

Monitoring Research Quarterly, MRQ is the newsletter of Auckland Council's Research and Evaluation Unit, RIMU.

Each edition of the newsletter contains reports of RIMU's current work including information about recent publications, research, facts and trends about Auckland. RIMU publications are available on the Auckland Council and Knowledge Auckland websites.

# Introducing Dr Lucy Baragwanath



Two and a half months into my new role at Auckland Council, my voyage of discovery into its intricacies continues. It is a steep learning curve! However my patchwork quilt of a back-history seems to be proving useful in navigating Auckland Council's operating environment.

After several years working at the muddy end of the primary industries as a fruit picker, vineyard worker and herd tester in Central Otago and the Waikato, I worked and travelled in Europe and the UK, before embarking on my resource studies degree at Lincoln. With its combination of social and natural science this was a fantastic degree for somebody who can get interested in just about anything. I ended up more at the social end of the spectrum, culminating in a PhD focusing on globalisation and its implications for New Zealand, and a postdoc in the UK.

Several years as a researcher and analyst at several of the former Auckland councils, followed by a research fellowship at the University of Auckland looking at wine and tourism on Waiheke, led me to the Committee for Auckland. At the time it was lobbying hard for the amalgamation of Auckland's councils and contributing to the evidence for the Royal Commission. After Auckland Council was established, I spent a year in the Mayor's Office as advisor on the spatial plan and stakeholder engagement.

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This provided a great insight into the context for the Auckland Plan, and allowed me to read thousands of the submissions to the draft plan, which represent a goldmine of information reflecting the outpouring of love and care that Aucklanders have for their city.

As strategic relationships advisor in the Vice-Chancellor's Office at the University of Auckland, my main task was to navigate the university's relationship with Auckland Council. During this time I represented the university on the Auckland City Centre Advisory Board, which I chaired for a year and a half. I've learned that I enjoy working collaboratively amongst a diversity of perspectives, together reaching collective positions that couldn't have been arrived at individually.

Consequently I have worked for many years around the fringes of Auckland Council, observing its genesis and evolution with great interest. It has a huge influence on the lives of Aucklanders, and holds a heavy responsibility to ensure that Auckland remains the magnificent place that it is. And so it is a great privilege to join Auckland Council from July as Manager of the Research and Evaluation Unit.

It is inspiring to see the commitment and competence of the intelligent, highly qualified, extremely competent people in RIMU and beyond, who choose to use their skills and experience for the benefit of Auckland. I see my job as ensuring that RIMU's value to Auckland Council is recognised in the provision of high quality evidence through research, support and evaluation, to support Auckland Council's decision-making and the achievement of Auckland Council's priorities.

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# Vegetation changes on the North Shore

This article summarises a Landcare Research and RIMU collaborative study of vegetation changes within the old North Shore City boundaries.

Landcover is a description of the type of vegetation or built structures that cover the land. Examples of different landcover types include pastoral farmland, urban parkland, roading infrastructure, exotic forest or native forest. Each landcover type varies widely in terms of its value for different uses. For example, its value for recreation, as habitat for native plants and animals, for intercepting and retaining stormwater, and for cleansing pollutants from the air. Having the appropriate balance of urban landcover is an important component of a liveable city and this is why RIMU and the council are interested in landcover changes.

Urbanisation offers a one-off opportunity to retain, conserve and connect space for relatively intact native ecosystems and the ecological services that they contribute. Once an area is divided into small sections – which usually also involves the removal of intact soil with its diverse community of fungi, invertebrates and micro-organisms – the opportunity to enhance buffers or connectivity is largely extinguished. These opportunities are greatest in large-lot, rural-residential areas, regional parks and motorways and can be achieved by planting grassed open space or removing woody weeds.

The main tool for measuring landcover change in New Zealand is the New Zealand Landcover Database (LCDB). The LCDB is a repeated measure, digital map of the land surface of New Zealand based on satellite imagery. It is funded by central government and informs better resource management decisions and improved environmental management. This study looked at landcover changes within the old North Shore City boundaries using two LCDB measures from 2001 (LCDB2) and 2009 (LCDB3). Landcover change was separately assessed within five different 'protection zones' based on the analysis of district plan rules that provided zero or very low protection (Zone 1) to very high protection (Zone 5) for different parts of the city.



