

# The Consulting Surveyor

The Newsletter of the  
Association of Consulting Surveyors (Victoria) Inc

2021 - Issue No.5

October



## CSV Board of Directors October 2020/October 2021 & Staff

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### ARTICLES WANTED AND FPET POINTS AVAILABLE

SRBV ' Guidelines for FPET ' effective from 30 August 2020 provide for allocation to a Licensed Surveyor of 3 points for writing a substantial article, see 6.6.6 extract below:

*6.6.6 Writing a journal/magazine article and/or presenting a conference paper of direct relevance to the practises of a licensed surveyor— 3 points in the appropriate category for writing/preparing and presenting a substantial article/presentation, up to a maximum of 6 points in each FPET period.*

Articles are accepted at any time and newsletters are collated and published bi-monthly.





## Update from your Outgoing President

At CSV our members are our priority

I encourage you to read the Consulting Surveyors Victoria AGM papers, due out shortly. These papers include the convenor's reports and my report as President on the many other activities the Board has been involved with over the past 12 months.

My AGM report acknowledges and thanks special CSV people - please make the effort to read it.

I do not propose to repeat anything already stated in my AGM report, other than to again thank the Board Directors for their time and support over the past 12 months and the CSV office team in Cherie, Trish and Rita led by Carmen Olson our Executive Officer, with unwavering conviction to serve our members. Our members are our priority.

I also wish to thank CSV team members in Gerry and Rob for their contributions and for sharing their knowledge and experience with full generosity of spirit to those they have connected with and helped through the development and running of CSV's specialised training modules.

On behalf of CSV, I thank our valued members and sponsors for supporting our association.

**The role of CSV President is an enriching experience**

I might write an article about the role of CSV President early next year to point to all the things it entails from my perspective, as I believe this would be insightful to many readers.

For now, all I wish to say is, it has been an honour to represent you as President. It has

been an enjoyable and enriching experience for me personally. CSV's representation at state government level through the industry stakeholder briefings has been a guiding light for the surveying fraternity to navigate its way through the restrictions. It provided businesses with clarity on what was in and what was out. The process appeared to work well. The government briefed industry (the peak bodies), the peak bodies briefed their members (the employers) and the employers briefed their employees (the individual worker). Best endeavours by all throughout the process. CSV, through its Member Alerts, strived to ensure its members were updated on their obligations to have their employees working within the rules and strictly in a COVID Safe workplace - to keep the workers and in turn the community safe.

**The importance of our relationship with state government**

As a surveying business peak body, CSV must have an ongoing relationship with state government to continually promote and represent the interests of its members. We must fully respect and support the role of the Surveyor General as our champion to enable the reach we require. This is how we must continue to put ourselves in a position to support the process - whether it be policy development through consultation or other things. CSV



owns this state government advocacy role within "One Voice".

**A personal perspective**

I enjoy and value the fellowship within Consulting Surveyors Victoria. For me it goes way back to when I was a young surveyor. I would always find myself leaving a seminar event feeling inspired and rejuvenated. This relates to my attendance at both CSV and ISV events as a young surveyor. I felt at home and I felt the generosity of spirit in the people hosting and presenting at these events.

Throughout my career when asked by a fellow surveyor for a favour I would always help straight away. I always found this experience of fellowship and sharing with my peers very enriching.

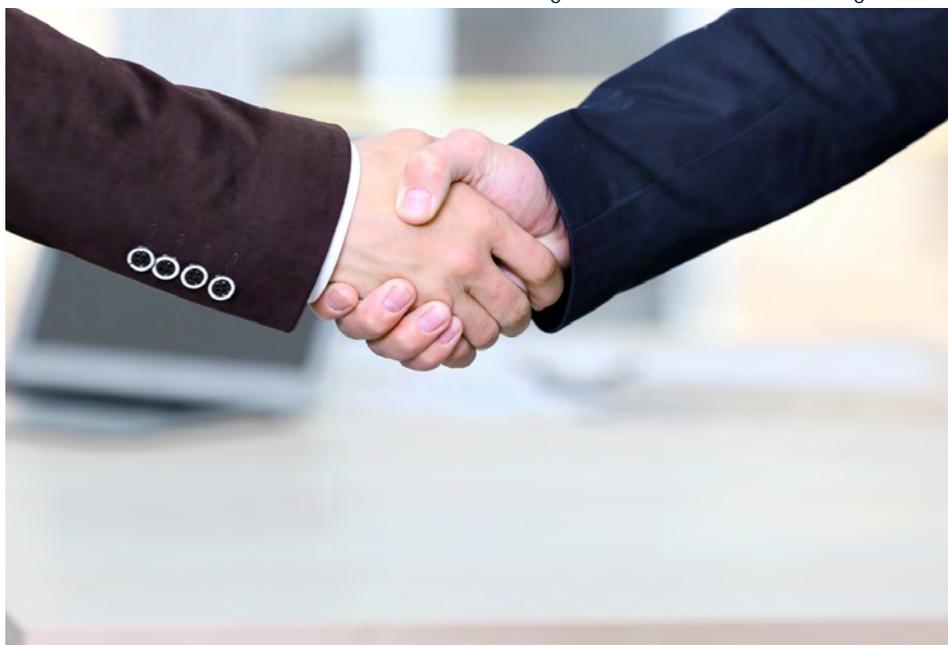
Whether it is mentoring a new graduate within your business, taking on a PTA candidate, helping a fellow surveyor with a query, presenting at a seminar, serving on the CSV Board, or stepping up to the role of CSV President - generosity of spirit can empower you to do all these things.

If you find yourself being asked to support the activities of Consulting Surveyors Victoria - please just think carefully of all the reasons how you could help and say YES, if you can.

This is what it is to be a professional - contributing to industry and the next generation.

Finally, I must thank my fellow shareholders at Taylors for supporting me devoting the time to the role of CSV President, arguably during the toughest and most disruptive epoch in business.

**Leo Bateman**  
Taylors





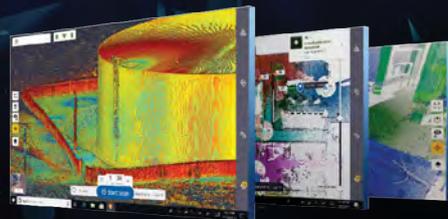
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## How Ancient Babylonian Land Surveyors Developed A Unique Form Of Trigonometry — 1,000 Years Before The Greeks

Our modern understanding of trigonometry harks back to ancient Greek astronomers studying the movement of celestial bodies through the night sky.

But in 2017, I showed the ancient Babylonians likely developed their own kind of “proto-trigonometry” more than 1,000 years before the Greeks. So why were the Babylonians interested in right-angled triangles? What did they use them for?

I have spent the past few years trying to find out. My research, published today in *Foundations of Science*, shows the answer was hiding in plain sight.

Read more: [Written in stone: the world's first trigonometry revealed in an ancient Babylonian tablet](#)

### Si.427

Many thousands of clay tablets have been retrieved from the lost cities of ancient Babylon, in present-day Iraq. These documents were preserved beneath the desert through millennia. Once uncovered they found their way into museums, libraries and private collections.

One example is the approximately 3,700-year-old cadastral survey Si.427, which depicts a surveyor's plan of a field. It was excavated by Father Jean-Vincent Scheil during an 1894 French archaeological expedition at Sippar, southwest of Baghdad. But its significance was not understood at the time.



Si.427 shows a surveyor's plan of a field. Author provided

It turns out that Si.427 — which has been in Turkey's İstanbul Arkeoloji Müzeleri (Istanbul Archaeological Museums) for several decades and is currently on display — is in fact one of the oldest examples of applied geometry from the ancient world. Let's look at what makes it so special.

### A brief history of Babylonian surveying

The ancient Babylonians valued land, much as we do today. Early on, large swathes of agricultural land were owned by institutions such as temples or palaces.

Professional surveyors would measure these fields to estimate the size of the harvest. But they did not establish field boundaries. It seems those powerful institutions did not need a surveyor, or anyone else, to tell them what they owned.

The nature of land ownership changed during the Old Babylonian period, between 1900 and 1600 BCE. Rather than large institutional fields, smaller fields could now be owned by regular people.

This change had an impact on the way land was measured. Unlike institutions, private landowners needed surveyors to establish boundaries and resolve disputes.

The need for accurate surveying is apparent from an Old Babylonian poem about quarrelling students learning to become surveyors. The older student admonishes the younger student, saying:

Go to divide a plot, and you are not able to divide the plot; go to apportion a field, and you cannot even hold the tape and rod properly. The field pegs you are unable to place; you cannot figure out its shape, so that when wronged men have a quarrel you are not able to bring peace, but you allow brother to attack brother. Among the scribes, you (alone) are unfit for the clay.

This poem mentions the tape and rod, which are references to the standard Babylonian surveying tools: the measuring rope and unit rod. These were revered symbols of fairness and justice in ancient Babylon and were often seen in the hands of goddesses and kings.

Babylonian surveyors would use these tools to divide land into manageable shapes: rectangles, right-angled triangles and right trapezoids.

Earlier on, before surveyors needed to establish boundaries, they would simply make agricultural estimates. So 90° angles back then were good approximations, but they were never quite right.

### Right angles done right

The Old Babylonian cadastral survey Si.427 shows the boundaries of a small parcel of land purchased from an individual known as Sîn-bêl-apli.

There are some marshy regions which must have been important since they are measured very carefully. Sounds like a normal day



at work for a Babylonian surveyor, right? But there is something very distinct about Si.427.

In earlier surveys, the  $90^\circ$  angles are just approximations, but in Si.427 the corners are exactly  $90^\circ$ . How could someone with just a measuring rope and unit rod make such accurate right angles? Well, by making

Pythagorean triple.

A Pythagorean triple is a special kind of right-angled triangle (or rectangle) with simple measurements that satisfy Pythagoras's theorem. They are easy to construct and have theoretically perfect right angles.

Pythagorean triples were used in ancient India to make rectangular fire altars, potentially as far back as 800 BCE. Through Si.427, we now know ancient Babylonians used them to make accurate land measurements as far back as 1900 BCE.

Si.427 contains not one, but three Pythagorean triples.

Crib notes for surveyors

Si.427 has also helped us understand other tablets from the Old Babylonian era.

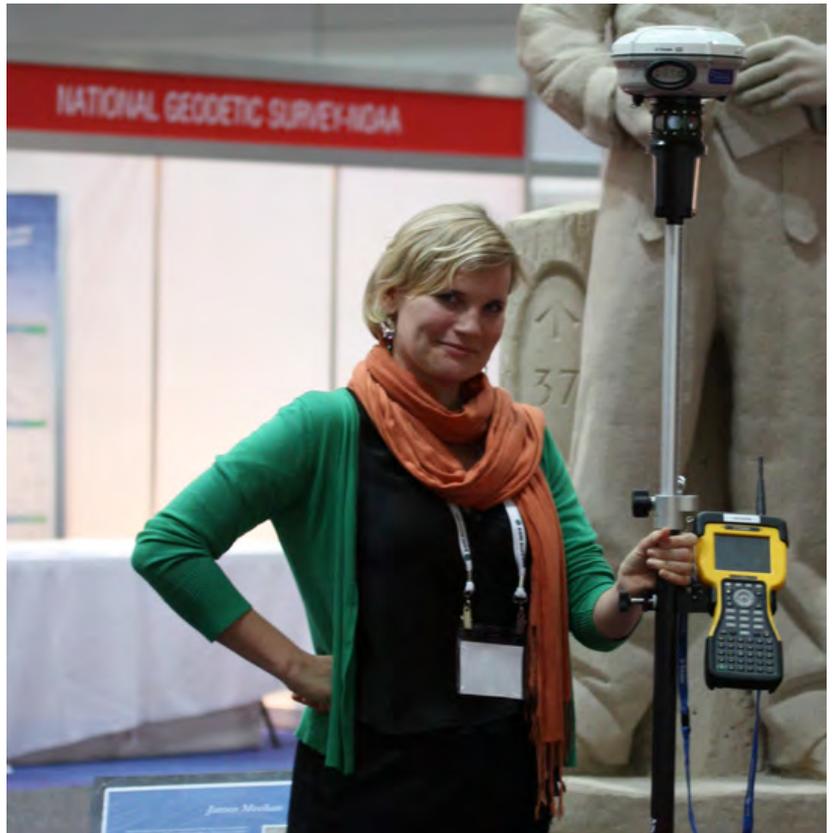
Not all Pythagorean triples were useful to Babylonian surveyors. What makes a Pythagorean triple useful are its sides. Specifically, the sides have to be "regular", which means they can be scaled up or down to any length. Regular numbers have no prime factors apart from 2, 3 and 5.

