Spatial Industry Statistics Program

Analysis: 2014 Salary Survey
## Activating Organisation:

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### Spatial Industry Statistics Program

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### October 2014
Introduction

The 2014 Spatial Salary Survey was conducted online during May to August 2014 by Spatial Industries Business Association on behalf of the Spatial Industry Statistics Program participants.

Past experience suggested that a broader response would be obtained if the survey was done on a personal basis rather than an organisational basis. Consequently the survey was done on that basis, although employers were asked to encourage their staff to complete the survey or do it for them – with a spreadsheet format also available for that purpose.

The link to the survey was distributed through various mailing lists and newsletters and most participants in this Program were involved in that distribution.

In addition, social media channels were used extensively to get the message to potential participants. This included relevant LinkedIn groups, Twitter, and Facebook.

Several reminders were distributed through all channels.

Responses were still being received on the day the survey was closed (at the rate of 2 or 3 per day) — twelve weeks after the survey was opened for input and notices sent out.

A total of 1489 valid responses were included in this analysis (up from 1137 in 2013).

Respondents continue to have most difficulty with the questions relating to job classification. With such a diverse industry, this is never going to be easy; however the comments received last year and the amendments made appear to have made a difference.

A continuing point of comment was the separation of Cadastral Surveying into a single classification. This was done only because cadastral surveyors are the only type of surveyor with mandatory registration (recognising mine surveying’s safety requirements) and a separate analysis is relevant to that process.

Two areas that were previously not addressed sufficiently were the academic roles and sales roles (particularly in sales of hardware and software, but also sales roles in service organisations). Classifications for these have been added in 2014.

Rating the Survey

The average rank out of a possible 10 for each of the rating questions was (2013 and 2012 in brackets) —

- Relevance of the employment categories — 7.02 (6.85) (6.61)
- Ease of use (navigation and completion) — 8.56 (8.43) (8.45)
- Visual appeal and instructions — 7.99 (7.80) (7.78)
- Usefulness of results to you personally — 7.01 (6.71) (6.69)
- Usefulness of results to your organisation — 6.69 (6.49) (6.64)

Clearly there is still room for improvement, but the positive trend in all items is encouraging.
Trends

This is the third year that the Salary Survey has been done in the current format.

The number of respondents in each year was —

- 2012 — 1162
- 2013 — 1137
- 2014 — 1489

This is the first year that a comparison with previous years has been made to determine if any trends are emerging. Readers should, however, note the comments below.

About the Respondents

It should be noted that the survey was not distributed to a predetermined sample of the whole population in a strictly statistically valid process. The request to participate was merely circulated as widely as possible.

Consequently, the sample may not be, statistically, a true representation of the whole industry population. The analysis is therefore an analysis of the sample, not the population.

However, the following sections showing the demographic information collected about the sample serve to provide a level of confidence that there is sufficient data to make conclusions.

Also, comparisons with previous years and trends should be carefully considered because of the sampling methodology.

This suggests that, over all, the industry is an aging one. A separation of the proportions into the various job classifications, presents a somewhat different picture.
The proportion of older participants is high in the surveying classifications, particularly cadastral surveying. Note that many in the 18-24 group for the surveying classifications were survey assistants rather than qualified staff.

Interestingly, the proportion of older participants is also very high in the Remote Sensing and the Academic classifications. However, these groups are small (19 and 14 respectively) so they may not be completely representative.

Because of the distribution methods — by direct email and through social media — it may be fair to surmise that people of all ages in the various classifications were exposed to the information about the survey. Whether the motivation to complete it is as evenly distributed is unknown.

However, the overall figures might realistically be interpreted as representative of the industry.

**Gender distribution**

Speaks for itself — even without statistical rigour, the spatial population is clearly biased, although there is a larger proportion of female respondents compared to last year.

However, there is again a noticeable variation based on Job Classification.

Again the polarisation is strongest in the two surveying classifications with both at over 90% male. The Remote Sensing area is not far behind.

Later in this report it is indicated that the number of Full-time and Permanent jobs far outweighs Part-time, Casual and Temporary or Casual jobs.

