Challenges to and Relevance of a Licensed Surveyor?

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Key Words: Cadastral, Relevance, Technology, Challenges

SUMMARY

It is a curiosity within the Geomatics (Surveying) profession in Victoria Australia, that it is rarely outwardly praised, rewarded or acknowledged for the work that is undertaken and successfully completed. It is considered one of the challenges of the profession and at times the question is asked about the relevance of the profession in modern day society. There is no question that in the past surveyors were the explorers of the world, discovering new lands and providing details far beyond what we might provide today.

Technology is changing at such a rapid rate, that our relevance in society may well be challenged and the work it facilitates can be completed by persons not trained as surveyors, but able to understand the processes using this new technology. Is this fair and reasonable to the trained surveyor or the clients they serve? It is a question we must ask and answer thoughtfully if the profession is to remain relevant in today’s society and into the future. Ask yourself: Would you have a plumber train an electrician?

To answer this question and others that may come out of it, it is important to list what might be considered to be the challenges facing the survey professional today. From this it may then be possible to determine the relevance of the profession into the future. It should be clearly noted that the surveying profession is not the only one scratching its head and crystal gazing about its future.

This paper is designed to review what might be considered the challenges facing the profession and determining if these challenges can be overcome in order to make the profession relevant and worthwhile in terms of training new surveyors, offering value to the land property system, offering value to the engineering and construction industry and being a leader in the development of new technologies in 3D measurements and positioning.

To some this may be a rehash of the work with which surveyors are involved. To others it might be an opportunity to provide a service over and above what is considered normal today; and to others it might be a challenge to deliver newer technologies far above what we have today.

Sit back and challenge this discussion and determine if what surveyors do has a future in society and if it needs to change course to maintain relevance!

Please note that all references relate to the State of Victoria in Australia.
1. INTRODUCTION

The question was asked at a recent meeting I attended, does the surveying profession have exclusive ownership of the word "surveying", like a lawyer having exclusive use of his/her professional name. The feeling of the remainder of the meeting members was clearly no, as the term surveyor is used in a number of professions not associated with what we know as surveying. Health surveyor is one; marine surveyor another and so on. What we have clear ownership on is the qualification “Licensed” or Registered” surveyor, being one who has exclusive rights over land registration and boundary determination matters in Victoria Australia.

Thus the challenge here is to emphasise the role of a licensed surveyor in society and to encourage and educate the public that a licensed surveyor adds to the land registration system. Land registration is defined as being all things associated with owning land, marking boundaries, defining easements/leases and licenses.

Challenge 1 – Define the role of a Licensed or Registered surveyor to remove any ambiguity.

A second question came from the person asking the one above, he being a licenced surveyor in Victoria Australia. What can be done to stop surveyors or organisations that are not licensed or do not have licensed surveyors working for them, from performing surveys which purport to mark out boundaries for various works? Marking a “building line” was the terminology used.

What can be done? This is a difficult one although if enough evidence is collected and presented to a court it is possible to obtain a conviction. This was recently achieved in Melbourne Victoria where a person purporting to be a licensed surveyor was convicted of falsely placing marks and was fined in accordance with the Surveying Act 2004. Great start, but this required the use of specialised personnel to locate and filter out the required information for presentation in court. Not a job for you or me to do as a licensed surveyor in the profession. We cannot call in the Mentalist (a character who uses mind skills to solve mysteries) to find the evidence as they do on television!

What skills do I need to investigate problems within the profession? I need to know the law governing surveyors and the rights of the public to expect respect of those laws.
Challenge 2 – How do we protect the cadastre from persons/organisations working illegally?

The training of those wanting to enter the profession is conducted by a number of universities in and around Australia. In addition surveying courses are undertaken at TAFE (Technical and Further Education) colleges covering various parts of the states of Australia. For those seeking registration to practice as a licensed or registered surveyor, this is undertaken by the Surveyors Registration Board of Victoria, with the Surveyor General as chairperson of the Board.

In Victoria, persons entering the profession can do so through Melbourne University or Royal Melbourne Institute of Technology (RMIT) University. Certificate course qualifications, Advanced Diplomas and Diplomas can generally be obtained through the TAFE sector.

Most students seeking to study surveying choose RMIT University as it is more practically orientated than Melbourne University which has recently opted for the new \textit{Melbourne model}. This model has the first three years as a general degree with the last two being a specific Masters qualification dedicated to surveying. What is missing here in comparison to RMIT University?

