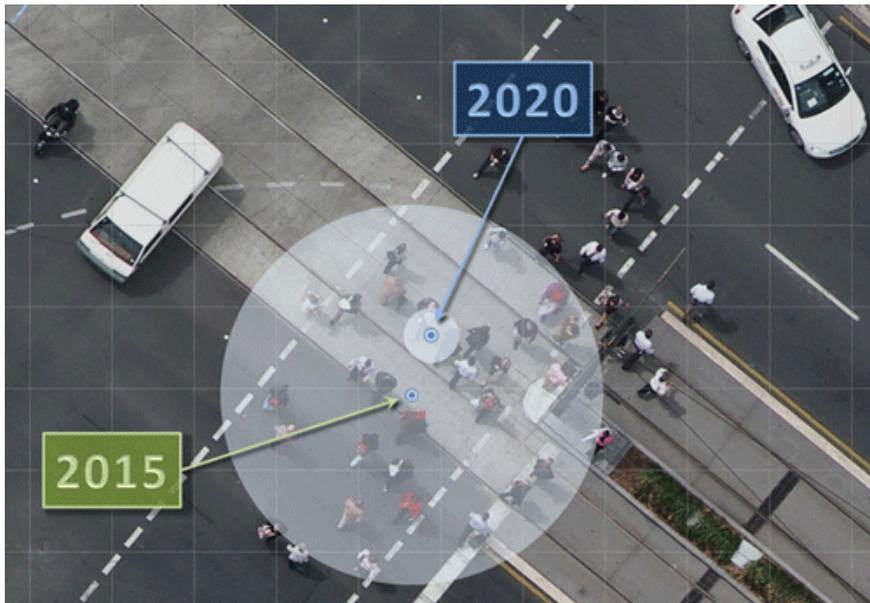


## Modernising Australia's Datum



Aerial image is used with permission from AEROMETREX Pty. Ltd

## Questionnaire Summary July 2016

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# Contents

Each question from the questionnaire is reproduced and a graphical or numerical summary of responses presented where appropriate. Comments received in response to questions 2.7 and 4.6 are reproduced in Appendix A and B respectively.

- **Observations**

Outlines observations by GMIWG derived from consideration of the responses either singularly or in combination with other question replies.

- **Implications / Actions**

Outlines DMIP implementation implications arising from the GMIWG observations

- **Terms**

**GDA2020 Adoption Date** – being the date of adoption of GDA2020 as the operational datum by Australian jurisdictions

**NTv2** – National Transformation version 2, binary grid format widely used for 2D transformations between geodetic datums that permits distortion in ground survey control networks to be modelled in the transformation.

**FAQ's** – Frequently Asked Questions about datums, transformations and datum modernisation implementation collated on the ICSM Datum Modernisation FAQ page.

**COTS** – Commercial-Off-The-Shelf

**EPSG registry** – free database of coordinate reference systems and transformations maintained on a best effort basis by the Geomatics Committee of the International Association of Oil and Gas Producers.



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## Background

Following a recommendation from ICSM, the GDA Modernisation Implementation Working Group (GMIWG) prepared a questionnaire intended to provide a baseline on the level of awareness and knowledge of the plans to modernise GDA94 and provide data to inform the implementation plan. The move to GDA2020 was a focus. The questionnaire was developed nationally and directly issued to a large range of industry and allied organisations and individuals and promoted on the ICSM web site. The survey was opened on 28 April and closed on 27 May 2016 and in total 1067 responses were received.

## Summary

The survey responses indicated there is a good level of base knowledge about the modernisation of GDA94 and the move to GDA2020 but indicated that still more needed to be done, within and without the spatial sector, to raise awareness of the change and details of the process proposed.

The requirement for ICSM to lead engagement with stakeholders outside the spatial sector on the importance of datum modernisation and providing supporting resources was a clear theme.

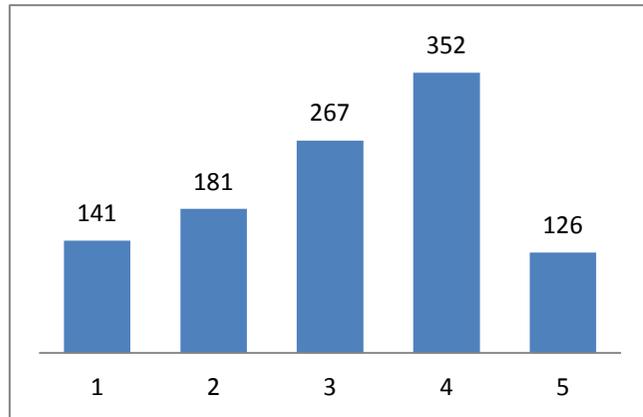
Notable results from the questionnaire include:

- A clear majority of respondents (67%) didn't envisage significant issues implementing GDA2020.
- Nationally, 85% of respondents nominated a date before or during Q1 2018 as an appropriate date for their organisation to adopt GDA2020 as the operational datum, armed with the knowledge they have available.
- Nationally, 68% of respondents indicated they would require the property boundary layer to be available on GDA2020 before they could operate on GDA2020.
- A list of over 100 different software platforms from over 80 suppliers used with spatial data was collated and will be used by GMIWG for direct communication about GDA2020.
- Emails are the preferred method for communication about the implementation and 734 respondents left their contact details.

This report directly addresses some matters raised in the questionnaire. ICSM will more fully consider the responses and address them in detail over the coming months using an appropriate mechanism including updating FAQ's, issuing guidelines and producing targeted communiques.

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### 1.1 Results



Very Low: 1	<b>141</b>	13%
2	<b>181</b>	17%
3	<b>267</b>	25%
4	<b>352</b>	33%
Very high: 5	<b>126</b>	12%

### 1.1 How would you rate your current knowledge of the reasons behind the decision by ICSM and ANZLIC to adopt a new national spatial reference system to replace GDA94?

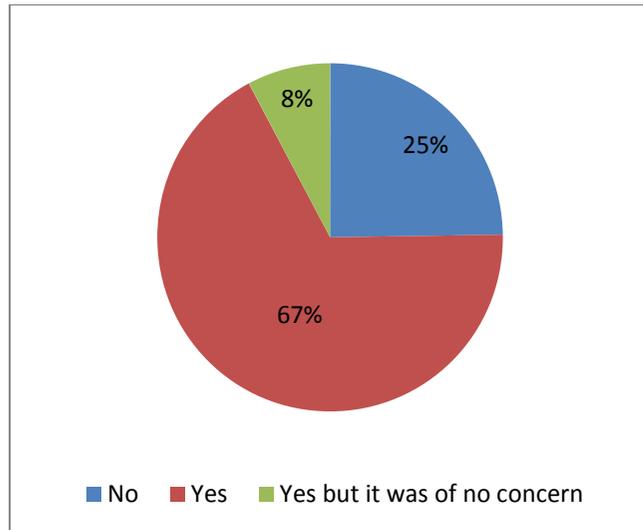
#### Observations

- i. Nearly 45% of respondents indicated high to very high knowledge of the reasoning behind the implementation of a new Australian spatial reference framework.
- ii. Overall approximately 30% of respondents indicated low or very low knowledge of the reasons behind the decision to replace GDA94.
- iii. These results demonstrate there is a good base of knowledge amongst spatial sectors stakeholders about the change but there is still more to do to raise awareness of datum modernisation and why there is a desire to move to GDA2020 and ultimately a dual frame reference system.
- iv. Comments (see 2.7 and 4.6) indicated the importance of communicating why modernisation is required to “downstream” stakeholders such as managers, decision makers and other industry and professional sectors.

#### Implications / Actions

- i. ICSM must continue to lead communication of why datum modernisation is required, both within and without of the spatial sector.
- ii. ICSM commits to increased promotion of this message directly, through execution of its Communication Strategy, to “downstream” stakeholders.
- iii. ICMS will provide generic resources to support stakeholders describing to their networks what datum modernisation is and why it is being undertaken in a two stage process.

## 1.2 Results



**1.2** *Were you aware that all GNSS systems operate in an "Earth-fixed" reference frame that shows coordinates of features on the Earth's surface changing over time, unlike GDA94 which is a static or "plate-fixed" datum where coordinates don't change?*

### Observations

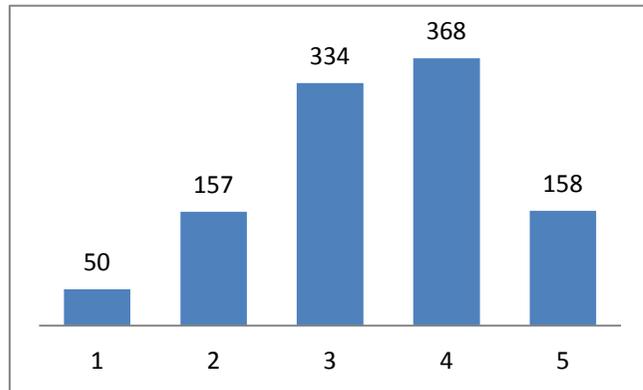
- i. Approximately 25% of respondents were unaware of a geodetic and mapping knowledge element that is one of the reasons integral to the decision to move to a new national reference framework supporting ongoing close alignment with GNSS reference frames.

### Implications / Actions

- i. Targeted communication by ICSM outlining why this issue is integral to the requirement to modernise GDA94 is required, both within and without of the spatial sector.

Yes	<b>720</b>	67%
Yes but it was of no concern as I only use spatial data where the accuracy is less than 3 metres	<b>83</b>	8%
No	<b>264</b>	25%

1.3 Results



Very Low: 1	<b>50</b>	5%
2	<b>157</b>	15%
3	<b>334</b>	31%
4	<b>368</b>	34%
Very High: 5	<b>158</b>	15%

**1.3 How would you rate your current understanding of geodetic topics, including the difference between a datum and a map projection or the difference between ITRF / WGS84 reference frames and GDA94 datum?**

**Observations**

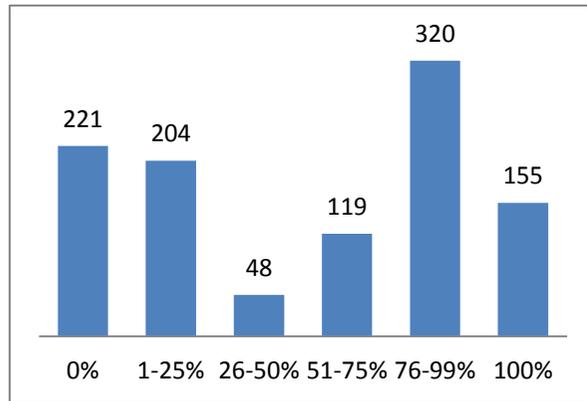
- i. Nearly 50% of respondents rated their technical knowledge about datum and map projections as high or very high.
- ii. Whilst approximately 20% identified as having low or very low technical knowledge nearly 25% responded they were unaware that there was a difference between GDA94 and GNSS reference frames (see 1.2). This is a fundamental concept integral to the requirement to modernise GDA94 in response to the impending new paradigm in accurate location measurement.
- iii. It is not expected that the number of respondents identifying low or very low technical knowledge would be less than those who were unaware of the difference between GDA94 and GNSS reference frames.

**Implications / Actions**

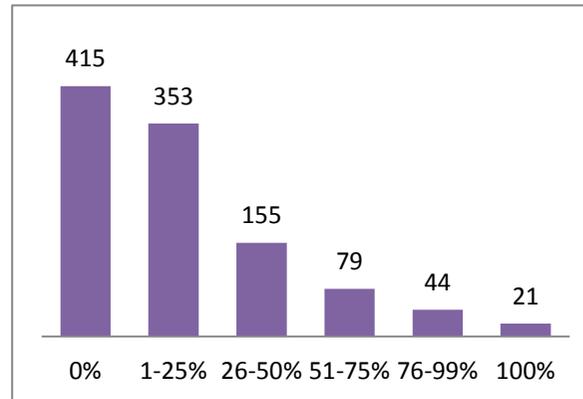
- i. ICSM will continue to communicate the difference between GDA94 and GNSS reference frames and the importance of clearly identifying the “datum” to which spatial information refers.
- ii. It will be communicated that the requirement for appropriate metadata accompanying spatial datasets and ultimately the incorporation of epoch of measurement within coordinate information is an inevitable consequence of the impending new paradigm in accurate location measurement.
- iii. ICSM will support the development of a range of resources that aim to facilitate widespread conceptual understanding of these issues to a varied audience.

2.1 Results

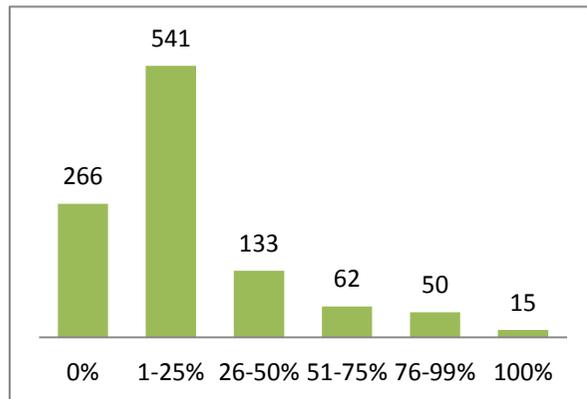
Data accuracy < 0.1m



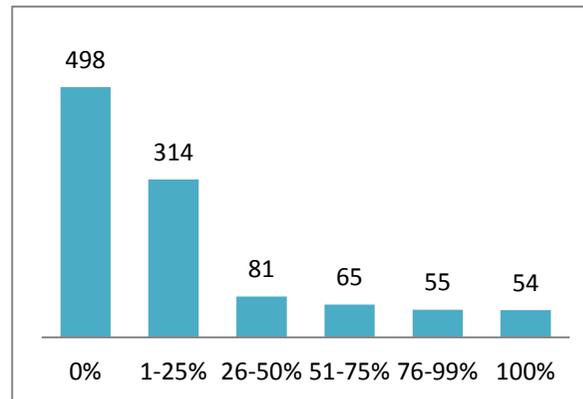
0.5m < data accuracy < 3m



0.1m < data accuracy < 0.5m



3m < data accuracy



**2.1 Estimate what percentage of datasets you create, maintain or use is within the nominal horizontal accuracy ranges below (select one of the percentage options per row)?**

**Observations**

- i. Nearly 80% of respondents indicated they deal with datasets whose accuracy is better than 0.1 metres, and 75% with data in the 0.1m < data accuracy < 0.5m range.
- ii. Around 46% reported no dealings with datasets with accuracy worse than 3 metres and only 5% worked exclusively with this data.
- iii. The overwhelming majority of respondents deal with datasets that are directly impacted by the impending new paradigm in accurate spatial data measurement. This will necessitate changes to the way they maintain or use those datasets irrespective of the datum modernisation initiative.

**Implications / Actions**

- i. ICSM communication must facilitate conceptual understanding of the drivers for datum modernisation.
- ii. ICSM focus on a simple take-home message - a coordinate (location) without explicit knowledge of the datum, and ultimately date of measurement, should be considered inconclusive in relation to accurate location measurements.

