# Home Economics

# Breaking infrastructure barriers

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**Home Economics is a new ASB report dedicated to in-depth analysis of the New Zealand housing market.**

**Our third issue of Home Economics explores the link between infrastructure provision and house prices. In particular it looks at how the current challenges associated with current infrastructure funding models have contributed to underinvestment in Auckland's housing-related infrastructure. The report then considers how alternative methods could be implemented in order to help overcome some of the shortcomings of current models and help alleviate house price pressures over the longer term.**

## Summary

Infrastructure provision is one of the most challenging aspects facing councils. Characteristics of infrastructure provision including high upfront costs, uncertain future revenue streams, debt financing constraints and ratepayer resistance can disincentive councils from providing adequate infrastructure. In Auckland's case, the above have culminated in Auckland Council underinvesting or limiting the supply of infrastructure. Limiting supply of new developable land, combined with very strong population growth, has exacerbated the rise in Auckland land costs.

Shortfalls in current infrastructure provision models suggest that alternative methods are needed. This report highlights a number of alternative methods of funding infrastructure that mitigate some of the issues Auckland Council has faced. In particular, Municipal Utility Districts (MUDs) help to fund infrastructure provision in a fair and equitable manner, as well as providing more innovative financing mechanisms. Auckland Council needs to explore some of these more unorthodox measures if rapid house price growth in Auckland is to be properly addressed.

## Infrastructure's impact on house prices

Previous ASB Economics research found that clunky and inflexible planning processes had played a large part in Auckland's high house prices. However, current infrastructure funding models have also exacerbated Auckland's house prices. In saying this, infrastructure provision is one of the most challenging tasks facing councils.

There are a number of complicating factors associated with infrastructure provision that result in, sometimes acute, funding difficulties. Firstly, infrastructure requires very large upfront costs. In Auckland, little appetite for more council debt or higher rates has created hurdles for paying for the infrastructure to start with. But, further complicating matters is the difficulty in recovering the costs. For example, infrastructure can usually pay for itself over the lifetime of the asset, but this payoff period is often longer than the funding horizon. Further, there are demand risks associated with infrastructure provision. If demand is less than projected, infrastructure can be underused and not cover its costs. Finally, legislation often means that councils are limited in their ability to price the use of certain infrastructure services, which constrains revenue flows. In Auckland, the combination of the above has seen the Council tightly controlling the supply of new assets in order to keep costs/debt down and, as a result, underinvest in infrastructure.

At face value, this suggests that alternative models for infrastructure provision are also required if we are to limit house price growth by overcoming chronic supply constraints. However, in order to seek improvements, it's important to first understand the current system.

### Auckland Council's current funding model

The key infrastructure AC provides and maintains can be split into 4 groups:

1. Transport (including roading, footpaths, parking and public transport)
2. Water supply and wastewater
3. Storm water and flood control
4. Parks, communities and lifestyles

Infrastructure within each group is generally funded by a combination of operating revenue including user charges, general rates and government funding. However, water supply and wastewater, run by Watercare Services, receives no funding from Auckland Council or the Government. Instead, Watercare is self-funded from water charges. With a limited pool of funding available from the Government, and people's aversion to more council debt or higher rates, Auckland Council has struggled to fund the infrastructure required to match the pace of population growth.

In order to help ease the burden of new infrastructure associated with housing developments, AC charges developers development and financial contributions to cover some of the cost of this additional public infrastructure. However, development contributions often don't cover the full cost of the asset. Further, if not included in the development contributions, developers are also required to pay Watercare Services an infrastructure growth charge of around $12,000 per

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dwelling in order to be added to Watercare's network. These upfront costs increase the barriers to entry for development firms, limiting the number of developers able to undertake residential development. Further, developers typically pass on the full costs to the homeowner through higher house prices.

## Alternative funding methods

### Infrastructure bonds

Introducing a system that spreads the burden of the cost over the life of the asset will lessen the upfront cost of housing infrastructure and could also encourage development via a more competitive market. However, it is also desirable to have funding systems that are fair and efficient.

Infrastructure bonds provide an alternative way of funding infrastructure while spreading the burden of the cost over the whole life of the asset. Currently infrastructure bonds are being successfully used to fund infrastructure in Texas via Municipal Utility Districts (MUDs).

MUDs are local government entities, presiding over a specific geographical area, that finance infrastructure via tax-exempt bonds. Before issuing bonds, the MUD must satisfy strict financial feasibility rules. Rules include proof that land values, including existing and future improvements, will be sufficient to support the tax rate for debt servicing payments (e.g. a targeted rates levy). These rules protect landowners against high tax rates and help maintain the integrity of the MUDs. In turn, this results in lower interest rates for future MUD projects. Further, the current set up means that the city bears no risk for the MUD or any developments it is financing. However, at any point, the city can annex the MUD, acquiring the assets and the debt.