We would speculate that perhaps this mitigates against females re-entering the workforce after taking time out to start a family. A more in-depth analysis that compares Age and Gender Distributions with Employment Type and Employment Status would be interesting.
These figures suggest that the industry is highly educated. The post-graduate qualification is now in two categories but the number of respondents is the same in total.

On a quick browse of the responses, the majority of the high school level staff was surveyor’s assistants and some older “other technical activities” people, particularly drafters and some in “management/sales”.

There was no provision to specify “other” education levels.

No deeper analysis of education levels against other criteria has been activated at this stage. As for any other deeper or cross tabulation analyses, these can be completed on request and a list of the questions is given at the end of this report.

Education level

Employment type and status

Clearly the predominant form of employment in the spatial industry is full time permanent employment and not much use is made of part time, casual or contracting arrangements. The Fly in/Fly out category was added in 2013.

In terms of hours worked per week, 68% indicated either 38 or 40 hours.

A total of 11% indicated that they worked fewer than 38 hours per week.

There were 21% who claimed in excess of 40 hours per week ranging up to 100 hours per week.

The number working >40 hours per week is down from 30% in 2013 — perhaps indicating a slowdown in some areas, particularly small businesses whose owners and staff are more likely to work excess hours.
Position level
This question continues to cause some confusion but it was very handy to validate the later question on job description.

The numbers indicate that around 22% of respondents are in the management area of the industry. That seems rather top heavy but is slightly down on last year (although overall the variations are not significant given the sampling methodology).

Some explanations for the proportion might be –

- The number of very small businesses in the industry
- The number of government respondents

The proportion of “technical” level increased slightly from last year and the number in “trainee/cadet” was down significantly but again may be due to the sampling process.

Job classifications
Respondents were asked to select a classification and then a job description from a second question that popped up relevant to that classification.

This still caused the most confusion despite amendments prompted by feedback in previous years. The classifications “Teaching / Research” and “Management / Sales” were better defined in terms of sub-categories and responses were less problematic.

A total of 84 (down from 96 last year and 123 in 2012) additional job descriptions were added in the “other” option. Some of these seemed to be respondents trying to match their job title to the question. Rather, the survey was more interested in the activities of the respondent than the actual job title.
In the meantime, the best attempt has been made to place respondents into a job description that best fits or remove the response from the analysis for this review.

Around 46% of the respondents indicated some kind of surveying as their major activity. Cadastral surveyors were separated out because they are the only type of surveyor that has mandatory registration through government legislation and reporting on that group represents a special case. It is also the largest group of surveyors amongst respondents.

**Experience**
The survey asked respondents to nominate the number of years in their current role/job. A second question asked the number of years in the industry.

Respondents answering the second question have obviously largely rounded off their best guess at the 10, 20, 25, 30, 35 and 40 marks.

A comparison of the two charts is interesting.

The much broader range of the second chart suggests that there is quite a deal of movement of people in the spatial industry — either between jobs internally (including promotions) or between organisations.

It might be interesting to ask a third question seeking the number of years in the current organisation to gauge movements in that aspect.
Trends in the Respondents
The following charts indicate the trends in the data received. It is important to remember that they are not necessarily true trends in the overall industry because of the sampling method. Nevertheless, they give an indication of the demographics of the sample from year to year.

The Gender Distribution has been static the last two years but somewhat different from the first year. This probably reflects the fact that the proportion of respondents from the surveying discipline was higher that year.

Significant differences in job classification proportions of the sample include an increase in “Other Surveying” and “Management/Sales” and a decrease in “Geospatial Activities”.
About the Organisations

The survey was circulated to all sectors of the spatial industry. The figures shown here are proportions of respondents rather than an indication of the proportions of type of organisation.

By far, the majority are in the private sector and this proportion is up from 70% last year, with a corresponding reduction in the number from state and federal governments. The categories of Research Institute and GOE were added as a result of respondent feedback but attracted small numbers.

Likewise, the proportions on the organisation size graph should not be construed as the proportion of different sizes of organisation in the industry. It is the proportion of respondents who work in organisations of that size.