## 2.2 Results

*Responses have been collated resulting in a list that includes over 100 different software / applications (including open source) from over 80 different providers.*

**2.2 What software platforms do you use to maintain, store and distribute spatial / coordinate data? Please enter individual product names separated by a comma.**

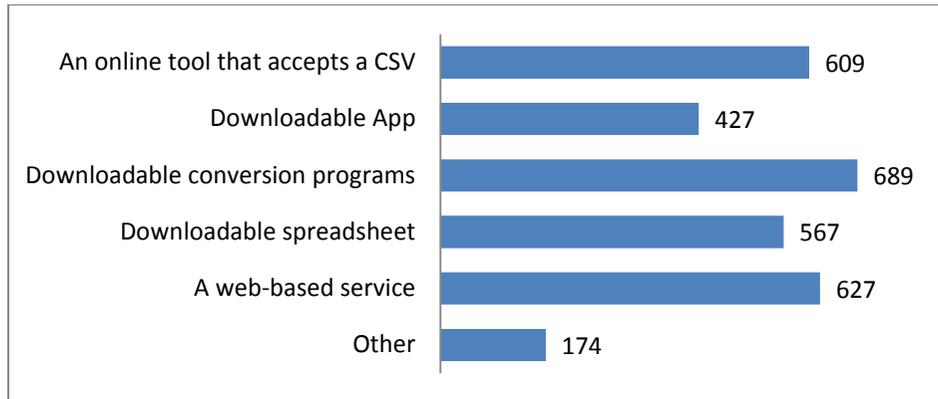
### Observations

- i. Around 3% of respondents nominated “none” in response, indicating they personally did not use software in their role (e.g. Manager, Director, Media) or engaged consultants.
- ii. Over 90% of respondents listed applications from one of 15 providers of software to the spatial, engineering and construction sectors as being used to maintain, store and distribute spatial / coordinate data.
- iii. Not all platforms listed provide the option to utilise transformation grids (e.g. NTV2 format) for transformation between datums.
- iv. Due to the limited response from Precision Agriculture community there needs to be further investigation of software platforms used in this sector.

### Implications / Actions

- i. Geoscience Australia provide GDA2020 datum and transformation information to the [EPSG Geodetic Parameter Registry](#) as soon as it is available – see [How Will I convert my GDA94 coordinates to GDA2020 and vice-versa](#) on the ICSM datum modernisation [FAQ](#) page.
- ii. GMIWG collate contact details for listed software / hardware providers and the major Australian distributors for non-Australian organisations, including those used in Precision Agriculture.
- iii. Geoscience Australia to directly contact the entities on this list, advising them when the GDA2020 datum is released and the associated EPSG Registry codes.
- iv. Education which highlights the importance of establishing what transformation parameters software or online applications are actually applying must be provided.
- v. Geoscience Australia and ICSM should support, and contribute to, Standards Australia’s participation in the International Standards Organisation (ISO) review of *International Standard (IS) 19111 Geographic Information - Spatial Referencing by Coordinates* and the establishment of the Geodetic Registry under the soon to be finalised *ISO/IS 19127 Geographic Information – Geodetic Codes and parameters*.

2.3 Results



An online tool that accepts a CSV file or allows entry of a single coordinate for transformation	<b>609</b>	57%
Downloadable App that allows entry of a single coordinate for transformation	<b>427</b>	40%
Downloadable conversion programs like GDAY / GDAit / GEOD (these were developed for GDA94)	<b>689</b>	64%
Downloadable spreadsheet to allow transformation of a file of coordinates	<b>567</b>	53%
A web-based service to transform the most common spatial data format files	<b>627</b>	59%
Other	<b>174</b>	16%

**2.3 What, if any, GDA94<->GDA2020 transformation and validation tools / products / services would you like provided?**

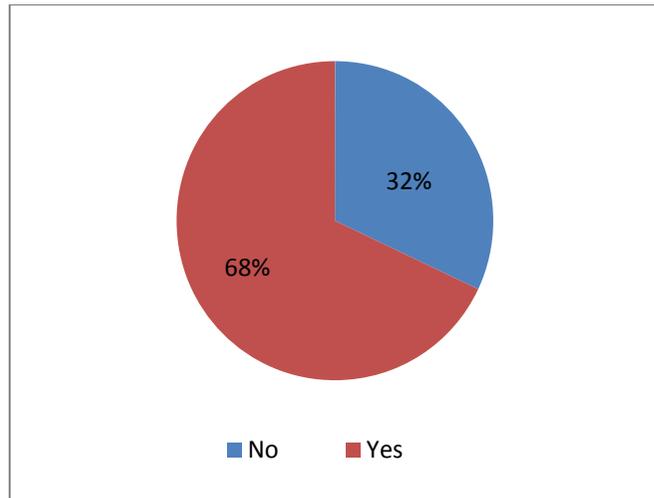
**Observations**

- i. Almost all requests under “Other” were for actions to have the new spatial reference framework supported in COTS software.
- ii. Around 19% of respondents chose 4 or more options. This may have been to ensure as many options as possible are developed and available however they may only be looking to use one tool repeatedly.
- iii. Requests for a downloadable conversion program were most popular amongst respondents who identified themselves as “surveyors” whilst a web-based service to transform the most common format files was more popular amongst “Spatial data managers / GIS users”.

**Implications / Actions**

- i. ICSM will develop the four tools that received the support of over 50% of respondents.
- ii. The range of spatial data formats that will be converted by the web-based service will be determined with respect to the processing capacity that is required.
- iii. GA, on behalf of ICSM, will take direct action to facilitate the adoption of the new spatial reference frameworks in COTS software (see 2.2 above).

## 2.4 Results



Yes	<b>725</b>	68%
No	<b>342</b>	32%

**2.4** A GDA2020 compliant dataset is one that has been transformed by some means (such as products above) to GDA2020 and a GDA2020 compatible dataset is one that can simply be re-badged GDA2020, because the spatial accuracy far exceeds the 1.8m shift from GDA94 to GDA2020. If you need to transform datasets do you maintain any that are reliant on the digital cadastral boundary layer being transformed and available on GDA2020?

### Observations

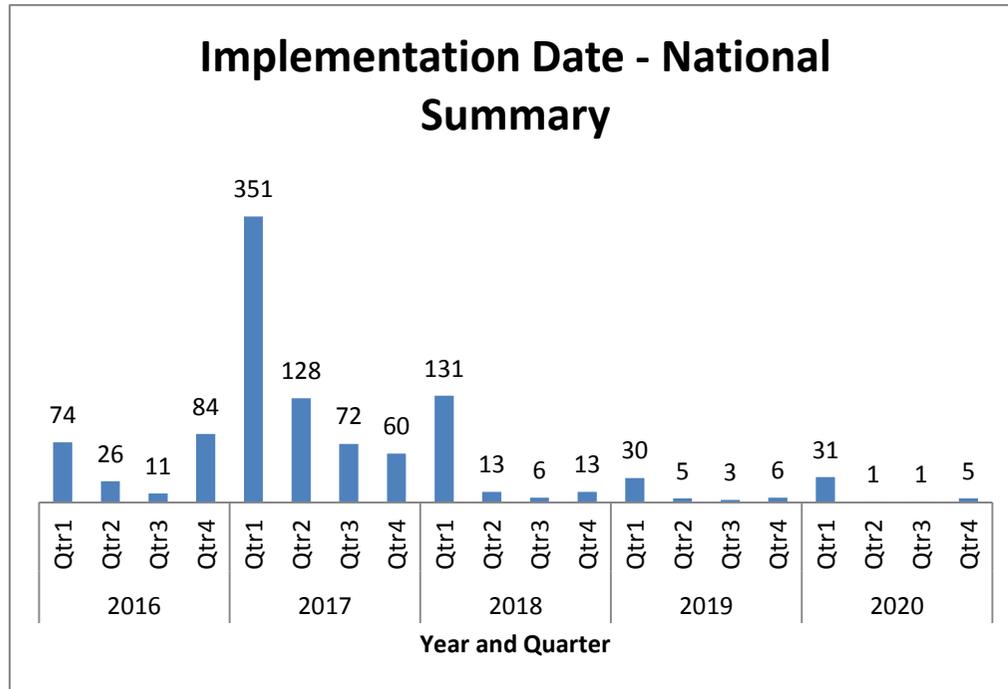
- i. The digital property boundary layer is a key spatial indexing resource and a significant majority of respondents depend upon it being readily reproduced on the same datum as other datasets.
- ii. For many stakeholders it is critically important they are able to preserve the “relative” spatial relationships that have been established between the location of the digital property boundary layer and other spatial data layers.

### Implications / Actions

- i. The GDA2020 Adoption Date chosen by jurisdictions must consider the importance of enabling users of spatial data to preserve the relationship between digital property boundary layers and other spatial data.
- ii. Specifically, the date chosen must allow sufficient time for users of digital property boundary layers to readily incorporate GDA2020 and/or its relationship to GDA94 in standard operational processes. This means not only software upgrades, but also revision of applicable metadata, policies, quality assurance programs and documentation (see **2.7**).

## 2.5 Results

National totals of selected Implementation dates, sorted by calendar Year and Quarter, are as follows.



The following dates were also chosen but excluded from this graph to simply the extents (value in brackets indicates the number who chose the preceding date if more than one)

Qtr1 2000 (2); Qtr1 2021; Qtr1 2022 (2); Qtr4 2022 (2); Qtr1 2025 (2); Qtr4 2025 (2); Qtr1 2030; Qtr1 2034; Qtr 1 2050 (2); Qtr 1 2999; Qtr 1 3000.

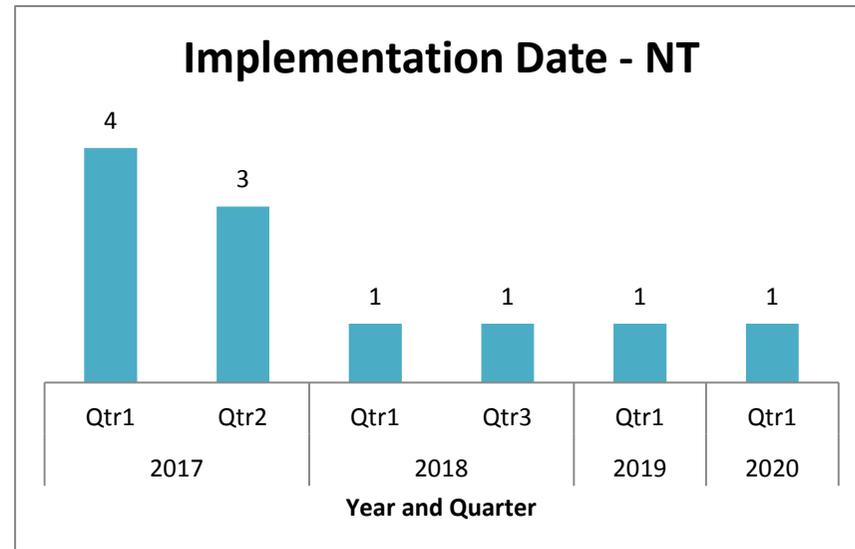
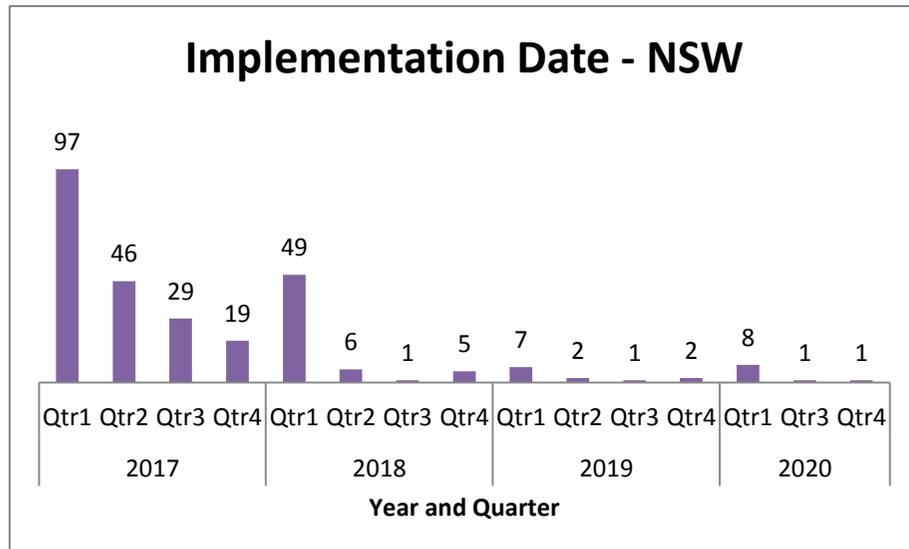
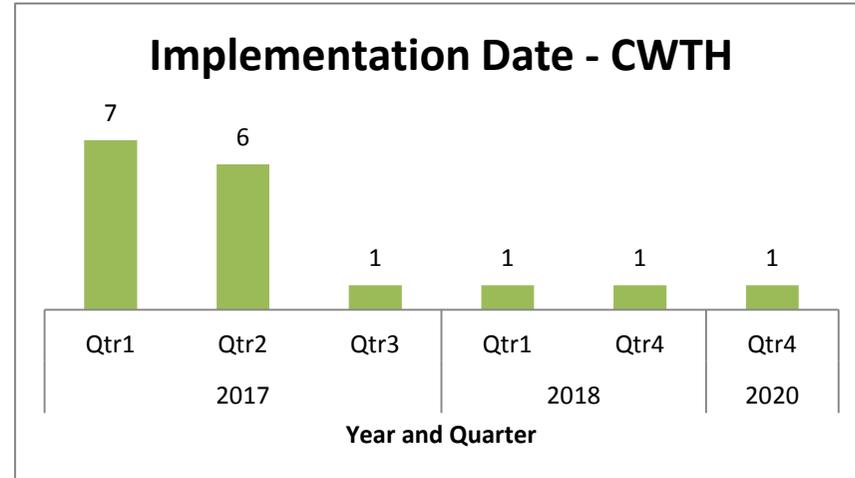
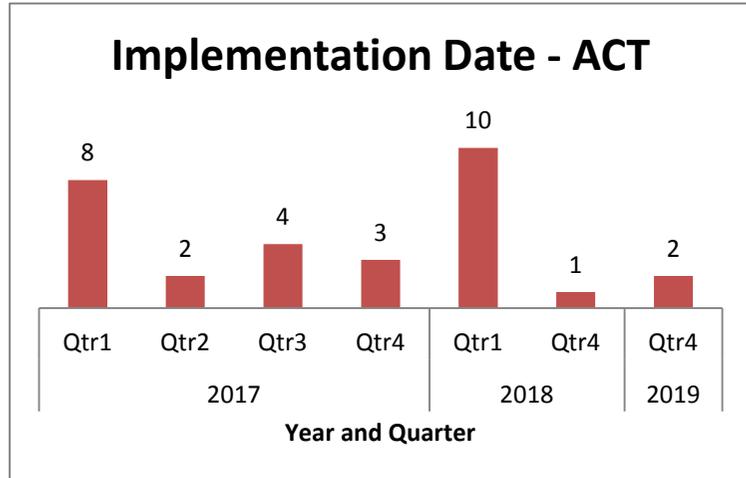
**2.5** If the transformation parameters for GDA94<->GDA2020 are provided to software developers and providers during 2016 and the general validation tools, support documentation and education resources supporting datum modernisation were available by 1 January 2017 what is a realistic time-frame for you / your organisation to nominally "operate" in GDA2020, rather than GDA94 (assuming the digital cadastre and other layers are available from jurisdictions on GDA2020)?