Plimpton 322 is another ancient Babylonian tablet, with a list of Pythagorean triples that look similar to a modern trigonometric table. Modern trigonometric tables list the ratios of sides (sin, cos and tan anyone?).

But instead of these ratios, Plimpton 322 tells us which sides of a



Plimpton 322 in the Rare Book and Manuscript Library at Columbia University in New York. UNSW/Andrew Kelly



In modern times, surveyors measure land with specialised GPS tools. Chris Arison

Pythagorean triple are regular and therefore useful in surveying. It is easy to imagine it was made by a pure mathematician who wanted to know why some Pythagorean triples were usable while others were not. Alternatively, Plimpton 322 could have been made to solve some specific practical problem. While we will never know the author's true intentions, it is probably somewhere between these two possibilities. What we do know is the Babylonians developed their own unique understanding of Pythagorean triples.

This "proto-trigonometry" is equivalent to the trigonometry developed by ancient Greek astronomers. Yet it is different because it was developed in response to the problems faced by Babylonian surveyors looking not at the night sky — but at the land.

In the attached short video I summarise my findings, explaining how the ancient clay tablet Si.427 is the oldest known and most complete example of applied geometry. Video Link - <https://www.youtube.com/watch?v=8C6lbJJ-mhM>

Daniel Mansfield  
Senior Lecturer, School of Mathematics and Statistics  
University of New South Wales, Sydney

*Acknowledgement: This article was originally published in 'The Conversation' <https://theconversation.com/how-ancient-babylonian-land-surveyors-developed-a-unique-form-of-trigonometry-1-000-years-before-the-greeks-163428>, We thank Daniel for giving us permission to republish.*

## Don't let COVID go to waste

This year has seen an extension of lockdowns and impact of the newer variants of Covid even in the face of widespread vaccination. This was perhaps unforeseen last Christmas as the worst seemed behind us. As businesses the challenges are similar but varied from 2020.

There is no minimizing the scale of the impact and many tragic outcomes at a personal and community level as well as mental and business health and confidence. I do not in any way want to gloss over those negative outcomes.

However, the more creative and farsighted business operator could now be engaging with the positives that can emerge from such a significant disruption on a global scale. It is now the time for some over the horizon strategic business thinking as new possibilities and opportunities open up. The disruption of Covid forces us as a society to consider things in a new light, which in the normal course of events would not have been necessary. Going back to the way things were in 2019 would be a wasted opportunity in my mind.

One of these is around risk management where our societal thinking is now undergoing change in real time. In the last few decades we have become fixated on zero risk in all circumstances but this pandemic has shown us that pursuing zero risk in one area of life (i.e physical health) can open up significant risk in others (i.e mental, economic health). Opening up, as we expect to happen, will expose us to one area of risk in order to reduce other areas of risk. Lockdowns do the reverse. A rapid development of vaccines leads to a quick reduction of risk from Covid but opens up the possibility of unknown risks of vaccine side effects in the long term. The next few months will be interesting with the possibility of some Australian states remaining closed to each other while other states possibly open up internationally. Zero risk as a strategy is starting to look like a person with a hammer who can't see anything except nails. This may flow onto an adjustment to how we manage risk in the workplace and I am optimistic a more nuanced outcome may result.

Working from home looks like becoming a good outcome in many cases

if robust accountability systems are in place combined with a level of trust between employers and employees. This has a number of good outcomes in terms of time saved, traffic reductions, environmental outcomes and expense saved in commuting to a central location, as well as better work/family balance.

It would appear anecdotally that the commuting time saved is often deployed to complete the days tasks properly without interfering with outside work hours. Most surveying practices have previously instructed employees to go directly from home to work sites and only visit the office when necessary, so this just extends that arrangement. This is an area offering big productivity gains for both businesses and employees and offers much food for thought.

Bernard Salt, who is a futurist using demographic and social data and writes regular columns in the Weekend Australian, made comments recently of an interesting new idea around working remotely. That is, people working remotely for stints of up to two months from holiday homes or other distant locations and checking in at the central office 6-8 times per year. This is a very interesting combination of work and lifestyle that may develop, together with decentralizing of our population.

The pattern of land and infrastructure development is likely to adjust with strong growth more likely in areas of high recreational, scenic or tourist



value, as these move from just holiday or retirement locations to a hybrid remote work/recreational location. Design and servicing of houses and properties will follow the demand.

We have been fortunate that this pandemic did not occur 20-30 years ago before the advent of broadband internet as this has also provided a useful tool for developing new skills, to remain connected. The thought of coping with a pandemic and working from home or in lockdown in the late 1980s doesn't bear contemplation. Consider in the last 2 years how much our skills have improved in use of "Zoom" or "Teams" or other formats, you can see that necessity has been the driver. How many other areas of day to day operations or education can be translated likewise? More food for thought.

Businesses that offer high flexibility in working hours and conditions in light of all these outcomes are most likely to be rewarded with higher job satisfaction and employee stability. Less stress on blind ideology (of the left or right variety) and more on practical outcomes will be rewarded.

As I am stepping down from the board of CSV, this will be my final article and I would like to take the opportunity of thanking the other 21 board members along the way and Chairs/Presidents for what has been a most stimulating eleven years of personal and professional development in the role since February 2011. I would like to acknowledge the other presidents (Gerry Shone, Mick Ramsdale, Alan Norman, David McLennan, Andrew Busse, Andrew Harman - who provided my pathway onto the board, and current president Leo Bateman) for dedication, hard work and excellence in their roles as they each led the board for a year or two, and express strong support for president-elect James Canning as he takes over quite

soon. CSV is in great financial and professional shape, and its profile before government and allied professions has been elevated during the pandemic with numerous government briefings. Special thanks to Carmen Olson for her outstanding and steady leadership as Executive Officer since 2015 and to Lauren Falkiner before her. The other CSV staff have been a tremendous support to the EO and board members and especially the various presidents.

A few highlights of CSV development that have been significant have been the appointment of an Executive Advisor (Gerry Shone has admirably filled this role), and development of modules to support PTA candidates (Rob Steel is actively working in this space). Two new offices have been purchased in St Kilda Road, one now as an investment property, the other for our day to day operations. Education and professional/business development is a space that we are actively working in and see this as future focus for CSV.

I would recommend to any readers to consider a CSV board position at some point in your professional career as a forum to advance the cause of the private sector and raise with others the inevitable concerns you may have in day to day business practice. You will find unexpected rewards and come away with a widened perspective of the industry in Victoria and elsewhere. I would especially encourage owners of small to medium sized practices to consider this opportunity.

**Michael Wilson**  
Outgoing Board Member

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## Planning Scheme Amendments

The following planning scheme amendments may be of interest to some members.

### APPROVED

**Greater Bendigo Planning Scheme – Amendment C243.** – Approved 10th September, 2021. Implements the findings of the Heathcote Flood Study, March 2016 by updating flooding controls to properties located in active flow paths to ensure that future development proposals consider the associated hazard and risk

The amendment affects approximately 320 properties near the McIvor Creek in Heathcote, which will either have existing flood controls removed or amended, or new flooding controls applied. The Land Subject to Inundation Overlay, Schedule 3 will be removed from properties within the Heathcote Flood Study area and replaced with updated controls. The amendment also makes minor changes to the wording and permit exemptions of the Land Subject to Inundation Overlay, Schedules 1 and 2. This will affect all land within the municipality where these two schedules apply, including much of urban Bendigo.

### PROPOSED

**Moreland Planning Scheme – Amendment C215.** Proposes to amend the incorporated document: Moreland Development Contribution Plan, January 2015 to extend the date by which projects funded via the DCP will be delivered from 30 June 2023 to 30 June, 2026. Submissions close 17 September, 2021.

**Colac -Otway Planning Scheme – Amendment C116.** The amendment proposes to implement the findings of the Birregurra Flood and Drainage Strategy 2021 by introducing and amending planning controls in responding to flood events in Birregurra. The Flood Overlay (FO) is applied to areas that are likely to convey active flood flows and/or store floodwaters to hazardous depths. The Land Subject to Inundation Overlay (LSIO) is applied to land affected with waterways and open drainage systems. These floodplain areas have a lower flood risk than areas in the FO. The Special Building Overlay (SBO) is applied to land affected by overland flow from the urban drainage network. These overlays may trigger planning permits for development, works and subdivision on land affected by flooding. Submissions close 22 October, 2021.

**Moira Planning Scheme – Amendment C93.** Proposes to implement the findings of the Yarrowonga Framework Plan (2020) and Yarrowonga Stormwater Drainage Strategy (2019); update the Planning Scheme by including new background documents which inform the planning scheme and future decision makers; and; rezone land in Numurkah to a zone which more accurately reflects the current use of the land and provides for short term industrial development. Submissions close 8 October, 2021

**Yarra Planning Scheme – Amendment C286.** Proposes to increase the public open space contribution rate in the schedule to clause 53.01 from 4.5% to 10.1% . Specifically, the amendment proposes to amend the Schedule to Clause 53.01 to require that all subdivision provides a public open space contribution at a rate of 10.1%. • Replaces Clause 22.12 Public Open Space Contribution with a new Clause 22.12. • Amends Clause 72.08 to insert the Yarra Open Space Strategy 2020 and Yarra Open Space Strategy 2020 Technical Report.

Submissions about the amendment must be received by 5 October 2021 to the City of Yarra.

In accordance with clause 4(2) of Ministerial Direction No.15 the following panel hearing dates have been set for this amendment:

- Directions Hearing: week of 8 November, 2021.
- Panel Hearing: week of 6 December, 2021

### LAPSED

**Northern Grampians Planning Scheme – Amendment C031-** Lapsed 1 September, 2021. This Amendment was prepared by the Northern Grampians Shire Council as the planning authority for this Amendment with a request by the Wimmera Catchment Management Authority. It proposed to apply the Floodway Overlay (FO) and Land Subject to Inundation Overlay (LSIO) to the Halls Gap area, and to make consequential changes to the Northern Grampians Planning Scheme.

Members are advised that the above is for information purposes only and is not intended to be a legislation advice service. Members should refer to their own resources to obtain the latest legislative updates.



