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Briefing on the report of NZIER: *Te Tai Tokerau Northland Expressway*

Presented to the House of Representatives
by Andy Foster, Chairperson

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Briefing on the Report of NZIER: *Te Tai Tokerau Northland Expressway*

Recommendation

The Transport and Infrastructure Committee has considered a briefing on the report of NZIER: *Te Tai Tokerau Northland Expressway*, and recommends that the House take note of its report.

About the briefing

In April 2024, the New Zealand Institute of Economic Research (NZIER) published its report, *Te Tai Tokerau Northland Expressway: Unlocking economic growth and regional prosperity*. The report was commissioned by the Northland Corporate Group, a consortium of large businesses in the region.¹ Collectively these organisations employ more than 3,500 people and provide services to 65 percent of the region's population. NZIER is a consultancy firm that produces freely available economic research to better understand New Zealand's economic challenges.

The report proposes that planned roads between Auckland and Northland be connected into a single Northland expressway through a major upgrade of State Highway 1. This would mean extending the expressway from Warkworth through the Brynderwyn Hills to Whangārei.

We initiated a briefing because we wanted to know more about the report's findings. At the time, two of the three electorate seats in Northland were held by members of our committee. We held a hearing with NZIER and the Northland Corporate Group on 23 May 2024.

Following this hearing, we decided to expand the briefing to look more broadly at alternative transport options for Northland. We held hearings with Waka Kotahi | New Zealand Transport Agency (NZTA) and KiwiRail on 25 July 2024 to discuss this.

Roads of National Significance

The *National Land Transport Programme 2024–27* (NLTP) was released in September 2024. This three-year programme sets out how NZTA, along with its partners, intends to invest in New Zealand's land transport system.

The current NLTP outlines the Government's priorities in relation to its Roads of National Significance programme (RoNS). This is a package of major transport projects intended to create a more resilient roading network by upgrading several sections of the state highway network. Funding for the programme is provided through the NLTP, which outlines RoNS projects in eight regions across New Zealand. NZTA describes the RoNS as strategic corridors that will support economic growth and build greater resilience into the roading

¹ Channel Infrastructure NZ, Culham Engineering, Marsden Maritime Holdings Limited, McKay Limited, and Northpower.

network. All RoNS projects are subject to investment decisions and funding. We heard from NZTA that, pending funding confirmation, up to seven projects are set to commence construction within the next three years. The NLTP notes that RoNS projects have been grouped into three “waves”, based on which projects are likely to begin construction the soonest. The Northland Corridor is one of the wave-one projects, along with State Highway 1 Cambridge to Piarere, State Highway 29 Tauriko, Hawke’s Bay Expressway, Belfast to Pegasus, and Mill Road.

As part of the RoNS programme, NZTA intends to pursue the construction of a “Northland Corridor”, which is planned to include:

- upgrading SH1 between Whangārei and Port Marsden to a four-lane highway
- upgrading SH1 between Te Hana and the Port Marsden Highway
- constructing a road from Warkworth to Wellsford (Te Hana).

The NLTP states that, once completed, the Northland Corridor will provide a continuous 100km upgraded state highway between Auckland and Whangārei. The corridor is intended to enable economic growth and productivity, and support the region’s significant industries (manufacturing, agriculture, forestry, farming, and fishing) and resulting movement of freight. NZTA intends to begin project development and route protection for all three parts of the strategic corridor in 2024–2027.



Above, left: Overview of planned Roads of National Significance in New Zealand.

Above, right: Land transport projects planned for Northland, including the proposed Northland Corridor.

Report of NZIER—Te Tai Tokerau Northland Expressway

The NZIER report recommends that the Government prioritise investment in, and construction of, the Northland Corridor. Speaking to our committee, NZIER and the Northland Corporate Group asked that the Government commit that a four-lane expressway from Auckland to Whangārei be operational by 2034. They also asked that the expressway be extended to Waitangi by 2040, to coincide with the bicentennial of the Treaty of Waitangi.

The report assesses the potential benefits of developing a Northland expressway from Auckland by extending the expressway between Wellsford and Whangārei through the Brynderwyn Hills. It found that constructing this expressway would support the expansion of Northport (a deep-water commercial point located at Marsden Point, near Whangārei) to meet Auckland's future growth needs. It also notes the potential economic value of increased productivity for businesses in Te Tai Tokerau | Northland.

The majority of respondents to a business survey conducted for the NZIER report stated that they would increase their investment in Northland if there were stronger transport links in the region. For example, the report notes specifically that the expressway would enable Northport to “expand and support Auckland's future growth needs.”

