

# SURVEYING+SPATIAL

December 2019  
Issue 100

# 100

## ISSUES



***Cycling Cities: Innovation in spatial and planning design***

***Mapping the plastic in waterways worldwide***

***Satellite data: tools for NZ's primary sector***



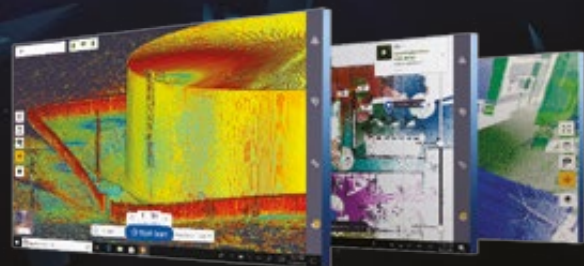
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## ● EDITORIAL



## Celebrating a special milestone

Rachel Harris

This month, *Surveying + Spatial* magazine has arrived at an exciting milestone as it reaches its 100th edition.

To mark this special occasion, we have collated an article outlining some of the history, aspirations and anecdotes from previous editors of *Survey Quarterly* and *Surveying + Spatial*.

The magazine has continued to grow and evolve over the years to reflect the current topics, opinions and innovations of the day, and with the support of our readership, industry and stream contributors, we look forward to continuing to provide a magazine that is progressive and topical for the profession.

This final edition for 2019 features a wide variety of articles from the surveying and spatial industries, ranging from advocacy issues to university perspectives and industry awards.

Simon Ironside reports on the FIG working group 4.3, Mapping the Plastic, which aims to provide accurate information across the survey profession to improve plastic pollution in waterways, help identify unsustainable practices and ultimately eliminate dumping of plastic waste into rivers both in New Zealand and overseas.

Fresh from her recent Planning a Cycling City study tour hosted by the University of Amsterdam, Beca senior landscape architect specialist Emily Cambridge examines some of the spatial and planning impacts on cycling culture in a major European city, and how this context could be applied to cities in New Zealand.

Determining riverbank boundaries and the case of a recent breach of the RMA in the Selwyn River are examined in this edition's Case Law Commentary.

And Eliot Sinclair's Darren Hocken considers the importance of survey assistants in providing future opportunities and experience in the industry in the 'Death of the chainman'.

Finally, thank you to all our dedicated contributors and readers this year, a very happy Christmas to all and best wishes for the year ahead.



# Property addressing for in-fill developments

Anselm Haanen

Surveyor-General/Kairūri Matua



Allocating property addresses for in-fill developments has been causing some significant issues for surveyors, developers and land owners. This has prompted the Surveyor-General to publish new guidelines that will help avoid these issues.

Ensuring that individual properties can be readily and unambiguously identified and located is vital for the delivery of goods and services, but in an emergency, it can mean the difference between life and death. The allocation of addresses to newly developed properties is an important part of the subdivision process and essential to any development's ultimate success.

Recent rapid development in both urban and rural areas has created addressing issues nationwide, particularly in Auckland where in-fill development is becoming increasingly common. Examples include roads being extended to add more properties, additional dwellings being added to large lots, single dwellings being internally subdivided, and commercial buildings being converted into multiple shops or apartments.

Territorial authorities, which control the allocation of addresses, use the Australian/New Zealand Standard for Rural and Urban Addressing AS/NZS 4819:2011 ('the Standard') to ensure addresses are allocated in a consistent and sensible way.

However, full compliance with the Standard when allocating addresses for in-fill developments can require changes to the addresses of existing properties, and can include road naming. This has caused significant concern for developers and property owners – especially when the

latter are not directly associated with the development.

The new *Guidelines for Addressing In-fill Developments* provides additional guidance and options for addressing these developments without compromising the overall integrity and use of the addressing and road naming system. The guidelines relate specifically to in-fill developments and complement the Standard. The provisions in the document vary from the Standard in several key areas, to deal with the issues that people were experiencing.

By following the new guidelines, surveyors and developers can help ensure developments comply with territorial authority requirements and avoid potential delays at the end of the development process. The guidelines will also help developers better understand the background to addressing and the requirements when numbers are being allocated.

Using these guidelines should avoid or at least minimise the need for renaming roads or renumbering properties in the future, while still ensuring addresses enable properties to be easily identified, located and accessed. Having high-quality addresses from the start reduces the likelihood of problems when further in-fill development occurs.

The Surveyor-General developed the draft guidelines in liaison with Auckland Council and surveyors from the Auckland Branch of Survey and Spatial before nationwide consultation was carried out earlier this year.

As well as issuing these guidelines, the Surveyor-General is proposing to enable the principal unit numbers in a cadastral survey dataset to be better aligned with the units' addresses. The proposed Rules for Cadastral Survey will also allow the identifier for a unit to be a letter followed by a number (eg, Principal Unit G02). In many cases these proposals will allow the sub-address number and the principal unit number to be the same; although not in all cases.

The guidelines are available to download free of charge on the LINZ website: [www.linz.govt.nz/regulatory/01245](http://www.linz.govt.nz/regulatory/01245).





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# Survey and Spatial NZ Welcomes New President

DR KAT SALM WAS WELCOMED AS THE NEW PRESIDENT OF SURVEY AND SPATIAL NEW ZEALAND AT THE ANNUAL GENERAL MEETING HELD IN WELLINGTON, 7 NOVEMBER.

Kat is delighted to take over the role from outgoing President, Rebecca Strang. She sees it as “an exciting opportunity to lead Survey and Spatial NZ into the next chapter – connecting with members, stakeholders and the wider community to ensure we provide a recognised and valued home for all of our diverse community”.

Kat has been a Council member leading the Spatial Professional Stream since 2017. Christchurch based, she is an Associate and NZ Spatial Service Line Lead for Aurecon, and NZ Business Development Manager for FrontierSI. Kat has a PhD, and a BSc (Hons) in Environmental Science, from the University of Canterbury and brings a wealth of experience to the S+S NZ Council that spans geospatial across government, industry and education/research. Kat's strengths are in strategy and roadmap development, research and review, business case development, and collaborative project/programme leadership.

Daniel Williams, S+SNZ Board Chair, is delighted to have someone with Kat's depth of experience and ability on the Council “she will contribute the strong skills need-



ed to grow and advance our spatial strategy in a rapidly evolving sector” he says.

In 2018, Kat received the NZ Spatial Excellence Awards (NZSEA) Women's Leadership Award and went on to win the Asia Pacific Spatial Excellence Awards (APSEA) Women's Leadership Award in Australia. This year, Kat was a judge for the 2019 NZSEA awards that were announced in October 2019. Kat has also been on the committees for WIS (Women in Spatial/Survey) and the National Geospatial Capability Committee and has been NZ rep for FIG Commission 3.

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## Congratulations to New S+SNZ Council Members

THIS YEAR WE SEE SEVERAL CHANGES TO THE S+SNZ COUNCIL AND STREAM LEADS AS TERMS END AND NEW TERMS START. WE WELCOME A NEW PRESIDENT, VICE-PRESIDENT AND SEVERAL NEW COUNCIL MEMBERS AND FAREWELL OTHERS FROM THESE ROLES.

We welcome Dr Kat Salm lead of the Spatial Professional Stream as the new President. Kat takes over from Rebecca Strang who has been in the role since 2017.

Russell Benge, from Davis Ogilvie, Christchurch takes over the vice presidency from Guy Panckhurst and there are three new divisional council representatives – Emma Cook for the Young Professionals replacing Rob Mears, Carl Fox for CSNZ replacing Paul Newton and Richard Hemi is our new tertiary representative replacing Christina Hulbe.

We farewell Matt Ryder who has been the long-term chair of the Cadastral stream and welcome Karl Wilton

as the new Councillor and Toni Hill as the Stream Chair. Stuart Caie has replaced Emily Tidey as Chair of the Hydrography stream. The new Spatial Stream Councillor is Andrew Clouston, and Jasmin Callosa-Marr takes over the Stream Chair role.

A huge thank you goes to these new council members and continuing members that have so generously volunteered their time and skills during their tenure. Without the efforts and commitment of all our volunteers and leaders, we would not be able to offer a rich programme of CPD and advocacy events.

## Cadastral Professional Stream

The cadastral stream welcomes two new members to the committee, Hannah Reader and Rita Clark as well as a new chair, Toni Hill. Traditionally the role of chair has also come with a seat on the Council, however this year this role has been separated and we congratulate and thank Karl Wilton for being the cadastral representative on the Council.

Brian Curtis stepped down from the committee during the past term, and we thank him once again for his many years of service and contribution. With new members on board, Darren Hocken has taken the opportunity to step back and we wish to thank Darren for all his work over a number of years.

Darren has been instrumental in pulling together as number of training opportunities for members which take a huge amount of effort and we are extremely grateful for the work he has done. Darren will stay involved with the Good Survey Practice working group.

The rest of the committee are Matt Ryder, Trent Gulliver and Richard Hemi.

*Toni Hill, Cadastral Stream Chair*

## Engineering Surveying Stream

A big thank you goes to all delegates, presenters, sponsors, exhibitors and organisers of our third annual S+SNZ Engineering and Positioning Workshop. It was another success. This year it was held at the Sudima Hotel at Christchurch International Airport, the first time away from the tried-and-true Auckland venue, and numbers in attendance nearly matched the Auckland events. We now look forward to next year when it will be brought back to Auckland once again. Please get in touch if you have **any** suggestions for presentation material for next year, each year the standard is set higher.



Engineering and Positioning Workshop 2019

As often reported here, the focus of our stream is on developing a certification specific for engineering surveyors. The S+SNZ Council and Board are continuing to show support, but progress continues to rely on the volunteered time of the stream's members. If you would like to help in this endeavour or would like to know more, please get in touch.

*Michael Cutfield, Engineering Stream Chair*  
[engineering@surveyspatialnz.org](mailto:engineering@surveyspatialnz.org)

## Hydrography Professional Stream

Congratulations to HPS members from the award-winning LINZ and Marlborough District Council team, along with contractors NIWA and Discovery Marine Ltd (DML), who won the Environment and Sustainability Award at the 2019 NZSEA Awards. Also well done to HPS members from Eliot Sinclair who were finalists in the Technical Excellence Award this year.

We have been following the Tuia 250 commemorations with interest as we consider our hydrographic surveying ancestors.

The stream was represented at the Mapping the Plastic Workshop held on 7 December in Wellington. FIG Working Group 4.3 – Mapping the Plastic – is a joint venture between the FIG Young Surveyors Network and FIG Commission 4 (Hydrographic Surveying) whose purpose is to enable a greater understanding of the extent of plastic pollution at source by providing accurate and reliable information of the magnitude of the problem to inform robust land use controls with the ultimate goal of eradicating the dumping of plastic waste into waterways.

LINZ is again partnering with Marlborough District Council to carry out a survey of Pelorus Sound/Te Hoiere, Admiralty Bay, and Te Aumiti/French Pass. DML and iX-blue have installed tide gauges, the on-the-water field-work commenced mid-November and continues until May 2020. NIWA will be collecting seabed samples as part of the project for future science investigation. DML is also finishing survey work in Samoa as part of the LINZ/MFAT Pacific Regional Navigation Initiative.

Wishing everyone happy and safe times on the water over the summer.

*HPS leadership team*

## Land Development and Urban Design Stream

The LDUD Stream committee has recently been focusing on advocacy, the stream work plan and beginning preparations for the 2020 conference.



The Ministry for the Environment put out a discussion document on a proposed National Policy Statement on urban development entitled Planning for Successful Cities. The stream provided National Office with feedback which broadly supported the policy statement while highlighting several points that needed to be explored further. A copy of the full submission can be found on the S+SNZ website.

The stakeholders' workshop was recently held in Wellington and provided valuable feedback. The ideas discussed at this workshop will be a key focus for the stream work plan for the coming year.

The National Technical Committee has also kicked off preparations for the 2020 conference. The LDUD Stream is again assisting with the coordination of top-quality speakers for this conference.

*Julia Glass, LDUD Stream Chair*

## Positioning and Measurement Professional Stream

After a successful workshop in Christchurch, which was very well attended with some really interesting practical papers, the thought process turns to what can be improved, and where to next year. If anyone who attended the workshop did not fill in the feedback form and has ideas, please do send them through to [positioning@surveyspatialnz.org](mailto:positioning@surveyspatialnz.org).

In conjunction with the Spatial Stream, we are looking to develop a workshop/spatial day with a focus around mixed reality and machine learning – this day will need to be squeezed into next year's calendar. It will be quite a different focus for the P&M group but offers the chance to look at how technology is coming together across the spatial sector. Look out for more details in the new year.

The Resilience Initiative is in its early stages of development. The overarching goal is to be able to provide, equip and train a volunteer group of surveyors who are prepared to offer their services in times of national emergency. The need for such a group has been seen during the Christchurch and Kaikōura earthquakes. The first documents in the kit are now in draft form for review by the Council.

Certification – in conjunction with the Engineering Stream, the goal is to be able to provide a certification path for those who choose not to follow the cadastral or hydrographical survey path.

*Bruce Robinson, P&M Stream Chair*

## Spatial Professional Stream

This will be my last report as chair of the Spatial Professional Stream. Thank you to all those who have stepped up to be part of the Spatial Professional Stream committee for the next year. We have a great, diverse group to drive the stream towards our vision of supporting a thriving, dynamic, and connected spatial professional community in New Zealand.

I am very pleased to say that Jasmin Callosa-Tarr from Jacobs will be taking over as stream chair. Jasmin has a long background in spatial work across the world – including South Africa, Lesotho, Mozambique, the Philippines and South-East Asia. She is also engaged in supporting GIS in conservation and emergency management, and is on the GIS panel for Volunteer Service Abroad.