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Murray Walter, Executive Manager of GlobalX Terrain commented:

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(Geelong Aerial Image: capture resolution 60mm)

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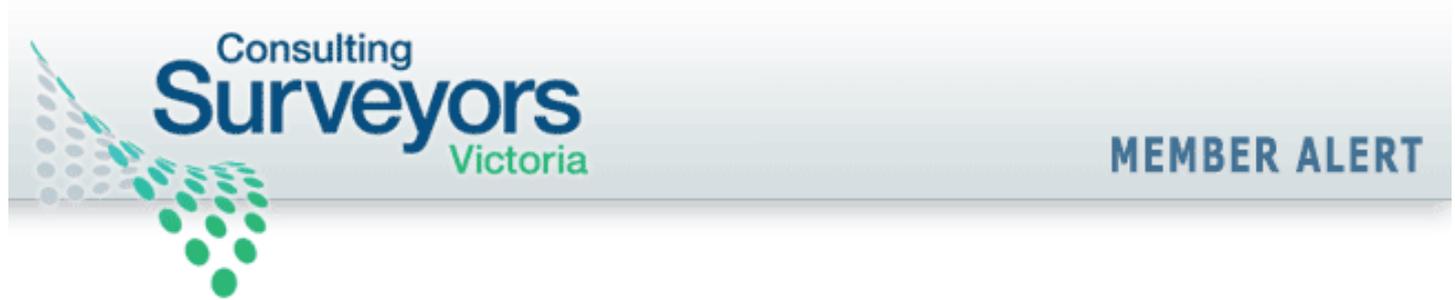
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Further details on coverage and updates are available via [Metromap Coverage](#).

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### Feature and Level Survey Plans with a Disclaimer "This is Not a Title Survey"

Following queries from a Member Firm, the Surveyors Registration Board of Victoria (SRBV) provided advice on what is considered appropriate for depiction on a Plan of Feature and Level Survey, for that plan not to be considered a cadastral survey. This information is set out below for the information of members.

This includes:

1. It is acceptable to show title pegs found (with suitable notation e.g., Peg Fd.) at the time of survey as they are essentially features. These pegs must not be disturbed in any way.
2. It is acceptable to include a disclaimer that a survey is not a title re-establishment survey, but the appropriateness and effectiveness of any notice is at the discretion of the author.
3. The plan cannot show title bearings and distances on the lines drawn between pegs or any other lines taken from a Plan of Subdivision or other title diagram. As soon as the dimensions are shown the plan becomes a cadastral survey plan. A lay person, including construction companies and architects, will look at the plan and quite reasonably expect the dimensions to be true and correct and an accurate indication of the title position.
4. The inclusion of boundary lines only, with no dimensions, is permissible, but they must be shown as broken lines unless verified by a Licensed Surveyor. This is consistent with the requirement for Permanent Mark Sketch Plans under regulation 7(3)(c), Survey Co-ordination Regulations 2014.
5. Offsets from indicative boundary lines to features must not be shown. This includes but is not limited to fences, building, water meters, kerbs and other physical features.
6. Easement details should not be shown without the instruction of a Licensed Surveyor.

**A Plan of Feature and Level Survey which shows boundaries defined by solid lines with title bearings and distances, to comply with current laws, must include a certification signed by a Licensed Surveyor as per Schedule 2, Surveying (Cadastral Surveys) Regulations 2015.**

The SRBV has advised it is actively monitoring unlawful cadastral activities by unregistered persons and will be pursuing legal action if necessary.

### Re-establishment Surveys/Cadastral Survey Plans

Members are also reminded that under the Surveying Act 2004 and the Surveying (Cadastral Surveys) Regulations 2015 that all plans of cadastral surveys, including Plans of Re-establishment Survey are required to include the Schedule 2 certification, as below:

#### **Schedule 2—Certificate by licensed surveyor for plan prepared from survey - Regulation 14(1)**

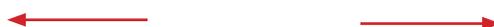
I, *[insert full name]* of *[insert office address]* certify that this plan has been prepared from a survey made under my direction and supervision in accordance with the Surveying Act 2004 and completed on *[insert date of completion]*, that this plan is accurate and correctly represents the adopted boundaries and that the survey accuracy accords with that required by regulation 7(1) of the Surveying (Cadastral Surveys) Regulations 2015.

Date: *[insert date of certificate]*

*[signature]*  
Licensed Surveyor  
Surveying Act 2004

*The above Member Alert has been reviewed and approved by SRBV*

Best Regards  
Leo Batemen  
President



# CONSULTING SURVEYORS VICTORIA COMPLETE MEMBERSHIP



## We've got you covered with extra support from the Victorian Chamber.

We are thrilled to announce a partnership between Consulting Surveyors Victoria (CSV) and the Victorian Chamber of Commerce and Industry (VCCI). Right now Victorian businesses are doing it tougher than most, this partnership can provide you with an extra layer of support through a heavily discounted membership.

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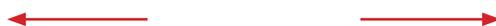
#### Victorian Chamber communications

Regular email communication provide important business information and practical advice.

#### Connect Program

Member only offers and employee benefits program, including shopping discounts for your organisation and staff, via an online portal or mobile app.

[Click here for more information on this special offer](#)





## Surveying – The Career of Choice

### Surveying Task Force Victoria launch the Industry Connection Program.

The Industry Connection Program is designed to showcase the surveying industry by providing a supported pathway for Tertiary students, graduates and job seekers through to industry. Whether looking for work experience, a part-time job or a full-time job this program will provide valuable support for both the job seeker and industry.

In addition, the Program will focus on increasing diversity in the profession by offering industry mentors and seeking out sponsors of study bursaries to support women and indigenous people to complete their surveying studies.

With regular follow-ups and personal introductions this program will develop meaningful connections between industry and students, graduates, and job seekers.

#### Become a Partner:

- Grow your workforce
- Grow your brand
- Promote Surveying
- Be informed
- Stay connected
- Be part of something special for our industry

If you're an industry advocate and want to be part of the passionate driving force behind the Surveying Task Force then, please, reach out to us on the details below for more information or [click here](#).

Kellee Ireland  
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30/09/21

*A life without limits*

## CSN Consultancy Excellence Awards 2021 - Victorian Firms Recognised

Consulting Surveyors National has continued its annual awards to recognise the peak surveying consultancies in Australia, with an on-line Awards Ceremony conducted on 1st October, 2021.

The awards are now in four categories based on surveying business size and type, with the awards open to any Australian businesses that are land surveying consultancies or multi-disciplinary businesses with a substantial land surveying business unit.

The four categories are:

1. **Small Consultancy** - 20 employees or less
2. **Medium Consultancy** – between 20 and 50 employees
3. **Large Consultancy** - greater than 50 employees.
4. **National Consultancy** – greater than 50 employees and with substantial offices/staffing levels in at least two states.

The 2021 Surveying Consultancy Awards considered nominated consultancies achievement of excellence in delivering surveying services, business vitality and culture, staff development, community involvement, support for young professionals and professional image as well as their response to the Covid 19 factors affecting businesses through 2020, based on the submissions received.

CSN reported that the quality of nominations across all categories was very high.

**Victorian Award Recipients:**

### National Consultancy - greater than 50 employees, with offices in at least two states/territories.

**WINNER:** Beveridge Williams with offices in Victoria (9), New South Wales (3) and Queensland (1)

Over the 60 years of its existence, Beveridge Williams has grown from a small surveying company based in country Victoria into a multi-disciplined consultancy with over 300 staff, which is owned by its employees. Although a large-scale company, Beveridge Williams presents as a family minded, diverse, environmentally and socially conscious company which is committed to and supportive of its staff. Client satisfaction with the company is demonstrated by the results of an independent client survey which focussed on the key areas of customer focus - communication, quality of work, expertise, value for money, efficiency, accuracy, attention to detail, trustworthiness, reliability and the spread of services.

Beveridge Williams has strong and demonstrated commitment in the areas of diversity, reconciliation, environmental consciousness and community involvement.

### Medium Consultancy – 20 to 50 employees

In this category there were a number of firms that excelled, and the judges awarded a **HIGHLY COMMENDED** to **NOBELIUS LAND SURVEYORS** of Pakenham, Victoria, which demonstrated a high level of commitment in the areas of staff development and community engagement. The consultancy also demonstrated successful business evolution through generational change in management.

CSV congratulates Beveridge Williams and Nobelius Land Surveyors on their awards and encourages all member firms to consider nominating for the 2022 awards.



**Other Award Recipients:**

### Small Consultancy - 20 employees or less

**WINNER:** RESOURCE DESIGN AND MANAGEMENT PTY LTD from Coffs Harbour, New South Wales

### Medium Consultancy – 20 to 50 employees

**WINNER:** PARKER SCANLON PTY LTD from Hamilton (Newcastle), NSW

### Large Consultancy - greater than 50 employees.

A **HIGHLY COMMENDED** in this category went to: **WOLTER CONSULTING GROUP** of Newstead (Brisbane), Queensland.

**WINNER:** SDG Land Development Solutions Pty Ltd of Baulkham Hills, New South Wales

Full details on these award recipients are contained in CSN's reports on the awards



## Intrax Consulting Engineers

Like many, we believed that after the bushfires of the summer of 2020, work and life would return to normal. Little did we know Covid-19 was lurking around the corner! As the world went into panic and lockdowns commenced, the future of jobs, businesses and the economy were all unknowns. All we could do was remain calm, however, we did ask ourselves, "Is work going to stop?"

No one could have prepared for this exact situation, but we came to realise that things would improve with time. We're very fortunate to be working with such competent and courageous staff members who never missed a beat and kept the business running smoothly. Regardless of the chaos happening outside of our hallowed halls.

The countless hours of staff training each year came together when every team member across Australia became genuinely autonomous. Thanks to our cloud-based solutions, our survey team can deliver from anywhere in the country. We utilise technology to deliver solutions and understanding our client expectations is key.

Our journey has been anything but static; when Rodney Olsen LS our National Survey Manager, joined Intrax almost eight years ago, we were a small team of 15 staff servicing Residential Volume Builders. Over time our team and capability grew to include building and land subdivisions, construction, infrastructure and engineering surveys.

As we continued to grow, there were opportunities to bring in other surveying firms that believed in our purpose. So ESG, CBH and Terramap joined Intrax, which diversified our service offerings and solidified our national presence. We are proud to provide a place where more than 90 surveying professionals can build their careers in an environment where they feel safe, valued and respected.

Our team are innovative, loyal, passionate, and we live and breathe our values of Respect, Innovation, Performance, Leadership and Understanding. The future of Intrax hinges on the growth and development of our people. We invest in our staff and provide growth opportunities, tailored training, mentoring, technical development, industry representation, leadership opportunities, etc. We will even pay for 50% of our staff tuition fees if they wish to further their study and provide time off so they can focus.

As Intrax continues to evolve and grow, so does our company branding. To provide focus on the market where our skills are most valuable and our staff expertise could shine, Intrax Land was created containing the Survey, Geotechnical and Civil teams.

We are privileged to share our lives with fantastic people that inspire us and in turn, we inspire you.



## The CSV Office

We are all hopeful the lockdowns will continue to ease and Victorians can get back to some sort of normality. We said the same thing last year and here we are yet again. We must all stay positive and hopeful and look forward to what the future holds whatever that may be.

We had hoped to have a face-to-face Seminar in October, sadly this cannot happen, and we are reverting to a webinar series. The details are as follows:

### October Webinar

**Tuesday 19 October 2021 @ 9am** hosted by Nic Moore  
Speakers: Josh Batchelor and Harrison McKinnley from SGV  
Topic: GNSS Data & SMES

**Thursday 21 October 2021 @ 9am** hosted by James Canning  
Speaker: - Damien Paul – CEO of Civil Train  
Topic: Working on Roads

**Tuesday 26 October 2021 @ 9am** Ray Mawson  
Speaker: Byron Starkey  
Topic: SP Plans for Level Crossing

**Thursday 28 October 2021 @ 9am** hosted by Leo Bateman  
Speaker: Craig Sandy  
Topic: SRBV update

To register for the series please go to <https://fpetbank.com.au> This will be the last webinar series for 2021.