The report applies standard transport appraisal methodologies and business surveys to quantify the effects of the potential expressway. As NZIER did not have access to a confirmed route or transport model, its assessment uses several assumptions to determine the expected benefits of the road. These assumptions were informed by the business cases of similar projects pursued by NZTA. The report also uses a regional computable general equilibrium model to forecast the flow-on effects of this potential expressway on the economies of Northland and Auckland. Overall, the report highlights possible benefits of combining the planned RoNS projects into a single four-lane highway from Auckland to Whangārei, and ultimately all the way to Kaikohe.

Some of us expressed concerns about the methodology used in NZIER's report, noting that it relies largely on assumptions about the effect the Northland Corridor would have on GDP. Some of us pointed out that there is no evidence of increased regional GDP in areas where RoNS have been built in the past. To further analyse the methodology employed by NZIER, we received independent specialist advice from Dr Simon Chapple. His findings are appended to this report.

Procuring and financing the Northland Corridor

The Northland Corridor comprises three key sections: Warkworth to Wellsford, Wellsford to Port Marsden, and Port Marsden to Whangārei. During the week of our hearing with NZTA, the Government announced its intention to accelerate the delivery strategy for the Northland Corridor. At the time of our hearing, NZTA was in the process of developing its delivery strategy. Procurement for the Warkworth to Wellsford section is currently under way.

The corridor will be constructed as a single project with three phases, rather than as individual projects for each section of road. This approach means that there will not be multiple procurement processes. The design, construction, maintenance, and operation of

the entire corridor will be integrated, which NZTA said would allow for greater efficiency and speed of delivery.

NZTA must complete an investment case which will address key issues around funding and financing, contracting, and the consent approvals. NZTA informed us that a range of funding and financing options are under consideration, including tolling and public–private partnership (PPP) funding models. It noted that if the road were to be tolled, an alternate route would need to be available.

We look forward to hearing more details about the business case once it has been completed. We consider these details to be of great public interest.

Projected cost of the Northland Corridor

In September 2024 it was reported that, according to advice provided to the Minister for Infrastructure by the Infrastructure Commission, the Northland RoNS would cost 10 percent of the Government’s total infrastructure budget over the next 10 years. The advice itself was not made available at that time but was later published under the Official Information Act in October 2024.²

We expressed concern about the figure that was initially reported and asked to hear from the Infrastructure Commission. The Commission clarified that it had projected that the Northland RONS could total 10 percent of the Government’s non-maintenance/renewal investment infrastructure budget across the next 10 years, not the total infrastructure budget. The Commission also told us that this number is only an early estimate, and that multiple factors could cause it to increase or decrease.

We also note that the cost estimate of 10 percent was based on several assumptions, as NZTA did not yet have a lot of information about the finalised route that cost estimates could be based on.

Land transport in Northland

Drivers of Northland’s economy include manufacturing, forestry, agriculture, and tourism, with growth focused around Whangārei as the region’s urban hub. The region is challenged by limited shipping, rail, and public transport, so it relies heavily on the state highway network to move freight and tourists. NZTA stressed the importance of the state highway network to connect businesses to domestic and international markets. Northland is also home to Northport, the northern-most multi-purpose port in New Zealand, through which freight is exported around the world.

Road

NZTA told us that its investment decisions for New Zealand’s land transport system are guided by strategic documents. These include the Government Policy Statement on land transport 2024, as well as Arataki, its 30-year investment plan.³ It said that, beyond these

² [OIA response – Northland roading corridor \(2 October 2024\) | New Zealand Infrastructure Commission—Te Waihanga.](#)

³ [Arataki – Our 30-year plan | New Zealand Transport Agency—Waka Kotahi; Government Policy Statement on land transport 2024 | Ministry of Transport—Te Manatū Waka.](#)

strategic documents, its direction in Northland is based on enhancing what it has, but with an “eye for the future”. We heard about a number of programmes and projects it has conducted in the Northland region, including:

- state highway maintenance through the State Highway Maintenance Renewal Programme
- ongoing road network maintenance following severe weather events
- installation of a fixed speed camera in Kawakawa, with additional cameras planned for Kaitaia and Ahipara
- driver licensing pilots enabling more Northlanders to receive their licences
- safety improvements between Whangārei and Wellsford (such as the Puketona roundabouts and Kāeo Bridge).

NZTA informed us that it expects the risk of damage to Northland’s transport network to grow over the next 30 years as intense weather events become more frequent. Cyclone Gabrielle, for example, caused a number of land slips and floods in the region, which affected the state highway and local road network. Northland is vulnerable to weather events like this, which can cut it off from the rest of New Zealand completely, as there are no suitable detour routes. We see that there is a need for more transport options to prevent this from happening.