The proportion of respondents from firms in the 100-499 staff has more than doubled since last year while other sizes decreased proportionately. This has been due to the direct involvement of several large firms who assisted in getting their staff parameters into the survey.
Almost half of the respondents work mainly in Queensland. This is due mainly to the support that was given to the survey by private business in Queensland.

In the two states that should have the largest numbers (NSW and VIC), it is apparent that the linkages are not as strong and, particularly, surveying firms in those states actively boycotted the survey citing their own internal surveys (within one state and within a single membership group) as being sufficient.

Through the use of social media to distribute the information about the survey, some employees of those entities have become involved. Clearly, the NSW-VIC anomaly will bias the overall results but, as the overall numbers are up by nearly 30%, any bias has been reduced.

The major change to the Work Location proportions have been a reduction by over half in WA (due to the resignation of a champion in SSSI).

**Trends in the Organisations**
Again note that the trends shown in the graphs at right are not necessarily a complete and definitive interpretation of the organisations in the industry.

Rather it is an indication of the organisations and locations in which the individual respondents are working in each of the years represented.
Markets
Respondents were asked to select as many markets as their organisation was engaged in.

There is some confusion as to what a market is in the industry’s context. Quite a few surveying respondents, for example added “surveying” or “surveying and mapping” in the “other” option. Clearly surveying is done in many of the options listed but is not a “market” in itself – surveying is not done for the sake of surveying, after all.

The options have been clarified over the three years and the number of “other” markets nominated is reducing.

While the first four or five options dominated, perhaps reflecting the narrower work sphere of traditional surveying firms, it is clear that there are options for spatial industry participants in a wide range of markets.

Note that the trend represents the number of respondents working in that area, not necessarily the work available.
The Salaries

These two charts provide two overview ways of looking at the salaries for Australia.

[Salary Overview - Australia chart]

[Salary Overview - Australia chart]
There were 1354 respondents for Australia included in those charts. These charts are useful for an overall comparison of the different groups of the spatial industries and the relativities within groups. The “Other Technical Activities” group includes a wide range of disciplines (from drafters to pilots) so this comparison is not very meaningful but the group is included for completeness.

The number of respondents from New Zealand totalled only 135, up from 47 last year. A pleasing increase but not sufficient to make the overview for New Zealand very meaningful. However, there is data to warrant three New Zealand job classifications — Cadastral Surveying, Other Surveying, and Geospatial Activities — to be analysed in the detail sections of this report.
Cadastral Surveying Activities
A total of 381 Australian respondents listed cadastral surveying as their principal activity (312 in 2013). The breakdown (by number and percentage) is shown in the following chart.

The boycott by NSW and VIC surveyors will be most influential in this classification — but thank you to those who did participate.

The sample is more evenly balanced than in previous years, when it has been rather top heavy. The salary comparisons at the lower levels will be more reliable as a result.

The range for Survey Assistant is much wider than previous years which have seen a concentration in the first two columns. The number of Survey Assistants responses is also higher so this may be more representative.

At Survey Graduate and Registered Surveyor level, there are wide variations in salary with a noticeable peak. At the Senior Surveyor the range is flatter but covers the same range as the Registered Surveyor. The range for Survey Manager has a significant peak which has not been the case in previous years.
A total of 16 responses from New Zealand listed Cadastral Surveying as the principal activity and most of these were in the higher levels. **The salaries are expressed in NZ dollars.**

**Cadastral Surveying Activities - NZ**

- Survey Assistant: 12.5%
- Survey Technician: 31.3%
- Surveying graduate: 50.0%
- Reg’d / Licensed Surveyor: 6.3%
- Senior Surveyor: 0.0%
- Survey Manager: 0.0%

**Cadastral Surveying Salaries - NZ**

- < $50,000
- $50,000 - $60,000
- $60,000 - $70,000
- $70,000 - $80,000
- $80,000 - $90,000
- $90,000 - $100,000
- $100,000 - $120,000
- $120,000 - $140,000
- $140,000 - $160,000
- $160,000 - $180,000
- $180,000 - $200,000
- $200,000 - $300,000
- $300,000 - $400,000
- > $400,000

**Other Surveying Activities**

There were a total of 283 Australian responses for the “Other Surveying” classification. The breakdown (by number and percentage) is shown in the following chart.