This year the Annual General Meeting (AGM) will be held on Thursday, 28 October 2021 at 10.00am. The AGM will be held after the 28 October 2021 webinar. To register your attendance please email [admin@acsv.com.au](mailto:admin@acsv.com.au) the details on how to enter the AGM will be emailed to you closer to the day. The AGM will be held via a Zoom meeting.

Due to the restrictions and the everchanging environment CSV has decided to not proceed with the Tennis Day and Golf Day for 2021. We are hopeful both these events will return next year.

After two years in the role, Leo Bateman is finishing his term as President, I would like to take this opportunity to thank Leo for his commitment and hard work,

it has been a pleasure to work alongside Leo during the past 24 months. It has also been a very interesting journey, we have both learned so much, attending the Stakeholder meetings and gaining a presence in this space definitely provided us with the information which enabled us to pass on to members. From my perspective Leo has gone above and beyond to ensure members were provided with the correct information about the restrictions in a world that is forever changing.

The CSV staff are all still working from home, its business as usual, if you need to contact us, you can still call us on the office number, 03 9690 6660 or call my mobile 0411 328 068. Stay safe and lets all hope the restrictions are lifted and we can get back to some sort of normality once we hit the vaccination targets.

**Carmen Olson**  
Executive Officer



## Advocacy

CSV has been working on the following advocacy, all submissions were emailed to the relevant bodies in September 2021

- Bab Baw Shire Council – Public Open Space Valuation Fee
- CSV Naming Rules Submission – Naming Rules for Places in Victoria 2021
- Nous – Licensing Process Submission
- Owners Corporation Amendment Regulations 2021
- Wellington Shire Council – Public Open Space Valuation Fee



## Plan of Subdivision towards Harmonious Strata Living

### Abstract

The decisions of surveyors on Plans of Subdivision play a crucial role in creating a good title and a governance structure in multi-owned buildings. The plans are drawn in compliance with legislative requirements to clearly define ownership boundaries and establish Owners Corporation (OC) structure. In some cases, it contains inappropriate aspects from the building operation perspective that could cause property disputes among owners, especially in mixed-use buildings. Surveyors try to consider end-user requirements based on individual experience and knowledge. Their views toward the good title that shapes well-fit governance structures for avoiding disputes are not always consistent. The necessity of shared principles on how to do the subdivision for better building operations has increased with growing complexity in building structure and ownership arrangement. In an attempt to establish the principles, our research team at the Centre for Spatial Data Infrastructures and Land Administration (CSDILA) at the University of Melbourne has identified the requirements and critical features of subdivision plans to minimise disputes in mixed-use strata schemes. It provides surveyors with general directions about what the plan needs to achieve to proactively prevent common disputes. This article presents the main findings of this research.

Victoria has experienced rapid growth in the number of high-rise buildings for the last two decades. High-density living in these buildings has caused nearly 3,300 property dispute cases applied to the Victorian Civil and Administrative Tribunal (VCAT) every year. Due to disputes, many owners suffer from stress, emotional burden, and disharmony with next-door neighbours in urban communities.

A Plan of subdivision is a legal instrument to generate the property title, as well as the fundamental governance structure of Owners Corporations (OCs). In current practice, the plans are drawn in line with requirements of legislation, councils, title office, and planning controls to create a good title with clearly defined boundaries and established OCs. In some cases, the good title from a legal perspective involves inappropriate features on a building operation side that could cause disputes, especially in complicated mixed-use buildings. To prevent this, surveyors try to do the subdivision, considering general requirements of owners and OCs based on individual experience and knowledge. In addition, OC managers nominated by developers can advise about how a governance structure in the plan is going to work and what to do to avoid expected operational issues; but it is not always available. Consequently, surveyors' different views toward a good plan for harmonious building operation apply to the plan review across the industry. The limited consistency within current practice occasionally generates plans containing features that could result in conflicts and end with disputes among owners and OCs.

There have been no written guides or principles for building subdivision that ensures effective OC governance and dispute minimisation. The knowledge of experienced surveyors has not been accumulated, shared, and reused systematically and scattered across experts. The current trend in the increasing size, function, and complexity of buildings has generated high-density communal living with conflicts of various interests of owners. A need for shared principles on how to subdivide mixed-use strata buildings has increased to successfully deliver a good governance structure supporting harmonious building operations.

In an effort to establish the principle, we identified five requirements and 20 features of subdivision plans, which should be achieved to prevent potential disputes in mixed-use strata schemes. These define generalised approaches around how to remove key dispute triggers from the plan. The requirements and features were distilled from issues of subdivision plans that caused 101 VCAT dispute cases about building use and management within OCs from 2010 to 2020. Six experienced surveyors, four OC managers, and one OC chairman/architect were interviewed to evaluate the feasibility of the requirements and features and add practicality to them. The interviews were conducted with the cooperation of the Consulting Surveyors Victoria and Strata Community Association Victoria. This article presents the identified requirements and features, which can deliver general ideas and approaches for building subdivision to consider for dispute minimisation. In addition, the potential

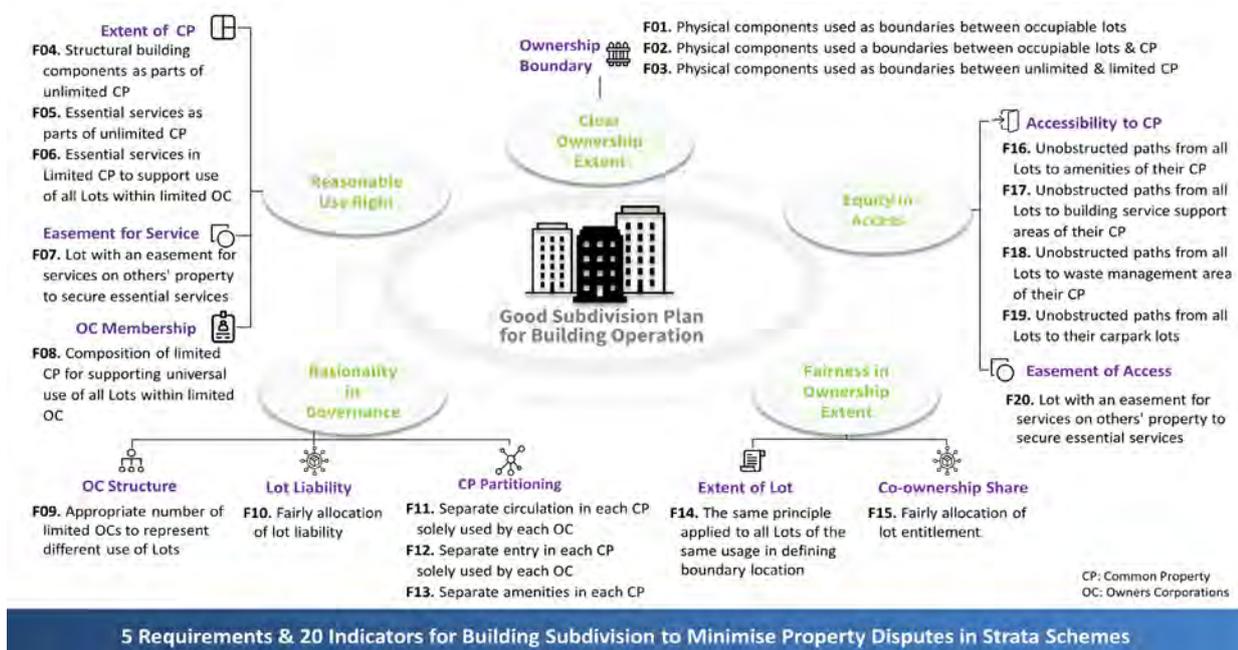


Figure 1. Requirements and features for building subdivision to minimise property disputes

of Building Information Modeling (BIM) for supporting the subdivision plan preparation in consideration of features is discussed.

### Five Requirements for Subdivision Plans

The five requirements for building subdivision to avoid property disputes proactively have been defined. As goals to be achieved by the plans, they address the fundamental approaches that should be met to minimise disputes about using and managing multi-owned buildings. The established requirements are as follows:

- **Clear Ownership Extent:** The 3D extent of all lots and common property (CP) shall be clearly distinct from others
- **Reasonable Use Right:** The right to use of building services and assets granted by ownership shall be acceptable to owners in terms of practical use and peaceful enjoyment of lots
- **Rationality of Governance:** OC governance structure shall set out an organisational arrangement, which rationally determines relationships, power, roles, and responsibilities among owners, to allow harmonious MOB maintenance
- **Fairness in Ownership Extent:** Ownership extent of lots and CP shall provide all owners with fairness in use rights and benefit share
- **Equity in Access:** The right to access of all owners to their private and CP shall be secured to allow them to exercise ownership equally.

Subdivision for multi-owned buildings should deliver a clearly defined title, reasonable ability to access and use CP via OCs, and fairly allocated lot entitlement and liability. Although creating Clear Ownership Extent is a fundamental role of surveyors, all interviewed experts acknowledged the importance of the other four requirements as essential deliverables of subdivision plans. The five points present fundamental paths to the best possible outcomes for building use and management and dispute minimisation.

### 20 Features of Subdivision Plans

As means to fulfil the requirements, 20 features of plans of subdivision have been identified from the analysis of VCAT cases and adjusted in line with interview results. These features are related to ownership boundary, the extent of lots and CP, creation of limited OCs, separation of CP, accessibility to CP, use of easements, and allocation of lot entitlement and liability, as represented in Figure 1.

#### Clear Ownership Extent

- **Physical components shall be used as boundaries between occupiable lots, between occupiable lots and CP, and between unlimited and limited CP (F01, F02, F03)**

The ownership boundary is the essential feature of subdivision plans. Many disputes resulted from a lack of understanding by owners of what their ownership extent is. People go to VCAT on where the boundary is, where lot ends, where CP begins, and who is responsible for what. Surveyors need to draw plans simply and clearly so that laypeople, including owners and OC managers, can easily understand boundary location. In current practice, most of the boundaries are defined by physical structure; however, it is not always followed because that is what's allowed. In the interview, OC managers emphasised that ownership boundaries shall not be based on fixed measurements as they are wrongly interpreted or wrongly located most of the time due to design changes and poor building works. Physical building components need to be used as boundaries between (1) occupiable lots, (2) occupiable lot and CP, and (3) unlimited and limited CP. It is supportive from a

dispute perspective. However, the practicality and affordability of using building boundaries between unlimited and limited CP must be reviewed before its application, as installing physical barriers generates additional costs.

#### Reasonable Use Right

Lot owners might not pay for something they are using or experience inconvenience without something they need to use when the right to use building services and assets is not set appropriately and correctly; it can lead to disputes. Five features were identified as required characteristics of subdivision plan to construct the reasonable use right.

- **Structural building components and essential services as parts of unlimited CP (F04, F05)**

A primary principle of determining what to include or exclude from unlimited CP is putting services related to people's lives and the ongoing safety of buildings into the unlimited. Essential services or any building parts where everybody benefits from are always put under unlimited CP. All these services should be contained in and accessed safely via CP, not private property. However, there is a limitation in generalising what should always be parts of unlimited CP since the delineation depends on project circumstances. If the development has multiple OCs, it should consider which infrastructure is shared across all OCs and which one is only for specific OCs. Trunk infrastructure generally becomes the unlimited CP, while private infrastructure is a part of the limited. It can also be applied differently according to situations, such as usage and physical building numbers in the development. If there are multiple buildings in a strata scheme, services or devices between the buildings are assigned to unlimited CP, while services located in one building are assigned to the limited. Again, surveyors are not always in line with it because developers occasionally want to give lot owners more control over structures or services to increase marketability and saleability.