RMIT University has a high number of students studying surveying at various levels as does RMIT TAFE in its certificate and diploma courses. Melbourne University has a much smaller number but seems little concerned by this. The GOTAFE College in Shepparton Victoria runs a Certificate IV in Surveying which attracts students from various parts of the state and interstate.

Appendix 1 gives a current breakdown of students attending the various colleges.

Challenge 3 – Are the universities and associated colleges producing graduates that will advance to the licensing stage or be swallowed into the greater Spatial industry?

Technology is everywhere and it would be foolish to ignore the value it can add to the profession and to other professions. However, is technology over running the current members of the profession and leading to non-professional surveyors embracing it and taking work from the genuine licensed surveyor? Do we see the light or ignore it at our own peril?

\textbf{Do we bury our head in the sand and ignore it, or do we embrace changes and work with it? Seeing the light is fundamental!}

A challenge or relevance, your honour? Both is the obvious answer but how do we deal
with it and make it work for the profession? We adapt our methodologies to use the technology to add value to our processes and ultimately enhance the product to the customer. Somehow we need to incorporate the customer/client into this discussion for without them, as in any profession or trade, we are nothing.

I use GPS for surveys, both cadastral and engineering. I enjoy and embrace the technology and for the most part it does the job required. However, it is important that the laws under which we operate change to embrace the technology as well. The profession that most struggles with the vast difference between development and law is the medical profession, particularly the ethics of the profession.

Our profession is not as critically dependent on new discoveries or development as the medical profession is, but the struggle to keep up with the law is in the same basket. Developers of new technology most likely do not think of the law when tinkering with new ideas so it is up to others to take this role on. However, is the challenge the technology or the law and who needs to accept responsibility for it?

Challenge No 4 – technology and the law, who is responsible and what is an acceptable timeframe for them to move in together?

I accept that there could be many more challenges in our profession, but perhaps it is time to consider the ones above and test them as a challenge and more so are they relevant in today’s profession.

2. CHALLENGES OF THE PROFESSION, OR AT LEAST A COUPLE OF THEM!

This sounds like an Australian television show such as the “Biggest Loser” or “Master Chef”, one relating to losing weight and the latter relating to cooking. In the surveying profession perhaps it is, and I raise this to test the resolve of the profession going forward. It is about prompting discussion on the importance and value of the profession and the relevance of the profession in years to come. It is important for those either thinking about entering the profession or those who are about to start a career in the profession. For older people it is about enhancing the profession with the knowledge gained and passing on this knowledge.

This picture is about the earth, the environment and awareness, some of the many skills a surveyor has in his/her field bag. Think about what skills you have and how you use and share them in your everyday working experience.
2.1 The first challenge was to define the meaning of Licensed Surveyor as opposed to surveyor in the context of the question asked. When we are asked what our profession is do we say I am a licensed surveyor or do we simply say surveyor. I know I say surveyor, so I am being non-specific in my terminology, which may lead to confusion with the general public. When you say surveyor, quite often the answer comes back you are the one holding the “stick” on the road.

So what is wrong or misleading in the commentary above?

On the Surveyors Registration Board of Victoria website at:


the definition is as follows:

“A Licensed Surveyor (also referred to as a cadastral surveyor) is the only person legally authorised to perform cadastral surveying in the State of Victoria Australia.

………….. Licensed Surveyors are required to practically apply those laws to delineate property boundaries on the ground. …………”

These set aside licensed surveyors from all other types of surveyors and provides extra responsibility in carrying out the work through its association with land and people. Land and people are like bees and honey, inseparable.

A licence in Victoria Australia, is the equivalent of a Post Graduate Diploma at university level and can only be achieved through extra study and internship spent under the watchful eye of a Supervising Surveyor. Gaining a licence can be achieved in about eighteen months or it may take up to five years or longer, depending on the intent of the student.

Let me not be too judgemental of those who are surveyors but not licensed surveyors, for they all add value, knowledge and experience to the overall surveying profession. Cadastral surveying is not for everyone and I accept this.

However, surveyors who are not licensed do not have the right to practice as a cadastral surveyor in any circumstances and should not assume that they can, no matter what experience they have in understanding boundary definitions. Do you want a dermatologist operating on your appendix when a specific surgeon is available? I don’t think so!

Check the Victorian Surveyors Act 2004 for details and responsibilities of licensed surveyors. Refer to:
2.2 **Challenge two** is about protecting the area of boundary definition from those persons or organisations who want to bypass the correct process. After all, a licensed surveyor costs more than employing someone with experience who believes that they have the skills to carry out a legal survey. Wrong!