Engineering surveyors were the largest proportion of the respondents but there were again a significant proportion of Survey Managers. Note that the survey managers could be in any of the disciplines also listed as options for operational staff.

The fact that this classification is a mixture of levels and disciplines is a reflection of the anticipated number of returns. For 2014, the mining activities have been divided into defined levels but the total response was not as high as expected from previous experience.
A total of 14 respondents from New Zealand listed Other Surveying Activities as their principal occupations.

Only categories with more than one respondent have been included in the salaries graphic. Salaries are in NZ dollars.
Geospatial Activities
There were a total of 199 Australian responses for the “Geospatial Activities” classification (down from 313 in 2014). The breakdown (by percentage) is shown in the following chart.

These categories were obtained in consultation with experienced geospatial practitioners, but the feedback suggests that there is still a significant variation in terminology. We have sought to clarify the terminology over the past two years and there were fewer “other” inputs than previously.

Formalised career structures and career progression categories are still unclear and inconsistent within the spatial sector. This is reflected by the variation in spread of data across the different position descriptions. The salaries attained reflect junior positions in the industry and may reflect those working in the industry who do not currently have professional qualifications.

At the upper levels, the spread appears to reflect the diversity of the definition of ‘Senior’, which in some cases simply reflects 5 years+ work experience, while in other cases reflects a wider range of core competencies, both in technical and project management and/or management areas.
From New Zealand there were a total of 76 responses for the “Geospatial Activities” classification (up from 40 in 2013). The breakdown (by percentage) is shown in the following chart.

The two largest groups are Spatial Analyst and Senior Analysts with about the same proportion of Geospatial Manager as in Australia.

The other groups are very small and it is not obvious that the comments above in relation to geospatial activities in Australia also apply in New Zealand. However, the proportion of “seniors” as opposed to the remainder is perhaps more logical.

The spatial industries in the two countries are probably at around the same level of maturity but the relative size and spread of the industry in the two regions could mean that the industry is more uniform in New Zealand.

Again the overall sample is not large and anomalies may arise from the lack of truly random sampling.

Note that the salaries in this table are in NZD.
Remote Sensing Activities
There were a total of 15 Australian responses for the “Remote Sensing Activities” classification. The breakdown (by percentage) is shown in the chart at right.

The number of responses in this classification continues to be unexpectedly small. It is intended to cover people supplying and using satellite imagery or data and imagery or data captured from aerial platforms such as planes or drones.

Strictly, "remote sensing" is wider than that, but that is probably close to the traditional perception of it. It may need some better definition of terms if the survey is to continue with this classification. Perhaps the terminology is out of date.

The analysis shown on this page should be read with recognition of the small sample size.
Information Technology Activities

There were a total of 110 Australian responses for the “Information Technology Activities” classification (up from 67 in 2013). The breakdown is shown in the following chart.

The descriptions in this classification group were modelled on those used by Australian Information Industry Association (AIIA).

This classification group continues to provide a strong response in the survey.

This classification mimics the other in that there is a large group describing themselves as “manager”. This was more unexpected here than elsewhere and perhaps reflects the view that information technology activities in the spatial industry are not merely service personnel.

Some commentators of the spatial industries have promoted the alignment of “spatial” and “ICT” for some time. Perhaps this is evidence that such an alignment exists and ought to be exploited for business opportunities.
**Other Technical Activities**

There were a total of 89 Australian responses for the “Other Technical Activities” classification (up from 67 in 2013). The breakdown is shown in the chart at left.

This is a very mixed group of largely unrelated disciplines and some of the returns were very small. The classification is included to capture the support and other disciplines regularly employed in spatial organisations. It is recognised that the list is not exhaustive.

These low returns may be because some of these people are not receiving mail or social media notices aimed at spatial people and were not aware of the survey.

This intelligence is important to employers of those disciplines and is included where there was more than one response for a particular job description.
Non Salary Benefits
A total of 1275 respondents (out of the total of 1489) selected one or more non-salary benefits.

The table below indicates the percentage of those respondents who selected each of the benefits listed.