### Observations

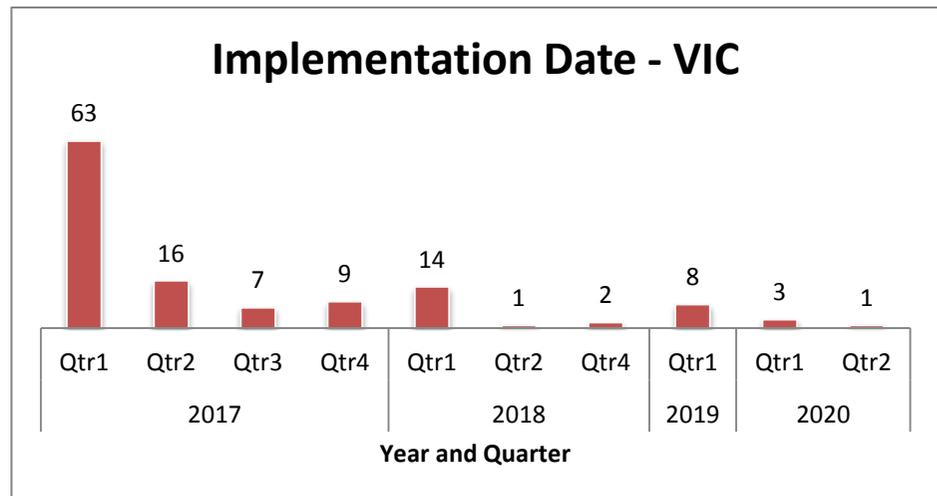
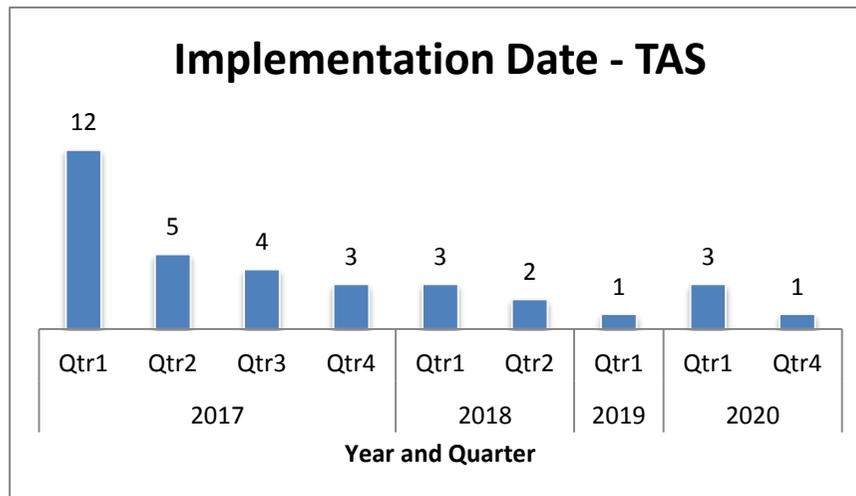
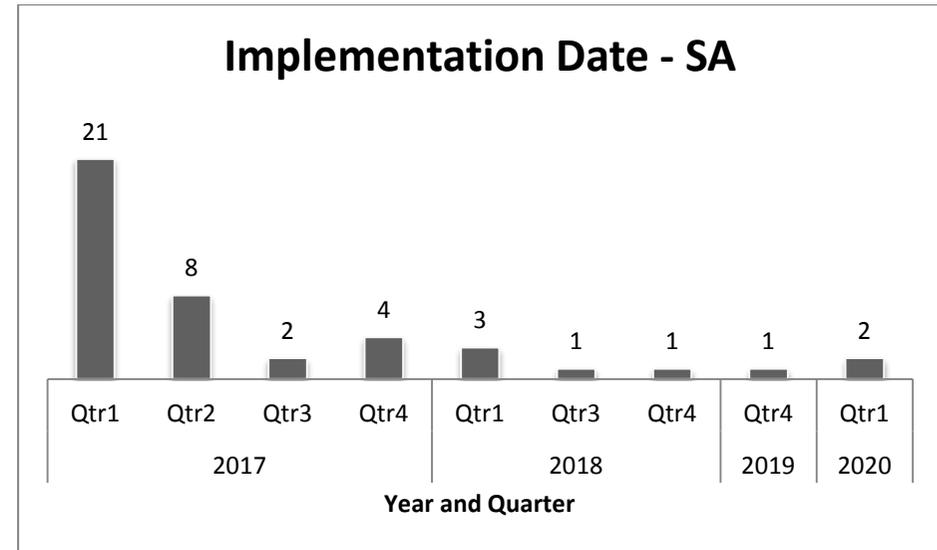
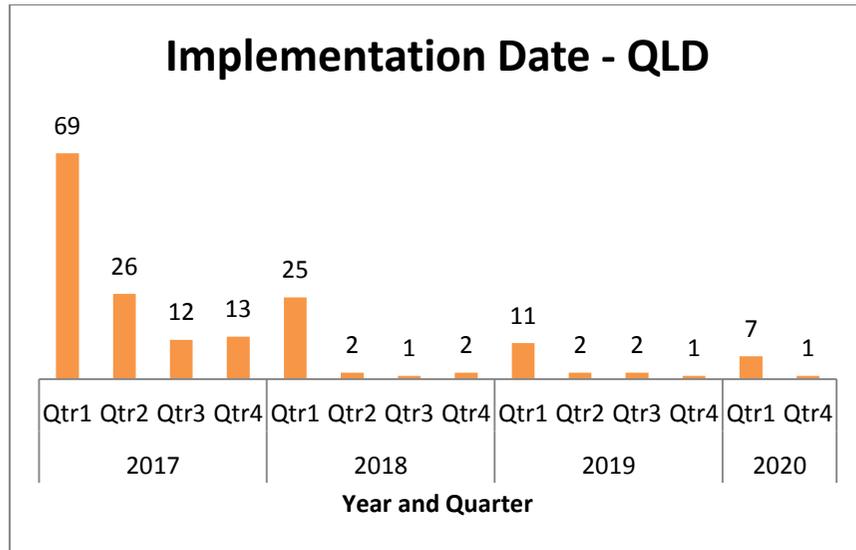
- i. The nominated date is clearly dependent upon fulfilment of the pre-conditions nominated in the question; including software providers being given GDA2020 datum information in 2016.
- ii. Dates chosen in 2016 are shown in the national summary. It is assumed that the majority of the entered dates were an error during data entry. No conclusion has been drawn about what years was intended by respondents and are excluded from comparisons.
- iii. Excluding the dates prior to 1 January 2017, the following percentage of respondents nominated a date before or during Q1 2018: Nationally 85%; ACT 90%; CWLTH 88%; NSW 90%; NT 72%; QLD 83%; SA 88%; TAS 79%; VIC 89%; WA 89%.
- iv. Some dates chosen indicate there are respondents who feel they or their organisation will never be ready for, or able to accommodate, datum change. This is not unusual at the commencement of a change process.

2.5 Results con't

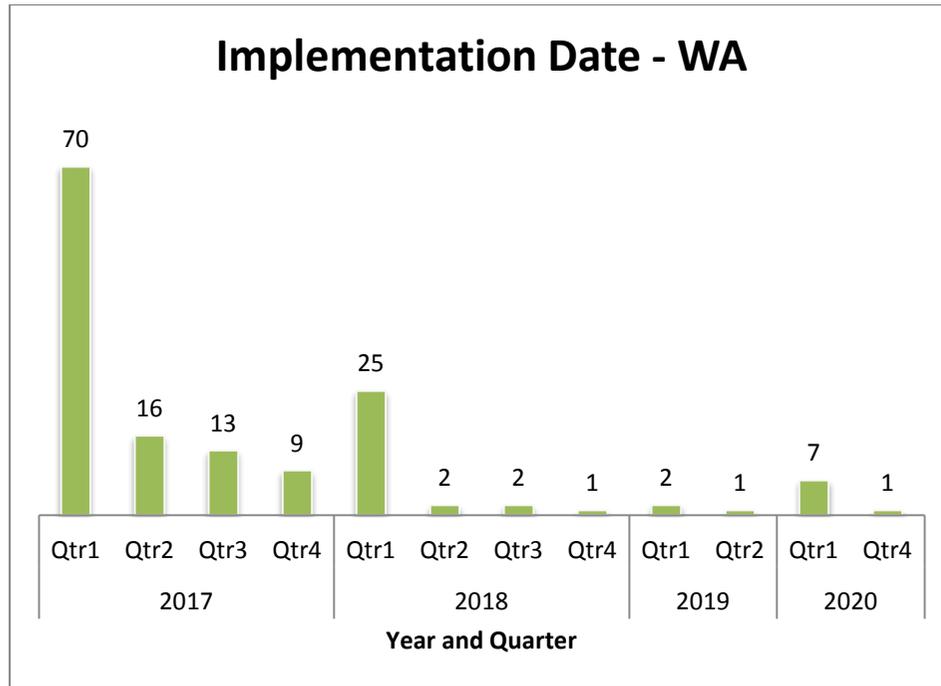
Jurisdiction totals of selected Implementation dates, sorted by calendar Year and Quarter, excluding dates pre 1 January 2017 and post 31 December 2020 are as follows.



2.5 Results con't



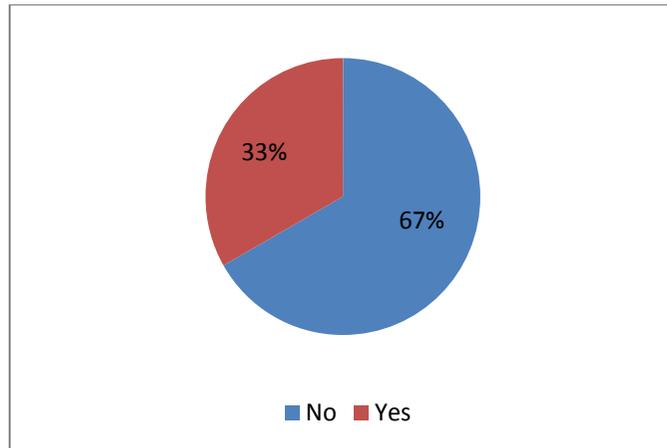
2.5 Results con't



**Implications / Actions**

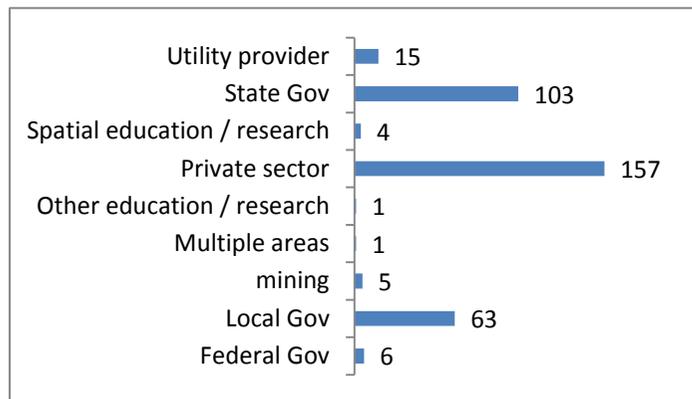
- i. ICSM will include the dates indicated by respondents as an important consideration when choosing the Adoption Date for GDA2020.

2.6 Results



Yes	<b>355</b>	33%
No	<b>712</b>	66%

Number who envisaged significant issues by sector



**2.6 Do you envisage significant issues in implementing GDA2020 as the new operational datum in your organisation?**

**Observations**

- i. A clear majority of respondents (67%) do not envisage significant issues implementing GDA2020.
- ii. Nationally, of those that did envisage significant issues, approximately 50% identified themselves as surveyors and 35% as GIS experts which are similar to the overall percentage of respondents by role (52% and 32% respectively per 4.1).
- iii. Nationally, the following approximate percentages per sector indicated significant issues were expected:
  - a. 44% from private sector (49% of total respondents)
  - b. 29% from state government (23% of total respondents)
  - c. 18% from local government (19% of total respondents)
  - d. 50% who identified as utility providers.
- iv. Respondents who subsequently identifying as being involved with mining and long running construction projects (see 2.7 and 4.6) identified particular issues.

**Implications / Actions**

- i. The issues raised by over 33% of respondents must be considered by jurisdictions when determining the GDA2020 Adoption Date.
- ii. ICSM will utilise the comments provided in 2.7 and 4.6 to target issues by sector, role and jurisdiction in the implementation process.

## 2.7 Results:

*Of the 355 respondents who identified that they did envisage significant issues in adopting GDA2020 as the new operation datum in their organisation 330 provided a comment on these issues in Question 2.7. Another 12 who didn't envisage significant issues also provided comments. The majority of responses are reproduced in Appendix A along with the primary role in relation to spatial information indicated by the respondent (4.2). They have been grouped into broad categories of issues, which are outlined adjacent.*

## 2.7 If you answered "Yes" to question 2.6 what are the issues?

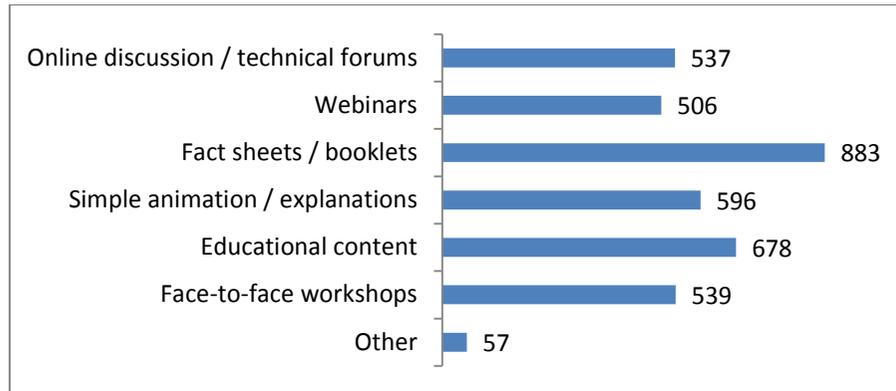
### Observations

- i. The responses to **2.7** have be grouped into 6 broad categories as follows:
  - a. Arrangements during transition from GDA94 to GDA2020.
  - b. Process of change - complexity, resistance, processes, resources, cost, extent (amount of data).
  - c. Lack of widespread understanding / conceptual knowledge / awareness of importance of datum, size of coordinate change from GDA94 to GDA2020 (1.8 metres).
  - d. Currently using operational datums other than GDA94.
  - e. Software / Hardware Support.
  - f. Other comments, including the issues regarding the "Earth-fixed" datum (stage 2).
- ii. Jurisdiction specific questions were asked and will be dealt with by the appropriate jurisdiction
- iii. A large number of basic questions posed had been addressed in the ICSM FAQ page prior to the release of the questionnaire, indicating that awareness of the ICSM Datum modernisation pages was not high (an observation supported by the number of web page visits).
- iv. Whilst this report does address many individual issues raised detailed responses to all issue categories are beyond the scope of this report.
- v. A theme common to all of the above categories was the lack of awareness, knowledge or understanding - whether that was in relation to why datum modernisation was proposed, the detail of what was proposed, detail about the change process and in particular the lack of interest by the large number of impacted stakeholders outside the spatial sector.

