



# Pathways

## Editorial



Shane Turner – Editor

The Land Transport Management Act (LTMA) and New Zealand Transport Strategy (NZTS) have now been in place for two and three years respectively. We are certainly seeing over recent times more significant progress on a number of priorities in these documents, such as travel demand management, dealing with congestion, more and better public transport services in our main centres and more guidance of how to promote and provide for walking and cycling.

However, in another important transport priority area, road safety, progress towards 2010 fatality targets has been slow with downward accident trends appearing to level off over recent years.

During the last ten years there have been several successful education and enforcement programmes introduced that have assisted in driving down the number of fatal and serious accidents to current level, particularly over a period where traffic volumes have been growing steadily. But to reduce the number of accidents further it is becoming evident that we'll

need to 'engineer' safer roads. We all know that engineering options are costly and it will become increasingly important to try and spread the available funding as far as possible. Beca is at the forefront of developing new tools to assess accident risk and mass action options to manage risk over a road network. Two such safety assessment tools (the Road Safety Tool Kit and Motorway Collision Diagrams) recently won awards at the inaugural Beca Innovation Awards.

Over the last six months Beca has expanded the size of the South Island transportation team. The Christchurch office now has a team of seven specialised traffic engineers/transport planners. Working with our colleagues throughout the country we can now offer a wider variety of services, including transport modelling, travel plans, public transport, walking and cycle plans and design services to our South Island based clients. This issue of Pathways outlines the full breadth of services offered by Beca Transportation.

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Workplace travel plans (see inside)

## Evaluating rail



By providing people with an understanding and interest in rail design, operations, and economics, Beca Transportation is working on a number of rail initiatives.

We are working with ONTRACK (the owner and manager of New Zealand's railway infrastructure) on the Marsden Point Rail link (a proposed 16.5km stretch of track between Oakleigh on the North Auckland line and Marsden Point's deepwater port, Northport). We are progressing work on consultation and designation requirements to a stage where, if they wish, ONTRACK could lodge a designation request to acquire the appropriate land.

We have been commissioned by the Auckland region for peer review evaluations on the economics of track electrification and on the ability to create a tunnel to form a CBD loop line in Auckland. With the Government's ongoing funding programme in rail, the capabilities Beca Transportation are offering continue to expand to match this renewed importance of rail investment.

**For more information, contact:** Graham Ramsay  
**Email:** [graham.ramsay@beca.com](mailto:graham.ramsay@beca.com)  
**Telephone:** +64 4 495 6595

## Auckland transport models



The Auckland Transport Models are used for all transport planning and evaluation projects in the Auckland region. These can relate to long-term infrastructure planning, determining Regional Land Transport policies or strategies, or for evaluating individual projects such as new roads, railway stations or road pricing studies.

The cost of developing major regional transport models means that entire re-designs are only carried out every decade or so. Beca are now working as part of an international team in developing a sophisticated multi-million dollar model for Auckland using the latest technologies and modelling techniques. Last updated in 1991, the new version is intended to forecast travel behaviour for the next fifteen years over the entire Auckland region.

Whilst mathematical modelling skills are essential in producing the models, the real skill lies in understanding and predicting people's complex behaviour from a number of mathematical formulas, and distilling the information into key messages. With a team including social and land use planners as well as transportation modelling specialists, Beca plays a crucial part in providing the information to assist in major transport decisions, and ultimately to make a difference to people's lives.

**For more information, contact:** Andrew Murray  
**Email:** [andrew.murray@beca.com](mailto:andrew.murray@beca.com)  
**Telephone:** +64 9 300 9230

## Pedestrian and cycling projects



Walking and cycling are sustainable modes of transport supported by a number of government strategies. Working for Land Transport New Zealand on a number of ongoing research projects, Beca is playing a key role in advancing the industry's knowledge regarding the preferences of users, and the safety of these modes.

Following the preparation of the "New Zealand Pedestrian Planning and Design Guide", due to be published in the second half of 2006, Beca has continued to be involved in pedestrian related research. One current project looks at how the provision of new and improved facilities attracts

pedestrians. Beca is also involved in research on walkability, defined as the extent to which the built environment is 'walking friendly'. Members of the public (some with impairments) will help assess what influences walkability.

In addition, Beca's research on the safety of sustainable modes involves a project investigating the safety benefits of reducing traffic volumes and speeds along cycle routes, and the benefit of providing facilities such as cycle lanes and paths.

