Article for NZ Railway Observer

THE VALUE OF LONG DISTANCE PASSENGER RAIL

by Roger Boulter and Don Wignall

We have a problem . . . .

We are a couple of transport planning consultants who saw a research gap, and thought we'd look into it. Why, we thought, is long-distance passenger rail absent from the planning of transport programmes? We've both worked on 'land transport programmes', those local council project lists ranging from repairing potholes, to building new roads, to 'walking school buses', and even support for local bus and rail services within major urban areas – but not long distance (or regional) passenger rail.

When Toll nearly withdrew *The Overlander*, there was an outcry. Questions in Parliament. Letters to newspapers. Many meetings held, and many brows furrowed over how we could get funding together to keep the old train going. Although it is still going – saved at the very last minute – long-distance passenger rail is still vulnerable, and outside the 'land transport programme' funding system.

Why, if *The Overlander* gets mass numbers up in arms, and overseas commentators praise it so highly? Are they really all nostalgic airheads? We thought we'd study overseas practice, compare it with New Zealand, and enlist some serious intellectual grunt to help us.

That last bit was crucial. The 'national land transport fund' (NLTF) overwhelmingly goes on roads. With some notable exceptions, politicians of whichever party were rather sceptical whether spending money on long-distance passenger rail was anything other than throwing hard-earned taxpayers' money after old-world nostalgia. Can you really blame them, when we hop into a car at the slightest provocation?

So no good enthusing over old steam engines, or even sleek high-tech trams. Number-crunching – involving dollars – was needed to win the day.

It's the 'Transport Economics', Stupid!

'Transport economics' tries to put dollar values not only on spending, but also on benefits, and compares the two. What benefits are there to car-loving, car-driving, middle New Zealand, from investing in rail infrastructure and services?

Overseas, it's a different world. Roger, in 2007, travelled first class from Paris to Amsterdam in four hours, getting a breakfast at his seat as Brussels and Antwerp flew by. He also took one of Britain's finest, the East Coast Main

Line, from London to Leeds in just over two hours. Where Professor Chris Nash and doctorate researcher James Jackson, at the University's Institute for Transport Studies, agreed to 'peer review' (means 'check we'd got it right') our research. Leeds Institute for Transport Studies is one not just Britain's or Europe's, but the world's, leading bodies of knowledge in transport economics.

We delved into over 100 studies, because it's unfamiliar territory to New Zealand policy makers, and we knew they'd be sceptical. Another well-respected international body, Canada's Victoria Transport Policy Institute, hosted our findings on their website, at www.vtpi.org/rail_evaluation.pdf.

Government agencies

The National Land Transport Fund (NLTF) started life about 1990 as a 'National Roading Fund', which was then 'stretched' to cover other things. Since the 2003 Land Transport Management Act, the NLTF has broadened to cover public transport, walking, cycling, managing travel demand, and road safety. But not (yet) long-distance passenger rail.

Also in the early 1990s, rail was sold, and only in the last few years brought back into the public sector, first as ONTRACK for infrastructure, then this year as KiwiRail for services. Roading, by contrast, has always been owned and funded by public sector bodies.

The government's side of the relationship with private rail operator Toll has been led by Treasury, whose main business quite obviously is managing money. In contrast, roads have come under Transit NZ, Transfund NZ and local councils, whose business has primarily been about providing, maintaining and managing transport infrastructure. So it's hardly surprising these agencies have been approaching what they're been doing from very different angles.

The NLTF has openly-published procedures, including 'how to' manuals and fill-in-the-gaps worksheets, to guide local Councils on applying for NLTF subsidy for their favoured projects. On rail, however, it's not clear even whether any procedures exist.

There is a publicly-available National State Highway Strategy, showing projected traffic levels, location maps, and indications of what investment can be expected where, and over which period. There is nothing remotely approaching this for the passenger rail system. Certainly private sector ownership (until this year), and Toll/ government discussions, complicated things, yet the *Overlander* near-closure hoo-haa showed that New Zealanders really are very concerned about what they see as 'their' railway.

Two issues where we found a gap between overseas and New Zealand practice were firstly on the need for 'strategic assessment' of entire transport

programmes, and secondly the range of benefits which are (or are not) counted for rail.

'Strategic Assessment' – losing the wood for the trees

To their credit, the NZ Transport Agency do encourage local councils to put *"packages"* together, meaning *"linked and inter-related activities"* (projects) to make sure diverse projects are working in conjunction with each other. *"Packages"*, though, rely on the creative initiative of busy officials using a system set up for individual projects. Also, even the *"strategies"* (from which *"packages"* are meant to derive) may only relate to detailed areas (say, a walking and cycling strategy).

