



Customer
Service



Preparing, Enabling and Adopting

Australian Institute of Mine Surveyors – Nat'l Conference
Sydney, NSW
15 August 2019

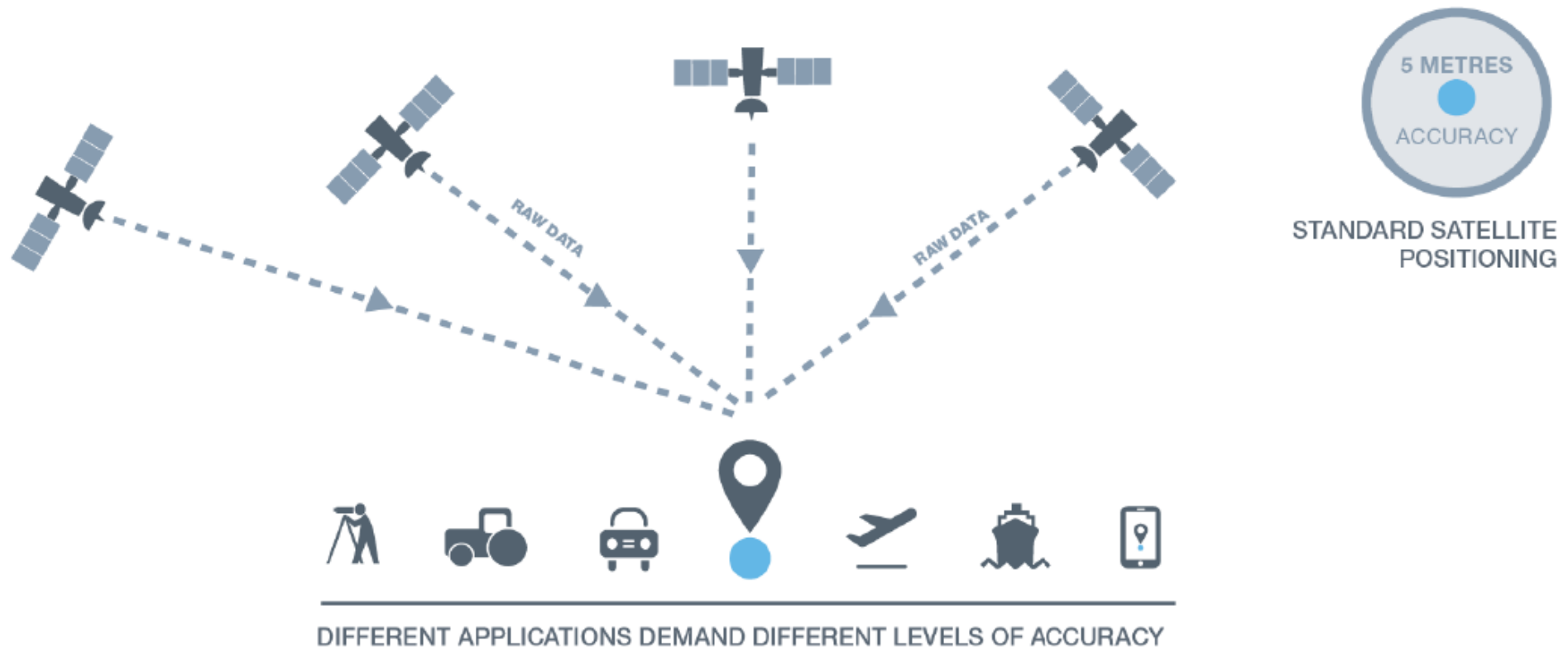
Joel Haasdyk

GDA2020 Program Manager (NSW Implementation)

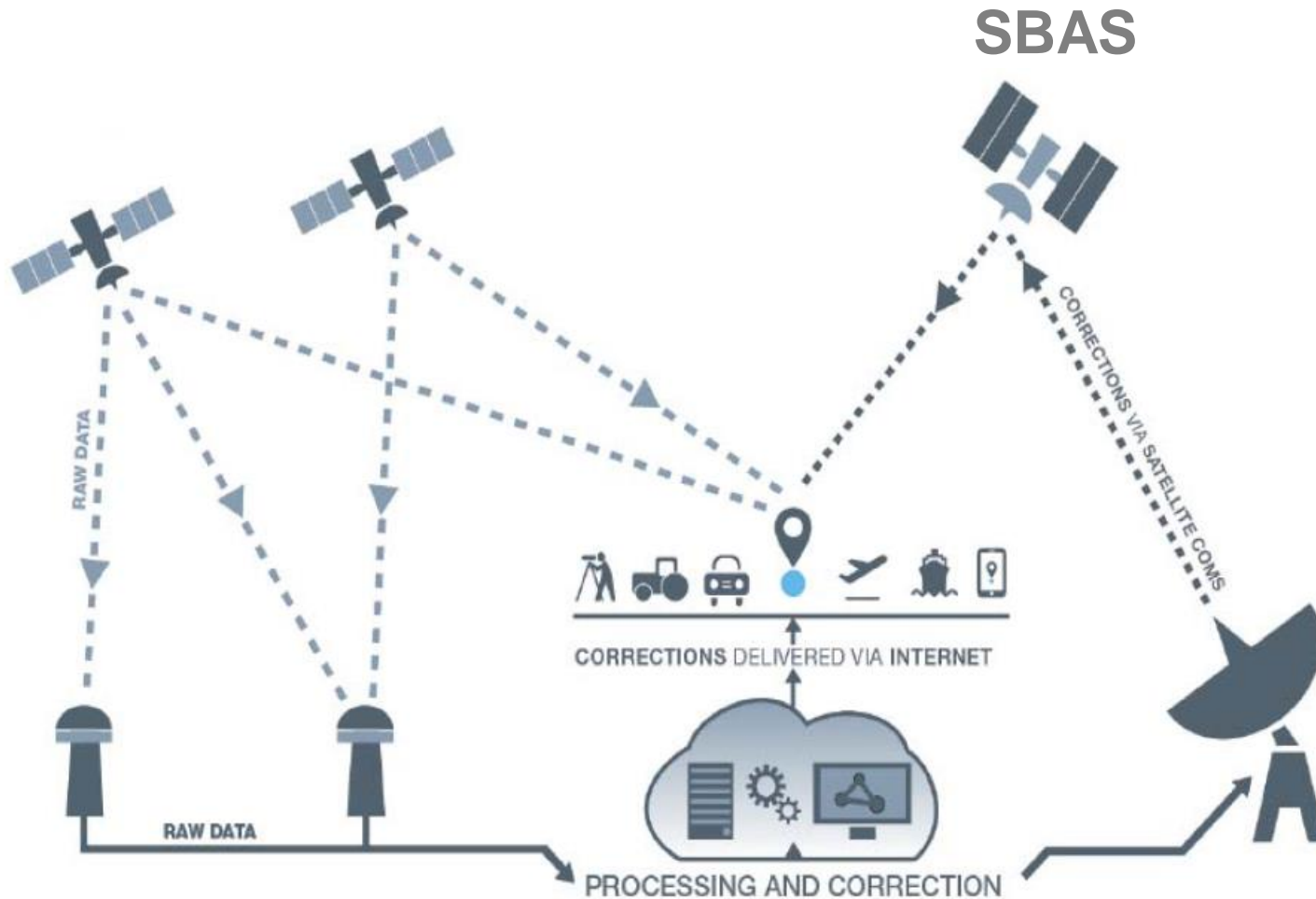
www.customerservice.nsw.gov.au



Positioning by GPS / GNSS (historical)



Positioning by GPS / GNSS (future)



Accurate and reliable positioning for everyone.



(Previously)