In delineating unlimited CP, the benefit principle in cost allocation for CP and balancing the control power between individual owners and OC are critical points to be considered by surveyors to minimise disputes. Experts agreed that structural components and essential services, especially fire safety related services (firefighting devices, mechanical, ventilation, electrical), need to be the unlimited in most circumstances.

- **Composition of limited CP for supporting universal use of all Lots within limited OC (F06), Lot owners holding memberships of the OC managing CP that they benefit (F07)**

Breaking CP up between unlimited and limited creates the exclusive use of building parts by separating areas, services, and amenities that the associated OCs only use. It also segregates legal entities consisting of people who use, access, and pay for it. If limited OC is already set up, surveyors must define the extent of limited CP to include all the essential things for supporting reasonable use of all lots in the OC. The limited CP shall include the services that capture exclusive big building uses (e.g., hotel, residence, commercial) and may be governed effectively by the limited OC. Together with it, all lots that need the services should be members of the OC considering its usage and benefits.

There are a series of conditions to be considered when setting up the limited CP since there are different ways of providing essential services, such as licence, lease, and easement. The feasibility of

applying each way depends on the project characteristics. The size of limited OCs and the cost-effectiveness of containing services should be reviewed to check affordability in their operation. The delineation of limited CP is important as it comes into play with the budgets. For example, only two items in the limited CP for the limited OC with a small number of lots become an administrative nightmare and requires high costs for operating the OC. It creates such an inefficient and unworkable over-governed structure. It is essential to balance it out to a point where it doesn't become the administrative nightmare and get down to individual users and sub-exclusivity.

- **Lot with an easement for services on others' property to secure essential services (F08)**

To provide essential services to lots, surveyors can use the easement for services, but it is only for specific situations. It is beyond question that easement should be avoided if possible, as it is usually not ideal. There is a high probability of dispute incidence as soon as there is an easement. The reason for it is that people never want to rely on an easement to use or access their properties, and it could cause potential issues in maintenance (e.g., lot owners install something of other's property or CP to get essential services). The easement needs to be used as a last resort to provide essential services in limited circumstances, such as (1) essential services defined as other private properties, (2) poor building design with insufficient services, and (3) inaccessibility to services of CP.

An implied easement exists on any created plan so that the easement creation means that there is a double layer of these easements. However, it is sometimes required to specify easements more clearly as the implied one confuses people in interpreting it. From an operation perspective, OC managers prefer the easement, which is clearly and visually represented in subdivision plans, over the implied. End-users have no idea of what implied easement is, and they have questions about why they need to do it when there is nothing on the plan. Before using easement, changing architectural design, composition and arrangement of CP, and use of lease or license must be considered first

### *Rationality of Governance*

- **The appropriate number of limited OCs to represent different usage of Lots (F09)**

The different interests of owners in using and managing their properties can be managed in various ways: creating limited OC, setting lot liability, and using the benefit principle. The creation of relevant OCs to divide people's interests is one of the critical jobs of surveyors. There have been many disputes resulted from inadequate use of limited OCs, especially in a residential-commercial mixed-use building.

All the limited should have CP they manage; otherwise, there is no point creating them. The appropriate number of limited OCs to represent different usages of lots is significant. However, the creation of limited OCs is like a two-edged sword with many problems and benefits. It is useful but cost-centred and generates ongoing running of administration and management with high operating costs. The number of limited OCs should reach a balance point where their CP can be effectively separated and managed while creating an acceptable financial burden to owners. Currently, there is no agreement on what the best approach to review the balance point is, but there are various ways using multiple criteria: different building uses, the size of OC, items in its CP, physical buildings (e.g.,

towers, podiums), exclusive use of CP, cost efficiency of creating OC (affordability), benefits, and market value of lots. As operation parties, OC managers put more importance on using the benefit principle to determine the adequacy of the limited OC number as it can represent the level of use to CP. It is recommended that OC managers, who manage the strata scheme, are invited in the early stage of a project to capture.

- **Fair allocation of lot liability (F10)**

Fairness in allocating lot liability is enormously important as it frequently leads to disputes. It frustrates people if they think they are unfairly paying more than others due to the improperly set lot liability. Lot liability is a concept based on the wear and tear of CP and creates differences in what people pay towards a budget based on the use. The new bill, Owners Corporations and Other Acts Amendment Act 2021, sets a tiered process of determining lot liability based on the size of lots, lots' level of consumption or use of CP, and the number of bedrooms of lots. It offers a clear direction of how to achieve fairness and how to consider the drain on CP. All experts agreed that this enhanced clarity would contribute to dispute minimisation within OC. However, OC managers raised an issue on what concept the fairness implies in the bill and how to determine that. The new methods in the bill and current methods are limited in reflecting and dealing with how owners use and abuse CP practically. This issue needs further discussion amongst industry experts in the legal, surveying and building operation fields.

- **Separate circulation, entry, amenities (recreational, community, hygiene) in each CP solely used by each OC (F11, F12, F13)**

Separate individual services for each CP are for dividing different interests of owner groups physically and legally. Individual services in each CP mean duplicating services in a building, resulting in more management costs eventually. The feasibility of the separation is secured when OC has a reasonable number of lots to burden the costs effectively. In mixed-use buildings, separation of circulation, entry, and amenities (recreational, community, hygiene) are valuable to support full functions for each usage type and effectively prevent possible conflicts in property use by different types of users. Especially in strata schemes with commercial and residential lots, separating corridors and entry is an efficient way to run retail lots according to their requirements (e.g., large corridor to bring material into a shop) and segregate visitors from residents. Toilet and community facilities are identified by the dispute analysis and the interviews as where the separation makes much sense from money position, maintenance, and risk management perspectives. This separation depends on building to building and comes into play with architectural design and budget; it requires surveyors to communicate with designers and OC managers actively.

### *Fairness in Ownership Extent*

- **Fair allocation of lot entitlement (F14)**

Fairness has always been an issue, which often results in disputes. As the ownership extent of CP, the importance of the fair allocation of lot entitlement in preventing disputes was identified. The new bill mandates a method to determine fairness in lot entitlement – a basis of the market value of lots. Lot entitlement decides not only the ownership share to CP but also the voting power of lot owners. Various ways of demonstrating fairness and equity in allocating lot entitlement have been used in practice: market value, lot areas, or a combination of them. The interviewed experts anticipate that the



value-based concept in the new bill provides a consistent approach across the industry and support proactive avoidance of disputes. However, some raised the issue that it could cause a nightmare as surveyors might do the allocation differently without a standard method for the approach. In addition, the value approach shows a lack of correlation between the lots' voting power from an operational perspective. The fact that one pays more means that they wear and tear on CP more; it conveys a message that they need more voting power on the property where they use more and pay more than others, not the one who has bigger lots. The lot's market value is limited in describing how much they use CP and how the value sets how much they should pay and have power in decision-making. It implies that there is a big room in what fairness is in setting lot entitlement from both ownership and operation perspectives and how to deal with it holistically.

- **The same principle applied to all Lots of the same usage in defining boundary location (F15)**

To achieve fairness in lot ownership extent, it is important to keep consistency in delineating boundaries of all lots of the same use. It shows that consistent boundary positioning of lots amongst similar styles is ideal for fairly providing the same degree of control and right to use their private properties. Under this approach, there would be consistency among all the commercial lots and among all the residential lots in a strata scheme. From plan to plan, it can vary depending on the nature of development. It is crucial to reach a balance point between the consistency among similar lots and the flexibility to deal with lot styles that may be unique within the development.

**Equity in Access**

- **Unobstructed paths from all lots to their carpark and amenities, building service support areas, and waste management area of their CP (F16, F17, F18, F19)**

As legal requirements, if all owners have the right to access something and pay for something, they should have an unobstructed path to get it physically and legally. They should have clear, consistent, and non-convoluted access and pathways to their lots and CP parts of associated OCs via unlimited CP. Owners should never have to access private property to get to CP, and CP must never be in private lots. Among services of CP, amenities, building service support areas (e.g., manager office), and waste management areas (e.g., bin chute) have been identified where surveyors' attention is more needed to create legally and physically unobstructed paths from all lots. From an operational perspective, there are situations and services that not everyone can access CP, such as the COVID restrictions and plant rooms. It is critical to consider how the plan works in building operation in ordinary and specific circumstances during the subdivision to ensure the plan's intention without peoples' obstruction to using and managing the properties.

- **Lot owners with easement of access to have unobstructed paths to their properties (F20)**

Similar to easements for services, the easement of access has double-sidedness. It is helpful to create access and responsibilities when the legal and physical arrangement of CP cannot provide fair access from lots to their properties. However, it makes lot owners uncomfortable and frequently causes disputes on their no participation in managing properties from which they benefit. The first principle in using the easement is to avoid it and provide access via CP. However, if the plan must have it, the easement can be an appropriate tool only for access service facilities or fire egress, not part of private property. Easement of access is more important than one for services. For some experts, it is regarded as more valuable than implied easement as its precise definition and representation facilitate a better understanding by owners of their rights to access. OC managers have pointed at the need for a management agreement on the easement to minimise potential

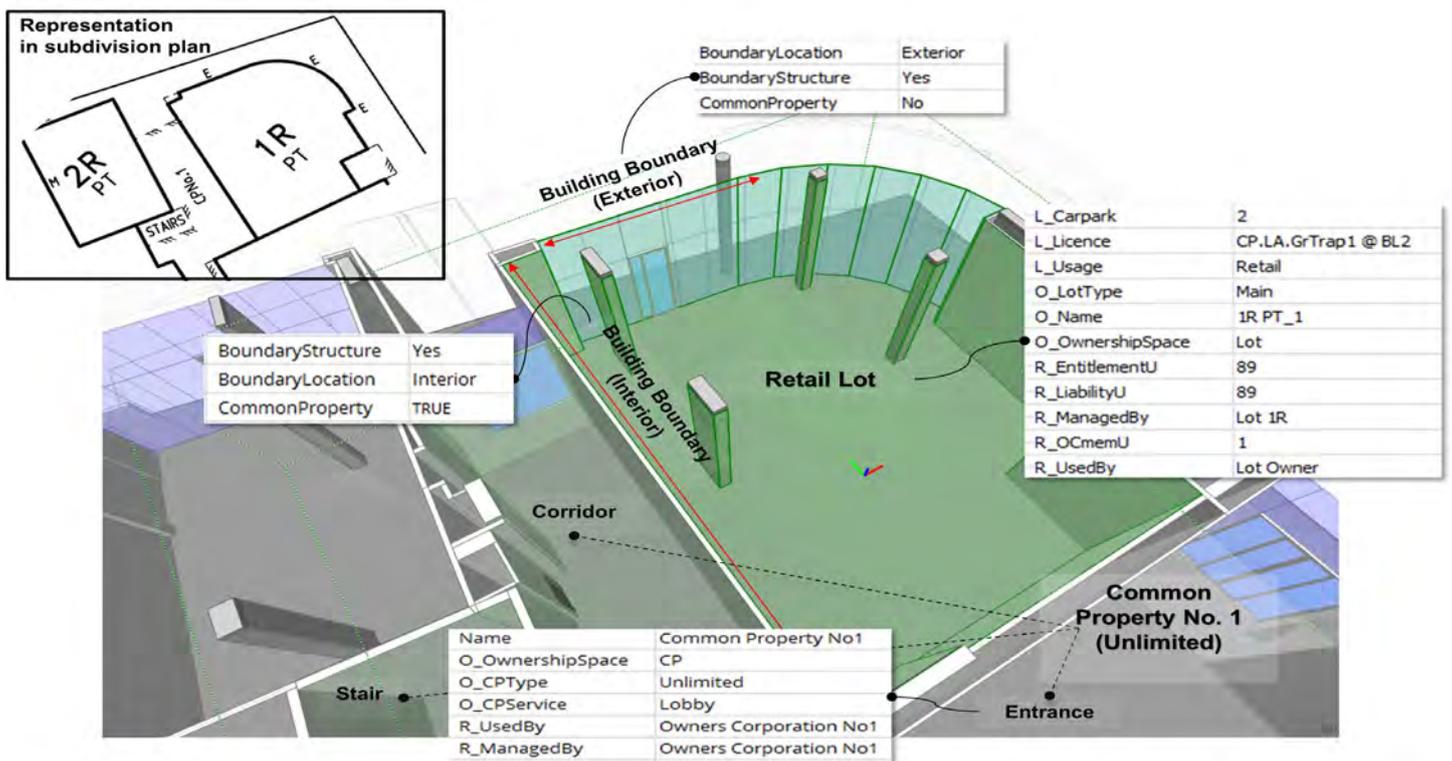


Figure 2. BIM representation of one lot and part of common property in a plan of subdivision

issues and disputes during operating buildings. It sets out clauses on how maintenance is shared during building operations; it has to be registered on the title.