Procedures and techniques don't readily allow road and rail projects to be compared with each other, and at no time is the programme itself (as distinct from its component projects) compared with what the government actually wants the programme to achieve.

Since August this year, New Zealand has had a new Transport Strategy, including for the first time targets to increase urban public transport use by 3% each year, increase walking and cycling by 1% each year, and reduce single car occupancy by 10% each year, over the period until 2015. This is totally new territory for the NZ transport sector – and present Transport Agency procedures and methodologies may actually hinder these targets from being met.

Let's suppose our current procedures and methodologies show a particular proposed road scores well comparing benefits to costs. The more people drive on the road, the more 'worthy' the road is for being funded, because that many more people benefit from (say) a quicker or a safer journey. Sounds fine and logical – but what if those Transport Strategy targets are met? The methodologies incorporate an assumption that traffic is rising by a certain amount each year. That's how it's always been. So how, under this approach, do we allow for the possibility of the traffic actually reducing (which, of course, would hinder the case for the road to be built), and, more than this, actually aim for this (as the Transport Strategy implies we should be doing)?

Or what if over the next few years oil prices (not just at the petrol pump) rise substantially, as many responsible commentators are predicting (even allowing for the recent dips)? That would again quite possibly reduce traffic numbers – which again is not allowed for in the traffic forecasting methodologies.

Now let's also suppose we have a proposal to improve a rail service on the same 'corridor' (basic route) as the proposed new road, and that this, too, scores well by 'benefits' compared to 'costs', again suggesting it should be built. Let's see what happens if we build both.

Some motorists may switch to the improved rail service – and this damages the prospects of getting funding for the road (behind which, by this time, a political momentum may have gathered). Similarly, the improved rail service, justification for which will rely on passenger numbers, will find it hard to build up patronage if an attractive new expressway has just been built parallel to it.

In short, New Zealand doesn't really have 'strategic assessment' in the sense we found it overseas – and without this we lose the wood for the trees.

'Benefits? What benefits?'

The old 'National Roading Fund' was based on 'safety' (measured by reductions in crashes and injuries) and 'efficiency' (measured by traffic engineering analysis aimed at maintaining or increasing speeds). The 2002 NZ Transport Strategy set broader objectives, worked into the 2003 Land Transport Management Act, which were *"ensuring environmental sustainability", "assisting economic development", "assisting safety and personal security", "improving access and mobility"* and *"protecting and promoting public health".*

These new objectives are open-ended. For example, does the 'environment' one just include things we can measure for particular projects, like noise and pollution, or also global warming effects or that growing concern of businesses and governments, carbon neutrality? The second type of effect can only ever be measured by looking at a programme as a whole, as distinct from individual projects.

Is *"economic efficiency"* just the time and safety benefits-divided-by-costs score, or does it also include, say, tourist dollars brought into the country? In theory we could count tourist dollars brought in by a particular improved rail service, yet in practice we don't. For roads, on the other hand, we have 'themed' state highways, or state highway access to national parks, in order to capitalise on exactly this type of benefit. As we've said, procedures for evaluating potential rail investment aren't clear, and overseas dollars spent elsewhere than on the fare itself won't register under a narrowly commercial approach. For rail, we fail to count all that extra spending on whale watching, ski-ing, snorkelling, mountain biking, cultural performances, leisure facility entry fees, meals, accommodation, and so on, even though they are clearly economic benefits to New Zealand.

And then those overseas visitors may tell their compatriots back home about New Zealand, which may lead to yet more visitors and spending. And don't let us think 'it's just a few student backpackers'. Some of those backpackers, when a bit older, may become their countries' shakers and movers making big overseas investment decisions. It could then greatly benefit us for them to have had a good tourist 'experience' of New Zealand!

'Outer-urban' or regional commuting may not usually be as fast as driving, but it's a lot more comfortable, there's no driving stress, and you don't need to

find a car park at the other end (or pay for it). Also, given sustained investment, there's no reason why travel times couldn't be raised to rival those by road, as they once did. Even if your business isn't within easy reach of the rail station, surely this is another chance for transport planners to fit different transport projects together so you can easily reach your destination by bus, or whatever, at the other end? The two such services which do exist – Wellington's Capital Connection and Wairarapa Connection – are both well-used by business commuters. Doesn't this suggest there may be scope for more?

A scenic tourism 'rail experience' has comfort and amenity unmatched by other ways of seeing New Zealand. Let's put to rest the claim sometimes made that the same need could be met by road-based coach. It just ain't the same! You're unlikely to attract well-heeled retirees to see New Zealand by coach – it lacks the comfort and perceived 'elegance'. The Commerce Commission has clarified that coach and rail cater for different markets.

