

Core spatial data services roadshow

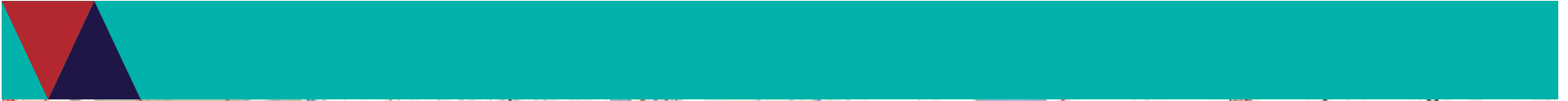


Environment,
Land, Water
and Planning



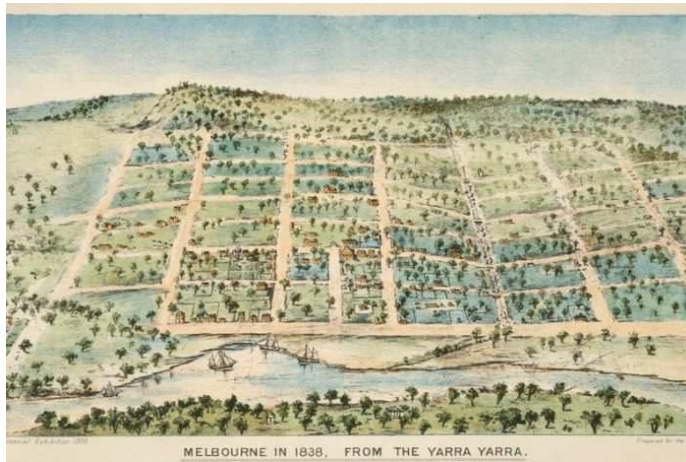
Mr Craig Sandy
Surveyor-General Victoria

- **Post your questions to www.sli.do**
 - event code C809
- **Twitter - @DELWP_Vic**
- **Social media - #DELWP_CSDS**

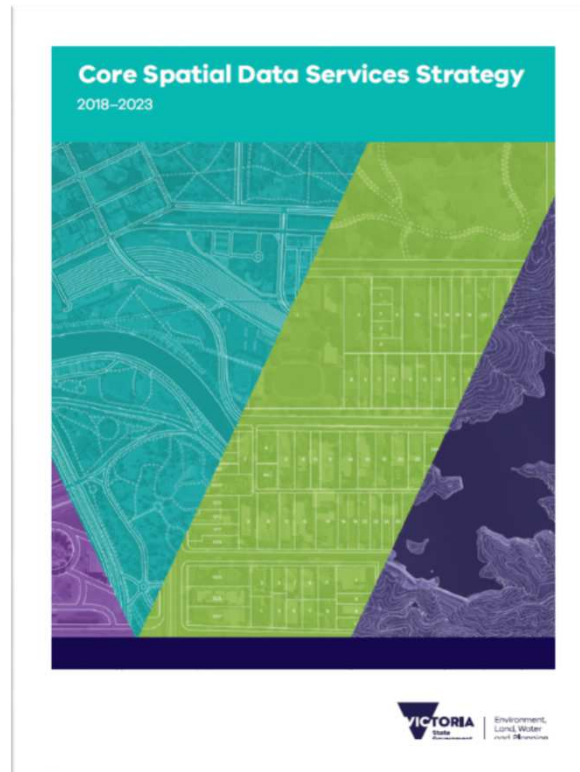


Ms Melissa Harris

Executive Director, Strategic Land Assessment and Information



DELWP Core Spatial Data Services Strategy



<https://www2.delwp.vic.gov.au/maps/news>

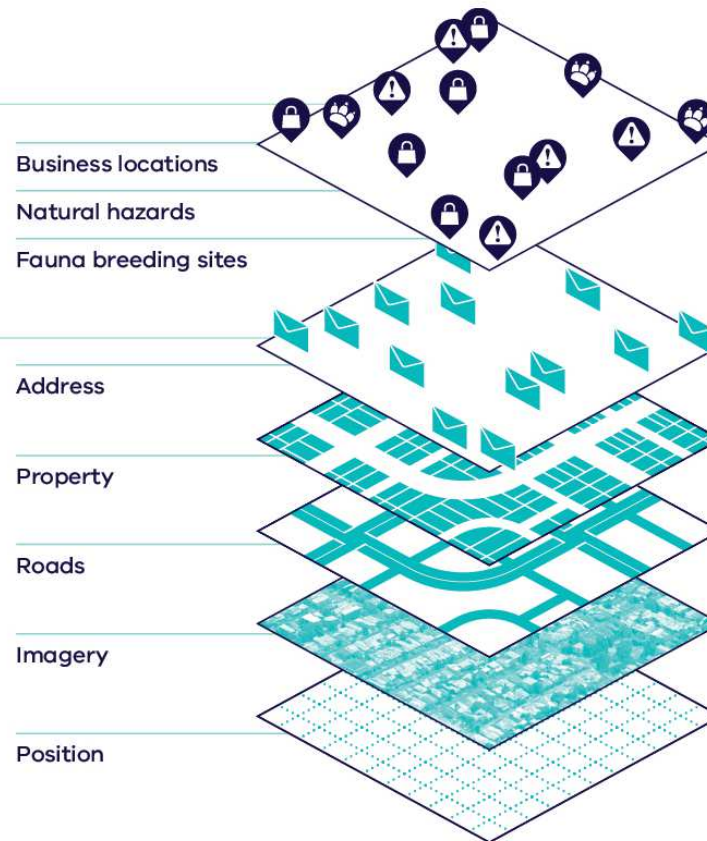
What *are* core spatial data services?

Business-specific data

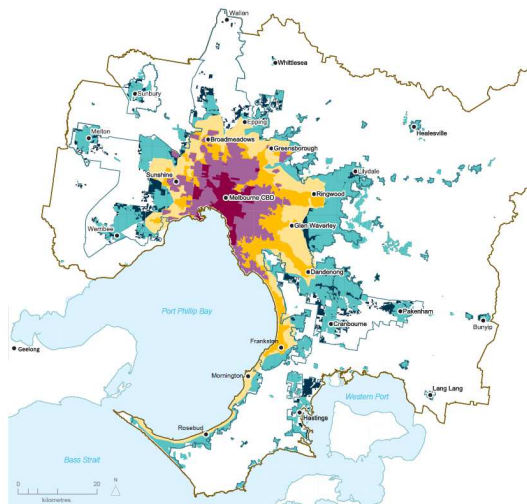
Using core spatial data as a basis, organisations generate their own specific business data to analyse events and make decisions. Some examples are shown.

Core spatial data

Authoritative base data sets depicting natural physical features of the earth's surface and the built environment. Some examples are shown.



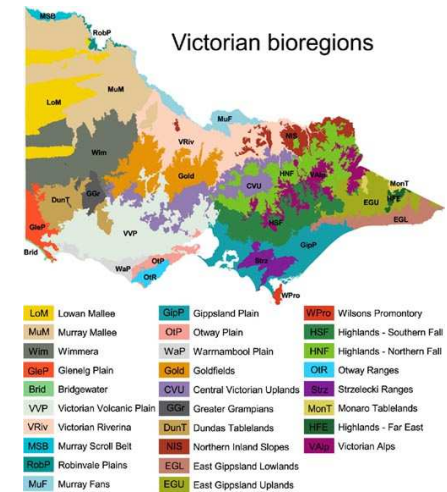
Spatial business data and services



Land use planning



Emergency response



Biodiversity management

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and Planning



www.sli.do

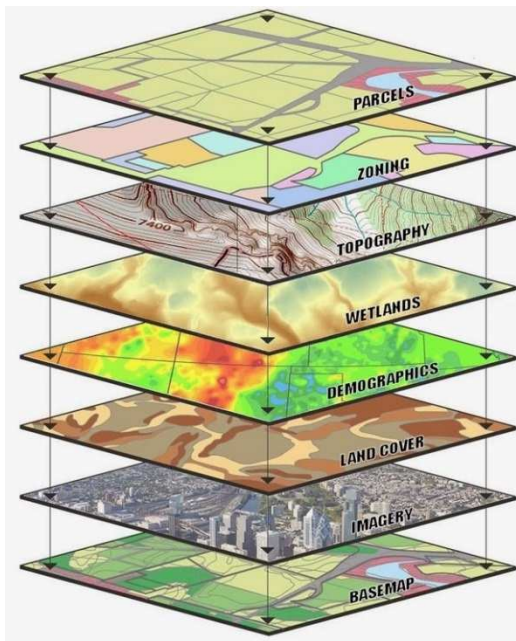
Event code
C809

Roger Fraser
Manager, Geodesy
Office of Surveyor General Victoria

Upgrading Australia's positioning datum and what it means for Victoria

Importance of a datum

Enables integration of different datasets, measure once, use multiple times



GDA2020 is now Australia's official national datum

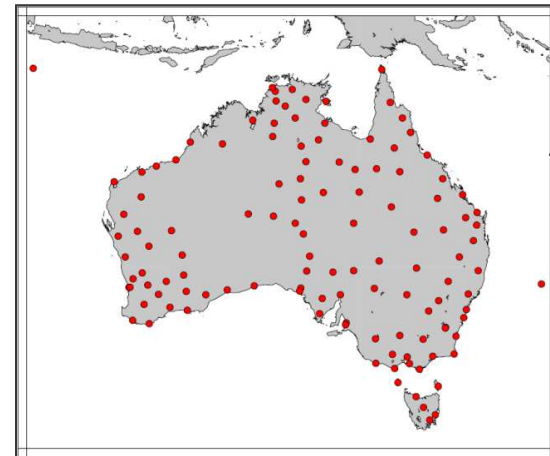
- Published in Commonwealth Legislation as:
National Measurement (Recognised Value Standard of Measurement of Position)
Determination 2017
- GDA2020 is Australia's official datum, revoking GDA94
- Effective from 11 October 2017



National Measurement (Recognized-Value Standard of Measurement of Position) Determination 2017

I, Dr R. Bruce Warrington, Chief Metrologist, National Measurement Institute, make the following determination.

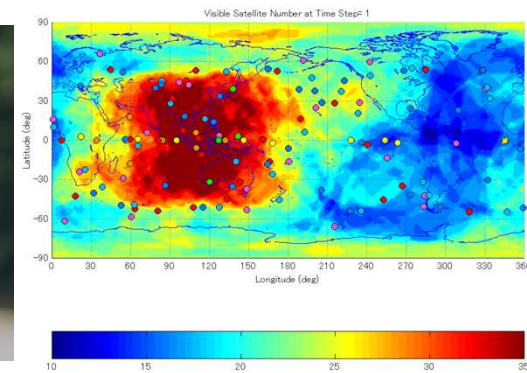
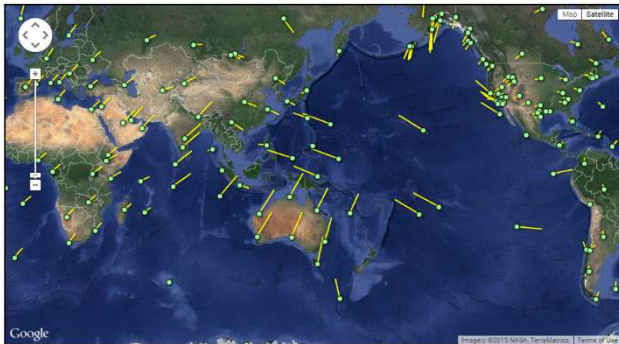
Dated 11 October 2017



GDA2020 drivers

Drivers to adopt a modernised geodetic datum for Australia:

- Plate tectonics and regional deformation
- Alignment with global satellite positioning systems - ITRF
- Significant positioning technology developments
- GDA94 failing to support increasing accuracy needs of users
- Widespread distortions in GDA94



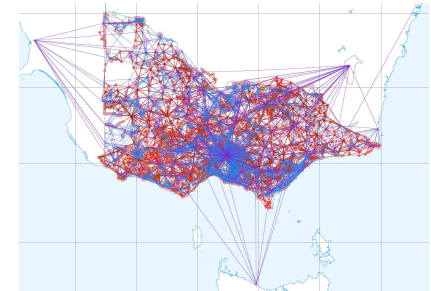
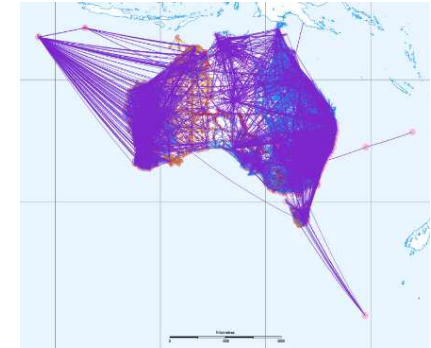
GDA2020 specifications

- Geocentric Datum of Australia 2020
- Conventional static datum like GDA94 with rigorous uncertainty
- Just like GDA94 — based on ITRF, fixed at a specific epoch:

GDA94 = ITRF1992 @ 1994.0

GDA2020 = ITRF2014 @ 2020.0

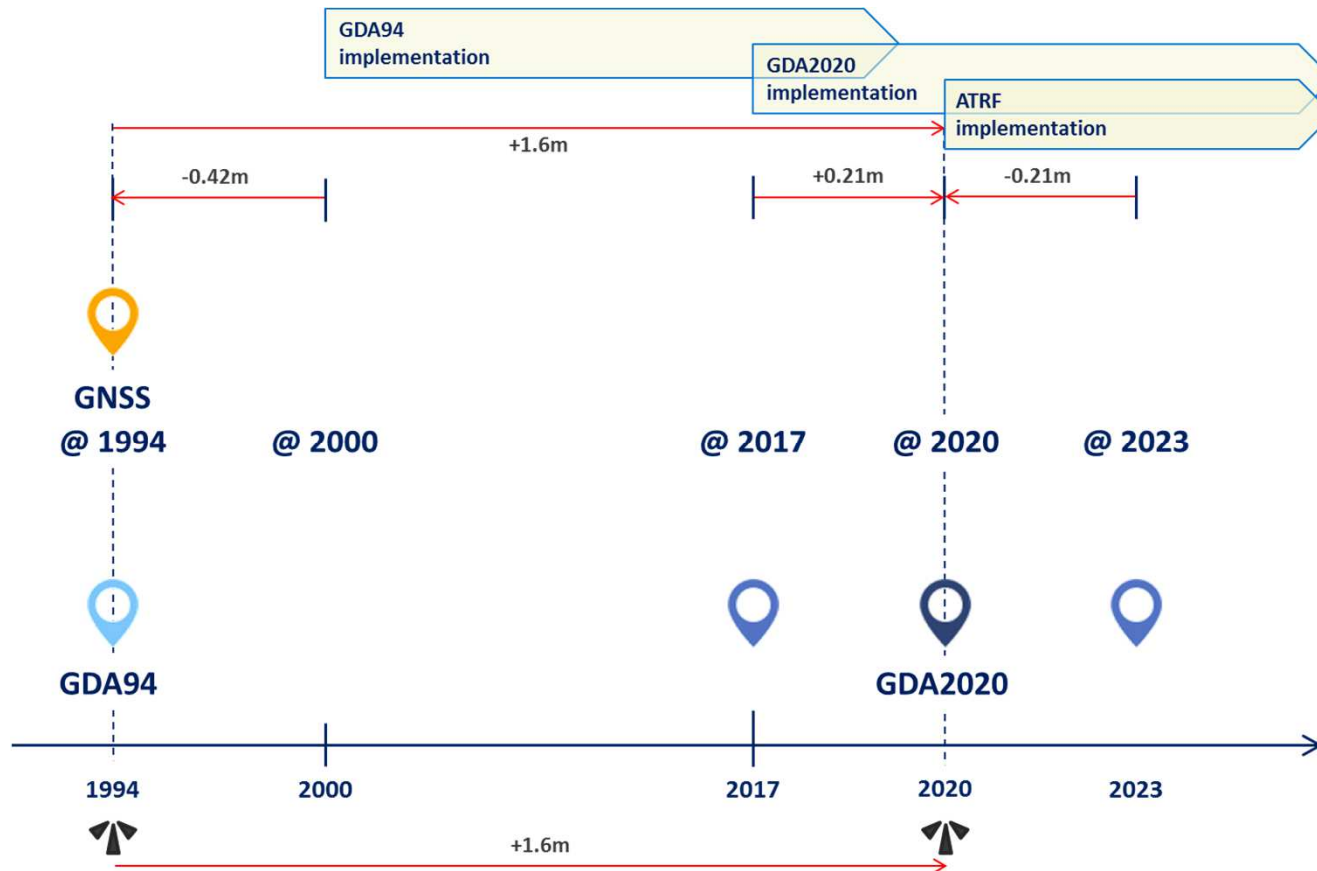
- Horizontal shift of approx. **1.6 m NE** from GDA94, slightly rotated
- Consistent vertical drop of **0.09 m** from GDA94
- AUSGeoid2020
- Projections: **MGA2020** (UTM), **VICGRID** (conformal conic)
- Australian Terrestrial Reference Frame (ATRF), initial release commencing January 2020



GDA94 to GDA2020 shift



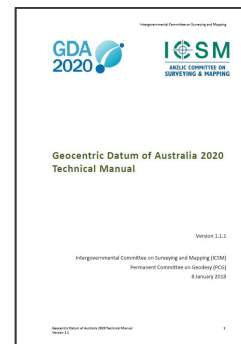
GDA94 - GDA2020 – ATRF implementation



Transformation products and tool

- Transformation parameters
- Transformation grids
 - Conformal only grid
 - Conformal + distortion grid
- GDAy downloadable software
- QGIS Plugins – NTV2 datum transformations
- Online transformation service – FME based
- Excel spreadsheets
- Proprietary software support
- GDA2020 Fact Sheets
- GDA2020 Technical Manual
- GDA2020 Online forum

Available from <http://www.icsm.gov.au>



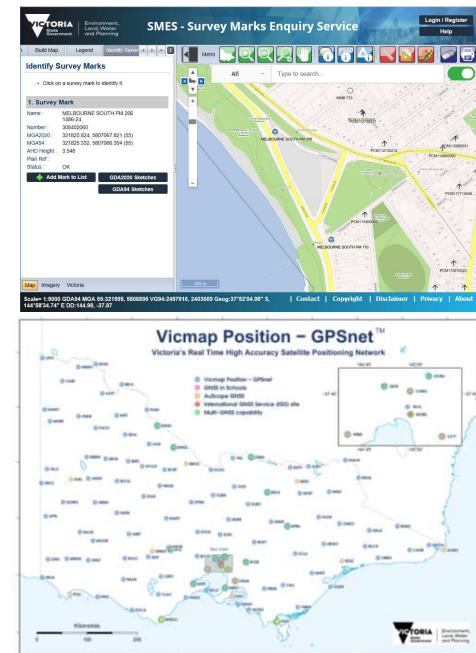
Progress of Victorian legislation changes

- **Victorian Cadastral Surveys Practice Directives (July 2018)**
- **Surveying-related legislation**
 - *Surveying (Cadastral Surveys) Regulations 2015*
 - *Survey Co-ordination Regulations 2014*
- **Official datum for Victoria**
- **Other legislation**
 - *Fisheries Act 1995*
 - *Offshore Petroleum and Greenhouse Gas Storage Act 2010*
 - *Mineral Resources (Sustainable Development) (Mineral Industries) Regulations 2013*
 - *Geothermal Energy Resources Regulations 2016*
 - *Petroleum (Submerged Lands) Regulations 2004*



Supporting both GDA94 and GDA2020

- DELWP GDA2020 Implementation Plan
- Survey Marks Enquiry Service (SMES)
- Vicmap Position – GPSnet
- Vicmap, Spatial Datamart
- Know your data, know your datum
- Encouraged to commence transition
- Geodesy – OSGV offering support



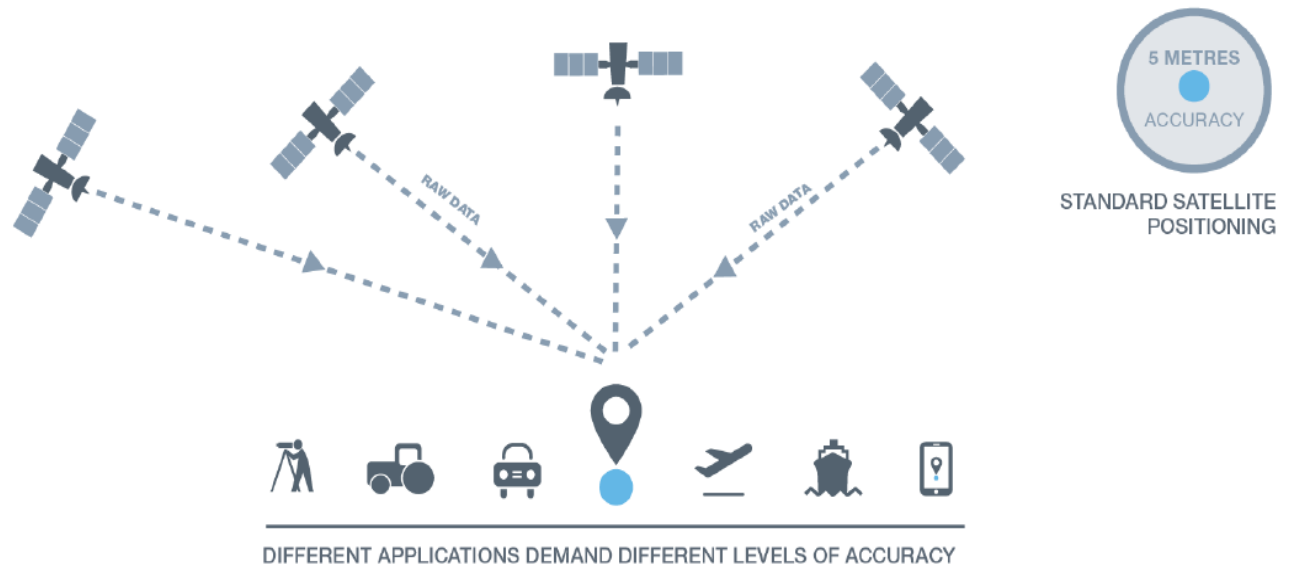
NPI

National Positioning Infrastructure

SBAS

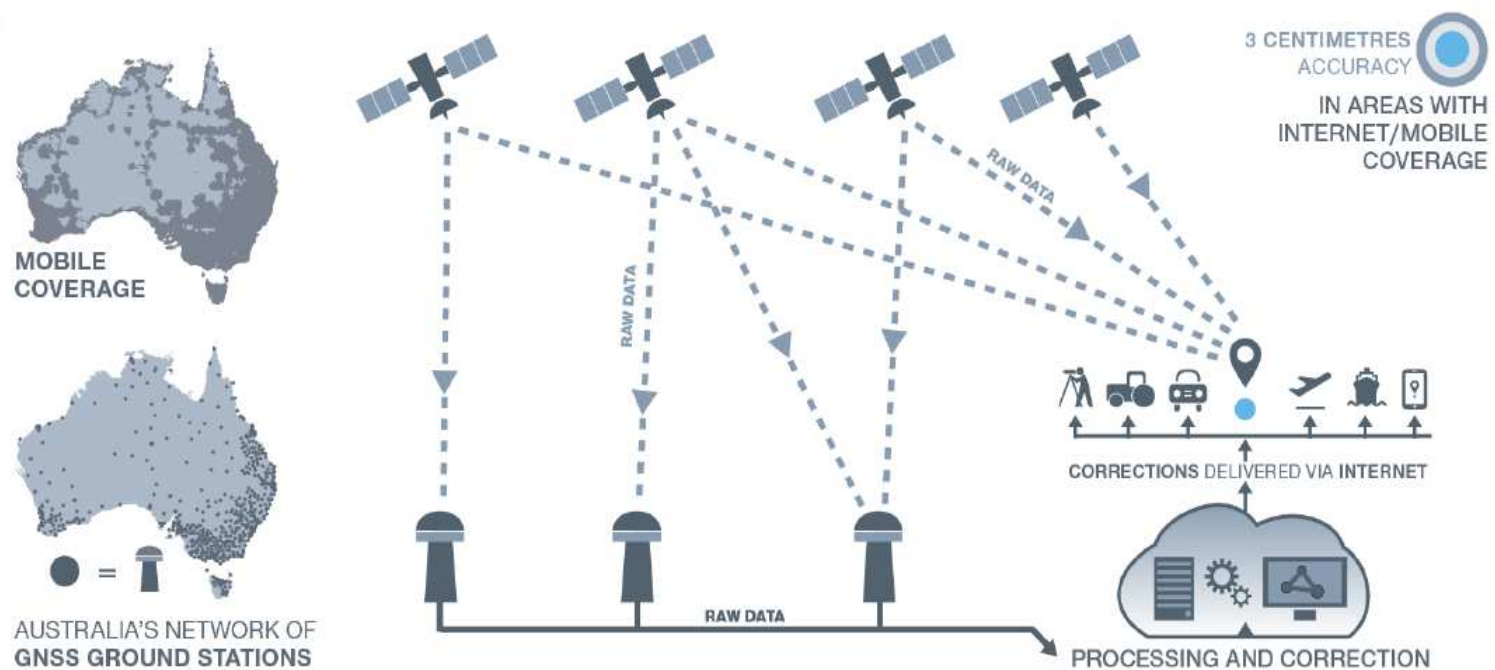
Space Based Augmentation System

Standard positioning service from GNSS



GNSS = Global Navigation Satellite Systems (GPS + GLONASS + Galileo + Beidou)

Reference station infrastructure for higher accuracy



2018 budget announcement - NPI



+



AUSTRALIA'S NETWORK OF
GNSS GROUND STATIONS

AUD \$64 million for:

1. Upgraded national CORS network

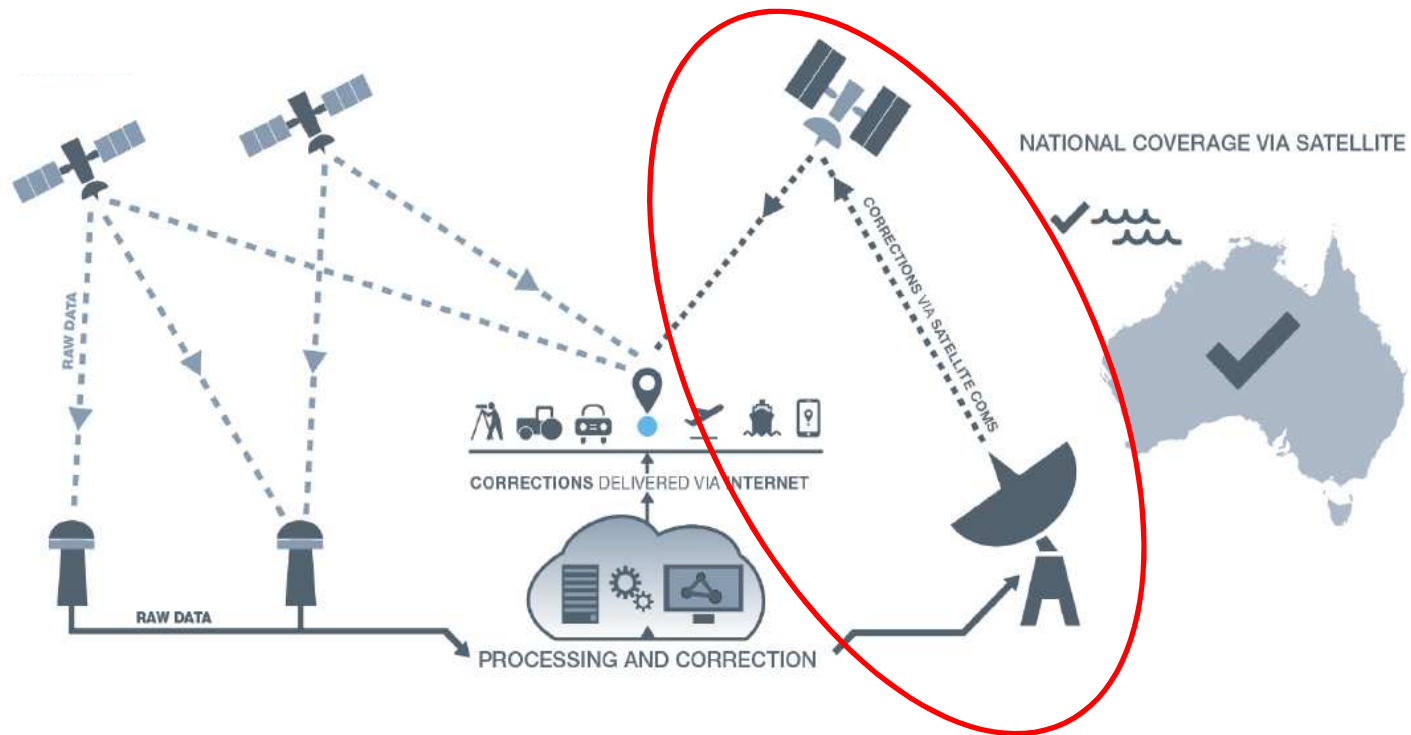
- Extend AuScope network to 200 stations
- Operate as national high-integrity network
- Caster infrastructure upgrades to support 100,000s of users

2. Open source GNSS analytics software and products

3. Encourage open data access

- Work with operators of GNSS networks to encourage **open and free access**
- Recognise **investment and ongoing operational expenses**

Space Based Augmentation System (SBAS)

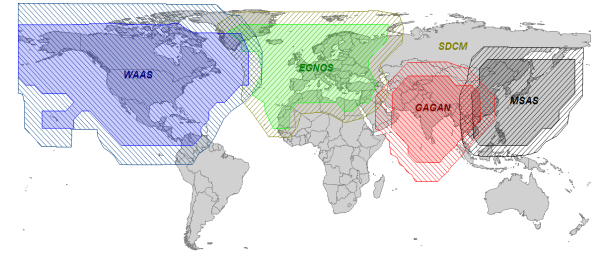


augment (*verb*) – to make something greater by adding to it

2018 budget announcement - SBAS

\$161M funding in SBAS to:

1. Expedite innovation
2. Support new markets; expand existing markets
3. High-integrity, free-to-air positioning in mobile coverage 'black holes' (which are often high risk)



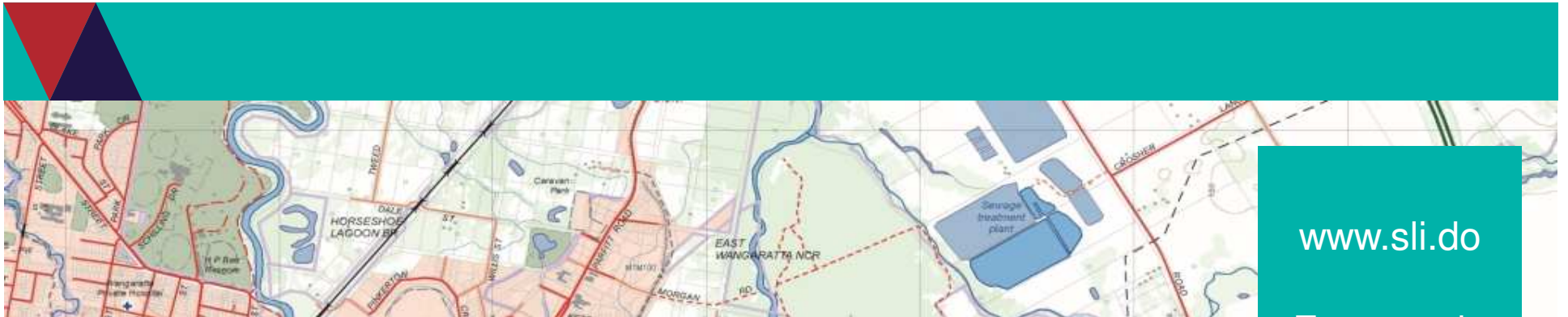
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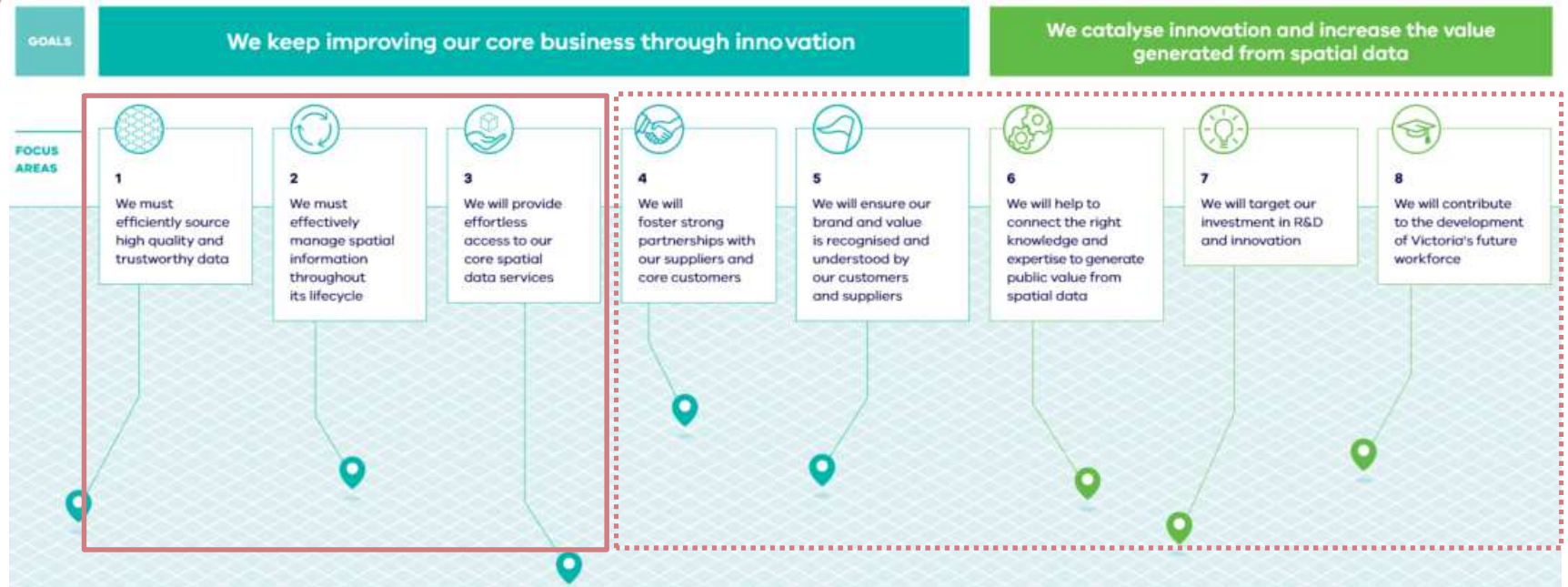


Mark Grant

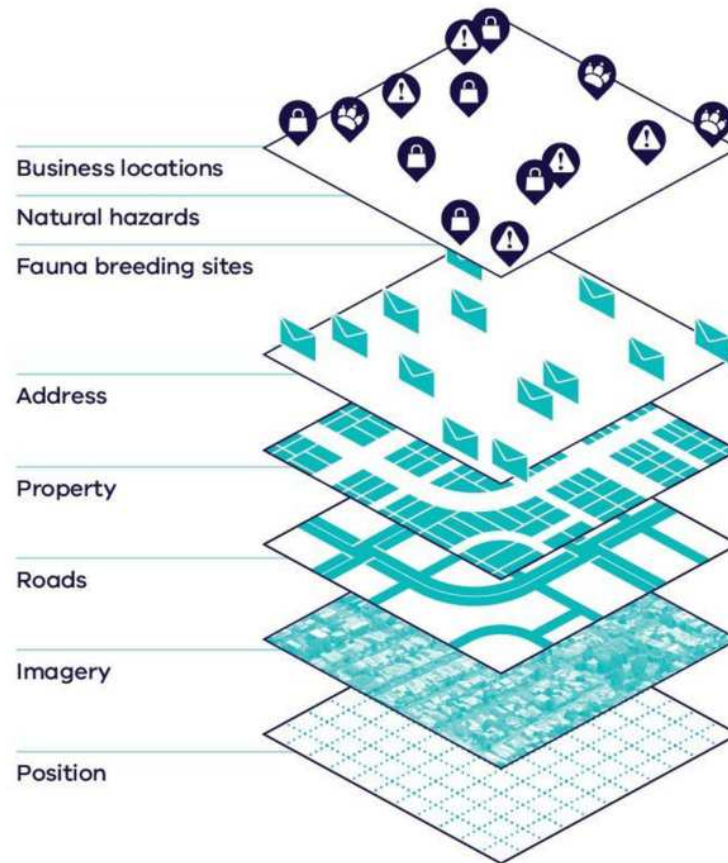
Project Director, Digital Cadastre Modernisation

Modernising the authoritative map of Victoria's property boundaries (cadastre)

Contributing to the Core Spatial Data Services Strategy



Vicmap property



Multiple spatial layers will be more accurately displayed using back captured data

Current boundary inaccuracy



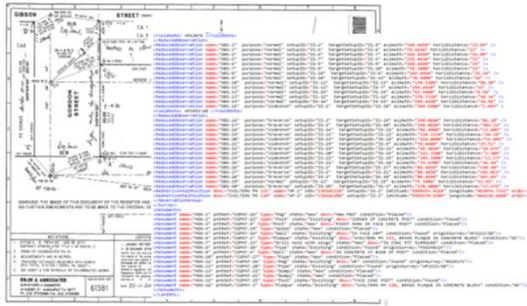
Vicmap
property
boundaries

Real world
boundaries

Digital cadastre modernisation

Back Capture

Accurate data from each paper plan is converted into a digital record (LandXML)



Adjust

Data from individual plans is joined and adjusted to fully align (within 50cm rural and 10cm metro)



Automate

Updating future data and use of newly back captured files in modern systems

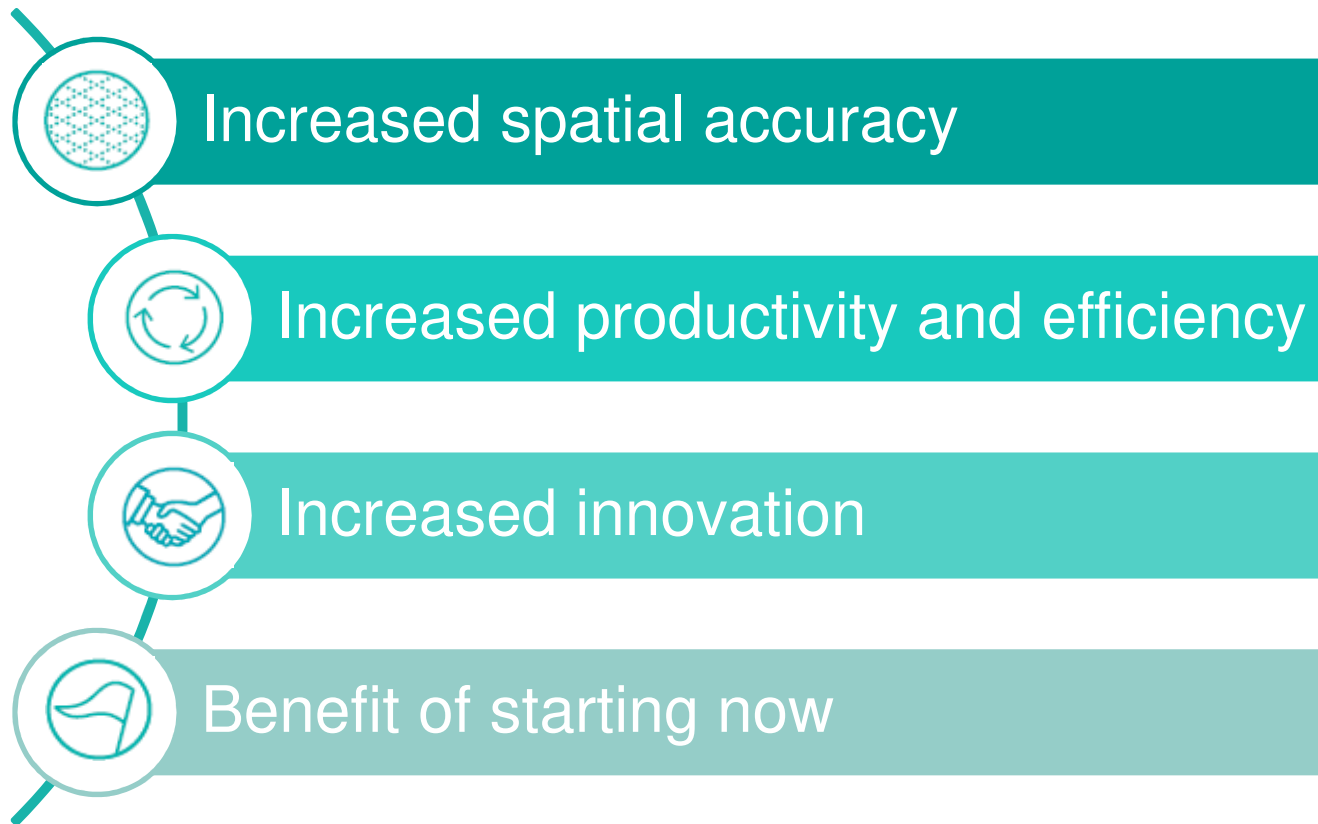


Integrate

The new cadastre is published in the state's authoritative map base (Vicmap) and made available to the public



