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Upper North Island Supply Chain Strategy

Regional economic development possibilities

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1. Introduction

Officials are undertaking a programme of additional work following the independent working group report on the Upper North Island Supply Chain Strategy. This workstream considers Regional Economic Development and Social Impact.

1.1 Scope

The workstream scope is summarised below.

Inclusions

- input-output analysis of inter-industry transactions to determine economic structure
- additional 'investment in capitals' analysis to determine longer-term, dynamic effects
- social impact assessment
- quantified and non-quantified (descriptive) analysis.

Exclusions

- bespoke social impact analysis of each of the location options
- computable general equilibrium or other more advanced modelling
- site visits.

For tractability reasons, we focus on 'full' freight operations moves. That is, outside of the 'split' option of Auckland's current freight task at Waitematā harbour being shared by both Northport and port of Tauranga, we assume that freight operations in their entirety relocate to one or other of the alternative locations.

We concede that so-called 'partial' moves are possible in that different freight types might relocate to different alternative sites, but do not model such moves. The decision to focus on 'full' moves was made at the outset in order to complete the analysis in the time available.

This particular working paper provides an economic-based view of the likely effects of relocating the freight operations from the Waitematā harbour. This working paper should be read in conjunction with a separate social assessment by Tika Impact Ltd.

1.2 Context

The Regional Economic Development and Social Impact workstream was commissioned for two reasons. The first reason was to extend the work undertaken for the Working Group by EY on regional impacts to:

- include another relocation possibility for freight operations other than Northport (i.e. Port of Tauranga)
- apply 'non-standard' approaches to the analysis in addition to the more 'standard' multiplier-based impact completed previously.

The second reason for commissioning the workstream was to assess the potential social effects of the relocation of freight operations from their current site on the Waitematā harbour.

Data availability dictates that the analysis in this working paper proceeds on a regional basis. That is, no sub-regional data is available and therefore we primarily compare Northland and Bay of Plenty regions (as the locations of Northport and Port of Tauranga respectively). The Waikato region is assessed implicitly, rather than as a standalone location as such.

As the Firth of Thames and Manukau options are in the same region as the current site, there is essentially no impact at the regional level that could reasonably be estimated.

1.3 Approach

We have combined insights from different perspectives to paint an overall picture of the likely impacts on regional economic development of freight operations' relocation. The key components are:

- an overview of the economic structures of the relevant regional economies, predominantly to highlight any regional specialisations or comparative advantages which might prove complementary to the relocated activities
- analysis of impact from the capital (mainly construction) expenditures associated with freight operations, to give a sense of the likely employment and GDP impacts relative to the existing regional economies (i.e. short-term impacts)
- estimates of on-going and catalytic impacts as a result of the lift in throughput at the respective ports/regions applying relationships developed elsewhere to the proposed relocation
- initial examination of a developing literature on regional attractiveness and the effects that such attractiveness has on labour supply and quality, and in turn regional economic performance, to assess the extent to which there are valid implications that could be drawn on the suitability or otherwise of the alternative locations.

The intention was to integrate as much as possible the various components, even though they each measure different elements.

2. The proposition

On 9 December 2019, Cabinet noted, *inter alia*, that “the Ports of Auckland is not viable as the Upper North island’s key import port in the long term.” Thus, the key task for this workstream is to provide insights around the direct and indirect impacts on the alternative locations proposed to take over Ports of Auckland’s freight operations.

The scope of the potential addition to alternative locations is not trivial. At present, the annual freight task at Auckland accounts for just over nine million tonnes, comprised of around:

- 1 million containers (TEU)
- 260,000 imported cars
- 1.7 million tonnes of bulk imports.

This freight task is expected to grow over time, such that when any relocation is complete, the total freight task is estimated to be 11.3 million- 15.7 million tonnes (in 2045). Relocation of such freight volumes will give rise to economic impacts which will differ depending on the ability of alternative locations to absorb the impulse.

3. Economic structures of alternative locations

We examine relevant locations in terms of key metrics that are typically used in analyses such as this: employment and gross domestic product (GDP).

During the preparation of this analysis, restrictions associated with the COVID-19 pandemic were put in place. Economic effects that are potentially material are likely to result from the restrictions. It is not possible in this work to accurately factor in the magnitude or timing of such effects, but structural changes to relevant economies are possible.

For the purposes of this analysis, we assume that the structures in place currently represent what relevant economies would look like in the future.

3.1 The port relocation would represent a significant boost to regional economies, especially Northland

In October 2019 the contribution of the port/s at Auckland to Gross Domestic Product (GDP) was estimated to be approximately \$158 million per year (i.e. the economy would have been smaller by approximately \$158 million per year over the last five years if the port did not exist).

The \$158 million figure is comprised of approximately \$99.5 million for earnings before interest, taxes, depreciation and amortization (EBITDA) and around \$58.4 million in compensation to employees (NZIER, 2019).