### Implications / Actions

- i. ICSM will more fully consider the responses and address them in detail over the coming months using an appropriate mechanism. For instance, the DMIP work program will address many of the issues raised and the FAQ page will be updated with additional responses.
- ii. In particular, ICSM will aim to increase engagement with all stakeholders to more effectively outline the "why, what and how" of datum modernisation and highlight what resources are being provided to assist the modernisation effort.

### 3.1 Results



Online discussion / technical forums	<b>537</b>	50%
Webinars	<b>506</b>	47%
Fact sheets / booklets	<b>883</b>	83%
Simple animation / explanations via You-tube	<b>596</b>	56%
Educational content e.g. updated ICSM Fundamentals of Mapping pages	<b>494</b>	46%
Face-to-face technical workshops	<b>486</b>	45%
Other	<b>57</b>	5%

### 3.1 What tools or resources would assist you / your staff to transition to GDA2020?

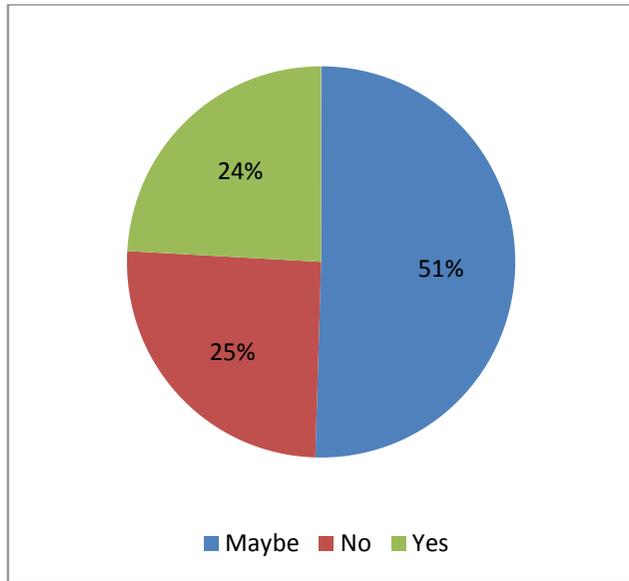
#### Observations

- i. Direct (and notified – see 4.4) access to summarised factual information and booklets is clearly seen as the most effective means of communicating information.
- ii. Simple conceptual explanations (e.g. animations) and general education resources were almost as requested as technical information and updates.
- iii. This desire for supporting conceptual resources reflects the results from **Section 1** and the comments received in **2.7** and **4.6**.
- iv. Around 50% of respondents requested provision of online forums (see also **3.2** and **3.3**).
- v. Approximately 25% of respondents chose all options. This may be to ensure all are developed and available to a broad range of users. However, they are likely to be accessing only one or two of those tools repeatedly.
- vi. Majority of “Other” responses were for support in COTS software, but mention was also made of example calculations and datasets and the need to support communication of messages to decision makers.

#### Implications / Actions

- i. ICSM will provide general education and conceptual level resources, including animations, to inform a broad range of audiences, including managers and clients, of the importance of the national datum and the requirement to modernise.
- ii. ICSM will engage with the non-spatial sector highlighting the availability of these resources.
- iii. Sample calculations and test datasets will be provided.

3.2 Results



**3.2** *Would you utilise a national online forum created to support modernisation of GDA94?*

**Observations**

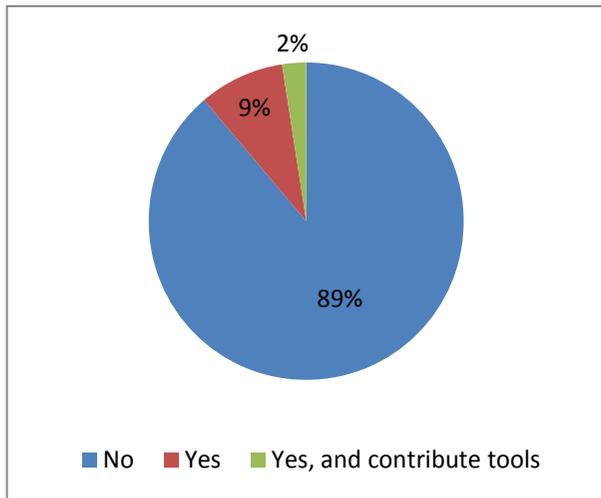
- i. Whilst 50% of respondents to question 3.1 requested an online forum only approximately 24% have identified they would definitely utilise it.

**Implications / Actions**

- i. ICSM will investigate the feasibility and desirability of a national forum, in particular if the assistance it provided could be delivered by other measures.

Yes	<b>257</b>	24%
Maybe, if it had widespread support and usage	<b>538</b>	51%
No, not likely except in limited instances	<b>272</b>	25%

### 3.3 Results



### 3.3 Would you be happy to participate in a national forum as an expert moderator in your area of expertise?

#### Observations

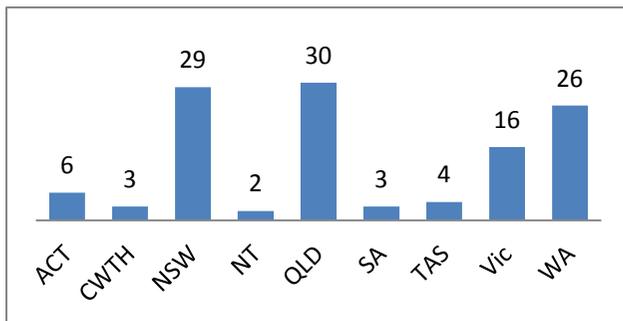
- i. 118 respondents (approximately 11%) indicated they would participate in a national forum as a moderator in some capacity.
- ii. 99 respondents left their contact details.

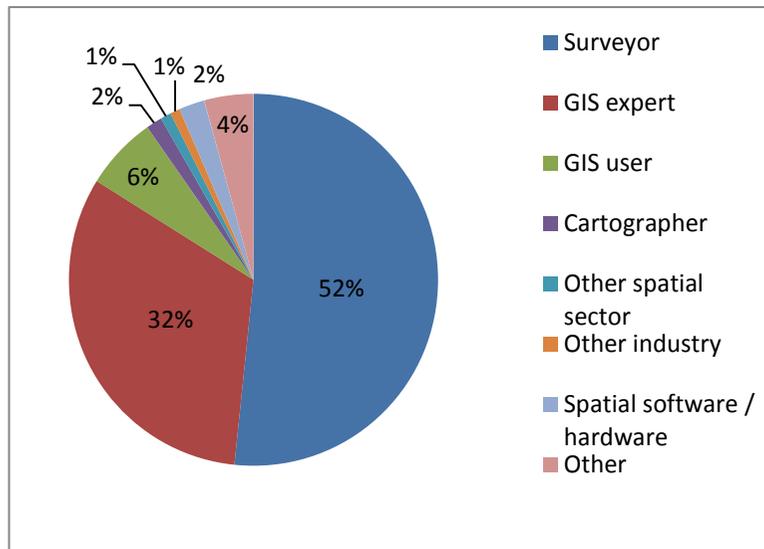
#### Implications / Actions

- i. ICSM will consult with those respondents who indicated they would participate as moderators.

Yes	<b>93</b>	9%
Yes, and I would also be prepared to contribute workflows, tools etc developed for re-use	<b>26</b>	2%
No	<b>944</b>	89%

Forum contributors by jurisdiction





4.1 Results

Surveyor	<b>551</b>	52%
GIS expert / spatial data analyst / spatial data manager	<b>344</b>	32%
GIS user	<b>68</b>	6%
Cartographer	<b>15</b>	1%
Other spatial data sector e.g. land manager, forestry, planning	<b>10</b>	1%
Other industry high level user e.g. precision agriculture, machine guidance	<b>9</b>	1%
Spatial software / hardware provider	<b>24</b>	2%
Other	<b>46</b>	4%

4.1 Indicate your primary role in relation to spatial information.

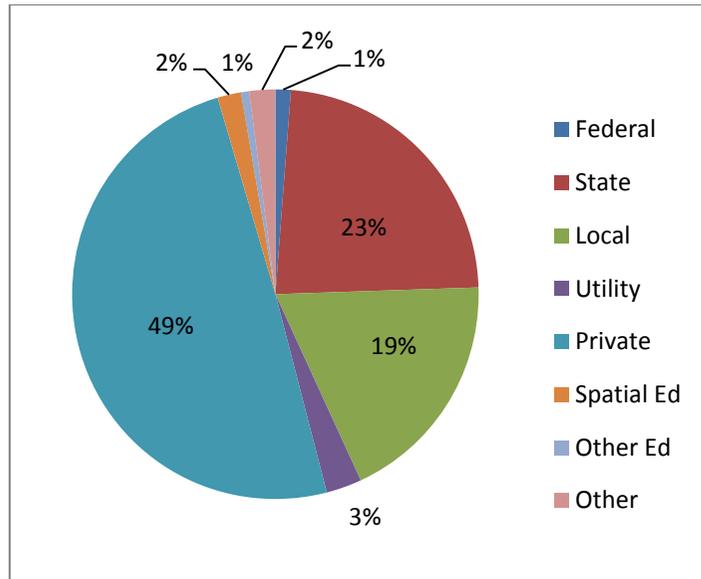
Observations

- i. In the “Other” category 8 respondents identified themselves being Managers, 2 indicated they were in IT support, 6 specifically nominated the other sector they were from whilst the majority of the remainder nominated multiple categories or a more detailed position description.
- ii. Over 95% of respondents identified their role as one that could broadly class them as executing technical functions in the spatial sector and ICSM regards the results as being a good representation of the spatial sector.
- iii. The absence of responses from other industry users, and the comments from those who did respond (2.7 and 4.6) indicates there is still significant work to be done in communicating the “why, what and how” of datum modernisation outside the spatial sector.

Implications / Actions

- ii. ICSM will actively pursue increased awareness of the importance of the national datum and the process proposed for its modernisation across multiple sectors (e.g. agriculture, engineering, construction).

### 4.2 Results



Federal government	<b>13</b>	1%
State government	<b>248</b>	23%
Local government	<b>199</b>	19%
Utility provider e.g. power, water	<b>30</b>	3%
Private sector	<b>528</b>	49%
Spatial education / research	<b>20</b>	2%
Other education / research	<b>7</b>	1%
Other	<b>22</b>	2%

### 4.2 Indicate your primary sector of employment.

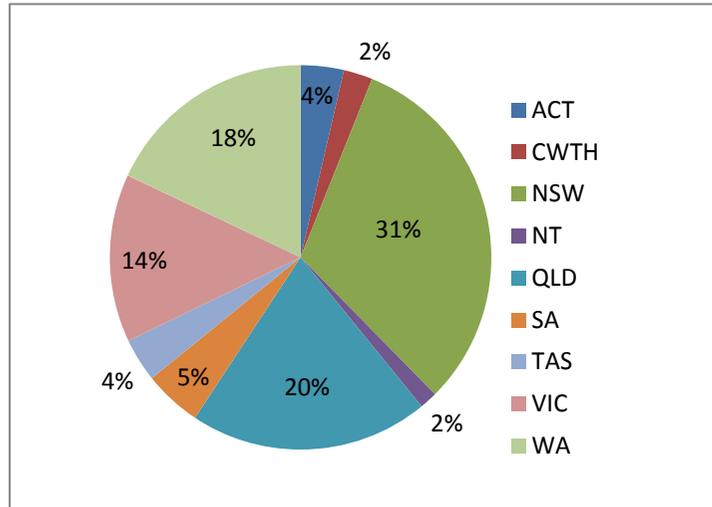
#### Observations

- i. The three tiers of government were individually identified in the expectation they would have different issues / response trends – e.g. predominantly dealing with different accuracy data (small scale vs large scale) that would not be captured by a single government category.
- ii. In particular, the different levels of government have different direct dependencies upon the digital property boundary layer and different levels of resource capacity to effect change.
- iii. Ten respondents in the “Other” category specifically nominated the Mining sector.
- iv. The sectors have been evaluated with other question responses (e.g. **2.1**, **2.6**) to look for sector specific issues.

#### Implications / Actions

- i. GMIWG members are responsible for obtaining additional feedback from sectors not well represented in the responses on a jurisdictional basis.

4.3 Results



Australian Capital Territory	<b>39</b>	4%
Commonwealth	<b>26</b>	2%
New South Wales	<b>336</b>	31%
Northern Territory	<b>16</b>	2%
Queensland	<b>216</b>	20%
South Australia	<b>52</b>	5%
Tasmania	<b>39</b>	4%
Victoria	<b>151</b>	14%
West Australia	<b>192</b>	18%

4.3 Indicate the jurisdiction in which you primarily work.

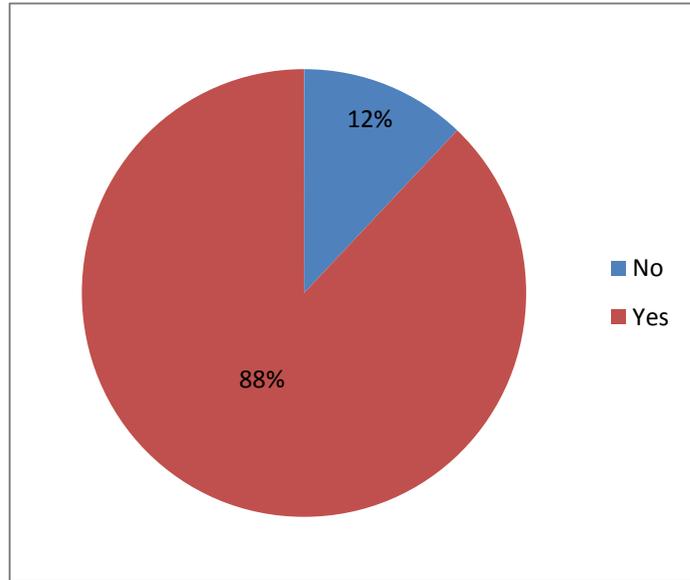
Observations

- i. ICSM considers all jurisdictions were adequately represented in the responses.
- ii. The nominated Adoption Date (2.5) and percentage of respondents who identified significant issues in implementing GDA2020 (2.6) was reasonably consistent across all jurisdictions.

