



Investigation of cost pressures in Auckland compared to those in the rest of New Zealand

for Vector

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1. Introduction

The methodology used by the Commerce Commission to set default price-quality paths (DPP) for electricity distribution businesses (EDBs) uses forecasts of the Labour Cost Index (LCI) and the Producers Price Index (PPI) to ensure that expenditure that is used to 'build up' prices reflects the cost structure of EDBs.

Vector has asked Infometrics to investigate the proposition that these indices, which have no geographic disaggregation, adequately recognise the costs of doing business in Auckland compared to the rest of New Zealand.

We look firstly at the level of costs in Auckland compared to elsewhere in New Zealand, and then at how relative costs have changed over recent years. Has a larger wedge opened up between Auckland and the rest of the country? Finally we present a recommendation for a premium to be added to forecasts of the LCI and PPI to reflect possible future changes in Auckland's relative costs.

Our results show a clear cost penalty to doing business in Auckland. Labour costs are higher and congestion is more severe than elsewhere. Over recent years congestion has worsened and construction costs have risen by more than in other parts of New Zealand. Mean earnings have risen at broadly the same rate as in the rest of the country, but we believe it is likely that the LCI understates the increases in wages and salaries that have occurred in Auckland.

Overall we estimate that over the four years to 2016/17 Vector has faced a relative increase in input (OPEX) costs that was 2.1% higher than the 8.7% stipulated under the DPP; that is, over 25% more.

Looking five years ahead it seems likely that rising wages and worsening congestion will continue to put more pressure on costs in Auckland than elsewhere in New Zealand. Irrespective of what forecasts of the LCI and PPI are used in future DPPs, our analysis suggests that a further 1.1% pa for additional relative cost increases in Auckland is justified.

There is an additional risk of which one should be aware, namely that for New Zealand as a whole, changes in mean earnings are almost always greater than changes in the LCI. This does not affect the relative cost premium that exists in Auckland, but does affect the allowable cost escalation faced by all EDBs.

2. Cost Base in Auckland v Rest of New Zealand

Before looking at how costs have changed in Auckland over recent years compared to costs in the rest of New Zealand, we look at relative levels of costs in Auckland compare to the rest of New Zealand.

We note the price escalators adopted by the Commission for the 2015-2020 DPP are applied to each individual EDB's costs in a base year which was a 50/50 weighting of data for the years ended 31 March 2013 and 31 March 2014. So any differences in the level of costs between EDBs (for whatever reason) in that given blended base year should be automatically carried forward under the escalation formulae (assuming no changes to the activities undertaken between periods). Nevertheless, it is informative to gain some idea of the relative starting point.

Not all of the data that we wish to consider can be anchored in exactly the same time frame, so we aim for as close an alignment as possible.

Historical Labour Costs

Earnings

While the LCI has no regional disaggregation, Statistics New Zealand's data on earnings does. Table 1 has historical data for the years ended June 2013 and 2014, showing that mean earnings in Auckland are about 9% above those for New Zealand as a whole.

Table 1: Mean Earnings per Job

	Auckland	All NZ	% Diff
2012/13	60390	55190	9.4%
2013/14	61920	56730	9.2%

Source: Stats NZ LEED data, mean earnings of continuing jobs

Income from Wages & Salaries

Another source of data with regional disaggregation is Statistics New Zealand's Household Expenditure Survey (HES). It has data on household (not individual) income from wages and salaries. Thus it captures changes in household labour force participation as well as changes in wage rates. Data for Auckland and all New Zealand is presented in Table 2, and shows an average premium for Auckland in 2012/13 and 2013/14 (June years) of about 23%.

Table 2: Mean Household Income from Wages and Salaries

	Auckland	All NZ	% Diff
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2012/13	70034	58821	19.1%
2013/14	71523	57849	26.3%

Source: Stats NZ, HES Table 2

Skill Mix

One of the likely reasons why mean earnings in Auckland are relatively high is that the mix of jobs in Auckland is more skill-intensive than elsewhere in the country. Using Statistics NZ data on qualifications, Infometrics' Regional Economic Profile identifies the proportion of jobs classified as highly skilled or skilled:

- Auckland: 47.3% of jobs in 2012/13 (March year).
- New Zealand: 43.9% of jobs in 2012/13.