It has been a busy few months for the spatial industry. In the second week of November alone, events included International GIS Day ([www.gisday.com/en-us/overview](http://www.gisday.com/en-us/overview)), the FOSS4G SOTM conference in Wellington ([www.2019.foss4g-oceania.org](http://www.2019.foss4g-oceania.org)), the Place 19 Maori GIS conference in Rotorua ([www.tekahuimanuhokai.org/2019/11/10/kaupapa-place19](http://www.tekahuimanuhokai.org/2019/11/10/kaupapa-place19)), an OGC (open geospatial consortium) workshop ([www.opengeospatial.org](http://www.opengeospatial.org)), the Emerging Spatial Professionals Symposium ([www.facebook.com/EmergingSpatialProfessionals](http://www.facebook.com/EmergingSpatialProfessionals)), and GEO week in Canberra on all things Earth Observation ([earthobservations.org/geoweb19.php](http://earthobservations.org/geoweb19.php)). It's a really exciting time to be in the spatial industry.

The New Zealand Spatial Excellence Awards (NZSEA) 2019 were announced on 17 October in Wellington. A huge congratulations to all of the winners, finalists and those who entered. To see more about the event and winners, visit the NZSEA website: [www.nzsea.org](http://www.nzsea.org).

Don't forget to join the stream's LinkedIn group – S+SNZ Spatial Professional Stream. We will be using it as a channel for interesting industry articles and stream updates.

Looking forward to a great 2020. Have a safe and happy festive break. If you have any feedback, please contact [spatial@surveyspatialnz.org](mailto:spatial@surveyspatialnz.org).

*Dr Kat Salm, Spatial Professional Stream Chair*



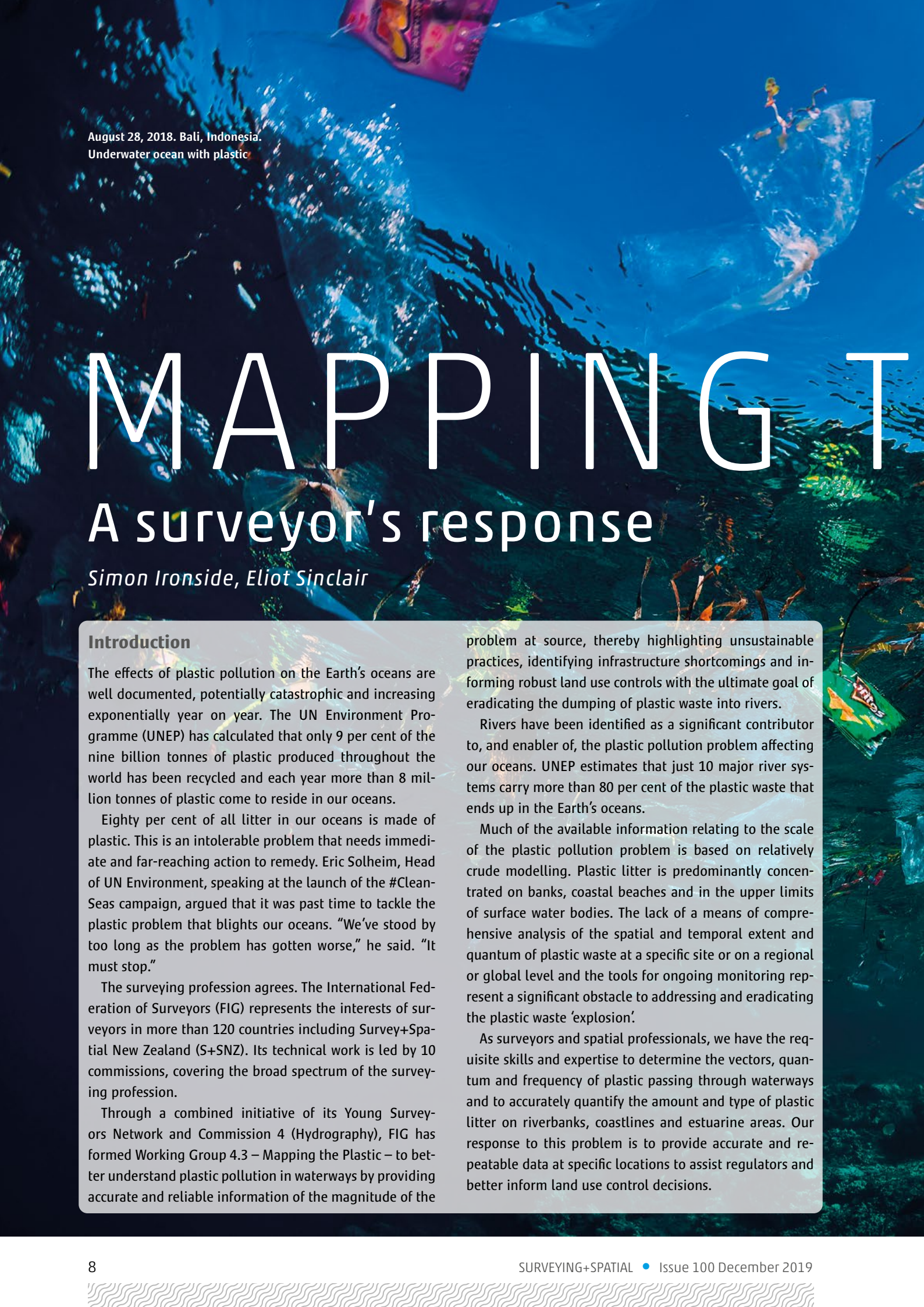
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An underwater photograph showing a blue ocean filled with various pieces of plastic waste, including bags and fragments, floating in the water. The scene is dimly lit, with light rays filtering through the water.

August 28, 2018. Bali, Indonesia.  
Underwater ocean with plastic

# MAPPING

## A surveyor's response

*Simon Ironside, Eliot Sinclair*

### Introduction

The effects of plastic pollution on the Earth's oceans are well documented, potentially catastrophic and increasing exponentially year on year. The UN Environment Programme (UNEP) has calculated that only 9 per cent of the nine billion tonnes of plastic produced throughout the world has been recycled and each year more than 8 million tonnes of plastic come to reside in our oceans.

Eighty per cent of all litter in our oceans is made of plastic. This is an intolerable problem that needs immediate and far-reaching action to remedy. Eric Solheim, Head of UN Environment, speaking at the launch of the #Clean-Seas campaign, argued that it was past time to tackle the plastic problem that blights our oceans. "We've stood by too long as the problem has gotten worse," he said. "It must stop."

The surveying profession agrees. The International Federation of Surveyors (FIG) represents the interests of surveyors in more than 120 countries including Survey+Spatial New Zealand (S+SNZ). Its technical work is led by 10 commissions, covering the broad spectrum of the surveying profession.

Through a combined initiative of its Young Surveyors Network and Commission 4 (Hydrography), FIG has formed Working Group 4.3 – Mapping the Plastic – to better understand plastic pollution in waterways by providing accurate and reliable information of the magnitude of the

problem at source, thereby highlighting unsustainable practices, identifying infrastructure shortcomings and informing robust land use controls with the ultimate goal of eradicating the dumping of plastic waste into rivers.

Rivers have been identified as a significant contributor to, and enabler of, the plastic pollution problem affecting our oceans. UNEP estimates that just 10 major river systems carry more than 80 per cent of the plastic waste that ends up in the Earth's oceans.

Much of the available information relating to the scale of the plastic pollution problem is based on relatively crude modelling. Plastic litter is predominantly concentrated on banks, coastal beaches and in the upper limits of surface water bodies. The lack of a means of comprehensive analysis of the spatial and temporal extent and quantum of plastic waste at a specific site or on a regional or global level and the tools for ongoing monitoring represent a significant obstacle to addressing and eradicating the plastic waste 'explosion'.

As surveyors and spatial professionals, we have the requisite skills and expertise to determine the vectors, quantum and frequency of plastic passing through waterways and to accurately quantify the amount and type of plastic litter on riverbanks, coastlines and estuarine areas. Our response to this problem is to provide accurate and repeatable data at specific locations to assist regulators and better inform land use control decisions.



An underwater photograph showing various pieces of plastic debris, including bags and fragments, floating in clear blue water. The debris is scattered throughout the frame, with some pieces appearing closer to the camera and others further away. The water's surface is visible at the top, showing ripples and reflections of light.

# THE PLASTIC

## Research

Remote sensing data from satellites and airborne platforms available in different spatial, spectral and temporal resolutions has the potential to be a reliable source of long-term qualitative and quantitative information over large geographic areas. Research by members of the Mapping the Plastic working group at universities in Bosnia and Herzegovina and Serbia are now working to distinguish plastics from surrounding litter/debris classes using remote sensing techniques, and the results are very promising.

Assessment of the spatial extent and variability of plastic is possible due to the unique spectral signature of polymers in the near-infrared part of the electromagnetic spectrum and we are looking at defining the data acquisition technology and identification methodology that will enable identification of plastic debris down to 1cm<sup>2</sup> in size.

An object-pixel based algorithm for mapping plastic distribution in surface (fresh) water using red, green and blue (RGB) and multispectral (MS) images from high-resolution WorldView-2 satellite images has been developed and is described in the paper *"Remote sensing data in mapping plastics at surface water bodies"*. Written by Gordana Jakovljević, Professor Miro Govedarica and Flor Álvarez Tabobada, it was published and presented at the 2019 FIG Working Week in Hanoi, Vietnam, in May this

year. (Ms Jakovljević and Prof Govedarica are WG 4.3 members.)

The paper describes the creation of algorithms and models for plastic identification and their associated accuracies based on high-resolution, 8-band, multispectral images from the WorldView-2 satellite of plastic debris in the River Drina in Serbia. This research has subsequently been expanded, focusing on the results from additional study areas in rivers in Bosnia and Herzegovina using a WingtraOne drone with a high-resolution (42-megapixel) RGB camera and a high-quality MS camera.

Several surveys have been undertaken at differing heights and resolutions using specially designed markers. Work is ongoing to refine the analytical processes and survey methodologies for adoption, and the preliminary results are encouraging. However, this project's accuracy and application are uniquely challenged by the lack of existing polymer 'libraries', as this project is one of the first attempts at identifying plastic in this manner.

## Methodology

A combination of high-resolution satellite and drone data has been processed using the developed algorithms to detect floating plastic in surface water, combined with 'ground truthing' land surveying measurements, bathymetric and water current data. This data will enable teams of volunteers to accurately map plastic concentrations at



global 'hot spots' to enable regulators to better understand the extent of the phenomenon they are dealing with and inform decisions that impact the potential solution.

In order to undertake the field work required to infill gaps in the satellite/drone data, Trimble has kindly donated a suite of surveying hardware and software to the Mapping the Plastic working group, consisting of:

- R10 GNSS receivers
- A Greenseeker crop sensor
- Trimble Business Centre
- eCognition software.

On behalf of FIG, I would like to express my gratitude to Trimble for its assistance. This equipment will be of enormous benefit and is greatly appreciated.

Negotiations are ongoing to secure a drone to assist with the plastic surveys.

## Volunteers

Our principal volunteer base is the FIG Young Surveyors Network, with its interconnecting networks in each of the 120 FIG member associations, including Survey+Spatial New Zealand. However, youth is not necessarily a prerequisite and we are seeking volunteers of all ages with a strong sense of social responsibility, commitment and adventure; surveying and spatial expertise would be an advantage! The YSN is coordinating the Mapping the Plastic training programme through its networks including at the 2020 FIG Working Week to be held in Amsterdam, the Netherlands, next May.

For those wishing to volunteer for this demanding but satisfying work please contact YSN Chair Melissa Harrington, [melissa\\_harrington@trimble.com](mailto:melissa_harrington@trimble.com).

## Alliances

The (anti) plastics 'movement' worldwide is dynamic, motivated, concerned (verging on angry), well informed and growing rapidly. The problem is huge, if not overwhelming, and one of the things the surveying profession has learnt is that forming alliances with groups within the plastics movement is the most effective way of directly influencing positive outcomes. It also enables the profession to understand where and how we can contribute most effectively.

The 2019 FIG Working Week in Hanoi was an opportunity to form a relationship with GreenHub, a young, dynamic and green Vietnamese NGO, and Australia's Commonwealth Scientific and Industrial Research Organisation (CSIRO), which is doing great work in the plastics field.



GreenHub and CSIRO have undertaken a large plastic survey along the coastline near Hanoi and attendees were fortunate that these organisations were able to present the results of their survey at the Mapping the Plastic session in Hanoi.

A representative of the Vietnamese government presented a rather gloomy picture of Vietnam's plastic problem and World Bank representatives in attendance expressed interest in the uses of the plastic detection algorithm that the working group has developed, particularly the ability to identify individual plastic manufacturers. One of the 'hot spot' areas the working group would like to survey with GreenHub and the Vietnamese government is the Mekong Delta in the south of Vietnam. Unfortunately, there are no shortage of hot spots that require attention.

## Plastics Mapathon

The working group also wishes to offer assistance and expertise to the plastics movement in Aotearoa/New Zealand. To this end S+SNZ Mapping the Plastic members will be holding an all-day Plastics Mapathon in Wellington on 7 December to coincide with the annual general meeting of the Aotearoa Plastic Pollution Alliance. It will be held at NIWA's Wellington offices, 301 Evans Bay Parade, Hataitai, with the objective of:

- investigating the extent of information available on the plastic pollution of waterways in Aotearoa through formal survey datasets held by the government, academia etc
- developing techniques for collecting this information formally as part of future contract specifications or through dedicated plastic surveys, and informally through citizen science/crowd sourcing techniques
- applying these formal and informal techniques to 'hot spots' locally, throughout the Pacific and South-east Asia.