Railways access some remote parts of the country (and sometimes this is part of their attractiveness!), which helps boost economies which otherwise might struggle. Both regions identified for special NLTF regional development investment – Northland and Tairawhiti (East Cape) – are served by rail lines which used to have, but no longer have, passenger services – and this applies to other remote regions too.

Then think of civil defence emergencies. If a main road is closed for some reason, it's useful to have an alternative rail line. We're all aware of state highways being closed by landslips at critical locations. Manawatu Gorge, with the road on the south side and rail on the north. Rimutaka Hill Road into Wellington, often because of its height closed by high winds or ice in winter, while the rail tunnel is unaffected. Or an earthquake affecting Arthurs Pass a few years back, which closed the state highway for days, and while the rail line took two hours to check and re-open.

A Two-Stage Process

Overseas there is often a two-stage process:

- **strategic assessment**, based on broad objectives, to determine the balance needed between different elements of a total programme, followed by
- **detailed evaluation**, a narrower scrutiny of individual proposals.

'Strategic assessment' embraces a range of objectives, for example an outline cost-benefit analysis of different strategic options. This is then supported by a value-for-money assessment. The two stages together should inform investment decisions and operational planning. Methods and procedures need to be of a high standard, so that we make the most of existing assets (like all that railway infrastructure laid down in years gone by, which might otherwise go to waste) and obtain good value for money. Without good assessment and evaluation processes, investment is likely to be wasteful and ineffective.

What happens internationally – strategic assessment

Good international strategic assessment examples include the 2006 Australian *National Guidelines for Transport System Management in Australia*, and the UK's 2007 *Delivering a Sustainable Railway White Paper, Summary of Key Research and Analysis, and Rail Technical Strategy.*

These show rail fully integrated with other transport planning, rather than being regarded as a 'special commercial case'. Decision-making on rail forms a full part of broader transport planning procedures and timeframes – and this doesn't depend on whether rail is in public or private ownership.

Information, modelling and assessment techniques for rail are needed, just as much as they are for road. Without the hard numbers of 'transport economics', road and rail proposals can't be adequately compared.

Strategic assessment sees the rail system as a network (just as state highways are seen), and describes conditions, identifies issues, tests future strategic options, and selects a preferred future direction. Within this, detailed routes or corridors can be planned for.

Assessment framework methods may include (for example) strategic environmental assessment, and may be used at nationwide and inter-regional levels. Supporting strategic methods may cover social, health and economic impacts.

Some form of descriptive and predictive modelling may be needed, based on the whole transport system, and measuring the effects of changes in economic and social conditions (i.e. not just things like speed and smoothness of traffic flow, which is what tends to be measured now). Strategic options should be checked for alignment with national objectives, and be responsive to issues identified in the assessment.

What happens internationally – detailed evaluation

Good international detailed evaluation examples include the 2007 UK *Guidance on Rail Appraisal*; the 2004 Scottish *The Case for Rail in the Highlands and Islands* study; and the 2006 US/ Canada *Alaska Canada Rail Link Phase 1 Feasibility Study.*

Costs and benefits of rail, over and above benefits to users, are measured. Techniques nowadays don't only include cost-benefit analysis, but also benefits to the community as a whole (like incoming tourist dollar spend).

Typical factors covered include capital and operating costs; time savings; comfort; reduced operating costs of other forms of transport; safety;

environmental costs of other forms of transport; 'option values' (see below); wider economic benefits; accessibility; social inclusion; and congestion relief.

'Option values' are the value of having the service available, even if you don't use it. The *Overlander* near-closure outcry is a good example of 'option values'. New Zealanders clearly placed a value on the train being available – an 'option' – even if they didn't use it. 'Option values' are particularly important for lightly-used 'social' rail services serving remote areas.

Cost-benefit analysis can now give dollar values to more things than it used to. Some countries give dollar (or euro) values to user charges and revenues; disruption during construction; noise; air pollution; emissions; and socio-economic impacts. There's variation in the numbers used, but general consensus about what should be measured.

It doesn't happen in New Zealand

Strategic assessment is not undertaken comprehensively in New Zealand.

The 2005 *National Rail Strategy* stated that *"Long-distance passenger rail services presently receive no central or local government subsidy"*, without saying why. Yet two months earlier, the NZ *Surface Transport Costs and Charges Study* had stated that, for long-distance rail travel, *"charges (fares) should be significantly reduced to better align with marginal costs".*

The 2002 and 2008 *NZ Transport Strategies*, 2005 *National Rail Strategy* and 2007 *National State Highway Strategy* all omitted to use systematic road-rail strategic analysis techniques. ONTRACK has developed a national rail network plan, but so far this has been treated as confidential. The Auckland, Canterbury and Wellington regional land transport strategies have each identified inter-regional issues, but none addresses long-distance passenger or freight rail comprehensively.