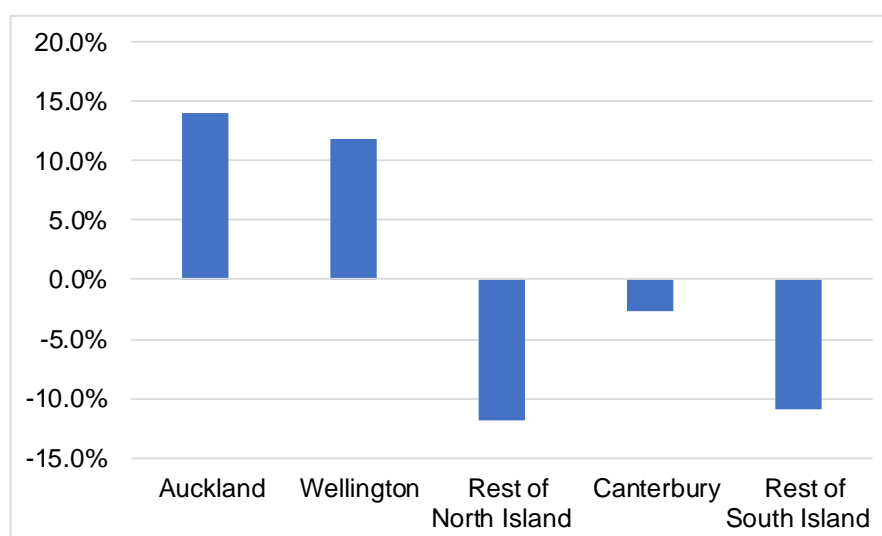
Although an EDB in Auckland will require largely the same skill set as an EDB in Gisborne, the Auckland EDB will be facing more competition for skilled labour from other industries, which has the effect of raising wage rates.

Living Costs

Higher living labour costs in Auckland are a cause of higher labour costs. Data from HES measures household income and expenditure by New Zealand region. Expenditure is quite different to the CPI disaggregation which measures the changes in prices for a basket of goods and services. This feature of the CPI means there is much less regional variation as it isolates only price changes. However, the HES measures expenditure, capturing both the price and quantity of costs for living in different parts of the country. This will have a closer approximation to wage needs for labour in different parts of the country.

The HES shows that in the year ended June 2013, average household expenditure in Auckland was 14% above the national average. See Figure 1.

Figure 1: Relative Average Weekly Household Expenditure (New Zealand = 1.0)



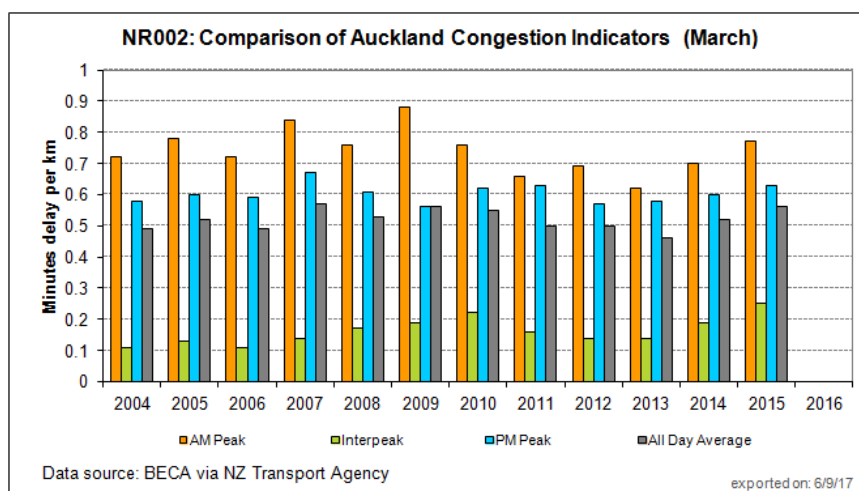
Other Costs

As the PPI has no regional disaggregation and no level data (as opposed to an index), we consider other regional indicators to approximate non-labour inputs. We look at congestion costs as a proxy for the relative cost of doing business in Auckland versus other regions - see Figure 2.

Historically congestion (minutes of delay per kilometre) in Auckland has been worse than in Wellington or Hamilton, especially at peak times when the average difference is around 30%. In the next section we will look at how this has changed since 2014.

In a recent report NZIER¹ estimated that congestion costs the Auckland economy between 1% and 2% of its regional gross domestic product. The estimated benefit to the Electricity, Gas, Water and Waste Services industry if this congestion did not exist is calculated to be between \$19m and \$31m. Using an unofficial estimate of a regional input-output table for Auckland,² the implied relative cost is equivalent to 2.3% of intermediate input costs. Based on the 30% estimated above, the relative congestion cost penalty in Auckland would be about 0.7% of intermediate input costs.