## Can Building Information Modeling (BIM) Support Dispute Minimisation in Preparing Building Subdivision?

BIM is one of the digital engineering technologies to create, capture, process, integrate, and manage various building information with 3D representation throughout the building lifecycle. BIM provides (1) an opportunity to communicate and collaborate with various stakeholders and (2) a basis for analysing buildings from diverse perspectives. It can be adopted in subdividing multi-owned buildings, and it could support surveyors in reviewing the 20 features mentioned above.

In the BIM data environment, all information in the plan can be represented geometrically and semantically, including ownership boundaries, ownership rights, OC structures, and lot entitlement and liability. As represented in Figure 2, the spatial extent of private and common property and their boundaries are expressed as Space and Space boundaries and visualised on top of essential building structures (e.g., wall, window, slab, door, ceiling). OC structure and lot entitlement and liability can be described as attribute information of the Space indicating lots.

The BIM representation of a multi-owned building can be used as an assessment model to review subdivision plans from the operational perspective. It can also be used as a communication tool that enables owners and OC managers to enhance their perceptions about boundary location and ownership rights from various viewpoints by zooming, rotating, and panning the BIM model.

Single BIM data of a strata scheme integrates information of building subdivision and design and provides a complete view of buildings to be considered by surveyors. BIM rule-checking tools (e.g., Solibri) and analyses in the BIM authoring tools (e.g., Autodesk Revit) allow surveyors to examine BIM data of their plans over the proposed 20 features. For this, the development of rules or settings for checking the features needs to proceed firstly.

Figure 3 shows use-cases of BIM data for checking two features: (1) checking fairness of lot liability compared to its area value (F10) in Solibri and (2) checking accessibility from lot to amenities of CP (F16) in Revit. According to user-defined rules and analysis settings, these two tools automatically detect parts of the subdivision, including that lots with unfair lot liability for their area values and lots with obstructed paths to CP amenities. The tools also report and visualise the results in 3D; these can be easily interpreted and understood by surveyors. Other features

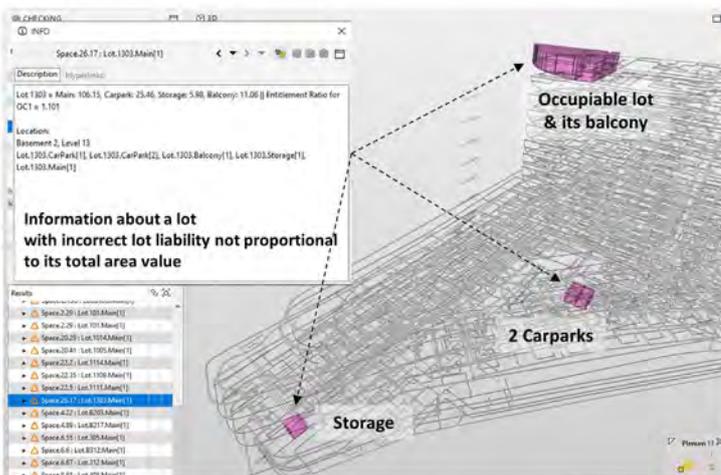
also can be automatically investigated on building subdivision in the BIM model using the tools. Currently, the rules for checking 20 features in Solibri is under development. This 3D representation and automatic review of the subdivision can facilitate accurate examination, reduce oversights in plan preparations, and create a more objective approach to multi-owned building subdivision.

## Conclusion

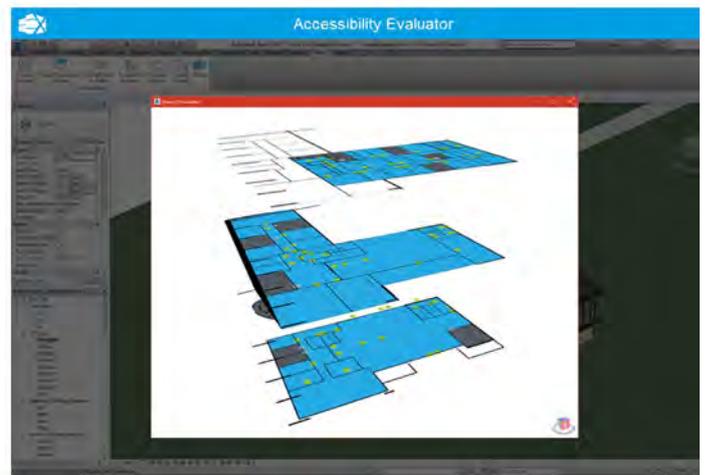
How can we build a foundation of harmonious living communities in multi-owned buildings? A good title from land administration and building operation perspectives answers this question. A Subdivision plan shapes governance structures of owners corporations, and its features that unsuccessfully address operational requirements and characteristics occasionally lead to property disputes. To prevent similar types of disputes, it is necessary across the industry to have a clear understanding of common measures that need to be applied to plan to facilitate the effective strata operation. The suggested requirements and features point out a generalised view of how to remove potential triggers of disputes. However, some aspects still require more attention from surveyors and OC managers to generate knowledge and approach about a good plan for building operation on which everyone can agree.

We also reviewed the potential of BIM for enhancing an understanding by owners and OC managers of their ownership rights and assessing subdivision plans. The adoption of BIM in the plan preparation provides surveyors with diverse views towards the plan overlaid on building design and the automatic assessment of the plan over the proposed 20 features and additional requirements. It could reduce time, effort, and oversight in plan review from a building operation perspective and eventually support the proactive dispute minimisation at the planning stage. The required technologies for representing and assessing subdivision plans in the BIM environment have been developed and ready to be used. It is time to think about how to increase the practicality of applying the technologies within the current building subdivision process.

This work is a part of PhD research aiming to develop a BIM approach for assessing building subdivision to minimise property disputes in mixed-use strata buildings. Our team continues to establish the widely accepted principles for building subdivision plans and seek answers about controversial problems inherent in current subdivision practice. We are also developing a BIM-based tool for automatically evaluating BIM data of strata buildings over the identified 20 features. If you have interest in our research, please email [jihyes@student.unimelb.edu.au](mailto:jihyes@student.unimelb.edu.au).



Result of BIM-based Lot Liability Fairness Checking



BIM-based Accessibility Checking



**Acknowledgments**

This research is a part of an Australian Research Council Project titled “3D Property Ownership Map Base for Smart Urban Land Administration” at the Centre for SDI and Land Administration, the University of Melbourne. A variety of industry partners are participating in this project: Land Use Victoria, Intergovernmental Committee on Surveying and Mapping (ICSM), and the City of Melbourne. However, the views expressed in this article are the authors’ alone.

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Jihye Shin



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**Mohsen Kalantari**

*Associate Professor, Department of Infrastructure Engineering, The University of Melbourne  
Deputy Director, Centre for SDIs and Land Administration (CSDILA), The University of Melbourne*



Mohsen Kalantari



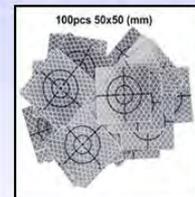
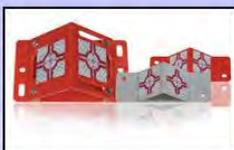
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## Blockchain Technology

### Were land surveyors the first blockchain validators?

Maybe, but don't call me a decentralised node...

*Thoughts from a new kid on the blockchain...*

The latest buzzword making the rounds in technical circles of the internet is 'Blockchain Technology', a curious phrase which seems to have a range of different meanings depending upon who you ask. One thing is for certain, there is no doubt that it will soon become a very common term to all land surveyors in this ever growing and transformational 'Digital Age'

#### So... What's the hype about?

Making a mysterious journey into the supposedly 'new' realm of blockchain in recent times has led me to conclude that land surveyors have actually been interacting with a basic form of this technology for millennia, albeit in different ways.

In my most simplistic understanding, a modern blockchain could generally be described as; 'a growing ledger of useful records, validated by multiple stakeholders and protected by a cryptographic language'. It does have some more complex characteristics, but that is a good place to start this journey.

#### Building blocks ?

As the name implies, a 'block' within a blockchain could easily be analogous with some fundamental activities undertaken by a land surveyor, the most obvious being the survey for a 'block' of land.

For as long as we can remember, land surveyors have used the cryptic coded language of 'trigonometry'; comprising vectors, bearings, angles, distances, corrections, co-ordinates, scale factors and closures to 'prove' to other surveyors that a 'block' which he or she has 'created' is entirely mathematically 'valid' both on paper and in the real world.