By a large margin, the payment of seminar and conference attendance was the most popular, followed by membership of professional associations. At this stage, no analysis of these benefits against Position Level has been addressed.

Of interest was the list of “other” benefits provided in answer to this question.

These included —

- Discounts at banks and retailers
- Flu injections and health checks
- Home rent paid or rent assistance
- Salary insurance / income protection
- Longevity bonus
- Meal allowance away from home
- Professional registration (e.g. surveyors board)
- Training courses
- Study allowances
- Pollution allowance
- Language study allowance
- Flights

Non-Salary Benefits - AUS/NZ

[Image of a bar chart showing the percentage of respondents who selected each non-salary benefit.]

Position Descriptions
The list of additional position descriptions provided in answer to “other” at questions 17 – 24 was extensive, and somewhat repetitive and overlapping.

Terminology is still an issue, but most of the “other” suggestions were able to be absorbed into existing descriptions.

The new classification of Management and Sales has accommodated many of the “other” suggestions of previous year, but that classification is even more diverse than specific discipline classifications and many of the “other” suggestions this year were in this classification.

The new descriptions in the classification of Academic Teaching/Research appears to be addressing that sphere to some extent but again, that is an area more diverse in terminology than expected. Responses in this area were low this year.

Obviously, the more the data is segmented, the better the intelligence for prospective employers and employees.

However, if the number of respondents in one group gets too small, then the data is not meaningful as an indicator because of the unknown external influences on the salary amount.

Some of the “other” suggestions were actually already in the questionnaire somewhere but the respondent has not found them in the classification he/she expected. We’ll look at some way to make this clearer in 2015.

Commentary
Over 50 respondents left a comment at the end of the survey. Many of these were to clarify a response to a question in the survey or remove some confusion. These suggestions will be valuable in formatting the 2015 survey.

Others provided general commentary and most of these were positive towards the survey and its objectives or provided good advice.

More Detailed Analysis
The survey questionnaire is provided on the following pages and the raw data received is maintained.

A detailed cross tabulation analysis on any of those questions could be done.

Organisations or individuals who would like a deeper analysis on a particular parameter should contact the author. See Page 2 for contact details.

Depending on the scope of the work and its purpose, any deeper analysis may incur a cost.
The Survey

The Salary Survey 2014 was conducted on a per person basis and one record was sought for each individual.

Most questions were dropdown lists or multiple choice.

Job descriptions lists emerged for each classification selected at Question 15.

Question 1
Age —
- Under 18
- 18 – 24
- 25 – 34
- 35 – 54
- 55+

Question 2
Gender —
- Male
- Female

Question 3
Education level —
- Postgraduate degree
- Bachelor degree
- Associate degree
- Diploma
- Associate Diploma
- TAFE/Polytechnic Certificate
- Year 12 High School
- Other

Question 4
Years in the current role? (insert number)

Question 5
Years in the industry? (insert number)

Question 6
Employment type —
- Full time
- Part time
- Casual

Question 7
Employment Status —
- Permanent
- Temporary
- Contract

Question 8
Number of hours per week usually worked (insert number)

Question 9
Position level —
- CEO/director/head
- Manager / division / branch head
- Professional
- Technical
- Admin. / support
- Student
- Trainee / cadet

Question 10
Organisation type —
- Private sector business
- Cooperative
- Local Government
- State Gov’t agency
- Federal/Central Gov’t agency
- Gov’t owned enterprise
- Academic institution
- Research Institute/Centre
- Other

Question 11
Organisation size —
- 1 – 4
- 5 – 9
- 10 – 19
- 20 – 99
- 100 – 499
- 500+

Question 12
Work Location —
- Australia – ACT
- Australia – NSW
- Australia – NT
- Australia – QLD
- Australia – SA
- Australia – TAS
- Australia – VIC
- Australia – WA
- New Zealand

Question 13
What market sectors does your organisation operate in? (tick all that apply)
- Agriculture/Food
- Asset management
- Civic administration
- Communications
- Construction
- Culture & Arts
- Defence
- Education
- Emergency services
- Environment
- Indigenous lands
- Land development
- Land Titling / Admin
- Law & Order
- Logistics
- Marketing
- Maritime
- Medicine/Health
- Resources / Energy
- Retail
- Social services
- Tourism
- Transport/Roads
- Urban Planning
- Utilities
- Other (specify)

