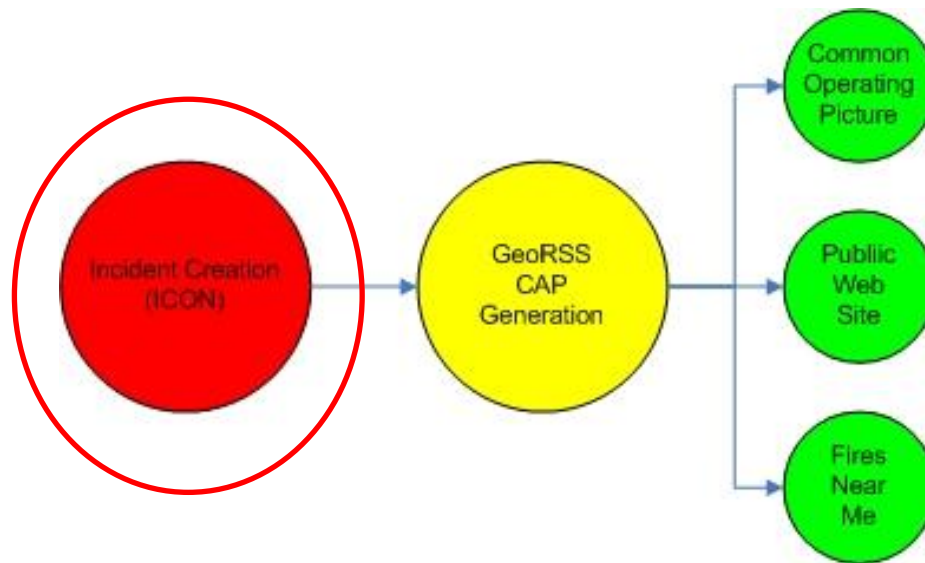


- World's largest fire service
- 70,000 Volunteers
- Provision of emergency services to over 95% NSW
- RFS Web Mapping Systems are becoming **“Mission Critical”**

NSW Rural Fire Service



- Significant shift in focus towards alerting the public with a **consistent** message



	Advice A fire has started. There is no immediate danger. Stay up to date in case the situation changes.
	Watch And Act There is a heightened level of threat. Conditions are changing and you need to start taking action now to protect you and your family.
	Emergency Warning An Emergency Warning is the highest level of Bush Fire Alert. You may be in danger and need to take action immediately. Any delay now puts your life at risk.

Current Spatial Technologies



- Web
 - ArcIMS
 - MapDotNet
 - ArcGIS Server Web ADF (9.2, 9.3.1)
 - Flex (Common Operating Picture)
 - Javascript (Public Website Google Map)
- Desktop
 - ArcMap
 - ArcEngine (custom applications)

RFS Corporate Web Apps



- **ICON**

- Incident Control
- Situation Reports
- Authorised Maps
- Incident Location

- **BRIMS**

- Fire Mitigation
- Legislative focus
- DA's
- Hazard Reduction
- Section 52 mapping
- Permits
- 50 + ASP screens
- Complex business processes

Problem



- Multiple web mapping technologies and versions
 - BRIMS (9.2) with ArcGIS Server and ArcIMS components
 - ICON (9.3.1) on separate platform (2 x infrastructure)
- Tight business system integration
 - **ONLY** mapping components to be upgraded
- Poor performance and customer satisfaction
 - Dating technology
 - User expectation (Google Maps, caching etc)
- ESRI Deprecation plans

Options



- 9.3.1 / 10.0 Web ADF
 - Current code could not be migrated to 9.3.1 without significant development
 - Mapping Control deprecation etc.
- Web API's
 - Silverlight
 - JavaScript
 - FLEX

Solution



- Silverlight API
 - Microsoft .NET shop
 - Solid IDE and Debugging
 - Integration with existing Microsoft ASP .NET codebase
 - May have been done with other Web API's...
- ArcGIS Server REST Services (AGS 10)
 - Map Services
 - Feature Services (Editing Templates)
 - Cached Base maps
- Migration of Web ADF components to 10.0
 - Printing
 - Server Side communication (Server Context)
 - Fine Grained ArcObjects (Custom Code)

Why are we showing you this?