Rail and port

During our hearing with KiwiRail, we discussed the work it has done to reopen the North Auckland Line from Whangārei to Auckland, which was closed due to significant weather damage in 2023. This has now been completed.

We also heard that KiwiRail is designing a 19km single-track line to Marsden Point. Northport is one of the few ports in New Zealand that is not rail connected, and this route would connect it to the national rail network. KiwiRail expects to send its revised business case to the Government by mid-2025. We were told that about 85 percent of the track design and 50 percent of the civil engineering and structural planning has been completed. KiwiRail intends to hire Northland-based contractors, as they understand Northland’s specific geology. It intends to conduct this project in two or three sections, and tender out each package. KiwiRail told us that this is the first time it has built a rail section of this scale since the 1970s

We understand that KiwiRail has now acquired all the land for this route, and is conducting a detailed design of the link. KiwiRail expects to send the detailed design and a revised business case to the Government by mid-2025, for it to consider and agree next steps for funding and construction.

We welcome the planned rail connection between Northport and the national rail network, which will greatly improve the connection with the rest of New Zealand. We note that having two connections to the port, through both rail and road, will mean that larger ships may be more likely to dock there.

KiwiRail also noted that the earth itself in Northland can lead to issues. It said that the earth “does not form a pretty good basis” for infrastructure. This vulnerability must be considered when constructing any land transport projects in the region, for both rail and road.

An integrated and resilient transport system

We consider it important for Northland to have an integrated and resilient transport system, where all modes (road, rail, and port) work together seamlessly. Given the high volumes of freight moved through and out of the region, Northland requires a transport system capable of accommodating this demand. We see benefits to exploring these different models of transport to better connect Northland, both regionally and nationally.

Although NZIER was commissioned solely to examine the economic benefits of a Northland expressway, it acknowledged that transport is a network, and that rail should be considered as part of a wider business case for transport in Northland. However, NZIER also noted that roading is the most flexible option, as it “services the biggest range of the community for different options”.

We recognise the importance of both road and rail in driving economic growth and development opportunities for the region. We believe that the Northland Expressway could be particularly useful in accommodating the large amounts of freight that moves around and through Northland. We also think that all models for delivering transport in Northland should be considered, so long as everything works together.

Green Party of Aotearoa New Zealand and New Zealand Labour Party differing view

The Green Party and the Labour Party consider that the evidence provided to the committee during this briefing is wholly insufficient to conclude that the Northland Expressway is the best way to improve transport links, improve economic productivity, and increase resilience for Northland. The unknown, but likely extremely high, cost of a new four-lane expressway must be evaluated against other investments in infrastructure and services that will benefit the people of Northland. No evaluation of alternatives was undertaken by NZIER, as they themselves acknowledged. There is an urgent need to reduce greenhouse gas emissions, and New Zealand has a limited financial budget and a limited carbon budget to invest in infrastructure that will enable the efficient movement of people and goods. As noted by the independent economic adviser:

The NZIER report is advocacy research, paid for by people with monetary skin in the game to commercial providers of consultancy services, meaning its conclusions need to be regarded with caution by the public. The recommendation to prioritise the expressway does not logically follow from any of the analysis undertaken and estimates of benefits and costs derived by the NZIER.

Appendix A—Committee procedure

We met between 2 May 2024 and 22 May 2025 to consider this briefing. We heard evidence from the Northland Corporate Group and NZIER (on 23 May 2024), Waka Kotahi | New Zealand Transport Agency, KiwiRail, and the New Zealand Infrastructure Commission | Te Waihanga (on 25 July 2024). We received advice from our independent specialist adviser, Dr Simon Chapple.

Committee members

Andy Foster (Chairperson)
Dan Bidois (from 29 January 2025)
Dr Carlos Cheung (from 9 April 2025)
Hon Julie Anne Genter
Mariameno Kapa-Kingi
Cameron Luxton
Hon Kieran McAnulty (from 12 March 2025 to 14 May 2025)
Grant McCallum (until 29 January 2025)
Dr Tracey McLellan (from 14 May 2025)
Tom Rutherford (until 29 January 2025)
Stuart Smith (from 29 January 2025 to 9 April 2025)
Tangi Utikere
Arena Williams (until 12 March 2025)

Shanan Halbert, Hūhana Lyndon, and Celia Wade-Brown participated in some of our consideration.

Related resources

The documents we received as evidence for this briefing are available on the [Parliament website](#). A recording of our hearing on 23 May 2024 with the Northland Corporate Group and NZIER [is available here](#), and a recording of our hearing on 25 July 2024 with Waka Kotahi | New Zealand Transport Agency and KiwiRail [is available here](#).

