

# Insights

Topical commentary on the Auckland economy



October  
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## How rapid transit access adds to property values

- We would expect that properties in Auckland's **rapid transit network** catchments (the train and northern busway stations) would sell for more money given the additional amenity that comes from access to frequent, faster public transport.
- Our analysis shows that the maximum walk-up distance to the rapid transit network (RTN) that adds value to a property is shorter than we had anticipated although there are several likely reasons for this we have not been able to model.
- Nevertheless, homes that are well-served by trains or express buses command a significant premium over those that are not.
- The work suggests that the completion of the City Rail Link (CRL) and the proposed light rail project would provide a significant windfall gain to nearby properties that has not yet been fully realised. This has policy implications in terms of the case for recouping some of the costs of construction from those who benefit from the windfall gains of new RTN infrastructure.

Widespread public transport (PT) in Auckland has existed since the early 1900s, when the original Auckland tramway system opened. Over time, the trams gave way to buses, trolley buses, and trains. Historically, ridership peaked during World War II, then fell dramatically through to the 1980s. Since the mid-1990s, ridership has increased rapidly, but is still well below WWII levels, despite a population that is six times higher today.

According to Auckland Transport, rail ridership has nearly tripled in the past 10 years and the northern busway has grown from nothing to 5.5 million trips a year. Overall, ridership on Auckland's RTN has increased eight-fold in 10 years whilst population has grown a little under 20%. All of this tells us that, while Auckland's PT system is not currently optimised (a fact we delve into below), people are still switching to PT from other modes.

### What we would expect

It stands to reason that when PT options become more frequent and accessible, the properties within easy walking distance to these amenities will increase in value.

It is important to note that it is irrelevant whether the people living in these places **use** the RTN themselves – the properties gain value because **someone** would pay more to live near the RTN<sup>1</sup>. The question is then: how much is the premium and how far out from the station does it extend?

### What we found: Go the distance

We found that on the Auckland isthmus<sup>2</sup>, properties within a 500-metre walk-up distance receive a value premium from being close to the train network. At further distances, there was no detectable value uplift from access to the RTN. This was a smaller value catchment than we thought we would discover given the distances people are willing to travel to get to train stations<sup>3</sup>. However, there are some very good reasons why Auckland's value catchments may be smaller than in other, more transit-oriented cities.

First, as currently configured, Auckland's train system is sub-optimal for moving people to the two main job centres in the city – the airport precinct and the CBD. The only station with CBD access is Britomart, and the upper CBD is an almost 2km long uphill walk from there. Even Auckland Town Hall is more than 1km from Britomart Transport Centre. The closest station to the airport is more than 6km away, from which a person can catch a bus that runs only three to four times per hour at peak times. This is clearly suboptimal for job access via PT.

Second, a bus network that can move people to the CBD faster than the current train alignment is available. For instance, a bus from Avondale to the central CBD takes less time than walking to the train, riding to Britomart, and then walking up Queen Street. For many people on the isthmus, unless you live very close to a train station, it just does not make sense to use the train instead of the bus.

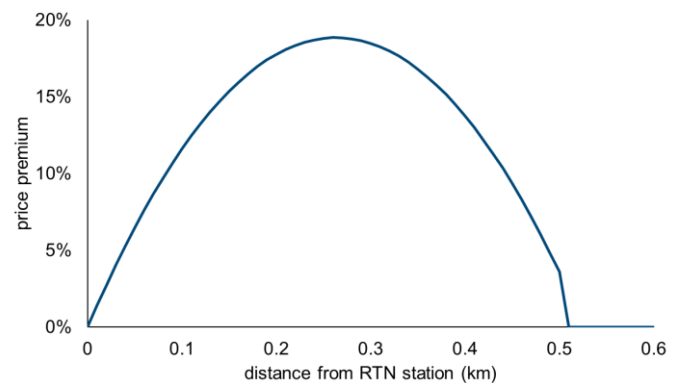
The CRL (and proposed light rail project) aim to overcome this sub-optimal idiosyncrasy of the Auckland train network. The CRL will cut 10 or more minutes off travel times across the train network to the CBD and double frequency on much of the network. Part of the value of this increased access will already be incorporated into land values along the rail corridor and around the new stations, but as we move closer to the CRL becoming operative, we would expect homes near train stations to increase

further in value. The new stations and removal of the Newmarket dog-leg will make the train a much more attractive option to people currently reliant on the bus, and we would expect to see an increase in the walk-up distance within which proximity to a train station adds value.