This miracle cannot be achieved in isolation. It also requires that adjacent and pre-existing 'blocks' are 'validated' to ensure that the measurements are correct before any new block can be 'added' into a growing 'register'

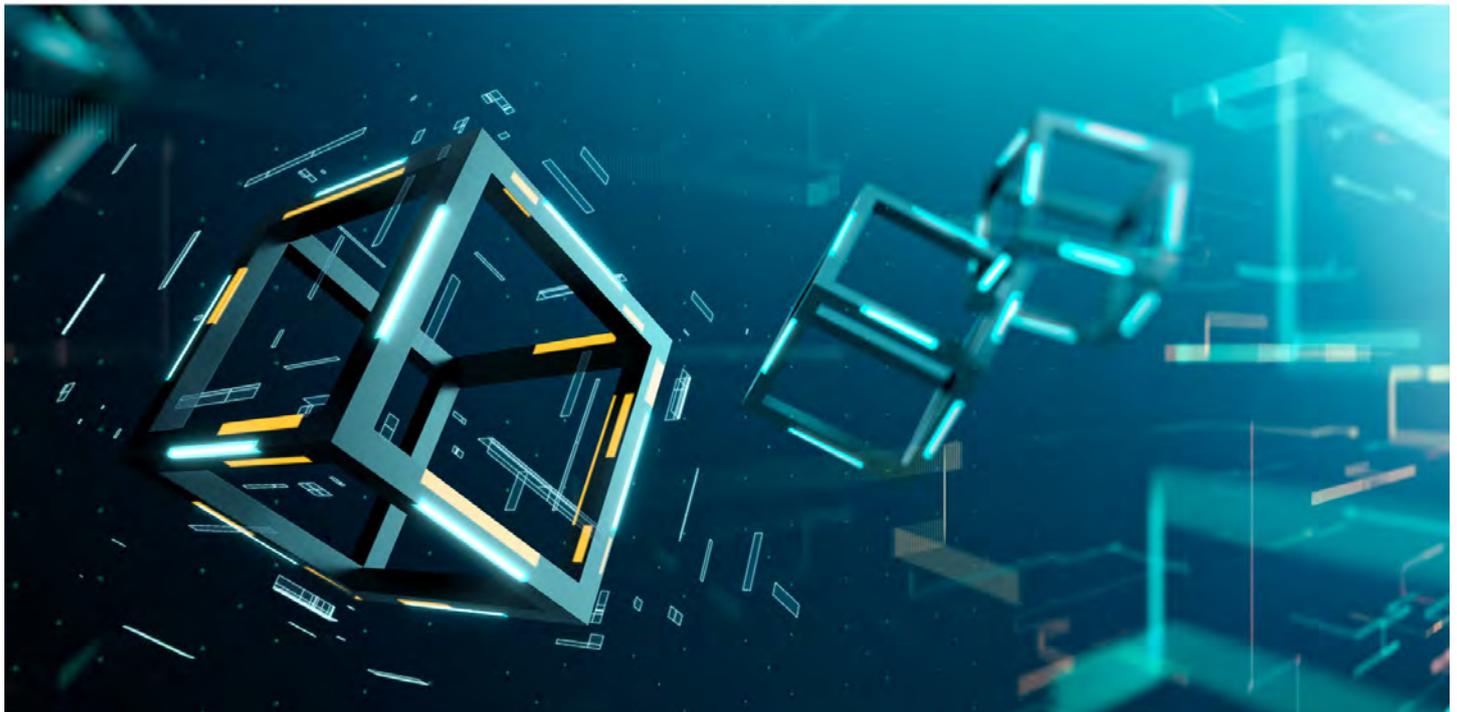
for public consumption. (...yes Virginia, insert the word 'cadastre' around about here...)

Over a period of time, a great many 'blocks' will be validated by other surveyors using precisely the same mathematical 'language', rejecting invalid data and effectively providing a 'third party community consensus' that the 'block' is indeed a valid piece of mathematical data. In this example the data just happens to represent something on the ground which is deemed by people in the community to be of great 'real world' value.

#### Validation Nodes?

The age-old survey validation concepts of reading a closing angle in a control network, recording a closed level loop, reading redundant measurements in a trig network, or simply adding a checksum to some lot area computations are familiar techniques employed daily by the land surveyor ever since it was done with parchment and quills.

The 'validation' done by independent Land Surveyors (decentralised nodes) to check levels between a couple of Permanent Survey Marks, (recorded within a centralised register) not only provides confidence in the 'network' of marks but sustains the operation of that very network.



### Proof of work?

How would a cadastral surveyor prove that their title survey validation process had been correctly executed for a new 'block'? Simple... We presently call it an 'Abstract of Field Records' and a 'Surveyors Report'.

These documents can be electronically added to a 'Block' of data in the centralised registry, identified with a unique 'address' such as 'PS' number.

Any present or future 'stakeholder' who understands the cryptographic trigonometric language can 'interrogate' that data package to 'prove' the surveyors work or reject (vote down) any work that is deemed to fail certain agreed protocols; presently described as 'Title Re-establishment Principles'.

In Victoria 2021, this task is presently done by the 'centralised registry', but in time, perhaps it will follow a path of further de-centralised expansion of the Licensed Surveyor's role, to participate in a "validation pool", where good and fast validations are rewarded. The development of Eplan and 'Single Cad Format' protocols will certainly assist such digital evolutions.

### So what's next?

We are presently witnessing a digital evolution in a deregulated segment of the financial world where blockchain tokens such as 'Bitcoin' are being 'created' using a 'cryptographic' language to represent something of 'value' and a ledger of transactions is being 'validated' by a series of 'decentralised nodes' to ensure that all community 'stakeholders'

interests and 'transactions' are being appropriately protected. This rapidly expanding technology is creating some interesting headaches for regulators and some fascinating opportunities for early adopters.

Land surveyors already hold a deep understanding of abstract concepts such as a 'plan' or a 'title' or an 'Eplan' to represent something in the physical world of great community value.

I therefore believe it is not too much of a stretch for land surveyors to become leaders in the further application of blockchain technologies, as our foundations already run deep.

The Australian Stock Exchange is presently exploring global partnerships to replace its ageing share transaction protocol with a clever 'smart contract' blockchain.

Is it just a matter of time before our businesses and Land Registries do exactly the same thing to make all sorts of transactions faster, cheaper, transparent, de-centralised and even more reliable inside a purpose-built blockchain?

What role would land surveyors like to take in this space, leaders or followers, early adopters or skeptics? We have a choice to make but we had better make it soon.

James Canning  
KLM Spatial

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## Musings From a Surveyor Travelling

Recently I had the good fortune to be able to take some of my long service leave and join some of my friends travelling up and around the western half of Australia for a few months. It was many kilometres of travel across this wide brown land of ours.

Eventually we ended up in Darwin, a place I had fond memories of and where after finishing my survey degree, I started my survey career forty years ago. The place has changed greatly and has become very cosmopolitan and urban, but still the land of four-wheel drives.

As I strolled along the promenade absorbing the Darwin ambience and reading the information signs recounting the history of Darwin and the bombing during the Second World War, I stumbled upon an observation pillar which was one of the marks used in 1950's for the primary mapping control network of Australia. This relative nondescript survey mark highlighted that our profession serves the community well and for many years, but it is not really understood or quite appreciated by the wider community.

Continuing my walk, I ambled into Goyder Park and had no idea of its history. Fortunately, I read the several information posts and was enlightened about George Goyder. He was the South Australian Surveyor General who arrived in 1869 along with 136 men with the task to survey the Darwin hinterland and layout the township of Darwin and farming lots of approximately 130 hectares. The South Australian Government had sold land 'sight unseen' to investors who after five years were still waiting for and growing very impatient with the Government to provide the lots.

Here was a new park celebrating one of the early members of our profession. The park had the outlines of the huts used during the expedition and several information posts about this chapter in the surveying history of Darwin. It was excellent to see role and work of surveyors relayed to general community.

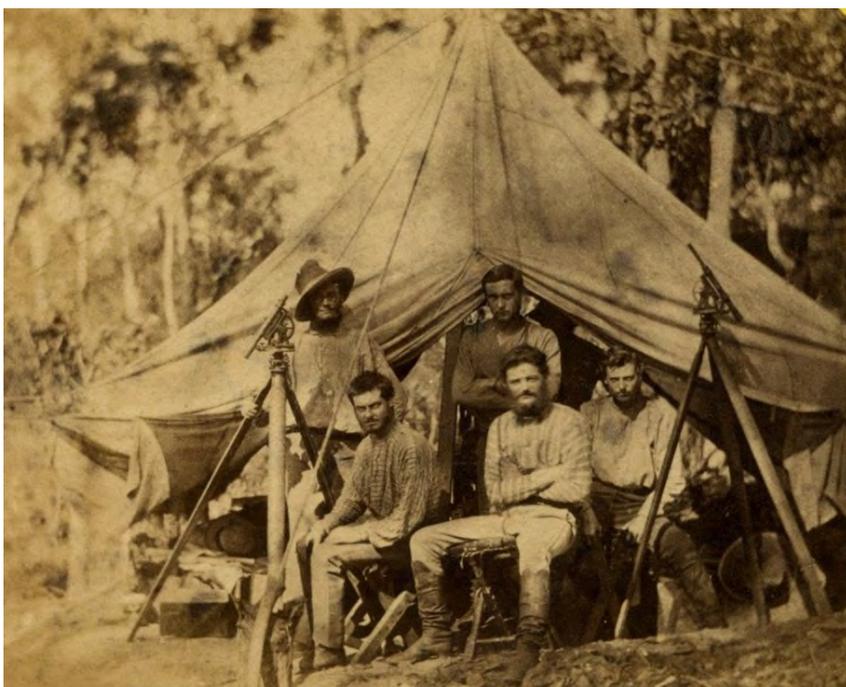


My travels headed southwards and eventually out to Chambers Pillars about 160 kms south of Alice Springs. This sandstone pillar was visited in 1860 by surveyor, John McDouall Stuart, on one of his several expeditions into the interior of Australia. Stuart named the pillar in honour of James Chambers, one of his South Australian financial supporters. This pillar was a distinctive landmark guiding later explorers which in turn brought European settlement to Central Australia.

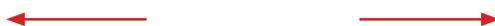
Stuart's expeditions were done in the same era as the Victorian colony's backing of the 1860 Victorian Exploring Expedition, more commonly known as the ill-fated Burke and Wills expedition. While credit is given to Burke and Wills as being the first Europeans to cross Australia from south to north, Stuart's sixth expedition in 1862, comprising of 10 men, reached Van Diemen Gulf, east of today's Darwin and then all returned safely to South Australia. His route generally guided the surveyors for the Overland Telegraph Line in the 1870's, and the subsequent settlements that followed.

Moving further southwards and just off the Stuart Highway near the N.T. - S.A border is the Johnston Geodetic Station. This cairn atop a small rocky outcrop, clearly visible from the highway and located on the Mount Cavanagh station, was once the central reference point for the first official national Australian Geodetic Datum (AGD 66). It was named after Fredrick Johnston, first director of National Mapping.

Having spent some much time over the years doing surveys based on the AMG datum, I had to make the small pilgrimage to the cairn. Despite being greeted by



Expedition team, Brooks, Joseph, 1869, PictureNT, Goyder Expedition Collection, PH0837/0017



a closed gate to the cattle station, I was fortunate that the station manager arrived a few minutes later. He was quite happy for us to pass around his homestead and make our way to the rock outcrop. After few minutes of scaling the rock outcrop, I was standing next to this relic from the pre-GNSS and GDA era. As I scanned the horizon of this arid landscape contemplating the vast task of surveying and mapping Australia, I saw the new AuScope GNSS survey infrastructure site nearby on another granite outcrop.

This was another reminder how our technology and profession has been rapidly evolving and adapting, particularly over the last fifty years to the needs of the communities we live in. These are interesting and challenging times ahead in which our profession pushes into the new digital and electronic frontiers. We can and should be proud of our surveying history and the contributions our profession makes to society. Now more than ever, it is important to continue enlightening the broad community to role of the surveyor, or the plethora of geo-spatial specialists comprising our multi-faceted profession.

Mark Sommerville  
Taylors



## Reasons Subdivision Lodgements Are Refused - Approved by Land Registry

### Reasons Why Subdivision Lodgements Are Refused

The CSV Board has received consent from Richard Jefferson, Executive Director, Land Registration Services, Deputy Registrar of Titles to publish his advice below, which he provided to the CSV Board in response to a discussion on matters relating to the current Plan of Subdivision registration process. The Board was curious to understand the pattern of plan lodgement refusals. That is, for the Board to get a picture of the reasons why some applications would be bouncing back at lodgement – both from the perspective of lodging party errors and surveyor errors. We trust members will find this information helpful.

Below is the publication of that advice.