Implications / Actions

- i. GMIWG members are responsible for obtaining additional feedback on a jurisdiction basis.

4.4 Results



Yes **925** 88%

No **127** 12%

**4.4** *Would you like receive regular updates on the datum modernisation process?*

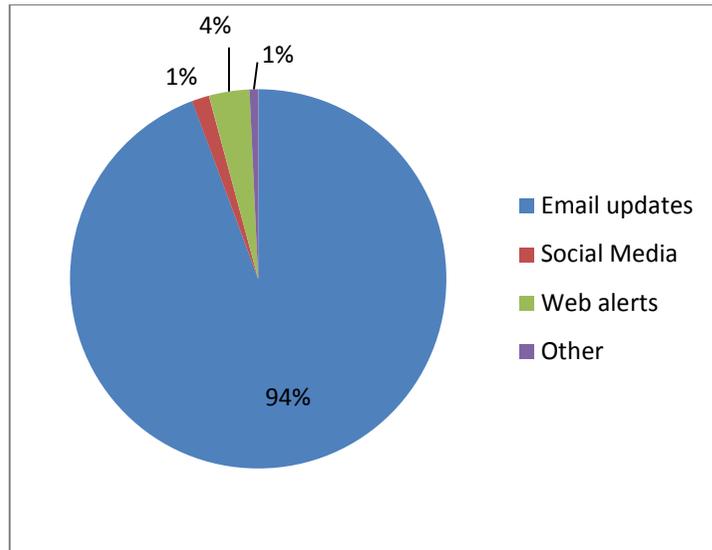
**Observations**

- i. Majority of respondents wish to be kept regularly directly informed about datum modernisation progress.

**Implications / Actions**

- i. ICSM to provide regular updates (approximately monthly till 2017).
- ii. Updates will be delivered via email to subscribers who nominate to join.
- iii. Email updates will contain the basic details of changes and developments but the ICSM website will be the maintained as the focal point and repository for more detailed information – emails will contain links to the website.
- iv. Email subscribers will be directly referred to details of changes and updates on this site or in other forums (see also **4.5**).

### 4.5 Results



Email updates (includes eNewsletters)	<b>894</b>	94%
Social Media (Twitter, Facebook, LinkedIn)	<b>14</b>	1%
Web update alerts	<b>33</b>	4%
Other	<b>7</b>	1%

### 4.5 If yes, what communication channel is most helpful?

#### Observations

- i. Majority of respondents prefer direct email updates.

#### Implications / Actions

- i. ICSM to provide regular updates (nominally monthly).
- ii. Updates will be delivered via email to subscribers who nominate to join.
- iii. Email updates will contain the basic details of changes and developments but the ICSM website will be maintained as the focal point and repository for more detailed information (see 4.4).
- iv. Social media alerts, pointing to updates and developments will also be used but will not be relied upon as a major communication mechanism with the spatial sector although it will be a useful communication channel for the broader audience who are not in a spatial or surveying discipline.

## 4.6 Results

*Of the 237 Respondents who did answer this question 103 either responded “no” or that they had no further comment at this time. The majority of the remaining 134 responses are reproduced in Appendix B along with the primary role in relation to spatial information nominated (4.1). They have been grouped into broad categories of issues, which are outlined adjacent.*

### 4.6 Do you have any comments or questions about GDA2020 implementation?

#### Observations

- i. This open-ended question was provided to capture issues not suited to specific choice and the responses have been grouped into 8 broad categories as follows:
  - a. Arrangements during transition from GDA94 to GDA2020.
  - b. Communication and Implementation.
  - c. Process of Change - complexity, resistance, processes, resources, cost, extent (amount of data).
  - d. Education / conceptual knowledge / awareness and specific queries about proposal.
  - e. Software / Hardware Support.
  - f. Support / Positive feedback.
  - g. Concerns / Alternative views.
  - h. Other comments.
- ii. Jurisdiction specific questions were asked and will be dealt with by the appropriate jurisdiction.
- iii. A large number of basic questions posed had been addressed in the ICSM FAQ page prior to the release of the questionnaire, indicating that awareness of the ICSM Datum modernisation pages was not high.
- iv. Whilst this report does address many individual issues raised detailed responses to all issue categories are beyond the scope of this report.
- v. A theme common to all of the above categories was the lack of awareness, knowledge or understanding - whether that was in relation to why datum modernisation was proposed, the detail of what was proposed, detail about the change process and in particular the lack of interest by the large number of impacted stakeholders outside the spatial sector.

#### Implications / Actions

- i. ICSM will more fully consider the responses and address them in detail over the coming months using an appropriate mechanism. For instance, the DMIP work program will address many of the issues raised and the FAQ page will be updated with additional responses.
- ii. In particular, ICSM will aim to increase engagement with all stakeholders to more effectively outline the “why, what and how” of datum modernisation and highlight what resources are being provided to assist the modernisation effort.

## 2.7 Comments

A small percentage of comments have been deleted from publication, including those from which identity could be deduced. Names of software platforms have been removed.

2.7 Issues mentioned	4.2 Primary sector
<b>Arrangements during transition from GDA94 to GDA2020</b>	
I am just thinking back to the AGD1984 to GDA1994 changeover and there was a transition period where there was a lot of confusion in respect to what projection data was in and consequent use of this data.	State Gov.
Ongoing projects commenced in GDA94	Private sector
Much of our engineering coordinate information is held in paper and CAD formats that require formal management of change revisions for each file - a lot of work would be required to change datums.	Private sector
The many drawings and documents with GDA94 coordinates having to be revised and approved for issue	Private sector
Our current mine life does not exceed 2020 so what benefits will we have for converting versus the effort involved & the potential headaches & speed bumps.	Mining
No problem with smaller subdivision projects in single stages but large estate developments rely on a static co-ordinate datum for the life of the project. A project may take 10+ years to complete and all disciplines involved in design & construction rely on a consistent co-ordinate base for the life of the project.	Private sector
Accurate project coordinates have legal significance and cannot change during the life of a project.	Private sector
Conversion of existing NSW railway coordinate projections ISG and MGA not only includes survey control marks but also the rail infrastructure i.e. track centrelines, platforms, bridges, utilities, etc. I understand Sydney Trains never moved across to MGA because of the cost.	Private sector
Time period where some jobs are still on GDA94 and new Jobs are on GDA2020	Local Gov.
Changing and use of coordinate data sets created in two systems such as old files	Private sector
Historical datasets using the cadastre that we purchase (if that is not updated).	Local Gov.
Due to feature information extracted from surveys by engineers before and after the datum change has taken place. Making sure engineers are aware of the change and relaying that information onto their design plans.	Private sector
Coordination between and within existing projects, both for us and other consultants reliant on our information	Private sector
Contractors uploading 94 coords into machinery controlled kit operating on a 2020 fix.	Private sector
Transforming historical data for ongoing jobs. Potential confusion dealing with third parties that have been previously issued our data in gda94	Private sector
Ensuring all internal and external stakeholders are able to adapt to the change at the same time or have been told what the consequences will be (if any) if they are not ready for the change when this agency 'flips the switch'.	State Gov.
Assisting some regional users that I support to update local data	State Gov.

2.7 Issues mentioned	4.2 Primary sector
There will be issues for projects which begin prior to Jan 1 and continue into 2017 and beyond. It is unavoidable, particular care will have to be taken during this time as to ensure you continue to use the same datum throughout the life of a project or introduce the change at a certain epoch and convey that change to all stakeholders.	Private sector
Many of our clients will still be using GDA94 data sets as they will be part way through projects that last 5 or so years. I don't imagine they change datums part way through projects.	Private sector
I don't think we have any issues but long running project in the CSG and Mining sectors may have some. We will need to be able to relate our 2020 data back to the original source design models that will most likely be on GDA94.	Private sector
Say a 3 years project, with the approved for construction data in 2016, and project running through to beyond 2018.	Private sector
Confusion created by having 2 datum's GDA94 & GDA2020 both being used simultaneously during the handover period. Risks due to the co-ordinates been so similar, <2m.	Private sector
My biggest concern, as a coal mine with survey data records dating back 4/5 years I can see there being confusion when any of this data is used in conjunction with 'new' data on a different datum.	Private sector
Only issue will be projects that carry over a long period, bringing them to the new system	Local Gov.
Trying to get clients to understand the difference, and understand why the project datum needs to be shifted. For this reason current project will probably continue on GDA94 until they are complete and new projects would start on GDA2020.	Private sector
<p>1/. Is the demand for GDA2020 products sufficient to warrant changing?</p> <p>2/. Differentiating data on the different datum and being able to manage data where the differences are small spatially. That is, it isn't 200m as with the previous change.</p> <p>3/. Managing the time element within spatial databases.</p>	Private sector
Datum on long term projects	State Gov.
Mainly with ongoing projects and GIS datasets	Local Gov.
Transforming old jobs. Data supplied in wrong coordinate systems. Confusion about which grid a job is in.	Private sector
We use aerial images supplied by LPI. Not sure how it would match the new cadastres.	Local Gov.
Sorting out major projects extending 40 to 50km.	State Gov.
Transforming old data sets and jobs that are ongoing	Private sector
<b>Process of Change - complexity, resistance, processes, resources, cost, extent (amount of data)</b>	
Motivating the business to change.	State Gov.
<p>Will clients adopt GDA2020? When?</p> <p>Will non-GDA2020 grids currently in use have a direct GDA2020 conversion and can this be trusted?</p> <p>Will clients want deliverables in GDA2020 or want converted to GDA94 for implementation into their existing dataset?</p> <p>Will clients/government bodies who cannot currently handle GDA94 datums be able to use and understand GDA2020?</p> <p>Will our software handle conversions? Can we trust these conversions?</p> <p>Should we be (for legal reasons) use the collated data in its native datum, or convert?</p>	Private sector
Applying changes in other geospatial datasets in an efficient manner.	State Gov.

2.7 Issues mentioned	4.2 Primary sector
It will take some time to transform our substantial datasets	State Gov.
Configuration and code in systems needs to be examined and updated, vendor support will likely require patching/updates/upgrades to software platforms from Database (<names removed>) to Web Services (<name removed>) to Web Applications.	State Gov.
Database, supporting software and systems transformations.	State Gov.
Cost, time required to convert, complexity of upgrading process and work flows, need to upgrade software, waiting for vendors to support GDA202	State Gov.
Council works on limited staffing and current staff has limited GIS knowledge. This would be something I envisage would require a consultant's assistance.	Local Gov.
Quality management, firmware upgrade costs, training, what clients and 3rd party consultants want and use	Private sector
We have a lot of information based on GDA94	Local Gov.
Many systems and datasets to be migrated.	State Gov.
There is always issues with any change	Private sector
Resources to undertake the transformations of all data and update documentation that refers to datum's (data supply agreements) and all metadata records	Local Gov.
All of our current internal standards will need to be updated and approved with sign-off of new standards being the slowest part of the transition.	State Gov.
Requires change throughout an organisation and support by managers without an understanding / appreciation of the technical aspects or potential flow-on effects of a datum change.	Utility provider
We are really unsure how this will work. The tools we use transform between coordinate systems 'on-the-fly' fairly well. So if the coordinate system we use to store the data can remain unchanged, then impact will be minimal as the tools will re-project to the new datum. However if we need to change the coordinate system that is used to store the data I expect significant challenges. We have functions within our GIS that perform calculations using network lengths that don't work if the data is stored in a geographic coordinate system. Full impact would need to be assessed and tested robustly before committing to transforming our entire database.	Utility provider
Amount of data to transform	Utility provider
Transformation of layers married to relational databases is difficult. <name removed> assigns a unique ID to each object, but this is not static.	Local Gov.
Making decision whether to do it or not and then implementing the conversion amongst all the other spatial warehousing/integration projects that are going on	State Gov.
Conversion of historical data for comparative analysis. Conversion of gridded data. Testing of all geospatial apps	Fed. Gov.
Council going through amalgamation. Migration to new datum a very low priority	Local Gov.
Conversion of data as a whole, possible maintenance issues	Local Gov.
Our data sets already have very high precision and are shared with other organisations, stakeholders and survey contractors. The 1.8 m change will not really improve the precision very much but we have concerns that all the parties won't be on the same page with the conversions and so on. Frankly, it will be expensive and tricky to move everything over to GDA2020.	Private sector

2.7 Issues mentioned	4.2 Primary sector
Prioritisation of tasks to make changes considering other priorities	State Gov.
There are always unforeseen issues.	State Gov.
DCDB, SCDB	State Gov.
Co-ordination across Government, re-development of tools and process for field capture. conversion of existing data within applications outside of <name removed> control	State Gov.
Resourcing to complete the task - if adequate tools are provided, then this should help mitigate this issue to some extent.	State Gov.
Ground truthing after our asset locations have been transformed, external provided datasets not being transformed. External contractors not ready to adopt GDA2020	Local Gov.
Resistance and outright opposition of key staff to adopt GDA2020. Also, resourcing (staff and budget) to implement GDA2020.	State Gov.
Sourcing funding to allow changes that are not well understood outside an area with spatial experience.	Local Gov.
Alignment with all ACT Agencies and Consultants has to be coordinated. We are not on GDA94, we are on AGD66 (Stromlo Grid). Reissue of amended standards. Resistance to change. Cost and effort	Utility provider
Dependencies on other agencies, technical implementation issues with dependant systems. Resources to make the change.	State Gov.
The diverse range of spatial and related software. The large number of datasets, in particular raster datasets.	Local Gov.
The complexity of the task and the funding to be able to allocate time to the task.	State Gov.
Doing the work to transform them to 2020	State Gov.
Lack of staff to do conversion work, Maintaining service delivery during conversion work	State Gov.
Legacy datasets provided to clients will not align with new datasets unless the client's software is updated. We can adapt quickly, but our clients may not be able to.	Private sector
Procedures to be developed to facilitate transformation. Transform existing data sets as required.	Private sector
Conversion of existing and ongoing projects, local authority submissions, engineer supplied data	Private sector
GPS may need to change, custom software may need rewriting or updating, large volumes of data may require transformation and we need to look at these on a case by case basis	State Gov.
Just depends on management allocating resources to transform existing data sets into GDA2020. Needs to be a corporate initiative to change.	Local Gov.
Volume of dataset conversion; redeveloping GIS applications	State Gov.
Different software, databases, end users, contractors, historical data	Private sector
Legacy data	State Gov.
We have so many different spatial applications and datasets it will take us a long time to get everything converted. Our other issue is simply finding the time to make the change.	Utility provider
General teething problems, but we will ensure processes and a set timeline for transitioning into GDA2020	Private sector
Large multi-disciplinary company that would need to progress the argument and shift across departments, clients and authorities. Would be of assistance if authorities required the shift.	Private sector

