

Proactive Release

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Listed below are the most commonly used grounds from the OIA.

<u>Section</u>	<u>Description of ground</u>
6(a)	as release would be likely to prejudice the security or defence of New Zealand or the international relations of the New Zealand Government
6(b)	as release would be likely to prejudice the entrusting of information to the Government of New Zealand on a basis of confidence by <ul style="list-style-type: none">(i) the Government of any other country or any agency of such a Government; or(ii) any international organisation
6(c)	prejudice the maintenance of the law, including the prevention, investigation, and detection of offences, and the right to a fair trial
9(2)(a)	to protect the privacy of natural persons
9(2)(b)(ii)	to protect information where the making available of the information would be likely unreasonably to prejudice the commercial position of the person who supplied or who is the subject of the information
9(2)(ba)(i)	to protect information which is subject to an obligation of confidence or which any person has been or could be compelled to provide under the authority of any enactment, where the making available of the information would be likely to prejudice the supply of similar information, or information from the same source, and it is in the public
9(2)(ba)(ii)	to protect information which is subject to an obligation of confidence or which any person has been or could be compelled to provide under the authority of any enactment, where the making available of the information would be likely otherwise to damage the public interest
9(2)(f)(ii)	to maintain the constitutional conventions for the time being which protect collective and individual ministerial responsibility
9(2)(f)(iv)	to maintain the constitutional conventions for the time being which protect the confidentiality of advice tendered by Ministers of the Crown and officials
9(2)(g)(i)	to maintain the effective conduct of public affairs through the free and frank expression of opinions by or between or to Ministers of the Crown or members of an organisation or officers and employees of any public service agency or organisation in the course of their duty
9(2)(h)	to maintain legal professional privilege
9(2)(i)	to enable a Minister of the Crown or any public service agency or organisation holding the information to carry out, without prejudice or disadvantage, commercial activities
9(2)(j)	to enable a Minister of the Crown or any public service agency or organisation holding the information to carry on, without prejudice or disadvantage, negotiations (including commercial and industrial negotiations)

Auckland Light Rail

Beneficiary identification and cost allocation

30 May 2023

Draft for discussion

Purpose and scope

Purpose

The purpose of this report is to detail the approach and analysis undertaken in identifying beneficiaries of the Auckland Light Rail (ALR) project and allocating benefits and costs to these beneficiaries.



The **primary focus** of the report is on **explaining the methodology** proposed to allocate benefits to different beneficiaries. While the report also provides an initial overall allocation, this is based on the benefits calculated in the IBC. Revised economic analysis as part of the CBC is yet to be completed. As such, this is an interim deliverable and the allocation will be updated when this revised analysis becomes available.

Scope of this report

This report covers the following:

- Methodology (primary focus):
 - identification of different beneficiary categories
 - allocation of benefits to each beneficiary category
- Initial overall benefit allocation based on Indicative Business Case (IBC) benefit numbers (secondary focus).



The findings in this report provide a first principles cost allocation between beneficiaries that can be used as a starting point for developing the suite and mix of funding tools for ALR.

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1. Overview of approach and findings

Background and approach

Background

Due to the size and scale of the ALR project, a bespoke funding and financing approach is required, including responding to how those benefiting from the project can contribute, while doing so in a manner that is affordable, equitable and sustainable.

Sponsoring Ministers have identified 'beneficiary pays' as a core guiding principle in developing a funding solution for ALR. *"The distribution of whole of life project costs should be in accordance with the distribution of whole of life benefits across identified beneficiary groups".*