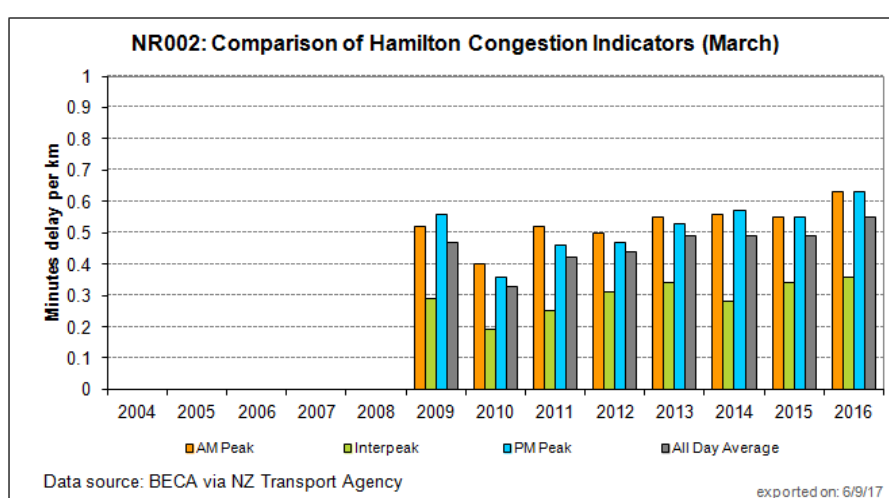
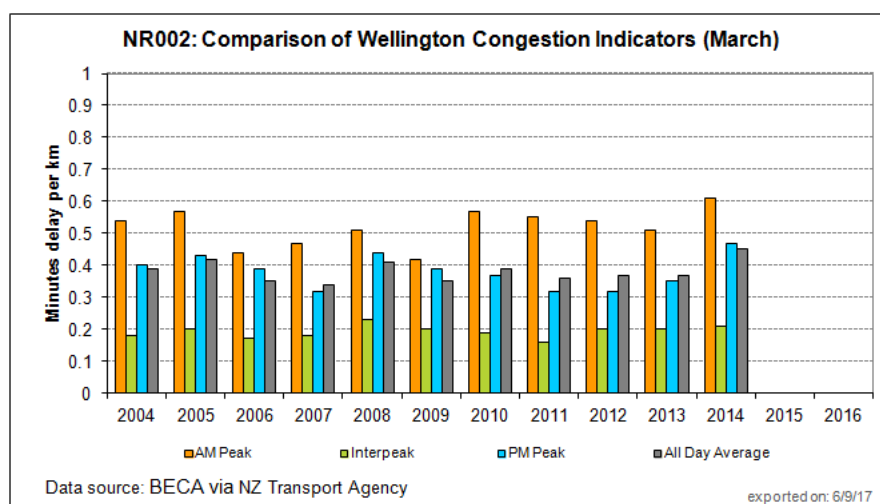
Figure 2: Congestion Indicators³



¹ NZIER (2017), Benefits from Auckland road decongestion. Report to the Employers and Manufacturers Association, Infrastructure New Zealand, Auckland International Airport Ltd, Ports of Auckland Ltd, National Road Carriers Association.

² Obtained from Butcher Partners, based on http://archive.stats.govt.nz/browse_for_stats/economic_indicators/NationalAccounts/input-output%20tables-2013.asp

³ Ministry of Transport: <https://www.transport.govt.nz/resources/tmif/networkreliability/nr002/>



Summary

The above data points to Auckland having higher labour costs and worse congestion (which affects a whole range of business costs) than elsewhere in New Zealand. Weighting the earnings figure (a 9% premium) and the congestion cost estimate (a 0.7% premium) by the DPP's 60/40 weights for labour costs and non-labour costs respectively, yields an the overall cost difference of about 5.7%.

This ought to be close to the base year cost premium faced by Auckland EDBs relative to EDBs in other parts of the country. The estimate does not take into account differences between firms due to factors such as size and the age of plant and equipment.

3. Recent Cost Changes

We now look at how that 5.7% difference in the level of costs has changed since 2012/13.

