

Transport-wise

Robert Hoddle is a Melbourne legend. In 1837, the British surveyor laid out the universally admired “Hoddle Grid” – the uniform series of streets that uniquely define Melbourne’s central business district. Major arteries were an impressive 30 metres wide to prevent bullock carts from delaying horse-drawn traffic when making right turns. Mr Hoddle understood the need for access; however accessibility challenges Melbourne’s modern-day urban planners.

In a March 2010 article entitled “New suburbs forced to adopt car culture”, Deborah Gough of *The Sunday Age* wrote “Poor design and weak guidelines governing new suburbs in outer Melbourne are increasing car reliance, with residents forced to drive to local facilities.

A new Australian Conservation Foundation report shows the emphasis on low-density housing in outer suburbs means fewer people live within walking distance of facilities such as public transport, schools and shops”.

The significance of that report was noted by Steve Abley, whose Christchurch-based company is at the forefront of New Zealand’s accessibility research and development. He believes the concept of accessibility is generally not well understood “because the relationship between mobility, opportunity and access is often ill-defined”. Put simply, Mr Abley says “accessibility is defined as the ability or ease with which activities, economic or social opportunities for example, can be reached or accessed. Therefore accessibility assessment is the measurement of how easy it is for an individual to reach a desired activity, based on a set of measurable factors”.

Accessibility planning’s relevance to New Zealand was investigated in NZ Transport Agency’s Research Report 363 (October, 2008). It concluded “Accessibility planning has the ability to



Above: Accessibility to doctors and medical centres within 20 minutes by walking (grey), public transport (green) and cycling (blue). Image courtesy of Abley Transportation Consultants Limited and ESRI.

improve the life chances of all New Zealanders by delivering improved accessibility to key services and activities such as education, medical facilities, employment, food shopping and community/social services”.

Since mid-2009, the NZ Transport Agency (NZTA) has been adapting the United Kingdom’s accessibility planning process to the New Zealand context. It also commissioned Abley Transportation Consultants in 2007 to develop a methodology enabling accessibility to be measured for a district, town, suburb or neighbourhood. Two real-world pilot projects have been undertaken so far; the Gisborne Integrated Planning project, and the Heretaunga Plains Transportation Study.

Accessibility map production involves calculating computer-simulated travel “time plots” to construct a map showing the time it takes to reach a destination.

The methodology Mr Abley developed (within an ArcGIS mapping system) measures accessibility to core land-use activities; doctors, hospitals, schools, further education, convenience stores, supermarkets and places of work. The transport networks include walking, cycling, public transport, and private motor vehicle. Data sets can also include existing and future land uses so accessibility can be forecast based on population or planned growth strategies. Land uses and transport networks can then be optimised to provide the best accessibility for all members of the community.

There are two main outputs from this work. "Threshold indicators" provide values for the number or percentage of a population that can access a destination type within a specified threshold such as time, distance or economic cost. "Continuous indicators" record the number or percentage of a population with access to a destination type, but weight the population closer to the destination higher than a population that is further away.

Mr Abley says his team had a "light bulb" moment when they returned to basics and created a "deterrence function" for people's propensity to travel that was linked to a continuous indicator – and included additional value for multiple opportunities. Essentially, if things are further away people are less likely to go to them – and more opportunity provides better accessibility. He says the main difference between continuous and threshold indicators are the shape of the deterrence function and the continuous function's ability to value

multiple opportunities.

There are a multitude of computer programs with differing methodologies that vary in price, complexity and usefulness. However, Mr Abley says the methodology his team developed for the NZTA "beats the pants off" rival off-the-shelf products because the latter typically rely only on threshold indicators which don't take into account things like parking and walking. He says "parking is part of every vehicle trip and the accessibility model NZTA uses includes how easy it is to park – or how difficult – including the walk trip from the park location to your final location".