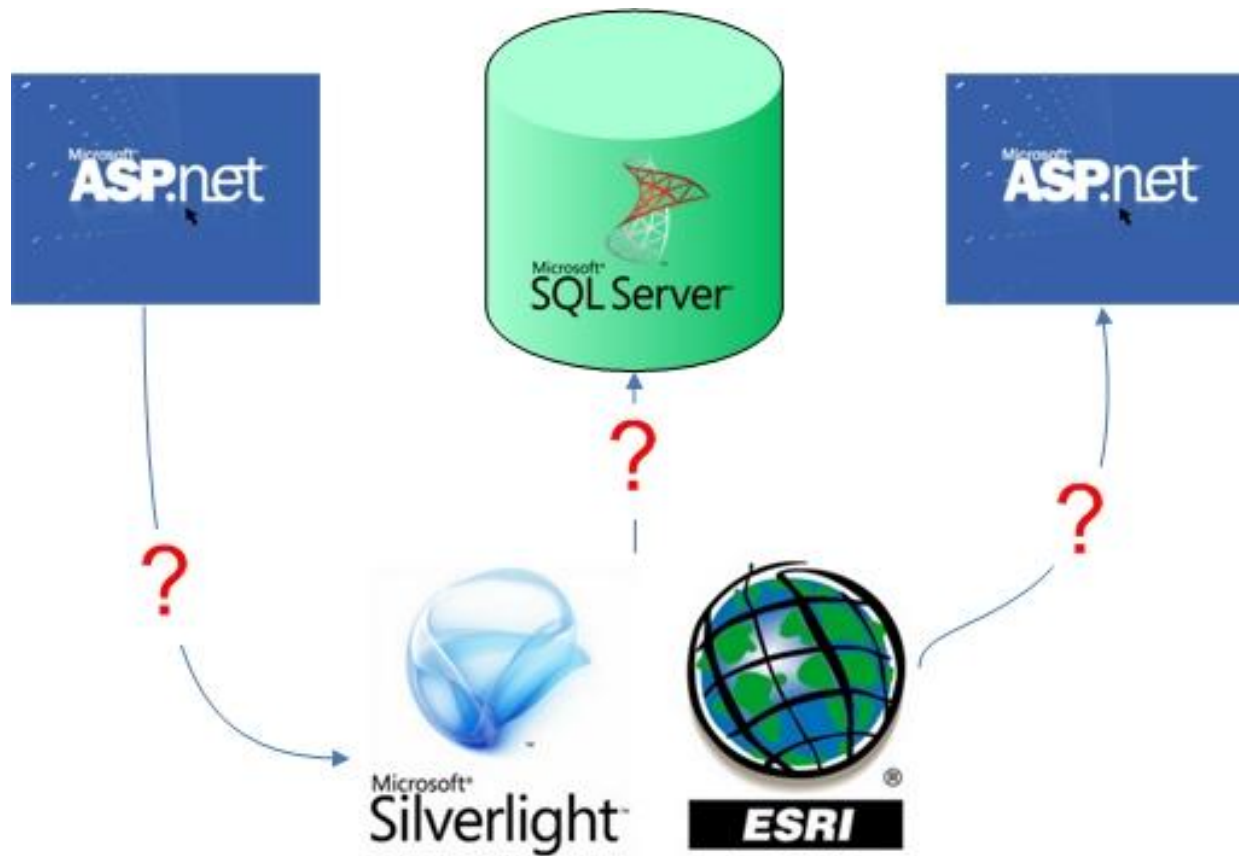
- Many nice stand alone REST Web Applications
 - Look great
 - Perform well
 - **Standalone MapViewers!**
- Limited examples of tightly integrated REST applications
 - This is an example of how to integrate ESRI Web APIs into existing business systems

Challenges Faced



- Only mapping components to be rebuilt
 - Complex application
- Existing business non-mapping components built using Microsoft ASP .NET (VS 2010)
- Integration of client-side plug-in (Silverlight) with ASP business logic
- Mapping forms an integral part of the business workflow and is therefore tightly integrated into the applications.
- Communication (3 main scenarios)

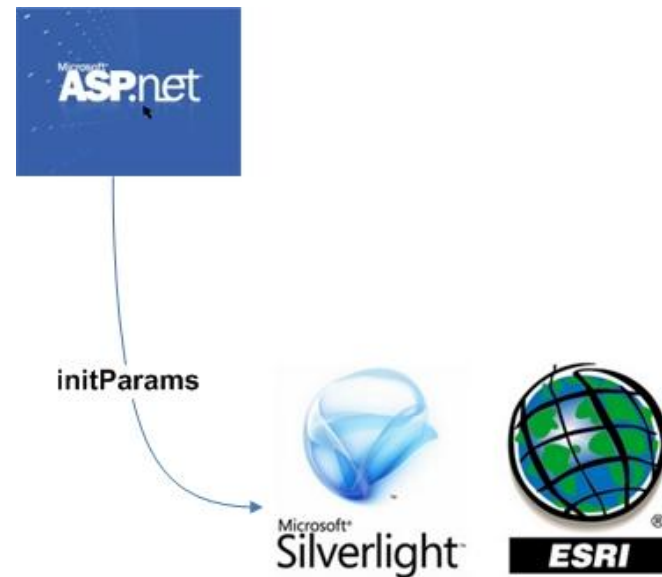
Communication Challenges



Server-side Web Page to Silverlight Client



- Current Session variables into Silverlight Client via `initParams`
 - Extent, MapId, Map Mode, UserId



Silverlight Client to Enterprise Systems



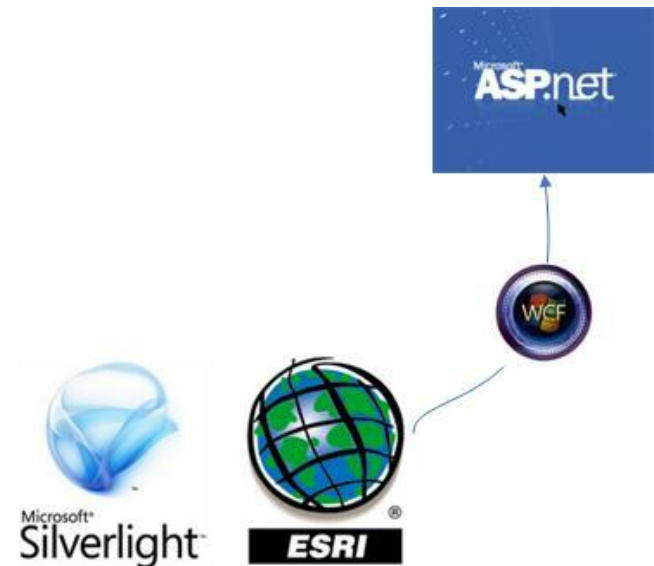
- ArcGIS Server REST Services
 - Read and write
- WebServices (WCF, ASMX)
 - Lightweight objects used to send and receive data
- Geoprocessing Tasks
 - Projection
 - Area and Length calculations



Client back to ASP Web Pages



- Write to server-side session variables
 - Internal WCF Service
- Launching existing asp user controls
 - JavaScript / Silverlight integration



Technology / Skills



- VS 2010 C# .NET
- XAML
- WCF
- JavaScript

Results and Benefits



- Significant performance improvements
 - Faster map draw times
- Rich User Experience
 - Positive customer feedback and response
- More secure environment
 - HTTPS
 - Secure WebServices
- HiAv and Advanced Request Routing (ARR)
 - Aligns with Current RFS System Architecture for Higher Availability
 - Disaster Recovery

Results and Benefits cont.



