

IN THE HIGH COURT OF NEW ZEALAND
AUCKLAND REGISTRY

CIV-2021-404-1618

I TE KŌTI MATUA O AOTEAROA
TĀMAKI MAKAURAU ROHE

UNDER the Judicial Review Procedure Act 2016

IN THE MATTER OF an application for judicial review

BETWEEN **ALL ABOARD AOTEAROA
INCORPORATED**
Applicant

AND **AUCKLAND TRANSPORT**
First respondent

AND **THE REGIONAL TRANSPORT
COMMITTEE FOR AUCKLAND**
Second respondent

Cont.

AFFIDAVIT OF RALPH BROUGHAM CHAPMAN IN REPLY

23 March 2022

Assigned judicial officer:

Next event date: Hearing on 26-28 April 2022

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AND

AUCKLAND COUNCIL

Third respondent

AFFIDAVIT OF RALPH BROUGHAM CHAPMAN IN REPLY

I, Ralph Brougham Chapman, of Te Whanganui-a-Tara, economist, swear –

1. This is the second affidavit I have made on behalf of the applicant in this proceeding. I make this affidavit in reply to the affidavit of Hamish Bunn, Auckland Transport’s Group Manager for Policy, Planning and Investment, filed on behalf of the respondents.
2. I confirm that I have read and complied with the Code of Conduct for Expert Witnesses in preparing this affidavit.
3. Since preparing my first affidavit, I have been provided with a copy of the affidavit of Todd Litman dated 21 December 2021, filed on behalf of the applicant. I refer to his affidavit below.

Introductory comments on modelling

4. In his affidavit Mr Bunn places reliance on modelling conducted using Auckland Transport’s “Macro Strategic Model” (**MSM**).
5. I wish to make a general point about a systems perspective, and modelling. Traditionally, transport modelling has been used to consider various aspects of a system such as Auckland’s transport network, and draw out an indication of outcomes when one variable (or perhaps a few) are adjusted. This is what modellers and economists often call a “*ceteris paribus*” assessment. There can be some value in this, for small perturbations, depending on model assumptions, and how well the system is captured in the model.
6. However, because system behaviour (including human behaviour) is complex and interconnected, more often than not the system effects of changes are hard to model realistically. This is especially true if we are talking about significant or major changes, of the sort that will be required if Auckland’s carbon emissions are to be significantly reduced by around 2030.
7. In such non-marginal situations, where model drivers may elicit non-linear responses, models are of limited use, in my view. They indicate direction of change and possibly the order of magnitude of responses, but are certainly not definitive. This is because one non-marginal change in the nature of the transport/urban system (such as a significant rise in petrol prices, or a significant reallocation of traffic lanes to bikes/e-bikes) will often induce changes to other aspects of the system, such as trip times, working from home, or employment location. These can turn out to have significant flow-on effects to behaviours which the simple model was *supposed* to have captured, but has not. The model is unlikely to capture such effects well simply because of the complexity of the adjustment of the real system.
8. One manifestation of this limited capability is the call by almost everyone in the transport policy world to consider transport and urban form together. In the 1970s, this was a new idea. Now, it is an established truism, based on a better understanding of the implications of a systems perspective (Chapman, Howden-Chapman, & Capon, 2016): it reflects the fact that, even within a fairly

short period of time, a change in land use rules, for example, can profoundly alter transport patterns, and there will also be strong feedbacks from transport patterns to land development.