If you would like to participate in the Mapathon, please register with S+SNZ national office and if you would like to join the Mapping the Plastic working group, please let Melissa or me know.

*Simon Ironside, Chair Working Group 4.3 – Mapping the Plastic. Email: [lsi@eliotsinclair.co.nz](mailto:lsi@eliotsinclair.co.nz)*





## Our story with S+SNZ so far...

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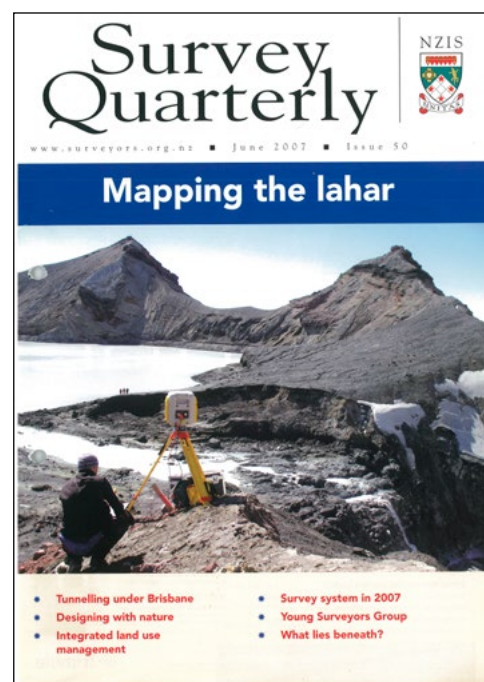
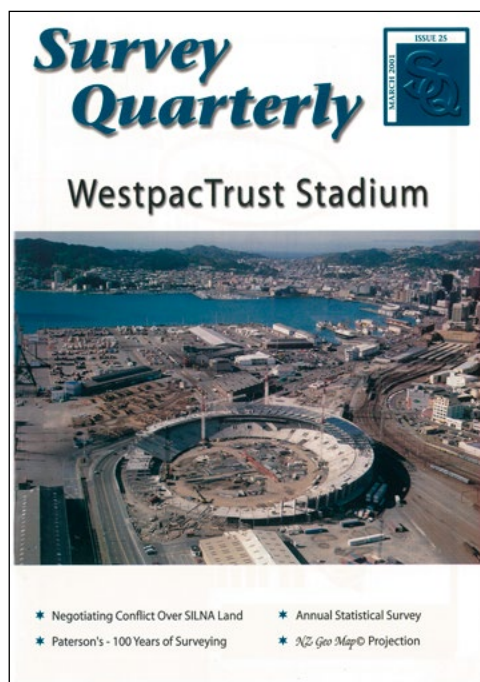
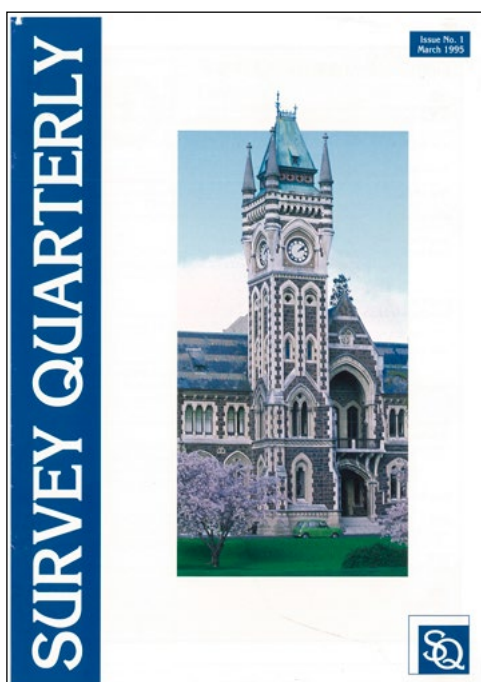
Allan Blaikie

Now that *Survey Quarterly/Surveying+Spatial* has reached 100 issues, it is perhaps timely to briefly review the history of the publications of the New Zealand Institute of Surveyors, now known as Survey and Spatial New Zealand.

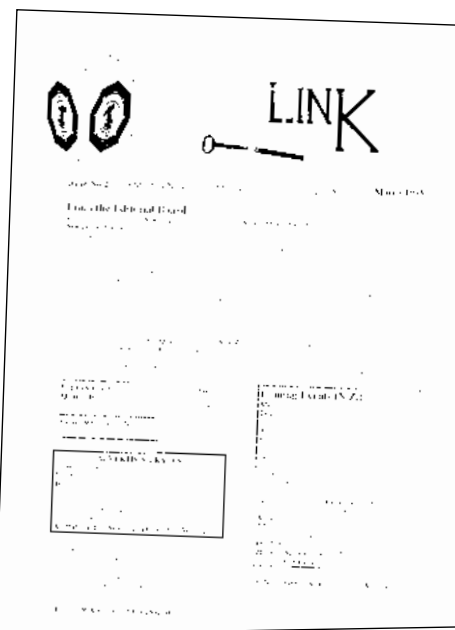
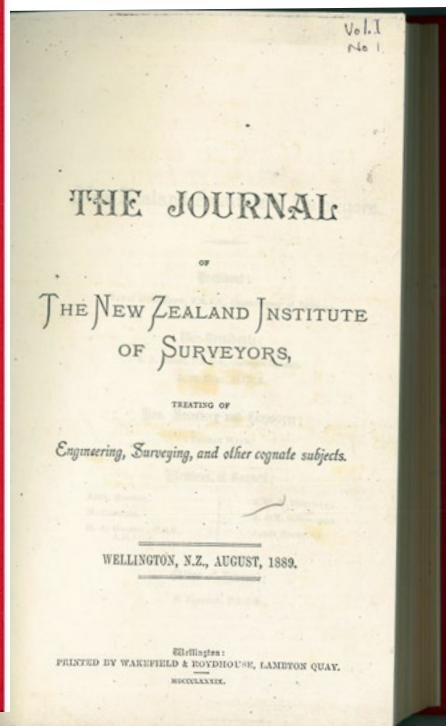
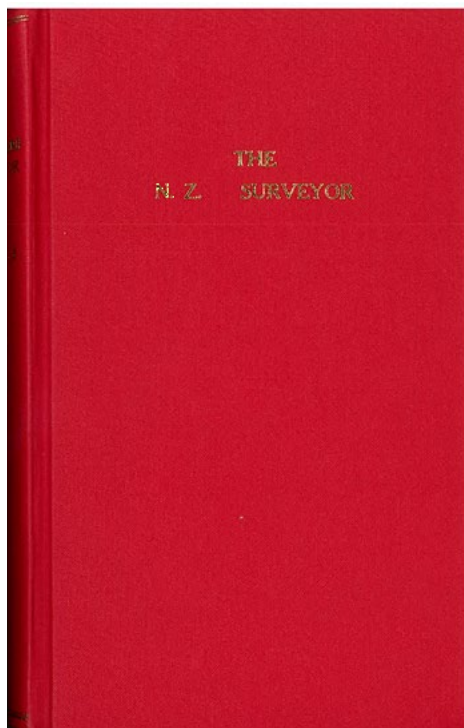
The *New Zealand Surveyor* was published from the institute's beginning in 1888. It was the institute's only regular communication with members until 1971. In early years it appeared quarterly, but in later years it was a biannual publication. It was commonly known as the *Journal* which was part of its sub-title. The format was an imperial size of about 230mm x150 mm.

At the institute's AGM in 1970, a remit from the Otago Branch recommended that a monthly communication to members be published to provide a regular forum for communication. This remit was approved, and the Council decided that since Otago had suggested the idea, it should be responsible for publication for the first two years. Thus, the writer, being a member of the Otago Branch at the time, became the first editor.

The first issue appeared in February 1971 as *Newsletter – Supplement to the New Zealand Surveyor*. It comprised eight pages in A5 format. After soliciting and receiving







many suggestions for a better name, it was decided in July 1971 it should be titled *News and Views*.

From the outset it was expected by the Council that it should be fiscally neutral, in effect the cost of production should be covered by revenue from advertising. Further, it would not be able to compete with the *Journal* for advertising. To a large degree this was achieved initially, but as the publication grew and became more "professional", it became a charge on institute funds.

It had been agreed that responsibility for *News and Views* should rotate through the various branches of the institute on a two-yearly cycle. Thus, over the 24 years of its existence (1971-94), 12 (of 15) of the institute's branches were responsible for publishing *News and Views*. About 16 editors were involved in producing 259 issues. During the period the publication evolved in size and presentation – from eight typed/duplicated pages to as many as 60 typeset, glossy coloured A5 pages.

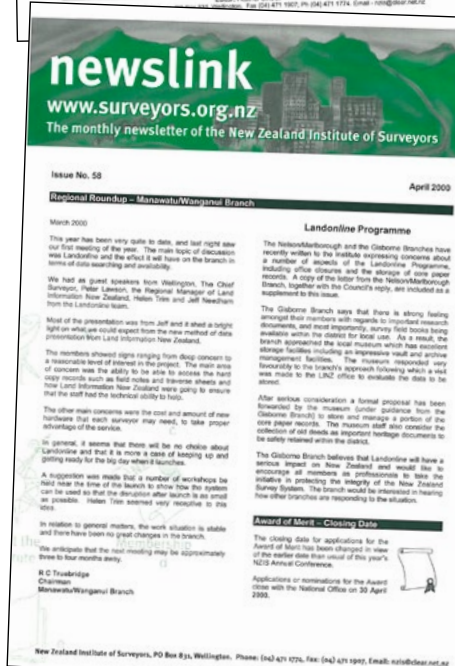
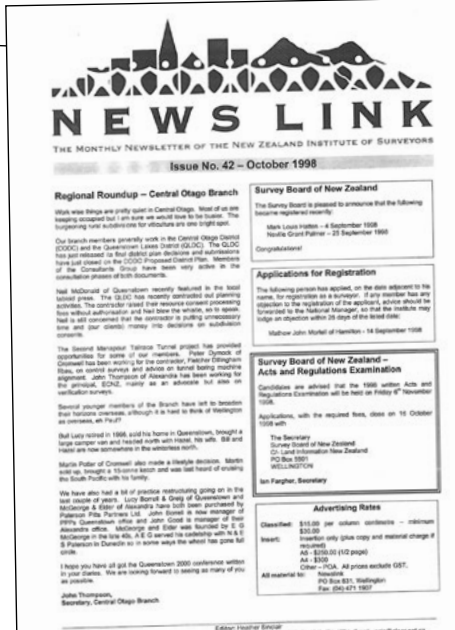
The editorial in the first issue of *Survey Quarterly* in March 1995 outlines the events which led to the publication of this new magazine. There was a three-year gestation period (1992-94) during which the Public Relations Committee of the Council made recommendations regarding publications. These recommendations were debated at the committee, council, branches and annual general meetings.

It was finally agreed there should be "three strings in our publications bow", *Newslink*, *Survey Quarterly* and *New Zealand Surveyor*.

At the Council meeting in New Plymouth in 1994, in conjunction with the AGM, an editorial board was appointed. It was charged with the responsibility of facilitating the production of the new publications.

It comprised Allan Blaikie (Dunedin), as convenor, Alistair Cocks (Christchurch), Frank Easdale (Auckland), Wayne Nickles (Auckland) and Mark Roberts (Lower Hutt). At a meeting in Christchurch in December 1994, it was agreed that *Newslink* would be published monthly in national office, arrangements for the *New Zealand Surveyor* would remain as they were and *Survey Quarterly* would be published in Dunedin with the convenor as editor for the first year.

It was established that papers would not be referred, rather such papers would be the prerogative of the *Journal*. In retrospect the Christchurch meeting of the editorial board must be considered as being very successful as it was the only face-to-face meeting it had. The board was very conscious of the need to publish on time. Any subsequent issues were resolved by phone and so within a few weeks the editorial board had discharged its responsibility.



But then the hard work began with the production of the first issue of *Survey Quarterly* (in March 1995) as an A4 44-page glossy magazine. It was a new concept for the institute although *News and Views* had provided some experience.

It was necessary to engage some professional experience to get the project off the ground. Devine Graphics was engaged to advise on format and presentation. John McIndoe Ltd, a well-established and respected Dunedin firm of printers and publishers, was selected as the printer. A good liaison was established with a key person in each of these firms, this proving to be a vital requirement.

Editorial and advertising content was the sole responsibility of the editor with no input from national office.

So, a plea went out directly to branches and through *Newslink* for papers and articles, as well as appropriate news and items of interest. The response was encouraging and throughout the first year of publication there was enough material to “fill” the available space. A little prompting was necessary but most of those approached responded positively.



Advertisers generally responded positively to the new concept even though the costs were significantly higher. Meeting publication deadlines often required some prompting, but it should be recorded that our advertisers were very supportive of the new medium. This was critical as the Council, as with *News and Views*, hoped the publication costs would be fiscally neutral. According to the schedule of advertising costs, advertising in the first issue would have grossed \$5620.

But what about proof-reading? This service was not provided by the printer and, in what was probably the pre-spell-check era, the task fell to the editor. It was a tedious process (a lot like marking student essays) and despite the editor’s best efforts, he is aware of five minor errors in the first issue. At the beginning of 1996, the editor was ready to pass on the editorial baton.

It has been encouraging to witness the evolution of our quarterly magazine under its various editors. It has survived for 25 years and 100 issues – long may it thrive. The decisions taken in 1994 have been truly vindicated. From small beginnings...

*Dr Mick Strack, Senior Lecturer, Pūkenga Matua, Kaiāwhina, School of Surveying, Te Kura Kairūri, University of Otago*

The 100th edition of a quarterly magazine amounts to 25 years of insight into what surveying is all about. That time period also closely matches my academic career, so it has always been relevant and useful to me as an outlet for commentaries about legal issues and to keep up with what surveyors are doing and writing about.