2.7 Issues mentioned	4.2 Primary sector
Transforming datasets held in other projections, e.g. Lambert. Imagery to support ground models in GDA2020 also needs to be in GDA2020.	State Gov.
Legacy data layers	Local Gov.
Time and effort required to validate the conversion of datasets we maintain, and to convert data we receive from stakeholders until they transition to new datum.	State Gov.
Quantity of datasets to be shifted and timing of the shifts around business processes	Local Gov.
Lack of resources, both available staff and funding to implement necessary changes. Significant impacts on existing work programs.	State Gov.
Large volume of data to transform, reliant on other agencies to make the change, educating end users, users with limited knowledge of datums and projections, coordination across and within governments, no clear pathway to the change.	State Gov.
All archival datasets would need to be re-badged as GDA94, and all current datasets would need to be transformed to the new datum. This all takes time and there aren't sufficient GIS resources in the organisation	State Gov.
Our IT department is very bogged down with projects and day-to-day maintenance. It would take ages to get anything implemented. ALL of our datasets would require transformation to GDA2020, and a HUGE amount of education of our staff and our clients would be required	Local Gov.
Resourcing	State Gov.
In-situ documents and databases	Utility provider
Resourcing / skills	State Gov.
Recent Council Amalgamations, 3 different systems to merge onto one	Local Gov.
Multiple agencies will need to synchronise transformation to occur on the same date.	State Gov.
Coordinating the transformation between the multiple systems, as many of our (non-spatial database) systems hold records which include coordinate data	State Gov.
Dependent processes	State Gov.
Huge historical datasets that are plan based. Old underground datasets that are plan based. Neighbouring mines. Sheer volume of data being collected (UAV's)	Private sector
Always issues with new technology and data reshaping	State Gov.
Resourcing	State Gov.
Resources and lack of management support	Local Gov.
A few issues/concerns: * Have some key layers (e.g. cadastre, utilities, planning data that are highly spatially accurate <0.15m). * We have a lot of data (e.g. assets data) which has been captured by survey accurate GPS but has not been processed / made it into the GIS yet. It is in MGA format. * We have a lot of non-GIS data such as large engineering projects currently underway (e.g. digital engineering designs) which are in MGA format and may need conversion.	Local Gov.
My organisation is too large and there are too many legacy datasets and system, so I am sure there will be a problem somewhere. In my unit I think I would be able to implement the change reasonably quickly.	State Gov.
Planning NSW spatial LEP data	Local Gov.

2.7 Issues mentioned	4.2 Primary sector
Conversion of all our existing job coords from GDA94 to GDA2020	Private sector
Too many layers (in difference format) and potentially cost issue	Local Gov.
Time required for the transition	Private sector
The likelihood of error or omission when converting all databases and workflows to GDA2020	State Gov.
For consultants like us, we will be reliant on how quickly and accurately the surveyors transition to the new system as we undertake our design/documentation using the data provided by surveyors.	Private sector
Probably the sheer number of datasets to be converted across.	Local Gov.
Translating the Data. Referencing back to old aerial photos. Having an existing CADASTRE layer (provided by SA Govt.) which has the spatial accuracy of being +/- 25m out to areas such as Cherryville in the Adelaide Hills Region.	Local Gov.
Significant business systems changes across currently streamlined multi-disciplines using current data including Architects, Civil Engineers, Urban Designers, Surveyors, Landscape Architects. Also what about point cloud data?	Private sector
Clients will want to stay with MGA94	State Gov.
Aerial photography sets need to be shifted/corrected in order to match the new surveys	Local Gov.
Transformation of layers currently utilising GDA94 and verifying accuracy between the layers after transformation. (More a question of time)	Local Gov.
There are many base layers that will need to be transformed from GDA94 to GDA2020 which will possibly take the group responsible a substantial amount of time (including testing).	State Gov.
Data compatibility on projects to completion or clients specifying GDA94. We would explain GDA2020 but they have final say of system coords e.g. they may be monitoring and wish not to change	Private sector
Corporate understanding & importance of such, funding, risks involved, statutory legislation, historical operational datasets still based on AGD66, amount of historical data/plans both inside and outside the organisation, long term continuous operations (40-50+ years) still reliant on archived hard copy data into the future, historical datum legacies, GDA94 was never fully implemented anyway .... more	Private sector
Updating Docs and Procedures that contain GDA94	Private sector
Mainly a time factor transforming existing control, such as photo control and existing domestic control points. This is time consuming and therefore expensive.	Private sector
Serious lack of resources and skills	Local Gov.
Multi users and platform requirements	State Gov.
Like any major change for a business	Private sector
Time to implement	State Gov.
Conversion of existing data sets so that these can be mixed with new data in the GDA 2020 format.	Private sector
Local skills and resources, workload. As mentioned above will likely engage a consultant so funding will be an issue too.	Local Gov.
There are number of ETLs, datasets, systems and databases which needs to be transformed, communicated, tested and approved by not only internally but external vendors who developed online systems and maintaining	State Gov.

2.7 Issues mentioned	4.2 Primary sector
Resources for conversion of data and web services whilst continuing business as usual	Local Gov.
Having done the AGD66 to GDA94 transition in a large spatial organisation previously, I know how much is involved in converting all of the spatial datasets held.	State Gov.
Need time to update relevant systems and also ensure GPS network is also updated	Local Gov.
changes in spatial data maintenance	State Gov.
Non spatial systems (CRM, EDMS) holding coordinated data	Local Gov.
Unsure until I have better understanding of this but I do not expect this to be simple.	Local Gov.
Our Digital Cadastre is maintained in house and therefore would be required to be transformed in house.	Local Gov.
Resistance to change	Private sector
Crosschecks on transformations & quality checks to satisfy clients	Mining & Oil/Gas
Downstream users will all change at different timeframes which will cause market disruption as the end user will most likely not understand the key issues and why there is a difference.	Private sector
Not sure, forgotten data, resources, time to implement, storing another set of data	Local Gov.
The council has recently merged with 2 other councils so we need to combine all our data as well as (apparently) do a datum change. sigh	Local Gov.
Justifying a spatial concern such as this convincingly to the executive	Fed. Gov.
Unsure of implications relating to Map Services and Mobile applications and cached data. Some downtime may be required across the organisation.	Local Gov.
Slow movement of government IT support	State Gov.
Historical datasets, embedded design data, aerial imagery overlays, achieving millimetre transformation,	Private sector
Implications for Raster datasets. We have large volumes of high res imagery & elevation. What are the options for the vertical?	State Gov.
Large number of vector and raster datasets to reproject	State Gov.
It is not a difficult task, just the large number of datasets.	State Gov.
knowledge, time to implement correctly without impacting day to day job	mining
Data conversion and familiarisation	Private sector
Transforming approximately 200 map layers to the new datum	Local Gov.
Converting existing Digital Orthographic Aerial Photography	Local Gov.
Significant amounts of historic data.	Private sector
Computational time to transform very large datasets i.e. LiDAR.	State Gov.
All datasets held in <name removed> as points and polygons in GDA94 MGA Zones	Private sector
Volume of data, interdependency of data	State Gov.
Massive amounts of data to apply	Private sector
More than 200 TB of Departmental GDA94 TIF/ECW photography will no longer be in correct position	State Gov.

2.7 Issues mentioned	4.2 Primary sector
Updating historical datasets.	Private sector
large amount of files to transform for site moving forward	Private sector
Large number of datasets to be converted	Local Gov.
large amounts of data	State Gov.
Transformation of old data sets	State Gov.
Only issue I see is the need to shift our aerial photography (recent and historical photographs). I would want a professional in aerial photography to do this since we rely on it so much.	Local Gov.
Cost to implement, being able to convert quickly between datums.	Private sector
<b>Lack of widespread understanding / conceptual knowledge / awareness of importance of datum, size of coordinate change from GDA94 to GDA2020 (1.8 metres)</b>	
Updating old hand held GPS (<name removed>) to house/collect in new datum	State Gov.
Education, resolving what our current datum is, determining the appropriate algorithm to use (e.g. NTv2), deciding on what to do with millions of historical data sets, etc.	Fed. Gov.
Deposited plan azimuth rotations, distortions in datum transformation accuracy, no Re-Survey of SCIMS co-ordinates only calculated transformation coordinates.	Private sector
Other professional colleagues (engineers, architects...) that use MGA/GDA will be confused about the coordinate shift.	Private sector
Non spatial users of corporate datasets will struggle with understanding the difference between GDA94 and GDA2020 due to the small shift between the datasets. As a result conflicting datasets will cause compatibility issues. While education rollout could occur infrequent users will consistently have issues.	State Gov.
Our clients already struggle to understand the difference between AMG / AGD and MGA. Having a new coordinate reference system will only confuse them further. These clients are typically engineers and they assume that the coordinates are plane and the distance between two points in the digital data set (in MGA) is the same as the ground distance. You will need to ensure that not only is the entire Spatial industry behind the datum reference change, but also other users of data sets	Private sector
All stakeholders not on the same datum	Utility provider
Knowledge and awareness of the change and how it makes a real difference to their work. People still don't know what a map datum and projection are.	Spatial education / research
Staff understanding implications on ground	Private sector
Handling of project based datasets (or not...) Communication and coordination	State Gov.
Transforming old data and explaining this to clients	Private sector
Educating staff/clients/others that require the datasets.	Private sector
The necessity of survey is not understood at all well by the organisation. Many parts are still working in ISG.	State Gov.
Trying to explain to client, especially engineers & architects, why the coordinates for their projects are moving. Getting the right information from non-surveying consultants about the data sets they supply to us.	Private sector

2.7 Issues mentioned	4.2 Primary sector
Existing data provided to clients for design/construction, will have to continue to provide data to MOST existing clients in GDA94 as their existing data bases are on this and they don't have the knowledge and resources to change	Private sector
Data that is supplied by other bodies will be difficult to ascertain where it comes from	Private sector
Educating infrequent users	State Gov.
Explaining the datum to lay people, working out how to manage asset databases, working out how to manage long term roadworks jobs, working with GIS to ensure aerial photography and internal layers move with cadastre. Hopefully DNRM works out how to move PSMs with derived coordinates.	Local Gov.
Most staff have no idea about datum differences. The issues I see will be with dealing with other organisations and data sets. Architects and draftsmen (most) currently believe that GDA94 = Ground distances. What's a shift in datum going to do? The shift will also affect machine control files, it may be a matter of identifying which co-ordinate system is being used but there is bound to be errors.	Private sector
Concern over the relative smallish coordinate shift between GDA94 <-> GDA2020 (1.8m). This may add to confusion from less knowledgeable staff with possibility of mixing data sets inadvertently.	Private sector
Staff and client knowledge of different datums and how to convert between them (similar to issues encountered when moving from AGD84 to GDA94)	State Gov.
Education of employees, changes to internal standards and programs	Private sector
Old archived data & field data, and people not understanding coordinate systems	State Gov.
Understanding and technical awareness.	Private sector
Many staff still don't understand the transformation options and inaccuracies to go from ISG to MGA let alone understand datum's and projections	Private sector
Still using AGD 84, masses of data to transform	Private sector
The amount of systems that would need to be checked. Educating clients!!!	State Gov.
Most corporate data sets are held/maintained by persons or groups that may not be fully conversant with the need for change and may be hesitant to adopt the change as "if it ain't broke - don't fix it)	Local Gov.
Retraining and re-educating staff. Explaining the datum changes to Engineers.	Private sector
More of an education of users in the broader non spatial fields about the difference between GDA94 and GDA2020.	State Gov.
Re-education, transformations of all existing data sets,	Private sector
Data is held in multiple locations across the agency, much by users not spatial staff, who will need guidance & support in making the changes.	State Gov.
many people without any understanding of datum's or projections using the data and not realising the differences	State Gov.
Educating the business on what this means.	Utility provider
QA procedures would require another step. We would have to explain (back to the basics) the change to lower level staff so they understand ramifications and ensure no mistakes are made. I see a huge risk in only having the datum difference 1.8m different, I think a shift in the origin to make the difference significantly bigger would be a safer option	Private sector

2.7 Issues mentioned	4.2 Primary sector
Educating those with little understanding of datums, diverse organisation with many areas managing their own spatial data	State Gov.
This may not be significant but the shift distance could be an issue if the distance is minor, datasets may get overlooked. Unlike AGD to GDA the shift distance was ~200m n/e so it was easy to pick up datasets that were not transformed.	State Gov.
Education of users	State Gov.
Lack of understanding from general staff	State Gov.
Confusion of non-technical users about the difference between GDA94 and GDA2020.	Local Gov.
Trying to either re-create customer fields and AB lines or transform them and update their data sets without significant errors	Private sector
Clients that do not understand what datum their own data is in. With only a 1.8m shift it will be virtually impossible to determine. Propose a vastly different false easting / northing to MGA.	Private sector
Non spatial users creating DGPS locations on different datums, transferring between datums and geodetic and projected coordinates; translation of other data in a variety of GIS formats that has unknown spatial accuracy.	State Gov.
There will be some time and cost involved in transforming data from GDA94 to GDA2020 where necessary for my clients. It will generate a lot of revenue for my business of course, but the clients will have to pass these costs on to others. Most of my client's GDA94 data has an uncertainty of better than 50 mm based on AusPOS, VICPOS and CORSnet NSW. Of greater concern is where clients and end users just use GDA and assume the coordinates are very similar. I don't really think the datum modernisation and datum naming was really well thought out at the practical level.	Private sector
Staff education, client understanding and acceptance, software implementation	Private sector
Education of staff and universal implementation of work flow arrangements	Private sector
Training Staff	Private sector
We use a lot of datasets from different sources and timeframes. It will be essential to have on-the-fly transformations available in <name removed> so that we can continue to work with GDA94 datasets easily, until such time as all has been converted. We also work with many private mining companies and will need to work hard to ensure they specify their coordinate system rather than all assuming all is in GDA94. Broadly available education will be required. We will also need to have a software upgrade for <name removed> GPSES to ensure they can operate with GDA2020.	Native Title Representative Body
Making certain the correct datum is being used on every job.	Private sector
1.8m difference with GDA94. Dataset confusion.	State Gov.
There are existing re-current issues with different data sets created for local project areas within our organisation.	State Gov.
We currently experience issues when other consultants use different origin points/scale factors, and discrepancies between SmartNET surveys and our local datum (particularly when the local SCIMS network is weak). I am expecting the risks associated with these datum issues to be far worse on GDA2020. Also many of our projects are over 5 years old, some older, and going forward we will be working on long-term projects, so this won't be something that we can just phase in and then forget about, it will be an issue for years to come.	Private sector
Lack of understanding among employees.	Private sector
Data held & managed by non-spatial professionals within the organisation	Local Gov.