9. This complexity of adjustment also needs to consider social and political dynamics. The siting of transport infrastructure investments such as mass transit can have major effects on land values and employment locations, and changes to housing development patterns will often have big effects on transport demand. There may be feedbacks not just through market responses (including transport mode changes), but also other (non-market) social responses (such as decisions about choice of school, or social activity) and political responses (including resistance to, and adjustments of, policies).
10. Top international transport experts argue that much transport modelling internationally appears to be subject to common 'systemic' problems – for example, they “do not typically include all of the feedback loops necessary to accurately predict the induced travel effect” (Volker, Lee, & Handy, 2020). Urban systems are also adaptive, and models are rarely up to date. In my view, much conventional transport investment modelling in New Zealand, as with other car-oriented developed countries, has been limited because of its restricted understanding of system feedbacks (Callister & O'Callahan, 2021, p.7).
11. In his affidavit (paragraphs 29-34) Mr Litman points to reasons, which I would endorse, for weak transport modelling and misleading model conclusions. The modellers are often not to blame. They cannot readily predict or account for all the policy and planning changes that typically go with road building/expansion, or an absence of it. For example, when a new highway such as Transmission Gully is built, it is easy to discount or ignore the associated investments in subdivision development, local roads and infrastructure, changes in other local government investment priorities, changes in who lives in an area, and even changes in attitudes and awareness of those who might alter their travel behaviour. Yet many of those ancillary or induced investments and changes can help to entrench car travel. [[201.0103]]
12. The same can be said in reverse for interventions or investments in walking, cycling and public transport, such as reducing motor traffic lanes, and carparking, investing in cycle lanes and real-time bus signals, and so on. What we do know with confidence is that a package of interventions is more powerful than the sum of its parts. Synergistic effects can be generated to shift people's mode choices. That is why we see some dramatic changes where various complementary policies and investments are brought together, such as in Paris and Buenos Aires, which have managed to reduce private motorised mode shares down from high levels twenty years ago to 12% and 14% respectively by 2019.^{1,2} This has not been achieved by assuming that policy change will be cancelled out by trip diversion to other roads (for example).

¹ https://www.c40knowledgehub.org/s/article/Why-shifting-to-green-and-healthy-transport-modes-delivers-vast-rewards-for-cities?language=en_US

² https://www.c40knowledgehub.org/s/article/How-to-drive-a-modal-shift-from-private-vehicle-use-to-public-transport-walking-and-cycling?language=en_US

13. To conclude these introductory comments on modelling:
- (a) The results of the MSM modelling should not be relied on too heavily, especially at a time of rapid change in travel habits (including working from home), economic turbulence, and changing government policy, including climate policy; and
 - (b) Urban investment and policy levers often work synergistically, and well-judged policies can have surprising and cumulative non-linear effects (such that social tipping points in matters such as transport and land use patterns are quite often observed).

Scenario labelling

14. At paragraph 115 of his affidavit Mr Bunn criticises my understanding of the OECD modelling, when he is describing the drivers of the OECD scenarios. He states: [[201.0298]]

We had some difficulty with the Study at the time, principally around the description of the objects as being ‘public transport’ or ‘EV related’. Our concern was that these elements would be assumed to be the key causal factors, when the main changes were actually the result of essentially distance-based road pricing schemes. For example, Mr Chapman’s affidavit (filed in these proceedings) makes this error at paragraph 38 by citing the OECD report as evidence of the gains of reallocating resources towards better public transport.

15. Mr Bunn is incorrect to say that I made an error in my first affidavit. In paragraph 38 of the affidavit, I said: [[201.0204]]

The recent detailed OECD study... makes clear that reallocation of resources towards better public transport in particular plays a significant part:

This [OECD] report examines a package of policies that promotes public transport over private vehicles. This package drastically increases the cost of private vehicle ownership while channelling a large subsidy to public transport fares.... [being a quote from OECD, 2020].

16. There is no error on my part here. I have summarised part of what the OECD modelling scenario does, and I use an OECD quotation for clarity. It is clear that the scenario models a mix of support for public transport along with increasing the cost of private vehicle ownership. The wider point is that scenarios modelling a complex system are likely to use a mix of policy elements in varying proportions; the simplified titles of the scenarios characterise the distinctive element (in this case the 80% cut in public transport fares) but are not misleading.

Induced traffic and effects of other measures

17. At paragraph 225 Mr Bunn notes: [[201.0336]]

As I understand it, the thrust of the evidence of Mr Chapman and Mr Litman on this issue is that large roading projects in particular can have an impact on emissions by inducing additional travel and more extensive

land use patterns which then result in more fuel consumption and emissions. At a purely theoretical level, I do not disagree with this. However, in the present case the particular context of Auckland and the RLTP must be taken into account.