**For more information, contact:** Aaron Roozenburg  
**Email:** [aaron.roozenburg@beca.com](mailto:aaron.roozenburg@beca.com)  
**Telephone:** +64 3 374 3104



## Bus priority



Bus priority is one example of how Beca's transportation specialists are helping Auckland City Council to bring new forms of transport to existing corridors. Measures such as dedicated bus lanes, signal pre-emption and bus priority at traffic signals all increase bus trip reliability, and encourage more people out of cars and onto buses.

The major challenge is finding a balance. While introducing bus lanes may appear to be the answer to congestion problems, it's actually about offering people more choice. A more efficient bus service is likely to see more people transfer to public transport, but for those who don't it's equally important to keep traffic flowing and allow for sufficient parking, without widening or building new roads.

Auckland's Central Transit Corridor project has provided Beca's team of traffic engineers with the challenge of how to transport more people throughout the city centre by bus without compromising on traffic flow. Recognising that bus passengers are pedestrians at either end of their journey, Beca is also engaged in producing detailed design for urban design and street scaping, providing for shelter, crossings, timetables and pleasant surroundings in which to wait.

**For more information, contact:** Andrew Stevens  
**Email:** [andrew.stevens@beca.com](mailto:andrew.stevens@beca.com)  
**Telephone:** +64 9 308 0833

## Traffic management planning



While Beca have been involved in traffic management planning for construction projects for a number of years, recent media attention has meant that our services in this area are growing quickly. Road controlling authorities and contractors are increasingly looking to avoid any unexpected congestion from traffic diversions.

For us, successful traffic management planning is about combining traffic engineering and the science of traffic modelling with the practical requirements that contractors need on-site. Our traffic engineers' experience of working on construction sites imparts the professional judgement, which when combined

with technologically advanced tools, provides the basis for an effective plan.

An often overlooked part of defining a plan is how best to communicate such measures to the public, providing people with the option of avoiding an area completely, or at least preparing them for potential travel delays. Our services include brochure drops directly to motorists, a programme of advertising in the media, and direct stakeholder liaison with affected residents and business owners.

**For more information, contact:** Adam Francis  
**Email:** [adam.francis@beca.com](mailto:adam.francis@beca.com)  
**Telephone:** +64 9 300 9000 ext 9338

## Workplace travel plans



Given the importance to employers of recruitment and retention, there is a growing focus on initiatives to give staff more options for how they travel to and from work. While more traditional workplace travel plans have focussed on promoting the use of sustainable transport modes, we are increasingly helping employers work with their people on also improving commuting options.

This focus reflects the makeup of our travel plan consulting team, which includes our travel plan expert Judith Goodwin, along with transport planners, human resources and communications experts.

The team are currently working with some major clients creating workplace travel plans, making use

of both simple internet-based surveys as well as café style focus groups. The process involved in workplace travel plan consultation is holistic, with employees' 'voice' forming the backbone of any outcome. In our work developing a plan for the Beca Auckland offices, we have found our approach brings a real willingness of staff to be involved, giving impetus for an effective travel plan.

**For more information, contact:** Judith Goodwin  
**Email:** [judith.goodwin@beca.com](mailto:judith.goodwin@beca.com)  
**Telephone:** +64 9 300 9065



## Congestion monitoring

With the hundreds of millions of dollars being invested in transport initiatives to address congestion, we believe that understanding and measuring it is essential.

Beca Transportation have developed sophisticated techniques to monitor and measure congestion. This information assists road controlling authorities in gaining an appreciation of where it occurs, trends in the growth of congestion, as well as being able to report on actual route travel times.

Beca's Geospatial team have developed an automatic process using the combination of GPS and GIS (Geographical Information System) to collect, analyse and store travel time information. Once the

information is in the GIS it is possible to analyse and assess the full range of travel times, variability and trends over subsequent survey years. Information is accessible from any internet-connected computer in the world.

With the benefits of GIS and Internet technology, Beca are unlocking congestion monitoring, making it available to transport planners to better tackle what is, without doubt, a billion dollar issue for road controlling authorities.

**For more information, contact:** Chris Vallyon

**Email:** [chris.vallyon@beca.com](mailto:chris.vallyon@beca.com)

**Telephone:** +64 9 300 9274



## Speed zone assessments

Excessive speed is one of the world's largest road safety problems. To help address this problem in New Zealand, the concept of speed zoning has been introduced. Speed limits on rural roads may be set for the operating conditions and physical characteristics of the road, rather than the default rural speed limit of 100 km/h.

Land Transport New Zealand is currently carrying out research to determine an appropriate methodology for setting these speed limits. Beca Transportation have been closely involved during the research stage to help determine the best method for Road Controlling Authorities (RCAs) to implement a speed zone.

