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 NEELIMA GHANTA IN REPLY

22 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 NEELIMA GHANTA IN REPLY

I, Neelima Ghanta, of Arlington, Virginia, United States of America, senior principal planner, swear –

Introduction and instructions

1. I make this affidavit on behalf of the applicant in reply to the affidavit of Hamish Bunn, the Group Manager: Policy, Planning and Investment at Auckland Transport.

2. As I outline below, I worked on secondment at Auckland Transport in Mr Bunn's team between May and December 2021.

3. In addition to describing that work, I am instructed to give my expert opinion and response to Mr Bunn's evidence in respect of the following matters:

   (a) The process that Mr Bunn describes in respect of the development of the Regional Land Transport Plan for Auckland 2021 (**RLTP 2021**), and whether in my opinion that process was consistent with good planning practice, and the strategic priorities of the Government Policy Statement on Land Transport 2021 (**GPS 2021**).

   (b) Mr Bunn's evidence that RLTP 2021 could not have delivered better outcomes in terms of emissions reductions.

   (c) The transport modelling results relied upon by Mr Bunn, which I am familiar with as a result of my work at Auckland Transport.

   (d) His suggestion that fleet electrification and road pricing are the most critical levers in the reduction of transport emissions in Auckland.

   (e) His claim that by enabling more optimal traffic flows, roading projects will not automatically lead to increased tailpipe emissions.

   (f) His views about the availability and use of funding for reallocating road space to sustainable modes.

   (g) His suggestion that there will be "substantial negative impact on economic, social and cultural wellbeing – particularly from an equity point of view" if there is rapid and comprehensive system change.

4. I confirm that I have read and complied with the Code of Conduct for Expert Witnesses in preparing my affidavit. A copy of my CV is **attached** to this affidavit.

5. I note that in June 2021 I became a board member of Women in Urbanism Aotearoa, an organisation that advocates for improving New Zealand's urban environments through amplifying the voices and actions of women. I understand that Women in Urbanism Aotearoa is one of the member organisations of the applicant. I have had no personal involvement with the

applicant, or its claims in this proceeding, prior to being instructed to prepare this affidavit.

6. For the avoidance of doubt, I record that I am making this affidavit in my personal capacity, and not on behalf of my employer.

Summary of evidence

7. In summary, my evidence in reply to Mr Bunn's affidavit is as follows:

(a) Based on my professional experience of good transport planning practice, I do not consider that the approach to allocating funds for RLTP 2021 that Mr Bunn describes was appropriate, particularly given the fundamental shift in priorities required by GPS 2021 and Te Tāruke-ā-Tāwhiri: Auckland's Climate Plan. It is evident that most of the funding (more than 93%) was allocated to projects and programmes without assessing them again the strategic priorities of GPS 2021.

(b) In my professional experience, an iterative process should have been followed, starting with quantifying the impact of every project and programme under consideration against the required outcomes. This was necessary in order to ensure consistency with the strategic priorities of GPS 2021.

(c) The transport model on which Mr Bunn relies has a number of significant shortcomings and limitations that mean it is not an appropriate tool to assess the potential for mode shift, and hence emissions reductions, for a city-wide investment plan such as RLTP 2021.

(d) Contrary to Mr Bunn's view, fleet electrification and road pricing should not be seen as the key plank of a transport decarbonisation strategy for Auckland. They need to be complemented by dramatic improvements in walking, cycling and public transport options in order to produce a sustainable system that also achieves wider wellbeing outcomes.

(e) Mr Bunn's view that roading projects will not automatically lead to increased tailpipe emissions has been debunked through numerous studies on induced demand. When more traffic lanes are provided, new drivers or more trips fill them, leading to renewed congestion.

(f) In my opinion, extensive road reallocation could have been delivered under RLTP 2021 as an affordable way to meet strategic objectives, but it is evident that proper consideration was not given to its potential.

(g) I disagree with Mr Bunn's views on the transport equity impacts of widespread changes to our transport systems. Ensuring reasonable access to quality public and active transport options is key to addressing transport equity.

Qualifications and experience

8. I have a Master of Science in Civil Engineering with specialisation in Transportation Planning and Engineering from the Virginia Polytechnic Institute and State University, USA (2007), and a Bachelor of Engineering (Honours) in Civil Engineering from the Birla Institute of Technology & Science, Pilani, India (2005).