There has always been a diverse array of articles and commentary about interesting and complex surveying jobs, new technology (an advertisement in the first edition introduced robotic total stations – nothing about GPS) and methods, and historical and contemporary stories of places and surveyors.

The magazine provides a good window into what surveying is all about, and as such, it should be widely publicly accessible.

The first issue’s editorial by Frank Easedale notes that the Institute must “promote an image or perish or at the very least be lost to sight beneath the endless waves of change”.

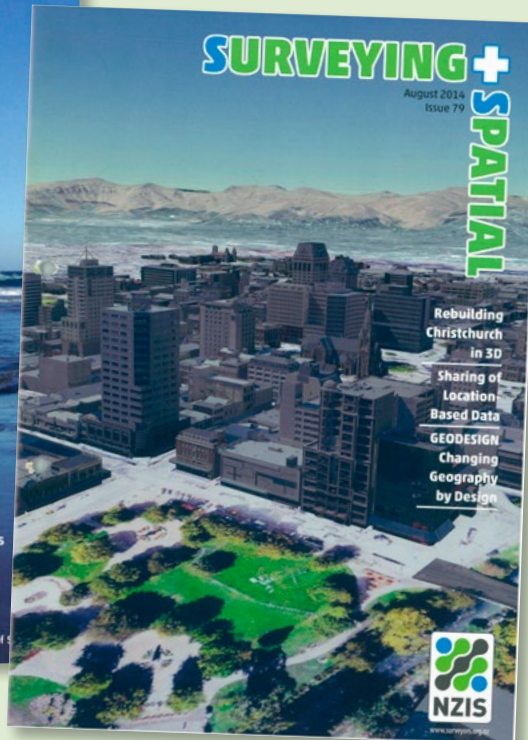
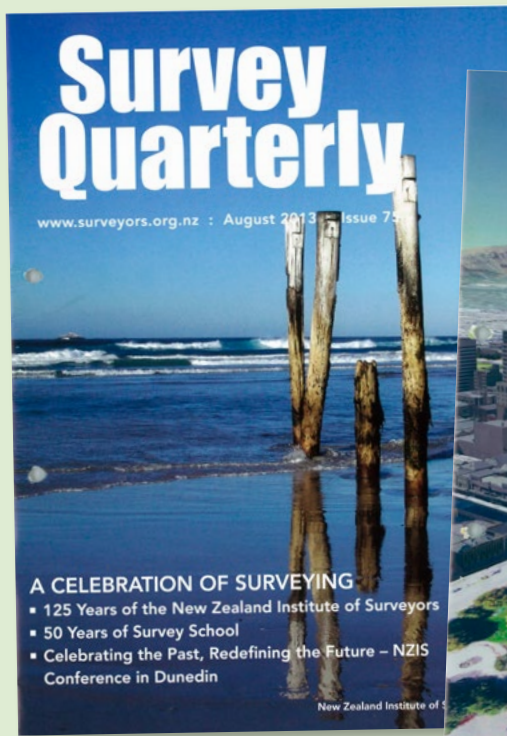
Hopefully we have not sunk beneath those waves. Surveyors seem to have a very low public profile and image.



It is by no means clear that young people know what surveying is all about or are attracted to the profession – in spite of the great employment opportunities.

The National School of Surveying is the principal gateway into the profession and more students are always needed to feed into the profession. The Institute and its members must do much more to promote the image of surveying.





## Diane Moriarty

My tenure as editor of *Surveying+Spatial* spanned the four years between June 2013 and June 2017. These four years were some of the most rewarding working years of my life and helped fill the void between babies and re-joining the workforce.

When I took over the reins, NZIS was in a state of re-structure, with the new constitution balloted in by members in May 2013. This restructure was a perfect opportunity to also undertake a refresh of the magazine. I relished the opportunity to take on this challenge and published my first edition with a new cover, layout and content.

Introducing regular features Technology, Perspective, News, Legal Column, BCB Commentary, Surveyor-General, and University Happenings. Later, as the magazine progressed with the changing structure of the institute, there was the inclusion of regular features by the professional streams.

The magazine refresh was definitely an evolutionary process, with the final design and new name *Surveying+Spatial* being launched in August 2014. The final product, a collaboration between myself, S+SNZ National Office and publisher KPMDesign, is a professional publication, which I believe matches or betters other magazines within the industry.

My most memorable edition was Issue 75 – August 2013, put together to align with the 125-year anniversary of NZIS and the 50-year anniversary of School of Surveying. In this edition I compiled a timeline entitled “50 years – A brief history of Survey School”.

Pulling this together involved numer-

ous phone calls with the school’s ‘royalty’ including the likes of John Baldwin, Mark Smith, Brian Coutts, John Hannah, Mick Strack, and the late Chris Hoogsteden. I fondly recall my evening conversation with Chris, which spanned a good two hours as he reminisced and recalled school events of the past.

On reflection, I am very grateful to have been given the opportunity to be part of the magazine and to shape its new look. I feel privileged to have met so many interesting and knowledgeable people and also honoured to be given almost full autonomy over the production process. It became my baby and I am extremely proud of what I achieved.

It has given me confidence in my writing and I discovered the part of the job that worried me the most (the editorial) was in fact what I most enjoyed. However it seems with the title of “Editor” on my CV, I am now perceived as a literacy expert, which is definitely not the case. Although my proof-reading skills have certainly improved and I am not too bad at the literacy questions in our daily quiz at work.



Rachel Harris – Editor from  
2017-current

I took over the editor's role from Diane in 2017, emerging from journalism maternity leave and a desire to move back into a more specialised form of media.

Having previously worked in the engineering world, the survey and spatial industries were appealing to me and I have continued to learn a considerable amount about the profession.

Through the editions and S+SNZ conferences I have met a wonderful network of professionals and it has been a privilege to work with all our contributors and industry representatives.

A special highlight for me has been meeting the highly skilled and specialised members in the industry at the national conferences and learning about some of the new innovations and research that is driving the future of the profession.

It is always enjoyable to read through the variety of articles from the different streams and across the industry. I have particularly enjoyed the personal stories which have involved volunteering, utilising professional skills abroad



and in  
some-  
times ex-  
tremely

challenging and inhospitable environments, such as Peter Otway's story of surveying in Antarctica in the 1960s that we featured earlier this year.

I have thoroughly enjoyed the variety of subject matter the magazine receives, and with the industry evolving with new technology, innovations and research, I would love to hear more from young industry professionals, of whom many are the driving force behind these projects.

With 25 years of solid foundations already laid down by dedicated editors, I am proud to continue to steer the inspirational work of the magazine into 2020 and beyond.



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# WHY A BIKE-FRIENDLY CITY IS A MORE LIVEABLE CITY

*Emily Cambridge, Beca*

CITIES ACROSS NEW ZEALAND ARE IN THE MIDST OF UNPRECEDENTED POPULATION BOOMS. WHILE THE HEART OF OUR BIG CITIES ARE BECOMING MORE VIBRANT THAN EVER, THE CAR-DEPENDENT MODEL OF URBAN DEVELOPMENT – WHICH HAS LED TO OUR SPRAWLING METROPOLISES – IS UNDER INCREASING STRAIN AS MORE VEHICLES SQUEEZE ONTO CONGESTED ROADS AND THE OUTER SUBURBS BECOME INCREASINGLY DISTANT FROM THE CENTRE.





Several could say: An example of a busy intersection in Amsterdam.

Having recently returned from a three-week Planning a Cycling City study tour hosted by the University of Amsterdam, Beca senior landscape architect Emily Cambridge shares some of her views on the strengths of Dutch cycling culture in relation to spatial and planning influences. She explores liveability in the context of Amsterdam and reflects on some of the key lessons from her experiences, which could help to make our own cities in New Zealand more liveable.

### How does land use planning influence transport choice?

Land use planning provides a macro view for the future development of a city. It is also an important factor in creating a liveable city. As I cycled around the streets of Amsterdam, I experienced a variety of urban and rural environments and felt that they were scaled 'just right'. The buildings are modest in size, street corridors provide spaces focused on people and there are local amenities on every corner including shops and parks. These key features are the result of good land use planning.

They have also helped shape my newly defined meaning of the term 'liveable city' by emphasising the importance of planning for future land use. Land use planning is not only the zoning of land use – it defines connectivity, accessibility to amenities and should also allow for transport choice.

In New Zealand, urban sprawl has only created longer distances between our homes, local amenities and key destinations. It has promoted a culture of car dependency. The kiwi expectation is that you should be able to drive and park right outside your desired destination. Accord-

ing to Van Acker et al. (2010), travel behaviour is the outcome of spatial, social and individual opportunities and constraints.

One of our lecturers, Lucas Harms, managing director of the Dutch Cycling Embassy, discussed land use planning and how the focus for future development should be away from 'suburbanisation' and towards 're-urbanisation'. It is time we restricted urban sprawl and promoted opportunities for well-integrated higher density living. In order to change the kiwi 'car' culture and realise a true level of liveability for our cities, alternative accessibility options should be prioritised and effective.

Lucas introduced us to the bike-train-bike model which is an efficient and flexible combination of transport modes. In the Netherlands the bike-train-bike system is the backbone to accessibility across the country. The synergies between cycling and transit services could also lead to a better-defined liveability for New Zealanders. In New Zealand the extensive issue of urban sprawl has made public transport inefficient and too expensive. Cycle and transit services could assist in connecting satellite suburbs and townships and make active travel options more attractive for everyone.

In the Netherlands facilities including supermarkets, covered secure parking and charging areas at transport stations assist in making the train system attractive and successful. New Zealand could create similar transport hubs in satellite suburbs and townships. These could include similar services and facilities to provide conveniences for people. These transport hubs could then be connected with high-quality cycling paths to enhance the attractiveness of the cycle-transit system. Kager et



al. (2016) discusses the relationship between cycling and transit services and how they should not be seen as one of mere competition. Public transport and cycling should be complementary. Cycling provides the flexibility at each end of the journey while the transit system provides the efficient direct link.

While visiting the Utrecht Central station bike parking facility, we observed the success of the OV-fiets. OV-fiets is a convenient rental bicycle scheme that has proven to provide an easy and accessible option for the last leg of a journey. Each day thousands of OV-fiets are used across the Netherlands to provide an efficient last-mile link for people to their final destinations. As demonstrated, when cycling is combined with transit, the bicycle can provide even more flexibility and convenience than the private car.

### Why aren't our street spaces more fairly distributed for people?

Liveability was further defined through my experiences of cycling around Amsterdam's neighbourhoods and observing people's everyday rituals and routines. Children were often freely roaming the streets on their bikes or playing together in local parks and people interacted with neighbours as they got on their bikes every morning. Small parks were full of children playing and busy supermarkets on every corner were frequented most days. The streets I cycled on were a general hustle and bustle of activity. Freedom, street activity and access to amenities are attributes that contribute to a liveable city. In contrast to New Zealand, Kiwis confine themselves to the inside of a vehicle before they even leave their property which leads to a lack of activation of our streets.

Due to this culture, New Zealanders have also become very risk adverse. There is little trust left on our streets which has restricted our ability to provide our children with freedom. Gone are the days when you could play football, cricket or hopscotch on the street. Neighbour-

hood gatherings are also a thing of the past. How can we promote liveable communities when New Zealand streets are essentially out of bounds for children due to car drivers making it unsafe?

Residential streets were once spaces for everyone to use but have become unfairly prioritised for car drivers. As discussed by Beitel et al. (2016), traditional urban street design had two core objectives which included efficient vehicle flow and adequate safety for all road users. This resulted in physically separating each road user type into designated spaces.

The car driver and car parking consume a (lot of) space, whilst pedestrians often only have a narrow path and if they are lucky a small amount of grass berm to occupy. Cyclists may be given a strip of pavement directly beside the vehicle lane and separated only by a white line. What happened to sharing our street spaces? The car is what happened... Now we are stuck with streets dominated by large spaces for vehicles and minimal safe places for people to enjoy.

In the Netherlands there is a trend away from traffic segregation, towards street design aimed at reducing vehicle speeds and increasing safety for vulnerable road users (Beitel et al. 2016). Amsterdam streets are continually giving more priority and space to the cyclists, for example,



Group photo: Emily with her diverse class of 2019. 30 students from 20 different countries attended the course.





Where have all the cars gone?

the 'gedeelde straat' puts the car as the guest ('auto de gast') through signage. New Zealand residential streets would be a great place to implement these types of initiatives. Providing less space, slower speeds and restricted permeability for vehicles will enhance the liveability, safety and attractiveness of streets for people. Then one day we might see cricket being played on our streets once again.