Appendix B—Independent adviser’s report

Independent analysis for the Transport and Infrastructure
Parliamentary Select Committee of “Te Tai Tokerau Northland
Expressway: Unlocking economic growth and regional prosperity.
NZIER report to the Northland Corporate Group”

Dr Simon Chapple

Motu Economic and Public Policy

November 2024

Thanks to my Motu colleagues for helpful comments on this work which was presented in draft as part of the regular Motu Internal Seminar Series (MISS). For full disclosure, I worked as a senior economist for the NZIER many years ago between 1993 and 1997. I do not personally or professionally know any of the authors of the NZIER report.

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Executive summary

- The NZIER report assesses the monetary or monetised benefits of extending the four-lane expressway on SH1 from Warkworth to Whangārei and from Whangārei to Kaikohe
- The NZIER report is advocacy research, paid for by people with monetary skin in the game to commercial providers of consultancy services, meaning its conclusions need to be regarded with caution by the public
- The recommendation to prioritise the expressway does not logically follow from any of the analysis undertaken and estimates of benefits and costs derived by the NZIER
- Estimates of benefits derived in the report are not readily independently verifiable
- The current average speeds used as a baseline by the NZIER to derive the gains in travel time from the expressway cannot be replicated here. This finding does not necessarily mean that they are incorrect (the error may be mine), but it emphasises a need for extensive consideration to avoid jumping to expensive conclusions
- The NZIER's exact point estimate from building the expressway of a \$1160 million annual GDP gain by 2050 is highly uncertain. It is also quite high compared to other plausible evidence
- The estimated GDP (and other) future benefits are presented in a manner which risks misleading the public as to their size. When discounted by the recommended Treasury commercial discount rate, future benefits are much lower. For example, the \$1160 million annual GDP gain in 2050 is reduced by the 8% discount rate to \$157 million. The cumulated 2040-2060 estimated gain of \$23.6 billion is reduced to \$3.7 billion
- The project will, according to the NZIER, raise Northland GDP but at the expense of reducing GDP elsewhere. The wider consideration of distributive and equity issues is very limited
- The brief consideration of indicative costs does not discuss the possibility of cost over-runs, deadweight costs of taxation to fund the expressway or maintenance and repair costs, all of which may be significant

Background

The Coalition Government is accelerating work on the new four-lane expressway between Auckland and Whangārei as part of its Roads of National Significance programme.

The Northland Expressway combines the three Roads of National Significance between Warkworth and Whangārei named in the Government Policy Statement on land transport (Alternative to Brynderwyn Hills, Whangārei to Port Marsden Highway and Warkworth to Wellsford). Below, this expressway is referred to as the “the southern leg”.

The NZIER report goes beyond supporting this accelerated commitment. It examines the further implications of extension of the four-lane expressway from Whangārei (city population 56,000, region of 96,678 people) to Kaikohe (population 5000, far north population of 71,430). Below, this expressway is referred to as the “the northern leg”.

The research question which the NZIER report addresses is assessing the monetary or monetised benefits of extending the four-lane expressway on SH1 from Warkworth to Whangārei and from Whangārei to Kaikohe. The question is addressed in a 60-page report which contains a forward by their funders, the Northern Corporate Group (NGC).

Interpreting advocacy research

The NZIER report cannot be considered a dispassionate assessment of the pros and cons of the benefits of the four-lane expressway to Kaikohe. This conclusion does not mean that the report is necessarily without value, but it does mean that an external assessment such as this one must understand it as such. It requires being careful about taking its conclusions at face value and in analysing its scientific robustness.

The NZIER's report is funded by a consortium of commercial funders – the Northland Corporate Group (NGC). The NCG are self-described Northland “business heavyweights” [Channel Infrastructure NZ](#), [Culham Engineering](#), [Marsden Maritime Holdings Limited](#), McKay Limited and [Northpower](#). Together, they boast a combined annual turnover exceeding \$1 billion and employ more than 3,500 people (employment in Northland is about 76,000 people). Their stated agenda is “calling for the government to fast-track its commitments and extend their scope to include a wholesale upgrade of SH1”.

It would not be unreasonable therefore to hypothesize that the bottom lines of these substantial players stand to be considerably increased by construction spending on the project and on the benefits generated by the project once the expressway comes into operation. The interests of this relatively small number of company managers and shareholders may or may not align with those of Northlanders or those of New Zealanders as a whole.

The providers of the report are the NZ Institute of Economic Research (NZIER). The NZIER is a longstanding private non-profit economic consulting and economic forecasting organization. Much of its income comes from commercial contracts. It uses the operating surplus from commercial contracts to fund public good research, which in turn gives them charitable tax status. The NZIER website indicates that “[o]ur core values of independence and promoting better outcomes for all New Zealanders are the driving force behind why we exist and how we work today”.