2.7 Issues mentioned	4.2 Primary sector
Training and familiarisation with the datum	Private sector
Getting other parts of the organisation (Local Government Council) to understand the change and implement it.	Local Gov.
The datum is too close to previous ones and I can see many issues with ensuring you are on the correct datum	Private sector
Ensuring users are using only the one datum. The database may be in GDA2020 but users will have separate files which they may not realize need to be converted. Coordinates will not be obviously different between the two datums to ring alarm bells	State Gov.
Large number of external users to whom map-derived coordinates are given or used by	State Gov.
Changes to Programs and Education to a large Staff Base	Utility provider
One issue will be recognition of data sets, given the closeness of the coordinates in the two systems. Another will be ensuring all users and clients are working in the 'new' system, especially with legacy data.	Private sector
Staff training	Private sector
The main problems envisaged are that suppliers of data for setting out, (engineers/architects/designers/contractors, etc.) have no awareness of the differences in datums, and basically consider that all coordinates are plane, with a SF of 1.000000 and are at ground level. I have had personal experience of this. Machine control will be an area of concern because a 1.8 m difference cannot be easily checked visually. Various governments have stated that they have no strategy to deal with the proposed datum changes.	Private sector
Numeric similarity to GDA94	Private sector
Educating the other staff in the organisation.	Private sector
Educating staff members and integrity of data	Private sector
We get drawings from surveyors and outside organisations, differing coordinate systems would be an issue	Utility provider
One of the main issues is the small change in coordinates from 94 to 2020. Thus practitioners need to be fully aware of the datum they are operating in on every known point they occupy. This is an educational issue in making sure surveyors are aware of the changes in place and the levels of accuracies they can achieve at various times during the 2020 datum change. We might not like what is happening but we need to embrace it.	Private sector
Other users and suppliers of data internal & external	State Gov.
Getting clients used to the new datum. Some of these clients have databases going back to AMG84	Private sector
Too many of our clients don't have any idea of what we are talking about and imagine we all operate on a flat earth	Private sector
Are all client groups conversant with implications, add to title block relevant info.	Private sector
AMG66-->GDA94 was a significant shift. It was obvious if a title boundary was in the wrong place. GDA94-GDA2020 is a subtle shift. Wait and see the balls-ups! Suggest you move the False Origin at the same time to avoid any numerical similarities!	Multiple areas
Only a 1.8m shift between datums will cause chaos with the less Geo savvy, at least AMG-MGA is 200m and it noticeable. Consideration must be given to increase the difference between them both.	Private sector

2.7 Issues mentioned	4.2 Primary sector
Training and implementing standards and data workflows with engineers, architects, builders, other non-geospatial professionals	Private sector
Making sure there is clear and concise procedures and rhetoric involving the transformations.	Private sector
Training customers	Private sector
Conversion algorithm to lat/long.	Private sector
Training, explaining to less knowledgeable clients why new co-ordinates are different from earlier versions	Private sector
Training, explaining to less knowledgeable clients why new co-ordinates are different from earlier versions	Private sector
If a project involving earthmoving is started during the transition period, we need to be sure that the contractors firstly have a knowledge of the new datum and secondly that they are able to adapt their systems to it and thirdly all contractors on the project are on the same datum. Big problems could occur if things are built 1.8m out. Once a project is started we need to be sure that the same datum coordinates are used for the entire length of the project. Some of our projects last 4-5 years. If the datum keeps on changing over time then errors may be introduced into the project if someone in say the 5th year of the project uses an updated coordinate of the datum, instead of the ones from the start of the project.	Private sector
Errors in combining, going back to old surveys	Private sector
We would need to develop clear workflows to ensure that there are no transformation issues. Remembering we are ecologists with limited "in depth knowledge" here. We would need support to ensure that we have a smooth. One issue may be if partners are still operating in GDA94. Would a logical move be to continue capturing data relative to ellipsoid heights and transform later?	Other education / research
Third parties understanding the coordinate change. Being supplied data in the right system. Third parties quoting the correct Datum to us when providing data. Third parties understanding scale factors. Untrained Third Parties without spatial science qualification. Most Spatial Scientist trained personnel don't understand datums let alone the difference between them!	Local Gov.
Likely to be source of income to support clients with their transition	Private sector
Educated people to the same level including clients, users of the data and other specialists	State Gov.
As the positional shift is relatively small, often it will not be known what datum existing data sets are on. Hence leading to doubt or being blissfully unaware that there has been a datum shift difference between two merged data sets. There will be many times when it is not visibly apparent that two sets have been merged that are on different datums. Unlike the 200m shift between AMG55 to MGA55.	Private sector
Ensuring that our clients understand the significance of "their lack" of understanding of the system. Surveyors will understand but our clients (Engineers and Architects) have generally never understood coordinates let alone if we ask them what system they will require them in. Yes we have dealt with this before when we transitioned from AGD66-AGD84 (large shift)-GDA94 but there was a lesser reliance and certainly understanding of coordinates in those days. We still get clients asking for data and also designing in inappropriate coordinate systems. Being a relatively small shift we see the risk and potential for a dramatic increase in litigation matters.	Private sector
Low level of understanding by non-survey users. Such as designers who will have data in live projects and will not understand the relatively small datum shift, unlike the move from AMG which was approx. 200m in our area. The is a significant risk in people trying to compare/combine MGA94 data with MGA2020 data and not realising that they are dealing with a datum shift of less than 2 metres	Private sector

2.7 Issues mentioned	4.2 Primary sector
Working with previous engineering designs based on MGA94. Educating civil engineers.	Private sector
Confusion internally and with clients	Private sector
<b>Currently using operational datums other than GDA94</b>	
I don't use GDA94 yet.	Private sector
Transformation of Railway alignments	State Gov.
Still work in AGD84 and significant amounts of historical data.	Private sector
Construction and Mine sites working over 40 year history in fixed datum - require ability to convert all externally communicated data to GDA2020 at suitable timeframe for compatibility. Will continue to operate mine on existing coordinate system internally due to age and type of source for location based historical data.	Private sector
Local grid system used, already been pushback to adopt gda94	mining
Rail projects still undertaken in ISG, increased difference between rail data and other datasets.	Private sector
We're still on Stromlo - AGD66! We have a lot of CAD data in Stromlo - not sure how this is going to go. Also Corporate Inertia.	Utility provider
Work in railways and still on ISG	State Gov.
ACT Coordinate Systems	State Gov.
GDA2020 being rigorously compliant with our DCDB: the new datum is not paramount	State Gov.
Some datasets in datums other than GDA94	Fed. Gov.
We work on a local plane grid based on AMG66 and still can't get reliable transformations to GDA94. We have large graphical mapbases to transform not just point data. Our area is extremely large in size. Compatibility with other organisations. Data library's going back over 40 years.	Utility
In house local datums used for legacy and set out purposes	Local Gov.
Mine Datum	Private sector
Transferring of information including drill-hole information, pit designs, and historical survey information to the new datum.	Private sector
Older datums such as AGD66 are still being used. New relationships to GDA2020 will have to be calculated.	Private sector
The use of local Project Zones	State Gov.
Inconsistent local (ACT Stromlo) coordinate system adopted across vendors and ACT Government business units.	State Gov.
The local cadastral datum is a local grid set to AGD66. We would need the tools to be able to transform that data.	State Gov.
No really, but I'd prefer to keep using the local grid coordinates for ease of use.	Private sector
We are still in ISG.	Utility provider
Legacy software products may not support the new datum. In the world of GIS, we don't modify software ourselves, we use stuff off-the-shelf. If ICSM works with the open-source community to support GDA2020 on the day of release, that's the first step. Getting commercial software producers on board will be hard (especially for the second tier providers, i.e., not <name removed>).	Private sector

2.7 Issues mentioned	4.2 Primary sector
Ensuring third-party software can handle the new datum	State Gov.
Vendor support from software	State Gov.
Large number of datasets that have to be transformed. If you can provide to <name removed> a transformation set, this should be made a lot easier	Local Gov.
Entirely dependent on support for GDA2020 in proprietary software we use	State Gov.
survey instrument updates; software updates	Private sector
Our versions of <name removed> may not support the new projection (stuck on Windows XP PCs)	Local Gov.
Unless software developers release updates to accommodate new GDA2020. Much of the data may need to be converted back and forth to GDA94 during operations. This may lead to longer time frames to perform tasks.	State Gov.
We are reliant on projection files that are defined with EPSG codes. There is no EPSG code for GDA2020, any dynamic datum is going to require a different software based approach such as automated downloads of up to date datum data.	Private sector
Many of our software packages would need upgrading to enable the new datum	Mining
Our software is not datum specific, so we will need to embrace different software or techniques to transform.	Private sector
Updating software and procedures for use in house	Private sector
Our corporate software incorporates a mapping plugin using legacy technology and may require specialist intervention to enable GDA2020 as a datum option.	Local Gov.
Possible problems integrating old software (<names removed> etc) to run on new Datum, I need more knowledge on the difference between a Plate grid (such as GDA94) and GDA2020. Provided the parameters can be input to old software it shouldn't be an issue	Private sector
Integration with <name removed> is the only issue I can think of	Private sector
Current corporate software not understanding the new projection	Local Gov.
field software - GNSS, office - post processing software	Private sector
Yes as a dealer of <name removed> products, we need <name removed> to make the associated changes to software etc. Another issue faced is the number of end users not using current software that will not be able to update to the latest versions of software.	Private sector
Upgrades of <name removed> being ready	Private sector
Firmware compatibility on Surveying equipment (older models -which are still working fine), also metadata on old and existing data-sets regarding datum.	Private sector
2.6 answer assumes that software providers support GDA2020	State Gov.
Using old data and combining new and old, if no conversation software is ready.	Private sector
Current GIS system used is no longer supported by software supplier.	Local Gov.
Upgrade of current equipment specific software	Private sector
Cadastral issues. Also our asset database (<name removed>) uses its own editing tools inside <name removed> and edits multiple files at once. Moving one file with the available tools may not move all the required information. We will most likely need to get the developers to move the data for us. This will be costly and may be time consuming if their other clients face the same issue.	Local Gov.

2.7 Issues mentioned	4.2 Primary sector
We have many apps integrated which will cause a significant job to ensure all are validated to the new datum	Utility provider
<b>Other comments, including the issues regarding the ATRF / "Earth-Fixed" datum (stage 2)</b>	
We have 6+ mine sites working on local map projections that are GDA94 based - these would have to be revised. This is not a big issue.	Private sector
Keeping data updated with shift vectors, management of that process	State Gov.
As long as the implementation is in line with that of Geoscience Australia.	Consultant
Different cords for the same point(s).	Private sector
All existing mine workings need to be validated and would be continually changing with a dynamic datum.	Private sector
The accuracy of some current datasets needs to be fixed up. Until those issues are fixed it does not matter what datum we use for those datasets.	Utility provider
No for the static, potentially yes for the time stamp dependent features	Local Gov.
It is difficult to answer the question with limited knowledge of the topic	Local Gov.
I think that main issues could be to have to update all features and cartographic information own because all new product vs old ones never will be equals accuracy.	Private sector
Creating cadastre by entering new survey plans comparing to GDA94 and ISG	Local Gov.
Periodic datum shifts, whereas currently coordinate values on file are correct for all time unless the permanent marks relied upon are re-adjusted.	Private sector
Ensuring past surveys are used in the correct system and no mistakes are made. Keeping 'timestamps' of everything and ensuring everyone knows why that is there and what it means. Basically learning a lot more about it than what I currently know to identify issues before they arise.	Local Gov.
Construction design invariably lists coordinates for where the works are to be setout to. Using a datum that is dynamic will affect all construction set out procedures, in Civil and Building works.	Private sector
I do not know yet, might not know until faced with it	Local Gov.
Alignment of all data sets	Local Gov.
If it becomes dynamic it'll create issues longer term regarding absolute accuracy	Insurance
ACT may have problems with MGA2020 due to scale factors in Canberra area	Private consultant
Crime data for instance rely on an exact position on the ground. A risk analysis need to be carried out in order to understand the possible impact of the new Datum	State Gov.
Diversity of data	State Gov.
Migrating to a new Survey Control Database to support full functionality for dynamic realisation of GDA20xx	State Gov.
Limited resources, skills and knowledge across organisation.	Local Gov.
Many datasets; reliant upon WALIS SLIP datasets; Many old drawings still used; big organisation;	State Gov.
As a systems supplier we would only need to assist our customers to achieve the implementation	Private sector

2.7 Issues mentioned	4.2 Primary sector
The proposal of a continuous geodetic shift will be difficult to maintain the metadata of when data sets are extracted. There is a risk that users will not be aware of the potential issue.	Fed. Gov.
Buying survey marks which are changing	Private sector
The need to constantly be converting datasets, and confusion over which day's coordinates are being used over several projects running simultaneously, as is often required in private surveying practices.	Spatial education / research
Unsure of issues that may arise at this stage. May be no issues	Local Gov.
My work involves simple 2 to 4 lot subdivisions and levels and feature surveys so all of the above is not relevant to my practice.	Private sector
I foresee many of the statutory bodies requesting data on GDA94 and GDA2020	Private sector
Being a small company we do not update our software every year, we will continue to operate on GDA94 and apply a shift to GDA2020. The meta data files will state GDA94 but they will be GDA2020 coordinated making issues for third parties importing the data, their system may apply an additional shift thinking the data is GDA94, causing unreliable data that may go unnoticed in the early years.	Private sector
The date above will depend on other Government governing body's implementing the change-over and as such the date above (2.5) will be subject to that. The main issues for our group would be going back to old jobs or jobs undertaken during the transition period that are fed into the GIS etc. on previous datums to ensure updated data is provided.	Local Gov.
Confusion about how to work with constantly changing datum	State Gov.
Long GPS connections to cadastre	State Gov.
Not sure, not direct to my role	Local Gov.
The real answer I wanted to give was maybe, because I'm not sure, but that wasn't an option	State Gov.

## 4.6 Comments

A small percentage of comments have been deleted from publication, including those from which identity could be deduced. Names of software platforms have been removed.