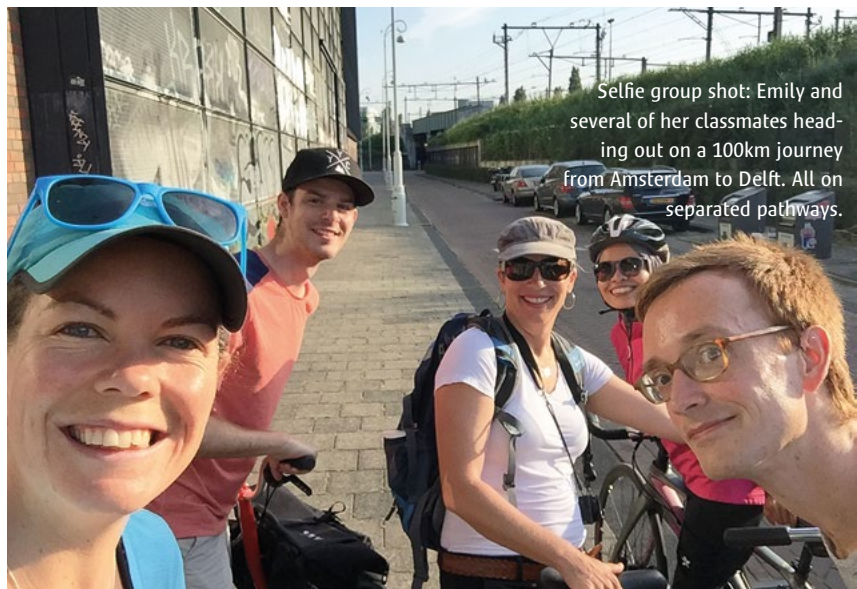
### Relevant lessons for New Zealand

Many would argue that New Zealand is very different from the Netherlands. I have learnt and experienced first-hand the cycling network in Amsterdam. While there are significant differences there are also some trends and principles that can be applied in New Zealand. Amsterdam used to be a car dominant city as well and it too had to begin a journey towards encouraging people back onto the bike. It is now 40 years into this journey and the success is evident on city streets which are humming with activity, including thousands of people on bikes.

As referenced in this article, there is a lot to be learnt about land use planning and its contribution to the development of a successful cycling network. It is also important to connect meaningful destinations within communities including schools and shopping centres, to provide a fair distribution of street space that is safe and attractive for people to use.

In New Zealand it is wonderful to see there has been a focus on developing better public transport systems. There are many lessons we can borrow from the Dutch in the planning of these systems. The key is to make sure cycling infrastructure is integrated with public transport rather than operating in competition. Providing convenient connections to transport hubs and amenities will assist communities to get out of the private car and onto a bicycle.

A key learning for me is that a change will not happen overnight. We are starting out on a journey that will take time. However, we can learn a lot from the Dutch which will help us progress faster so we too can experience the hum of activity and make our streets more liveable than ever before.



Selfie group shot: Emily and several of her classmates heading out on a 100km journey from Amsterdam to Delft. All on separated pathways.



# 5 differences between a good recruiter – and a cowboy...

Here are 5 tell-tale signs to help you discern a kick-ass recruiter from a drop-kick...

## 1. Good recruiters will meet you face to face

Clever recruiters have deep insights of the companies they represent so they'll meet you in real life to get an understanding of your personality. This will help them decide whether you'll be a good cultural fit for a business or not, which contributes massively to how much you'll enjoy working at your new company.

## 2. Good recruiters have in-depth knowledge of the industry

The best recruiters usually work with a specific industry and have in-depth knowledge of that industry. Amateur recruiters "dabble" in multiple industries. Good recruiters have built exceptional relationships with the decision-makers in their chosen industry and have access to those jobs that don't even get advertised – often the best roles...

## 3. Good recruiters keep you updated

If you find yourself desperately emailing your recruiter, pleading for progress, move on. A good recruiter will happily (but metaphorically) hold your hand through the process – they won't leave you feeling needy, like a bad recruiter will.

## 4. Good recruiters respect your career goals

If you're ever involved in a conversation where the recruiter's trying to persuade you to accept a role that you're not really interested in and it makes you feel undervalued, despite you being clear about what you want? Hang up as soon as you can.

## 5. Good recruiters focus on long-term relationships, bad recruiters on one-night stands

Bad recruiters dump your CV into the recruitment pipeline and only contact you if there's good news. Maybe they hate to be the bearers of bad news, or maybe they're just emotionless pimps. Either way, it's no good for a candidate or a business. A good recruiter walks the extra mile to ensure their clients and candidates achieve what they want.

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# DEATH of the CHAINMAN

*Darren Hocken, Eliot Sinclair*

At a recent surveyors' function, the topic of survey assistants came up in a group conversation. A director of a large multi-office survey company mentioned that they no longer employed survey assistants. This sparked some discussion and most in the group admitted that they now employed far fewer assistants than in the past.

It is no surprise that the now common usage of robotic total stations and GPS has reduced the need to have two-person field parties. However, is this going to have unintended consequences for our profession?

It would be a safe bet that it would be most, if not all, of us got our first experience of surveying by working as a chainman or woman. How then are we passing on the opportunity that we were given to discover surveying as a profession? Are we being short-sighted by not having assistants in survey teams?

In my opinion, by failing to employ survey assistants we will greatly reduce the opportunity for our younger generation to experience surveying and go on to consider it as a possible career. This is in part because school students have so little or no awareness of our industry and we do not typically feature in typical career information or advertising. It therefore falls upon all surveyors and spatial practitioners to promote and champion the job at any chance and provide opportunities for hands-on experience whenever possible. These opportunities may be short-term work experience days, or longer-term surveying assistant or trainee employment. My fear is that without these opportunities, fewer young people will discover surveying (as we did) and subsequently go on to become spatial technicians or graduates.

## Survey graduates

I understand that in recent years the number of students studying surveying at Otago University has remained relatively constant and I put that down to the good work of the Survey School staff marketing surveying to high school students. However, it would be interesting to compare the number of students that remain in surveying after graduation that had, or had not, worked as a survey assistant before or during their study.

If we are not employing many/any full-time survey assistants, then we have a moral obligation to, at the very least, employ a survey student over their study break periods. It is understood it may be difficult to charge out their time on projects where only a single surveyor is required. However, I would argue that the surveyor will be more effective with an assistant to set up tripods, dig holes, bang in pegs and carry equipment. The added benefit of a survey student is they will be very quick to learn how to use survey equipment and could help the surveyor finish a survey sooner by using a second GPS receiver or robotic total station.

It should also be remembered that university students rely on employers for summer work to fulfil their surveying course requirements (as I'm sure any former graduates reading this will recall from their own student days). Furthermore interested high-school students are actively encouraged and assisted by university and careers advisers to find local survey firms to connect with for work experience.



## Survey technicians

There has also been much commentary about the lack of survey technicians available for employment. Some of this is attributed to the change in the NZCLS and NDS education pathway.

However, most technicians (that I have met) started out as survey assistants and enjoyed surveying as a career, but the commitment of four years of university study wasn't a viable option for them. Some remain as unqualified technicians and others have completed NZCLS or more lately the NDS.

Our company is finding that the best way of employing surveying technicians is to employ young people as survey assistants and train them to be junior technicians over several years. Three of our current assistants have completed the NEXIS Survey assistant course and two are working through the NDS qualification. The course work is not easy and has had our graduates and licensed surveyors scratching their heads when asked for help.

By not employing survey assistants, we are removing the pathway for our younger generation to be survey technicians and they will potentially become an endangered species. If you are complaining about there being very few technicians available for employment, then first look at yourself to see if you are contributing by actively promoting and providing our younger generation the opportunity to experience surveying as a survey assistant.

## Field craft and good survey practice

In last year's Good Survey Practice Seminar in Auckland, several of the presenters mentioned many of the field skills of cadastral surveyors were being lost and young surveyors were lacking in good survey practice.

However, it was noted that it was not the fault of the younger generation. Instead it was entirely the fault of the older generation not passing down the skills that they themselves had learnt in the field from their master or senior surveyors.

Some older surveyors bemoan the lack of good survey practice by younger surveyors. However, they possibly fail to recognise that they and their generation have not sufficiently passed on skills and knowledge provided to them by the previous generation. If two-party teams are no longer the norm, then supervising surveyors need to ensure that a good part of their one-to-one mentoring happens in the field.

There now appears to be a mentality by some survey managers that graduate surveyors are taught everything at Survey School, and believe it is acceptable to send graduates straight out in the field by themselves immediately after graduation. I recall after I graduated about

20-plus years ago, I spent at least three months assisting an experienced surveyor before being let loose on my own survey. The field skills learnt provided a great education and something that cannot be replicated in a classroom.

The university teaching environment is not ideally suited to providing the more practical field 'tricks of the trade' – the lecture room cannot provide the context for these lessons to be meaningfully understood.

When young surveyors/graduates are sent out in the field as single-person field parties, they will also be missing out on learning skills that can be gained from an experienced survey assistant. Many graduates (including myself many years ago) have been taught a thing or two by an experienced survey assistant. The tips such as, "Have you considered doing it this way?" or "Fred (older surveyor) avoids doing that" can be very useful.

Cadastral survey field craft is being lost due to single-person field parties. The tips, tricks and techniques of experienced surveyors are not being passed down. Unfortunately, good survey practice will be lost to future generations.

## Health and safety

Survey companies also need to consider the risk when sending out single-person field parties, especially to rural or remote areas. If an accident were to happen, the second person/survey assistant could notify emergency services and potentially be the difference between life and death. Some of the risk these days is mitigated with the common use of cellphones, but the coverage as we know is not 100 per cent. Equally the safety of expensive survey equipment left apparently unattended on roadsides may, in certain parts of town, warrant another person in close proximity.

## Summary

Employing survey assistants is important to the future of our profession. The surveying and spatial profession is ultimately responsible for its own wellbeing in terms of sustainability and the recruitment of its next generation. We do not feature in Netflix TV series (although *'The Good Surveyor'* or *'LA Survey Law'* have a certain ring to them) and therefore responsibility for the promotion and longevity of the industry rests with us.

We all have the task of passing on the opportunities that we were given. By not doing so for the apparent purpose of saving money (and fattening your wallet) is in my opinion short-sighted and ultimately self-defeating. We are failing our next generation of surveyors by using single-person field parties and not employing young people as survey assistants.



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# 2019 NZSEA



Now in its 6th year, the awards continue to be as strong as ever and attract entries representing the best of the sector.



Mark Sainsbury, once again Master of Ceremonies, made sure the evening flowed smoothly with his wit and professionalism. This year we also enjoyed a presentation from the newly voted Mayor of Wellington, Andy Foster.

Special guest the Hon. Eugenie Sage Minister of Land Information presented the Supreme award to, New Zealand Geographic Information Systems for Emergency Management (NZGIS4EM) Committee, People and Community.

The People's Choice Award resulting from a vote on the night, went to Seeka Maps, a finalist in the Spatial Enablement category.

A huge congratulations goes to all this year's finalists and winners on the night. Winners of the Organisational and Individual categories are automatically entered into the Asia-Pacific Spatial Excellence Awards (APSEA).

See the full list of NZSEA winners and the entry videos at [www.nzsea.org](http://www.nzsea.org).

## People's Choice Award

### Seeka – Seeka Maps

*This is the finalist that received the most overall votes on the evening.  
Seeka was a finalist in the Spatial Enablement category.*

## Outstanding Contribution to Spatial Award

**Wendy Lawson, Pro-Vice Chancellor of Science at University of Canterbury**

## Award for Best Map Design

### Springload – Quake Nation: Te Papa Earthquake Interactive

*Springload was unanimously selected to win this award because it demonstrated the best use of maps as part of the entry. It's showing people how maps can be used to tell complex scientific stories and educate the public.*

## Environment and Sustainability Award

### Land Information New Zealand / Marlborough District Council

*The partnership between Land Information New Zealand (LINZ) and the Marlborough District Council (MDC) to map Queen Charlotte Sound/Tōtaranui has been described as one of the most comprehensive science mapping projects undertaken around New Zealand's coastline.*



Members of the Fox and Associates team receiving their 2019 Technical Excellence Award



## Innovation and Commercialisation Award

**Trimble Inc.**

*Trimble SiteVision enables you to "see what you cannot see" and to view and understand complex spatial information accurately in the real world – underground power cables, pipes, and in-situ designs that will exist in the future. The augmented reality system visualises things that would be difficult to identify in plan and cross section drawings with centimetre scale accuracy in 3 dimensions. This product will contribute significantly to urban planning and improved safety across many industries.*

## People and Community Award

**New Zealand Geographic Information Systems for Emergency Management (NZGIS4EM) Committee**

*Established in 2018, the NZGIS4EM committee is a shared and coordinated voice for the use of Geographic Information Science in Emergency Management in New Zealand. This relatively small volunteer community is rapidly expanding and is making some big contributions to the emergency management space.*

## Spatial Enablement Award

**Abley**

*Mega Maps' is a geospatial web application that displays multiple road risk layers in a single location to assist Road Controlling Authorities improve the safety of their road networks. One of the key layers is an Infrastructure Risk Rating which has become an Australasian benchmark for road risk assessment and mapping.*

## Technical Excellence Award

**Fox and Associates Ltd**

*Fox and Associates Ltd were early adopters of emerging Drone technology in 2015 and recently provided a supply of high quality and ultra-high-resolution imagery to a Canadian data analyst company. Their imagery helped their Canadian colleagues to develop their machine learning software for farmers to detect and geo-locate specific anomalies, pests and diseases in their fields. The success of the project is one step towards helping ensure food supply security and critical to feeding the world's growing population.*



Mark Nichols, Professional of the Year  
with Rebecca Strang, S+SNZ President



Nick Stilwell accepting the Young Professional of the Year Award  
from Anne Harper, SIBA on behalf of Melissa Harrington

# 2019 NZSEA

## Education and Professional Development Award

**Claire Thurlow, Eagle Technology**

*Claire has distinguished herself as the driving force behind the GIS in Schools programme and continues to empower the "Future GISer's of New Zealand.*

## Professional of the Year Award

**Mark Nichols, Trimble Inc.**

*The commendations Mark has received from his peers demonstrate great esteem, and initiatives he has led have had far-reaching and undeniable impacts on the industry. His technological innovations over an impressive 30-year career have "literally transformed the way surveyors do their work.*

## Student of the Year Award

**Rosey Harris, Victoria University of Wellington**

*Rosey's contribution to the industry while still at undergraduate level is stand out and the judges eagerly look forward to seeing her career progress within the industry - she clearly has the potential to be one of those leading the sector forward in the future.*

## Young Professional of the Year Award

**Melissa Harrington, Trimble Inc.**

*As the Chair of the Young Surveyors Network, Melissa has dedicated significant time and effort to the growth of her industry and has demonstrated outstanding leadership. Her contributions both locally, nationally, and globally have been acknowledged by the judges and this award is one of many she has rightfully earned. Melissa's commitment to her own professional development and of those around her will have a lasting impact on the geospatial industry.*





# S+SNZ Awards

## Members' achievements recognised with 2019 Honours and Awards

THIS YEAR WE RECOGNISE DAVE ROBINSON'S ACHIEVEMENTS WITH TWO AWARDS; THE 2019 BOGLE YOUNG SURVEYOR OF THE YEAR AWARD AND THE PERCY DYETT AWARD FOR THE AS BEST OVERALL LAND DEVELOPMENT ENGINEERING CANDIDATE IN THE PROFESSIONAL EXAMS.