Identified project benefits



Improving core business through innovation



Keep updated on our project



<https://youtu.be/KNqtuy8MbwE>

For updates contact: Nicola.deal@delwp.vic.gov.au

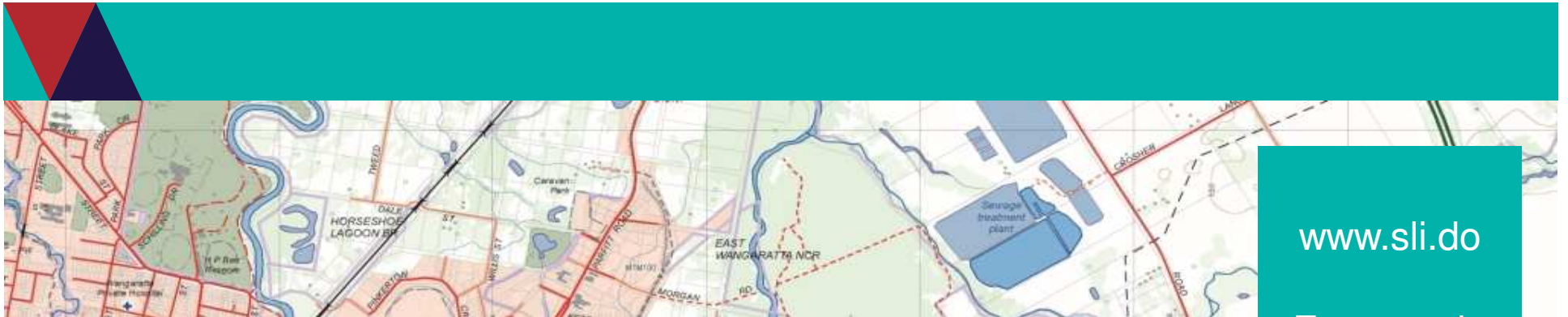
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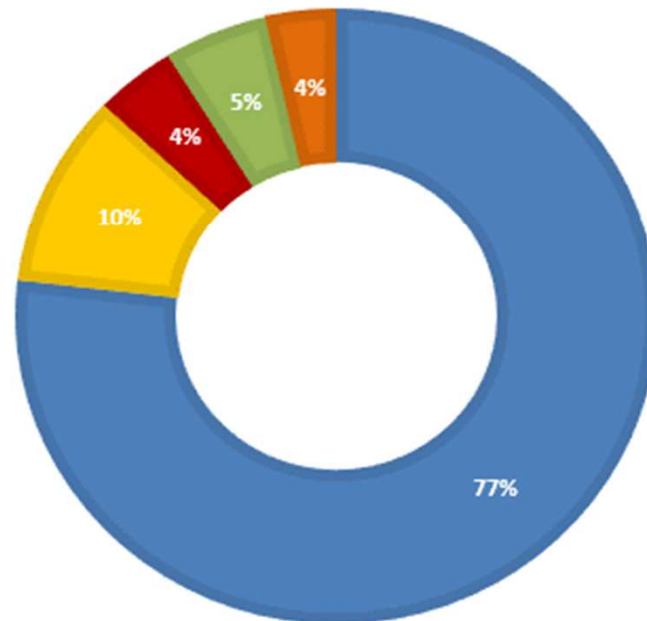
Mr Doug Marcina
Manager, Spatial Information

Centralised valuations – a spatial approach

Rating Valuation

2016 REVALUATION

■ Residential ■ Commercial ■ Industrial ■ Rural ■ Non Rateable Leviable



Total

2.9m Properties
1.85t Improved Value
1.2t Land Value



Residential

2.46m Properties
1.42t Improved Value
936b Land Value



Commercial

165K Properties
190b Improved Value
87b Land Value



Industrial

77K Properties
76b Improved Value
37b Land Value



Primary Production

159K Properties
98b Improved Value
73b Land Value



Non-Rateable Leviable

41K Properties
65b Improved Value
45b Land Value

Rating Valuation

Population 6 million

Annual revenue of \$8.4b

Local Government rates - approximately \$A5.1b*

State Land Tax \$A1.77b - based on site value*

Fire Service levy – annual revenue of \$627m*

Metropolitan improvement levy - \$153m

*2015-16 budget figures





Rating Valuation

2.9 Million Properties

200+ data elements collected

Property Description

- Address

- Land and Building Area

- Title Details

- Construction and Renovation Year\Material

- Land Use

- Improvements

Values

- Site Value - Land Value

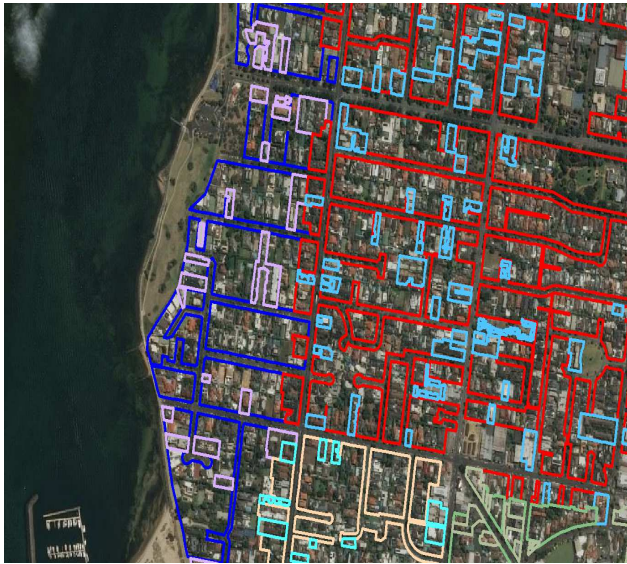
- Capital Improved Value - Land Value + Improvements

- Net Annual Value – Annual Rental

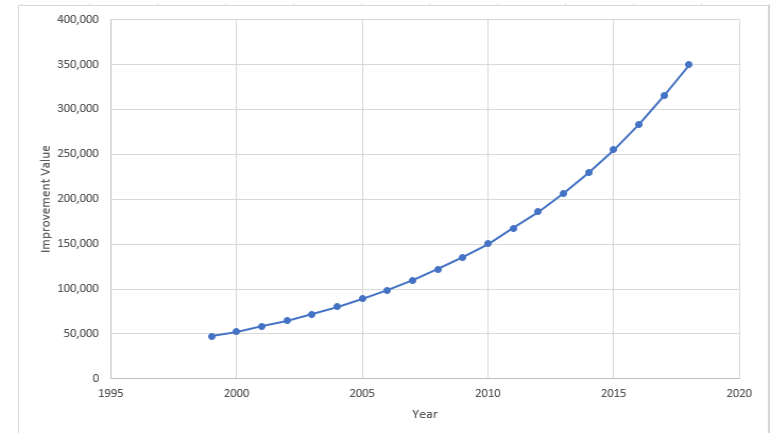
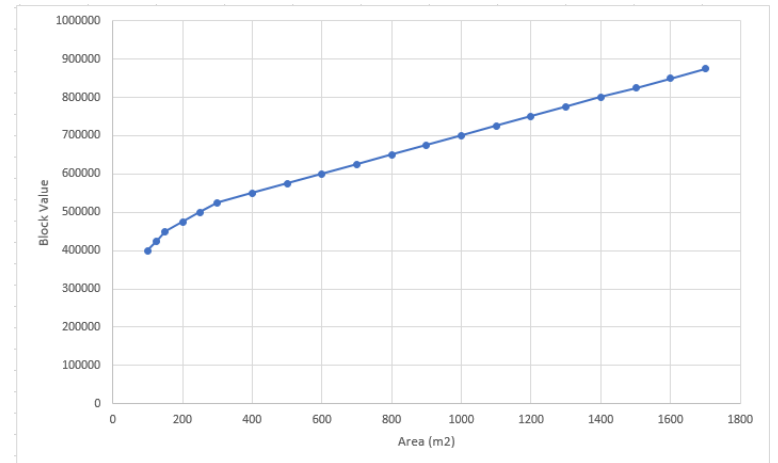
Ownership Details

Value Considerations*

Mass Appraisal



Valuation System



Mass Appraisal

Address	Water Rights
Title	Elevation
Land Area	Vegetation
Building Area	Improvements (pool, carport etc)
Construction Material	Land Use
Construction Year	Location Drivers (views, transport, schools)
Renovation Year	Encumbrances (contamination, easements, etc)
Bedrooms	Shape of the site
Planning	Urban Growth Boundary
Heritage	Conservation Covenant
Soil types	Crown Land
Arable Area	Imagery

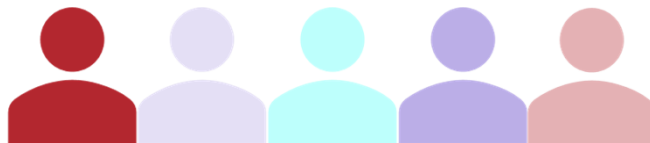
79 Local Government Areas



Valuation System



Contract and Council Valuers



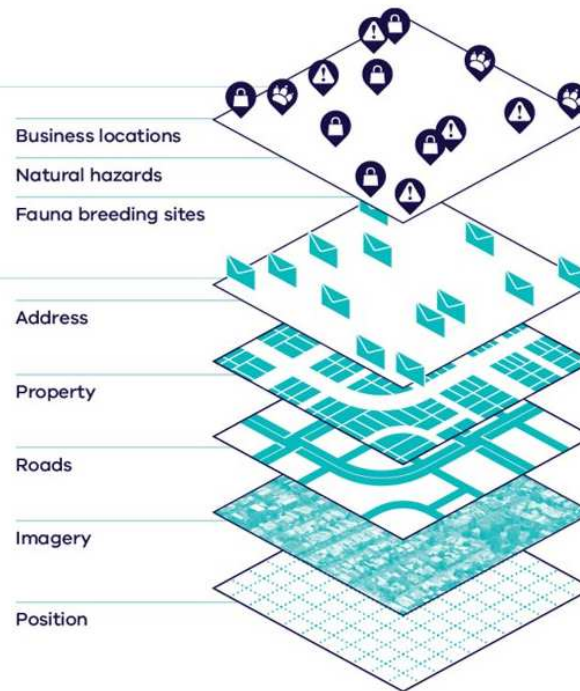
Mass Appraisal - Base Property

Business-specific data

Using core spatial data as a basis, organisations generate their own specific business data to analyse events and make decisions. Some examples are shown.

Core spatial data

Authoritative base data sets depicting natural physical features of the earth's surface and the built environment. Some examples are shown.