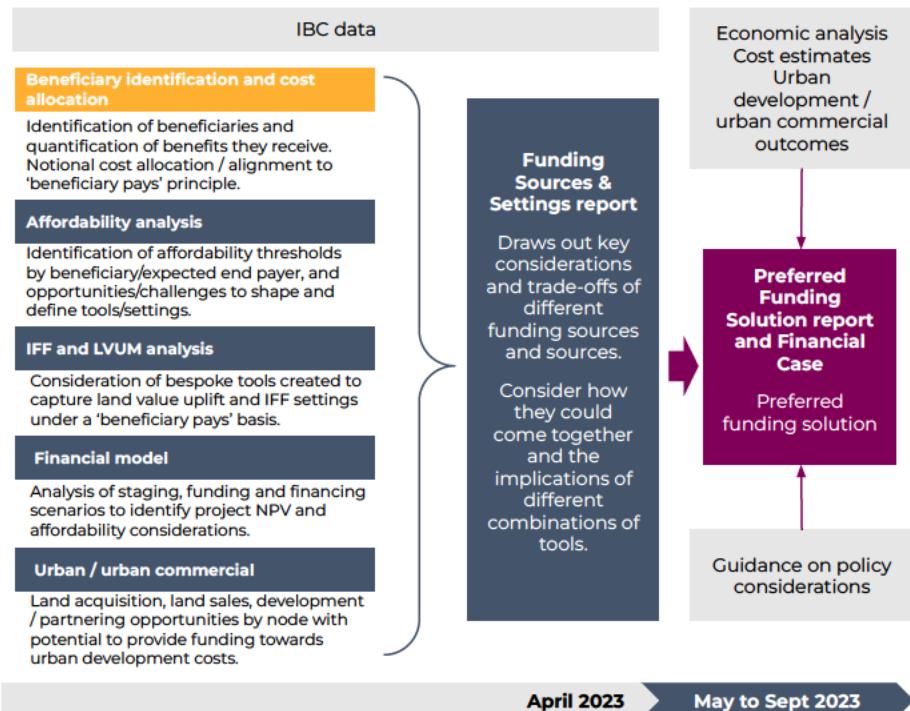
The focus of this report is on identifying beneficiaries of the project and developing an approach to estimating how much of the benefit they may receive.

A first principles approach would suggest that the proportion of benefit received reflects how much each beneficiary should pay - e.g. if a specific beneficiary type receives 10% of the benefit, they should pay 10% of the cost (assuming they still receive a net benefit). However, affordability and equity considerations mean this is unlikely to be the case in reality. Nevertheless, this serves as starting point as well as a sense check to scale funding sources and considering how they come together into a funding solution.

How this report fits with the business case

This report forms part of a suite of funding advice prepared for ALR Ltd to inform the Corridor Business Case (CBC) and support Ministerial/Cabinet advice.

The findings in these documents are indicative and draft, and will continue to iterate as underlying analysis progresses.



Background and approach

Approach

In order to adopt a beneficiary pays approach, a range of different beneficiary 'types' and 'geographies' were identified.

The transport and wider economic benefits estimated in the economic case form the basis of the analysis. Each benefit is considered in turn, and an allocation of this benefit is made to beneficiaries (both types and geographies).

The allocation exercise is complex and subjective.

Pure economic theory / benefit estimation does not necessarily reflect how value flows through the system. It also does not take into account the interrelationship and impact that charges / levies have on the way the benefit and value flows through. As such, we have considered two alternative scenarios:

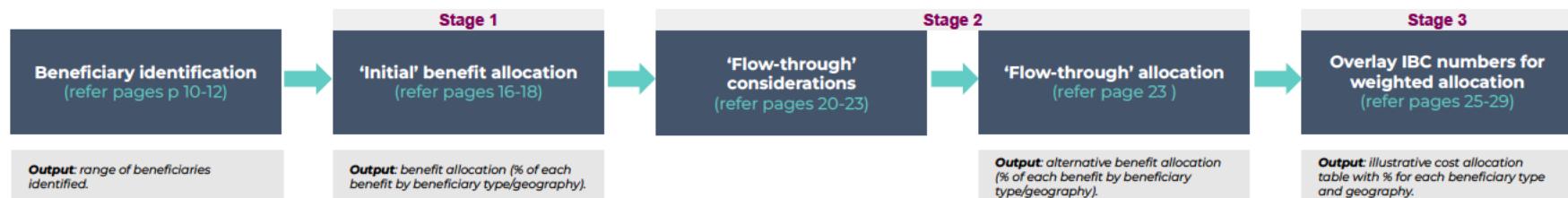
- 'Initial' allocation which considers the purer economic, first order impacts; and
- 'Flow-through' allocation which considers how the benefits and value flow through the system, along with the interaction with charges/levies.

A staged approach is adopted to step through the process:

- **Stage 1:** 'Initial' allocation of **each** benefit to beneficiary type and geography
- **Stage 2:** Alternative 'Flow-through' allocation of **each** benefit to beneficiary type and geography reflecting:
 - The relationship between public transport benefits and land value uplift (refer p 20-21); and
 - The financial flow of agglomeration benefits (refer p 22-23).
- **Stage 3:** Overlay IBC benefit values to provide a 'weighted' allocation across **all** benefits.

The weighted allocation provides the first principles cost allocation by beneficiary class.

The actual value estimated for each benefit as part of the economic assessment, will change the relative weighting and the allocation presented in this paper. The Financial Case will include the final allocation.