This is effectively the total economic contribution including cruise-related activities, which are not proposed for relocation. The figures above do not provide a breakdown in terms of the current GDP attributable to cruise activities. We are able to estimate the proportion of GDP that cruise activities provide using a previous study, which estimated that 14.4 per cent of the GDP contribution comes from cruise activities (Market Economics, 2011). We therefore reduce the figures above by that percentage, resulting in an annual GDP contribution from relevant port activities of \$135 million.

Table 1 contains information on regional GDP to contextualise the relocation of the port. The table shows that the annual contribution to GDP from the port ranges from 0.1 per cent of annual GDP in Auckland to 1.8 per cent of annual GDP in Northland.

When considered against the annual average percentage change (AAPC) in economic growth from the last ten years, we see that the activities of the port would account for almost 85 per cent of the recorded annual economic growth in Northland recently. That is, once the relevant activities at the Auckland port were transferred to Northland instantaneously, GDP growth would almost double.

For the Bay of Plenty, relocated port activities would represent around a third of the annual economic growth recorded for the region. Predictably, things are less significant for Auckland with the port contribution to annual economic growth representing only around 4 per cent of the observed growth.

Table 1 Regional GDP and the Significance of Port Relocation

Region	Annual GDP 2019(\$m)	Port share of annual GDP	AAPC in GDP for last ten years	Proportion of annual average GDP growth accounted for if port relocates
Auckland	113,482	0.1%	3.30%	3.6%
Northland	\$7,385	1.8%	2.17%	84.4%
Bay of Plenty	\$14,945	0.9%	2.68%	33.8%

Source: Infometrics Regional Database

3.2 Regional specialisation provides a useful analytical lens

The primary lens through which we analyse regions is specialisation. Specifically, we use location quotients to determine specialisation. Such specialisation is often referred to as revealed comparative advantage (RCA). A location quotient for a particular industry is a ratio that compares the percentage of employment in that industry in a local economy to the percentage that same industry constitutes in a reference economy, typically the national economy.

Formally, a location quotient is defined as:

$$LQ_i = \frac{\frac{e_i}{e}}{\frac{E_i}{E}}$$

where: e_i = Regional employment in industry i

e = Total regional employment

E_i = National employment in industry i

E = Total national employment

Location quotient analysis indicates which industries have a comparatively larger or smaller presence in the local economy. A location quotient of 1.0 means that the share of employment in a particular industry in a local economy is exactly the same as the share of employment in the same industry nationally.

If a location quotient is greater than 1.0, the local share of employment in a particular industry exceeds the national share of employment in the same industry. Location quotients greater than 1.2 are generally considered to be significant and indicate relatively high production of a particular good or service (McLean & Voytek, 1992). Such a value for the location quotient signals regional comparative advantage, which may come about due to locational endowments and/or productive efficiency.

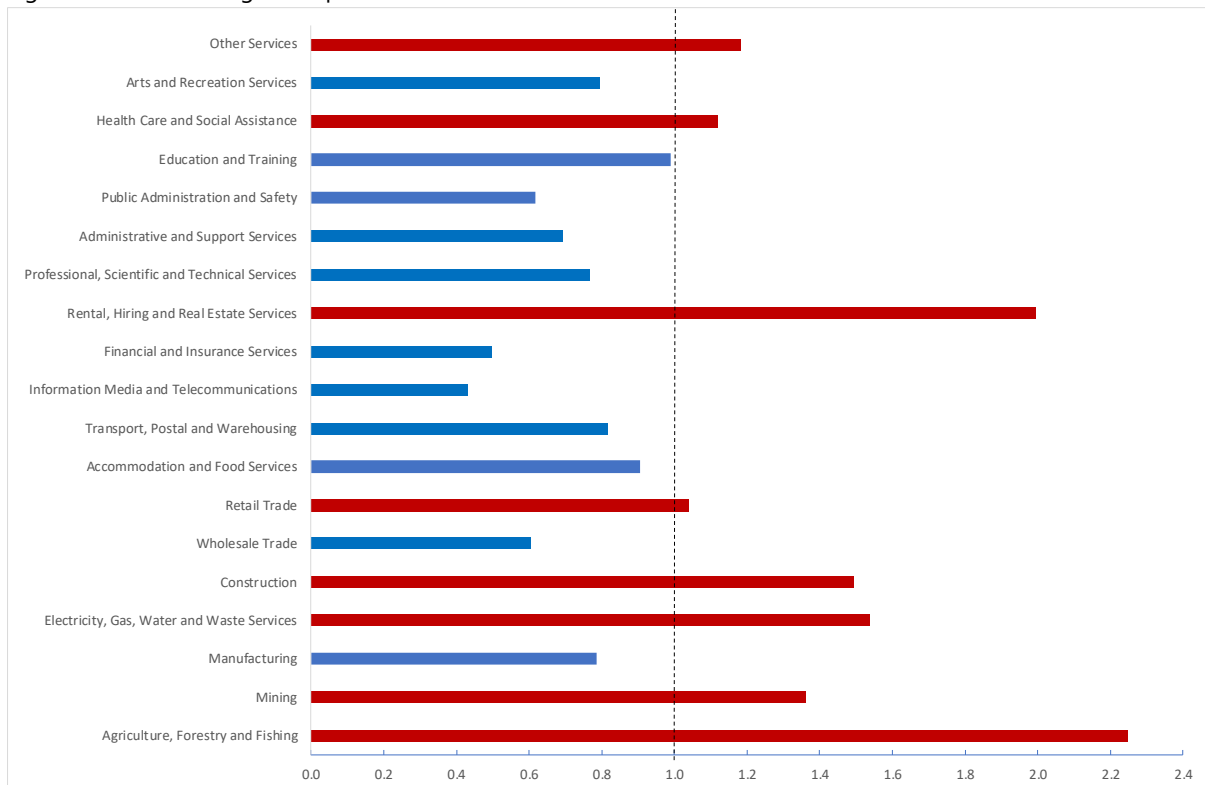
Perhaps reflecting its importance as an export/freight hub, Bay of Plenty has a regional specialisation in Transport, Postal and Warehousing, which is not shared with Northland.