Valuation System



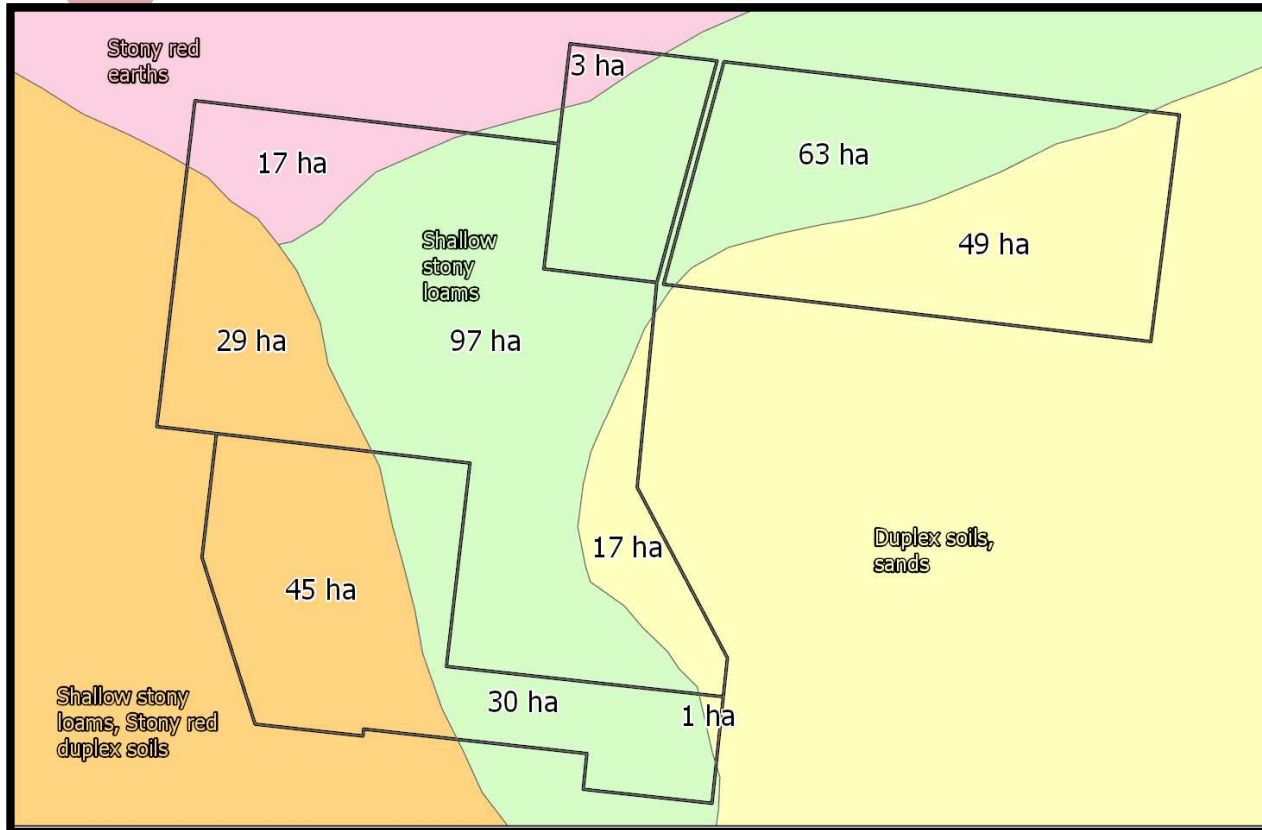
Mass Appraisal - Planning



Valuation System



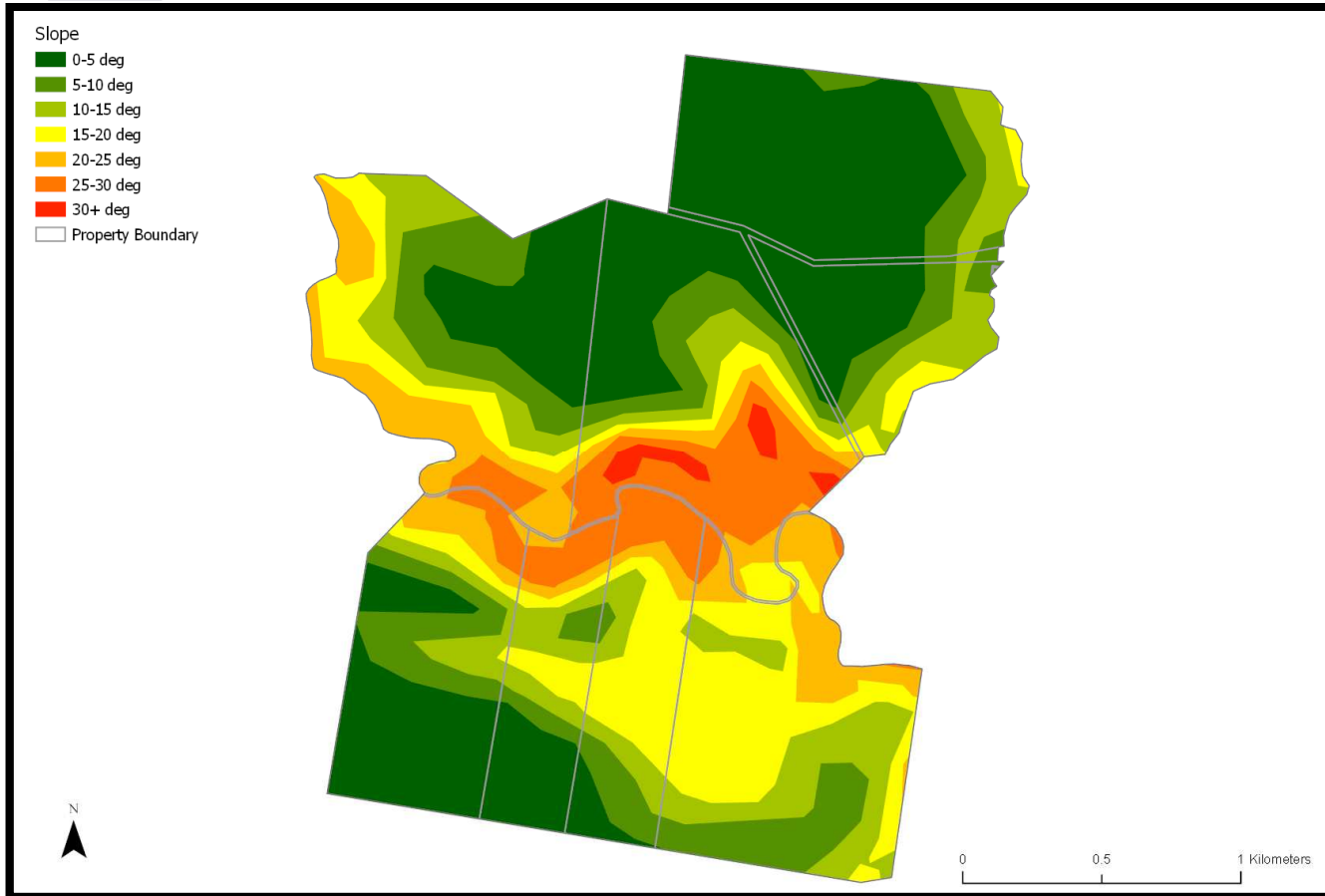
Mass Appraisal Rural - Soil Maps



Valuation System



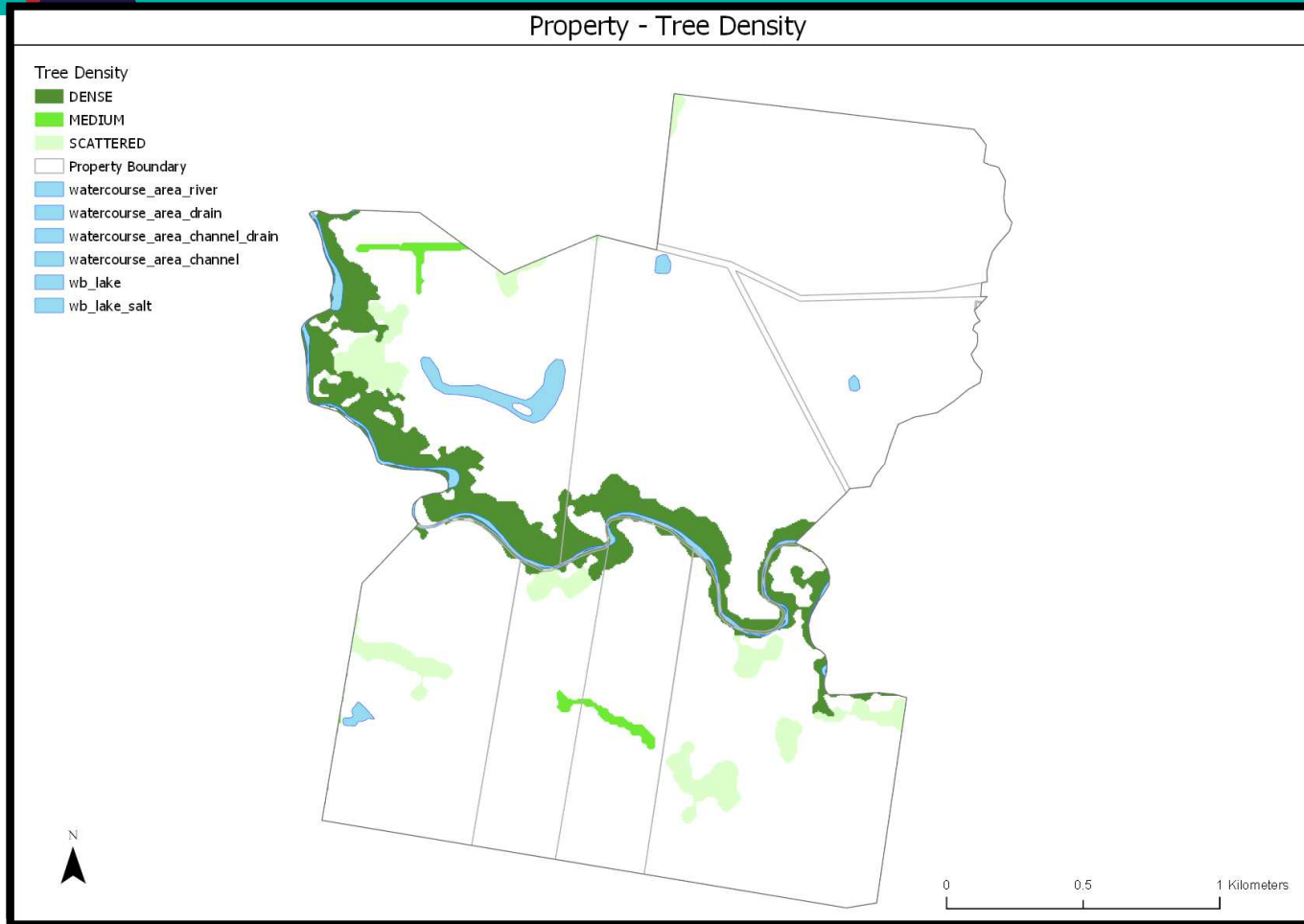
Mass Appraisal Rural - Slope



Valuation System



Mass Appraisal Rural

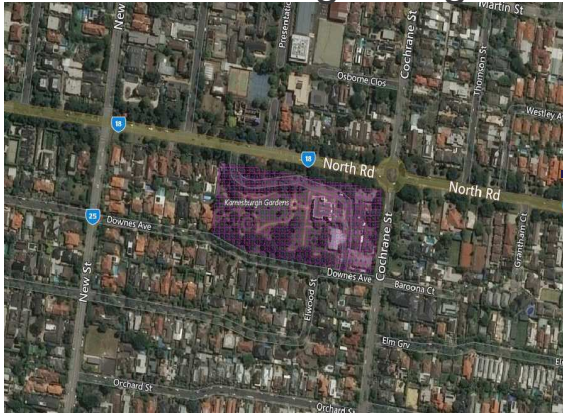


Valuation System



Mass Appraisal

Victoria Heritage Register



Transmission Easements

Valuation System



School Zones



Train Stations \ Shopping Centres

Mass Appraisal

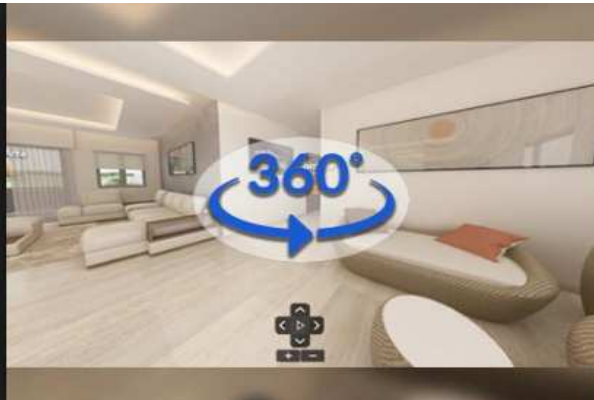


*source PSMA (Geoscape)

Valuation System



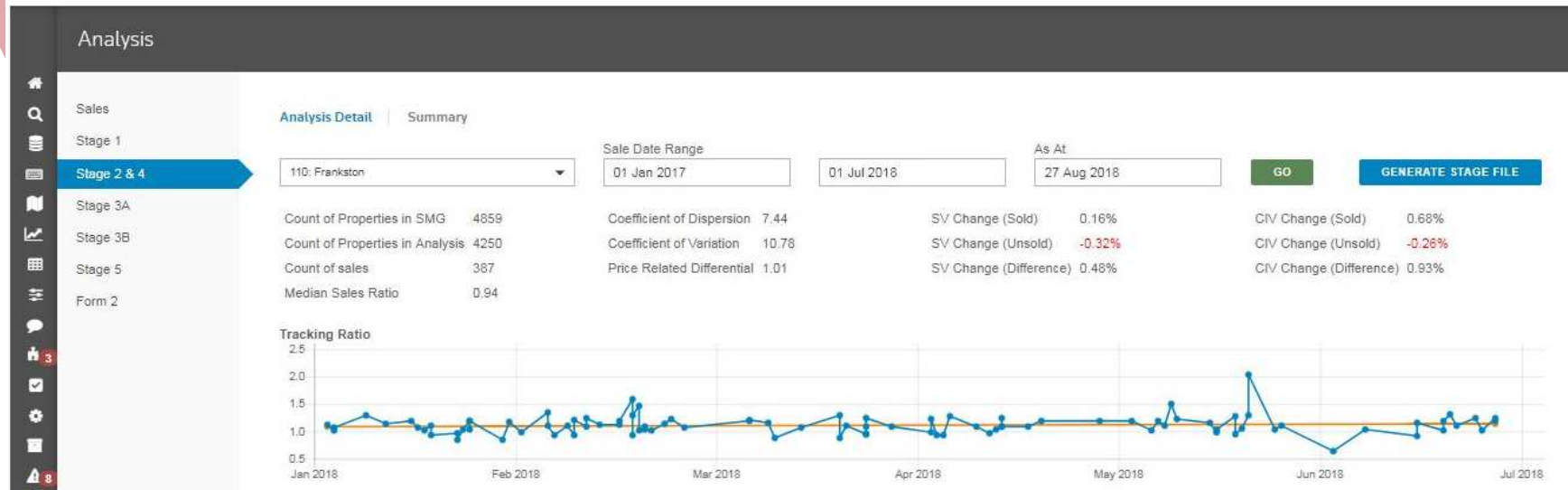
Building Area
Floor Area
Views
Natural Light
Noise
Construction Material
Renovation Details
Improvements