9. I am a Licensed Professional Engineer in the USA (2012) and a Chartered Member of Engineering New Zealand (2020).

10. I have 16 years of experience in transport planning and engineering, with the first 14 years in the USA and slightly over 2 years in Auckland. I have a wide range of experience in multi-modal planning, modelling, network optimisation, conceptual design, and managing projects through detailed design and programme management.

11. My roles have involved building and managing multi-disciplinary teams; client relationship management; strategic vision development; leading professional committees in professional organisations, including Engineering New Zealand's Transportation Group; and mentoring/coaching new talent.

12. Before moving to New Zealand, I was employed by HNTB, an American infrastructure design firm, in its Arlington, Virginia office. My position at the time I left was Section Manager - Planning and Traffic Operations. My work included leading the following projects:

    (a) City-wide bus priority planning for Washington DC;

    (b) A city-wide effort to upgrade bus stops throughout Washington DC under the American Disability Act;

    (c) The transport planning work for the Fairfax County, Virginia (with a population of 1.14 million);

    (d) Strategic planning and (multi-modal) transportation modelling for the City of Philadelphia on one of its most dangerous corridors, Roosevelt Boulevard;

    (e) The development of a state-wide guidebook on shared path development for the Virginia Department of Transportation; and

    (f) Big data analysis to reconfigure San Francisco airport's hub for ride hailing services, pedestrians and the AirTrain.

13. In January 2020 I moved to New Zealand, and at the start of February 2020 I took up a position in Stantec's Auckland office. I was initially a Principal Planner and within a month took on the role of Team Lead for Traffic Engineering.

14. In May 2021 (still working for Stantec) I moved into the role of Auckland Transport Panel Lead. Later in the year I became a Senior Principal Transport

Planner. I remained in those roles until March 2022, when I moved back to the USA.

15. I am currently working for my previous employer, HNTB, in the role of Senior Project Manager – Engineering.

16. In my role in Stantec's Auckland office I worked for a number of private clients, as well as for Panuku Development Auckland and Auckland Transport.

My work for Auckland Transport

17. My work for Auckland Transport included a secondment to Auckland Transport's Integrated Transport Planning team, between May and December 2021. That team is led by Andrew McGill, who reports to Hamish Bunn.

18. Prior to, during and after my secondment, I did various consulting work for Auckland Transport (through Stantec). This included:

    (a) Being consultant representative for all the contracts under Traffic and Transportation Engineering Professional Services;

    (b) Leading bus priority projects from planning to detailed design in collaboration with Auckland Transport's Metro Services team;

    (c) Leading cycling programme objective and dashboard development that provides an end-to-end view of cycling in Auckland;

    (d) Leading vulnerable road user safety projects throughout Auckland from optioneering to scheme design; and

    (e) Leading the business case for (active mode) connections to the Glen Innes to Tamaki Drive shared path.

19. While on secondment at Auckland Transport I led and supported the multi-modal strategic planning tool, Future Connect. Future Connect is Auckland Transport's long-term plan for the transport network in Auckland, covering all modes (including public transport, and cycling and micromobility). As well as launching the latest Future Connect tool, this role included researching and developing methodology for transport planning for the 2040 and 2050 decades for Auckland. I led a separate workstream on the quantification of transport equity in Auckland.

20. I was not directly involved in the development of RLTP 2021, which was largely complete by May 2021 when I began my secondment. However, in the course of my secondment, I was required to work with Auckland Transport staff members who had worked on RLTP 2021. This included understanding what projects and programmes had been included in RLTP 2021, and how they related to transport planning for subsequent decades. A particular workstream in which I was involved was overlaying the RLTP projects into the Future Connect web-based tool, after RLTP 2021 was finalised.

Objectives identified by Auckland Transport

21. In the first part of his affidavit, Mr Bunn describes the process that Auckland Transport followed in preparing and adopting RLTP 2021, and the update to the Auckland Transport Alignment Project (**ATAP**) package that preceded it. ATAP is an agreement between the New Zealand Government and Auckland Council about transport priorities for Auckland.

22. Under legislation, the RLTP is required to be consistent with the Government Policy Statement on Land Transport. At the time that RLTP 2021 was under development, the applicable GPS was GPS 2021. The strategic priorities of GPS 2021 are "safety", "better travel options", "improving freight connections" and "climate change". The document strongly emphasises the need for improved travel choices (with modal shift), emissions reductions and better safety outcomes.