18. Mr Bunn goes on to imply that induced traffic will not occur because the rapid population growth of 22% between 2016 and 2031 will exceed the increase in road capacity. However, the argumentation is weak. The RLTP entails a modest increase in road capacity (largely before 2021). Auckland Transport's model points to a 6% increase in carbon emissions, accompanying the (modest) growth in road capacity, or a 1% decrease taking into account proposed central government interventions.
19. However, in a scenario with an even *smaller* growth in road capacity, the extra growth in congestion would very likely *more heavily* constrain the growth in travel, causing a smaller increase in vehicle kilometres travelled (VKT) than 22% (being Auckland Transport's estimate under the RLTP).
20. It is quite possible, with smaller growth in VKT, that the growth in carbon emissions would be lower than a 6% increase, and that taking into account central government policy measures, it might fall more than 1%. My point is that increases in road capacity (i.e. substantial roading projects) do matter in the current Auckland context, and the RLTP will likely induce more VKT and carbon emissions than otherwise, leaving the overall emissions outcome worse than otherwise, irrespective of the 'base' level of congestion.

Lane removal

21. At paragraphs 269-272 Mr Bunn states (emphasis added): [[201.0349]]

In general, Mr Litman and Mr Chapman appear to have interpreted the text in the second half of paragraph 31 bullet 5 as relating to the reallocation of road space to public transport or active modes, rather than the narrower case of lane removal referred to in the text...

... there is no dispute over the broad principles that favour reallocation of road space to effective public transport and active modes projects, although differences clearly remain about the scale of impact...

The relevant difference is over the effectiveness and economic, social and cultural impact of **lane removal**. Here, both affidavits argue that lane reallocation will lead to disappearing traffic.

22. However, in respect of my own affidavit, I was referring (e.g. at my paragraph 29, where I address repurposing road space, and also at paragraph 31) to lane reallocation without (physical) removal, to the effect that more space would be available for active modes, and less for motor vehicles. The international evidence is overwhelming that such reallocation *is* effective in causing some motor traffic to disappear, generating more environmentally sustainable transport patterns. A good case can be made that community wellbeing (taking into account health gains) is improved by such reallocation where motor traffic diminishes and active mode use increases. If we factor in not only the health gains but also the social benefits from carbon savings, valued using estimates of the current and future marginal social cost of carbon (e.g. Ricke et al, 2018), then the case for reallocation is even stronger. [[201.0202]]

23. It is worth asking *why* Mr Bunn dwells on the effects of “large scale lane removal”, in the sense of physically removing lanes, rather than reallocation (see paragraphs 280-283). The modelling result referred to in paragraph 283 is interesting – in short, the model says that an 8% reduction in lane capacity might deliver around 4.8% in VKT. [[201.0368]]

24. This would constitute a significant reduction in Auckland’s travel and emissions (not ‘minor’, as Mr Bunn argues at paragraph 288(f)(ii)). Moreover, what if, rather than road lanes being ‘removed’, they were turned over to public transport, shared vehicles with three or more persons, and/or cycling, including e-bikes? This would reduce any diversion and be a clear signal that Auckland was seriously encouraging emissions reductions via innovative and healthier forms of travel, allowing people to maintain or improve economic and social wellbeing while accelerating the transformation of the city. [[201.0369]]

Mr Bunn’s conclusion

25. At paragraph 343 Mr Bunn states: [[201.0368]]

...as set out in the RLTP and Section 14 Analysis, as well as the discussion above, there was no scope to reallocate funding away from projects solely focused on reading capacity.