Figure 1 shows that Northland has particularly strong specialisations in the primary sector as well as real estate/property and (non-real estate) rental/hiring. This is similar to the situation in the Bay of Plenty, though the order of importance is reversed (see Figure 2). In total, Northland has an apparent regional comparative advantage in eight industrial categories (out of a total of 19), while Bay of Plenty has seven. There are five industries where both regions share an advantage (relative to the rest of the country):

- Agriculture, Forestry and Fishing
- Rental, Hiring and Real Estate Services
- Construction
- Other Services
- Health Care and Social Assistance.

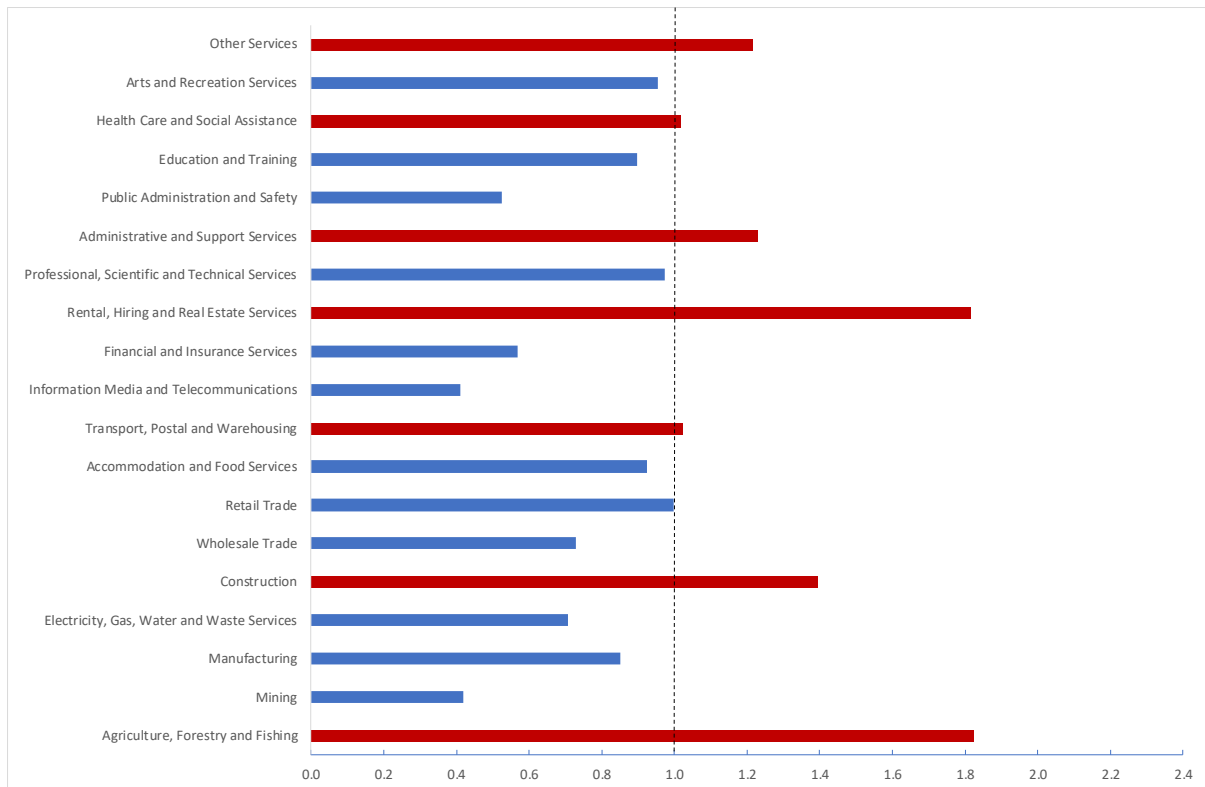
Perhaps reflecting its importance as an export/freight hub, Bay of Plenty has a regional specialisation in Transport, Postal and Warehousing, which is not shared with Northland.