The Percy Dyett Award was announced and presented to David at the S+SNZ conference earlier this year in May. The Bogle award was presented at the AGM in Wellington 7 November. David is the current Chair of the Christchurch Branch and works for Aurecon in Christchurch. Well done David!

John Macfarlane of Cuttriss Consultants, Lower Hutt was the winner of the Maurice Crompton-Smith Memorial Prize,

also announced at the conference. This award was for the best set of projects for a Certificate of Competency.

Nicki Leeann Shaw of Cheal Consultants in Taupo was the recipient of the State Sector Award for the highest placed candidate in the Cadastral Law Examination. Nicki also received her award at the AGM.

Congratulations to Nicki, David and John on their impressive achievements!



Rebecca Strang, President, presenting the awards to David (left) and John at the Auckland conference in May.



Simon Jellie with Rebecca Strang (left); Barry Greig (right)

## Two New Fellows for 2019

This year we have two members honoured with a Fellowship; congratulations to Simon Jellie of Wellington and Barry Greig from Nelson.

Simon has been a member of the Board of S+SNZ for six years, serving as the Stream representative. His role helped to ensure that the organisation and its members are ready to take advantage of the rapidly evolving environment. His contributions to the governance during a period where the organisation embraced many important changes were highly valued.



Nicki Shaw receives her award



New Honorary Member Dr Bruce Anderson with the President

Barry has over the years been a dedicated advocate of NZIS and S+SNZ, promoting the value of the organisation through clients, local government and other business associates.

Read the [full citations here](#).

## Honorary Membership

Dr Bruce Anderson was given an Honorary Membership in recognition of his long-term service to the S+SNZ Board during which time he made a significant contribution to the development of governance practice.

He made vital contributions to the development of the strategic plan, the Governance Manual and to many letters to Ministers and other documents that the Board and CEO developed.

Bruce's governance experience and his knowledge of government and ministers was a great asset to the S+SNZ Board.

Congratulations go to all this year's award and honour recipients.



- ▶ Surveying and Landonline
- ▶ Subdivision & earthwork design
- ▶ Drainage & Analysis
- ▶ Point cloud data



- ▶ Job data collaboration
- ▶ Job task management
- ▶ Email tracking
- ▶ File issue control

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*Karin Knedler, Advocacy and Policy Manager, Survey and Spatial New Zealand*

*Julia Glass, Land Development and Urban Design Stream Leader, Survey and Spatial New Zealand*

*Matt Ryder, Cadastral Stream Leader,<sup>1</sup> Survey and Spatial New Zealand*

THE ADVOCACY ROLE OF S+SNZ HAS BEEN DEVELOPED AND SHAPED OVER THE PAST TWO YEARS, HELPING TO RAISE THE PROFILE OF THE SECTOR.

### **What is advocacy?**

We're often asked: "What is the difference between advocacy and lobbying?" In brief, "all lobbying is advocacy, but not all advocacy is lobbying".<sup>2</sup> Advocacy is an activity that aims to influence decisions whereas lobbying is a specially focused form of advocacy with the purpose to influence legislation. The time period over which advocacy takes place on a particular issue can be short or long depending on the issue and where it is at along the continuum from initiation to legislation.

### **Why is advocacy important?**

Advocacy is important for a number of reasons. Perhaps the two most important reasons are: first, to reliably and

authoritatively inform development of policy and legislation and, second, to advocate for the profession by making our views known. Advocacy also serves to raise the profile and reputation of S+SNZ.

Limited resources, however, mean most S+SNZ advocacy is focused on priority areas set out in the Letter of Expectation<sup>3</sup> and on national issues that align with the strategic goals of the organisation. Those have been informed by members' input such as the annual stakeholder workshops. Local, single issue advocacy is primarily driven by branches with support provided by National Office where possible and especially where local issues are found to be more widespread.

Before 2018, advocacy on major issues tended to be done by ad hoc groups set up to deal with single issues or



advisory groups set up to encompass a broader area that would also deal with any advocacy required. However, the establishment of an advocacy function within National Office in late 2017 has centralised the coordination of much of S+SNZ's advocacy.

### **Where does 'engagement' fit in?**

Engagement and advocacy complement one another. We engage with stakeholders in key areas such as central and local government, and with the private sector with like-minded organisations. This allows us to get to know upcoming areas of work that are of potential interest and to be able to inform and influence at a number of stages in the course of developing policy and legislation. Those stages include initial scoping and informing and being a party to initial consultation.

Subsequent stages take on a more visible advocacy nature and may include making submissions in response to wider, public consultation (especially by government departments), or making submissions on proposed legislation or national strategies to select committees.

Over the past two years we have participated in all these areas. In addition, S+SNZ supported a member in seeking a declaratory judgment from the Environment Court on a question of law relating to the Resource Management Act 1991.

### **What is our impact?**

Measuring the degree of influence and impact that we have is more difficult. It is hardest to measure at the initial stages where we may be participating along with a number of others in scoping, as part of reference groups or through funded specialist input during the course of a major project.

At the other end of the advocacy process, any change resulting from a submission to select committee is easiest to measure although that may also be attributable to other submitters all making the same point.

As a general rule, the potential for greatest influence is through involvement and helping to shape thinking at the earliest practical stage, and more difficult at the end stages unless significant issues and implementation problems come to light. That is why it is easier to identify impact when there has only been late-stage involvement which has directly resulted in change.

### **Member input**

Professional organisations are a crucial component of the legislative process as they seek to develop and implement sound public policy. Irrespective of the stage we become involved at, the most important thing is expert information and quality analysis to reflect professional concerns and views.

For surveying and spatial matters, our members in the relevant stream(s) are the source of that information and analysis. National Office can provide the coordination, and assist with the writing of the submission so that it has the greatest possible impact.

There are also instances where specialist policy and legal skills and knowledge of the machinery of government held by National Office staff can provide or add further analysis. In many cases it has to be a team effort combining knowledge and skills to seek the greatest influence or impact.

### **An overview of where and what we have tried to influence over the past two years**

S+SNZ has provided input on a number of issues over the past two years. Some input is ongoing on longer term projects where S+SNZ members have particular expertise while other input has been in response to either targeted or public consultation. Much of the advocacy work has been published on the advocacy page of the website and is summarised below.<sup>4</sup>

#### **Early stage influencing**

Two key examples are where S+SNZ or its members are providing sustained, longer term input to Land Information New Zealand (LINZ) and the Surveyor-General. There has been specialist input into the Landonline rebuild through a funded lead consulting surveyor for the past two years, and all the licensed cadastral surveyors on the Reference Group for the *Review of the Rules for Cadastral Survey* are members of S+SNZ.<sup>5</sup>



### ***S+SNZ targeted input***

S+SNZ has been specifically asked for input on several matters where our members are stakeholders. LINZ has consulted with S+SNZ on proposed changes to Landonline terms and conditions, and on the use of the overseas public cloud as part of the Landonline rebuild project. In addition, the Positioning and Measurement Stream, S+SNZ branches and National Office provided support to LINZ's national roadshow on implementing NZVD2016 after the successful joint S+SNZ – LINZ NZVD2016 workshop in Napier.

S+SNZ is also consulted on board representation. This year the Minister for Land Information asked S+SNZ to provide nominations for the Cadastral Surveyors' Licensing Board, and the Minister for Building and Construction asked for nominations for the Engineering Associates Registration Board.

### ***S+SNZ submissions as part of broader public consultation***

S+SNZ has also participated in public consultation led by three government departments (LINZ, the Ministry for the Environment (MfE) and the Ministry for Primary Industries (MPI)). Over the past two years S+SNZ made formal submissions to the Surveyor-General in response to two consultation documents on the Review of the Rules for Cadastral Survey.

Last year S+SNZ made a submission to MfE on draft planning standards advocating, among other things, using NZVD2016 as the standard vertical datum. NZVD2016 has been incorporated in the finalised National Planning Standards<sup>6</sup> which require use of a vertical datum in new policy statements or plan information (incorporated through a policy statement or plan review, change or review) to be consistent with NZVD2016.

This year, further submissions to MfE have followed on the proposed National Policy Statements on urban development and on highly productive land. Most recently a submission was made to MPI on action for healthy waterways.

### ***Select committee and legislation-related activity***

The lengthy process of legislation development means there is often no proposed legislation before the House of Representatives relevant to the survey and spatial sector on which S+SNZ can make submissions to parliamentary select committees. This has been the case over the past two years.

However, occasionally other opportunities arise to make written and oral submissions to select committees such as occurred when the Governance and Administration Com-

mittee called for submissions on the National Disaster Resilience Strategy. S+SNZ was able to highlight the role of survey and spatial professionals as first responders and subsequent response and recovery roles following earthquakes, floods, slips and other natural hazards.

S+SNZ supported a member in seeking a declaratory judgment from the Environment Court that a conversion of cross-lease title to fee simple title did not constitute a subdivision under the Resource Management Act 1991. Though the court disagreed, the judgment provided clarity on the issue and also that consent authorities should not impose onerous conditions on those seeking conversion.<sup>7</sup>

### **Reflection**

The voluntary contribution of S+SNZ members' expertise is critical in progressing advocacy on matters important to both professional and related national interests. Over the past two years this has placed a particularly heavy burden on the Land Development and Urban Design Stream and the Cadastral Stream, mainly because of input sought by LINZ on the review of the Rules of Cadastral Survey and the Landonline rebuild project, and by MfE on resource management issues. These have raised both the visibility and the value of S+SNZ input at central government level.

Other streams and branches have continued with long-term engagement with their stakeholders and achieved visibility and impact particularly at local government level and among professional groupings with similar interests. Those will be showcased in a future issue.

#### **NOTES**

1 Matt Ryder retired from Cadastral Stream leadership at the 2019 AGM.

2 Advocacy & Communications Solutions:

[www.advocacyandcommunication.org/wp-content/themes/acs/docs/resources/redesigned\\_tools/Difference\\_in\\_Lobbying\\_and\\_Advocacy.pdf](http://www.advocacyandcommunication.org/wp-content/themes/acs/docs/resources/redesigned_tools/Difference_in_Lobbying_and_Advocacy.pdf)

3 2019-20 Council Expectations for the S+SNZ Board: [www.surveyspatialnz.org/Attachment?Action=Download&Attachment\\_id=5565](http://www.surveyspatialnz.org/Attachment?Action=Download&Attachment_id=5565)

4 <https://www.surveyspatialnz.org/members/advocacy>

5 Review of the Rules for Cadastral Survey: <https://www.linz.govt.nz/land/surveying/rules-standards-and-guidelines/review-rules-for-cadastral-survey>

6 National Planning Standards: <https://www.mfe.govt.nz/publications/rma/national-planning-standards> (p 67)

7 Environment Court Decision on Cross-Lease Titles Released: [https://www.surveyspatialnz.org/news\\_and\\_events/Story?Action=View&Story\\_id=187](https://www.surveyspatialnz.org/news_and_events/Story?Action=View&Story_id=187)

# Satellite data is key for the future of NZ's primary sector

*Andrew Clouston, Critchlow Geospatial*



## WHY SATELLITE IMAGERY IS A KEY ANALYSIS TOOL TO VISUALISE AND MONITOR CHANGE, SUPPORTING DECISION-MAKING.

As a driving force of New Zealand's economy, the primary sector encompasses the agriculture, forestry, horticulture and seafood industries. These industries produce, process and move goods around the country, as well as export around the world.

The sector is regulated by the Ministry for Primary Industries (MPI) and earns the country billions of export dollars every year.

The changing nature of the primary sector means it needs to be certain that it has the right tools and data to meet current and future social, environmental, regulatory and sustainability challenges.

Aerial imagery is a key tool for the primary sector because it provides a critical context for decision-making; however high-resolution aerial imagery is expensive and time-consuming to collect and process. Not only that, the images themselves temporarily devalue over time, as the land is always changing. Most aerial imagery is also limited to providing a visual perspective; there's little scope for analytics.

The needs of the sector have expanded beyond the reach of aerial imagery. The sector needs timelier, more cost-effective data provision that can provide the visual and the analytics to better inform decisions. These needs can be met with satellite services.

Satellite-based foundational imagery outpaces traditional aerial imagery by enabling more frequent collection and advanced image analysis to visualise and monitor change. With this enhanced capability, businesses across the sector could see significant enhancements to their operations and growth.

Key benefits of satellite imagery are that of time:

1. Businesses can access relevant satellite imagery within hours of image acquisition, allowing them to make timely decisions, rather than relying on existing aerial imagery.
2. Business can acquire imagery that relates to natural events (e.g. floods, fire, earthquake) or seasonal needs (e.g. planning for harvesting).