### The train station premium

Using the 500-metre train walk-up catchments, we find a statistically significant, positive impact on property values on the Auckland isthmus. We find that the maximum premium occurs at around 260 metres. This makes sense as despite the huge accessibility benefits of living right next to the train station, these are offset by the accompanying noise and congestion. But living a three-minute walk away from frequent train services is ideal.

Eastern isthmus property value premium



Source: Chief Economist Unit, Auckland Council

However, the pattern varies significantly across the isthmus. When the isthmus is split into east and west roughly along Manuaku Road/Pah Road (see the map at the end of this paper), the results vary drastically. On the west side of the isthmus, there is no detectible premium for RTN access. However, on the east side, the premium is large and statistically significant.

On the eastern isthmus, a home with a 260-metre walking distance to an RTN station has a premium of about 19% over a home more than 500 metres away from a station. Some explanations for this premium include that:

- The eastern isthmus has much more train access than the west. The Southern, Eastern, and Onehunga lines provide reasonably dense coverage of that half of the city.

<sup>1</sup> A simple thought experiment shows why this is true. Suppose you are looking to rent an apartment. The landlord advertises the apartment for some amount of rent per week and it is located a three-minute walk from the local train station. How likely are you to receive a discount on your rent if you tell the landlord that you have no intention of using the train?

- Options on the eastern, southern and Onehunga lines are higher due to the many stations that are covered by more than one line.
- Trains on these lines enjoy a direct trip into the CBD, unlike the Western line which requires a dog-leg through Newmarket until the CRL opens.

This is a surprisingly large premium, though not unprecedented in the international literature.<sup>4</sup> While this result is positive and statistically significant, a relatively small share of sales in the eastern isthmus were within the 500 metre catchments. Further, we would highlight that our analysis is limited to properties with a land component; it excludes apartments and townhouses without a specific land component, and the premium, if any, to these typologies is unknown. Nevertheless, the results do give us a guide to the existence and scale of premiums that could occur in the west as the opening of CRL approaches.

Outside the isthmus, there is no detectible premium for living near a train station. This could be due to several factors beyond the ones already mentioned. In particular, many of these stations are “Park and Ride” stations, where walking access is less crucial for using the train. It stands to reason that people are not willing to pay much extra to be able to walk, when they can take a short drive and park their car for free or at low cost.

### What about the northern busway?

The northern busway was officially opened in February of 2008, with dedicated bus lanes from Constellation Drive to the Harbour Bridge. After just two years of operation, Auckland Transport estimated that the busway was removing more than 5,000 cars from the morning peak rush hour, improving the commute for everyone. Today, ridership has reached 5.5 million trips a year.

But how much is the busway valued? Using the same methodology, we find that homes located within 500 metres’ walk-up distance have a flat premium of approximately 6.5%.

Part of the issue for walking access to busway stations is that there are few homes near them, as the busway is along the motorway. However, for

those homes where walking is possible, there is a real, measurable premium.

### What does it all mean?

Auckland’s RTN adds value to the city and as it improves and expands, we would expect this value to roll out to a number of additional households, most notably across the western line, the light rail route, and to greater walk-up distances around existing train stations.

These major infrastructure projects will result in a windfall gain to many thousands of properties within the walk-up catchments, and we now have a sense of the likely scale. This has policy implications for thinking about how infrastructure like light rail may be funded. A model that gets those who reap a significant windfall gain from proximity to the RTN to contribute some share toward its development is more than reasonable and is good economics – those who benefit should contribute in a commensurate way.

### How we did it

To analyse the premium (if any) that the RTN adds to properties in its catchment, we compared properties inside and out a defined catchment.

Naturally, there are likely to be other differences between these properties, beyond the presence of PT nearby, so we controlled for these factors as thoroughly as possible. A statistical method called “hedonic pricing” allows us to estimate the price of a property based upon the characteristics of the dwelling (e.g. size, quality, construction type, age, decks, garages) and the characteristics of the land itself (e.g. views, proximity to CBD, school zone, proximity to the coast, proximity to green space). By doing this, we could see the effect of proximity to an RTN station separately from other things that add value to a property.

As with our previous studies on [upzoning](#) and [special character areas](#), we used a log-linear hedonic pricing model with time and location fixed effects, and robust clustered standard errors at the Census Area Unit level.

<sup>2</sup> This is roughly the area covered by the old Auckland City Council.

<sup>3</sup> See for instance <https://doi.org/10.3141/2276-12>, <https://escholarship.org/uc/item/07k76097>, and Wilson, L (2013). Walkable catchments analysis at Auckland train and Northern Busway stations – 2013. Auckland Council technical report, TR2013/014.