- Increased use
 - End user uptake
 - Business reaping benefits of increased input
- Re-useable services (REST)
 - Already easier to integrate mapping services
- Public Alert Levels
 - Accuracy of incident location
 - More spatial information

Future



- Silverlight and HTML5
- ESRI Web ADF deprecation (10.1)
- Fine-grained ArcObjects still exist!!
- ArcPy Mapping – very process intensive
- 10.1 Printing is positive

Acknowledgements



- Ian Reid (ireid@pb.com.au)
- Tim Leigh (tim.leigh@scalablesolutions.com.au)

Live DEMO



- [ICON Demo](#)

Legend Work Locate



State Forest Locality

Address National Park

Select a Local Government Area

LGA*:

Search By Suburb and Street

Suburb

Street

OR Search By Street Name

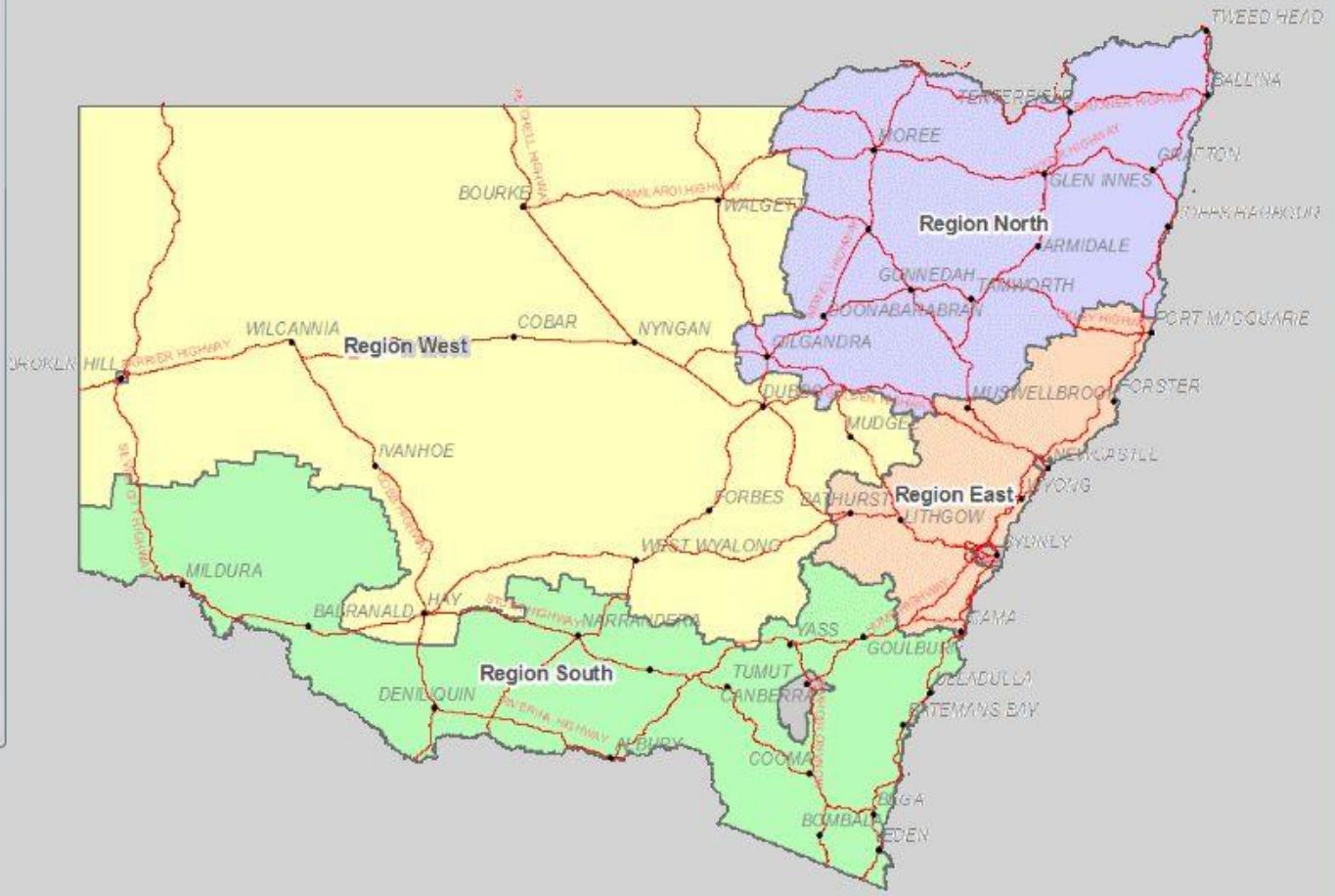
Name

OR Search By Lot and DP

Lot No.

Deposited Plan No.