Figure 1 Northland Regional Specialisations



Source: Infometrics Regional Database

Figure 2 Bay of Plenty Regional Specialisations



Source: Infometrics Regional Database

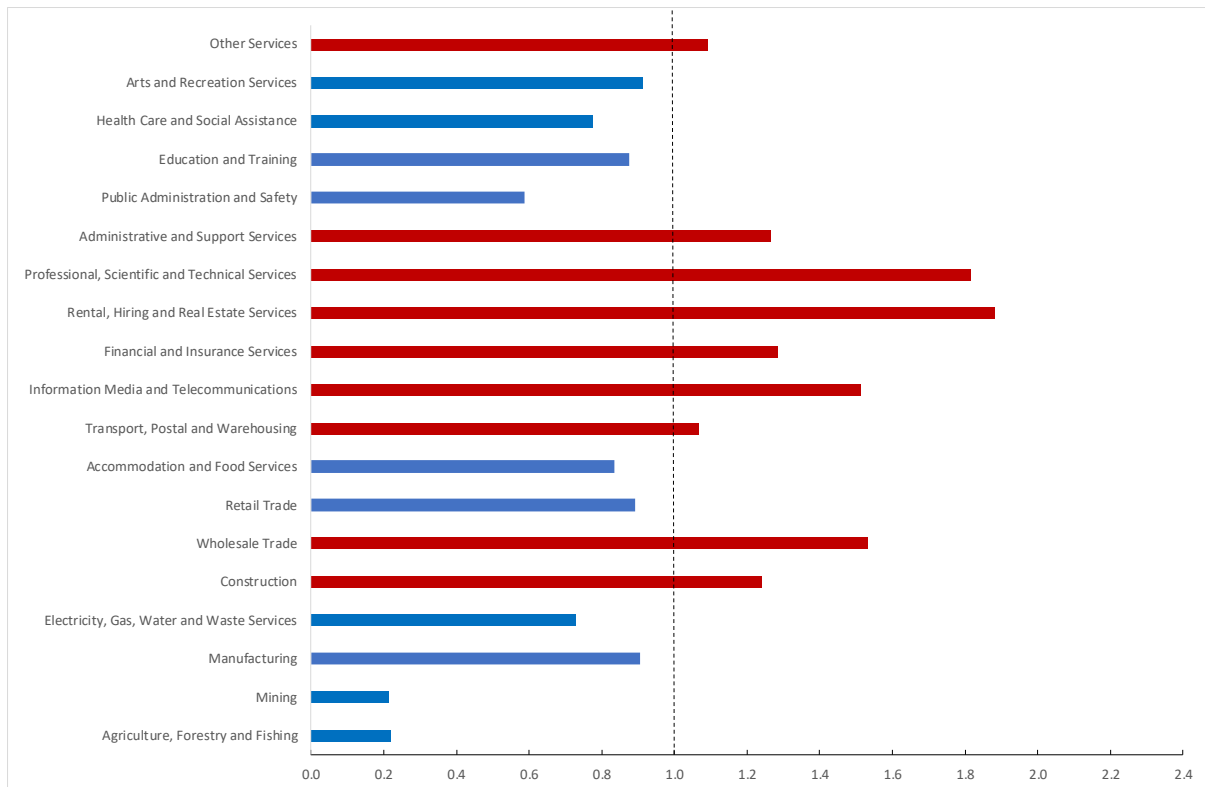
Figure 3 shows the heavy service orientation for the Auckland region. Auckland enjoys a regional comparative advantage in nine industrial categories, most of which are services-related:

- Rental, Hiring and Real Estate Services
- Professional, Scientific and Technical Services
- Information, Media and Telecommunications
- Wholesale Trade
- Administrative and Support Services
- Construction
- Financial and Insurance Services
- Other Services
- Transport, Postal and Warehousing.

There are three industries with shared regional comparative advantages across Auckland, Bay of Plenty and Northland regions:

- Rental, Hiring and Real Estate Services
- Other services
- Construction.

Figure 3 Auckland Regional Specialisations



Source: Infometrics Regional Database

3.3 Other measures show a similar pattern

We are conscious that the data on employment and GDP is concerned primarily with members of the relevant community who are 'economically participative' (i.e. those in jobs and contributing directly to production).

Northland is over-represented in terms of beneficiaries...

Table 2 shows beneficiary numbers for the relevant regions and what those numbers mean in terms of the total share of beneficiaries nationally. The final column shows the share of the national population that each region accounts for. We include this figure to compare each region's share of national beneficiary numbers with that region's share of total national population.

Comparing the figures in the last two columns shows that Northland has a share of beneficiaries that is slightly over 1.5 times its share of the population (i.e. it has an over-representation of beneficiaries). Auckland is relatively under-represented by this measure, while the Bay of Plenty is neither strongly over or under-represented in terms of beneficiary numbers.