Beca have carried out a number of speed zone assessments on a variety of different road types and locations using a number of different survey

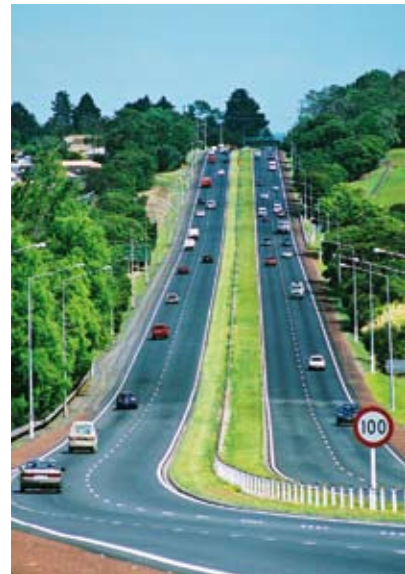
techniques (for example, travel time surveys, GPS speed profiles, spot speed surveys and road rating surveys).

"Speed Zoning provides motorists, especially motorists who have not previously travelled a route, with a better idea of the speeds at which they should be travelling, the aim is not a blanket reduction in speed limits but rather to give motorists the information they need to drive to the conditions" comments Peter Bradshaw, Beca team leader for the project, "Depending on the outcomes of the research, Speed Zoning could be an ideal way for RCAs to reduce crashes in their area".

**For more information, contact:** Peter Bradshaw

**Email:** [peter.bradshaw@beca.com](mailto:peter.bradshaw@beca.com)

**Telephone:** +64 4 233 2704



## Freight strategies

While one of the key economic drivers for a successful and prosperous city is for freight to be able to be moved efficiently and safely, often the existing roading and rail infrastructure is simply inadequate to meet modern needs.

With a keen interest in both road and rail issues, Beca staff and our key partners are working with planning bodies in identifying issues and developing strategies for freight transport. This includes such things as identifying the scale of freight movements, key strategic routes, significant origin and destination areas, and rail-freight feasibility studies. A recent innovation has been to combine congestion studies

on freight routes to identify how freight is affected by congestion within the Auckland region.

Beca's transport specialists collect and utilise data and are also involved in a variety of consultative techniques such as freight forums involving key interest groups (e.g. trucking operators, ports, distribution companies) to enable their participation in tackling issues relevant to freight transport. The results of these strategies present key information that can inform councils' policies and planning.

**For more information, contact:** Ian Bone

**Email:** [ian.bone@beca.com](mailto:ian.bone@beca.com)

**Telephone:** +64 9 300 9241



## Network safety management



Road networks are major assets of substantial value that require prudent management to make sure they operate smoothly, safely and that the necessary maintenance is prioritised accordingly. Beca Transportation works with, and assists, clients such as Transfield Services, as well as road-controlling authorities like Transit New Zealand and Territorial Local Authorities in the management of New Zealand road networks, which fall under their responsibility.

Beca is currently working with Transfield Services, managing 200 kilometres of Transit New Zealand's state highway roading network in the Rodney District just north of Auckland - as part of Transfield Services' Performance Specified Maintenance Contract. Beca's transport engineers focus on the traffic and safety

aspects of the network - conducting safety reports, investigations (fatal crash reporting), and inspection processes to identify problems.

There role also extends further, as Associate in Transportation Rob Mason explains.

"Once Beca ascertains the nature of the problems the network may be experiencing, we work through standardised processes to prioritise maintenance issues (according to available budgets), arrange them into programmes of work, and manage all the various logistics involved."

**For more information, contact:** Rob Mason  
**Email:** [rob.mason@beca.com](mailto:rob.mason@beca.com)  
**Telephone:** +64 9 300 9238

## Demand management



Demand Management is not just about engineering. It's not even just about transportation, it's really about using balanced transport investment to enhance the social and economic development of regions. We've just completed a Demand Management plan for the Bay of Plenty which covered both urban and rural sub-regions.

"For urban areas it was not a case of prioritising environmental issues over capacity issues," explains Matt Ensor. "Our goal was to maximise the benefits of all aspects as much as possible." In rural areas the initiatives were about steadily increasing access to employment, education, health and civic services for

those without realistic access to a private car, in order to support other economic development initiatives.

Beca's skills in demand management come from the range of experts in our team covering the different components of sustainable transport. We can quickly draw on experience for example in public transport, walking and cycling, travel planning and safe route approaches. Together these can contribute to increasing the number of viable travel choices available to people in the future.