<sup>4</sup> For example, a study for Sydney, Australia found that properties within a 400m catchment to a heavy rail station received between 4.6% and 48% value uplift. LUTI Consulting (2016). Transit and urban renewal value creation: Hedonic price modelling assessment of Sydney’s key transit and transit-oriented urban renewal investments (2000–2014)

Data on house sales from 2013-2016 was used. To be included, the sale must have been of a freehold property including land and a dwelling of at least 30 square metres.

Several model specifications were tested, and the results were reported for the model with the best fit.

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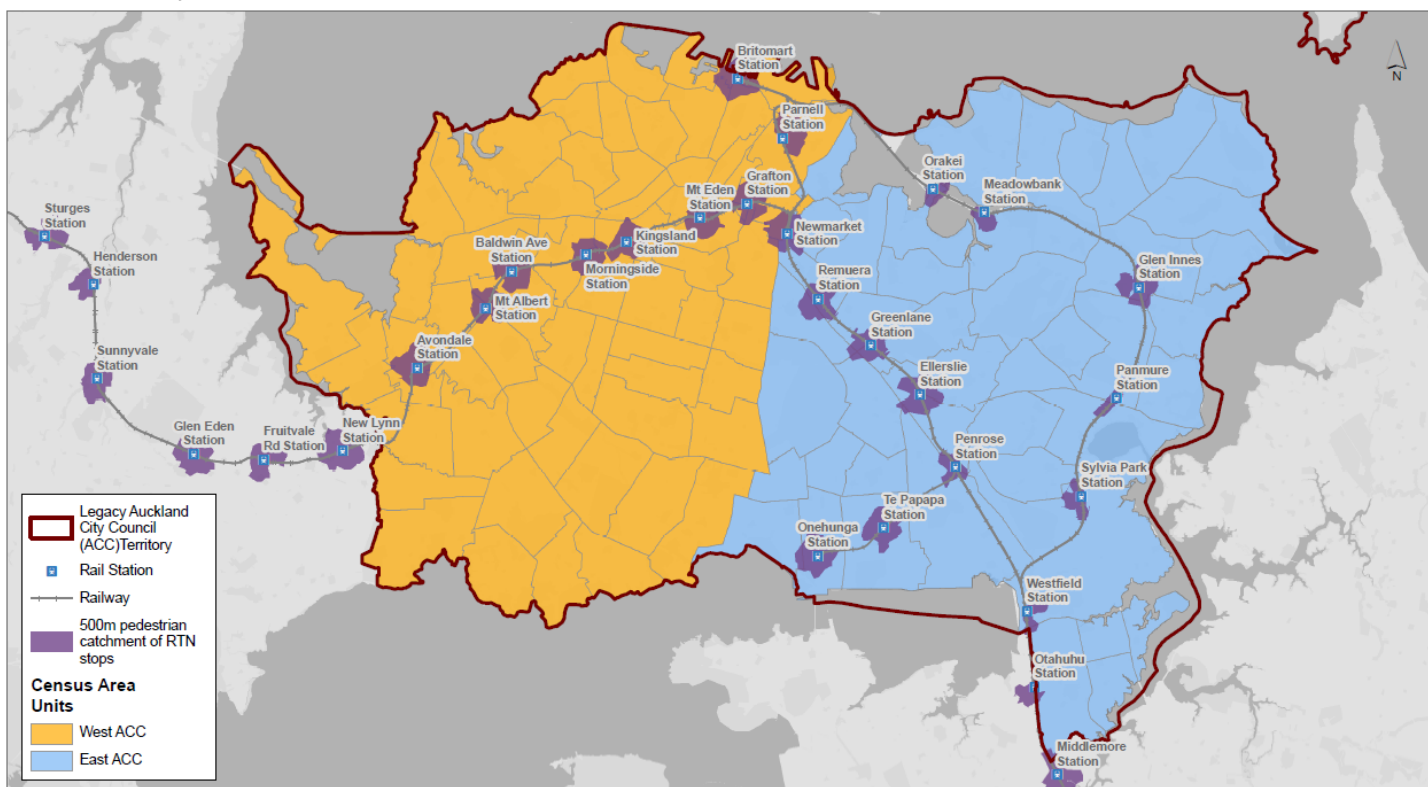
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Areas of analysis: The western isthmus and the eastern isthmus