4.6 Issues mentioned	4.2 Primary sector
<b>Arrangements during transition from GDA94 to GDA2020</b>	
Your questions assume that we will all be working in GDA2020 whether our businesses require it or not. My clients don't need it, and I don't want to be forced to change just to satisfy a national trend that admittedly suits many non-surveying users. Better to have the option to use GDA2020 data if required.	Private sector
ACT Govt will do a whole of ACT Govt response to GDA2020 and ACTPLA will lead the way in method of change, information flow and training.	State Gov.
I hope the take-up is fairly swift to minimise confusion and running two systems	Private sector
If a mine life is not expected to exceed 2020 is it necessary to convert over the GDA2020? Can we operate in GDA94 with reprisal from governing bodies such as WA DMP?	Mining
We are flying a new aerial photograph in Nov-Dec 2016. Our time frame for conversion will rely on the Datum we receive the photo in as <name removed> requires you to use the raster image datum for all vector layers in the map. Also it will rely on <name removed> having GDA2020 available in its software.	Local Gov.
<b>Communication and Implementation</b>	
Please ensure there are lots of releases of information in varying formats leading up to January 2017. There more information users have the easier it will be to transition	State Gov.
Yes, in a broad sense, what are the benefits and impacts of GDA2020?	State Gov.
I only heard about it recently when I attended <name removed> Technology day and it was mentioned very briefly	Local Gov.
I think you need to very fully explain why this is relevant to the majority of average surveyors WHERE IT APPEARS it is actually only of relevance to bureaucrats and academics. As with all SCIMS work, the Lands Department- by regulation- is using private surveyors to improve the DCDB. This is at the cost of the surveyors and their clients- and only benefits councils and utility providers.	Private sector
To date there has been insufficient communication about how this will affect specific applications of GIS. We need more information on the dynamic nature of this datum and how this will be implemented. I don't think we can provide too much information on this issue and to date there has been a very limited amount made available to users.	Private sector
Will there be any subsidy available to business' for costs associated with conversion requirements?	Private sector
Yes - why it its pending usage only being discussed / surveyed less than 7 months before it becomes available??	Private sector
Other than this survey being the first I have heard about GDA2020, no....	Local Gov.
I think there needs to be far greater communication regarding the detail of this change, including an outline of the proposed timeline. Also which product vendors know this is coming and are supporting the new datum?	Utility provider
Essential there is a well-supported communication strategy. There needs to be an education program across a broad spectrum of users that targets the specific needs of the various groups.	State Gov.
I was actually unaware of this at all. Perhaps helps us with notification in advance.	State Gov.

4.6 Issues mentioned	4.2 Primary sector
I would recommend that information comes out on a regular basis for all people to understand that this is a vital upgrade or development. Extolling the virtues of the new datum and beyond is extremely important as a way of moving forward	Private sector
Some confusion out there. It seems that this will be merely a "new" GDA94, i.e. a new static system. What about the continuously updating one? Is that for later?	Private sector
To let the other no spatial sectors to be educated / informed about this change that is coming	State Gov.
What is this and how much work will it be? Is it compulsory?	Local Gov.
What's the plan!	Private sector
If it's not rolled out well, to ALL sectors (engineers etc), then it will be a nightmare that will go on for years and years.	Private sector
Was not aware of January 2017 commencement date	Federal Gov.
There needs to be education of other than the spatial industry. People are using GNSS and machine control as a "monkey see monkey do" black box solution and do not understand the underlying principles. Garbage in - garbage out!!	Private sector
Needs to be better publicised outside of spatial sciences, especially in engineering, mining, earth/geology/water and environmental areas. Need to work with the various professional bodies in these areas to make a wide variety of spatial data users aware.	State Gov.
I'll notify people as I can	Spatial education / research
Education is key	Private sector
An indication from the main data providers and when they plan to provide 2020 data, when they plan to STOP providing 94 data would be useful to help force/encourage users to modernise and give them a deadline for when they need to implement.	Local Gov.
It has to be done, so just move on and keep communication open	State Gov.
All surveyors including those not registered with BOSSI need access to this process.	Private sector
To be kept up to date regarding implementation and facts	Local Gov.
Need seminars/webinars on implementation and use	Private sector
Not yet, as I don't know enough about it now	Private sector
<b>Process of Change - complexity, resistance, processes, resources, cost, extent (amount of data)</b>	
Are more businesses going to be disadvantaged or advantaged by implementation? How many Australian businesses actually care if our coordinate system is not "real world"?	Private sector
We can move to GA 2020 as soon as PM and vendors do so.	Federal Gov.
Without more detailed knowledge it is difficult to assess the potential impacts of this change.	State Gov.
Given that we are now half way through 2016 are the tools mentioned previously ready to be rolled out?	Private sector
The cost for utility and infrastructure managers never seems to be factored into these changes. In the 1980s I worked for the NSW Maritime Services Board in their Sydney office. Even then there were 5 coordinate projections we had to deal with. MGA came along now we have a seventh. I don't think the mapping agencies how difficult it is to collect and convert data.	Private sector

4.6 Issues mentioned	4.2 Primary sector
The NSW Local Gov. Sector is undergoing tremendous upheaval with proposed mergers and likely mergers happening in the middle of 2016. This places enormous strain on our resources especially for small rural councils. The fact that all our data is positioned on the LPI DCDB means a lot of work to shift our data which is relied upon by all staff on a daily basis for asset location, LEP mapping, property and rating enquiries, etc. It will be very difficult to achieve a changeover by January 2017. Thank you.	Local Gov.
I knew this was coming, but am unprepared anyway	Local Gov.
This process will cause quite a bit of work for us. However, it is timely and will allow us to resolve a number of spatial referencing issues internally. Now what are we doing with a globally consistent vertical SRS?	Federal Gov.
It is a good idea in theory, but I think the day-to-day nitty gritty is going to be difficult. Real practical experience (beta testers?) is going to be most helpful for us.	Local Gov.
Still somewhat confused about the process of implementing Stage 1. Is this the timing for this dependent on Federal Govt policy, or will each State, or Council implement the change as per their own requirements? It would be easier to have a definite time frame to work towards. It could be very confusing if everyone is implementing the change at different times.	Local Gov.
<b>Education / conceptual knowledge / awareness and specific queries about proposal</b>	
Any technical documents to share?	State Gov.
What is the likely transformation from GDA 94? Will it be as large as the 200 m north- south shift from a few years ago?	Private sector
What will be the difference from GDA94 and is it minimal?	State Gov.
Where could I find more information or papers about it? email:	Private sector
Will this supplant all other reference frames? i.e. local?	Private sector
I think it's important to highlight the differences this will make to GIS/Spatial vs surveying professionals in terms of dynamic vs static.	Private sector
I am hoping to have a totally flexible system where i can take my observation data and recompute it to any previous time back to gda94 and then go from any date to any other date to enable me to manage project coordinates.	Private sector
How is cross border NSW-Qld being handled	Private sector
AUSPOS? Will traditional GDA94 output continue and if so for how long? What are the plans for Ausgeoid re ITRF ellipsoid heights and heights in general? Looking beyond 2020/23 time tagged coordinates/datasets will have limited to no usability in some situations (as I envisage the current intent)	Private sector
The relatively small coordinate shift could create all sorts of problems with the confusion between 94 and 2020	Private sector
What are its implications for cadastral surveying in VIC? (Statutory rules?)	Private sector
My understanding is that we can expect "regular" updates to the permanent mark co-ordinates as the tectonic plate moves. The more frequent the updates, the larger the challenge for surveyors. If this is going to occur I'd like to see a simple standard issued so that everyone understands which "iteration" the data relates to. E.g. SSM12345(1) for the first iteration.	Private sector
Is it likely that GDA2020 will be Australia's last "plate fixed" datum and that Australian datums post GDA2020 will be continuously updated "earth fixed" datums?	State Gov.
It must have a fixed epoch for Deposited Plans, cannot have deposited plans registered two months apart with azimuth differences.	Private sector

4.6 Issues mentioned	4.2 Primary sector
Would form 6's be converted and published as GDA2020 or will the coords for existing marks remain in GDA94 leaving the conversion up to the user if required.	Private sector
I've heard of dynamic datum being introduced too (daily positioning changes); what is relationship to GDA2020 and how are they to be compared?	Local Gov.
Keen to see the parameters involved and when is Ausgeoid2020 due?	Private sector
If a plan is lodged in a GDA Datum (e.g. PCG2020) would a coordinated date be required or will some other method be used?	Private sector
Will it be browser based GIS compatible i.e. Web Mercator?	Local Gov.
Will it be dynamic?	Private sector
Need smarter ways to transform on the fly, as significant resource overheads converting large historical temporal datasets, with queries around the need to be transformed again to a new datum in the future. Transformation to GDA94 was a gigantic task, and there is lots more spatial data around now. Likely archive requirements to keep older datum datasets (significant data storage overheads). Common solution/workaround for gridded data. Good communication and collaboration will be critical from the outset.	Federal Gov.
Wondering if I will be told when XML data updates will change?	Local Gov.
Will the DCDB & DTDB incremental updates be supplied in GDA2020	Local Gov.
What is the likely impact on my role as a Utilities surveyor I fail to utilise 2020?	Utility provider
What time frame would data be expected to be converted over in?	Utility provider
Presumably the offshore oil & gas industry will continue to provide the Govt agencies and regulators, spatial data (such as wells and pipelines) in GDA94, the coordinates of which are derived based on 14 parameter transformation from ITRF2008 (current epoch).	Private sector
GDA is too technical for Web developer. Lat/long is more natural.	Private sector
Need example transformation calculations similar to that in paper "Dawson and Wood 2010, ITRF to GDA94 Coordinate Transformations (GA19050)"	Consultant
What's happening in the vertical sphere	State Gov.
Will GDA2020 impact the CORS network services	Private sector
will it be a fixed datum?...or kinetic	Private sector
I would like to receive more few white papers or technical article in this regards	Private sector
Are we moving towards a dynamic datum?	State Gov.
Will a dynamic, earth fixed reference frame require storing time along with X, Y and maybe Z?	Private sector
Wondering how GIS software will handle differential transformation based on time stamps and the potential impact on systems that need to transform on the fly e.g. web based mapping	Local Gov.
Will products like <name removed> allow us to manage the conversion to GDA2020?	State Gov.
Information on the stage 2, the dynamic datum, would be appreciated.	State Gov.
For control SCN marks how many different types of datum will be available for these marks from a historical perspective.	State Gov.
To calculate shift of any given GDA2020 point over time, won't the capture time need to be captured also for each point?	Local Gov.

4.6 Issues mentioned	4.2 Primary sector
<b>Software / Hardware Support</b>	
When will the EPSG code and proj details be available? For WA Local Gov. please work with <name removed> or <name removed> as they support most LGAs in WA and also around Australia!	Local Gov.
Has enough information been passed onto software developers to allow the appropriate additions to be made? What exactly is going to change in January 2017?	Private sector
We can change over as soon as PM and vendors have included GDA2020	Federal Gov.
In our organisation, <name removed> will play a key role during this implementation.	Local Gov.
Vendor support is critical, without it - no action will be taken by organisations.	State Gov.
<b>Support / Positive feedback</b>	
Agree that adoption is necessary	Private sector
Bring it on baby	Private sector
Great initiative	Private sector
About time	Utility provider
Bring it on ASAP	Private sector
Good initiative, I support innovative and modernisation of our systems	State Gov.
Great idea undertaking this survey	Local Gov.
It's very good that this is happening, more than 20 years since the previous one.	Local Gov.
We currently use GNSS Controlled PSMs within our network, for positioning of our cadastre. We still reference the surrounding PSMs, so if they were more accurate, it would benefit the spatial relationship of our surrounding cadastre - some of which is taken from the DCDB.	Private sector
Looking forward to it!	State Gov.
Well done on the survey. Great initiative.	Spatial education / research
Exciting news	Private sector
It's a good thing...	Federal Gov.
Cadastral plans need to become numerically consistent with GDA2020 and the profession has to take the leap away from a 'flat earth' mindset. Otherwise the cadastral surveyor will become marginalised from the impending explosion of spatial integration set to take place in the wider community.	Private sector
Bring it on	Private sector
Bring it on!	Private sector
Thank you	Other education / research
This is a critical initiative in supporting the ongoing integrity of a spatially accurate 3D digital cadastre	Private sector
Keep up the good work.	Private sector

4.6 Issues mentioned	4.2 Primary sector
<b>Concerns / Alternative views</b>	
This process is not needed when modernising GDA94 (removing known distortions) is a simple solution. Confusion will result from the retention of the GDA prefix. Transformation parameters to ITRF could be developed for those that need it.	Private sector
Please justify the change. Include the costs to industry and any perceived benefits	Multiple areas as listed above
I do not agree with this datum modernisation. I believe it is being driven by academics and public servants looking to create work for themselves and to secure their own future employment. It will not benefit the wider community and in my opinion will only serve to create confusion with the general public. In a bid to remain relevant in society this will only pigeon hole surveyors into one more step closer to obscurity. Those pushing this agenda need to look past their own self-interest and consider the good of the profession.	Private sector
This is a waste why do it	Private sector
A problem for Academics, whereas the general public only requires relative accuracies.	Private sector
This is driven by self -serving geodesists and other spatial with vested interests.	Private sector
I don't believe the implementation plan has been thought through properly - certainly with respect to the private sector and the issues affecting the planning and development of resource and infrastructure projects.	Private sector
Our view is that the datum change is an expensive and risky exercise and that almost all our clients and systems are setup in GDA94. Everyone is on the same page with GDA94 and changing datums should only happen if there are problems with the precision. In VIC GDA94 serves us well at the level of centimetres. The 1.8 m shift is just not warranted in our view.	Private sector
The move to 2020 has not been thought through properly for the non-govt sector - the focus on Govt in Q.4.2 shows the narrow perspective	Private sector
I think more emphasis should have been placed on the dynamic ATRF (continuously aligned with ITRF) as the top-line datum product managed by the ICSM and encourage work-flows and GIS development to that frame. The 1.6-1.8 m difference between GDA94 and GDA2020 will be real headache for managers of precise datasets and survey information, and end users that connect to geodetic infrastructure such as state CORS. What concerns me is that many organisations will invest a lot of time and money migrating their datasets and workflows to GDA2020 when this investment could have been made in working with a kinematic frame. It's almost certain there will be some incorrect assumptions made on whether data is GDA94 or GDA2020. Most usage is simply just "GDA" and "MGA" A stable plate frame based on ITRF or ATRF referenced to epoch 1994.0 would have reduced the risk of this. The ellipsoid height change will also catch a lot of users out unless they change the geoid model.	Private sector
I am disappointed that stakeholders did not have input into changing the datum	Private sector
It is excellent that a new datum is being implemented. The shift of 1.8m will cause many issues as most end users will not understand the difference and assume conformity, especially on a large scale. The 2020 epoch should also be considered to be stretched unless we are to have yet another model in 2023.	Private sector
Use a completely different initialism so GDA94 is not confused with GDA2020	State Gov.
<b>Other comments</b>	
We should be alright - survived AGD84 to GDA94	Local Gov.
Seems inevitable.	Private sector
No - still thinking on the ramifications of the dynamic datum	Private sector
Please tell Engineers and Architects to stop using coordinates	Private sector

4.6 Issues mentioned	4.2 Primary sector
Comment on the survey - the question on date of implementation wouldn't accept a date of 30/06/2017?? <ICSM note- changed in the final report>	Local Gov.
Maybe university (student) expertise to help large organisations to transition.	Utility
Any chance of Federal Funding to support dataset conversion?	State Gov.
Is the overall spatial and surveying industry supportive to implement, including software providers?	State Gov.
Is (or where is) the new datum acknowledged as a priority piece of public infrastructure which will support Infrastructure VIC's 30 year Strategic Plan?	Private sector
Not GDA2020 as such, but not all have superfast broadband. Mine is pathetic. Imagine others in regional Oz will echo my experience. Please consider that when disseminating information. A good well sorted Android App should work well, particularly on tablets.	Private sector