**For more information, contact:** Matt Ensor  
**Email:** [matthew.ensor@beca.com](mailto:matthew.ensor@beca.com)  
**Telephone:** +64 9 300 9234

## Site-safety recommendations



Beca traffic and transport specialists provide safety recommendations for clients with large internal road networks and truck receipt operations. They've recently been working with one of Australia's leading agribusinesses, GrainCorp Limited, at the Port of Portland in Victoria. GrainCorp sought Beca's assistance for a review of their internal road network and truck receipt operations, following an incident on the site and after safety concerns were raised by WorkSafe (a division of the Victorian WorkCover Authority).

After conducting a site observation, reviewing available documentation and operating procedures, and interviewing a large number of personnel, the Beca team, led by Paul Janssen, was able to identify improvements needed for the receipt road network and the tipping platform where the trucks unload.

They also reviewed the integration of the GrainCorp road network layout with other user groups at the Port and this led to further studies.

"We were able to draw on Beca's local and international industrial site and port-related transport experience during the process", said Paul Janssen, Market Segment Leader for Roads and Urban Transport in Australia. "Not only did we put forward recommendations for each of the safety issues raised by WorkSafe but we also addressed inefficiencies in the woodchip receipt process. We were able to show our client ways to streamline their loading and unloading processes and allow more trucks through in less time."

**For more information, contact:** Paul Janssen  
**Email:** [paul.janssen@beca.com](mailto:paul.janssen@beca.com)  
**Telephone:** +61 3 9272 1545



## Working with Singapore



Beca Transportation's New Zealand team work closely with Beca South East Asia enabling our local staff in Singapore to provide traffic engineering services for our existing buildings and infrastructure clients. An advantage of working for Beca is the opportunity to be involved in SE Asian projects, with members of the New Zealand team travelling to the bustling island to work alongside our Singapore team.

Beca Transportation provides advice and reporting on traffic sensitive issues related to development projects and collaborate with Beca Singapore on essential inputs related to building projects, often working

closely with the project architects. We work using LTA guidelines, with a current project involving safety audits for pedestrian and road safety for excavation related to construction of a major new radial underground train line.

With the growing traffic engineering resources within the worldwide Beca Group, our ability to provide services to our clients in South-East Asia continues to grow.

**For more information, contact:** Lee Tuck Cheong  
**Email:** [tuckcheong.lee@beca.com](mailto:tuckcheong.lee@beca.com)  
**Telephone:** +65 6512 9338

## Passenger transport planning



One of the most exciting areas to work in transport planning is Passenger Transport (PT) planning. To provide balanced investment in transportation infrastructure, funding agencies are spending more and more on integrated passenger transport systems.

The combined capability of Beca Transportation and Parsons Brinckerhoff (PB) has been utilised by the Auckland Regional Transport Authority (ARTA) to prepare a strategy report that outlines a vision for public transport in Auckland until 2016.

As part of the strategy, we benchmarked Auckland against other international cities of similar size and geographic make-up and conducted a detailed gap analysis in relation to projected growth (population and land) for the city. The plan depicts a network based on a hierarchy of services ranging from rapid transit, through bus based high frequency transit services, and local connecting services.

Transportation Specialist Celeste Treagus explains:

"Passenger transport planning is not simply about adding more services where there are currently none. In many ways it's about relating plans to forecast land use patterns together with close consideration of the relative quality and frequency of services between trunk and local services. Good PT planning is not just about providing more services, it's about being smart about how you maximise patronage for the money you invest."

A significant outcome of the study was a reduction in the number of bus kilometres in 2016 while maintaining the same levels of patronage. This can result in substantial savings in both capital and operating costs.

**For more information, contact:** Celeste Treagus  
**Email:** [celeste.treagus@beca.com](mailto:celeste.treagus@beca.com)  
**Telephone:** +64 9 300 9063



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Send your feedback and suggestions for future issues to [landtransport@beca.com](mailto:landtransport@beca.com)

## Traffic impact assessments

Traffic impact assessment reports are typically required for all new developments such as factories, housing developments, office buildings, retail centres or educational establishments, anywhere in the world.

Beca now offers these services to our clients in Australasia and South East Asia. Services backed up by our resources of more than 100 staff involved in traffic engineering, transport modelling, planning, environmental and architectural disciplines.

Even though we're a big player in traffic engineering, Beca's transportation team don't just work on large projects. We're also working on behalf of applicants

in some instances and for Councils and consenting authorities in others.

Given our existing long-term relationships with many of our clients, our approach in traffic impact assessments is often to work with both parties so that there is agreement on traffic matters before the matter goes to a hearing. Our experience is that this may reduce the costs and time for both parties to get satisfactory development consent.

**For more information, contact:** Peter Weller  
**Email:** [peter.weller@beca.com](mailto:peter.weller@beca.com)  
**Telephone:** +64 9 300 9000 ext 9803