The NZTA says new ground is being broken by adding a parking component into the methodology to provide a "true journey time". Project Manager, Susan Chapman, says the model is a lot more comprehensive because it goes down to household level; "If it's in the census, we can map it".

The NZTA is investigating how to use the tool to help inform its investment

decisions. It also sees the value of the accessibility indicators in post-project evaluation.

The signs from the Gisborne and Heretaunga Plains projects are encouraging. The Heretaunga Plains Transportation Study Review is a multi-agency project to develop a long-term sustainable transport strategy for moving people and goods within the Plains, which will benefit the region's economy and enhance its social and cultural fabric.

For the NZTA, it's an opportunity to build an access model that sits alongside the traditional transport model to see how they complement each other. Mrs Chapman says "The transport model tends to assume that if you build it they will come – people will be able to use the network, whereas the access model actually shows you who can and can't get to where they need to go to by each of the four modes". Put another way, Mr Abley says traditional transport modelling considers what people "would" do, while

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Private motor vehicle accessibility to primary and intermediate schools. Lighter areas represent households with better accessibility than darker areas.. Image courtesy of Abley Transportation Consultants Limited and ESRI.

accessibility modelling shows what people “could” do.

The first set of Heretaunga Plains accessibility maps reveals the vast majority of destinations in the study area are readily accessible by both bicycle and private vehicle. For example, 94 per cent of households are within a 10-minute cycle ride of the nearest primary school.

Mrs Chapman says that’s really useful when you start looking at which part of our network we should invest in ... if we want to reduce people’s reliance on cars.

The Gisborne Integrated Planning Project (GIP) focused on identifying access-related problems to improve social inclusion, especially for those groups most “at risk”. The NZTA says applying this comprehensive process is not without teething problems as it seeks to bring government agencies and their many stakeholders together to address access-related problems and deliver improved social and economic outcomes.

The two “most striking” issues identified in GIP, for example – access to education and healthcare – are complex and require long-term commitment to implement transport and non-transport solutions. These could include utilising spare capacity on rural school buses, walking school buses, improved cycle safety, more online learning, additional mobile health services and targeted

health initiatives for those at risk.

One of the “wins” from the Gisborne pilot has been the realisation of the potential for joint initiatives and new partnerships, which NZTA says “is likely to be especially important when it comes to funding, given New Zealand’s small tax base”.

Christchurch is another accessibility testing ground. Headline indicators will be used within the Christchurch Transport Plan to monitor access to opportunities like shopping, schools and health services. Christchurch City Council Network Planning Team Leader, Simon Ginn, says accessibility mapping is a good visual technique “in terms of being able to let non-professional audiences get a general picture of what’s going on”. However, he is looking at the use of performance indicators to identify potential strengths and weaknesses of the transport system. “Once you’ve put indicators around things you start to question how robust the methodology is,” he says.

Lessons learned in Gisborne are being used to extend the approach to other local authorities. Multi-Modal Planning and Delivery Manager, Matt Barnes, says “NZTA is moving from a funder to an investor – this tool will assist us to make sure we’re investing in the right transport solutions”. He says accessibility mapping

is a work in progress, “every time we apply it somewhere we see another potential opportunity”.

Mr Barnes also thinks one potential use is in parking provision for new developments – if a tool could show that, due to high accessibility by other modes, “you don’t actually need as many parking spaces when you put in a new supermarket compared to what the standards or district plan says”.

Mrs Chapman adds to this, saying “That’s why we say it’s a good integrated planning tool. It’s a good way of bringing together land-use planners, urban designers, and transport planners all into the same room to help try and solve problems that the maps will help highlight”.

As yet, any economic targets are relatively general and focus on achieving better value for money from existing resources and infrastructure. Improving people’s prosperity by improving access to destinations is another goal. However, Mr Abley believes the accessibility model can become an economic assessment tool “where we can say ‘look, this is the economic benefit for increasing or decreasing accessibility.’ You need to be able to talk in economic language”.

As they say, it’s work in progress. »

WRITER Owen Poland