Unfortunately many surveying organisations use unqualified staff to undertake cadastral surveys under the rule of supervision. Refer below to a section of the Victorian Surveying Regulations:

“**Surveying (Cadastral Surveys) Regulations 2005 - SCHEDULE 1**

**Regulation 13**

**CERTIFICATE BY LICENSED SURVEYOR FOR ABSTRACT OF FIELD RECORDS**

I, (insert full name) of (insert office address) certify that this abstract of field records correctly represents the results of the survey **effected under my direction and supervision** and marked on the ground in accordance with the [Surveying Act 2004](http://www.austlii.edu.au/au/legis/vic/consol_act/sa2004152/), that the survey accuracy accords with that required for (insert land characteristics) as defined in regulation 7(2) of the Surveying (Cadastral Surveys) Regulations 2005 and that this abstract of field records correctly represents the adopted boundaries and the related features existing on (insert date). Date: (insert date of certificate) (signature) Licensed Surveyor, Surveying Act 2004. ________________

Thus an organisation may have one licensed surveyor who may supervise others in the field. Obviously it is cheaper than employing a number of licensed surveyors, although it is not helping the profession in striving to support land administration and legal testament to land. I am guilty of asking an assistant to go and get a measurement I might have missed or to check a measurement.

**In terms of the law is it the right thing to be doing or should I be making a greater effort to do these myself? A judgement has to be made in terms of the time required and the value to the client, so I understand the justification for it. However, “What does the Law say?”**
Thus in order to “protect” the area of expertise covered by a licensed surveyor it is necessary to educate other professions, organisations and the public in the specific role and importance of licensed surveyors. That is, those who use a licensed surveyor need to know what they are getting. Sounds simple, but so is eating spaghetti.

2.3 **Challenge three** revolves around the education of surveyors and the direction in which they are being pointed. Following my retirement from the water industry, I have been doing some part time work with a company in Melbourne Victoria.

With many years of experience in a wide range of surveying activities I have been able to introduce the company to a wider application of survey practice, including some aspects of cadastral matters. This background has allowed the company to offer a greater range of services to present and perspective clients.

I am a believer in encouraging all surveying graduates to obtain a licence to practice cadastral surveys so that graduates have a source of employment to fall back on should their own direction falter. It’s like having your cake and eating it; a protection if required.

However, graduates are competing in many exciting areas of surveying such as GIS, GPS, Aerial Imagery, Spatial Sciences, Geodesy and so on, so that cadastral surveying does not seem to be appealing. So should academia push graduates into the licensed area or remain neutral and simply generate ideas for those graduates to investigate. This push to do other things in the profession has only really come to life in the last 20 years or so, as prior to this these areas were only in their infancy. As we know infants become grownups and need to be directed from time to time.

So many choices and only one life time to do it in. As a licensed surveyor I have used those additional skills to work in a wide range of surveying areas plus working in the area of document management. Try spreading your own skills.

In Victoria we currently have an oversupply of licensed surveyors. By 2016 we will be experiencing an under supply due to older members of the profession retiring or choosing other options.

Thus it is necessary to encourage those studying surveying now to seriously consider
becoming a licensed surveyor ready for action when the market demands it. We cannot wait until 2016 because it will be too late to invest in students and the property market and land administration is not going to sit around waiting for licensed surveyors to make an appearance.

What then is required for this to happen?

a. Make cadastral surveying an attractive profession for students to study. There must be a financial incentive for this to happen, a career path to follow and security in the knowledge of its importance to the economy of the state and nation. We are not demanding unrealistic financial returns, but salaries that relate to the importance of the profession.

b. Surveying courses must include sufficient material to cover all aspects of cadastral surveying which will encourage students to want to know more. Mr Bumble, the head of the poor house in response to Oliver Twist’s question said “You want more!” has particular meaning in terms of feeding students on cadastral surveying. Yes we need more, not so much at the expense of not selling out the other surveying sciences, but providing a pointed attack to cadastral surveying.

c. The current members of the profession getting out and emphasising the benefits of becoming licensed and the importance of licensing in relation to boundaries and the legal system.

d. The Surveyors Registration Board being more involved in the strategic direction of the profession and perhaps passing some of the more mundane matters off to professional associations to deal with, such as FPET (Further Professional Education Training) points, currently used in Victoria. They may well be involved in setting these directions but it is not obvious in discussions with Board members.