NPI NATIONAL POSITIONING INFRASTRUCTURE CAPABILITY

CENTIMETRES ACCURACY



NATIONAL COVERAGE VIA SATELLITE



Image courtesy of Geoscience Australia

GPS Standard Positioning Service Typical Performance

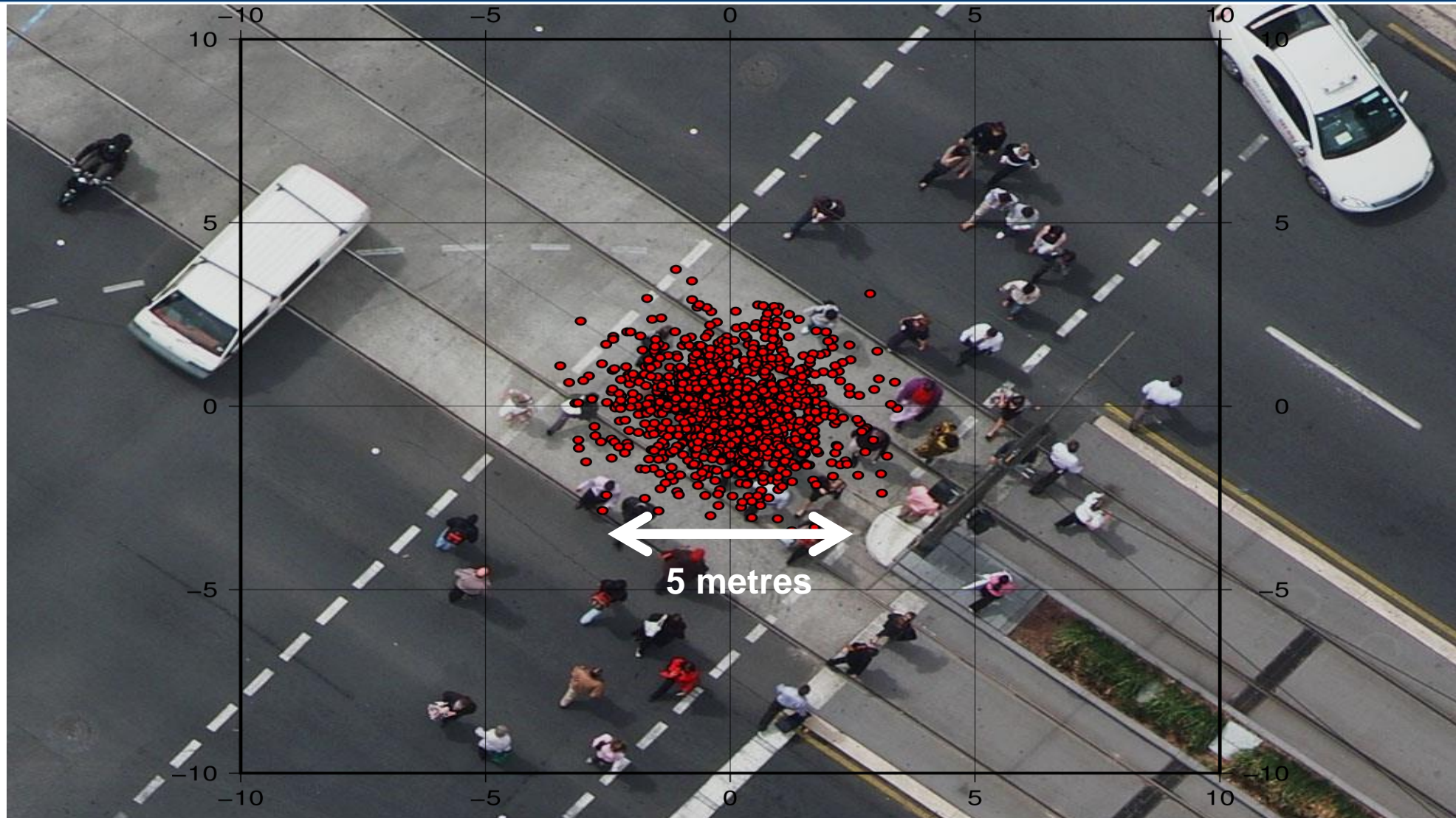


Image courtesy of Geoscience Australia

“Not just for surveyors anymore”
-- Locate 2019



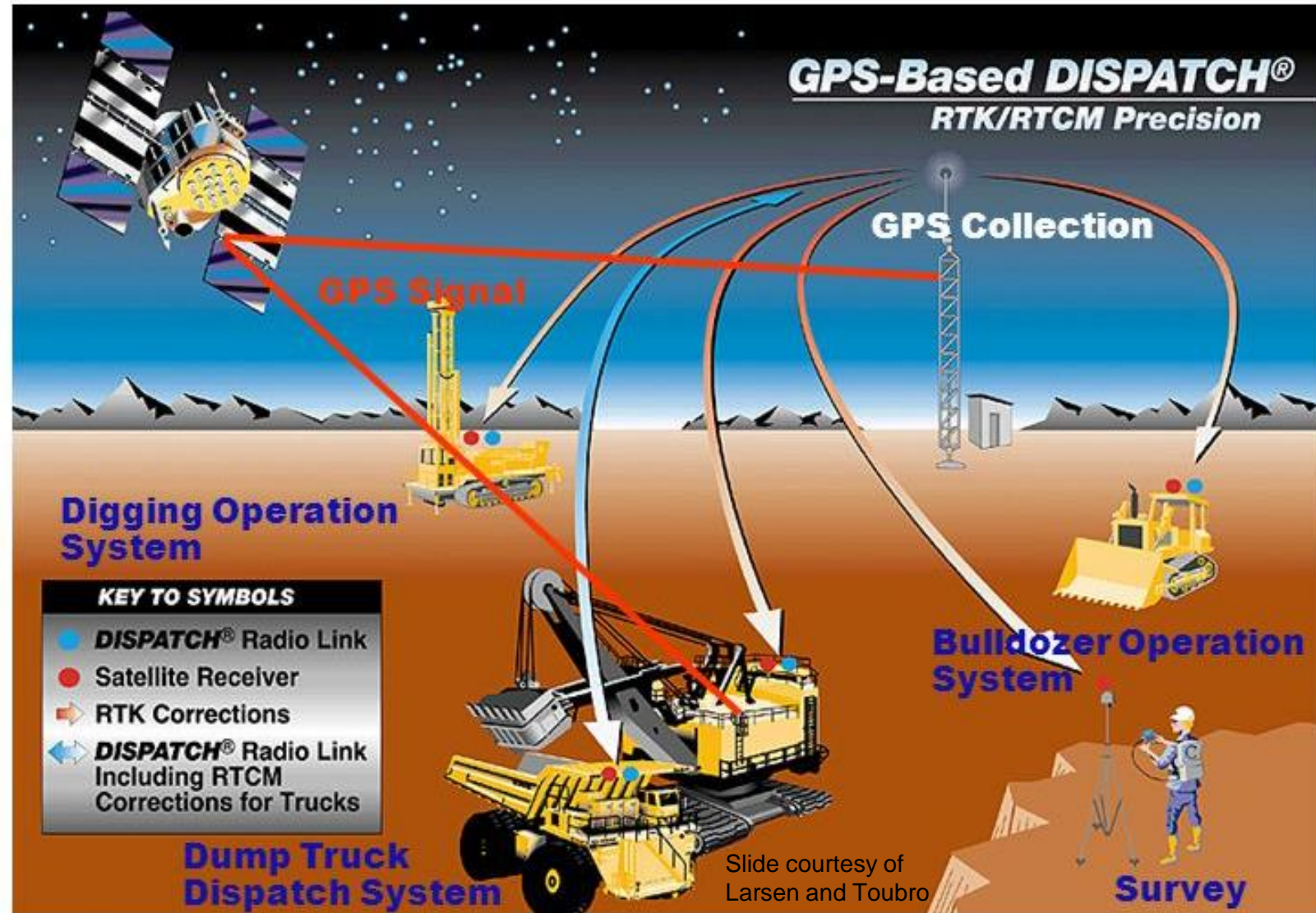
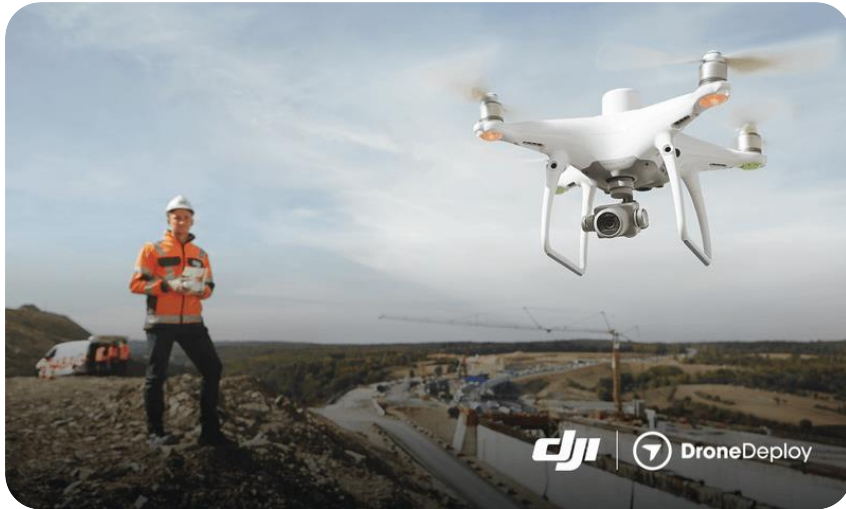
5 centimetres

New positioning applications

“Geospatial data is the foundation of the future economy”

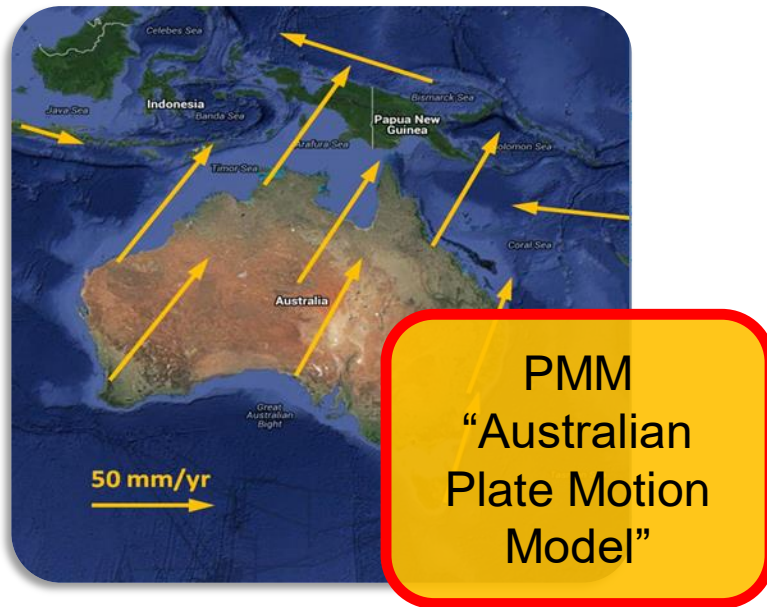


... e.g. GNSS Mining Applications

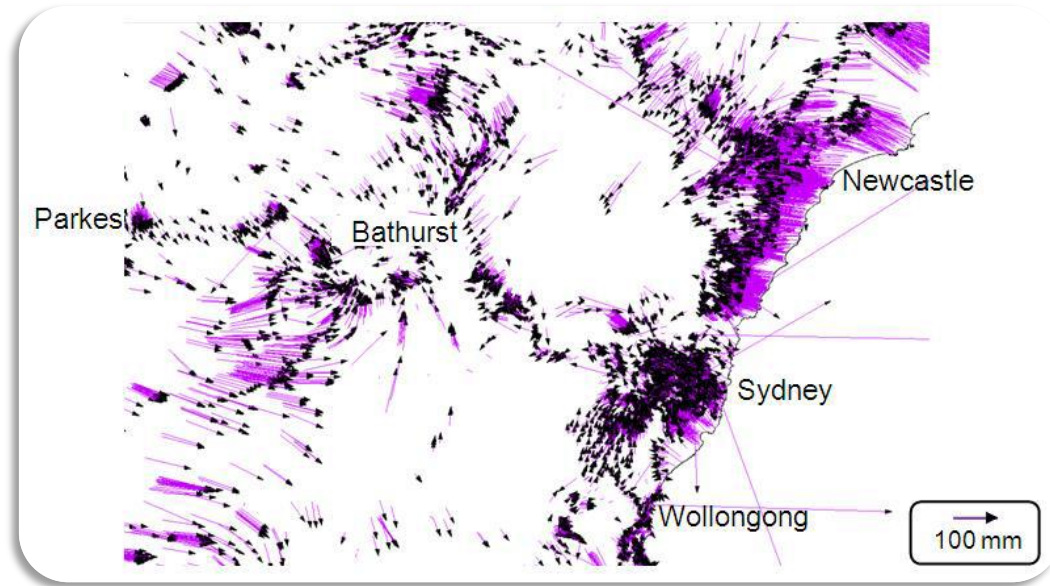


Why update the Australian Datum?

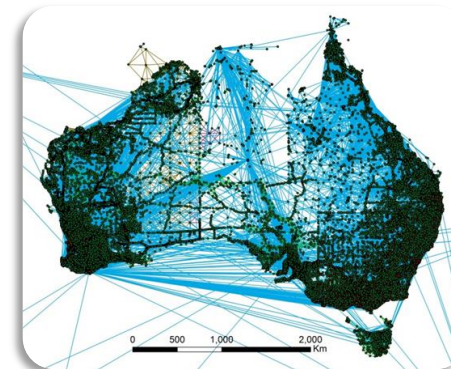
Australia is on the move



Known Distortions in GDA94



Improved
Geodetic
Technologies



National
Adjustment

GDA94, GDA2020 and ... ATRF

ATRF

**Plate Motion Model
[+Deformation]**

“Know your data,
Know your date,
Know your datum”



GDA2020

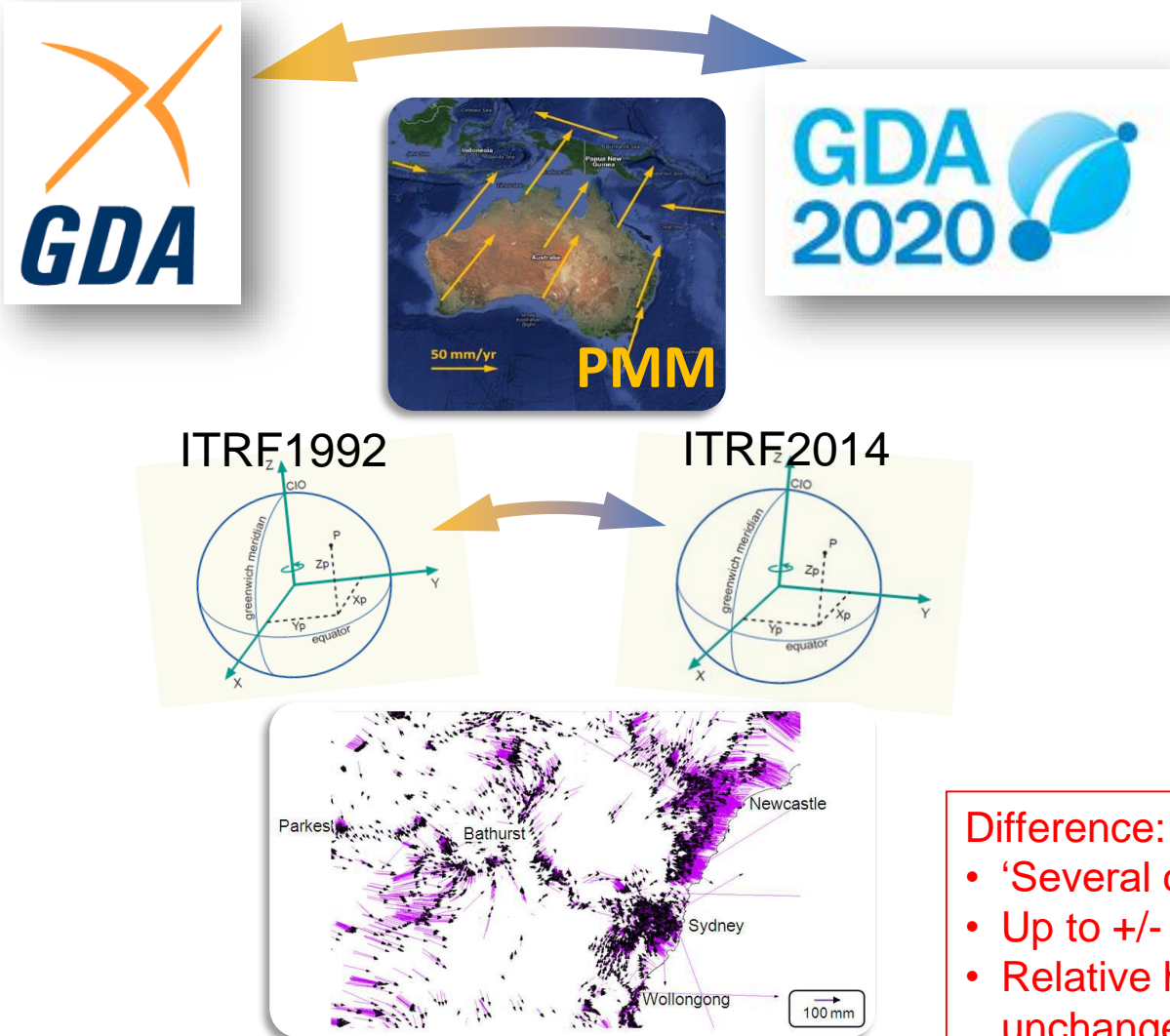
- new STATIC datum
- behaves like GDA94
- up to 1.8m NE of GDA94
- Better precision