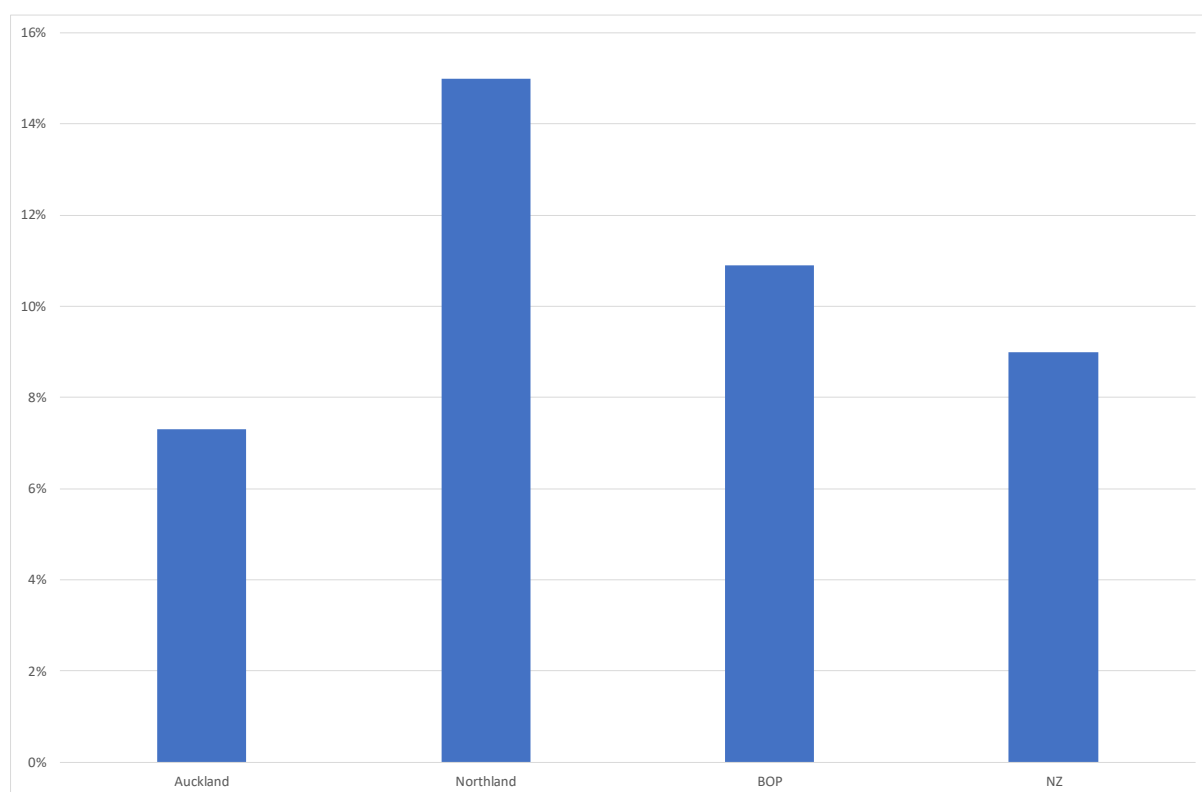
Table 2 Beneficiaries numbers and national share (2019)

	Number	Share of total beneficiaries	Share of total population
Northland	16,762	6%	3.8%
Auckland	81,258	28%	33.4%
Bay of Plenty	21,379	7%	6.6%
New Zealand	286,880	100%	100%

Source: Infometrics Regional Database

When considered against the share of the working age population (i.e. the usually resident, non-institutionalised, civilian population aged 15-64), Northland again stands out relative to the other regions and New Zealand as a whole (see Figure 4).

Figure 4 Beneficiaries as a share of Working Age Population



Source: Infometrics Regional Database

...with a lower overall standard of living and consumer confidence

Table 3 highlights the standard of living for the relevant regions and New Zealand overall, expressed in terms of mean annual earnings. Northland incomes are on average, some 12 per cent below the national average (and almost 20 per cent lower than its nearest neighbour Auckland). Perhaps

reflecting the similarity in the structure of their economies, Northland and Bay of Plenty have similar levels of mean annual earnings.

Table 3 Mean annual earnings, 2019

	Value	Share of national value
Northland	\$55,318	88%
Auckland	\$68,259	109%
Bay of Plenty	\$56,514	90%
New Zealand	\$62,774	100%

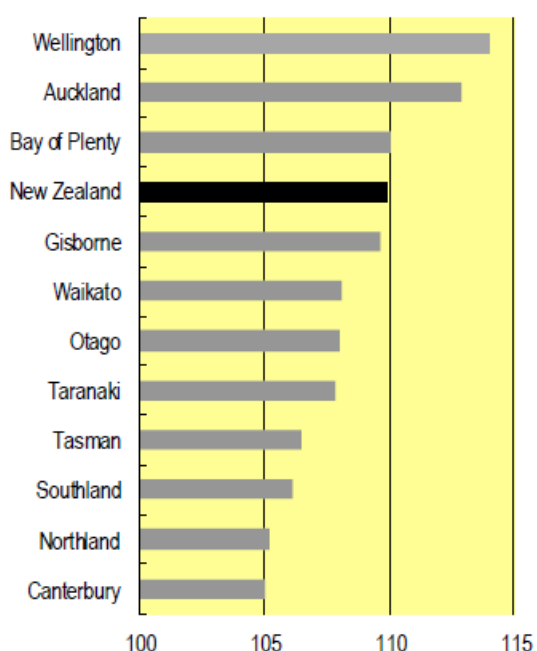
Source: Infometrics Regional Database

Recent consumer confidence figures used in ASB’s regional economic scorecard show Northland is the most pessimistic region, alongside Canterbury. Auckland and Bay of Plenty are much more optimistic (see Figure 5).