These are perhaps some blue prints for the future of the profession to move forward in developing enough members to undertake cadastral surveying.

2.4 I may well have left challenge four to the end as it is the most significant one of the four, I believe. Technology versus the rest of the world! Not really, but we hear so much about technology and new ideas it seems that nothing else matters very much. The quest to buy into new technology is always on the agenda. A simple example is that Autodesk releases the 2014 version of AutoCAD early in 2013 and so on.
However, the challenge with new technology is how is it to be managed in terms of the laws that govern a particular profession and does it really matter. Bioethics in medicine would say absolutely as human life may be put at risk. Not the same problem in surveying although it raises the question of how far can the law be manipulated to accommodate changes in technology and procedures. After all we are dealing with people’s assets.

Take for example the introduction of GPS into surveying. Introducing a more advanced spatial system into an existing spatial system seems a straightforward equation. But is it? If you refer to the various Acts and Regulations in Victoria covering surveying, very little if any reference is made to using GPS in cadastral surveying. In the Surveyor General’s Practice Directives, professional notifications, advice and statutory notices and others (refer to [link](http://www.surveyorsboard.vic.gov.au/content/90/publications.aspx)) there are a number of references to the use of GPS in cadastral surveying and what checks need to be put in place to ensure the necessary accuracies for these types of surveys. Are surveyors comfortable with these checks and balances or do they require more to verify that what they are doing is correct.

As indicated earlier, a GPS survey is a series of radiations from a known point or base station. What must be undertaken to ensure the correctness of the positions of the points?

Let’s look at an example to try and clarify this situation.

A surveyor measures a line which is 1622.13 metres long with a recently calibrated Total Station. The same line is determined from GPS observations to be 1622.15 metres. A difference of 0.02 metres seems to be an excellent result at a ratio of 1:81,106. This meets the legal requirements. Refer to Victorian legislation:

“Surveying (Cadastral Surveys) Regulations 2005 - SECT 7” – refer Appendix 2

This piece of legislation is quoted so that surveyors elsewhere are aware of the requirements for undertaking surveys for boundary definition. Remember we are responsible for land assets!

What if we have a difference of this in each of the traverse lines of the survey and finish with a significant misclosure? How does this define the suitability of GPS for cadastral surveying? And what if you have measured a line of only five metres and get a difference of 0.02 metres, giving a ratio of 1: 250, which is outside the required...
limits. Hopefully we would pull out the tape measure and check it.

In a rural environment this practically does not matter, but it will matter in an urban environment where boundaries need to be more carefully defined. After all we are talking about people’s assets and the legal requirements are much tighter in this urban jungle.

What checks and balances need to be written into the law to protect the integrity of the surveyor and his/her measurements and the integrity of the cadastre? After all a GPS survey is a set of radiations from a known point, which in theory can be checked by establishing an independent point and rechecking the entire survey. However, GPS is being used on the basis that it may reduce the cost of a survey. Will it, if you have to visit each point a number of times to verify the information? It will definitely reduce the number of staff required to carry out a survey so there will be a cost reduction.

We need to be mindful that technology is not the panacea that we may believe it to be. We may need to use a combination of technology to achieve the end result, and this may mean new purchases of instruments or increase in staff going out to do a survey. I see the combination of GPS and one man Total Stations as being an optimum solution, as you have alternative means of getting the correct information. This way it is possible to check GPS measurements directly using a calibrated Total Station.

Thus in terms of the law and equipment reference is made to the following section of Victorian legislation:

“Surveying (Cadastral Surveys) Regulations 2005 - SECT 6” – refer Appendix 3

Thus we need to be satisfied that the technology is going to provide the profession with information that can meet the legal requirements and be tested against previous criteria of registered surveys. It must be possible to show that you have made the necessary comparisons to prove the validity of your measurements to the satisfaction of the Surveyor General. From the Survey Practice Handbook (refer http://www.surveyorsboard.vic.gov.au/content/) the following comes out:

“Surveyor-General Victoria provides survey instrument calibration services, refer to http://www.land.vic.gov.au for the calibration of EDMs, Tapes and Bands, and Staves. However, there are no guidelines for any other equipment, such as theodolites (optical or digital), gyro theodolites or GPS, which may be used for cadastral surveys.

The basic vector used in cadastral surveying is the bearing and the horizontal ground distance of a line. It is only the distance that legislation currently attempts to calibrate. A differential GPS determination of the same line is a 3D vector which can then be reduced, like any other surveying method, into the same bearing and horizontal distance.