Question 14
Annual Salary range (gross salary incl. compulsory super.)
- < $50,000
- $50,000–60,000
- $60,000–70,000
- $70,000–80,000
- $80,000–90,000
- $90,000–100,000
- $100,000–120,000
- $120,000–140,000
- $140,000–160,000
- $160,000–180,000
- $180,000–200,000
- $200,000–300,000
- $300,000–400,000
- >$400,000
### Question 15
Non-salary benefits – (tick all that apply)
- Private use of company car
- Private use of company phone
- Private use of company equip.
- Professional memberships
- Club memberships
- Car parking for private vehicle
- Expenses for private vehicle
- Seminar / conf. attendance
- Business profit sharing
- Performance or other bonuses
- Frequent Flyer points retention
- Private accom. in remote areas
- Home phone expenses paid
- Home utility expenses paid
- Salary sacrifice arrangements
- Study assistance/scholarship
- Health or other insurances
- Other (specify)

### Question 16
Job classification —
- Cadastral surveying
- Other surveying
- Geospatial activities
- Remote sensing activities
- Information technology activities
- Other technical activities
- Academic teaching/research
- Management/sales

#### Geospatial activities —
- GIS/Spatial operator
- GIS/Spatial graduate
- GIS/spatial analyst
- Senior analyst
- Principal analyst
- Spatial architect
- Spatial manager
- Geospatial mngr
- Other (specify)

#### Remote Sensing Activities —
- Remote sensing operator
- Photogrammetric operator
- Image/remote sensing analyst
- Senior remote sensing analyst
- Senior photogrammetrist
- Remote sensing specialist
- Remote sensing consultant
- Remote sensing manager
- Other (specify)

#### Other Technical activities —
- Drafter
- Cartographer
- Pilot
- Navigator
- Photolab technician
- Town/urban planner
- Senior town/urban planner
- Landscape gardener
- Senior landscape gardener
- Environmental scientist
- Senior environ. scientist
- Engineer
- Senior engineer
- Research officer
- Senior research officer
- Other (specify)

#### Academic Teaching/Research —
- UNI – Assoc Lecturer / Tutor
- UNI – Lecturer
- UNI – Senior lecturer
- UNI – Assoc Professor
- UNI – Professor

### Other (specify)
About SISP

The Spatial Industries Statistics Program was formed by the stakeholders listed in February of 2011.

Over several brainstorming sessions, the participants developed a sense of what information is required.

The statistical intelligence required for the industry can be roughly described in 3 groups —

1. Whole of industry, size, economic impact, etc
2. Business operations, profitability, sustainability, markets, etc
3. Workforce development, entry, pathways, demand, supply, etc

Discussions are being held with the Australian Bureau of Statistics in relation to (1) with a view to establishing a “satellite account” for the spatial industries.

This Salary Survey represents part of (2). Discussions are also being held with a commercial business analysis organisation who currently conducts surveys in related areas, to explore the potential to broaden that work into the whole of the spatial industries.

A pilot study was conducted at some universities as part of a consultancy to advise the Queensland Destination Spatial group on communication to school leaver entrants to the industry.

This study sought information on how students were attracted to spatial courses and the pathway which brought them to their current situation.

Two questionnaires are now available for entering students and completing or abandoning tertiary students.

SISP Participants

ABS – Australian Bureau of Statistics
ANZLIC – the Spatial Information Council
ASIERA – Australian Spatial Information Education & Research Association
CIT – Canberra Institute of TAFE
CRCSI – Cooperative Research Centre for Spatial Information
DIGO – Defence Imagery and Geospatial Organisation
GA – Geoscience Australia
IMTA – International Map Traders Association
LGMA – Local Government Managers Association (tbc)
OSP – Office of Spatial Policy
SEAC – Spatial Education Advisory Committee
SIBA – Spatial Industries Business Association
SSSI – Surveying and Spatial Sciences Institute