Figure 1: Percentage of North Shore City in each major landcover class in 2001 (LCDB2) and 2009 (LCDB3). Exotic trees and pasture dominated polygons are combined as 'exotic vegetation'

### Results

Between 2001 and 2009 around 590ha of the North Shore was urbanised. Urban growth largely occurred on landcover that was previously dominated by pasture and other non-native vegetation (Figure 1). Over the eight years, 403ha of exotic-forest dominated vegetation and 487ha of pasture dominated vegetation was removed for the expanding city – an average of over 100ha each year. Most of this was converted to residential subdivision. Over 140ha of vegetation classified as exotic-forest was removed in areas with the highest vegetation protection (Zone 5, Figure 2). However, more detailed aerial photo analysis indicated that these areas tended to be replaced with native vegetation, either as plantings or regeneration.

LCDB analysis identified an average of over 40ha of new native vegetation was created each year, a total of 333ha over the eight years between the two measures. The majority of this new vegetation was in areas with the highest level of vegetation protection, i.e. Zone 5 (235ha, Figure 3). Indigenous vegetation decreased in zones with low vegetation protection (Zones 2 and 3). For example, in 2001-2002 only 14ha of indigenous vegetation remained in Zone 2, and about one quarter (4ha) of this was removed by 2009. Further analysis of aerial photographs showed that loss or degradation of scrub and forest vegetation is probably larger than that indicated by LCDB analysis alone. This is because, at least for LCDB2 and 3, only relatively coarse scale changes were detected. LCDB analysis alone wasn't able to detect changes beneath the forest canopy or the loss of scattered woody vegetation within large polygons that were dominated by a different landcover (usually pasture but also houses). There is also a delay in detecting change; blocks of planted woody vegetation bigger than about 0.8ha take 3 - 8 years to be sufficiently differentiated from grass to trigger a change in landcover classification.

Getting the full picture of how landcover is changing in our highly dynamic urban environment will therefore require a combination of LCDB analysis and more detailed examination of aerial photographs and ground-based surveys.



Figure 2: Change in area coded as exotic vegetation, by vegetation protection zone, 2001 - 2009 within the old North Shore City boundaries

Figure 3: Change in area coded as native vegetation, by vegetation protection zone, 2001 - 2009 within the old North Shore City boundaries

# Recent research activities

RIMU's scientists, researchers, technical specialists and analysts have assisted with many Auckland Council projects over recent months. A list of recent publications and research related activities follows.

### New reports:

- Dare to Explore IV: Auckland Libraries' summer reading adventure evaluation, (TR2015/024)

- Electronic consumer spending patterns in Northcote town centre, (TR2015/023)

- Housing choice and preference: a review of the literature, (TR2015/019)

- Older Aucklanders. Results from the 2013 census
- Orewa Reserve visitor survey 2015, (TR2015/025)
- Parrs Park visitor survey 2015, (TR2015/018)
- Papakura Stream faecal source investigation, (TR2015/022)

- West Auckland youth alcohol and other drug experiences survey (TR2015/026)

RIMU and Te Waka Angamua jointly hosted a workshop on Māori economic development, *Defining Māori business* with lead facilitator, Sir Pita Sharples

Economists Susan Fairgray and Penelope Tuatagaloa presented papers at the New Zealand Association of

## Economists 2015 conference, Wellington 1-3 July:

- Understanding retail economics and implications for urban form, Susan Fairgray

- Pacific people in Auckland: labour market insights from the 2013 census and implications on labour market, Penelope Tuatagaloa

- The Environmental Monitoring and Reporting Team is testing cell phones for collecting, storing and transferring field data
- Dr Jarrod Walker is working with the Manukau Harbour Forum on hydrodynamic modelling for the Manukau Harbour
- We hosted a Lunchtime Learning presentation by Alison Reid, RIMU senior researcher, The housing we'd choose: a study of housing preferences, choices and trade-offs in Auckland
- Scientists and researchers wrote evidence and appeared as expert witnesses at the Auckland Unitary Plan Independent Hearings Panel hearings. Topics included Auckland's residential development feasibility; retail centres; heritage protection; natural resources; rural environment and urban growth.

The reports noted here are available on the Auckland Council or Knowledge Auckland websites.