23. Those priorities align with Auckland Council and Auckland Transport's own plans and policies. Among others, these include:

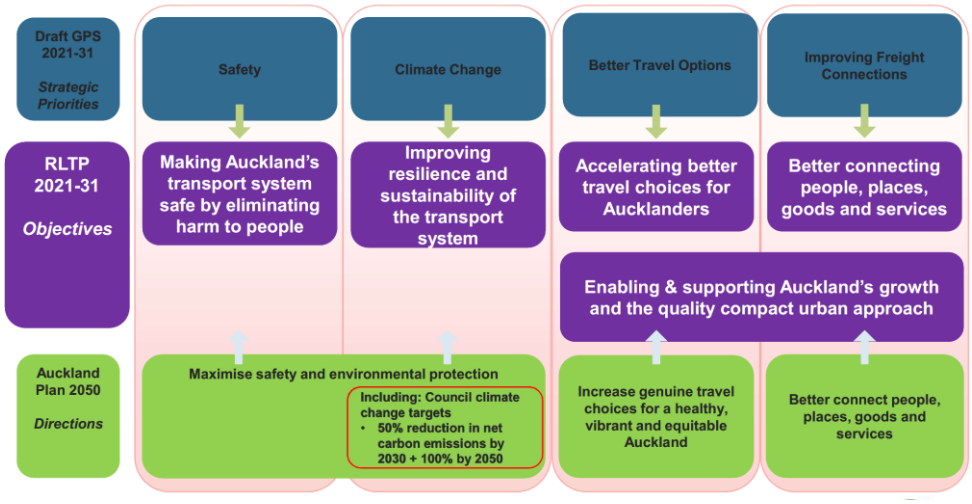
    (a) Te Tāruke-ā-Tāwhiri: Auckland's Climate Plan, which was adopted on 21 July 2020. Te Tāruke-ā-Tāwhiri sets a "core goal" of reducing Auckland's greenhouse gas emissions by 50% by 2030 and achieving net zero emissions by 2050. It models a 64% reduction in transport emissions by 2030. [301.0190]

    (b) Vision Zero for Tāmaki Makaurau, Auckland Transport's transport safety strategy and action plan to 2030, which was adopted on 3 September 2021. Vision Zero sets a target of no transport deaths or serious injuries in Auckland by 2050. [303.1012]

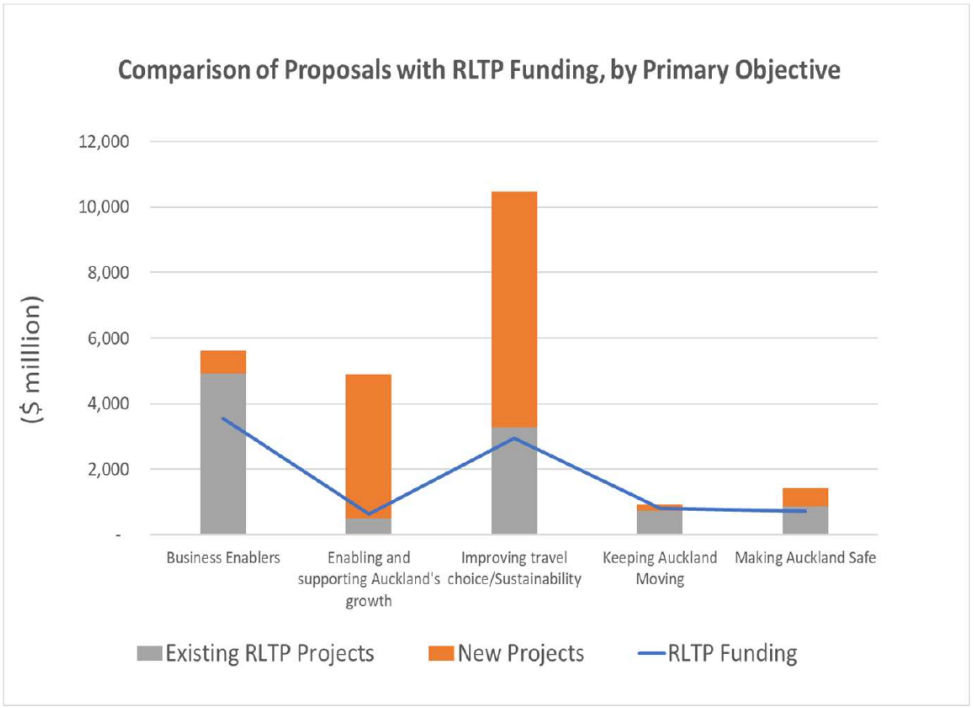
24. Mr Bunn describes the Terms of Reference that were developed for the ATAP update. These included the agreed objectives that Mr Bunn sets out at paragraph 39 of his affidavit. As Mr Bunn notes at paragraph 45, the Terms of Reference identified "climate change and mode shift as increasingly significant policy considerations for both Council and Central government". [201.0274]