Matching Addresses



Legend Work Locate



State Forest Locality

Address National Park

Select a Local Government Area

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OR Search By Street Name

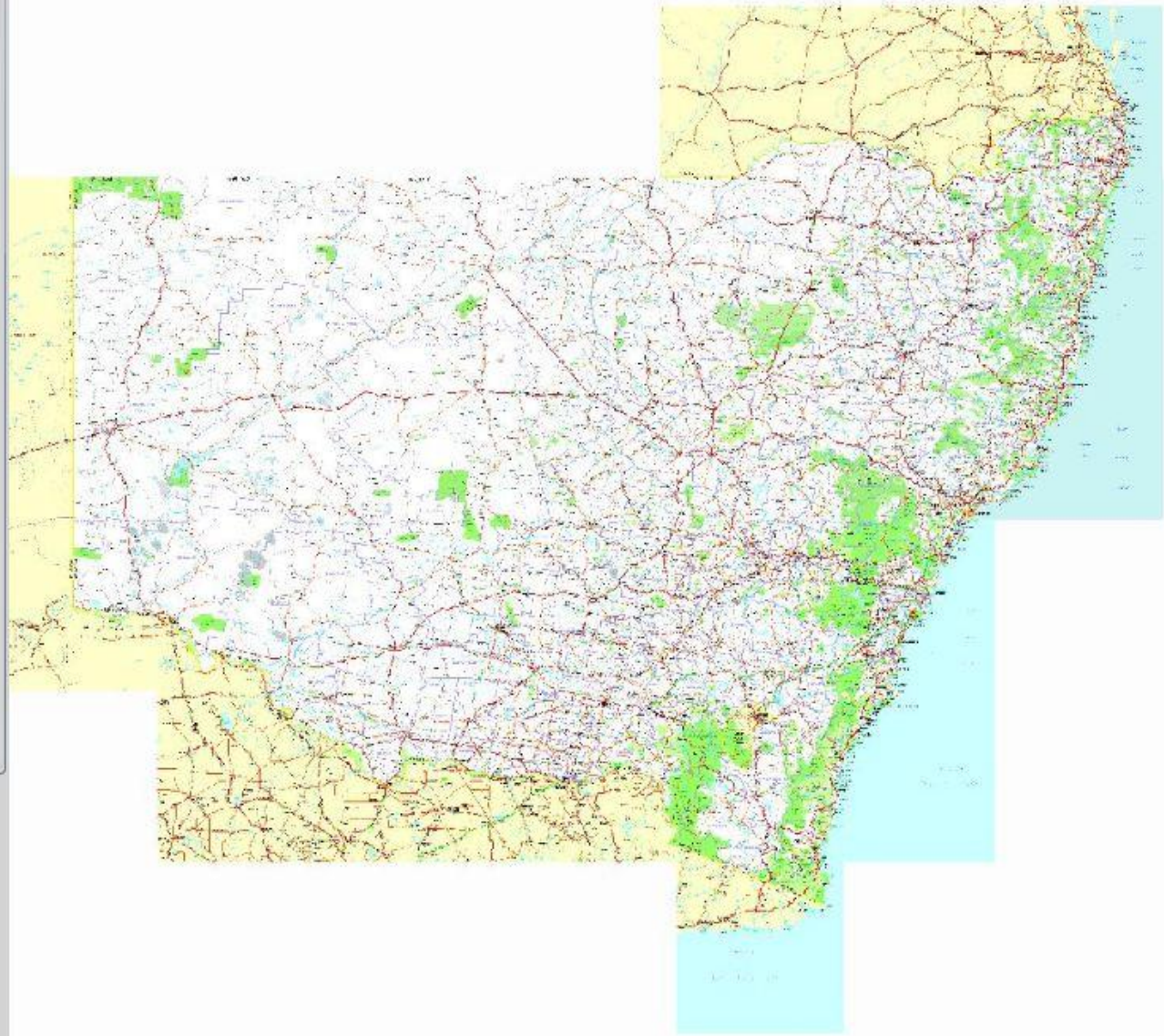
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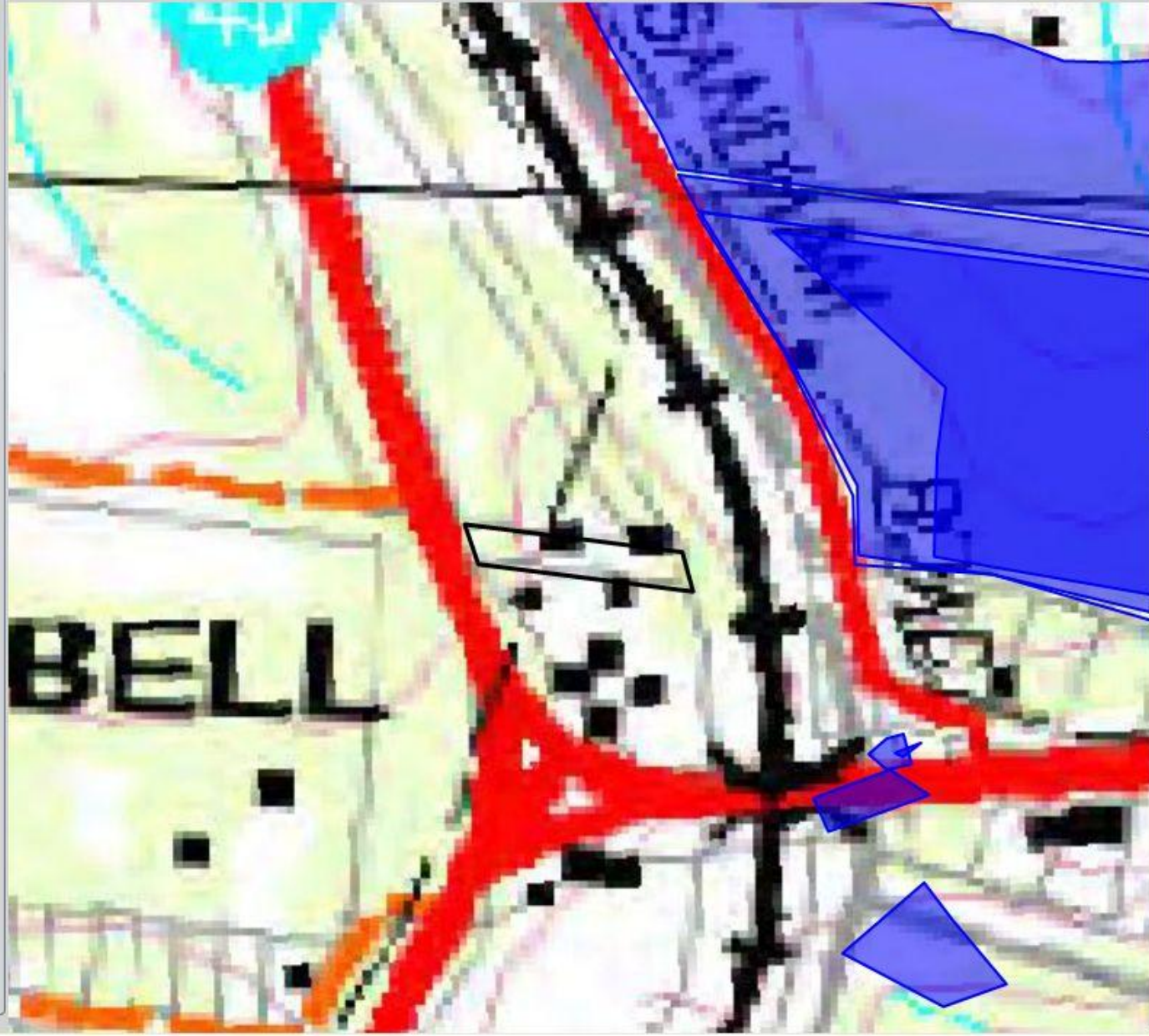
FullAddress	LUID
27 CHIFLEY ROAD BELL 2786	10157230 ▲
55 CHIFLEY ROAD BELL 2786	10157230
81 CHIFLEY ROAD BELL 2786	10157236
110 CHIFLEY ROAD BELL 2786	10018361
134 CHIFLEY ROAD BELL 2786	10157237
136 CHIFLEY ROAD BELL 2786	10157237 ▼