Impact on dwelling price of modelled variables, eastern isthmus only

Coefficient	Estimate	Cluster s.e.	t value	Pr(> t )	
CAU Average Income (\$000)	0.0074	0.0018	4.059	0.0000495	***
Land area (ha)	3.1330	0.2152	14.558	< 2e-16	***
Improvement Value as a share of total value	-0.0343	0.0636	-0.539	5.90E-01	
Built in 2010s	0.0792	0.0205	3.859	1.14E-04	***
Multi-unit dwelling	-0.0107	0.0187	-0.573	0.566899	
Water view	0.0925	0.0174	5.301	1.17E-07	***
Wide view	0.1840	0.0322	5.72	1.09E-08	***
School Zone decile	0.0117	0.0055	2.107	0.035178	*
Double Grammar zone	0.1924	0.0373	5.155	2.57E-07	***
Faces North	0.0464	0.0245	1.89	0.058773	.
Faces South	0.0050	0.0353	0.141	0.887794	
Faces West	0.0724	0.0296	2.445	0.014498	*
Age when sold	-0.0050	0.0008	-6.092	1.15E-09	***
Age <sup>2</sup> when sold	0.0001	0.0000	8.196	2.73E-16	***
Presence of deck	0.0378	0.0060	6.292	3.25E-10	***
1 car freestanding garage	0.0251	0.0124	2.034	4.20E-02	*
2 car freestanding garage	0.0846	0.0233	3.622	2.93E-04	***
3+ car freestanding garages	-0.0455	0.0631	-0.721	0.470628	
1 car integrated garage	0.0609	0.0121	5.029	4.99E-07	***
2 car integrated garage	0.0555	0.0186	2.981	2.88E-03	**
3+ car integrated garage	-0.0160	0.0865	-0.185	0.853408	
Wall condition (fair)	-0.0357	0.0363	-0.984	0.325168	
Wall condition (good)	0.0406	0.0121	3.365	0.000768	***
Wall condition (poor)	-0.1303	0.0812	-1.606	0.108346	
Wall condition (unknown)	0.0287	0.0599	0.48	0.631424	
Roof condition (fair)	-0.0502	0.0323	-1.553	0.120415	
Roof condition (good)	0.0484	0.0106	4.585	4.58E-06	***
Roof condition (poor)	0.0330	0.0816	0.404	0.685896	
Roof condition (unknown)	-0.0165	0.0383	-0.431	0.666276	
Distance to golf course (km)	-0.0965	0.0467	-2.066	0.038807	*
Distance <sup>2</sup> to golf course (km)	0.0185	0.0088	2.09	0.036638	*
Distance to DOC Reserve (km)	-0.1616	0.0763	-2.119	0.034112	*
Distance <sup>2</sup> to DOC Reserve (km)	0.0183	0.0085	2.155	0.031203	*
Distance to CBD (km)	0.0745	0.0405	1.841	0.065678	.
Distance <sup>2</sup> to CBD (km)	-0.0076	0.0030	-2.554	0.010652	*
Distance to green space (km)	0.1344	0.0469	2.866	0.004167	**
Distance <sup>2</sup> to green space (km)	-0.0985	0.0389	-2.534	0.011288	*
Distance to waterways (km)	0.2667	0.0758	3.52	0.000434	***
Distance <sup>2</sup> to waterways (km)	-0.1923	0.0871	-2.208	0.027289	*
Distance to arterial road (km)	-0.0082	0.0534	-0.154	0.877582	
Distance <sup>2</sup> to arterial road (km)	0.0012	0.0134	0.089	0.928788	
Distance to coast (km)	0.0130	0.0566	0.23	0.817714	
Distance <sup>2</sup> to coast (km)	-0.0170	0.0132	-1.288	0.197921	
Distance to school (km)	0.0391	0.0901	0.434	0.664154	
Distance <sup>2</sup> to school (km)	-0.0380	0.0888	-0.428	0.668538	
Distance to heritage site (km)	0.0738	0.0843	0.876	0.381223	
Distance <sup>2</sup> to heritage site (km)	-0.0691	0.0714	-0.969	0.332795	
Total floor area (m <sup>2</sup> )	0.0033	0.0001	23.803	< 2e-16	***
Characteristically leaky dwelling	-0.1614	0.0133	-12.094	< 2e-16	***
In special character area	0.0918	0.0150	6.14	8.49E-10	***
Upzoned	0.0504	0.0105	4.803	1.58E-06	***
In RTN Catchment	-0.1630	0.1198	-1.361	0.173668	
Distance to RTN (km)	1.4330	0.2837	5.051	4.46E-07	***
Distance <sup>2</sup> to RTN (km)	-2.7220	0.6754	-4.03	5.61E-05	***

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Multiple R-squared(full model): 0.7457 Adjusted R-squared: 0.7439

Multiple R-squared(proj model): 0.6148 Adjusted R-squared: 0.612

F-statistic(full model, \*iid\*):405.6 on 102 and 14107 DF, p-value: < 2.2e-16

F-statistic(proj model): 314.4 on 60 and 43 DF, p-value: < 2.2e-16

Source: Chief Economist Unit, Auckland Council

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