25. At paragraph 49 Mr Bunn refers to a presentation given by Auckland Transport to its Board on 20 July 2020 (which he exhibits as document HB1-055). The presentation records areas of overlap between the strategic priorities in GPS 2021, and the objectives for ATAP (from which RLTP 2021 was intended to be derived) (HB1-067). [201.0278] [304.1431]

26. The relevant slide from the presentation is reproduced below. The strategic priorities of GPS 2021 are shown in the blue boxes, with corresponding ATAP/RLTP objectives shown in purple boxes. I note that the "climate change" strategic priority in GPS 2021, and Auckland Council's emissions reductions targets under Te Tāruke-ā-Tāwhiri (in the green box), were each identified as aligning with the ATAP/RTLP objective of improving the sustainability of the transport system.



27. However, the same presentation also identified the primary objectives against which projects and programmes were proposed to be measured. These included an additional objective, "business enablers", which was not derived from the strategic priorities in GPS 2021, or the agreed ATAP objectives (HB1-085). Again, the relevant slide is reproduced below. [304.1449]



28. Measuring proposed projects and programmes against an objective that is not derived from the relevant strategic priorities will not lead to a well-aligned programme. In particular, the "business enabler" objective, which the Auckland Transport presentation makes clear was tied to renewals of existing infrastructure, tends to maintain a "business-as-usual" approach, allowing for the inclusion of projects that are less well-aligned with strategic priorities (including safety, mode shift and climate change).

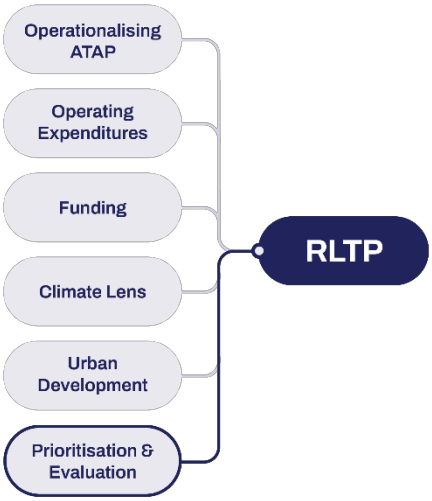
Development of ATAP/RLTP investment programme

29. From paragraph 50 onwards, Mr Bunn provides a high-level outline of the methodology for developing the ATAP/RLTP investment programme. He describes six workstreams, one of which is "climate change": "To determine how a climate change lens could be applied to addressing ATAP projects" (paragraph 50(b)). Another is "prioritisation and evaluation" (paragraph 50(f)). Mr Bunn describes "prioritisation and evaluation" as the "core" workstream and having the "greatest impact on the final ATAP (and subsequently RLTP) package" (paragraph 51). [[201.0278]] [[201.0280]]

30. I do not agree that "prioritisation and evaluation" should have been the "core" workstream. Each of the workstreams was important, and good planning allows different workstreams to guide each other in an iterative process. Transport planning processes are undergoing significant shifts, internationally. Those shifts are reflected in GPS 2021, Te Tāruke-ā-Tāwhiri, and other national and regional policies and plans. If the New Zealand transport sector is to adjust appropriately, work like ATAP and RLTP 2021 needs to allow each workstream to offer the insights it can. This is only possible if the importance of each workstream is upheld, and not submerged or only paid lip service.

31. Although Mr Bunn says that a "climate lens" workstream formed part of the development of ATAP, he does not say what that work involved, and it is unclear how it influenced the selection of projects and programmes for inclusion in RLTP 2021. In my view, there is an element here of Auckland Transport using the right words about what needed to be done, but the words obscuring what was in fact a business-as-usual approach. I address this further below in the context of the "prioritisation and evaluation" process that Mr Bunn describes.

32. The following graphic demonstrates how, in my view, each of the workstreams should have been an integral part of the process. That was particularly important for the "climate lens" workstream given the ambitious climate targets against which ATAP and RLTP 2021 were being developed. The weighted line represents what in fact happened, with "prioritisation and evaluation" effectively controlling the process.