It may be that the pessimism in Northland is temporally-based, given the drought conditions that have afflicted the region, harming major industries such as agriculture, affecting Northland’s regional ranking in ASB’s regional scorecard (see Figure 6).

We note that these figures and rankings were collected prior to the COVID-19 pandemic. As yet, it is unclear how or whether these results will have changed.

Figure 5 Consumer confidence (Q4 2019)



Source: Westpac McDermott Miller

Figure 6 Regional rankings (Q4 2019)

Region	This Quarter	Previous Quarter	Change
Gisborne	1	1	No change
Bay of Plenty	2	8=	Up 6
Waikato	3	14	Up 11
Auckland	4	3=	Down 1
Wellington	5	6	Up 1
Otago	6	7	Up 1
Tasman	7	3=	Down 4
Taranaki	8	10=	Up 2
Southland	9	5	Down 4
Manawatu-Whanganui	10	8=	Down 2
Hawke's Bay	11	2	Down 9
Northland	12	10=	Down 2
Marlborough	13	12=	Down 1
Nelson	14	16	Up 2
Canterbury	15	12=	Down 3
West Coast	16	15	Down 1

4. Regional economic impact analyses are evolving

The practices employed in regional economic development assessments are no longer 'static' in nature. New approaches are being developed. While this field of endeavour has always straddled economics and geography, more cohesive and innovative methods are being explored. Our aim is not to survey such approaches, but draw out key points relevant to the task at hand, which can be considered alongside the previous material and the separate social assessment.

4.1 Capital expenditure, jobs and catalytic benefits combine to present a broad view of impacts

A standard and well-used method of assessing regional economic impacts is so-called 'multiplier analysis' where inter-industry relationships are used to estimate the direct, indirect and induced impacts from an impulse (or shock) to a region's economy.

Previously the focus was on the expenditure change likely to eventuate from a proposal (often the capital spend) and estimates of how that expenditure flows through the economy.

Measures of employment change, output/production and value-added were regularly reported. This was the approach taken in the economic report for the Working Group (EY, 2019), where relocation of freight operations from its Auckland location to Northport was estimated to result in:

- a \$200 million boost to the Northland economy (over 30 years, in present value terms)
- around 2,000 sustained jobs (i.e. not related to the construction of the required supporting infrastructure).

More recently, analysis has extended somewhat to include broader measures of impact on productivity in the affected region. In particular, the following three elements are assessed:

- *Capital costs*- effectively the construction component associated with infrastructure and other physical structures
- *Employment*- the jobs associated with the proposal (relocation)
- *Catalytic benefits*- the relocation as a driver of productivity and attractor of firms and associated labour.

For our purposes, the three elements can be considered together, but also individually. Therefore, our impact estimation process involves summing the:

- capital expenditure involved in the relocation (and associated spill-over effects) through the input-output/multiplier analysis used previously; and
- GDP effects from increased throughput (using the elasticity estimates immediately above) at the alternative port sites to capture the ongoing/operational impacts of the relocation (including catalytic impacts).

This is an imperfect exercise, but provides a richer picture of the regionally-focused effects than is currently available.

4.1.1 The impulse from capital expenditure (construction) estimated to result in \$5 billion-\$19 billion in economic activity

As a first step we re-ran the input-output/multiplier analysis done by EY for the Working Group, using updated capital expenditure figures and extending the scope to the Bay of Plenty region as well. Table 4 shows the magnitude of economic impact from substantial infrastructure expenditure.

Across the entire 60-year period where capital expenditure takes place, the total boost in economic activity (direct, indirect and induced effects) ranges from a low of almost \$5 billion in Bay of Plenty to a high of \$19 billion in the other options. Predictably, the value-added (essentially GDP) figures are more modest. The employment impacts (FTE job numbers) are significant.

We point out that most of the impacts contained in the table will occur over a 10-year period, between 2030 and 2039 (i.e. they are not enduring). These results as presented assume that all of the impact is felt within the particular region, which is clearly not realistic but in the absence of any data on which to allocate impacts across other regions, is the default setting.

Table 4 Results from input-output model, non-discounted, \$m, 2020-2079

	Initial spend (\$m)		Output (\$m)		Value Added (\$m)		Jobs (FTE #'s)	
	Officials	Calibrated	Officials	Calibrated	Officials	Calibrated	Officials	Calibrated
Northland	\$9,598	\$13,063	\$14,151	\$19,163	\$4,922	\$6,681	53,140	71,485
Bay of Plenty	\$3,258	\$6,152	\$4,876	\$9,165	\$1,957	\$3,718	19,529	37,255
Split option	\$11,612	\$12,753	\$17,490	\$19,067	\$6,344	\$6,980	64,946	71,028

Source: EY, Insight Economics

Table 5 contains the relevant multipliers calculated from the impact figures above. They are so-called type II multipliers in that they capture direct, indirect and induced impacts.¹ There is a slight difference between the respective regions in terms of the size of the multipliers for output and value-added, indicating that the same activity of the same size in the Bay of Plenty gives rise to greater impacts than in Northland.