Mass Appraisal Analytics



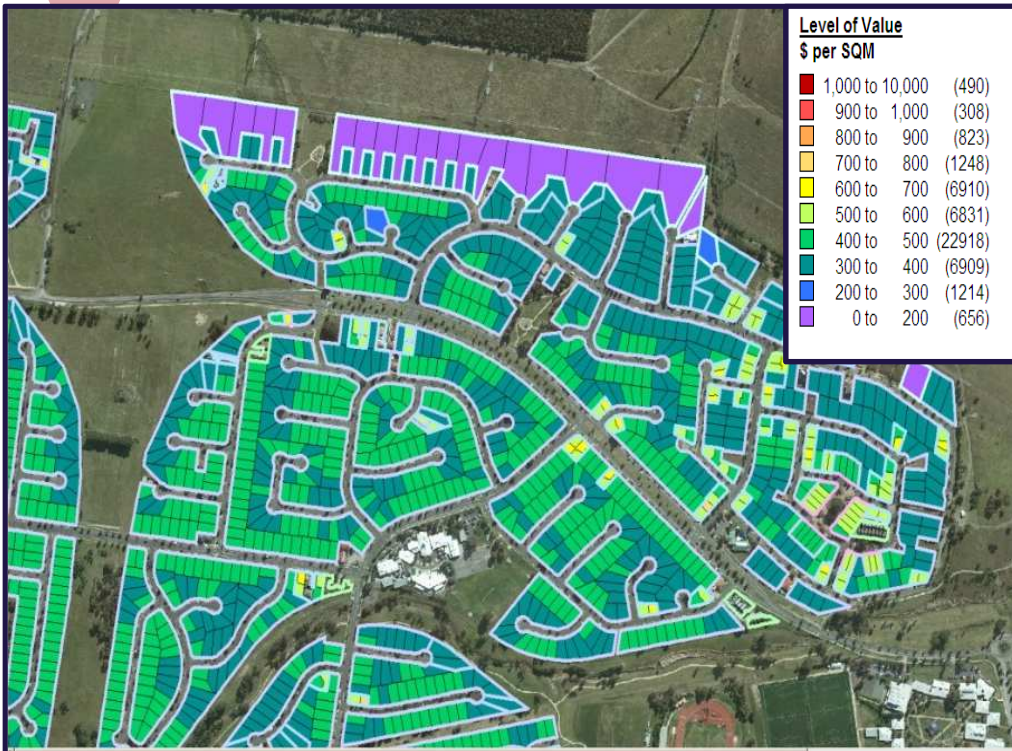
Mass Appraisal Analytics



Valuation System



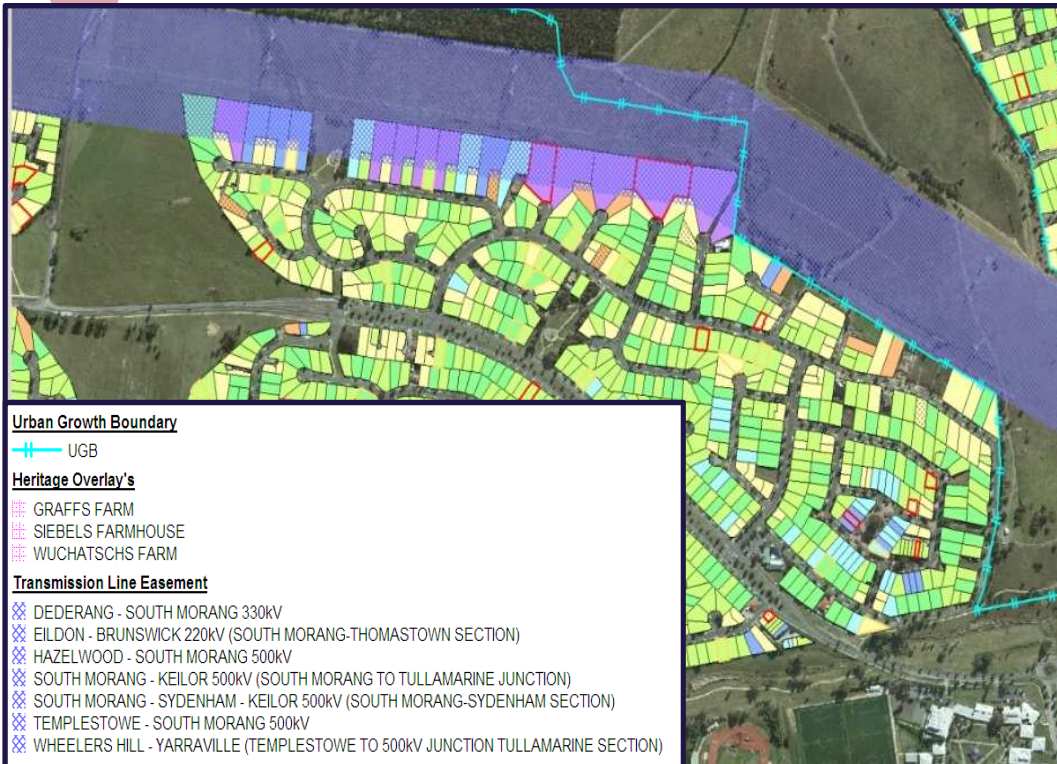
Mass Appraisal Analytics



Valuation System



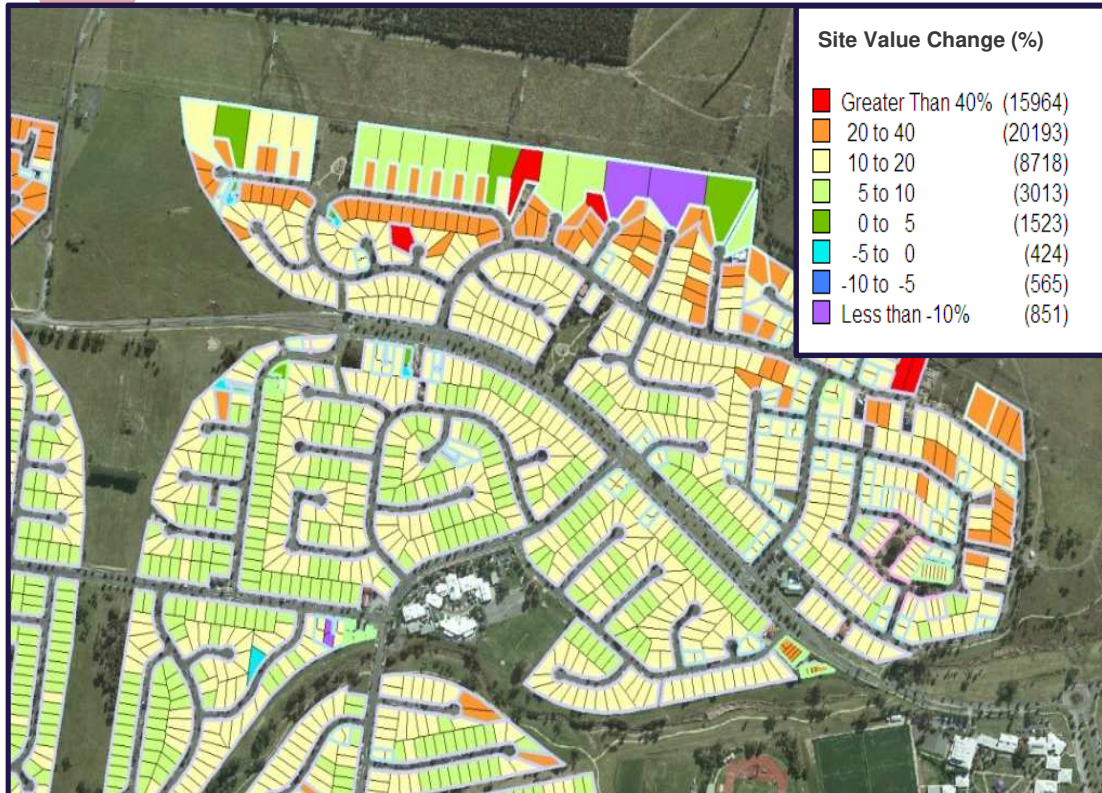
Mass Appraisal Analytics



Valuation System



Mass Appraisal Analytics



Valuation System



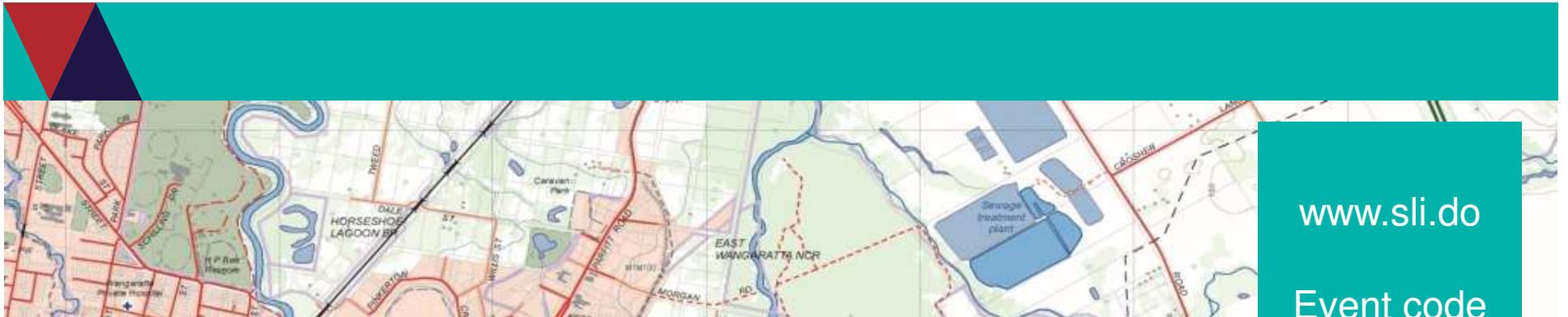
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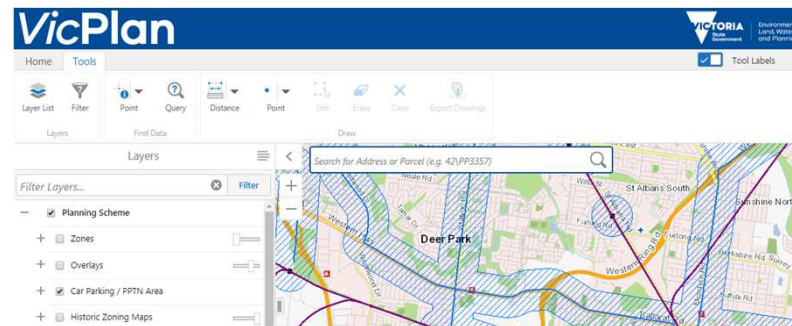
Mr Justin Madex

Principle Spatial Analyst, Planning Information Services

VicPlan – digital transformation of statewide planning data

- Victoria's official state-wide planning zone & overlay service
- Introduced to replace traditional PDF maps and Planning Maps Online website
- One of the many tools available on the new Planning website
- Utilises Esri ArcGIS technologies to provide an intuitive and powerful interface for our wide range of users

Geocortex®



- Victorian Planning Scheme is extremely complex to manage
 - 82 Schemes across each Municipality
 - 49,055 Planning Zones polygons (across 44 Zones)
 - 78,656 Planning Overlays polygons (across 25 Overlays)
 - 3,554,461 Properties across the state
 - 3,718,382 Parcels across the state
- Weekly amendments are submitted by Municipalities
- Weekly changes to the underlying Cadastre

- Old Technology Stack
- Couldn't utilise new features and technologies
- No Topology rules available to us
- Maintaining 15,000 PDF's as the authoritative dataset

Detailed map name	Date last modified
Grid area 01 details	
018802 Bushfire Management (PDF 898.7 KB)	25/10/2016
010902 Development Plan (PDF 131.1 KB)	04/06/2007
016602 Environmental Audit (PDF 129.2 KB)	04/06/2007
016502 Environmental Significance (PDF 141.8 KB)	05/06/2007
011002 Heritage (PDF 183.1 KB)	01/09/2015
011502 Land Subject to Inundation (PDF 182.3 KB)	26/03/2012
011902 Vegetation Protection (PDF 47.7 KB)	04/06/2007
01202 ZONES (PDF 137.1 KB)	29/05/2014
Grid area 02 details	
Grid area 03 details	
Grid area 04 details	
Grid area 05 details	
Grid area 06 details	
Grid area 07 details	
Grid area 08 details	
Grid area 09 details	
Grid area 10 details	
Grid area 11 details	
Grid area 12 details	
Grid area 13 details	