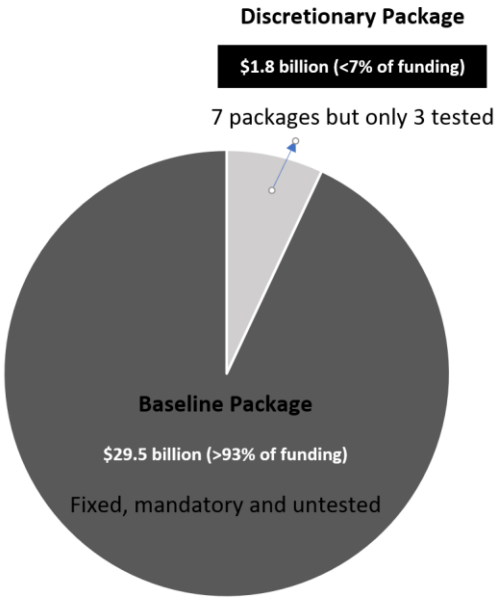


Evaluation and prioritisation workstream

33. Mr Bunn outlines the "evaluation and prioritisation" workstream at paragraphs 52-87 of this affidavit. [[201.0280]]

34. He describes a process whereby projects and programmes were identified as being "non-discretionary" or "discretionary". In essence, he says that "non-discretionary" projects and programmes were those that were under contract, of subject to a "formal political agreement", or "essential" to achieving the ATAP objectives (paragraphs 53-57). [[201.0280]]

35. Mr Bunn goes on to say that projects and programmes considered to be "non-discretionary" (or "baseline") totalled $29.5b, which left approximately $1.8b of funding for "discretionary" projects and programmes that were available for evaluation and prioritisation (paragraph 68). In other words, over 93% of the available funding was allocated to projects and programmes without assessment of their impact on the strategic priorities of GPS 2021 and the objectives of ATAP. This is demonstrated in the graphic below. [[201.0285]]



36. I note that even in respect of the 7% of the investment programme that was subject to assessment, there was not an assessment of individual projects and programmes against the strategic priorities. Rather, as Mr Bunn describes at paragraphs 78-81, seven different "packages" were developed, each representing a blend of different investments. Some of those packages (but apparently not all of them) were then modelled using the Auckland Forecasting Centre's Macro Strategic Model (**MSM**). I address the limitations of MSM below. [[201.0287]]

37. Based on my experience of good transport planning practice, I do not consider that the approach to allocating funds that Mr Bunn describes was appropriate, particularly given the very material changes that had occurred to the strategic priorities and objectives for the transport system in the period since RLTP 2018 had been developed. If some $30b of transport expenditure (representing more than 93% of the total budget) is allocated without interrogating its effectiveness at reaching prescribed goals, it is logical to expect that results will not align with goals.

The process that should have been adopted

38. In my professional experience, when the required outcomes include steep targets for emissions reductions, modal shift and road safety, the best process to follow is an iterative one, which starts with quantifying the impact of every project and programme that is under consideration for the investment programme against those required outcomes.

39. This would have brought any projects and programmes within what Auckland Transport identified as the "baseline" package that have perverse impacts on those goals to the attention of Auckland Transport, its Board and other agencies. This iterative process would have resulted in the following:

    (a) Elimination of business-as-usual spending that results in those perverse outcomes;

(b) Reallocation of the funding to projects and programmes that have high alignment with required outcomes; and

(c) Development of projects and programmes that have a strong alignment with strategic goals.

40. In my opinion, the process for developing the ATAP update and RLTP 2021, as outlined by Mr Bunn, inevitably meant that opportunities to deliver the strategic priorities of GPS 2021 were lost, because most of the funding was allocated without scrutiny of whether it met those priorities.

Ability to improve emissions outcomes of RLTP 2021

41. As Mr Bunn notes at paragraph 162, the ATAP/RLTP investment programme was modelled to result in Auckland's transport emissions increasing by 6% by 2031 (before certain government interventions were taken into account). That is a significant and alarming increase in the context of the climate emergency, and the imperatives to reduce emissions in GPS 2021 and Te Tāruke-ā-Tāwhiri. [[201.0314]]

42. The RLTP 2021 (appendix 9, paragraph 31) makes the claim that "there is little ability to further reduce overall emissions through RLTP direct investment in infrastructure and services". It goes on to say (paragraph 31(a)): [[301.0121]]

> Fundamentally, investment in infrastructure or services only has a very minor impact on total emissions, whether positive or negative. Even the biggest projects may only account for changes in the order of one percent of total. Scenario testing as part of ATAP development, along with analysis of other scenarios as background to the Te Tāruke ā Tāwhiri (Auckland Climate Plan), shows that plausible changes to the programme are unlikely to yield materially different results. External variables such as demand associated with population growth or improvements in fleet efficiency have a much larger impact on total emissions.