ATRF

Australian Terrestrial
Reference Frame

- Future proofing
- “Time-dependent”
- 7cm / year toward NE
- [+ deformation model]

Transforming from GDA94 to GDA2020



Horizontal

- 1) **7 Parameter Transformation (3D)**
'Conformal only' – preserves shape
- 2) **NTv2 Transformation Grids (2D)**
'Conformal only' – preserves shape
'Conformal and distortion'
in NSW: SCIMS, CORSnet-NSW (localised)

Height

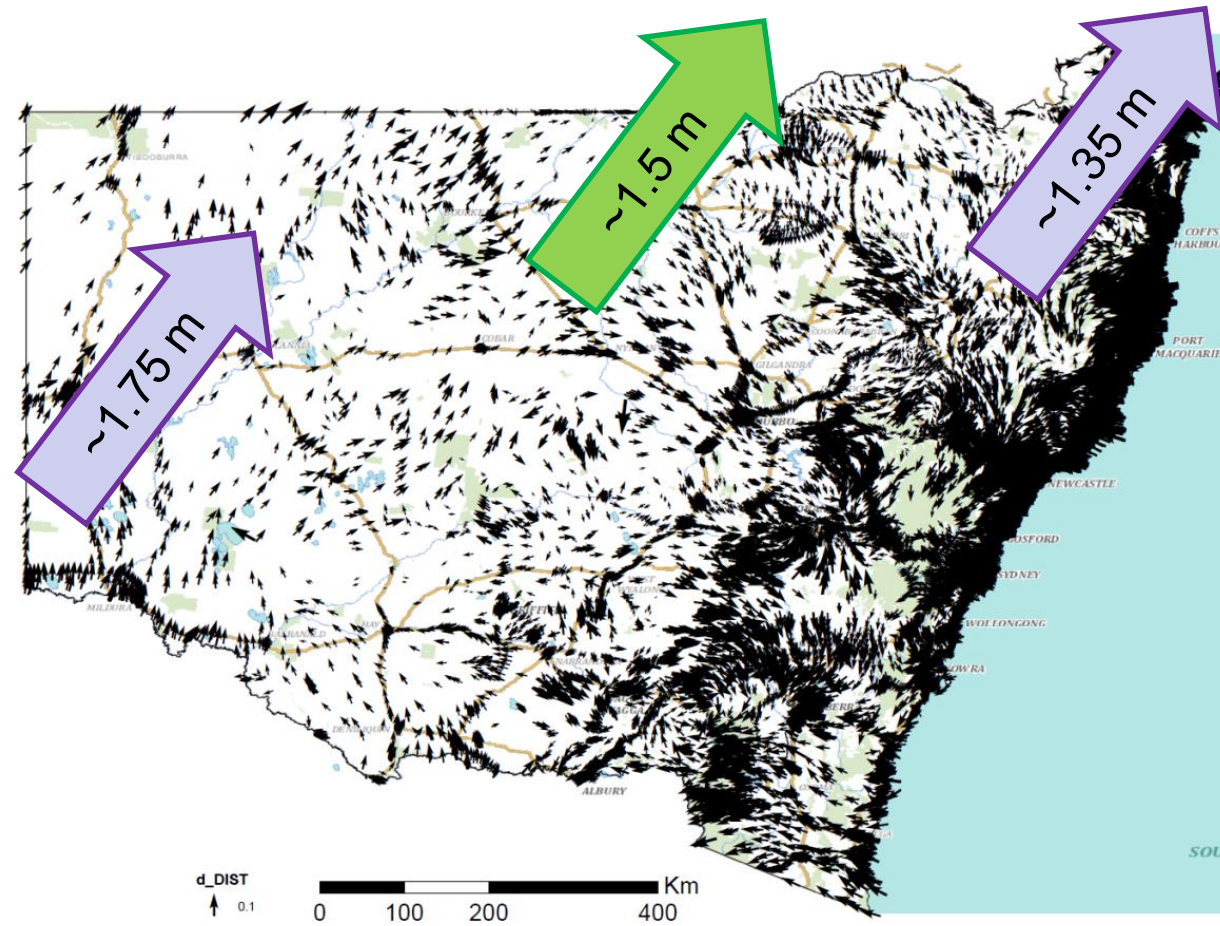
- 1) **No change to AHD71 heights**
- 2) **AHD-derived (from GNSS Ellipsoidal Height)**
requires new AUSGeoid model
GDA94 + AUSGeoid09
GDA2020 + new AUSGeoid2020

Difference:

- 'Several cm'
- Up to +/- 30 cm
- Relative heighting unchanged

Transforming from GDA94 to GDA2020 (just how far?)

(Print version)



Online transformation tools and services

- Online transformation service: <http://positioning.fsdf.org.au/>
- also <https://www.icsm.gov.au/datum/gda-transformation-products-and-tools/software-and-plugins>

The screenshot shows a web browser window with the URL `positioning.fsdf.org.au/`. The page title is "GDA94 – GDA2020 Online Transformation Service". The interface includes a search bar with "No results" and "Options" dropdown. A "Purpose" section explains the service's function. A large dashed box contains the text "Drop File(s) Here". Below this, "Allowed input file types" are listed as CSV, Shapefile, JPEG2000, GeoJSON, GeoTIFF, ASCII Grid, and ECW. On the right, "Selected Shapefiles" are listed with checkboxes. There are radio buttons for "Conformal" and "Conformal and Distortion" transformation grids. A notification email address field contains "Joel.Haasdyk@finance.nsw.gov.au". The page version is noted as "Version: 0.0.1".

GDA94 – GDA2020 Online Transformation Service

Purpose

The online transformation service (powered by FME) provides a reference standard that enables software developers and spatial professionals to transform their data from the Geocentric Datum of Australia 1994 (GDA94) to the Geocentric Datum of Australia 2020 (GDA2020). Users can simply "drag and drop" files onto the page and receive an email with a link to download the output file.

Please note, this service is not intended to enable users to transform all their data from GDA94 to GDA2020; instead it aims to provide a method of checking systems and processes implemented by government or the spatial industry to ensure the transformation results are correct. The online transformation service accepts the following formats at this time: Shapefiles, CSV, ASCII Grid, GeoTiff, ECW, JPEG2000, GeoJSON

Drop File(s) Here

Allowed input file types

CSV Shapefile JPEG2000 GeoJSON GeoTIFF ASCII Grid ECW

Selected Shapefiles

- SCIMS.dbf (151 MB)
- SCIMS.shp (11 MB)
- SCIMS.shx (2 MB)
- SCIMS.prj (145 bytes)

Please choose a transformation grid: * Conformal Conformal and Distortion

The data is in EPSG:4283 projection *

Nominate your notification email address*

Email

Version: 0.0.1

Online transformation tools and services

- NTV2 Transformation grids: https://github.com/icsm-au/transformation_grids

The screenshot shows the ICSM website with a navigation menu including 'ABOUT', 'WHAT WE DO', 'DATUM', 'EDUCATION', 'PUBLICATIONS', 'CONTACT', and 'MEMBERS'. A 'Datum' section is visible, with sub-sections for 'WHAT IS CHANGING AND WHY?' and 'GDA2020 AND GDA94'. A yellow callout box on the left contains the text: 'Search: "NTv2 Australia" "GDA2020 grids"'. The browser address bar shows the URL: <https://www.icsm.gov.au/datum/gda-transformation-products-and-tools/transformation-grids>.

The screenshot shows the GitHub repository page for 'transformation_grids'. The repository has 19 commits, 1 branch, 0 releases, and 3 contributors. The current branch is 'master'. A commit by alexgleith is highlighted, with the latest commit 882e0cc on Dec 18, 2017. The file list includes:

File Name	Commit Message	Time Ago
A66_National_13_09_01.gsb	Rename files	a year ago
GDA94_GDA2020_conformal.gsb	add 2020 grids	4 months ago
GDA94_GDA2020_conformal_and_distortion.gsb	add 2020 grids	4 months ago
National_84_02_07_01.gsb	Rename with extension	a year ago
README.md	update readme with license	4 months ago
licence.txt	Create licence.txt	4 months ago

The files 'GDA94_GDA2020_conformal.gsb' and 'GDA94_GDA2020_conformal_and_distortion.gsb' are highlighted with a red box.

GDA2020 in GIS – e.g. QGIS

The screenshot displays the QGIS desktop environment. At the top, the menu bar includes 'Project', 'Edit', 'View', 'Layer', 'Settings', 'Plugins', 'Vector', 'Raster', 'Database', 'Web', 'Processing', and 'Help'. The 'Plugins' menu is highlighted with a red box. Below the menu is a toolbar with various icons. A window titled 'QGIS Python Plugins Repository' is open, showing the 'ICSM NTv2 Transformer' plugin. A red box highlights the 'Download latest' button, and another red box highlights the 'Automatically loads NTv2 files' checkbox. The plugin description states: 'This plugin uses official ICSM grids to transform between Australian coordinate systems.' Below the description are tabs for 'About', 'Details', and 'Versions'. A note at the bottom of the window reads: 'This plugin enables accurate transformations using official Australian NTv2 grids.' In the background, a map of a grassy field is shown. A red arrow points from a point labeled 'TS3663' to another point labeled 'TS3663 GDA2020', with a red line indicating a distance of '1.5m'. An inset image in the top right corner shows a close-up of a survey mark, which is a concrete pillar with a black circular top containing a grid of holes. At the bottom left, the 'Layers' panel is visible, showing a list of layers: 'SCIMS_qda2020_point', 'SCIMS', 'Bathurst_2012_06_5cm', 'Bathurst_2013_04_10cm', 'EDP_POI:Point_Of_Inter...', 'SurveyMark', 'Points_Of_Interest', 'Lot_Labels', 'Lot', and 'BestImageryDates'. The status bar at the bottom shows the coordinate '736823.991,6295915.041', a scale of '1:55', a magnifier of '100%', a rotation of '0,0 °', and the EPSG code '28355'.

GDA2020 in GIS – Transformation On-The-Fly:

The screenshot shows the QGIS desktop environment. The main map area displays a satellite-style image of a field with a survey marker. Overlaid on the map is the following text:

'On The Fly' Transformations
GDA94 ↔ GDA2020
WGS84 ≈ GDA94 ↔ GDA2020

The survey marker is labeled with a crosshair icon and the text: **TS3663 GDA2020** and **TS3663**.