- Assessment of the available technologies
- Consolidation of the Planning Scheme to facilitate better management
- Implementation of quality assurance processes for automated validation and cleaner data

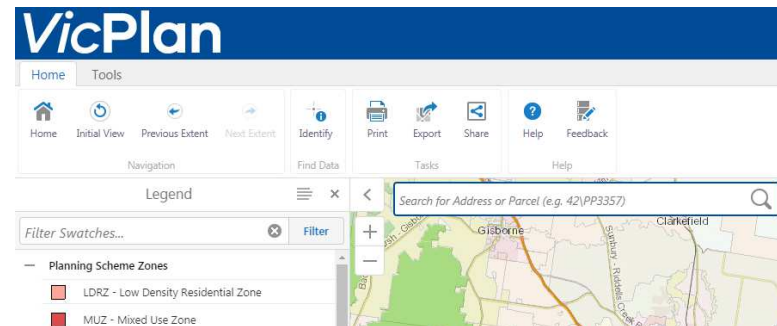


- Automated process executed each week
 - Utilises FME and Python technologies
-
1. Import new Cadastre dataset
 2. Automatically run validation scripts across Planning Scheme
 3. Review newly introduced alignment exceptions
 4. Update where applicable
 5. Run QA scripts to ensure no error introduced
 6. Publish updated Planning Scheme

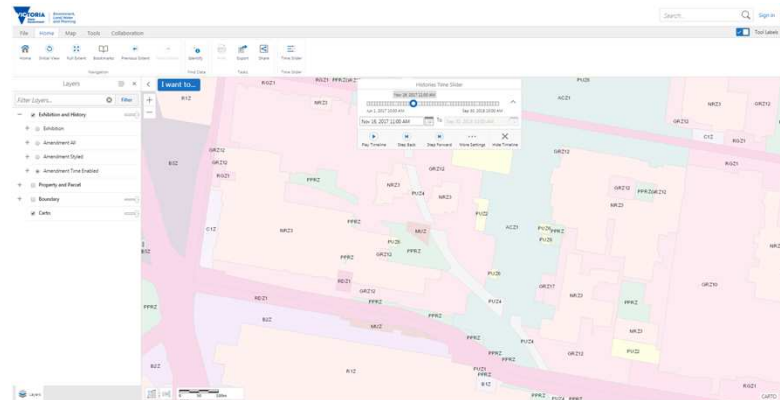
- During the first run of the QA processes

	Total Items	Exceptions Raised	Exceptions Resolved
Zones	48,409 Zones	63,017	18,609 (29.5%)
Overlays	28,972 Overlays	32,386	10,045 (31.0%)
TOTAL	77,381	95,403	28,654 (30.0%)

- Simple and easy to use mapping application
 - *Available on all devices (desktop, tablet and smart phone)*
- Large range of datasets and basemaps including aerial photography
- Most up to date Planning Scheme Zone and Overlay datasets
- Powerful search tools to make it easier to find what you need
- High Quality Printing Tools



- Planning Team can work more efficiently
 - *Ability to submit spatial amendments electronically*
- Better online offering to our customer base
 - *Planning Scheme Histories*
 - *State-wide view of amendments*
 - *State-wide view of exhibitions*



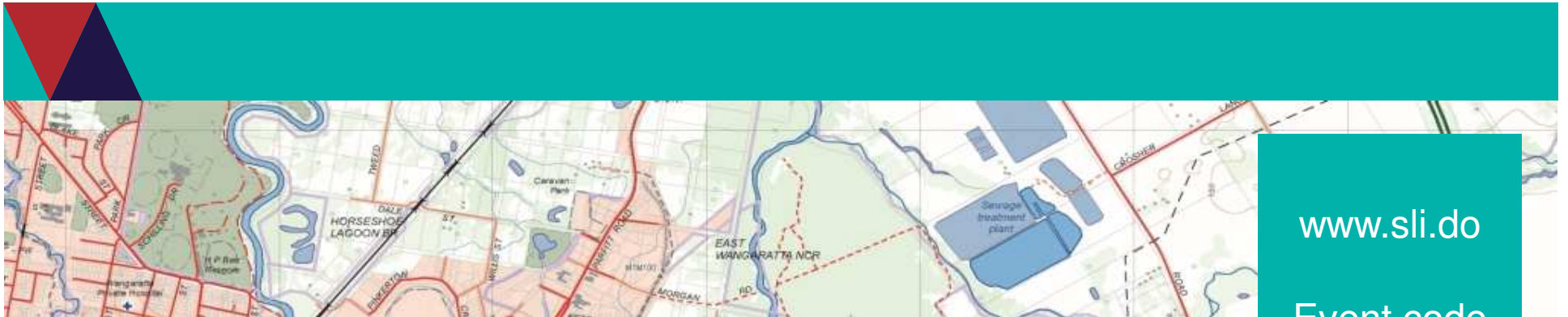
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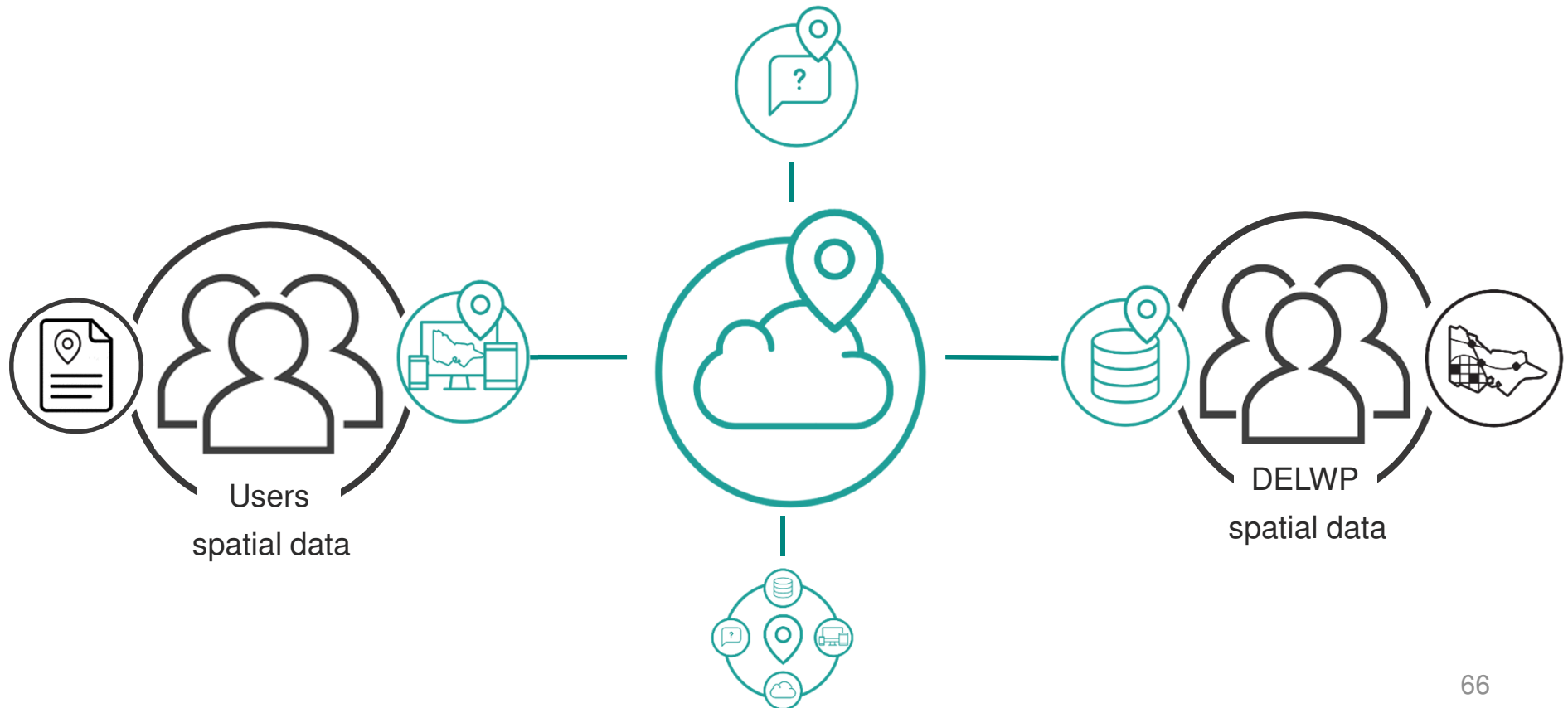
Pauline Kent

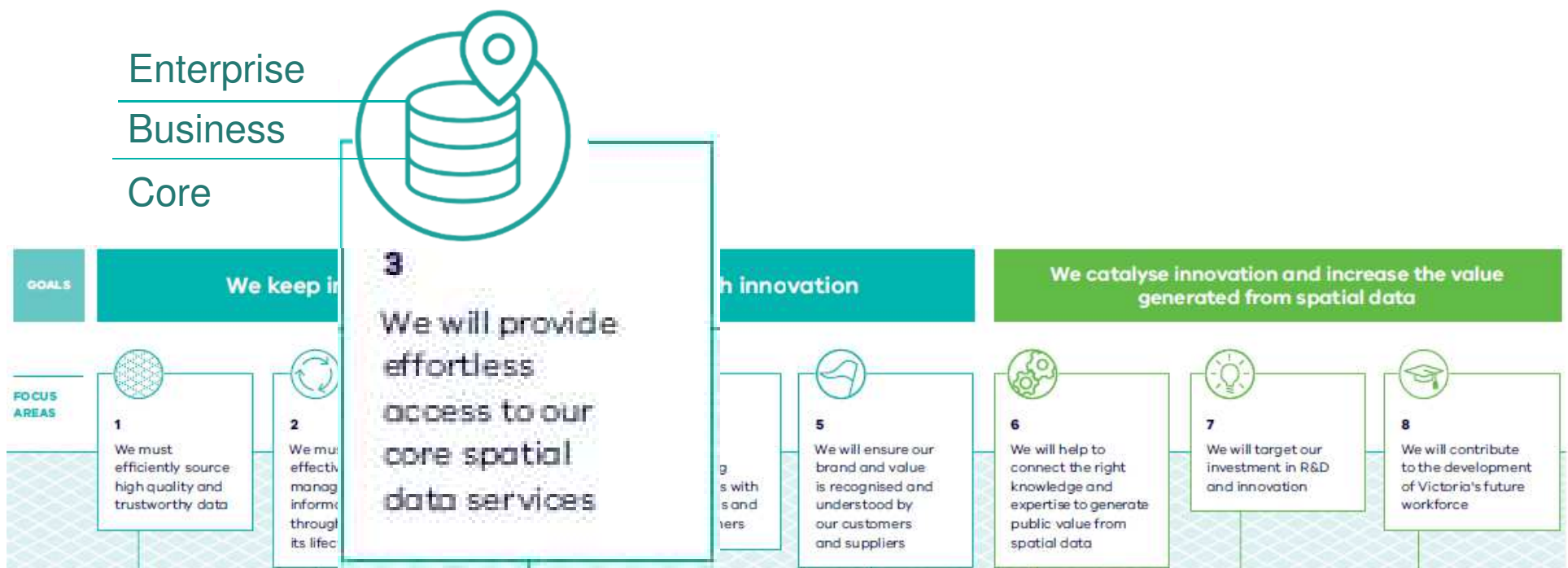
Enterprise Spatial Services Portfolio Manager