43. Throughout his evidence, Mr Bunn develops those themes, suggesting that the emissions profile of RLTP 2021 could not have been improved within the available funding, and reiterating his view that transport investment decisions do not have a significant impact on emissions.

44. In assessing those assertions, it is important to bear in mind that less than 7% of the funding was for projects and programmes that were tested against the strategic objectives, and that the remaining 93% was for projects and programmes that were included in all scenarios tested.

45. I cannot agree that investment in infrastructure or services "only has a very minor impact on total emissions, whether positive or negative". Investment decisions have significantly shaped the transport system of every city, influencing both travel behaviour and land development patterns. Large capital investments like rapid transit lines or new roading have long term effects on emissions, but it is equally clear that smaller scale, cheaper interventions like road reallocation and low traffic neighbourhoods can have a significant effect on reducing emissions too, even in the short term.

46. I have been shown advice that Auckland Council prepared for the Environment and Climate Change Select Committee on 10 June 2021 regarding transport emissions reductions.[1] The advice says: [308.3446]

> Accelerating mode shift toward public and active transport is one area where there may be potential to deliver relatively rapid emissions reductions. But this will require urgent action across a number of challenging policy levers in a funding constrained environment, including:
>
> - reallocating funding away from projects that will increase capacity on the roading network for private vehicles
> - providing more funding for public transport services to enable greater coverage and frequency
> - a much stronger emphasis on road space reallocation as a relatively cost effective means of providing for bus priority and safe active mode infrastructure

47. I agree with these statements entirely. They represent modern understandings of transport planning and policy, and the ways in which investment decisions about transport infrastructure and services can drive mode shift and emissions reductions.

48. I am aware that after RLTP 2021 was adopted, Auckland Council and Auckland Transport began working on a Transport Emissions Reduction Plan (**TERP**) for Auckland. The proposed approach for that work is described in a paper that Auckland Council prepared for the Environment and Climate Change Select Committee on 12 August 2021. The paper makes the following observations: [311.4811]

> The journey to decarbonise Auckland's transport system will require difficult choices, and the development of the TERP will identify the potential pathways necessary to stay within Tāruke-ā-Tāwhiri's carbon budget.
>
> Comprehensive implementation of 'avoid' and 'shift' interventions is especially important for a large, urbanised region such as Auckland. Auckland Council and Auckland Transport have control of, or at least some influence over, several of these interventions, including accelerating mode shift, reallocating road space, reprioritising investment, and shaping urban form.

49. The paper goes on to identify "the lack of priority given to climate outcomes in planning and investment decision-making" as a factor that may constrain the ability of Auckland Council and Auckland Transport to implement those interventions.

50. I consider this lack of priority to be evident in the process that Auckland Transport adopted for developing the ATAP/RLTP investment programme, which I have addressed above. In my view, many of the matters that are now

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[1] https://infocouncil.aucklandcouncil.govt.nz/Open/2021/06/ECC_20210610_AGN_10130_AT.htm.

apparently under consideration as part of the TERP should have been incorporated into the ATAP/RLTP development process.

MSM modelling

51. Mr Bunn's views about the impact of transport investment decisions on emissions appear to derive from the faith he puts in the Macro Strategic Model (**MSM**). MSM is a model developed by the Auckland Forecasting Centre, a partnership between Auckland Council, Auckland Transport and Waka Kotahi.

52. I am familiar with the MSM through the work I did on bus priority projects for Auckland Transport's Metro Services, and my work on Auckland Transport's Future Connect project. I have not personally run the MSM model, but in the course of my work at Auckland Transport I developed an understanding of how it works, and its limitations, through meetings and discussions with the staff of the Auckland Forecasting Centre.

53. I also have professional experience of how these types of traffic models generally work. Throughout my career in USA, I led complex traffic modelling projects that involved regional models (called four step models) and highly granular models (called microsimulation models).

54. At paragraphs 96-109 Mr Bunn describes MSM modelling and displays his high level of trust in the model as an aid to decision-making for all transport modes. It is important to understand the provenance and limitations of the model in assessing mode shift potential. [[201.0293]]

55. MSM is an example of a four-step transport forecasting model. As the name ("macro") suggests, it was developed to predict regional-level traffic, mostly centred on cars.