26. He goes on to describe what he sees as the two broad options for reducing transport emissions at paragraph 347(a):

(a) Rapid change, which will require implementation of comprehensive and high price distance-based pricing schemes – supported by recycling the revenue into public transport and cycling capacity. There is no other intervention that achieves the necessary scale of change. This will, however, have a substantial negative impact on economic, social and cultural wellbeing – particularly from an equity point of view; [[201.0369]]

(b) Less disruptive change, which can be achieved primarily through a much greater emphasis on shifting to low emissions vehicles – supported by continued priority investment in better transport choices. This will, however, take longer to achieve substantial emissions reductions.

27. The position that Mr Bunn advances on behalf of Auckland Transport de-emphasises the “Avoid” and to some extent the “Shift” parts of the Avoid, Shift, Improve (ASI) framework and hierarchy for emissions reduction. “Avoid” indicates avoiding emissions; “Shift” indicates shifting modes (e.g. mode shift to public transport); and “Improve” indicates improving efficiency. This hierarchy is widely used across the transport literature and also Hikina te Kohupara (MoT, 2021) (the Ministry of Transport’s policy document on transport emissions reduction).

28. The Auckland Transport stance would largely reject “Avoid” measures and pursue limited “Shift” measures, on the grounds that improving efficiency, via central government action (“Improve”), is the primary way to reduce emissions. That is an unnecessarily constrained and timid position that, if pursued, would see Auckland forgo many of the measures that are available to it to reduce transport emissions.
29. It is also worth noting that the apparent Auckland Transport position on the ASI hierarchy (emphasising mainly improvement) appears inconsistent with Auckland Council’s support for the full ASI approach, recorded in advice to the Environment and Climate Change Committee on 10 June 2021:³

76 Officers recommend Pathway Four as the decarbonisation pathway for Aotearoa, noting that Auckland has a much steeper regional pathway...

[[308.3450]]

77 Pathways One and Four place more emphasis on ‘avoid’ and ‘shift’ interventions and are considered by the Ministry of Transport to be more effective at reducing emissions. Pathways One and Four are also considered to be more cost effective as they focus on avoiding activities that produce emissions in the first place, rather than mitigating the emissions from those activities through technological improvements.

78. In comparison, Pathways Two and Three place more emphasis on ‘improve’ interventions and therefore would result in a significantly greater vehicle fleet and VKT.

79. Only Pathway Four meets the interim target set in the Commission’s draft advice, which recommends a 47 per cent reduction in transport emissions by 2035 (against 2018 levels). Pathway Four focuses on early and very aggressive implementation of ‘avoid’ and ‘shift’ interventions, as well as strong electric vehicle uptake. This makes Pathway Four the most similar to Te Tāruke-ā-Tāwhiri’s transport decarbonisation pathway, which envisages a 50 per cent reduction in VKT and 80 per cent of light passenger and commercial vehicles to be electric or zero emissions by 2050.

30. In effect, Mr Bunn defends the RLTP on the basis that it is unrealistic to change direction rapidly. His supposition seems to be that Auckland Transport, the RTC and Auckland Council are all ‘locked in’, and that there is an absence of political will to change direction.
31. But recently, against the backdrop of intensifying climate change, and with Russian threats to gas and oil supplies to western Europe, commentators have pointed out the sheer speed with which western nations can change direction if they have the political will to do so (McKibben, 2022). During the second world war, in 1941 in Michigan, USA, the world’s largest industrial plant went up in six months, and started producing a B-24 bomber every hour.

3

https://infocouncil.aucklandcouncil.govt.nz/Open/2021/06/ECC_20210610_AGN_1013_0_AT.htm

32. Auckland has the advantage of being as agile as the USA, and could reshape its transport systems dramatically over six years, even if not six months, if it wished to do so, to meet the declared climate emergency. The high current and foreseeable price of oil would help. But big change will necessitate facing up to a radical reorientation of spending plans, not least the 10 year transport investment plan that Auckland Transport promulgated in the RLTP.

SWORN at Wellington this ²³ day of ^{March}
March 2022 before me: R B Chapman

M Gray Ralph Brougham Chapman

A solicitor of the High Court of New Zealand

Moira Gray
Barrister & Solicitor
Wellington

SCHEDULE – REFERENCES

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