At the sub-regional or urban scale, a common technique called 'traffic modelling' doesn't test future scenarios well, especially on pricing. 'Traffic modelling' is geared to forecasting the impact on traffic flow, across a roading network as a whole, of changes like adding a bypass, closing a city centre street, or adding new development. Although 'multi-modal' traffic modelling may include public transport as a way of meeting travel demand, this is still focused on reducing congestion, primarily a benefit to motorists rather than to New Zealand in a wider sense. Not being geared to public transport, these models don't respond well to price changes, nor take into account the finding, known since the 1990s, that in some circumstances building more roads actually generates more traffic.

Transport proposals' 'strategic' value (mainly security of access, or keeping future investment options open) has mainly been applied to roads (for example, providing a road reserve widen enough to add extra traffic lanes to meet future predicted demand).

There are no standard New Zealand detailed evaluation techniques applicable to all transport proposals. ONTRACK undertakes route, corridor and network costing studies, but these aren't a match for full network assessment and planning.

There are two examples – not encouraging ones – of detailed rail evaluation in New Zealand. The 2001 Dunedin-Invercargill *Southerner Rail Passenger Service Viability Study* dismissed 'externalities' (effects beyond those actually travelling) as insignificant, and did not undertake full cost-benefit analysis, even though the cost of losing the service was similar to the regional economic benefit of retaining it – so *The Southerner* closed. The 2006 *Hamilton-Auckland Rail Service Feasibility Study* found the service financially unviable, even though (using conservative assumptions) its 'benefits' were found to exceed its 'costs'. The service, which had closed five years previously, was not reinstated.

Rail project evaluation is required to use 'willingness to pay' (*"what would you be willing to pay to see this service continued?"*) and 'consumer surplus' (*"would you be willing to pay more to keep this train going than you actually pay for your fare?"*) techniques. 'Willingness to pay' will always be low if the service starts out poor because of underinvestment, compared to roading which has been raised to a far higher level of service through many years of sustained investment. 'Consumer surplus' misses out on the benefits we mentioned to the economy beyond those actually making the journey. Detailed rail evaluation also suffers from information shortages, inadequate allocation of costs through charges and pricing, difficulties in allocating privately-accruing benefits and costs, and inconsistent treatment of profits. It is therefore hardly surprising that rail services are termed 'unviable' or 'uneconomic'.

You can't be serious?

Rail's share of all travel was historically much higher than today. It still would be high if investment had kept pace with the corresponding improvements to roading over rail's decline period. Reduced service demand was an entirely predictable result of fewer and poorer services, and of how alternatives (notably road or flying) are priced. Reverse these factors, and demand for long-distance rail services could well grow back again. We mustn't think of rail as an inevitably 'sunset' form of transport. On the contrary, current British initiatives aim to improve and expand rail networks – not just 'save' them.

Inter-urban trips form a high proportion of the total current New Zealand travel 'market'. In some cases, existing long-distance and outer-urban patronage could be grown through more frequent trains, resolving capacity constraints (like track space at Britomart), faster travel, greater comfort, better facilities and lower costs, all of which would make rail an attractive choice compared with private car driving.

We could also better integrate rail services with urban planning. The current professional interest in 'urban design' often uses as its models high-density mixtures of land uses **based around rail stations** – to which we could add bus services, cycle routes, provision for walking, and tourist visitor attractions and centres. The pricing used in transport economics needs to take account of historic under-investment, and 'externality' benefits to people other than those actually using the service.

Relationships between passenger and freight improvements must also be considered, to give the best outcomes for routes between urban centres. On mainly freight routes, passenger services should only pay the 'extra' costs they give rise to.

Where roads are at capacity, then rail capacity, speed, frequency and comfort improvements may be possible without requiring new land. Rail can service urban centres, make the fullest use of routes, provide reliable peak travel times, and provide a quality of journey experience, far better than road can.

Conclusion: Imagine the Future

We lack high-quality rail services in New Zealand, not because we don't want them, nor because we can't afford them, but because our current planning processes tend to look at individual transport proposals, rather than the big picture. They're also based around justifying roading proposals, whereas processes to favourably consider rail investment either don't exist, or use a far narrower range of benefits.

We've been calling the former 'National Roading Fund' the 'National Land Transport Fund' since 2002. Now let's make it that. It needs to embrace long-distance passenger rail, and to do this effectively we need a fresh approach. All relevant benefits need to be measured, to New Zealand as a whole, not just to those who use or operate rail or bus services.

The role to be played by road and rail, drawing on the strengths of each, needs to be made clear, and then used as a common basis for evaluating individual projects. We might then find there's more to rail than nostalgic romanticism.