Find HR



Proposals

Reference Number	HR Name
HR06062718470	BELL-2002-1
HR08052631038	BELL2002-1 - East of Sand
HR09070639106	Sandham Road Bell
HR09070639106	Sandham Road Bell
HR11092954534	IAR Test 001
HR11092954537	IAR Test004
HR08052631038	BELL2002-1 - East of Sand



[Return to Summary](#)

Legend Work Locate



Draw / Edit Shapes

Drawing Complete Cancel

Draw Shape

Method:

Method: Burning 2

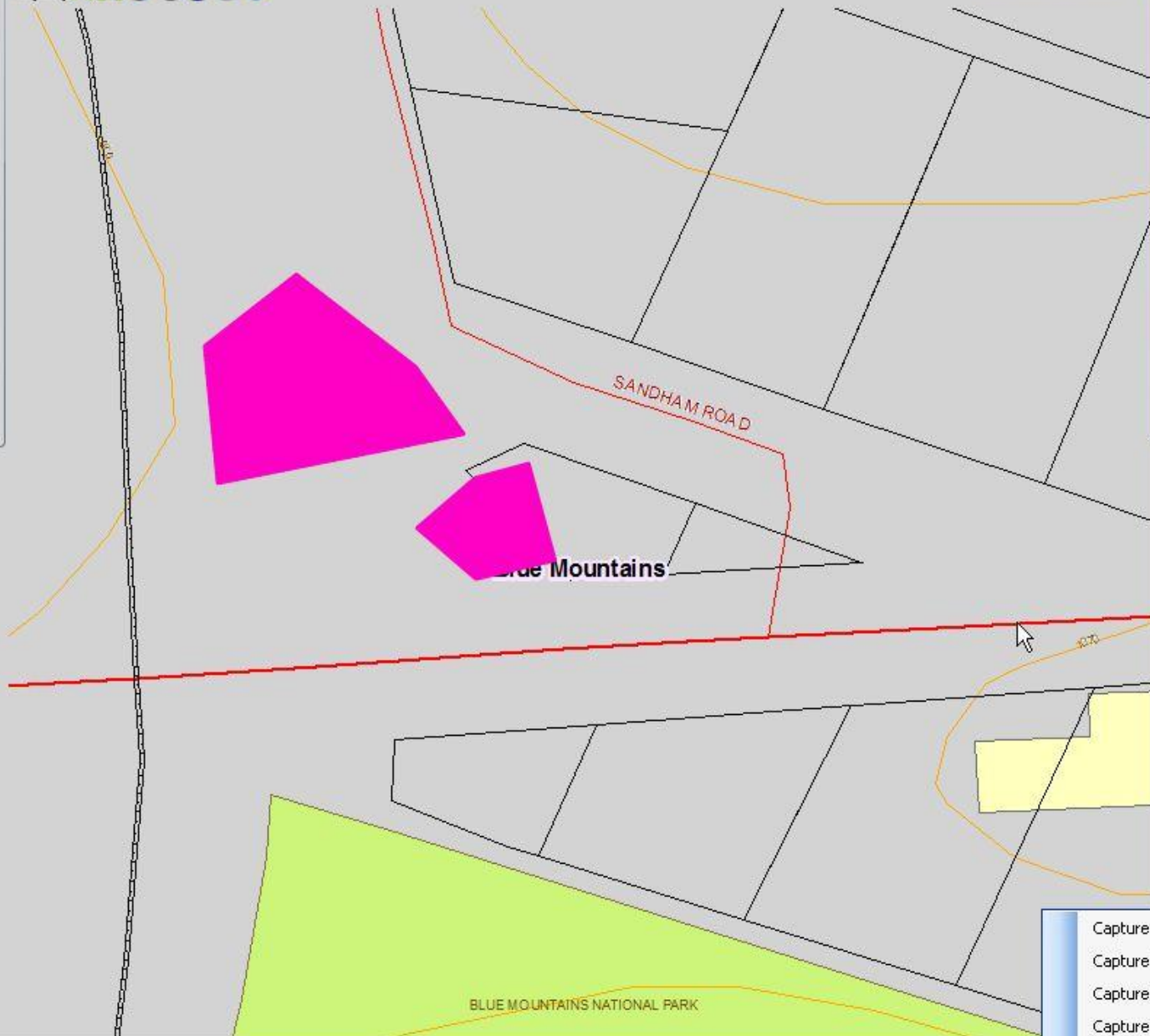
Save Shape

Clear Shape

Restart Drawing

View Options

Show all HR Proposals



Capture n

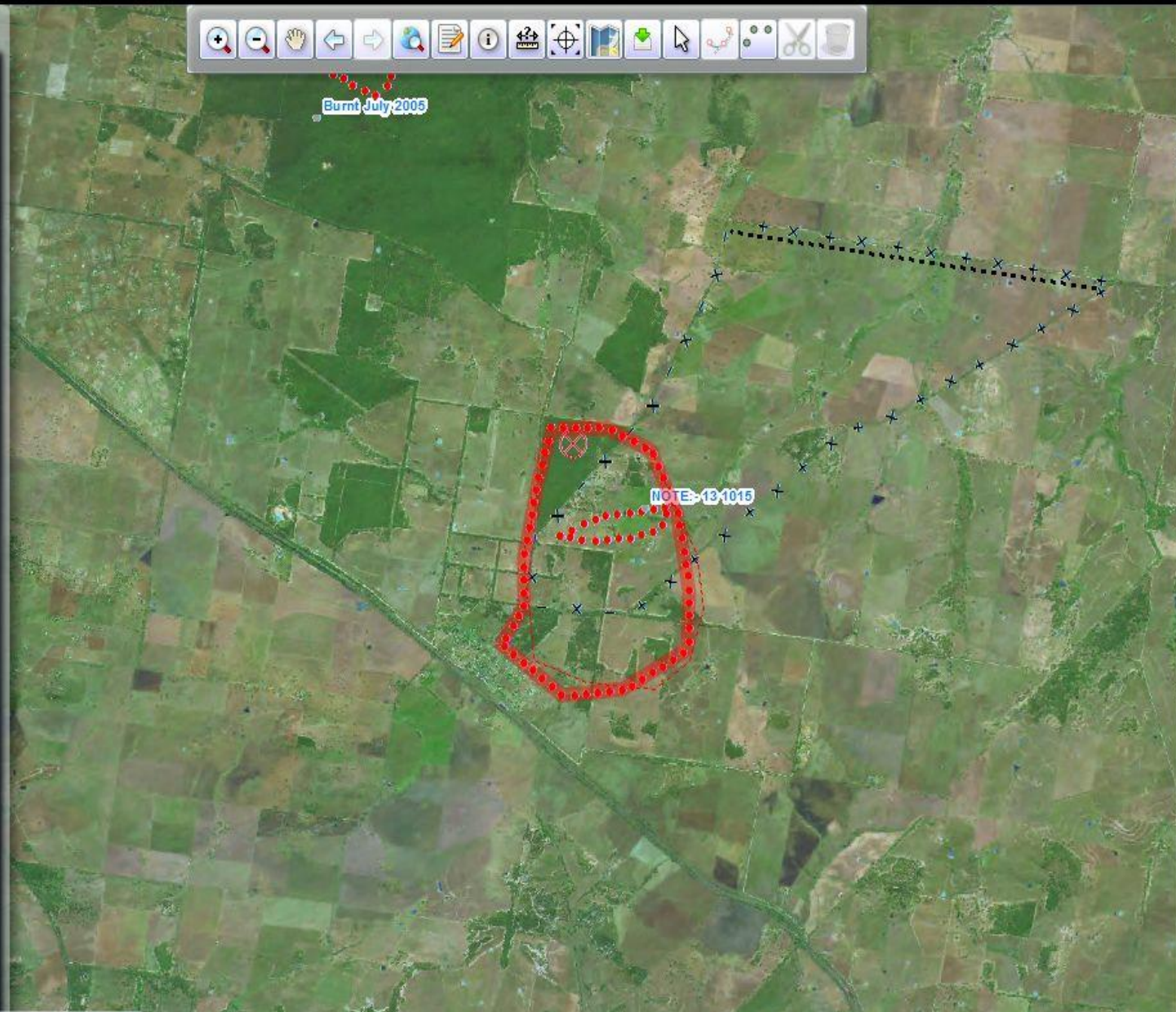
Capture l

Capture v

Capture e

Legend

- > Fire Features
- > Lightning
- > Vector Map
- > Topo Map
- > Imagery
- > Linescan
- > Terrain