Labour Costs

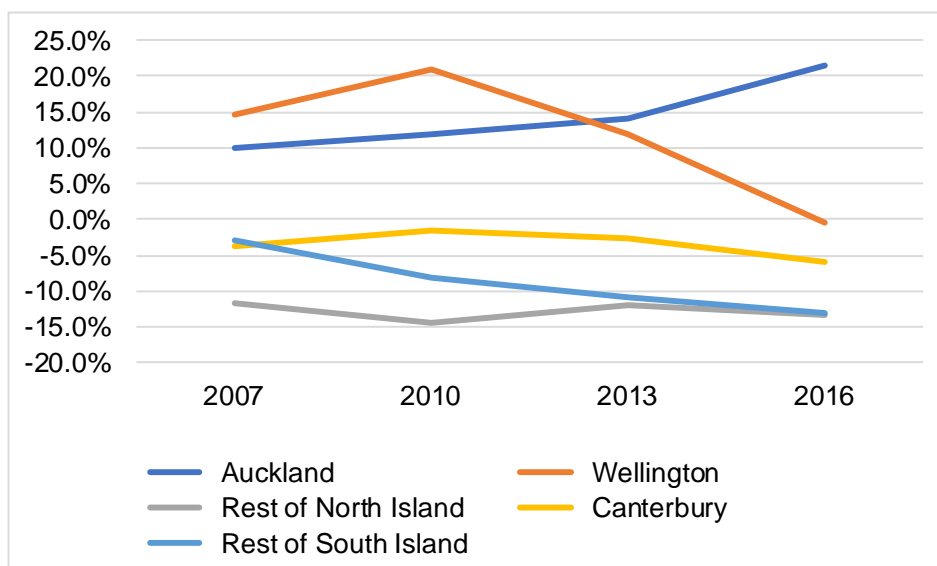
Our objective is to estimate the degree (if any) to which labour costs in Auckland have risen by more than elsewhere in New Zealand since 2012/13. As noted above, the LCI has no regional disaggregation while changes in mean earnings over time are compromised by compositional effects.

Changes in mean household income from wages and salaries is a possible proxy, but it also captures the effect of changes in household labour force participation. That leaves us with changes in mean household weekly expenditure. It is not an index as such, but does pick up the income (notably from wages and salaries) that is needed to finance the relative costs of living in various locations (assuming no change in relative household borrowing). We look at this below and then also at the other supporting measures.

Living Costs

In section 1 it was noted that average household expenditure in Auckland was 14.0% above the national average in 2012/13. By 2015/16 (the latest year available)⁴ the ratio had risen to 21.6%, continuing a rising trend since 2007. See Figure 3.

Figure 3: Relative Average Weekly Household Expenditure (New Zealand = 1.0)



⁴ The data is collected every three years. The most recent is for the year ended June 2016.

The underlying annual nominal increase in mean weekly expenditure is 6.6% pa in Auckland versus 4.3% pa for all New Zealand, a difference of 2.2% pa.⁵ As noted above the LCI rose by 1.6% pa over the same three year period so for Auckland the LCI underestimated the rate of growth in wages and salaries needed to maintain workers' standards of living by 4.9% pa.

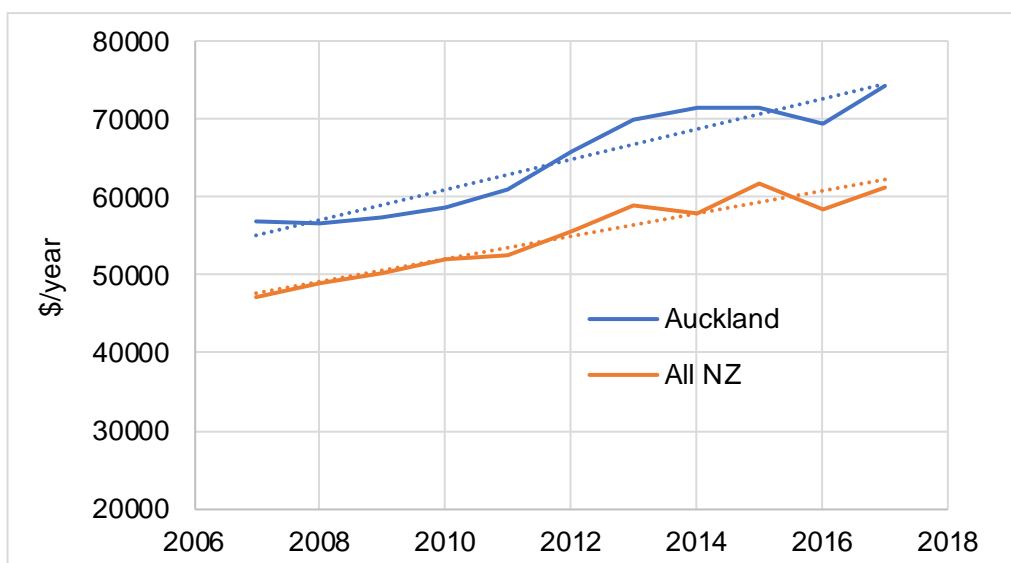
For the 2015-2020 DPP the Commission used NZIER forecasts of LCI which had an increase of 1.9% per annum,⁶ so on that basis the underestimate for Auckland is 4.6% pa.