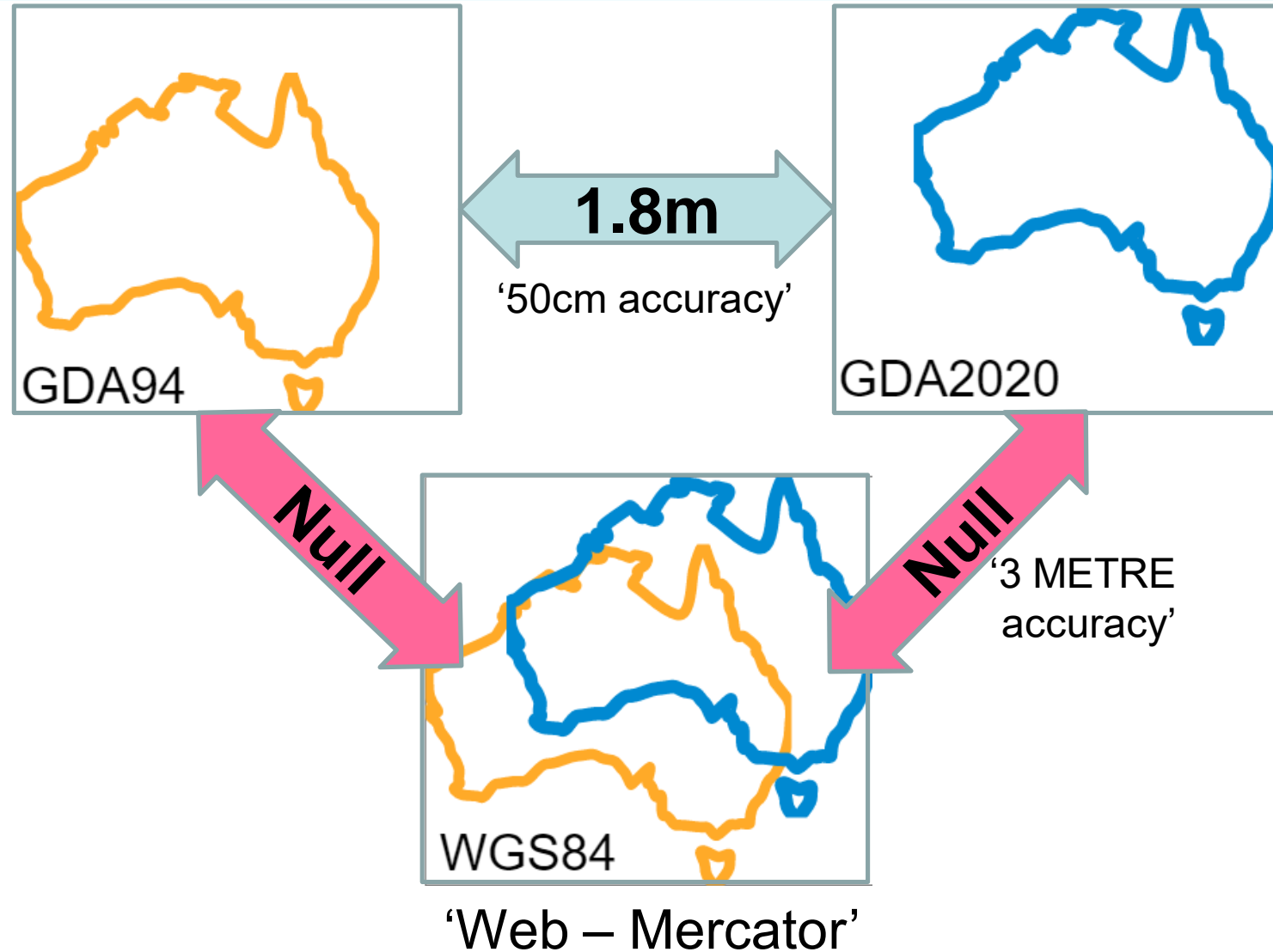
A yellow rounded rectangle callout box contains the following text:

Use software to transform 'on the fly'

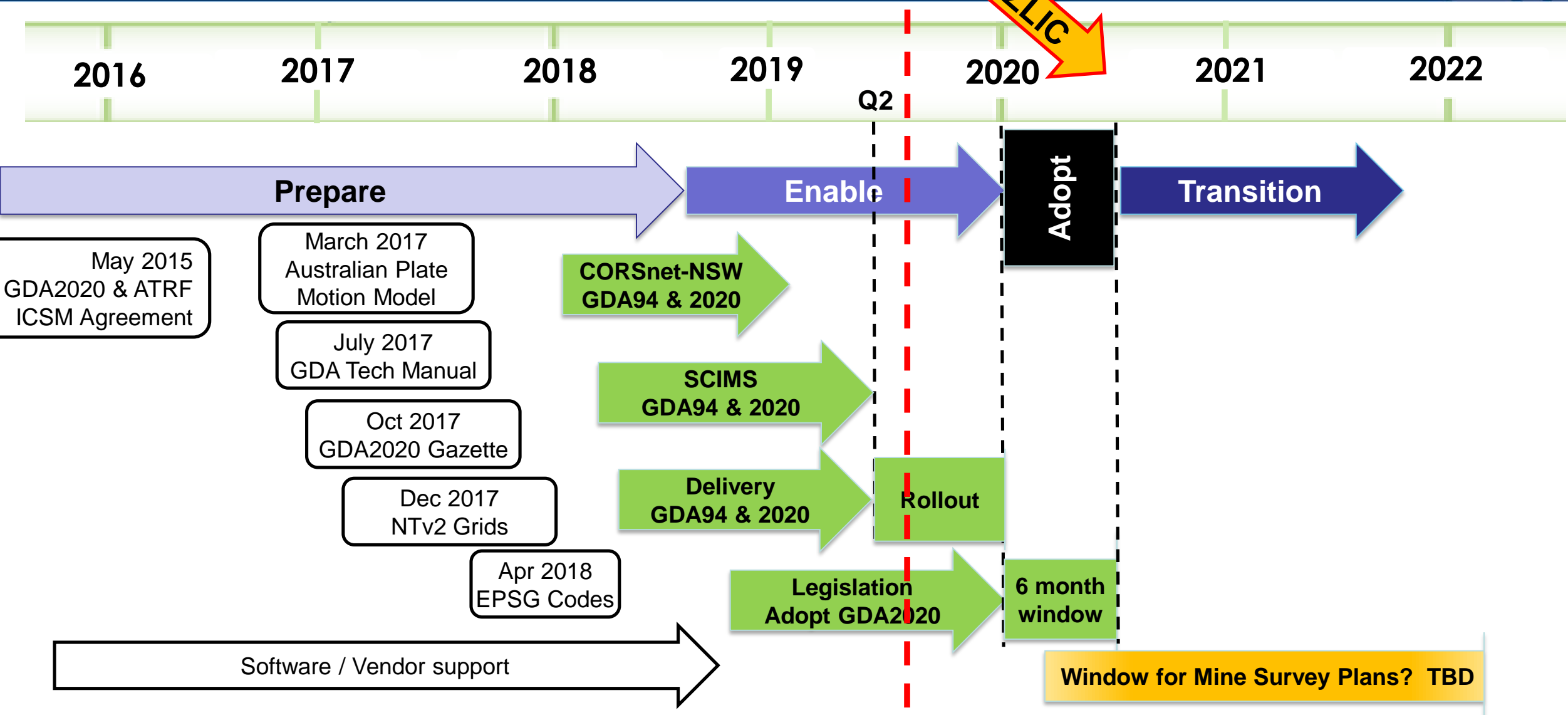
Keep GDA94 data in GDA94
Keep GDA2020 data in GDA2020
Beware WGS84

The QGIS interface includes a Browser panel on the left showing a tree view of data sources, a Layers panel at the bottom left with a list of loaded layers, and a status bar at the bottom with coordinate information (149.54787371, -33.45007255), scale (1:32), magnifier (100%), rotation (0,0°), and EPSG:7844.

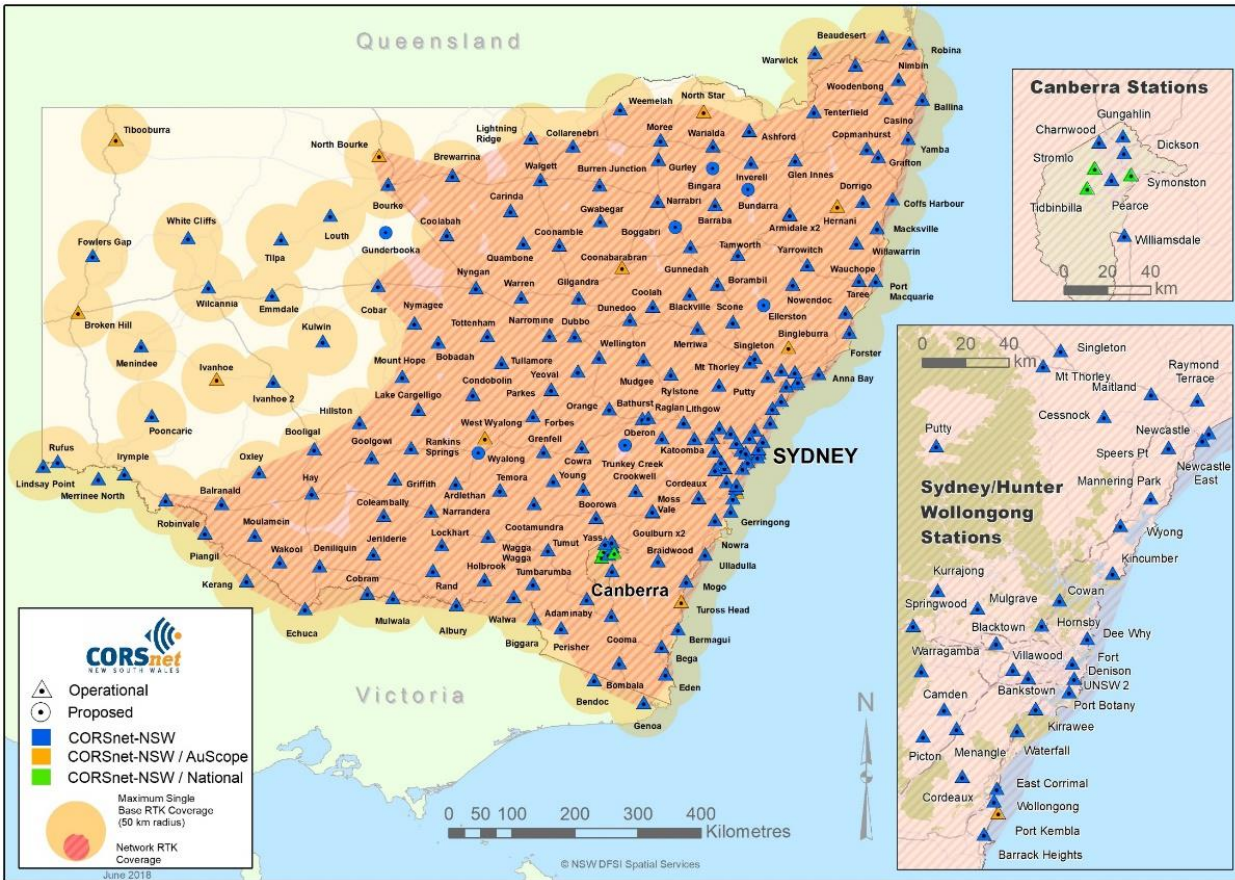
“WGS84 Projection Dilemma – A significant problem for web-mapping



GDA2020 – Timeline for Adoption (NSW)



CORSnet-NSW – GDA2020 and GDA94 from Feb 2019



Feb 2019

Retain GDA94
RTK / NRTK streams

Add GDA2020
RTK / NRTK streams

CORSnet-NSW

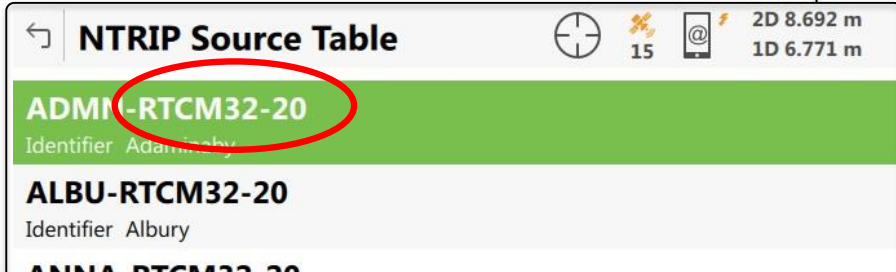
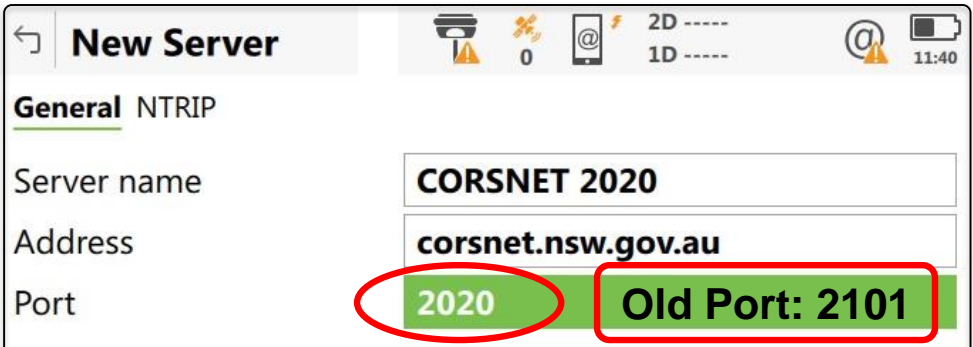
VIC GPSnet