Editor Palette

FireLabelLayer

FirePointLayer

FireLineLayer

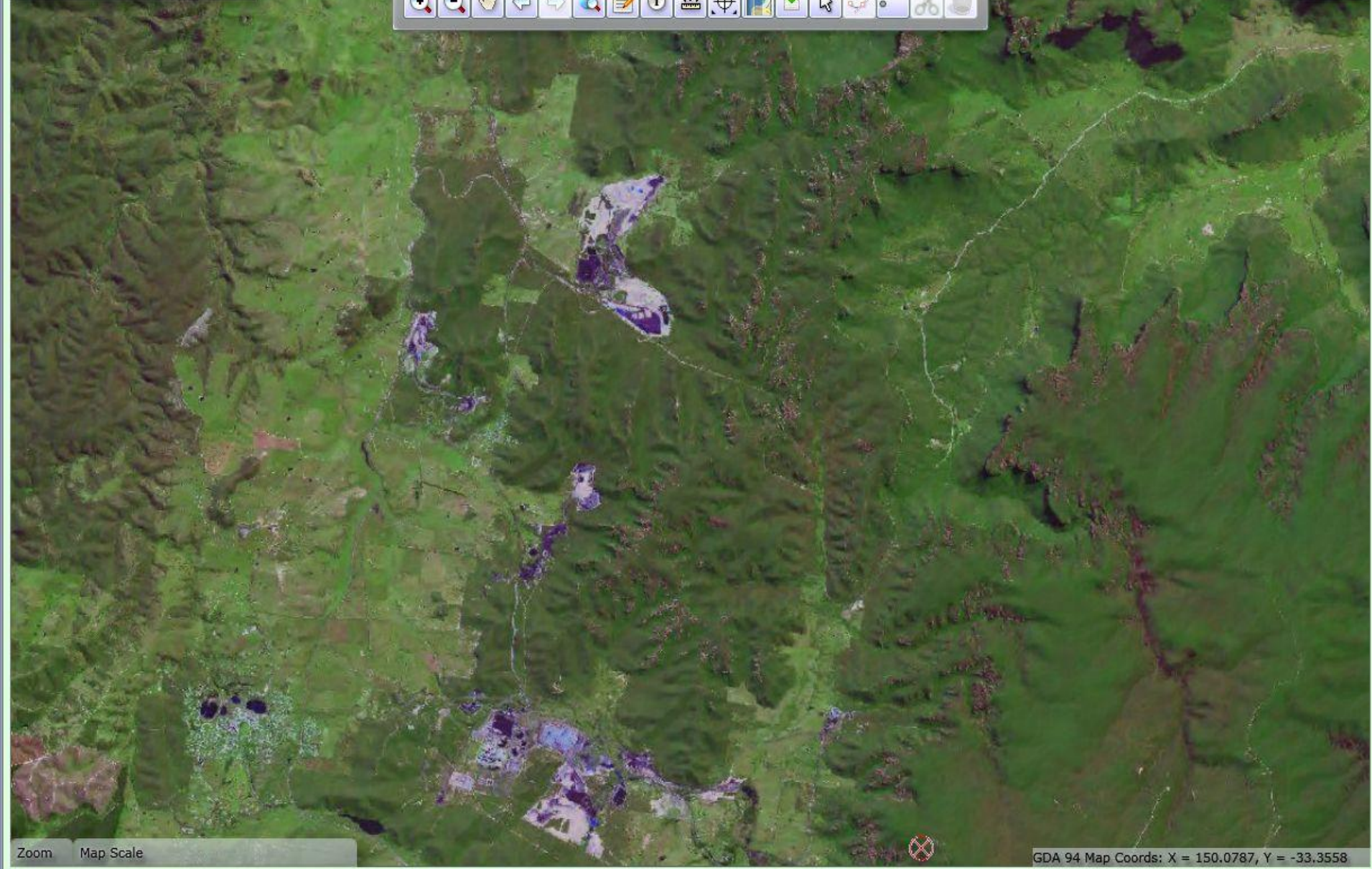
FireAreaLayer

Welcome Levi Roberts

Legend



Editor Palette



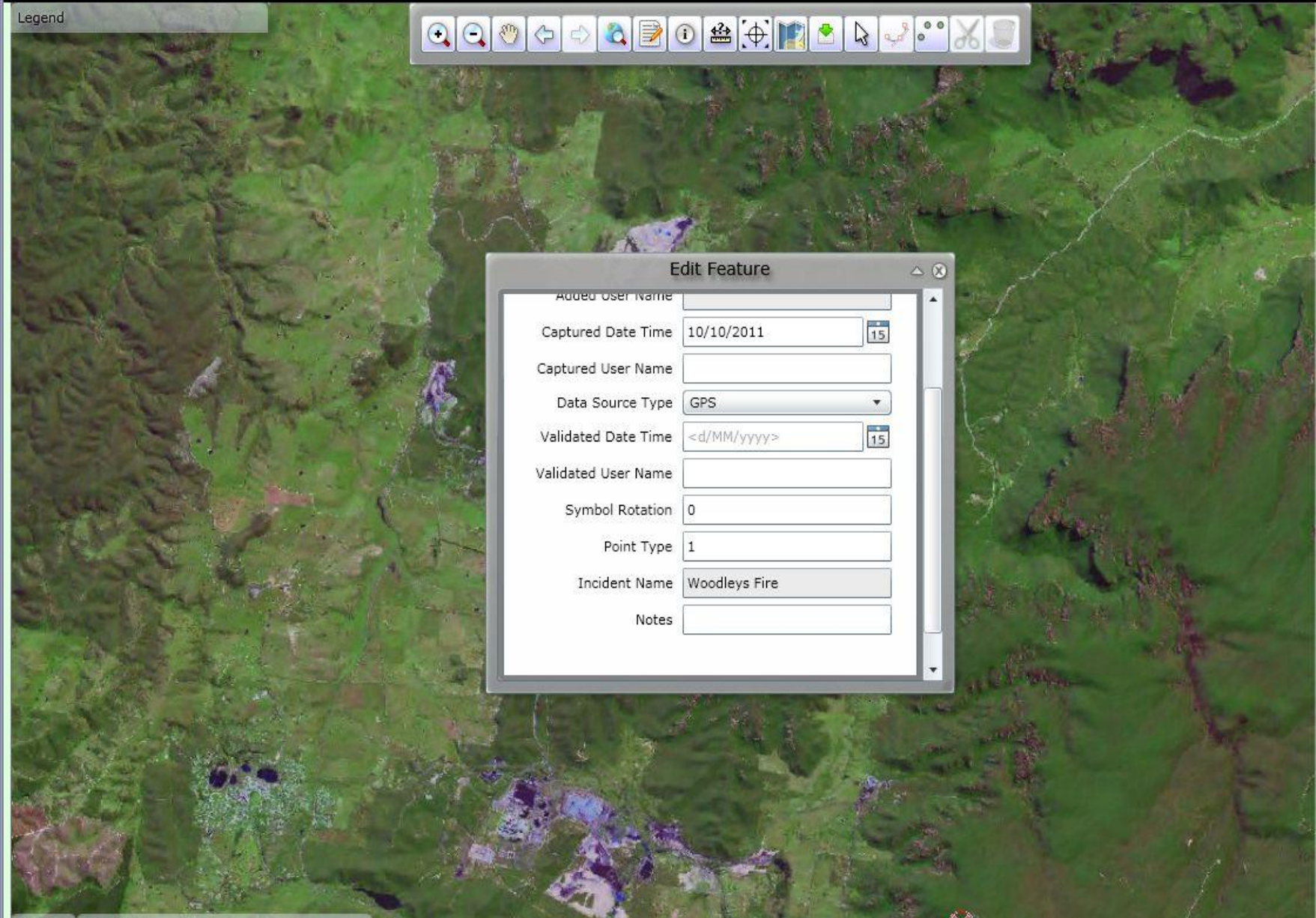
Zoom Map Scale

GDA 94 Map Coords: X = 150.0787, Y = -33.3558

Incident Map

Welcome Levi Roberts

Legend



Edit Feature

Added User Name	<input type="text"/>
Captured Date Time	10/10/2011 <input type="button" value="15"/>
Captured User Name	<input type="text"/>
Data Source Type	GPS
Validated Date Time	<d/MM/yyyy> <input type="button" value="15"/>
Validated User Name	<input type="text"/>
Symbol Rotation	0
Point Type	1
Incident Name	Woodleys Fire
Notes	<input type="text"/>

Editor Palette

FireLabelLayer

FirePointLayer

FireLineLayer

FireAreaLayer

Welcome Levi Roberts

Complete the information on this page to create an Icon bush, scrub or grass fire incident.
Information marked with * is mandatory.