In economic consulting, as in any other business, a fundamental driver of obtaining future work is giving the client what they want. In the case of economic consulting this is not primarily objectively seeking the truth in a neutral and balanced fashion. Against this pressure, a consultancy must balance risks of reputational damage for other long-term business should they be perceived in the consultancy market as merely a gun for hire.

In discussing the key points of the research throughout, the NZIER is commendably explicit that their report is advocacy research. Their report's aims and conclusions are clearly stated as normative advocacy, viz:

- *"The report...aims to motivate the government to prioritise the [four-lane Northland expressway]", p. iv*
- *"The case for the Te Tai Tokerau Northland expressway" p. vii*
- *"It is intended to convince the government to combine its roading commitments into a single Tai Tokerau Northland Expressway and make the investment a national priority", p. 2.*
- *"The government should prioritise this road and immediately begin work on the required detailed options appraisal, design and costing activities. This should include a full cost-benefit analysis" p. 37*

However, all governments face a very wide range of investment options rather than a simple binary question of build/do not build the northern expressway. In the absence of weighing the expressway investment up against all alternative investments, including alternative means of generating some or all of the desirable Northland outcomes, no dispassionate research report can draw such a strong conclusion about prioritisation of the Northland expressway over other forms of infrastructure investment. Indeed, the NZIER are explicitly not commissioned by the NGC to undertake such a comparison. There is, therefore, no professional justification for the NZIER claims about what government should do in terms of the expressway. What is more, the NZIER advocacy for both the project and a cost-benefit analysis puts the cart before the horse. A coherent and careful cost-benefit analysis should occur *before* any investment prioritisation occurs or is advocated.

The report has been internally quality assured at the NZIER. But there is no independent third-party assessment as there would be, for example, if the work was published in a professional refereed

academic journal. This report is, therefore, a form of independent quality assurance. Yet it cannot be a last word. I too could be wrong.

Aside from the fact that the NZIER's advocacy for the expressway project cannot arise out of their analysis, a further issue is the accuracy and robustness of the numbers which the NZIER provides regarding the expressway. This issue, and the NZIER methods and results, are discussed below.

Method 1: Applying the standard NZTA Model

The NZIER use three methods to assess benefits from the proposed expressway. They first use NZTA's standard transport appraisal approach to assess benefits of the expressway (p. 14). That approach divides benefit types into five types to be monetised:

1. Efficiency
2. Resilience
3. Safety
4. Emissions
5. Social (not quantified in the study)

The sum of annual benefits estimated using this approach by the NZIER ranges from \$299 million to \$562 million. The dominant contributor is travel time saved, which was between 80% and 83% of the estimated total annual benefits.

To generate the results, the NZIER assumes "[road] traffic volumes continue to grow at historic rates" between 2019 and 2050 (p. 14).

There is a high scenario and low scenario transport vehicle kilometres travelled presented for the 2019 baseline year (Table 5, p. 14). For example, the low outcomes measure ranges from 802 million to 1,2013 million kilometres travelled in 2019. It is unclear from the report why there is such a large

range in historical 2019 traffic volumes. That cone of uncertainty regarding kilometres travelled does not change going forward. The ratio of the historical low to high outcomes scenario in 2019 is the same as the ratio of the low to high outcomes forecast scenario in 2025. The high outcome in both cases is 1.5 times the low outcome. Therefore, the NZIER is implicitly just as confident about the difference between the high and low travel volume outcomes historically and into the future. This pattern may not be terribly plausible, unless the future is known with certainty (even though the present is not!).

The assumed annual travel growth rate for Warkworth to Whangārei is 2.7% and for Whangārei to Kaikohe is 0.2% (derived from Table 5). Given low projected northern leg growth and currently faster average speeds on the northern leg compared to the southern leg (according to Google Map) would suggest that the business case for building for projected vehicle growth is far weaker for the northern leg. Traffic volumes on the northern leg are approximately half of those on the southern leg. Again, that would appear to make the case weaker for the northern leg.

A core dimension of science is replicability. In a perfect world a researcher should be able to address the same question applying the same method and come up with the same results as the NZIER.

Replicability is one reason researchers describe their method, detail their data sources and so on. I have tried and not entirely succeeded in replicating the NZIER report in terms of travel times. It should be emphasised that the errors here could be mine.