Satellite imagery can provide the base for the intelligence needed to solve complex business problems, such as obtaining metrics on the total areas or volumes under

a specific crop (e.g. vineyards or forestry) and to predict crop yields. What this means for an agriculture business is they can make decisions based on an analytical perspective as well as a visual one.

Other key benefits include:

- Being able to support multiple purposes and extensive areas can be covered in a single image.
- The ability to obtain new satellite imagery as weather and soil conditions change.
- A cost-effective solution – our investigations show that existing satellite imagery can cost less than 1% of equivalent drone imagery when using a subscription service.
- Enhances business data for the primary sector, since businesses can access current and historic satellite imagery for anywhere in New Zealand (or the world).
- Access to technology and expertise – satellite imagery providers have specialised tools, including artificial intelligence, that enhance custom analysis.
- Supplements and extends other existing imagery sources such as drone or traditional Aerial Imagery

Satellite-based imagery helps uncover a 'hidden world'; to 'see' heat sources and detect change through clouds and smoke and readily distinguish between materials on the ground. Satellite images can be recoloured based on the information they're providing. So, when it comes to plant development, or land use and land cover characterisation, they're providing a measure or a visualisation.

A good example of how businesses in the primary sector can increase operational efficiency and inform policy is by using satellite imagery to plan and communicate information relating to a property. A recent satellite image will enable the owner or manager to show specific parts of the property, including any hazards, and indicate where work is required. It can also reduce the time and effort it takes to perform tasks such as site inspections, by being able to remotely view and measure features like fences and streams.

It can also improve decision-making about property development and maintenance through the ability to provide a current basemap for overlays such as: →



*Review by Emeritus Professor Peter Barrett –  
Patron NZ Antarctic Society*

***Exploring the Transantarctic Mountains by Dog Sledge  
1960-62 by Peter Otway.***

This book is a wonderful window into New Zealand's Antarctic exploration in the 1960s, based on Peter Otway's detailed diaries and superb photographs.

It tells the story of young boy from Te Awamutu with a passion for the outdoors, who was inspired by a school screening of *Scott of the Antarctic* and trained as a surveyor.

In August 1960 his dream came true and he was selected for a 16-month stint in the Antarctic, including two successive summer geological and survey exploration parties in the Transantarctic Mountains.

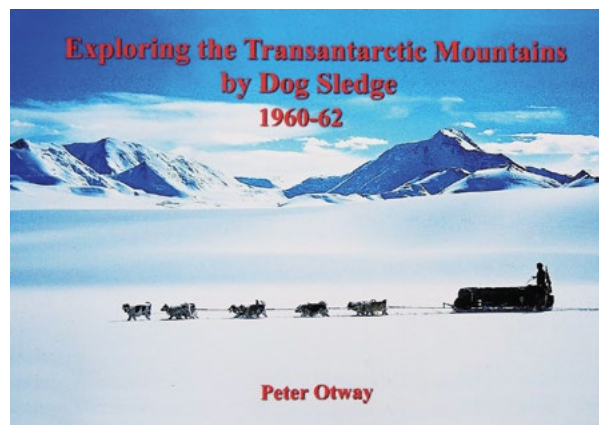
This was part of a mapping programme conceived and led by Sir Edmund Hillary's deputy leader at Scott Base for the IGY Programme and the TAE crossing, Sir Holmes (Bob) Miller. The mapping programme, which ran from 1957 to 1964 involved several four-person exploration parties comprising a leader, two surveyors and a geologist.

They lived in tents, travelling typically 1000km or more by dog team over a three-month period. The considerable challenges they encountered have been described in several books.

However, this book is special, with its focus on photographs and the remarkable range of scenes and activities they encompass. They range from spectacular views of the Transantarctic Mountains to warmth of life at Scott Base and surprisingly in field camps.



Peter Otway



They also include sledging on glaciers with their companions, the dogs, and then climbing the highest peaks for hours of survey measurements. This included Mt Fridtjof Nansen, at 4070m the highest mountain climbed in Antarctica at that time.

The topographic and geological maps from this period were a lasting achievement, but in terms of exploration, choosing to sledge down the fast-flowing Axel Heiberg Glacier 50 years after Roald Amundsen and his party sledged up it, must rank as among the most exciting.

The text throughout the book carries the story well, and it has a clarity and freshness that makes it seem like it all happened yesterday.

*As a Christmas special this book can be purchased for \$35 (+ \$5 postage if applicable) directly from the author: [otway1@xtra.co.nz](mailto:otway1@xtra.co.nz)*

- Cadastral and property boundaries.
- Existing farm mapping (e.g. fences or building) including names and areas.
- GPS track lines showing where rural contractors have applied fertiliser or sprays. These track lines can provide an audit control capability.

What this means is that satellite imagery plays a crucial role in foundational planning and communication, optimising land use, resource allocation and compliance or risk management.

With satellite Imagery we can go beyond what's visible to the naked eye through the use of multispectral imagery, including short-wave infrared (SWIR), to classify vegetation health, categorise man-made and natural material, penetrate smoke, detect fire, map minerals and more. It's game-changing technology and will enable businesses throughout the primary sector to improve their decision-making, enhance their operations and promote growth and sustainability.



# 5 THINGS TO HELP YOU FOCUS ON BUSINESS MANAGEMENT

*Edward O'Leary, Abtrac Time Management & Invoicing Software*

The best time is now!

You'll be hard put to find a news site today that doesn't have a bad forecast for the global economy. There's plenty of talk about with Brexit, and the US/China trade war.

Even locally we read that the majority of people in our lovely lands are inexorably falling behind economically. "The decline of the middle classes." Indeed, we probably all know people who are struggling right now, trying to



keep up, trying to live within tight financial constraints.

The result is businesses are struggling too, with a downturn in confidence impacting everyone's spending decisions.

Using an analogy of an old sailing ship, as captain or first officer you might have had most fun hoisting all the canvas to sail as fast as you can, or dropping anchor in an idyllic harbour for a bit of R&R. But with a bad forecast, to minimise the impact of whatever is coming, to weather the storm, you need to trim the ship and stay on deck.

As a business owner or manager, the response has to be the same when there's a bad forecast. And with there being little doubt the current economic forecast is bad, now is the time to really focus on business management.

The trouble is, for many people in business, "management" isn't something that comes naturally. Many businesses are started by people with professional qualifications and acquired skills. Their preference is to design or create, sell, advise, or plan, or manage. Managing the cash and financial performance of the business isn't their thing. They might even take money management for granted, "Having the recommended accounting software will help me keep doing what I love".

Or maybe they rely on others to do the counting.

At the best of times, that's risky. And with a bad economic forecast, it could be irresponsible.

So to weather the storm, put in place some basic business management practices. And put aside time every week for a personal update on each of them.

### **Number one is cashflow.**

Your cash flow is crucial. Cash is king, right? Start a cash flow forecast today and use it to look ahead at least a year. Use it to help you make every decision. Use it to model events you hope will never happen. What if the server needs replacing. What if we need to hire more staff. What if we have to put some staff on reduced hours. How could we save costs some other way? What if. What if. What if.

Staying on top of your cash flow. Modelling "what ifs" will mean nothing should take you by surprise. Looking ahead mightn't result in "easy come". But without a cash flow forecast, one day you might wake up and wonder "where did it go". And nobody wants that.

### **The second thing is time management.**

That doesn't mean timesheets for the sake of timesheets. It means planning time ahead and then recording actual time – so you can better plan the next bit of time ahead and better complete work within the planned time. In any white-collar professional services firm, there's no stock to manage. Revenue and profit comes from applying time

and expertise. Without measurement and management of the time consumed as the expertise is applied, Parkinsons Law prevails.

### **The third thing is invoicing.**

Who hates invoicing? Tough luck! Get your invoices out ASAP.

We all come to work to make money. Without invoices going out and money coming in, your cash flow will suffer. Get the money that your business has earned into your bank ASAP. Like many other aspects of money management in business, invoicing is sometimes perceived as a chore. Therefore it becomes a chore. If it's really that hard then review your systems. Talk to us. We'd love to help.

### **Get more out of the systems you have.**

Find out exactly what they can do. Most business systems are seriously under-utilised. One or two people know what they can do for their specific roles while other aspects of the same system are never used and at times not even known about.


Worse than that, often someone whom you trust suggests you replace your systems. It's easy to wax eloquent about some other package and sound knowledgeable. But at the end of the day, replacing your current system could be a fruitless exercise, because the new system is no better. Maybe the old system could have done what the new one does, and done it better.

Don't get sucked into feigning progress, wasting your time, and lining other peoples' pockets at your expense.

### **Remember, it's your business.**

However, there could be a genuine reason to change systems or introduce new ones. In which case as above, don't rely on anyone else to tell you what you need. How on earth could they know the intricacies of your business. Even if they know 'other businesses just like yours' consider how long it would take to train someone into any senior role in your business, with its own unique mix of personalities, skills, clients and market.

There's no such thing as a quick fix, nor a silver bullet. So even if you do hire a third-party consultant or delegate someone within your company to do the work, the decisions regarding the systems your business will rely on must be yours and yours alone. That means you need to put some honest time into the decision-making process. And do a good job of it, treating everyone else's advice with a healthy bit of scepticism be they enthusiasts for immediate change or obstructive sticks in the mud.




# Where is a river – and who decides?

Mick Strack [mick.strack@otago.ac.nz](mailto:mick.strack@otago.ac.nz)

Kendall Reid BSurv, LCS, MNZIS [kendall.reid@woods.co.nz](mailto:kendall.reid@woods.co.nz)





Banks of rivers are regularly used and illustrated as property boundaries. It is, therefore, important for property owners and surveyors to know where these boundaries are so we can provide a spatial depiction of upland riparian parcels; we can determine the centre line which defines the extent of rights to a river and its resources; we can determine claims for accretion and erosion; we can determine any legislative requirements (for example, esplanade reserves and marginal strips); and less directly, we need to consider different management regimes over rivers and their margins.

The determination of boundaries in Aotearoa New Zealand is the sole and exclusive role of a licensed cadastral surveyor (under the authority of the Surveyor-General and subject only to judicial review). The Cadastral Survey Act 2002 describes the functions and duties of the Surveyor-General in s7(c) as: "to determine how the spatial extent (including boundaries) of interests under a tenure system must be defined and described".

The Resource Management Act 1991 (RMA) section 2 states:

**bed** means —

(a) in relation to any river —

(i) for the purposes of esplanade reserves, esplanade strips, and subdivision, the space of land which the waters of the river cover at its annual fullest flow without overtopping its bank

(ii)  
in all other cases, the space of land which the waters of the river cover at its fullest flow without overtopping its banks.

This definition requires consideration of numerous other undefined factors: the waters of a river; its fullest flow (or annual fullest flow for esplanade purposes); overtopping; and banks. The interpretation requires some grammatical consideration particularly about whether everything relies on the banks or on the fullest flow.

In recent times some territorial and regional authorities have, through the resource consenting process, been attempting to prescribe a hydraulic modelling method to define a riverbank. Hydrological engineers have been involved in creating methodology using flood models and calculations to predict water position and using that position to establish the river bank location. This is causing problems for licensed cadastral surveyors who are now having to contend with councils and engineers over riverbank position.

In Auckland, a paper entitled *How Wide is the Stream* produced by North Shore City Council (now part of Auckland Council) and Beca engineers, which describes a hydraulic modelling methodology is being widely circulated by the council, requesting it be complied with during the resource consent applica-



tion process. The described method generally results in riverbeds being calculated much wider than conventional surveying methodology – increasing the areas where local authorities have unrestricted jurisdiction and reducing areas available for adjoining private land development. The methodology was supported by the Environment Court in *Whitby Coastal Estates v Porirua CC* [2009] NZRMA 269 which followed the evidence of a hydrological engineer to decide that the banks of a river could be determined by modelling the **mean annual flood** rather than by observing the identifiable physical feature of the bank.

A series of recent cases has restored common sense as well as the authority of surveyors to determine river bank boundaries. In 2016, a land developer carried out earthworks in the bed and on the margins of the Selwyn River. He was charged by the Canterbury Regional Council with an offence under the RMA of disturbing the bed of a river contrary to section 13. He admitted parts of the charge, but defended other parts on the basis that the works were carried out on his land. This required the District Court to determine what a river is and where the banks of the river are. A river can still be a river even if, for the time being, there is no water in it – as was the case for the Selwyn River.

In determining where the banks are, the council provided evidence of an engineer who used the *Whitby* precedent to argue for flood modelling. This was then appealed to the High Court where that determination was overturned. It was further appealed to the Court of Appeal which released its decision in October 2019 – *Canterbury Regional Council v Dewhirst Land Co Ltd* [2019] NZCA 486.

The Court of Appeal reviewed New Zealand and overseas precedent, the common law interpretations of a bank, statutory interpretation, and other reports produced when the RMA included the ‘bed’ definition. The principal New Zealand precedent is the case *Kingdon v Hutt River Board* (1905) 25 NZLR 145 which established the ‘bank to bank’ test whereby a river extends to the banks during normal high flows, but which overflow in exceptional flood events.

The Court of Appeal judgment, in upholding the High Court judgment, determined the bank to mean the “raised border to a water feature that constrains the water’s usual movement” and that “a river’s margin or floodplain should not form part of the ‘bed’ of a river”. It also agreed that the bank is an observable feature that might be indicated by the soil and the vegetation of the bed being of a different character to that of the margin. A report from the Ministry for the Environment to the parliamentary select committee looking at the RMA amendment stated clearly: “It was never intended that hydrological data would be required ... For most rivers vegetation will indicate approximately where the annual fullest flow is”. And “reference to

permanent vegetation could be introduced to ensure this is used to help determine the bed. Good practice should ensure this”.