Wages and Salaries

Figure 4 shows mean household income from wages and salaries between 2007 and 2017. The average changes per annum over the entire period as delineated by the linear trend lines are \$1956 pa for Auckland compared to \$1464 pa for all New Zealand.

Anchoring these changes back to the base year 2012/13 values of \$70034 and \$58821 (Table 2), implies proportionate changes of 2.8% pa and 2.5% pa respectively, a difference of 0.3% pa.

**Figure 4: Mean Household Income from Wages and Salaries
(year ended June)**



Source: Stats NZ, HES Table 2

Employment and Population

Changes in employment do not directly tell us much about changes in the cost of labour, but we would expect to see a tight labour market causing some pressure on

⁵ $1.066/1.043=1.022$.

⁶ Commerce Commission's Price Indices Model

wage rates. Based on data from Infometrics' Regional Economic Profile from 2012/13 to 2016/17 (March years), employment growth as measured by filled jobs was:

- Auckland: 3.3% pa
- All New Zealand: 2.3% pa

Over the same period the growth in the populations was:

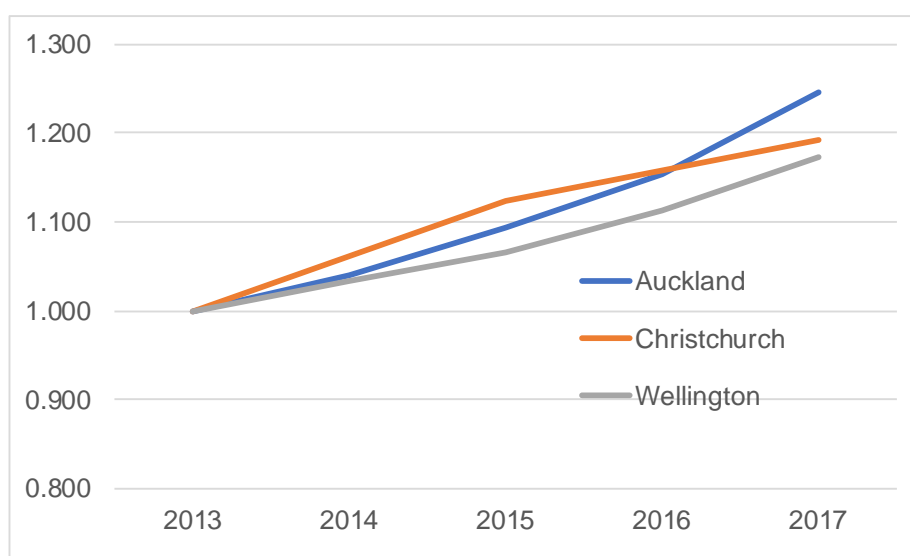
- Auckland: 2.6% pa
- All New Zealand: 1.9% pa

Not only has Auckland had faster employment growth and faster population growth than New Zealand collectively, but the growth in the relative intensity of employment has been greater in Auckland; 0.7% pa compared to 0.4% pa, a difference of 0.3%.

Construction Costs

A recent report by Rider Levett Bucknall (2019)⁷ includes a table of Tender Price Indices (TPI). The TPI takes into account labour costs, material costs and market conditions.⁸ It applies to buildings other than housing. Figure 5 graphs the TPI for Auckland, Wellington and Christchurch.

**Figure 5: RLB Tender Price Index
(2013=1.00)**



From 2013 to 2017 the TPI rose by 6 percentage points more in Auckland than in Wellington and Christchurch (24% v 18%), even though the Christchurch TPI was temporarily boosted by the rebuild. So whatever its relative level was in 2013, in

⁷ Rider Levett Bucknell (2019) *Readers Digest 2019 New Zealand Edition* p42.

⁸ Like any output price index the TPI includes an element of labour costs. There are indirect labour costs to the buyer of the services so there is no double counting with direct labour costs.