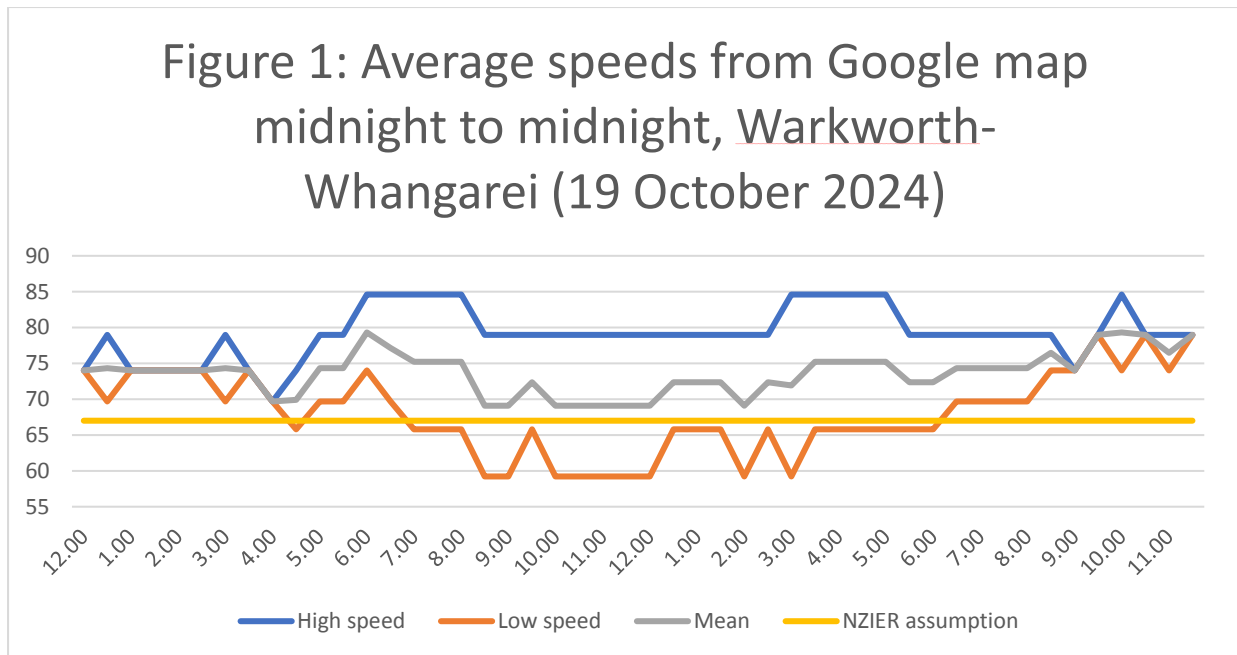
The NZIER use Google Map to generate a before-Expressway travel time baseline (p. 15). For light vehicles, their pre-Expressway baseline for average travels speeds for light vehicles is 67 kmph on both legs.

In a low scenario, the expressway is assumed to raise average speeds by 13 kmph to 80 kmph. In a high scenario the gain is 23 kmph to 90 kmph (p. 15).

They report distances in the southern leg of 98.7 km and the northern leg of 85.6 km. I can replicate both these distances on Google Map. But I cannot replicate the average travel times and hence average speeds. My calculation of the average speed on the southern leg is 73.1 kmph and an even higher 75.5 kmph on the northern leg. Both baseline speeds are considerably higher than the 67 kmph baseline used by the NZIER. Using the higher baselines will halve or more the estimated speed gains in the 80 kmph case and reduce them by a quarter in the 90 kmph case.

They estimate these southern leg speeds across four sub-sections, the shorter of which have higher traffic volumes and lower speeds. Many of these shorter trips are very local trips and whether people continue to take them on a new expressway will depend on the number of off-ramps built and their convenience compared to the ultimate locations. It is possible that differences in sub-section speeds and traffic volumes is the reason for my non-replication of the 67 kmph baseline, but my calculations suggest that this is unlikely.

Another possibility is that the NZIER have used a different time of day or day of the week for travelling, accounting for the slower baseline speed. However, the NZIER state that: “As there is little variation in travel times for different days of the week or different times of day, we do not consider it necessary to break down traffic volumes by weekday and week or peak and interpeak” (p. 40). This claim is not clearly supported by the data derived from Google Map for travel in the 24-hour period between midnight to midnight on 19 October (Figure 1). The average speed is consistently above the 67 kmph estimated by the NZIER and sometimes up to 13 kmph faster. The difficulty in replicating the NZIER’s numbers does not necessarily mean they are wrong – again, this attempted replication assessment may be in error – but it does indicate that there are questions for the NZIER to answer.



Method 2: Business survey

The Business survey was undertaken by the NCG, not by the NZIER. The stated aim of the survey (by the NZIER) was to understand the economic impact of the 2023 Brynderwyn hill road closures and assess the perceived impact of upgrading the route to a four-lane expressway for both the northern and southern legs.