¹ Note that these multipliers are derived from the final outputs reported in Table 4 rather than those derived from modelling, as separate multipliers were estimated for port and road/rail expenditures due to their different industry categorisation.

Table 5 Type II multipliers for impact categories

	Output	Value-added	Employment
Northland	1.47	1.59	1.54
Bay of Plenty	1.51	1.66	1.67
Split option	1.50	1.64	1.66

Source: EY, Insight Economics, Sapere calculations

4.1.2 The impulse from the shift in freight volume

Regional impacts that are more enduring than those from the construction expenditure result from the relocation of port activities associated with additional freight volumes.

Another look at employment impacts

Readily available evidence specific to port development is restricted to European studies, but does point to positive impacts, though probably modest:

The impacts of port infrastructure investments are expected of a positive influence of port throughput on local economic development.

Evidence across the world underlines that this influence is weak, with elasticity levels between throughput and employment that are typically less than 0.05 jobs per 100 tons.

This implies growth in traffic volumes are not associated with significant direct gains in employment (Rodrigue, 2020).

Using an elasticity of 0.03 (i.e. for every 100 tons of additional throughput 0.03 jobs arise) and the estimated tonnage once the transition is completed (11.3 million – 15.7 million tonnes), we estimated that between 3,075 and 4,273 jobs would be supported from the transfer of freight operations. These jobs could be considered on-going in nature and would continue to rise in line with freight volume.

Relocation to Northport could result in larger relative and absolute GDP impacts than Tauranga

A further study finds that a 10 per cent increase in port volumes in a given region leads to a 0.01-0.03 per cent increase in GDP in the given region and 0.05-0.18 per cent increase in GDP in other regions. Thus, the overall estimable effect of a 10 per cent increase in port activity is between 0.06 and 0.21 per cent of GDP (Bottasso, Conti, Ferrari, & Tei, 2014). Interestingly, the lion's share of impact is felt outside the region where the port is located.

Using these elasticities and estimates of total tonnage and GDP at respective locations, we assess the gain to the GDP in the relevant regional economies once the entirety of Auckland freight operations have relocated (see Table 6).

Table 6 Annual GDP impact, \$m nominal

	Local (GDP share)	Wider (GDP share)	Total (GDP share)
Bay of Plenty	\$9-\$26 (0.03%-0.09%)	\$43-\$154 (0.15%-0.53%)	\$52-\$180 (0.18%-0.62%)
Northland	\$18-\$53 (0.14%-0.42%)	\$89-\$319 (0.70%-2.53%)	\$107-\$372 (0.84%-2.95%)

The figures above are approximations only, for a single year. The key assumption underpinning the figures is a fixed relationship between the total tonnage at Auckland and the total tonnage at the alternative port locations.

In particular, the proportion of freight accounted for by Auckland for 2019 is 30 per cent and 140 per cent for Port of Tauranga and Northport respectively. These proportions are then multiplied by the relevant elasticities to determine then shares of GDP contained in the table.

While the impact in Northland is larger than that for the Bay of Plenty in both relative and absolute terms, that is to be expected given the incremental effect of Auckland's previous freight operations on the respective location, where Northport's tonnage impulse is over four times that for the Port of Tauranga, whereas Bay of Plenty's GDP is only around twice that for Northland.

Two key questions arise in respect of our estimation process. Firstly, the extent to which European studies are applicable to the Upper North Island situation. The modelling required to derive New Zealand estimates was not feasible in the time and resources available to this work. In addition, data constraints might have restricted the ability to do the necessary work.

Secondly, the studies do not point to the boundaries of the applicability of estimated parameters. Specifically, the model does allow for geographical areas closer to the port receiving the impulse to be impacted more, but does not report whether being say, 100 kilometres closer affects the impact on that region relative to others.

For the purposes of this work, our view is that it is better to have something rather than nothing so we are reasonably comfortable that the approach, while not perfect, is insightful. For example, one potential take-away is that while relocation to Northport results in greater GDP impacts, most of those could be felt in Auckland while the impulse from relocation to Port of Tauranga could affect Waikato as well as Auckland, though more modestly.

4.2 A burgeoning approach focusses on regional attraction

In recent times, a movement away from more 'mechanical' approaches to estimation has started. The approach highlights the role quality plays in regional attractiveness using two dimensions. The first is quality of life (QL), which pertains the attractiveness of a region to live in, while the second is the quality of doing business (QB), which mainly relates to the state of the regional labour market. The intuition is that workers and firms choose to locate in places that differ in their rent, wages and amenities.

Workers derive utility from the consumption of (tradable) goods and (non-tradable) housing and from local amenities, and their consumption expenditure depends on local wages and rents. Firms earn profits equal to the price of the goods they produce less the cost of labour and land inputs (local wages and rents). Local amenities may raise or lower production costs (either through affecting productivity or by directly shifting input costs, given a certain level of productivity).