Geoscience
Australia

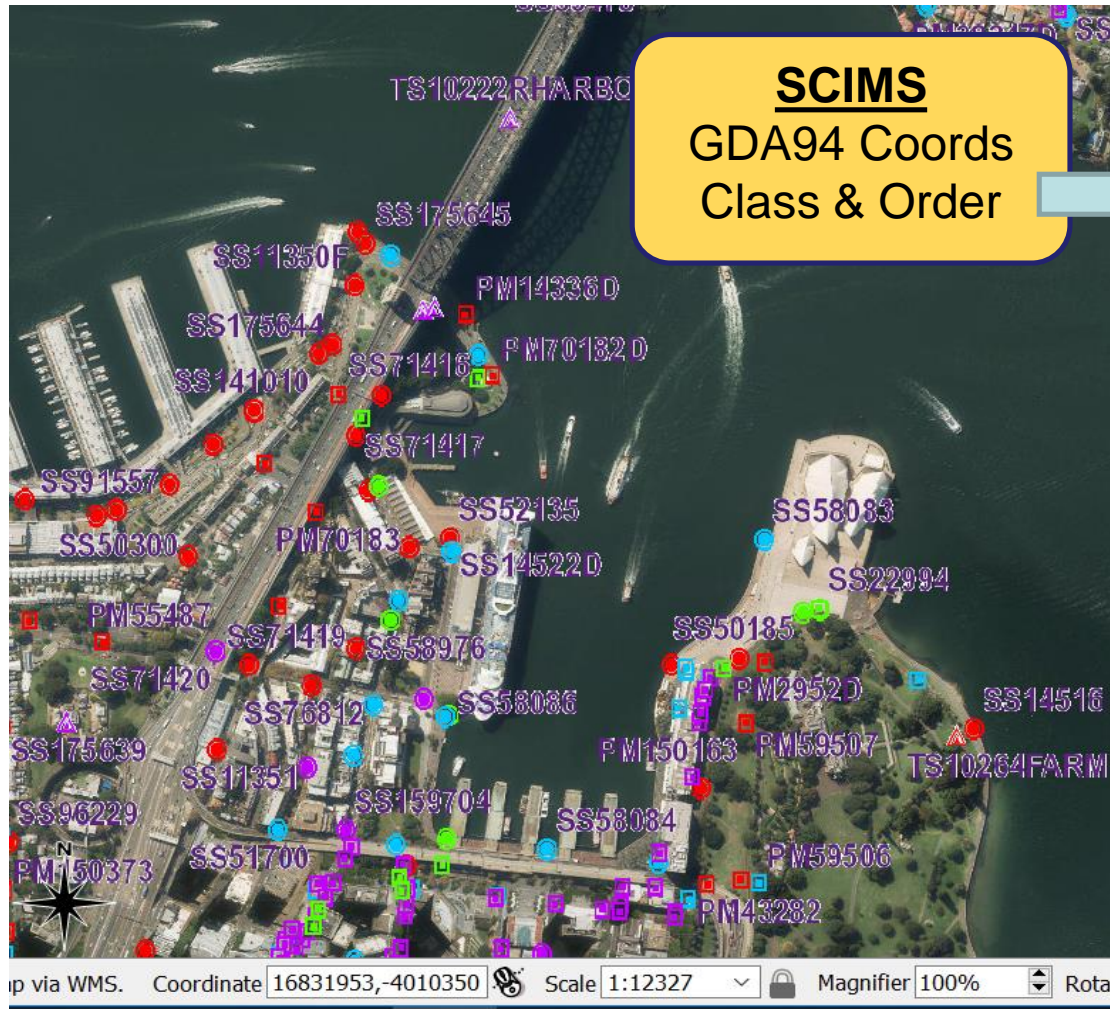
Value added
Resellers

Site localisation
still required !

GDA94 + AUSGeoid09
GDA2020 + new AUSGeoid2020 !



SCIMS Online – GDA2020 and GDA94 from 01 July 2019



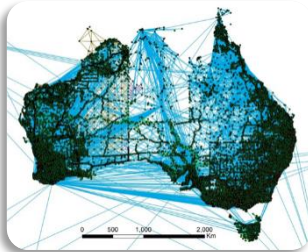
SCIMS
GDA94 Coords
Class & Order

SCIMS+
GDA94 Coords
Class & Order

GDA2020 Coords
Class ~~(and Order)~~
Positional Uncertainty
Local Uncertainty

**July
2019**

Measurement
Database



SCIMS Online – GDA2020 and GDA94 from 01 July 2019

Coordinate Tool

Click on the map to retrieve coordinates, or enter coordinates to locate:

GDA2020 - MGA56

Easting

Northing

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mark	Trig Name	Status	GDA2020 Class	GDA2020 PU/LU	GDA2020 Date	AHD Class	AHD PU/LU	AHD Date
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		CP 89253351				24-06-2019	U		24-05-2010
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		PM 13572		B		24-06-2019	LC		
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		PM 13573		B		24-06-2019	LC		
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		PM 13574	DESTROYED	U		24-06-2019	LC		28-02-1990
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		PM 37933	DESTROYED	B		24-06-2019	U		03-05-2002

SCIMS Online – GDA2020 and GDA94 from July 2019

GDA 2020

- New selection
- Add to existing
- Remove

C	S	D	Mark	Trig Name	Status	GDA2020 Class	GDA2020 PU/LU	GDA2020 Date	AHD Class	AHD PU/LU	AHD Date
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	SS 112001			B	0.02 / 0.03	26-06-2019	D		26-03-2008
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	SS 129599		FOUND INTACT	B		24-06-2019	B		22-03-2005
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	SS 130103			B	0.02 / 0.03	26-06-2019	D		17-03-2008
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	SS 130104			B	0.02 / 0.03	26-06-2019	B		03-09-2002
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	SS 166295			B		24-06-2019	D		26-03-2008

Clear Items Remove All Search Date: 05-07-2019 GDA2020 GDA94 ? My Documents Order

GDA

- New selection
- Add to existing
- Remove

C	S	D	Mark	Trig Name	Status	GDA94 Class	GDA94 Order	GDA94 Date	AHD Class	AHD Order	AHD Date
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	SS 112001			B	2	06-05-2009	D	4	26-03-2008
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	SS 129599		FOUND INTACT	B	2	06-05-2009	B	2	22-03-2005
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	SS 130103			B	2	17-03-2008	D	4	17-03-2008
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	SS 130104			B	2	06-05-2009	B	2	03-09-2002
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	SS 166295			B	2	06-05-2009	D	4	26-03-2008

Clear Items Remove All Search Date: 05-07-2019 GDA2020 GDA94 ? My Documents Order

SCIMS Online – new Symbology (GDA2020 and GDA94)

Map Legend

SCIMS Mark types (Colour codes refer to the assigned accuracy "Class")

SS	PM	TS	CR	MM	CP	GB	
							Established GDA2020 + Accurate AHD71
							Established GDA2020 Only
							Accurate AHD71 Only
							Accurate AHD71 + Approx. GDA2020
							Approx. GDA2020 Only
							Unknown

New symbols = Class E

Mark Status*

- F Found Intact
- N Not Found
- D Destroyed
- S Subsidence Area
- U Uncertain
- R Restricted Access

Established GDA coordinates are assigned accuracy class 3A, 2A, A, B, C or D

Accurate AHD heights are assigned accuracy class L2A, LA, LB, LC, LD, 2A, A or B

* Where available, the Mark Status is appended to the Mark Number in the map

SCIMS Online – GDA2020 Coordinate tool

Coordinate Tool

Click on the map to retrieve coordinates, or enter coordinates to locate:

GDA94 - MGA56

Easting 328806.739
Northing 6250576.22

GO Reset

Coordinate Tool

Click on the map to retrieve coordinates, or enter coordinates to locate:

GDA94 - MGA55

GDA94 - MGA54
GDA94 - MGA55
GDA94 - MGA56
GDA94 - MGA57
GDA94 - MGA58
GDA94 - Geographic
GDA94 - NSW Lambert
GDA2020 - MGA54
GDA2020 - MGA55
GDA2020 - MGA56
GDA2020 - MGA57
GDA2020 - MGA58
GDA2020 - Geographic
GDA2020 - NSW Lambert
Geographic DMS
Other

Coordinate Tool

Click on the map to retrieve coordinates, or enter coordinates to locate:

GDA2020 - MGA56

Easting 328807.217
Northing 6250577.636

GO Reset

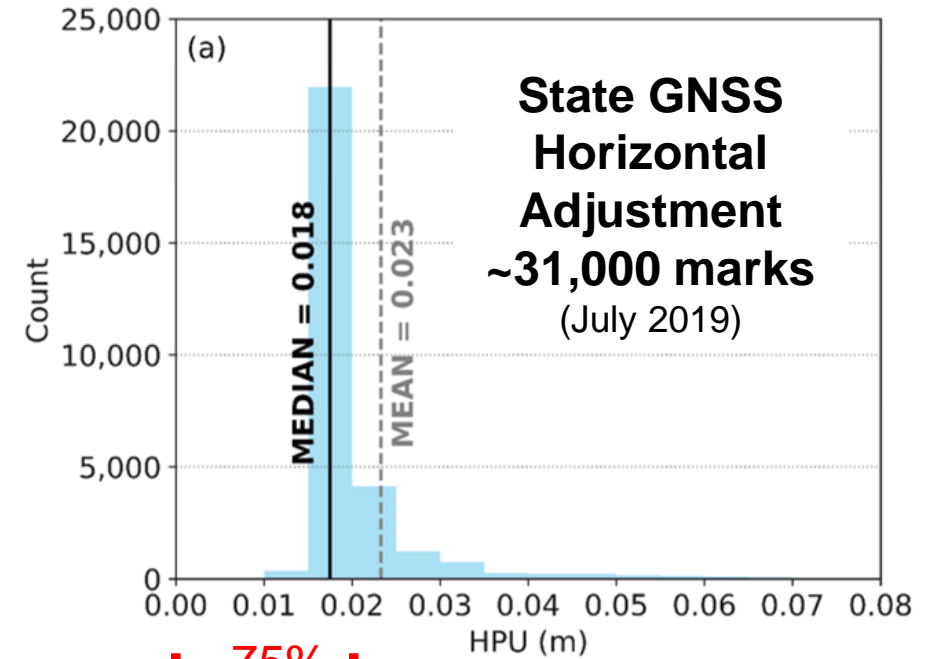
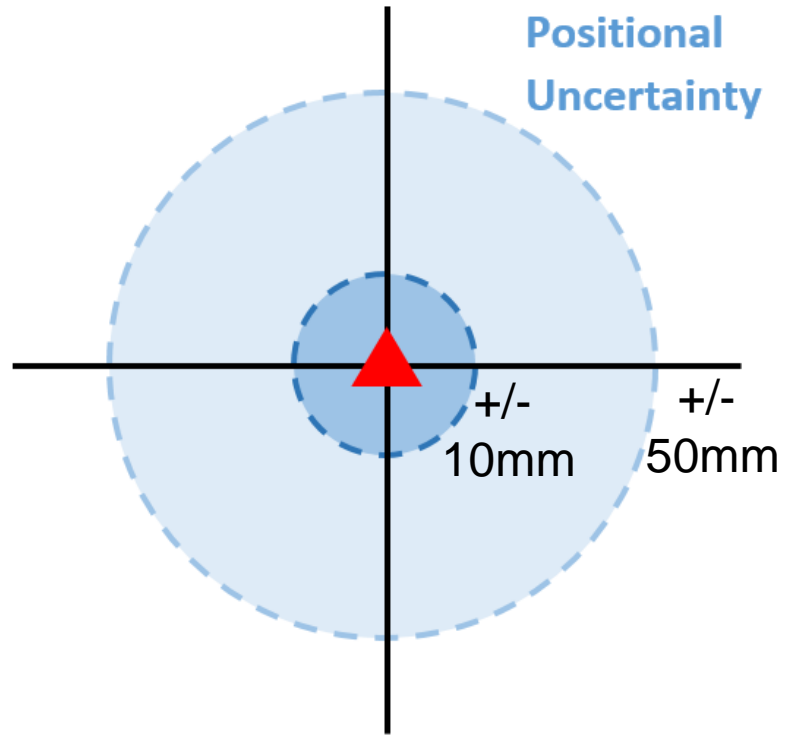
C	S	D	Mark	Trig Name	Status	GDA2020 Class	GDA2020 PU/LU	GDA2020 Date	AHD Class	AHD PU/LU
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		SS 112001		B	0.01 / 0.01	27-03-2019	D	