56. At paragraph 100 Mr Bunn acknowledges some of the model's shortcomings, mentioning that it "does not directly model walking and cycling modes to the same level of detail as motorised modes" nor "model the changes in land use that might arise as a result of projects". At paragraph 293 he also acknowledges that "it is possible that MSM will be missing some 'disappearing traffic' effects". However, he does not acknowledge the consequences of these shortcomings. In my opinion, overreliance on the model can impede full consideration of the effects of projects on climate, mode share and land use. [[201.0294]] [[201.0356]]

57. The model has a number of limitations, which Auckland Forecasting Centre staff acknowledged during my discussions with them, that make it an inappropriate tool to assess the potential for mode shift (especially to active modes), and hence emissions reductions:

    (a) The model focuses on maintaining trip equilibrium that is calibrated against status quo travel behaviour, so it struggles to represent change in travel behaviour such as users shifting to active modes or inducing more car trips. At paragraph 98 Mr Bunn fails to mention this inadequacy. This inadequacy is critical, as mode shift and induced car demand are key tools in the systemic changes that impact emissions. [[201.0293]]

(b) The model accounts poorly for intra-zone trips.[2] These are the short trips within a model zone that tend to be made by active modes or have the highest potential to be swapped for active modes / public transport.

(c) The model relies on New Zealand Household Travel Survey data in predicting future demand, which historically underestimates active modes trips, especially walking. Even if more detailed data were available on active mode trips, the model has limited capability to assign these trips, especially walking.

(d) The model represents motor vehicles most accurately, as these are the movements the model was designed to predict, with peak travel the focus, and interpeak travel and public transport added at a later stage.

(e) The land use part of the transport model spreads population evenly across a transport zone (see point (b) above). As such, it is not able to represent the positive impacts of transit-oriented developments.

58. The limitations of transport models such as MSM are well known in the transport planning industry. Due to their "black box" nature, their outputs can be easily misconstrued as fact, when they are merely projections based on a certain set of assumptions.

Systems change rather than band aids

59. Mr Bunn's affidavit identifies fleet electrification and road pricing (both of which are largely outside the control of Auckland Transport and Auckland Council) as the most critical levers in the reduction of emissions.

60. Fleet electrification is indeed an important tool in drawing down transport emissions, particularly in the latter decades as supply matures. However, it should not be seen as the key plank of a transport decarbonisation strategy for Auckland. It cannot deliver the emissions reductions over the next decade that are called for under GPS 2021 and Te Tāruke-ā-Tāwhiri. Nor can fleet electrification achieve other national and regional transport outcomes, including the Vision Zero road safety policy, urban amenity, public health, resilience, and value for money.

61. Road pricing is also an important tool, but it needs to be complemented by dramatic improvements in walking, cycling and public transport options in order not to perpetuate existing inequities.

62. Reallocation of road space, mode shift investments and land use changes (all largely under the control of Auckland Transport and Auckland Council) are all necessary to develop a system that is sustainable-by-design, one that

[2] The model splits the Auckland region into hundreds of different zones (see map here: https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-policies/docsdevelopmentcontributionspolicy/auckland-regional-transport-zones.pdf).

requires less energy and materials, and produces less emissions, while achieving wider wellbeing outcomes.[3]

Induced demand

63. At paragraphs 232-243 Mr Bunn claims that by enabling more optimal traffic flows, roading projects will not automatically lead to increased tailpipe emissions. This view has been debunked through numerous studies on induced demand.[4] When more traffic lanes are provided, new drivers or more trips quickly materialise to fill them, leading to renewed congestion and sub-optimal traffic flows. [[201.0338]]

64. Mr Bunn's acknowledgement in paragraph 100 that the MSM does not model changes in land use is important, as he cites the example of the Penlink highway project. Using the MSM model to estimate the effect Penlink would have on emissions is bound to lead to a serious underestimate, because Penlink is a road that will accelerate development, changing the land use along its route from farmland to suburbia. Rather than being an example of a project that will reduce emissions, Penlink is a good example of a project for which the emissions cannot be accurately estimated by MSM. [[201.0294]]

Road space reallocation

65. At paragraphs 253-256 Mr Bunn argues that providing for sustainable modes through road space reallocation will add costs and that "all funding was allocated". These costs pale in comparison to the costs of providing new routes without reallocating road space. By way of example, I worked on delivering bus priority lanes in Auckland. Bus lanes provided by allocating general traffic lanes to buses typically cost under $1 million per kilometre, which is far less than bus priority projects that require land acquisition. [[201.0345]]

66. Speed and cost of implementation is also a critical factor. Projects that rely on road space reallocation take a much shorter time to deliver because they do not require property acquisition.