Going Digital: How DELWP is transforming its spatial service

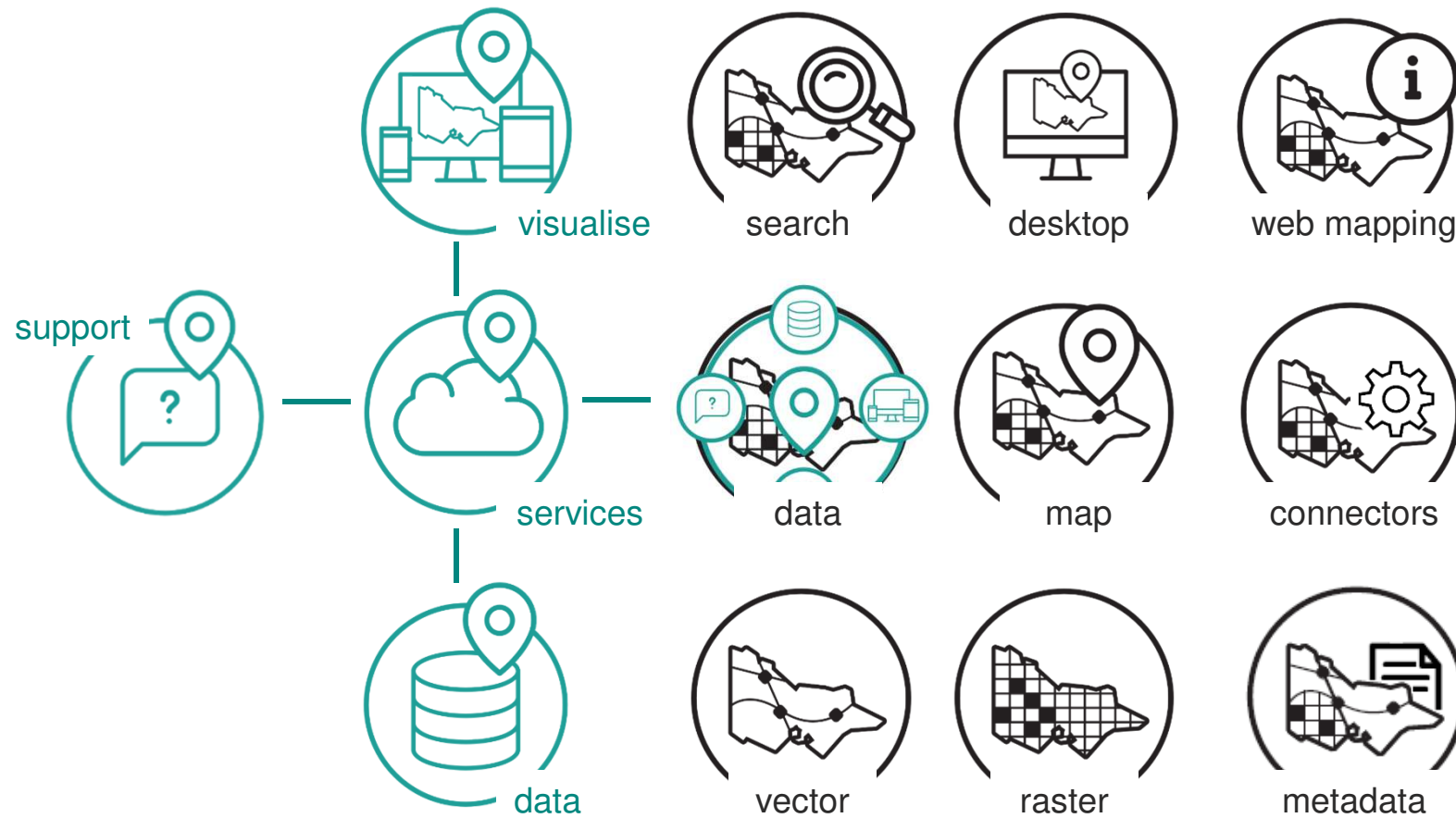
Our Purpose

Connect users to spatial data through services

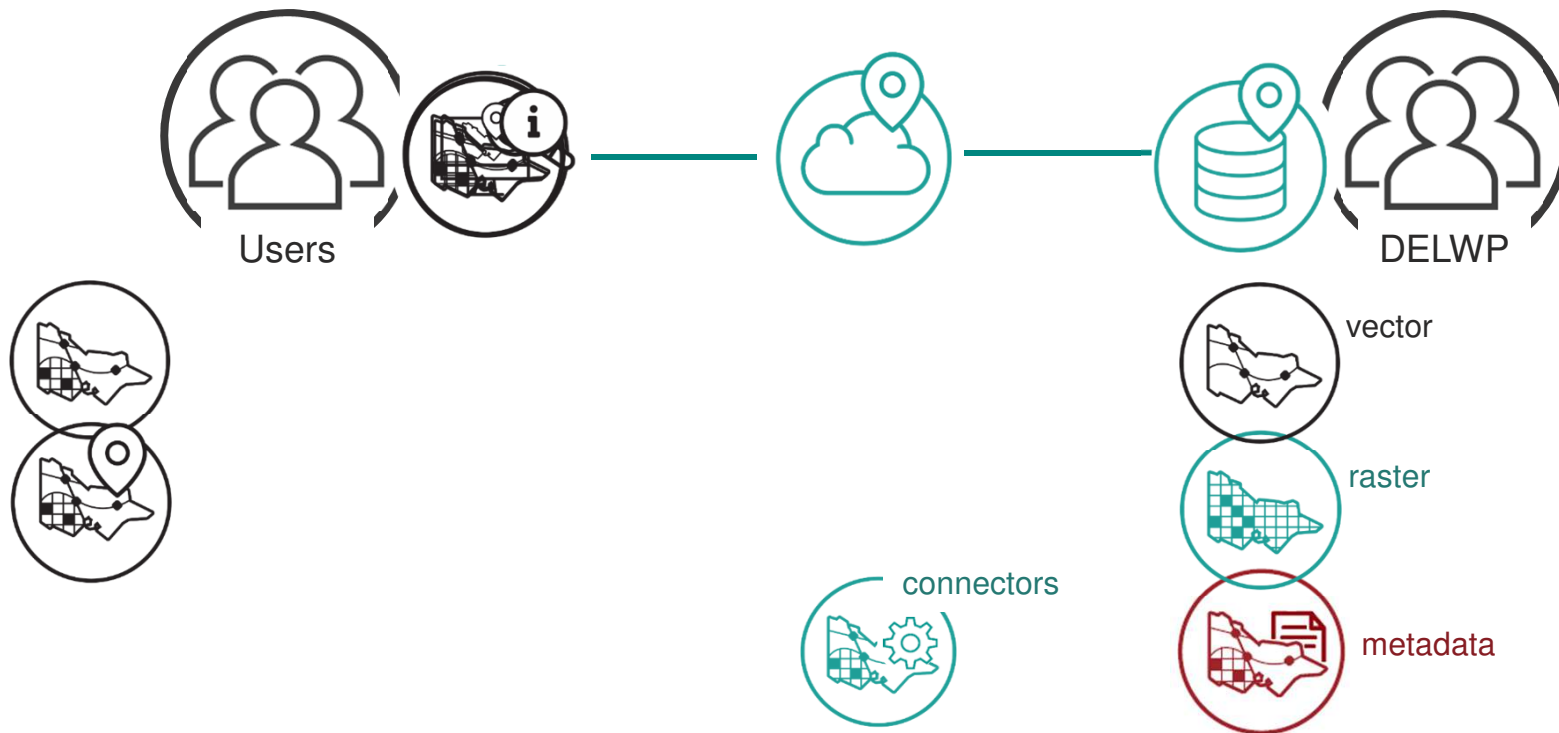




Our Services



Our Services



Our Approach

integrated



supported



licenced
configurable



cloud
Amazon Web Services



siloed



out of support



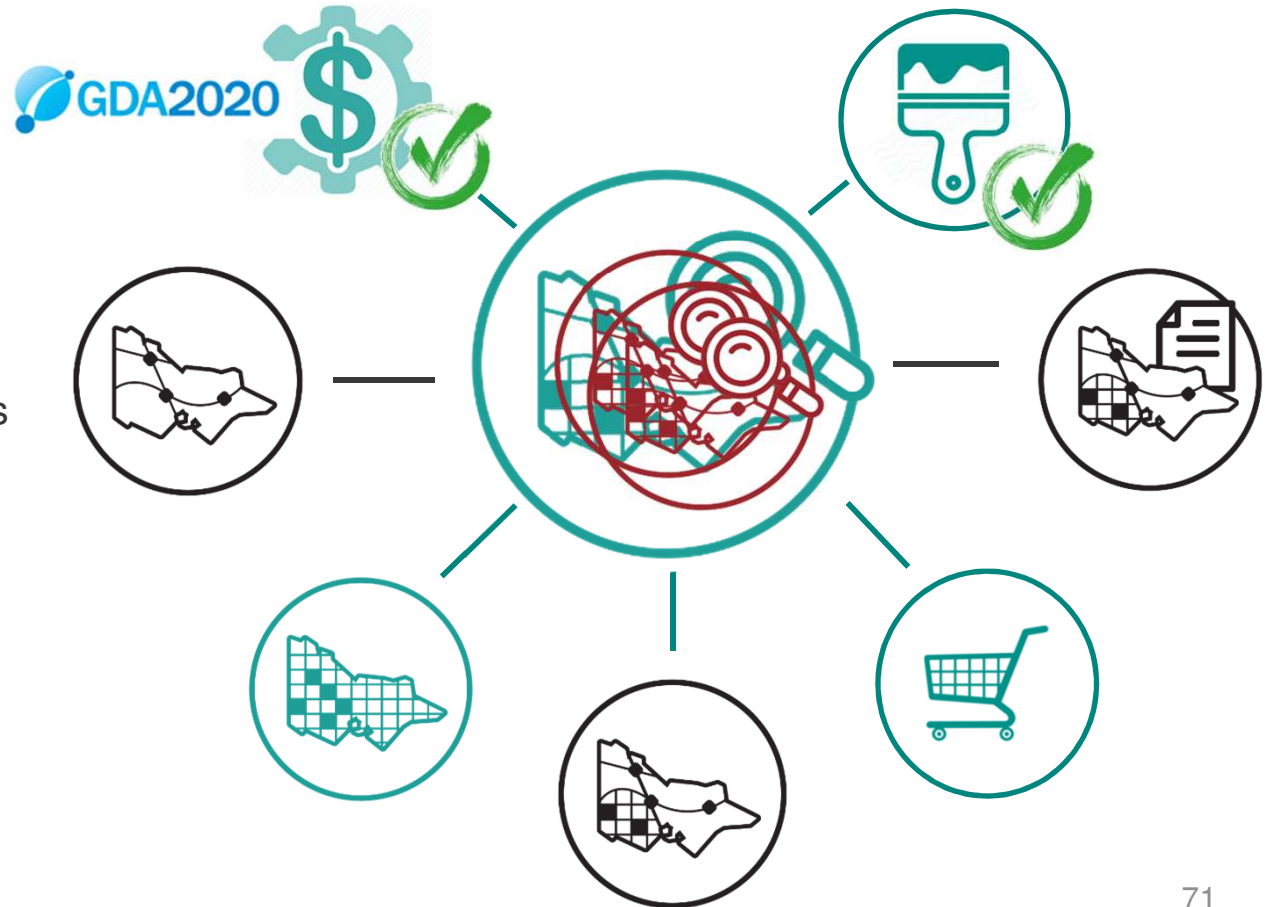
bespoke



infrastructure

Search & Discovery

- Spatial Datamart
 - vector only
 - metadata driven
 - Upgraded software
 - GDA2020 support
- Data.Vic for data services
- New Datashare
 - accurate search
 - raster + vector
 - eCommerce
- Spatial Datamart retired



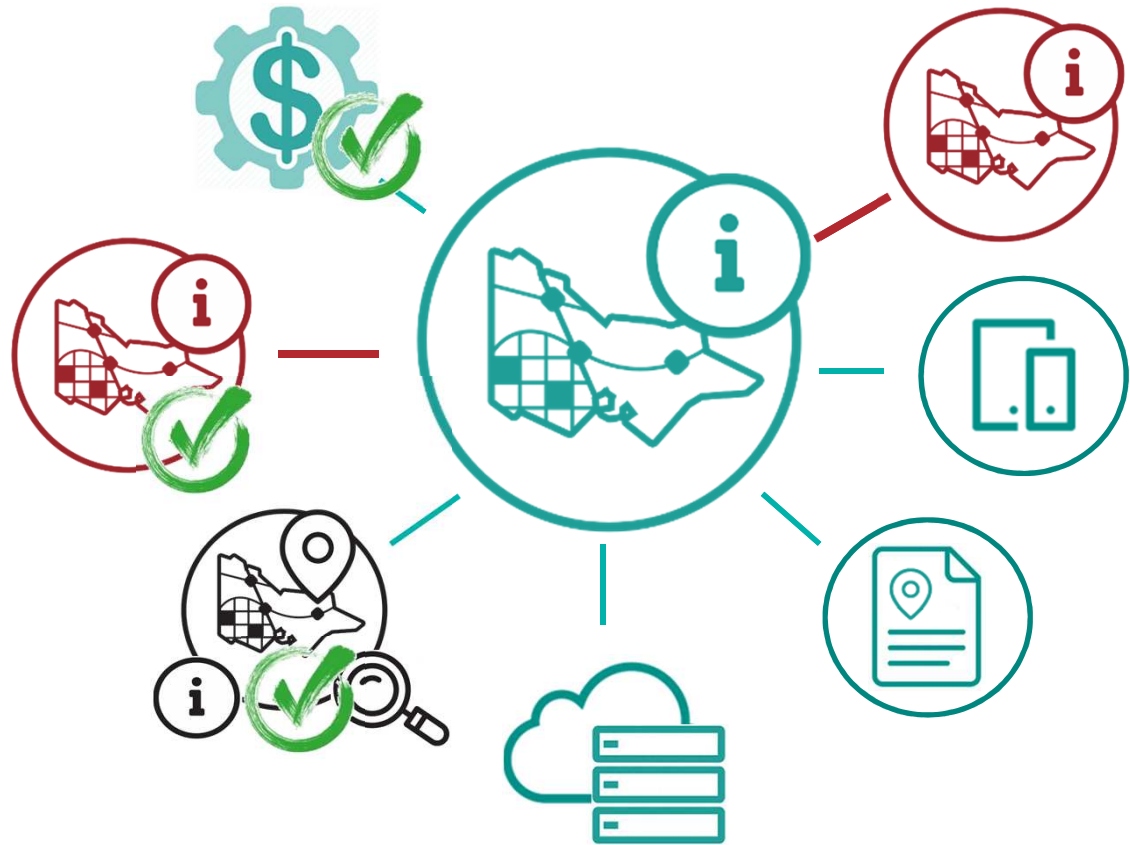
Map Service

- architecture
- operations infrastructure
- 256 pixel tiles
- currency
- new styles
- easier integration



Web Mapping

- consolidate
- maps
- functionality
- searches
- new architecture
- reports
- mobility
- Land Channel retired



More info this afternoon



Datashare
Search & Discover



Mapshare
Web Mapping



Vicmap API
Map Service

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Thank you

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