Submit Reset

Clear Items Remove All Search Date: 27-03-2019 Select GDA94 ? My Documents

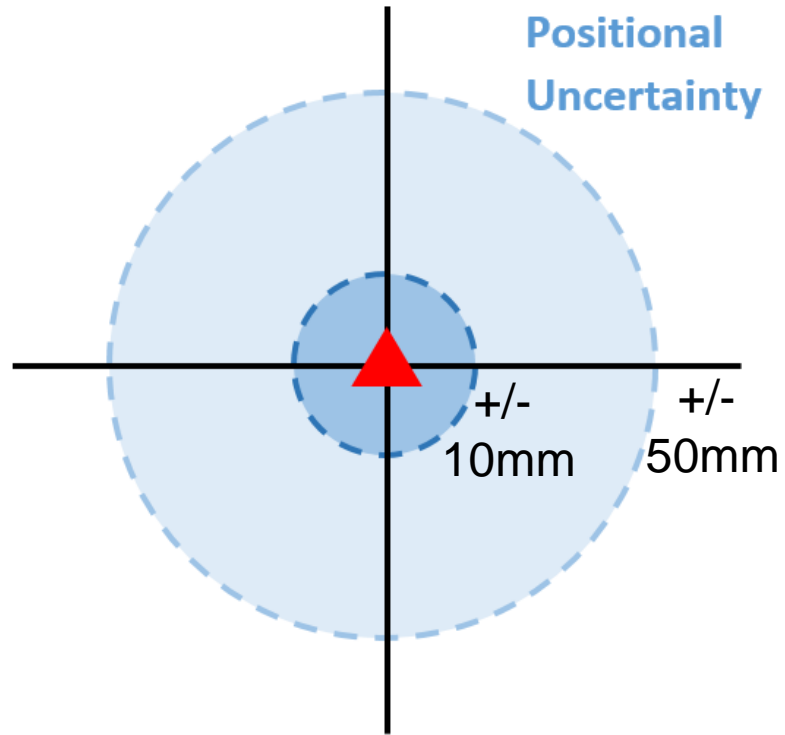
via 'Conformal and Distortion' transformation

SCIMS Online – GDA94 Class and Order GDA2020 Class, PU and LU

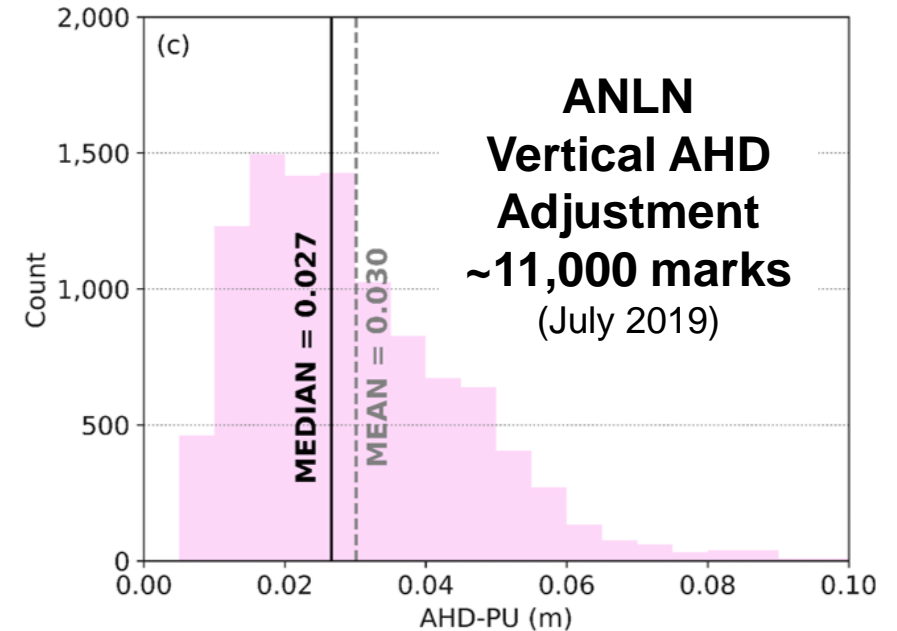


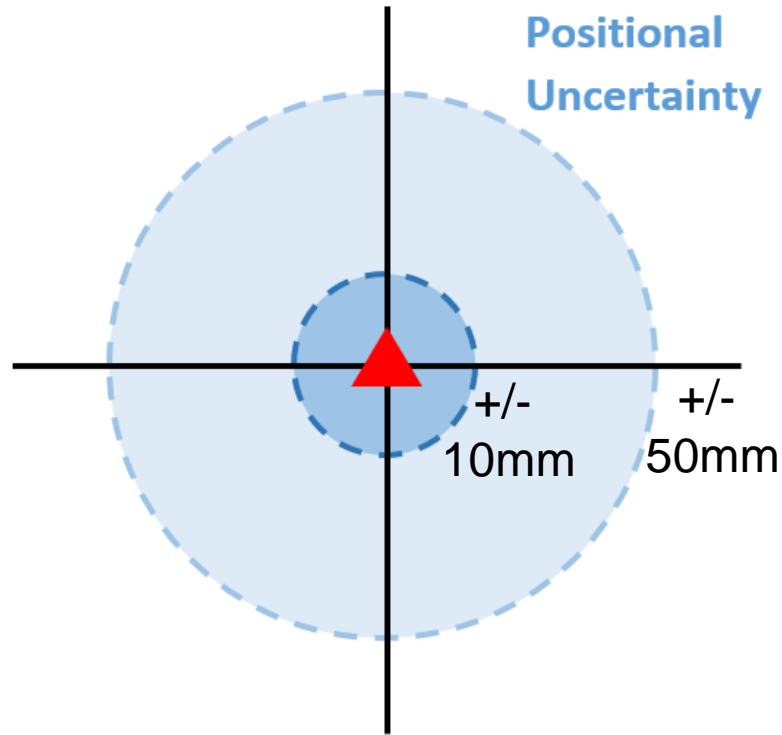
Positional Uncertainty (PU) describes the accuracy of a point with respect to the datum (e.g. GDA2020 or AHD) (95% confidence)

SCIMS Online – GDA94 Class and Order GDA2020 Class, PU and LU

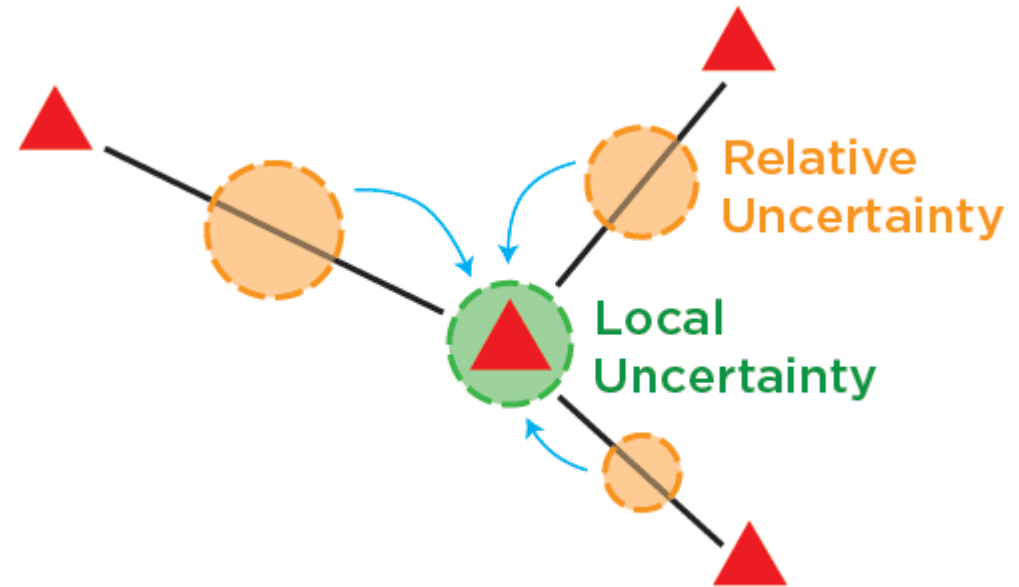


Positional Uncertainty (PU) describes the accuracy of a point with respect to the datum (e.g. GDA2020 or AHD) (95% confidence)

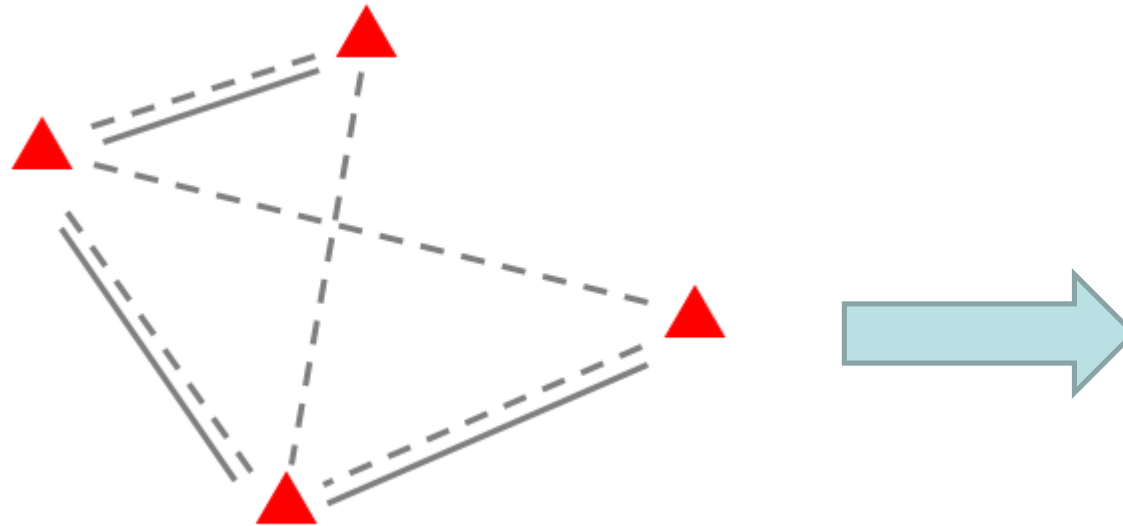




Positional Uncertainty (PU) describes the accuracy of a point with respect to the datum (e.g. GDA2020 or AHD) (95% confidence)



Local Uncertainty (LU) describes the relative accuracy of a point derived from the survey connections to adjacent points



‘Established’
Class D or better

‘Accurate AHD’
Class B or better
Class LD or better

Class describes

the precision of a survey network, reflecting

- observations, network design, survey methods, instruments and reduction techniques
- preferably verified by minimally constrained LSA.