Save and Close

Bush Fire Alert Levels

A bush fire alert level (or No Threat) is mandatory for a fire incident.

When determining alert level use local and current weather information.

Fire Danger: Rating	Time To Impact:			
	<2 hrs	2-6 hrs	6-24 hrs	24+ hrs
Catastrophic	EW1	EW2	WA1	A1
Extreme	EW3	EW4	WA2	A2
Severe	EW5	WA3	WA4	A3
Very High	WA5	WA6	A4	A5
High	WA7	A6	A7	A8
Low-Moderate	A9	A10	A11	A12

Upgrade Current Alert

Downgrade Current Alert

Threat Not Yet Known

Bush Fire Alert Type: EW=Emergency Warning + SEWS; WA=Watch and Act; A=Advice

Warning Message For

Bush Fire Alert:

Clear Alert Level

Incident Details

Incident Name *

Which LGA is it in? *

Start Date

Start Time

What type of fire is it (select one or more)? *

Bushfire Incident

- Forest
 Grass
 Scrub

What class is the fire? *

Class 1 Class 2 Class 3

How big is the fire? *

ha

What tenure(s) is it on? *
(select one or more)

Catchment Authority
 Council
 Crown Land
 Commonwealth
 National Park

Is the fire out of control? *

Going

Which Agency is responsible for the incident? *



Crown Land
Commonwealth
National Park
Going

Is the fire out of control? *

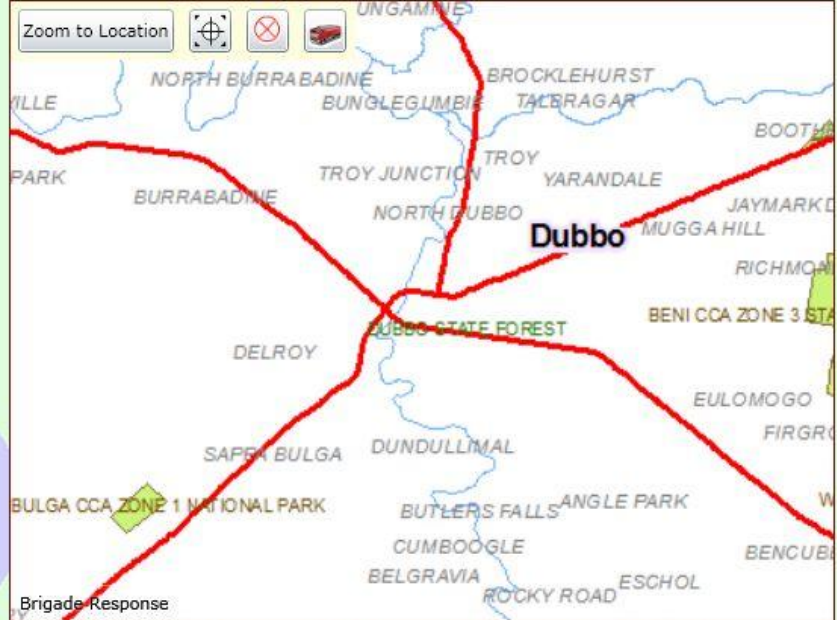
Which Agency is responsible for the incident? *



Incident Location, Heading and Threats

Where is the incident now? *

Dubbo



Incident Map

D

Where is it heading? *

To assist in providing clear, accurate information to the public, the following must be covered:

- What is the type of threat? (flame, smoke, embers)
- Where is it heading? (N/S/E/W, locations to be impacted, times to impact)

Is there a property threat? *

Is there anything else I need to know?

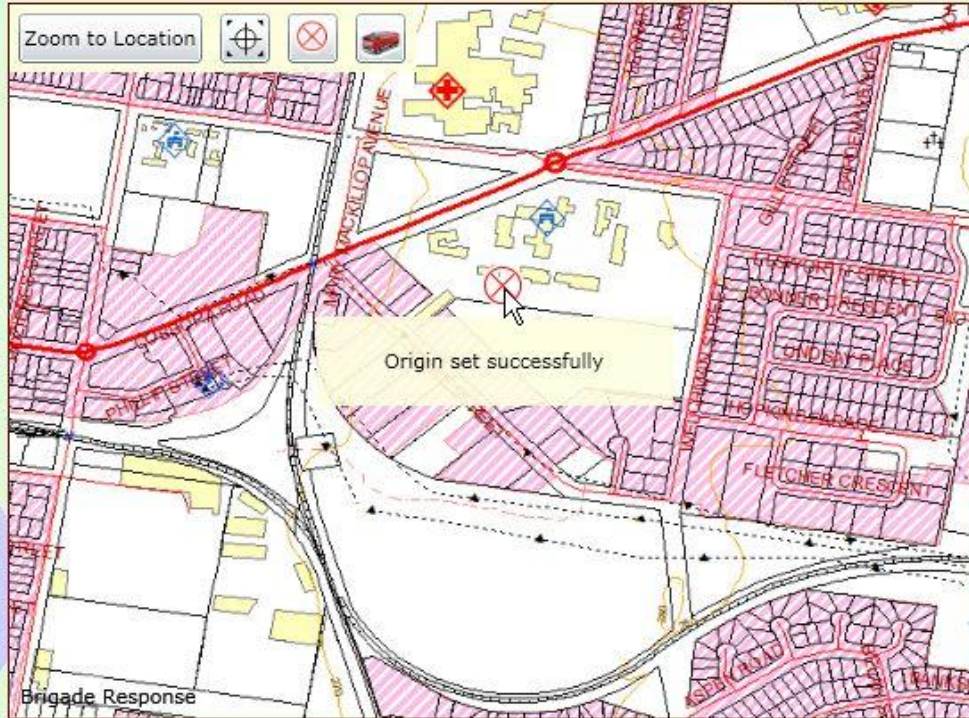
Incident Location, Heading and Threats

Where is the incident now? *

Dubbo



Zoom to Location



Incident Map

Hide Map

D

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