It was an opt-in internet survey. Participants were recruited through business networks and social media. 11% of Northland business responded and 81% of responses were full responses.

The NZIER's conclusion was that:

The responses from the survey indicate that the full benefits from improved road infrastructure could be many times larger than the direct benefits of travel time and vehicle operating cost savings. (p. 23)

Commendably, the NZIER report outlines several significant limitations arising from the sampling approach. A major issue is non-random recruitment into the sample via the sampling strategy. A further issue is that those businesses more likely to be effected by the building of an expressway are more likely to respond to the survey. The NZIER also mention the possibility of optimism bias as introducing further non-systematic error. A further potential form of bias not mentioned will be businesses over-reporting of the gains due to self-interest. Overall, upward bias in favour of finding positive impacts from the expressway seems more likely than downward bias in the survey. How much is impossible to state.

A further issue not discussed is possible bias introduced regarding how respondents were formally or informally primed. The report lists the survey questions but does not provide any indication of what respondents were told about the purpose of the survey when (1) they were recruited into it and (2) when they filled it out.

Lastly, also pointed out by the NZIER, there will be error in businesses' self-assessment of the impact of the expressway.

The NZIER report concludes:

This [survey] implies a total revenue increase of between \$690 million and \$2,200 million across Tai Tokerau Northland businesses for Auckland to Whangārei and between \$460 million and \$1,900 million for Whangārei to Kaikohe.

This is an estimate of \$1150 to \$4100 million in total revenue gains from building the complete expressway, a figure also highlighted by the NZIER in Table 2, p. vi.

I can further use these numbers to get an estimate to the expected Northland GDP gain.

Nationally, wages and salaries and operating surplus, which are contributions to GDP, are 27% of revenue. Should these *national average ratios* apply to *Northland's marginal revenue gain*,

then the implied Northland GDP gain from the expressway is \$311 million to \$1107 million per annum. This estimated gain is likely to be higher to the extent that the expressway may cause some businesses to relocate their activity to Northland.

Method 3: Computable general equilibrium modelling

The NZIER use a computable general equilibrium (CGE) model of New Zealand regional economies to estimate the GDP (essentially market income) impact of the expressway. Unlike in their previous two methods, they do not breakdown the separate impacts of the northern and southern legs. Use of such models is increasingly common in assessing the impacts of transportation project.

The CGE model appears to be a proprietary one. Hence, the model used is a black box, making outside quality assurance difficult and replication of their result impossible. Little information is provided about the structure of the model (pp. 12-13) in the paper. There is no reference to other available publications which provide detail on the model and its likely critical assumptions, especially those regarding input-output relationships, responsiveness of supply and demand to the assumed positive productivity shock, and the speed at which the economy adjusts to the expressway change.

The CGE model is driven by the assumption that the expressway raises productivity in Northland by “at least” 2.5%. This point-estimate productivity shock is argued, in a very loose fashion, to derive from the NCG Business survey (p. 32). Gains directly measured from the business survey are presented as ranges, whereas the productivity improvement somehow derived from the Business survey by methods are unclear is a point estimate, despite being almost by definition less certain. Equally, the plurality of businesses in the survey who report their belief in a change in economic

outcomes consequent on the expressway are unable to quantify the magnitude of change, again signalling significant parameter uncertainty.

Moreover, international meta-analyses on the impact of transport infrastructure investments give a wide variety of results in terms of whether economic productivity is consequently enhanced by infrastructure spending -i.e. whether or not the figure is non-zero (see for example Holmgren and Merkel 2017, Melo et al. 2013, Elburz et al. 2017). One recent international meta-analysis, specifically of roading infrastructure, concludes that the “[t]otal effect from road infrastructure is positive but statistically insignificant” indicating wide variability and significant uncertainty (Konno et al. 2021).

Given the likely uncertainties emerging here, it would have been more informative and more consistent with the international literature to use a range of productivity estimates as CGE model inputs, including zero, to assess the GDP impact. Obviously a zero assumption would not be terribly favourable to the expressway.

The NZIER find that the expressway adds \$1160 million to NZ GDP annually by 2050. It is not clear why 2050 has been chosen as the point at which to assess benefits, but presumably it is because (1) a gestation lag: it takes decades to plan and build an expressway and (2) it takes time for the economy to achieve the long-run higher productivity created by the expressway following its completion.

The NZIER also find that the expressway adds \$2331 million to annual Northland GDP by 2050.