2017 it was higher by an additional 6% (averaging across Christchurch and Wellington).

Other Costs

Retaining our congestion proxy, publicly available data from TomTom for the period 2012-2016 (2016 is the latest available year) is summarised in Table 3. The data appears to relate to calendar years, but should be close enough for our purposes to years ended March 2013 and March 2017.

Auckland congestion increased at 8.9% pa, which is exceeded only by congestion growth in Tauranga. However, the overall effect of congestion is still much higher in Auckland than in Tauranga, with average journeys being 45 minutes longer per day than free-flow times in Auckland, but only 23 minutes longer in Tauranga.

Linking this back to the 2.3% penalty on the level of intermediate costs estimated in section 1, the implied congestion penalty increment in Auckland between 2012 and 2016 is about 0.9%.⁹

Table 3: Road Congestion¹⁰

	mean % change pa 2012-26	extra minutes in 2016*
Auckland	8.9%	45
Tauranga	9.5%	23
Hamilton	5.5%	27
Wellington	8.0%	43
Christchurch	1.7%	29
Dunedin	6.2%	21

*per day, compared to free-flow speed.

An analogous figure for the rest of New Zealand (assuming say 6% pa growth in congestion in towns not listed in Table 1) is about 0.2%, implying a relative Auckland congestion growth effect of 0.7%. This cost penalty will be implicit in almost every input that Vector purchases.

Summary

Bringing together the various results from the preceding sections, over the last few years (generally from 2012/13 to 2016/17) Auckland has seen a number of relative cost increases:

- 2.2% for labour costs (using living costs as a proxy).
- 0.7% for other intermediate input costs (proxied by congestion).

⁹ 2.3% multiplied by 41%, being 8.9% compounded over four years.

¹⁰ Source: https://www.tomtom.com/en_gb/trafficindex/city/auckland

- 6% for construction costs.

Table 4 presents the results, producing a weighted average price change of 2.1% for OPEX. This premium can be interpreted as an estimate of the catch-up that Vector needs to compensate for relative cost increases in Auckland since the base year.

Table 4: Estimated Vector Historical Cost Penalty

Category	DPP weights	% change
Labour	60%	2.2%
Construction ¹¹	40%	6.0%
Other inputs		0.7%
		2.1%

To put this in perspective, from 2012/13 to 2016/17 the DPP equation produces a cumulative price escalation factor from 2012/13 to 2016/17 of 8.7%, so an increment of 2.1% implies a proportionate under-statement for Auckland of almost 25%.

That is, the wedge between costs to business in Auckland compared to costs to business in the rest of New Zealand has risen by about 2.1% since around 2012/13.

¹¹ Construction costs are 21% of intermediate input costs (21% of 40%), excluding electricity and intra-industry transactions. See http://archive.stats.govt.nz/browse_for_stats/economic_indicators/NationalAccounts/input-output%20tables-2013.asp

So 2.2% with a weighting of 60%, 6.0% with a weighting of 8.4% and 0.7% with a weighting of 31.6% yields a weighted average of 2.1%.

4. Projections

Our concern is to estimate an Auckland-specific factor that should be applied to future forecasts of the LCI and PPI for use in DPPs, irrespective of what those forecasts actually are.

In the previous section it was noted that since 2012/13 mean living costs in Auckland have risen by 6.6% pa in Auckland compared to 4.3% pa for all New Zealand, a difference of 2.2% pa. The relative growth rate in Auckland shows no sign of abating – indeed Figure 4 suggests it is increasing. Nonetheless, taking a conservative view, we recommend an additional premium for Auckland on forecasts of the LCI of at least half the historical amount; 1.1% pa, although a higher premium based on recent experience could also be justified.

With regard to non-labour costs, in the previous section it was noted that congestion in Auckland has worsened by 8.9% pa from 2012 to 2016. For the country as a whole the figure is estimated at 6.8% pa, a relative difference of 2.0% pa.

Again, taking a conservative perspective, it seems sensible to halve the historical difference to 1.0% pa for the future premium on changes in non-labour costs for Auckland, although the Auckland regional fuel tax introduced in July 2018 may well justify a higher premium.

Applying the 60/40 weighting used in the DPP, implies an overall future cost escalation premium specific to Auckland of 1.1% pa (being $1.1\% \times 60\% + 1.0\% \times 40\%$), rounded to one decimal place.

This premium is over and above the 2.1% catch-up for the period 2012/13 to 2016/17.

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