SCIMS SURVEY MARK REPORT AS AT: 1-APR-2019

Your Reference: null

Search Number: 584564

MARK NAME STATUS	COORDINATES AND HEIGHTS				CLASS	PU	LU	SOURCE	CSF CONVERGENCE AUSGEOID2020(N)
SS 16316	<u>Horizontal coordinates are sourced from GDA94 and transformed to GDA2020</u>								
	MGA2020	337792.	6252710.	56	U	n/a	n/a	300000	0.999920
	GDA2020	-33.85344990883	151.2466230619	U		n/a	n/a		-0° 58' 37.08"
	AHD71	Normal-Orthometric		2.271	LB	n/a	n/a	201399	22.630
	GDA2020	Ellipsoidal Height		24.901	C	n/a	n/a	202012	
SS 915600	<u>Horizontal coordinates are sourced from AGD66 and transformed to GDA94 and transformed to GDA2020</u>								
	MGA2020	338080.	6252610.	56	U	n/a	n/a	300001	0.999919
	GDA2020	-33.85439675556	151.249714075	U		n/a	n/a		-0° 58' 30.97"
	AHD71	Normal-Orthometric		0.	U	n/a	n/a	216285	22.621
SS 915602	<u>Horizontal coordinates are adjusted (or initialised) in GDA2020</u>								
	MGA2020	337880.000	6252609.999	56	B	0.03	0.03	300008	0.999905
	GDA2020	-33.85436604444	151.24755304444	B		0.03	0.03		-0° 58' 35.30"
	AHD71	Normal-Orthometric		100.000	B	n/a	n/a	300008	22.625

GDA2020 – Timeline for Adoption (Spatial Services) Legislation: Update S&SI Act and Reg

GMIWG Legislation Subcommittee

NSW Legislation references to horizontal datum (Acts and Regs)

- Surveying and Spatial Information Act 2002 No 83 and Surveying and Spatial Information Regulation 2017
- Work Health and Safety (Mines and Petroleum Sites) Regulation 2014
- Marine Estate Management (Management Rules) Regulation 1999 (and references to Marine Parks Act 1997, repealed)
- Mining Act 1992 No 29 and Mining Regulation 2016
- Offshore Minerals Act 1999 no 42
- Petroleum (Offshore) Act 1982 no 23 & Petroleum (Offshore) Act 1991 no 84 Petroleum (Offshore) Act 1991 no 84
- Fisheries Management Regulations (several)
- Water Sharing Plan for the NSW Murray Darling Basin Porous Rock Groundwater Sources 2011
- Etc

01
Jan
2020

Mixed terminology!!

- “Geocentric Datum”
- “Map Grid of Australia”
- “AGD66”
- “Lats and Longs in WGS84 datum”
- “GPS Coordinates”
- “As defined in the S&SI Act”

“GDA”	“GDA94”
“MGA”	“MGA94”

1) Move definition of Datum from S&SI Act to Regulation

2) (Begin to) rationalise the above legislation

3) Land Surveys: GDA2020 required on Survey Plans with ‘date of survey’ from 01 Jan 2020

4) Mine Survey Plans: Timing TBD

SURVEYING AND SPATIAL INFORMATION REGULATION 2017

Clause 3 Application of Regulation

This Regulation applies to all land surveys, and to all surveys referred to in section 4 or 5 of the Act, but does not apply to any mining surveys except to the extent to which the other provisions of this Regulation expressly provide and to the extent provided by an order in force under clause 4.

Clause 4 Mining surveys

(1) The Surveyor-General may, by order published in the Gazette, give directions with respect to the conduct of mining surveys.

(2) Such an order may only be made on the recommendation of the Board.

(3) The document entitled *Survey and Drafting Directions for Mine Surveyors 2015 (NSW—Mines)*, published in the Gazette on 2 October 2015 at page 3097, is taken to be an order under this clause with respect to mining surveys carried out for the purposes of the *Work Health and Safety (Mines and Petroleum Sites) Act 2013* and may be amended and repealed accordingly.

SURVEY AND DRAFTING DIRECTION FOR MINE SURVEYORS 2015 (NSW – MINES)

- 3.1.1 A metalliferous or extractive industry underground mine may apply to the Chief Inspector for an exemption to allow for surveying to a local grid and a “Letter of Datum Reference” where the relationship between the local grid and the height datum and MGA94 and AHD can be accurately provided.
- 3.1.2. To allow for a metalliferous or extractive industry underground mine to be surveyed on a local grid and datum a copy of the exemption granted by the Chief Inspector as required in 3.1.1 and a copy of the “Letter of Datum Reference” must be provided to the Department and the information must be updated as necessary.
- 3.1.3. At all mines where a “Letter of Datum Reference” has not been granted all surveys made and carried out in accordance with these Directions shall be calculated and plotted using the Map Grid of Australia (MGA94).

Mine Baseline

A permanently marked surveyed line included in the State Survey Control Network.



- 3.1.4 All surveys are to originate from the Mine Baseline or may originate from any other mark included in the State Survey Control Network having a standard of accuracy consistent or greater with that of the Mine Baseline.
- 3.1.5 The horizontal survey of the Mine Baseline should be planned and surveyed to Class 3.1.5“B” standards of accuracy as defined in ICSM (2007) SP1 (version 1.7). The geometry of the network should be consistent with this standard of accuracy.

WORK HEALTH AND SAFETY (MINES AND PETROLUUM SITES) REGULATON 2014

Advice to come
on updates of
Legislation

Clause 122(11):

Australian Height Datum means the Australian Height Datum described in the Division of National Mapping Technical Report No 12, *The Adjustment of the Australian Levelling Survey, 1970—1971* (2nd edition, 1975).

Geocentric Datum of Australia means the Geocentric Datum of Australia as defined in Commonwealth of Australia Gazette No. 35 of 6 September 1995 at page 3369.

Note. Regulations made under the *Surveying and Spatial Information Act 2002* have application to mine surveys.

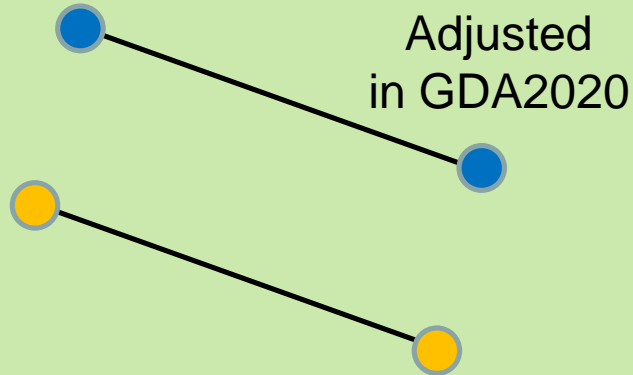
Mine Baselines

- Review current Orientation and Coordinates of Mine Baselines GDA94 values against new GDA2020 SCIMS values...
- Note: cm-level differences between Adjusted and Transformed coordinates in SCIMS

Advice to come on updating Mine Baselines

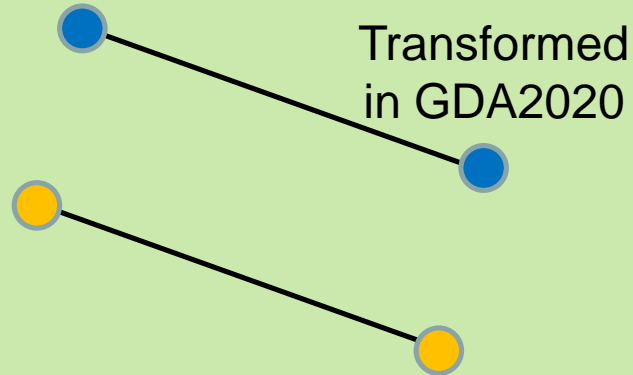
GNSS - adjusted

Adjusted
in GDA2020



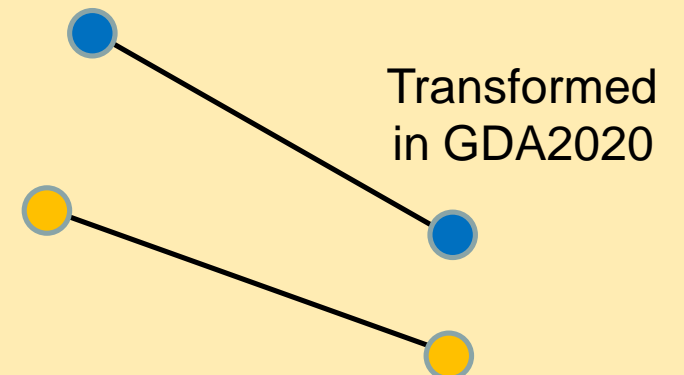
Terrestrial – to be adjusted

Transformed
in GDA2020

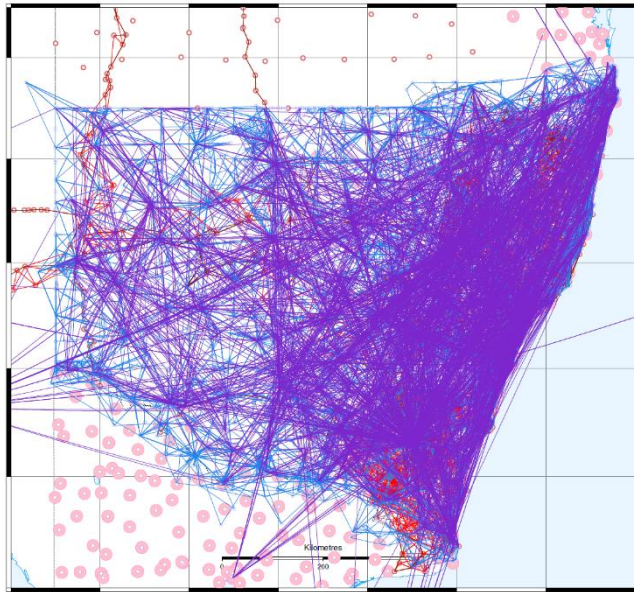


Mixed

Adjusted
in GDA2020

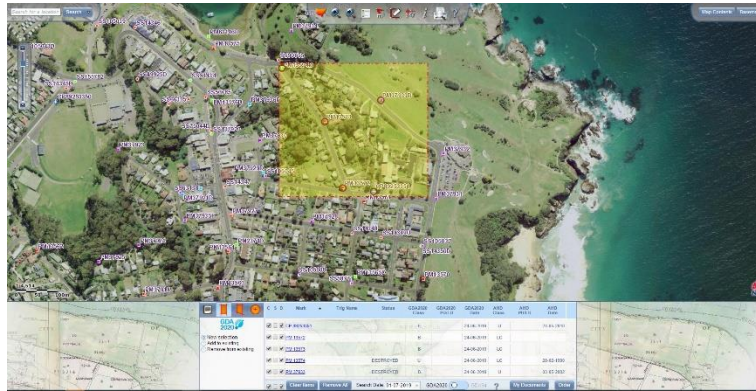


GDA2020 – Next steps: More adjusted stations



State Adjustment (2019 July)

- ~31,000 stations
- > 300,000 measurements
 - > 200 CORS
 - > 7000 AUSPOS
 - GNSS Baselines

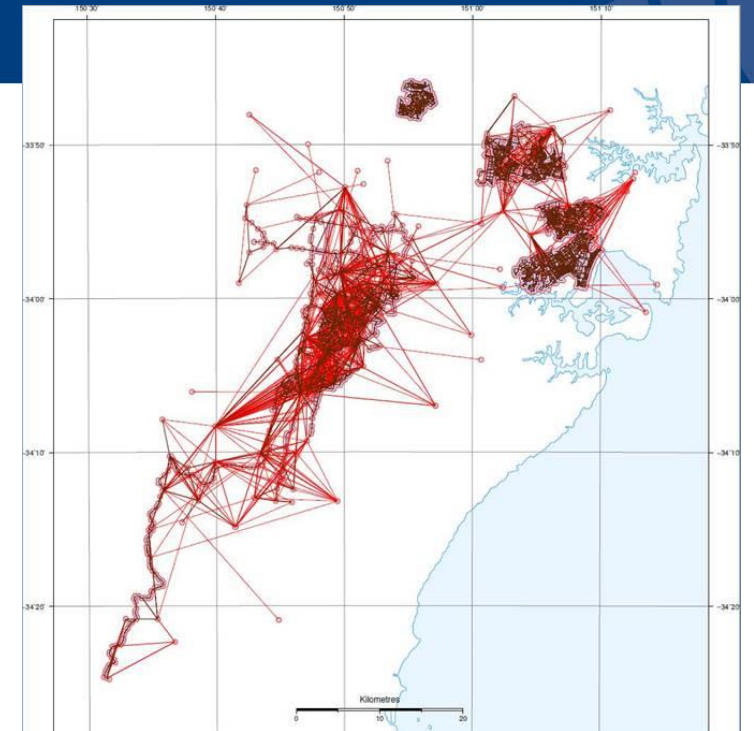


Populate SCIMS

~250,000 stations

~150,000 Hz Class D (or better)