# NIWA Science Fair. RIMU judges and student winners



RIMU prize winners: Anna, Tegan, Nina, Sylvie, Annabelle and Jett

The annual NIWA Auckland Science and Technology Fair celebrates excellence in scientific and technological investigation by year 7 to year 13 Auckland students. Students prepare scientific and technology investigation projects in response to an observation or hypothesis from five categories: the living world, the material world, the physical world, planet earth and beyond, technology.

The 2015 fair was held at St Kentigern Boys' School, Remuera. This year, the projects reached an exceptional standard covering interesting topics such as lead contamination, air pollution, water quality, dog behaviour, shellfish and new solutions to antifouling for boats.

RIMU scientists Nick Reid and Melanie Vaughan attended

the science fair to judge the projects. Melanie also attended the prize giving which was an exciting and positive evening, with students embracing their passions for science and being rewarded for their achievements. Five students received RIMU sponsored prizes:

• Annabelle Davison, Remuera Intermediate. *Atmosphere pollution test*. This project looked at air pollution from smoke from common firewood.

• Anna Schwabe and Tegan Lloyd, Ponsonby Intermediate. Are our waters clean? Anna and Tegan investigated bacteria levels in water.

• Nina Quinn and Sylvie Frater, Ponsonby Intermediate. *Pristine marine*. This project investigated the cleanliness of local water bodies.

• Jett Robertson, Saint Kentigern Boys'. *How polluted is our harbour?* An investigation off the pollution levels in Waitematā Harbour.

The NIWA Auckland Science and Technology Fair is a fantastic opportunity for scientists to support and encourage Auckland students and RIMU is exploring ways to further extend this support for next year's students. For more information, visit the Auckland science fair website, www.scifair.org.nz

# New Zealand property owners living in Auckland

Auckland's housing market has a constant media presence. Weekly stories on the unprecedented growth of Auckland property values abound. It's reported that this growth has encouraged Auckland residents to look outside the region to purchase homes. The effect of this is to drive house price inflation in other areas of New Zealand: the "Auckland effect". This stretching of residential housing investment poses the question: to what extent are the homes and buildings of other parts of the country actually owned by Aucklanders?

RIMU cadet, Jonathan Markwick, collected rates billing information from New Zealand local authorities as an indicator of Auckland's investment in other regions. Fifty-four of the 65 district and city councils provided figures. The rates notices provided cover all property types including residential and business premises. Housing New Zealand properties with a rates billing address in Auckland were excluded.

Analysing the rates billing information makes interesting reading. Fifty-eight thousand properties out of some 1.2 million (or 5%) had an Auckland rates billing address. Figure 1 shows that the Northland and Waikato regions have the largest number of properties with an Auckland owner. Thames-Coromandel district contains 7728 properties owned by Auckland residents and businesses, the highest total from councils that supplied data. This probably reflects the large number of holiday homes along the east coast of the Thames-Coromandel Peninsula. (See Figure 1)

Examining data for the Auckland-owned properties as a proportion of district and city totals reveals a slightly different picture. Thirty-one per cent of properties in the Kaipara District have an Auckland rates address but this drops to under 5 per cent for Tauranga, Rotorua and Whakatane. These proportions reduce to around 1-3 per cent in the many South Island districts. Queenstown Lakes District Council data was not provided, which might be the exception to this.

Generally, the districts and cities closer to Auckland have a higher proportion of Auckland based property owners. Forty-two per cent of properties with an Auckland rates address are situated in 11 districts within 150 kilometres of Auckland. The districts bordering Auckland, Kaipara and Waikato, have 31 per cent and 17 per cent of properties in their respective districts owned with an Auckland rates address. Both of these proportions are higher than the 5.3 per cent of New Zealand wide properties with an Auckland rates address.

Properties in non-Auckland districts that are owned by individuals or businesses in Auckland show evidence of Auckland's participation in national property markets. This shows that the Auckland property market is closely linked with the property markets of surrounding regions, giving rise to the "Auckland effect".

Further research by categorising the number of properties by use (residential or commercial) would be beneficial for looking at the activity of different sectors of the property market – For example, housing, retail, office or industrial.



For more information about Auckland related research, data and monitoring programmes visit the Research Unit's websites:

#### Knowledge Auckland

www.knowledgeauckland.org.nz

#### State of Auckland

http://stateofauckland.aucklandcouncil.govt.nz

#### Auckland Counts, census data

www.censusauckland.co.nz

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