67. Projects that involve road space reallocation also reduce maintenance requirements through better use of existing road space, freeing up more of the maintenance and renewals budget.

68. I believe that extensive road reallocation could have been delivered under RLTP 2021 as an affordable way to meet strategic objectives. It appears, however, that proper consideration was not given to its potential, nor to the perverse outcomes created by the business-as-usual projects and programmes that maintain road space for private vehicle traffic or parking.

69. At paragraph 293, and in earlier paragraphs, Mr Bunn refers to the "negative" wellbeing impacts of road space reallocation. This does not match my [[201.0356]]

[4] Litman, T. (2022). Generated traffic and induced travel. https://www.vtpi.org/gentraf.pdf

professional understanding. As the International Transport Forum's report Reversing Car Dependency says:[5]

[304.1830]

> A growing body of evidence suggests that a well-planned reduction of road space for private cars does not add to congestion... A reallocation of road space, and urban space more broadly, is key in achieving a more sustainable modal split and improving urban environments. Cars, roads and parking spaces use up a large amount of the already scarce space in cities that could be used for other purposes that would be more beneficial to overall economic welfare. In many cities, there is a mismatch between the amount of space given to each transport mode and the share of passengers actually carried, with car travel unfairly advantaged.

70. The population's wellbeing needs can only be met by implementing system changes, not just by applying a narrow focus on technological or pricing solutions. As the OECD outlines in its report, Transport Strategies for Net-Zero Systems by Design:[6]

[312.5041]

> Approaches to reach net-zero targets that focus mostly on improving efficiency via technological solutions limit our ability to radically cut emissions while improving people's lives. Such approaches try to fix systems that are unsustainable by design, and miss the opportunities that redesigning systems can unleash. There are indeed enormous untapped opportunities to harness if we focus our policy efforts on designing systems that improve people's well-being with less energy and materials, and hence far lower GHG emissions... Climate strategies focused on redesigning systems can bring the transformational change needed to meet net-zero goals on time while improving people's lives. Moving towards these strategies imply a mind-set shift, it implies thinking of ends (e.g. accessibility) rather than means (e.g. mobility), and innovating at the systems level and in the way we do policy-making. Such innovation is essential to transition towards better systems for better lives.

71. Enhancing sustainable access ensures people are still able to access the opportunities they need, while improving the wellbeing of many who are currently disadvantaged by Auckland's car dependent system.

Transport equity

72. At paragraph 347(a) Mr Bunn refers to what he describes as a "substantial negative impact on economic, social and cultural wellbeing – particularly from an equity point of view" if there is rapid and comprehensive systems change. This is presumably based on the assumption that disadvantaged groups need to drive to access opportunities such as jobs. In my opinion, this simplistic view does a disservice to the enormous field of transport equity.

[201.0369]

73. Research commissioned by the New Zealand Government shows that high income groups take more and longer car trips than low income groups.[7] A car dependent system forces households to rely on cars for their travel, despite the

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[5] https://www.itf-oecd.org/sites/default/files/docs/reversing-car-dependency.pdf [304.1823]

[6] https://www.oecd-ilibrary.org/sites/0a20f779-en/index.html?itemId=/content/publication/0a20f779-en [312.5037]

[7] https://www.transport.govt.nz//assets/Uploads/Report/EquityinAucklandsTransportSystem2.pdf (page 48 and 49). [304.1719]

high cost of buying, operating and maintaining a car. Low income households spend a much larger proportion of their weekly budget on transport compared to higher income households. Ensuring reasonable access to quality public and active transport options is key to addressing transport equity. Perpetuating a car dependent system, on the other hand, perpetuates inequity.

SWORN at Arlington, Virginia, United States of America this 22nd day of March 2022 before me:

Neelima Ghanta

A person authorised to administer oaths by the laws of Virginia, United States of America

City/County of ARLINGTON
Commonwealth of Virginia
The foregoing instrument was subscribed and sworn before me this 22 day of MARCH, 2022
by URSULA MCCALOP
Notary Public's Signature
Reg# 7951538 Commission Expires 04/30/2025

Ursula Shawn McCalop
NOTARY PUBLIC
REG. #7951538
MY COMMISSION EXPIRES
4/30/2025
COMMONWEALTH OF VIRGINIA

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