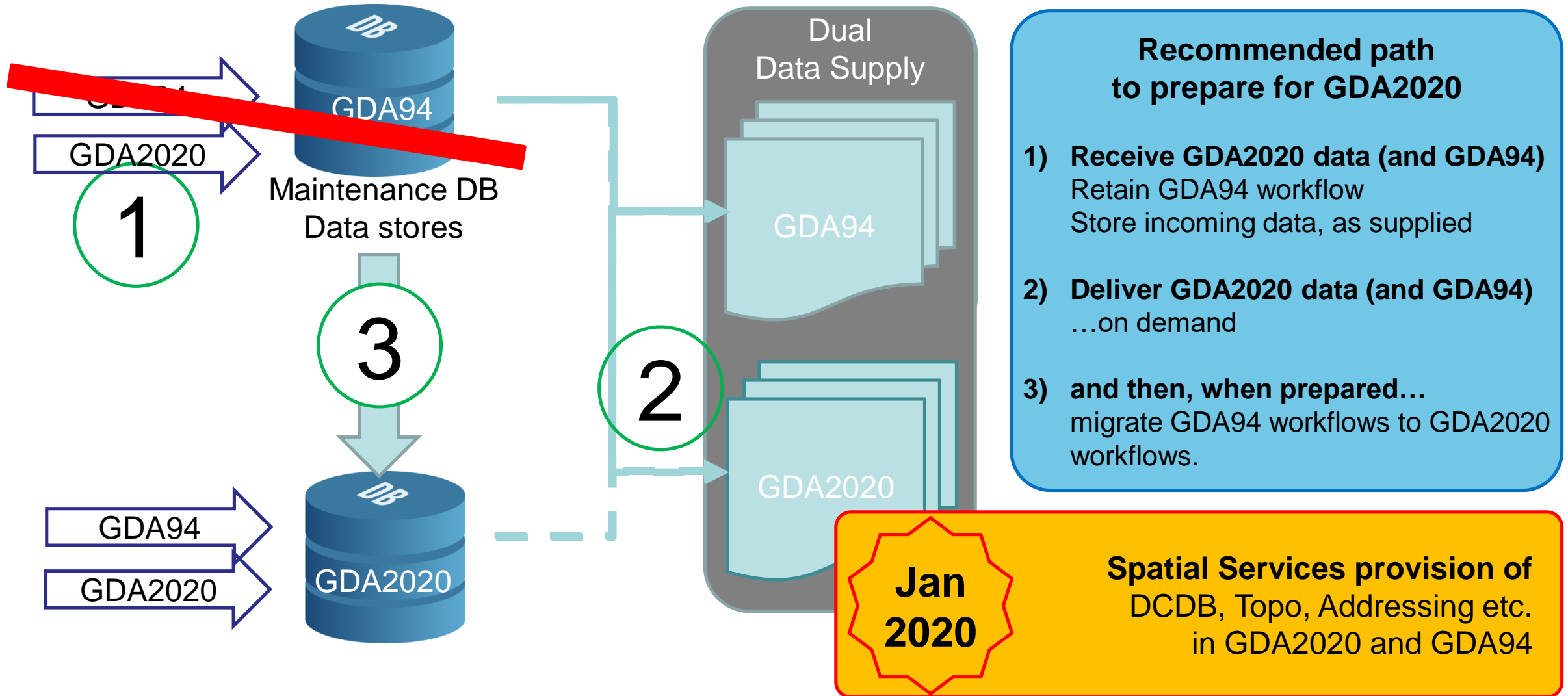
- 1) Transform all marks
GDA94 => GDA2020
- 2) Add State Adjustment (~31,000)
12% of all SCIMS



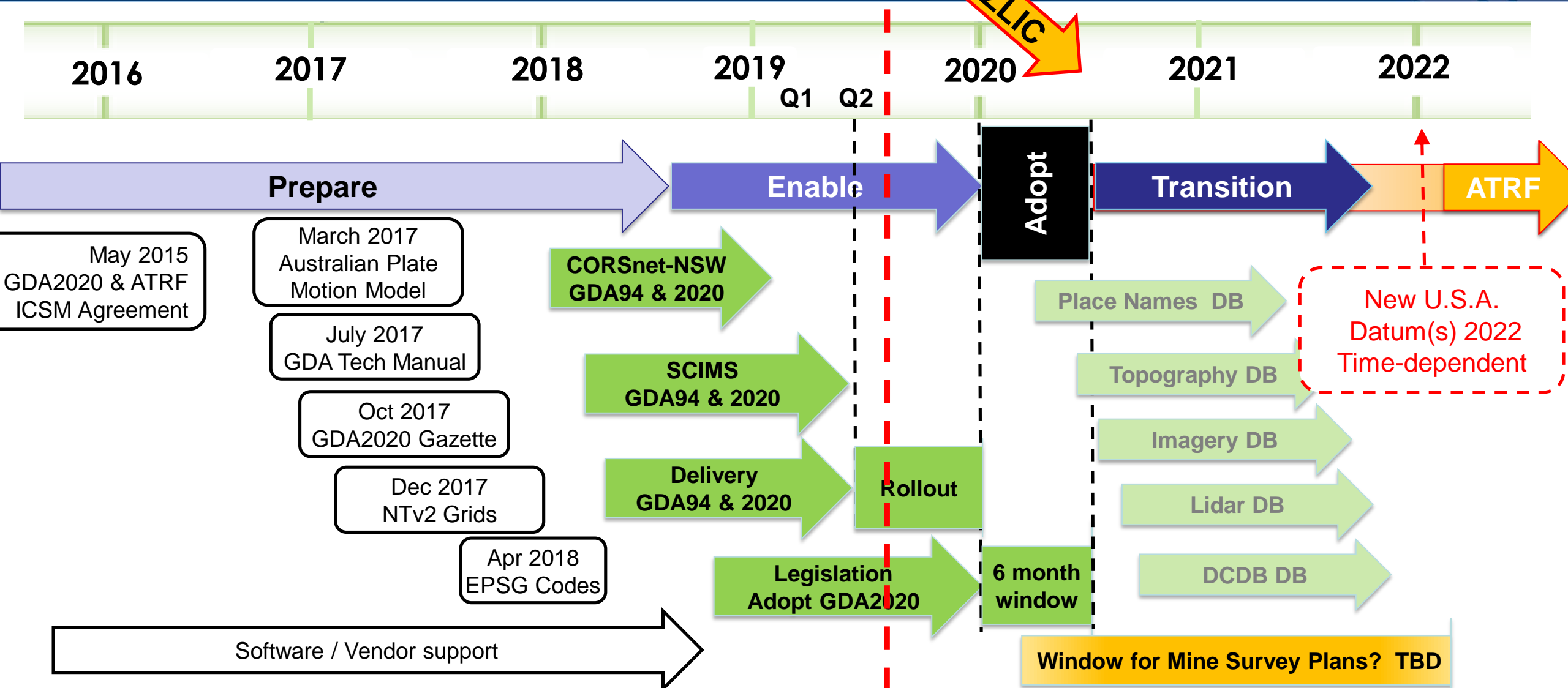
Next steps:

- 3) Adjust up to 50,000 stn this FY.
Add the 20 largest
Terrestrial Adjustments
- 4) Continue network densification

Recommended path to prepare for GDA2020 workflows



GDA2020 – Timeline for Adoption (NSW)

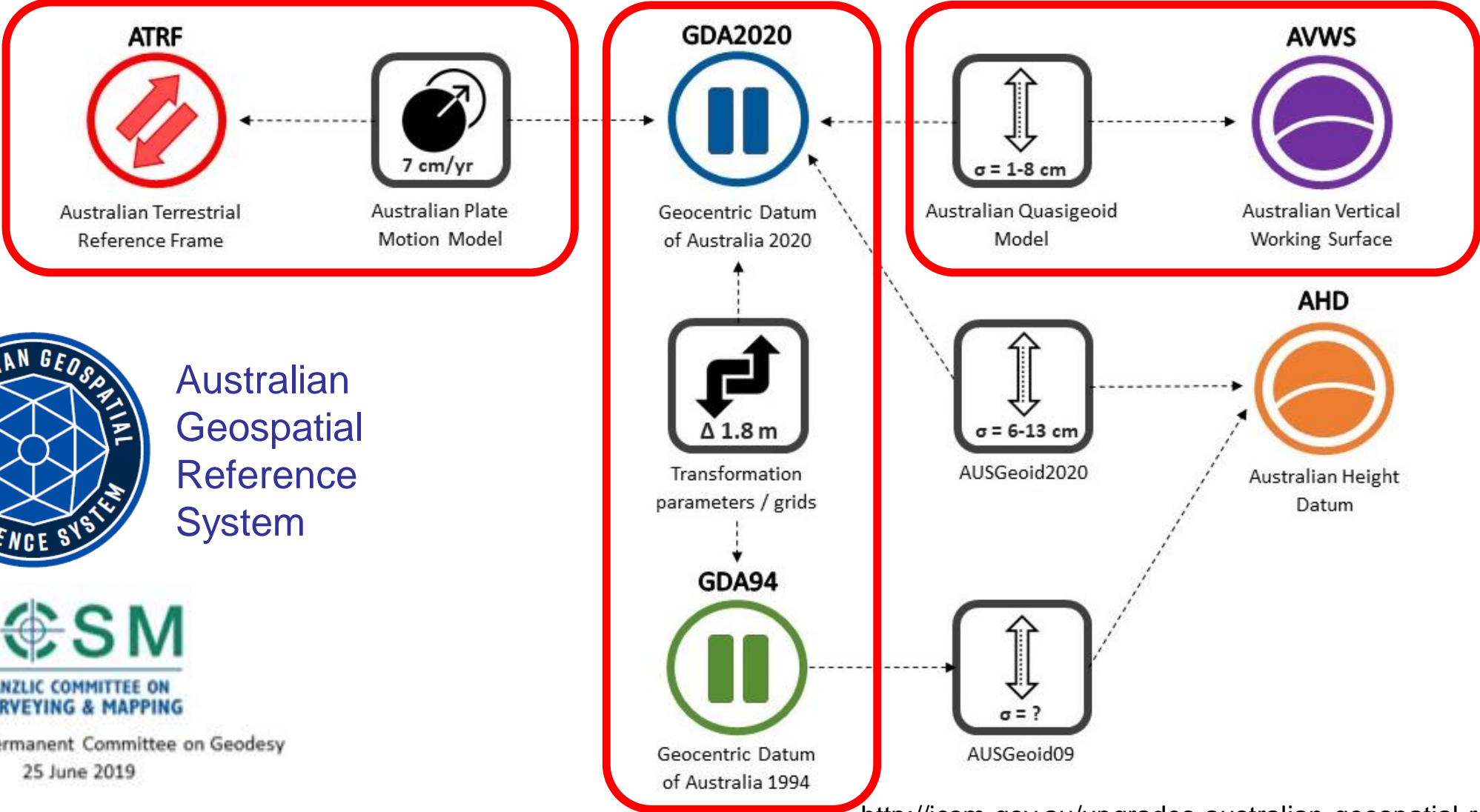


Australian Datums (and how to move between them)

Available Jan 2020
Adopt ???

Available 2017
Adopt 2020

Available Jan 2020
Adopt ???



Australian Geospatial Reference System



Prepared by Permanent Committee on Geodesy
25 June 2019

Practical take home messages

- GDA2020 is static **like GDA94, but ~2m NE**
... but the earth is moving... **GDA2020 + PMM [+deformation] = ATRF**
- AHD71 is unchanged... but...
AHD-derived from GNSS needs new AUSGeoid2020
- GDA2020 & GDA94 both to be supported
- 2018 = Prepare
- 2019 = Enable via **CORSnet-NSW, SCIMS Online**, Cadastre, Topo, etc
- 2020 = Adopt How to prepare for GDA2020 in your workflows
- ... and beyond

**Prepare: Review Mine Baseline and
Survey Control in SCIMS GDA2020**

Questions? Comments!



- Talk to the surveyors in your organisation
- Visit the ICSM forum and FAQs pages: www.icsm.gov.au/gda2020
- email: GDA2020@finance.nsw.gov.au
- Transformation grids: https://github.com/icsm-au/transformation_grids
- Online transformation service: <http://positioning.fsdf.org.au/>
- also <https://www.icsm.gov.au/datum/gda-transformation-products-and-tools/software-and-plugins>