The other issue that the council was concerned about was how to apply its management responsibilities for river control when it was uncertain about where the banks are. The fact that the Selwyn River is non-tidal and non-navigable means the common law doctrine of *ad medium filum* applies and the adjoining owners have common law title to half the river anyway. Although that particular argument was not brought to the case, the court confirmed that ownership of the river and of the margins plays little part in restricting a council to undertake its river control works.

The point about a natural boundary, like a river defined by its banks, is that it is natural and not surveyed. It is not fixed by marks in the ground established from calculated and reproducible measurements. A natural boundary is not capable of such precise definition and in any event remains ambulatory. Any attempt at specific and precise positioning is ultimately futile. However by applying common-sense rules of observation, the ambulatory boundary can be determined at a specific time for the purpose of graphical presentation.

In a case at the Maori Land Court (*Te Tawa Kaiti Lands Trust v Tuhoe Putaiao Trust* (2012) 50 Waiariki MB 247) about where the bank of a river is, the judge asked, “If there is specific survey methodology used by surveyors to fix a riverbed”. There is no specific methodology, but there are standard surveying precepts and practices. Surveyors are the experts in boundary definition and in gathering all the evidence required to fix a river boundary. Surveyors must continue to work with their territorial and regional councils to ensure continued understanding of the exclusive role licensed cadastral surveyors play in the definition of spatial interests and surveyors’ obligations under the Cadastral Survey Act 2002.

We propose some rules we might apply:

- The sole and exclusive responsibility to determine property boundaries, and including the identification of a riverbank as a boundary, rests with surveyors.
- River flows vary radically. The extent of a riverbed at low (or no) flow, or at flood flow do not indicate riverbank boundaries. Rivers intermittently overtop their banks.
- Because boundaries must be observed on the ground, a riverbank boundary can be recognised as **a physical and observable feature**.



# BRIAN LLOYD CURRIE

Brian was born on 9 February 1945 to Ron and Betty Currie in Whangarei. He attended school in Whangarei and excelled in his studies. He was always hands-on with a keen sense of adventure and love for the outdoors. He made his own kayak when he was about 10 years of age out of corrugated iron and tar, and later upgraded to a kayak with a wooden frame with stretched canvas. Brian enjoyed being a handyman and always kept the surveying equipment well maintained and in adjustment. He had an interest in how things worked and wrote his own programs for the various calculators he had over the years.

Brian became a Christian at a young age. He joined Boys' Brigade and loved the social, physical, mental, and spiritual things it gave him. He met Glenys when he was 17 at youth group and would cycle all the way out to Maungakarama to visit her. Brian and Glenys married on 26 March 1966.

One of his leaders at Boys' Brigade was surveyor Dave Reyburn, who encouraged Brian to consider the profession. Brian's love of the outdoors and his mathematical mind made surveying a good choice for him and he took a cadetship in Whangarei under Dave's leadership, quickly acquiring the qualification.

As newly-weds, Brian and Glenys saved hard and had a house built in Sorrento St, Onerahi. Then they moved to



Perth and later Tasmania for their big OE, Brian working as a surveyor. Julianne, their eldest daughter, was born in Tasmania. Returning home to Whangarei, Brian established his surveying business in 1974. He always had time for his growing family though – Alison was born in 1971, Simon in 1974 and Timothy in 1976.

After building a spacious new home in Boeing Rd, Onerahi, Brian and Glenys started taking in short-term foster children, and later permanently fostered three sisters, Esther, Nora and Marie, who became a treasured addition to the Currie family. Later, the family expanded with 14 grandchildren. The loss of Tim in 2010 to brain cancer was especially difficult for Brian and the family.

Brian was a hard worker, working from home often late into the evenings to establish his business and provide for his family. He earned a reputation over the years for his honesty, integrity and dedication to his clients. After an initial slow period starting up the new business, Brian was always kept busy. His advertising was by way of word of mouth from his satisfied clients.

In 1991, Brian was joined by graduate surveyor Wayne Birt. Brian was generous with his time and set about passing on his knowledge and experience and did all he could to assist Wayne complete the requirements for registration. He passed on his ideals of honesty, integrity and dedication.



I hope you have been following the story of New Zealand surveyor Toby Stoff and his campaign to have the title for the steepest street in the world returned to Dunedin's Baldwin St.

Toby has taken the 'bull by the horns' and flown to Wales to survey Ffordd Pen Llech, the competing street in the town of Harlech that now holds of the Guinness Book

of Record title. This is all good fun but does highlight a number of things about our industry.

The first is the way that Toby's old Survey School classmates have generously fundraised for one of their own to fly across the world allowing him to get on site in Wales. This speaks to the strong bonds formed in those university

(continued bottom of p44)

(Brian Lloyd Currie continued)



Brian as a young surveyor

Brian had a quiet manner that got him a lot further than if he had been aggressive and used a raised voice. At one time he had a client who had been having boundary issues with a man who featured on the TV show called *Neighbours from Hell*. While working at placing one of the required boundary marks, he threatened Brian and wanted to obstruct the work as much as possible.

He forbid Brian from entering his property to do the surveying work. He used colourful language and at a volume that a stone-deaf man would clearly hear on the oth-

er side of the hill. Brian continued driving the peg in as the man raved at him. He just kept quietly assuring him that he would not step onto his property, and he didn't. As he left he reassured the man that he had not trespassed, but warned him that it was a legal offence to tamper with a survey peg.

In 1998 Brian suffered a brain aneurysm but he worked hard to recover. It did slow him down, and brought him a lot of frustration that he couldn't achieve what he had previously been able to.

It was at a time when the profession was going through big changes with the advent of Landonline and a step-change in how surveyors were expected to process and deal with cadastral surveys. At the same time there were numerous changes occurring in the various planning documents in use. Brian continued to work in the surveying business until his retirement in 2008.

After retiring, Brian was able to spend more time with his family. Brian and Glenys joined Friendship Force and started travelling overseas and staying in the homes of local residents, and reciprocating the hospitality as many travellers came to stay with them.

Brian suffered from a heart condition but in recent years he had been much brighter and more energetic. His death on 23 July 2018 was a shock. He was loved and respected by many people. Many of his clients became lifelong friends. He is sorely missed.



# University of Otago recognises surveyors

Christina Hulbe

Among the people who have been recognized by the University of Otago during its 150th year are two surveyors: William Robertson (ONZM, RPSurv) and Rebecca Strang. Bill will receive an honorary Doctor of Science and Rebecca will give the graduation address in the ceremony when he receives it. Bill and Rebecca both represent the best of what surveying and spatial have to offer — talented professionals who see their work as about *people and place* and whose service ethic benefits both the profession and the communities around them. You will all be familiar with Rebecca's work as immediate past President of S+SNZ so I thought I'd share with you a few remarks about Bill.

Bill Robertson's contributions to the Surveying profession are extraordinary in their breadth and long-lasting influence at Otago, in Aotearoa New Zealand and around the world. Chances are, you benefit from Bill's more than 60 years of service to New Zealand every time you plan a road trip, set off to explore a National Park, buy a house, or even exercise your right to vote.

Bill began his working life in 1954 as a drafting cadet with the Lands and Survey Department, 8 years before the Otago surveying course began. He was soon appointed survey cadet, beginning a career that took him deep into the Aotearoa New Zealand back country, south to Antarctica, north to Malaysia, and across the globe as a land administration expert working for NZAID, the World Bank, FAO, and others, and to the Middle East and Africa where he helped determine the locations of disputed international borders.

One of Bill's his early posts as a surveyor was to Dunedin, where he made all the calculations for the Otago section of the nation's new comprehensive series of medium-scale maps. In the 1960s he combined surveying and planning skills to identify, nationwide, high-value landscapes for environmental preservation.

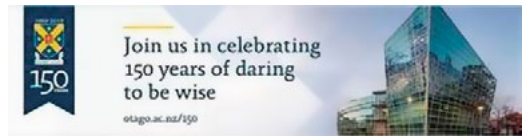
Bill was appointed Surveyor General and Director General of the Department of Survey and Land Information (DoSLI) in 1987, a position he held until 1996. This was

a time of considerable change in New Zealand government and in land administration. Bill's accomplishments during this time include overseeing the transition to digital technology and a cost recovery model that managed to increase revenue and achieve cost control without loss of staff; creation of the national digital cadastral database; new procedures for drawing electoral boundaries; and the 1990 publication of *He Korero Pūrākau mo Ngā Taunahanahatanga a Ngā Tūpuna, Place Names of the Ancestors*,



*A Maori Oral History Atlas* (compiled by Te Aue Davis and edited by John Wilson).

Bill's support for the National School of Surveying has been consistent and strong throughout our existence. He worked closely with Professor Basil Jones to establish new BSc degrees and having been party to their establishment, he then supported the degrees in their early days by moving DoSLI technical staff to Dunedin so that they could enrol as full-time students. This up-skilling produced a generation of men and women who formed the backbone for many of the digital mapping innovations subsequently undertaken by DoSLI and Bill stood alongside the School as it move into digital mapping technology itself.



Following his retirement from DoSIL, Bill became a highly respected expert consultant, involved in the demarcation of five international boundaries in Africa and Asia and he contributed an article and the forward to the International Federation of Surveyors (FIG) 2013 official publication on the matter, *International Boundary Marking*. He has provided independent consultation on land administration projects for the World Bank and United Nations in Vanuatu, Zimbabwe, Pakistan, Cambodia, Philippines, China, Albania, Thailand, Vietnam, and Australia.

Bill's depth of knowledge regarding land tenure and land rights is important here at home as well. He has written consultative reports on land administration for government and co-wrote the New Zealand Institute of Surveyors 2009 *Māori Land Committee Report, Review of Te Ture Whenua Māori Act 1993*. The report advocated that

Māori Freehold Land Tenure should be directed by the aspirations and objectives of Māori owners, their whanau, hapu, and iwi. It called on professional surveyors to be agents of positive change in this regard.

William Robertson, a man who grew up on a farm and started his academic life at a school with 9 students, cares deeply about human development and its connection with the land and its history. Those values have been clearly expressed throughout his life and career as a surveyor. His support for the University of Otago's National School of Surveying came at an important time in its history and in the development of the surveying profession in Aotearoa New Zealand. He represents the best of the surveying and spatial profession and we in the School are immensely proud that the University of Otago is recognising both Bill and the profession in its 150th year.

(University Happenings continued from p42)

days and how readily we can call upon old comrades for assistance and support. Toby was also supported during his survey work by an old classmate, Sam Harman, who currently works in Aberdeen.

The second thing that this highlights to me is that we work in a specialist field, and hold certain skills and expertise that are fundamental to so many areas of building, construction and development, but are not well recognised by the public.

The Guinness Book of Records appears to have accepted a flawed methodology for measuring the gradient of the Welsh street – allowing the grade to be measured along the inside curve as opposed to the centreline, greatly exaggerating the result.

We all know from basic roading studies that this is very wrong. Indeed, Toby's survey work has now verified that Ffordd Pen Llech is not steeper than Baldwin St in Dunedin, so while the Welsh may have their Guinness record for now, we New Zealand surveyors can be satisfied in knowing that by internationally accepted engineering standards, Baldwin St is steeper.

This has been a great opportunity for Surveying and Spatial to receive front-page coverage in newspapers, television and other media – very valuable exposure for surveying and great work by Toby.

To leverage this exposure we have worked closely with Otago University's marketing department and have produced a number of videos and other material featuring Toby and students measuring steep streets (it's not difficult to find other steep streets in Dunedin to prove the centreline point): [www.lnkd.in/gsrKS4J](http://www.lnkd.in/gsrKS4J).

At the recent S+SNZ AGM in Wellington, the stakeholder session discussed the promotion of our industry. This is not a new topic and has debated many times before.

How do we, among other things, maintain the right to certify civil works with local authorities, keep our credibility in the design of urban streets and neighbourhoods, and have organisations such as the Guinness Book of Records know that an RPSurv or licensed cadastral surveyor would be right person to ask to measure the steepness of a street correctly?

These questions and others about promotion are all important to the recognition of surveyors and spatial professionals. Appearing on TV news helps, but a long-term and sustainable strategy is needed to first acquire some level of public understanding about surveying, and to maintain it.

Also announced at the AGM was the new Council members of S+SNZ. I have now taken over from Professor Christina Hulbe who has served the Council diligently ever since her appointment to the Survey School in 2013.

One of my new duties is to bring you *University Happenings*. Another is to get busy with colleagues, S+SNZ and others on a long-term, sustainable marketing strategy. Toby is playing his part but any future strategy will require effort from all members in some way. Will you level up?

[www.linkedin.com/posts/m%26p-survey-equipment-ltd\\_harlech-worldssteapestroad-worldssteapeststreet-activity-6598235223400558592-89Pm/](https://www.linkedin.com/posts/m%26p-survey-equipment-ltd_harlech-worldssteapestroad-worldssteapeststreet-activity-6598235223400558592-89Pm/)





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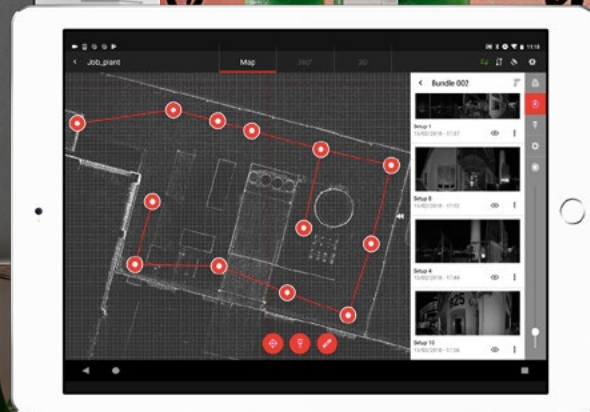
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