There is still much uncertainty about the use of GPS and legal traceability based on the National Measurement Act 1960. A subcommittee of the ICSM () has been
working to address this issue for many years and it is expected that it would recommend specific procedures for GPS validation. SP1 includes the Best Practice Guidelines for the use of GPS for survey applications.”

Thus we do not have a test at the moment for GPS other than making comparisons with already existing measurements or making immediate comparisons in the field. Should a check be developed or should we continue on this current path? Time will tell. Below is a test using existing distance baselines for testing GPS instruments. This is taken from the Surveyor General’s guidelines:

“An EDM baseline test (Static and RTK Techniques)

A pair of GPS receivers (plus ancillary equipment) can be tested over the various pillars of a validated EDM baseline. Measurements would involve setting up one receiver on the start pillar and simultaneous observation would be made to the other one on each pillar along the baseline. EDM calibration baselines have been established throughout Victoria to service the requirements of the surveyors under the Surveying (Cadastral Survey) Regulations 2005.

Example of a Combined EDM/GPS Coordinated Baseline

Because these baselines are certified annually as subsidiary standards of length, surveyors can then make a comparison of known lengths with EDM measurements. Similarly GPS-derived distances can be compared to the standard measurements.”

All good for the surveyor, as distance is one of the critical aspects of surveying and in
particular boundary surveying. Unfortunately the baselines have a limited distance of 200 metres, whereas GPS can measure significantly longer distances. However, to avoid curvature corrections the lines we measure for cadastral surveys are most likely to max out at about 1600 metres (a road block distance). Thus the baseline parameters may sit comfortably with the legal requirements of calibrating instruments on a regular basis.

So where does this leave us in terms of new technology and the law as it currently is. If we are mindful of the law when making measurements and include all the appropriate checks and balances, then be should be in a position to be satisfied with our measuring techniques and comfortable that we are satisfying our legal requirements. However, I am happy to be challenged on this and I trust that surveyors will be prepared to ask questions in order to be professionally satisfied in this area.

3. **FINALLY**

Let me preface my final remarks by asking that you challenge me on what I have presented and challenge yourself on what has been written. You can tell I like and enjoy writing about surveying; it’s in the blood as they say.

Having said that, I would like to summarise the above in the proverbial nutshell.

I have issued four challenges to the profession, although I am quite sure there are more out there to be addressed. You may address and solve one, but a new one immediately pops up, which may be more difficult to address than the previous one. Where would we be if not for challenges?

**Challenge one** was/is about being quite clear on our definitions of surveyor and in particular licensed surveyor. When asked about our profession be proud and refer to ourselves as licensed surveyors; other professions do it so why should we not do it.

**Challenge two** was about protecting the profession we make up and using that profession to protect the integrity of the cadastre. Land ownership is your castle so be careful of it and treat it with kid gloves.

**Challenge three** was about education and what needs to be undertaken to ensure the longevity of the profession during hard and fast times. We need to be aware of market forces and how they integrate with the profession, so that we can meet the demands applied. Make it an attractive profession, one people want to get into, not only for its glamorous lifestyle but for the personal rewards and intellectual challenges it offers.

Finally I had **Challenge four**, one of new technology and the current laws affecting the profession. As stated, new technology is a great and influential component of the surveying profession, although like all professions attracting new technology, it needs to be used in the current context of the laws in place.
Challenges to and Relevance of a Licensed Surveyor?

I trust that this paper will provide some insight into what I believe are the challenges of the profession, and challenge readers to take it apart and discuss the various aspects of it, and challenge the author on it.
Challenges to and Relevance of a Licensed Surveyor?

APPENDICES

Appendix 1

Data supplied by the Institution of Surveyors Victoria Australia 21 February 2014.

Results

Marketing activity commenced in 2008 so results from that year may be attributable to marketing activity and other organic growth.

Tertiary Enrolments

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Appendix 2

Surveying (Cadastral Surveys) Regulations 2005 - SECT 7

Classification and accuracy of surveys

7. Classification and accuracy of surveys

(1) A licensed surveyor must ensure that-

(a) The internal closure of any cadastral survey is such that the length of the misclose vector does not exceed-

(i) 15 millimetres + 100 parts per million of the perimeter for boundaries crossing level or undulating land; and

(ii) 15 millimetres + 150 parts per million of the perimeter for boundaries crossing steep or mountainous land; and

(b) the misclose vector is determined as? (a2 + b2) where "a" is the misclose in eastings and "b" is the misclose in northings; and

(c) all lengths are measured or determined to an accuracy of 10 millimetres + 60 parts per million.