Given that current Northland GDP is about \$9700 million (see

<https://rep.infometrics.co.nz/northland-region/economy/growth>), GDP is estimated to rise by

one quarter. Given that the road connection already exists, and the expressway is simply

reducing travel times by dozens of minutes, the marginal GDP gain estimated by the NZIER is

very high.

Additionally, under the NZIER simulation, the rest of New Zealand *becomes worse off* by \$1160 million GDP annually because of the expressway. This reduction is because a relatively large component of GDP relocates to Northland, something not concealed but also not highlighted by the NZIER. In addition, there will be a further reduction in GDP New Zealand-wide arising out of deadweight costs of the higher taxes required to fund the investment. Most of these higher taxes will be paid by the rest of New Zealand.

The NCG's claim in the introduction to the report (p. iiiii) that the project will be "for the benefit of all New Zealanders" consequently does not appear to be an accurate summation of the NZIER research. Nor is there any support in the NZIER's report for the NCG claim that the expressway will "amplify Auckland's growth" and "be the critical next step to achieving Aotearoa's ambitions". It is worth remarking that even if there is a positive boost for Auckland in addition to Northland's, GDP losses outside Auckland and Northland would then arithmetically need to *exceed* \$1160 million annually.

It is noteworthy that the CGE Northland GDP gain of \$2331 million is much higher than the Northland GDP rise derived from the revenue change estimated from the Business survey data of \$311 to \$1107 million, further suggesting it is a very soft number.

A further reality check on the size of the NZIER's \$1161 million NZ-wide GDP gain is to compare it to the estimated impact of the Waikato Expressway. The Waikato Expressway connected much larger populations and economies and thus was likely to access more substantial agglomeration economies. Economic consultancy Principal Economics (2022) used an apparently similar regional CGE model to estimate the downstream GDP benefits of the Waikato Expressway at \$334 million annually, less than one third of the NZIER's Northland estimates.

Discounting

The investment, according to the NZIER:

could unlock \$23.8 billion of GDP growth over a 20-year period [indicated in the report from 2040 to 2060], indicating the road will provide value for money. (p. vii)

The \$23.8 billion figure for GDP gains in the 2040 to the 2060 period risks creating misperceptions as a headline conclusion. It does not appropriately discount future benefits. How do benefits look if an appropriate time discount rate is used?

The current NZ Treasury-recommended time discount rate for commercial benefits and costs is 8%. Using this discount rate, the cumulated benefits between 2040 and 2060 are substantially reduced from the cited \$23.8 billion to a much more modest \$3.7 billion. Again, via Treasury-recommended discounting, the annual 2050 benefits estimated by the NZIER are reduced from \$1160 million to a more modest \$157 million.

The manner in which the NZIER and the NCG present the headline benefits may seriously mislead consumers of the research.

Distribution and equity

Despite the identified scope of the study ruling out consideration of “equity or distributional effects” (p. 2), the report makes some consideration of these issues. It is concerned to show Northland is more disadvantaged than the rest of New Zealand and, by implication, this is in part and rather loosely why the investment should proceed. It discusses access to employment, education, healthcare and poverty (pp. 20-22). The NZIER believe that the expressway investment will improve these outcomes in Northland. The basis for these strong conclusions is unclear, but it seems to be

founded on the notion that a rising tide will float all boats. Stronger and more systematic consideration of the distributive consequences *within* Northland is necessary before these conclusions can be given much weight. And if distribution and equity are important criteria for infrastructure investment, there may well be far more efficient ways of achieving these outcomes than the expressway which should be explored when making investment decisions. Otherwise, the perception may arise that sympathy for the disadvantaged is merely being played on to lever resources directly into the pockets of vested interests.

Indicative costs

The NZIER report usefully but briefly presents indicative costs of the northern and southern legs, again in non-discounted 2023 dollars (p. 35). They use comparable completed expressway projects to estimate costs of the southern leg of between \$3 billion and \$5.9 billion and of the northern leg of between \$2.6 billion and \$5.1 billion. The total estimated cost is therefore \$5.6 billion to \$11 billion. These are big numbers.

These costs do not include the deadweight cost of taxation to pay for the infrastructure. If the project is debt funded the funding costs issues become more complex, depending on how taxpayers perceive and adjust to the higher debt. Traditionally, a rule of thumb of 20% had been used by Treasury to estimate these deadweight costs, so it is possible that they are substantial.

These costs also do not take into consideration the ongoing maintenance costs of the expressway once built. At 6.8 cents per kilometre travelled (an NZTA number), these costs could be up to \$150 million annually in the higher travel volume scenario.

Lastly, the cost section does not mention the possibility of cost over-runs over and above those incurred on comparable projects. Infrastructure projects that come in on or under costs are rare.

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