*“As discussed, each week around 30-35% of plan applications are initially refused lodgement, resulting in a lot of time wasted by LUV staff, lodging parties and surveyors in documentation having to be reworked and re-presented. In terms of the 30-35% of lodgement refusals, this equates to around 50 plans per week. Proportionally, an estimated 10-15% of lodgement refusals are attributable to surveyor errors and omissions ie 5-8 of the 50 plans refused each week.*

*Following up on that discussion, below is a list of the most common reasons that plan applications are refused lodgement:*

#### **Lodging Party error or omission:**

- *Wrong purpose stated on Owners Corporation (OC) form*
- *Incorrect or missing allocation of lot entitlement and liability on OC form*
- *Applicant name is missing from the “... executed on behalf of...” section of the execution page*
- *Typo or mismatch of applicant name(s)*
- *Affected Folio is not nominated or is nominated to Lodgement Case instead of a paper instrument*

- *Not understanding who the applicant should be - registered proprietor vs owners corporation (this relates to Section 32)*
- *Omitting to refer to the folio for the common property on the form for Section 32A*
- *Incorrect points of certifications on the execution page*
- *OC form has not been supplied when the Plan of Subdivision (PS) is creating an OC*
- *Incorrectly submitting 32SA form instead of OC form*

#### **Surveyor error or omission (listed in order of frequency):**

- *Missing OC schedule*
- *Missing surveyor report*
- *Subdividing an ‘S’ lot under Section 22*
- *Prepared the PS incorrectly under Section 22 instead of Section 32 when subdividing a lot affected by OC*

*I hope you find this list helpful. I am happy to expand on any of the issues raised, should clarification be required.*

*I want to emphasise that our desire is to help everyone in the industry get it right first time, which would significantly improve the efficiency of the lodgement process for all concerned”*

In terms of the errors or omissions made by surveyors, the CSV Board wanted this checked again to ensure it was actually an ongoing issue that warranted a communication to members. We asked Richard Jefferson to confirm this was the case. Turns out the lists of errors from lodging party or surveyor are a true reflection of the ongoing issues encountered.

The 10-15% of lodgement refusals, which are attributable to abovementioned surveyor errors and omissions, should not be happening.

## How To Satisfy The “Reasonable Access” Requirement To Sewer Assets At Rear Of Lots On A Plan Of Subdivision

We refer to the requirement of Melbourne Retail Water Agencies for the provision of “reasonable access” (refer Section 5.2.4 of the Sewer Code of Australia) to sewer assets located at the rear of lots created on Plans of Subdivision prior to Certification and Statement of Compliance.

The below letter demonstrates the advocacy undertaken by CSV in relation to a concern raised by one of our members (Lyssna Group Pty Ltd) over a request to burden the relevant lots of a Plan of Subdivision by a one metre wide side easement for sewer access purposes. CSV took this to a Water Industry Liaison Committee (WILC) meeting earlier this year for discussion and achieved general support to the avoidance of side easements through early collaboration with respect to the alternative solution – a restriction on Plan of Subdivision.

We refer you to the letter below provided to WILC to confirm the discussions and our understanding of the preferred hierarchy for satisfying the requirement for “reasonable access”. The letter notes that despite the side easement solution being top of the list, it is the least used as a result of effective upfront consultation with the respective water authority.

For the benefit of members, we can confirm both Yarra Valley Water and City West Water currently support the short form restriction (mechanism No. 2 in the below letter) to mandate one metre of clearance between the future house and the boundary at one side of the lot. Refer to example below being a short form restriction. South East Water currently requires building envelopes to achieve the same outcome. These building envelopes would need to be contained in a Memorandum of Common Provisions (MCP) if there are too many building envelope diagrams for one page. The MCP would be enforced by a restriction on the Plan of Subdivision (mechanism No.3 in the letter below).

CSV would like to thank Lyssna Group Pty Ltd for bringing this matter to us to be attended to at industry level for the benefit of all members. The outcome was the water authority agreed the issue of concern was a misunderstanding and the short form restriction will be accepted going forward. This has formed a framework to help further discussions.

Should you have any questions please contact the CSV office and your query will be directed to Board Director Rohan Bakker, being the CSV representative at the WILC meetings.

---

Reference Number  
11 May 2021

Giuliano Gava  
Chairperson  
Water Industry Liaison Committee

Dear Chairperson,

**Re: Reasonable Access within the MRWA Edition of the WSAA Sewer Code - Section 5.2.4**

At the February 2021 WILC discussion, Consulting Surveyors Victoria (CSV) raised concerns on behalf of a member in relation to the inconsistent way each water authority deals with the ‘reasonable access’ requirement for sewers located in the rear of private properties.

Consulting Surveyors around Victoria acknowledge the access difficulties that water authorities are increasingly facing to meet the ever-expanding demands of their customers, with lots getting smaller and houses getting bigger. We also recognise the willingness each Authority have shown in approaching the discussions with the Licensed Surveyor in order to find an optimal solution to the end user needs.

From a development perspective, a Licensed Surveyor is engaged on each subdivision to provide advice in relation to creating quality titles that achieve a maximum sale price and minimise encumbrances. This advice considers the requirements of competing interests of the different stakeholders and proposes a solution that best works for the approved engineering design and the access requirements of the Water Authority.

With regards to our discussion at the February 2021 WILC meeting, the Consulting Surveyors Victoria raised a concern by one of our members, whereby they were instructed by the Relevant Water Authority that the proposed mechanism for providing reasonable access to the Authorities assets was not acceptable and a different mechanism was required in order to achieve certification / statement of compliance.

We understand that this discussion was a simple misunderstanding and subsequently resolved to the agreement of all parties, however it has highlighted the need for an agreed framework that provides confidence to the Water Authority that their interests are protected and provides assurances that a plan of subdivision can be certified and/or consented to statement of compliance without undue delay or change.

Therefore, in accordance with the definition of ‘reasonable access’ documented in the MRWA Edition of the WSAA Sewer Code, Section 5.2.4, Consulting Surveyors Victoria propose the following mechanisms available to Licensed Surveyors to demonstrate reasonable access for water authority assets located in the rear of lots shall be via:

1. Either a ‘short form restriction’ introduced via a Plan of Subdivision and worded appropriately to provide for 1m clear access along a side boundary or the introduction of a Building Envelope on the Plan of Subdivision noting a 1m clear access along the side boundary for each lot. It is noted that any restriction/building envelope introduced on the Plan of Subdivision can only be a maximum of one (1) page in length. \*
2. Memorandum for Common Provisions (MCP) enforced through a Plan of Subdivision Restriction, where the above ‘short form’ Plan of Subdivision Restriction wording arrangements cannot be implemented. An easement along one side boundary, in favour of (Relevant Authority), from the front to the rear of the lot. Whilst side easements are an option and preferable by (Relevant Authority), they may not be deemed practical or desirable for the development.

\* Where any 'Restriction' wording cannot be contained on a single sheet of the Plan of Subdivision, it must be extracted from the Plan and an MCP created which contains the multiple Restriction wording (refer to Land Use Victoria Registrars requirements for paper conveyancing transactions -Section 12.3(a) & (c)).

While Consulting Surveyors acknowledge the preference of the relevant authorities for surveyors to follow the above-mentioned hierarchy, we caution against any rigid application. Enforcing an easement in gross to be created on the plan of subdivision prior to certification will limit any flexibility for the registered proprietor(s) to construct to one of the two side boundaries of their choice where that side boundary contains an easement for access.

In recent discussions with Yarra Valley Water, we note that they have adopted a position of flexibility when assessing the reasonable access clause. Consulting Surveyors Victoria understand that Yarra Valley Water, have the capability to grant some form of dispensation or exemption for lots without demonstrated reasonable access, provided the following applies:

- have a significant cost advantage to be serviced this way, **and**
- are clearly marked on the design submitted to YVW as not having reasonable access (required to assist with the design review process), **and**
- are not excessive within any pod of lots. YVW's "rule of thumb" for lots within a pod without reasonable access is up to 10% (YVW is prepared to accept some minimal risk with lots with no reasonable access), **and**
- have no more than two adjoining lots without reasonable access, either side-by-side or back-to-back (whilst not ideal, this provides YVW with access from an adjoining lot with reasonable access), **and**
- do not have a maintenance structure located within a lot without reasonable access, excluding "pod bookends" (as previously stated, YVW needs access to our assets to ensure long term operations and maintenance capabilities)

Where lots within a 'pod' can satisfy all the above dispensation criteria, YVW will consider granting an exemption for sewers to remain in the rear of all pods lots, including those nominated without reasonable access. This (Noting that the granting of the exemption is at the discretion of YVW).

Whilst Consulting Surveyors Victoria see the above as a very proactive and practical application for creating quality certificate of titles, we also understand that exemptions / dispensations may not be available to all authorities.

Consulting Surveyors Victoria appreciate the difficulties that the water authorities face in delivering essentially services in an environment whereby lots sizes are shrinking, estates are increasing in density and the reluctance of lot owners to work with the authorities in times of rectification works. CSV appreciates the opportunity for working with the Water Authorities to find practical solutions for the benefit of all stakeholders.

Should you have any queries regarding this or any other matters please do not hesitate to contact Rohan Bakker at Consulting Surveyors Victoria.

Yours Sincerely  
**Rohan Bakker**  
 Licensed Surveyor

**Example of short form restriction:**

CREATION OF RESTRICTION

The registered proprietors of the burdened land covenant with the registered proprietors of the benefited land as set out in the restriction with the intent that the burden of the restriction runs with and binds the burdened land and the benefit of the restriction is annexed to and runs with the benefited land.

BURDENED LAND: Refer to table below

BENEFITED LAND: Refer to table below

RESTRICTION: The registered proprietor or proprietors for the time being of any lot on this plan to which the following restriction applies must not :-

Build or permit to be built or remain on the lot any building or garage on a side boundary of a lot unless the building or garage is set back a minimum of one metre from the other side boundary of that lot in order to provide the required reasonable access for maintenance of any sewer assets at the rear of the lot, by the relevant authority.

<i>BURDENED LOT No.</i>	<i>BENEFITING LOTS ON THIS PLAN</i>
101	102, 104
124	125, 126, 152, 153
126	124, 126, 127, 150, 151

2021 SOCIAL / OTHER EVENTS:

Date	Event Name
Thursday, 4 March	International Women's Day Breakfast Venue: Crown Melbourne, Southbank
18 & 19 March and 15 & 17 September	Business Academy Venue: CSV Rooftop Meeting Room, Melbourne / Via Zoom
Friday, 30 July	CSV / ISV Gala Dinner Cancelled
Thursday, 2 September	Industry Network Evening Cancelled due to COVID restrictions
Thursday, 28 October	CSV AGM Via Zoom
Friday, 22 October	30th Allan Van Tennis Challenge Cancelled due to COVID restrictions
Friday, 5 November (subject to change)	The Presidents Lunch Venue: The Emerald Hotel, Melbourne Cancelled due to Covid restrictions
Friday, 19 November	CSV Golf Day Cancelled due to COVID restrictions

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### 2021 FPET EVENTS:

At least one month's notice will be given on any changes made. Every effort will be made to keep to the draft

Date	TOPIC/FPET POINTS
Friday, 12 March	CSV Moving Victoria Forward - CSV Full Day Seminar & Biennial Council Excellence Awards Venue: Caulfield Race Course, Caulfield FPET Points: 3 Cadastral Survey Practice Points, 0.5 Development Planning and 2 'Other' Point
Friday, 21 May	CSV/ISV Joint Seminar Venue: Moonee Valley Racecourse, Moonee Ponds FPET Points: 3 Cadastral Survey Practice Points and 1 'Other' Point
17 & 18 June	National Congress 2021 - Webinar
August 2021 – 10 August – 12 August – 17 August – 19 August	Webinar Series FPET Points: 2 Cadastral Survey Practice Points, 1 Development Planning and 1 'Other' Point
October 2021 – 19 October – 21 October – 26 October – 28 October	Webinar Series FPET Points: 2 Cadastral Survey Practice Points and 2 'Other' Points

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