As alluded to above, an important factor in this approach is labour supply, both in quality and quantity terms. A worker's optimal location choice is the city in which their utility is maximised given the local wages, rents, and amenities. For firms, the optimal location is the city in which their profit is maximised given those same factors (Motu Economic and Public Policy Research, 2018). As Motu (2018) put it:

A place with high rents but low wages must have amenities that make it a nice place to live otherwise people would move elsewhere & newcomers would not arrive ("sunshine wages")

A place with high rents and high wages must have amenities that make it a good place to do business otherwise firms would move elsewhere & new firms would not be established ("productive")

Table 7 contains measures of QB and QL for the settlements relevant to this analysis. Tauranga is relatively rare in that it has positive values for both QB and QL, which suggests it would be attractive to people and businesses. Whangarei on the other has, has negative measures for both. Auckland is a mixed picture, performing strongly on quality of business but much less so on quality of life.

Table 7 Measures of QB and QL

	Quality of life	Quality of business
Tauranga	0.28	0.66
Whangarei	-0.36	-0.53
Auckland	-0.81	2.28

Source: Motu 2018

The key question is the extent to which relocation of freight activities would improve the quality of the labour supply (and hence spur development). Unfortunately, this remains largely unknown and was not able to be explored. We do see though, that Tauranga appears primed to exploit any opportunities that came its way in terms of attracting people and businesses.

While there appears to be a degree of stickiness in quality measures (i.e. places with low (high) quality in one or other dimension tended to continue to have low (high) quality measures in future) though it is possible to change over time. The question is still open in respect of the effect of a relocation of port activities.

5. Discussion and indicative findings

The question of what regional economic development effects are likely from relocation of some port activities is not a simple one to answer, and is likely to remain so for some time

Traditional models suffer from well-known limitations (e.g. assumption of freely available resources and fixed relationships between parties, no accounting for prices) but provide a comparative picture, at least. Moreover, they tend to ignore the essential resource transfer from one region to another that underlies the estimation process and the associated costs of achieving the estimated gains.

Developing approaches show promise in terms of better explaining the complex and dynamic array of issues that contribute to regional economic development. We have only been able to glimpse the issues here, meaning our ability to derive substantive results is limited. While it is tempting to repeat the oft-heard consultants' refrain that "further work would be helpful" (which it no doubt would be), it is not clear that further work would progress things much further.

There are limits to knowledge and seeking a thorough understanding of the future using methods that are not yet fully developed risks around spurious accuracy. Nevertheless, there can be no question that newer approaches that consider influences such as regional attractiveness, relative differences in labour supply and quality (and therefore the differential relative value of a job, even if it is a job that is effectively transferred from another location) and structural change to a regional economy have merit.

At the moment all we can say is that the effect of port expansion or creation on regional economic development is not fully known, but is expected to be relatively modest. We say this with reference to available findings in the literature, but acknowledge that the analysis has been of port operations on their merits and not necessarily the role that such port operations might play in terms of wider systemic investment in a region that supports the logistics and distribution of goods around the country.

In particular, where a region is slated to grow considerably (e.g. through irrigation or water storage investments that "unlock" potential in areas such as agriculture or horticulture) the current apparatus used for regional analysis would not fully account for such factors. Similarly, non-port infrastructure investments can often be justified on the basis of activities at the port (though full attribution might be risky), which in turn generate further investments and growth due to greater connectivity and supplementary labour market advances. Estimating these impacts is likely to remain difficult, but there is no question of their existence.

On the issue of whether a preferred location for freight operations emerges from the analysis, the picture is somewhat mixed

On the one hand, the economic stimulus in Northland is much larger than that for Bay of Plenty, reflecting the relative size of their existing economies when faced with a similar-sized impulse from the relocation. Relative labour supply differences suggest that there may be further beneficial gains to Northland, given it is home to a larger share of beneficiaries than Bay of Plenty.

However, the measures used to estimate the ongoing impacts of a rise in port activity indicate that the lion's share of gains are felt in regions outside where the rise in activity takes place (e.g. in neighbouring locations). Thus, any impulse felt in Northland would most likely result in greater impacts in Auckland.² That is not necessarily a bad thing, if that is what is intended by decision-makers.

Were Auckland's freight operations shift to Tauranga, not only would the Bay of Plenty gain, but Waikato and possibly Auckland and Hawke's Bay would too. Finally, measures of the quality of life and quality of doing business are very positive for Tauranga (and negative for Whangarei), suggesting that any impulse is more likely to be grown upon over time in Bay of Plenty than is the case in Northland.

In sum, there is no "clear winner" on the strength of this analysis.

² The extent to which expansion in port operations in Auckland over the last two decades would have resulted in a greater impulse in Northland is clouded somewhat by the proximity to Waikato (and by extension the Bay of Plenty). The so-called 'golden triangle' would suggest that the impacts on Northland from expanded port operations in Auckland would be less pronounced than the other way around.

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