Penalty: 10 penalty units.

(2) For the purposes of subregulation (1)(a)-

(a) level land means land where slopes do not exceed 3 degrees; and

(b) undulating land means land where slopes vary between 3-10 degrees; and

(c) steep land means land where slopes vary between 10-15 degrees; and

(d) mountainous land means land where slopes exceed 15 degrees.

(3) A licensed surveyor must ensure that all directional and angular measurements are verified.

Penalty: 5 penalty units.

(As a licensed surveyor I would be more than pleased with this result and continue on with the rest of the survey knowing that my results are acceptable.)
(4) If a cadastral survey requires the definition of a boundary to be related to Australian Height Datum a licensed surveyor must ensure that all vertical measurements are made and tested to the standard of precision set out in regulation 16(3) of the Survey Co-ordination Regulations 2004.

Penalty: 5 penalty units.

(5) In making measurements to determine the location of boundaries to be defined on a plan by reference to buildings or parts of buildings for which no dimensions are to be shown, a limit of error of 50 millimetres in any one measurement or one part in two hundred (whichever is greater) is allowable.

(6) In determining adopted dimensions of a parcel, a licensed surveyor may eliminate any closing discrepancies.”

Appendix 3

“Surveying (Cadastral Surveys) Regulations 2005 - SECT 6

Survey equipment

6. Survey equipment

(1) A licensed surveyor-

(a) must use survey equipment which has been compared to a standard of measurement in units of measurement specified in regulation 13(a) of the Survey Co-ordination Regulations 20042; and

(b) must ensure that-

(i) the process of comparison; and

(ii) the basis of comparison- are adequate to obtain the accuracy for a cadastral survey required under these Regulations. Penalty: 10 penalty units.

(2) A licensed surveyor must retain the records of the comparisons and make them available to the Surveyor-General for inspection upon request by the Surveyor-General.

Penalty: 4 penalty units.”
REFERENCES and ACKNOWLEDGEMENTS

I would like to acknowledge the following persons for their generous time in reviewing this paper.

Alan Timcke LS

Gary White Executive Officer Institution of Surveyors Victoria

BIOGRAPHICAL NOTES

Paul commenced his surveying career in 1974, having completed a Bachelor of Surveying at the University of Melbourne in Victoria Australia. He completed his Articles to practice as a Licensed Surveyor in 1976, the same year he joined the then State Rivers and Water Supply Commission (SR&WSC). From 1976 to July 2012 he was involved in the water industry with subsequent organisations deriving from the SR&WSC, the last being Goulburn Murray Water.

In addition to working extensively in Victoria, Paul spent 18 months in Fiji on an Australian High Commission secondment subdividing CSI land into subsistence farming land. He returned early following the first coup in Fiji in 1987. On his return to Australia, he took over management of the survey group of the then Rural Water Commission in northern Victoria.

Paul completed a Graduate Diploma in GIS and Remote Sensing from Charles Sturt University in New South Wales in the early 1990’s, using this qualification to enhance his work in the surveying profession.

As an extension to his surveying career, Paul was seconded to work on the introduction of an Electronic Document Management System into Goulburn Murray Water, as a result of his involvement in survey plans and other cadastral matters. He continued to be involved in this role of trainer and mentor up until his departure from Goulburn Murray Water in July 2012. During that time he managed the disposal of documents for Goulburn Murray Water.

Paul has undertaken survey roles in dam surveillance, large scale engineering surveys, aerial photography and Lidar surveys and managed the recalibration of Goulburn Murray Water’s storages as well as undertaking hundreds of cadastral surveys for land acquisition. Paul has been involved in GIS for many years and was involved in the implementation of an ESRI
solution into Goulburn Murray Water.

In recent years Paul was again seconded to the modernisation of the irrigation system and spent two and half years on this project before returning to the Survey and Draughting group in Goulburn Murray Water.

Paul is an examiner for the Surveyors Registration Board of Victoria and was instrumental in setting up a surveying training course at the Goulburn Ovens TAFE based in Shepparton Victoria for survey technical officers.

Paul continues to work actively in the surveying arena; be it working in the field, teaching at TAFE, examining Board projects or presenting at conferences. His most recent presentation was at the 2013 ISV conference held in Ballarat Victoria in March 2013.

CONTACTS

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