Landowners within the zone then pay the MUD back over the lifetime of the asset. As well as spreading the cost of the asset over its life, MUDs lower the barrier to entry for developers, allowing more competition in the industry. For example, under this model developers are only required to finance infrastructure in stages and are reimbursed by the MUD (who also issues the bonds in stages) after the completion of each stage. This tends to also result in a higher-quality build over a shorter period of time.

The costs are ultimately paid for by the homeowners over the lifetime of the asset. However, the buyers' payments to the MUD under this model are significantly lower than if the cost of the infrastructure improvements were included in the purchase price of the home. This results in a more equitable system where homeowners repay the bonds over the lifetime of the asset. It also means the building costs of the new homes (and prices of existing homes) are not inflated by the full infrastructure cost as is currently the case in NZ. And, the cost is borne directly by those using the infrastructure, rather than being subsidised by rates on existing properties.

### Value capture

Value capture aims to internalise the positive externalities of public investments in infrastructure. Currently, the value capture model tends to be used for large transport infrastructure projects. However, given the stress recent population growth has placed on Auckland's transport infrastructure, it could be implemented on top of infrastructure bonds to boost Auckland's overall infrastructure investment.

Under the value capture model the cost of the new infrastructure is, at least in part, covered by homeowners in the area who are benefitting from the additional infrastructure. For example, property owners close to a new train station will tend to enjoy higher house values as a result, which represents an unintended, unearned and untaxed financial windfall. Taxing this windfall through targeted rates would, according to the NZ Productivity Commission, present a fair, equitable and efficient way to help pay for critical infrastructure projects.

While there are a number of agreements that can be classified as value capture, 2 key arrangements are :

1. Tax increment financing[1]
    a. Levies/taxes on property values within a specified zone
    b. The additional tax revenue above the base rate repays the loan for the infrastructure
2. Betterment tax[2]
    a. Taxes on property owners who are direct beneficiaries of the new infrastructure
    b. Usually the taxes are based on unimproved capital value
    c. Examples of infrastructure funded via a betterment tax include Sydney Harbour Bridge, Melbourne City Loop rail system and the Gold Coast Rapid Transit Light Rail

Value capture could also be extended to ensure the Council benefits from the substantial windfall gains created when the Council re-zones land to residential.

[1] https://en.wikipedia.org/wiki/Tax_increment_financing

### Public-Private Partnerships (PPPs)

Auckland Council mentions PPPs as a potential source of infrastructure funding in the Shape Auckland Infrastructure Strategy.

Proponents for PPPs argue that the effectiveness and efficiency gains created by using PPPs offset any increased borrowing costs that private financing incurs relative to local/central governing borrowing costs. In particular, efficiency gains are created when contracts are well-designed, are long term (covering all phases of the asset's life) and cover risk sharing. For example, PPPs with long-term contracts can provide opportunities for better whole-of-life cost estimation. According to the NZ Treasury, long-term contracts incentivise design features and construction standards to better reflect the long-term cost of maintenance and operational requirements.

PPPs can also overcome issues arising from councils fully-funding infrastructure projects. In particular, projects fully-funded by councils are often insured against any potential losses (in the form of credit or cash flow guarantees). These guarantees lower incentives for cost minimisation and/or quality maintenance and, in the end, often result in higher costs than planned.

As well as efficiency gains, PPPs provide additional sources of financing which is particularly beneficial if there is limited appetite for council debt or debt limits that constrain a council's borrowing capacity.

## Other options

### Superannuation funds

Superannuation funds can provide cost-effective, long-term finance for infrastructure investments. In particular, mutual benefits can arise because the long investment horizon aligns with the long life of the infrastructure.

### Infrastructure banks

Infrastructure banks require significant funding in order to become operational, but once up and running, they then work with private investors to finance infrastructure projects. Benefits of an infrastructure bank include the ability to offer cheap long-term loans or loan guarantees. Further, infrastructure banks can improve project selection by removing political influence from decisions. However, an infrastructure bank doesn't necessarily have to supplant alternative funding options. As a result, an infrastructure bank could help limit council funding to, say, half the cost of the infrastructure otherwise.

### User charging

User charging follows the user-pays principle and is appropriate when users of infrastructure can be identified and charged efficiently, for example toll roads and water usage. User charging on roads and water consumption can even help alleviate additional demand created through housing developments by decreasing existing capacity pressures. For example, simply metering water and charging for usage can reduce water consumption. User charges can also be aimed at new users of the infrastructure, where such users are easily measurable, making it a reasonably fair source of revenue.

## Summary and next steps

This report finds that there are number of alternative methods for funding Auckland's infrastructure that overcome, at least some, of the challenges Auckland Council has faced in providing adequate infrastructure to meet the city's rapid growth. In particular, MUDs help to overcome council debt constraints, charge for infrastructure provision in a fair and equitable manner and lower the barrier of entry for developers.

Core to new alternatives is the need to variously overcome the current disincentives to provide the infrastructure speedily and the need to finance infrastructure from much broader sources.

In our next issue, we switch our attention to the construction sector and explore its role in the Auckland housing market.


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[2] http://www.dictionary.com/browse/betterment-tax


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