Other considerations (refer section 6)

Key findings

The diagrams opposite highlight how the allocation of benefits varies under the **Initial** and **Flow-through** allocation scenarios. The key drivers of the variance are:

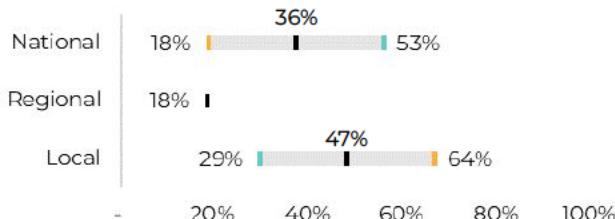
Public transport (PT) benefits

- **Initial allocation:** These *directly* accrue to PT users.
- PT users should be willing to pay for this benefit, either directly (i.e. fares) or by paying more to live near the services (house prices or rents).
- **Flow-through allocation:** Where PT is subsidised (and PT users do not pay for the full benefit), the benefit flows through to land value uplift (LVU) and therefore landowners as *indirect* beneficiaries.
- The greater the amount captured through fares, the less people are willing to pay to access the service (lower LVU). As such, the fare setting approach will impact where the benefit and value flows.
- It is also worth noting that in many cases *the landowners are the PT users*, the two beneficiary types are not mutually exclusive.

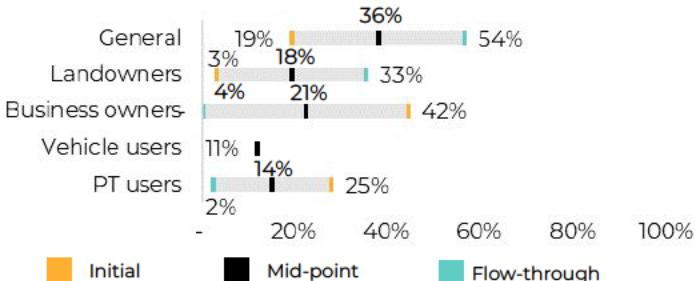
Agglomeration

- Agglomeration reflects increased GDP from increased productivity.
- **Initial allocation:** increased profitability initially *directly* accrues to agglomeration-affected business owners (primarily in the corridor).
- **Flow-through allocation:** Business profitability *indirectly* flows through to other beneficiaries:
 - Landowners through increased wages to workers;
 - National benefit from increased tax take (corporate, income and GST from increased activity); and
 - Business owners through retained profit to shareholders (which also flows through).
- If the full benefit is captured from business owners (e.g. a via a rate/levy), there would be no profitability to flow through to workers, shareholders and the Crown in terms of additional tax take. Simplistically, the benefit can either be captured 'at source' through a levy/rate on businesses, or through a combination or rates/levies on businesses and landowners and via Crown contribution reflecting national tax take.

Benefits by geography



Benefits by beneficiary types



Key findings

The diagrams on the previous page highlight how the split of benefits can vary based on approach adopted.

Neither approach is right or wrong. In fact, both methods yield outcomes that are not necessarily practical when considering funding tools and settings. For example, under the Initial allocation, the benefit to Landowners is only 3% making it difficult to justify residential rates/levies. Conversely under the Flow-through allocation, local landowners receive 26% of the benefit meaning ~\$58,000 cost per rating unit, which would be relatively unaffordable to fund.

The diagram opposite shows the allocation taking the mid-point between the two scenarios.

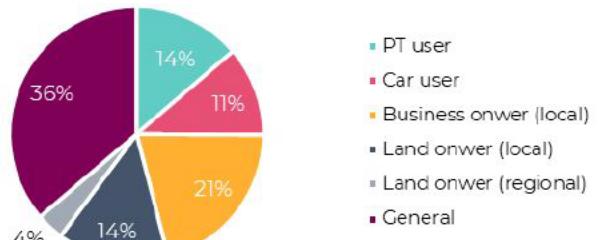
There are limitations to taking a mid-point, however, it provides a balanced and reasonable starting point for cost allocation in building up and considering funding 'stacks'. Ultimately a pure beneficiary pays approach will need to take into account, affordability and implications in terms of incentives and equity. This includes ensuring consistency with mode shift incentives (e.g. charging of PT users) and equity (e.g. regressive nature of taxes to target vehicle users and implications for transport poverty).

While beneficiary pays is being considered as guiding principle to determining a funding allocation, the relationship between beneficiary identification/allocation and charging is complex. The charging mechanism can impact and alter the benefit received. Consideration should be given to the amount charged relative to the benefit received (ie to ensure charges do not exceed the benefit received).

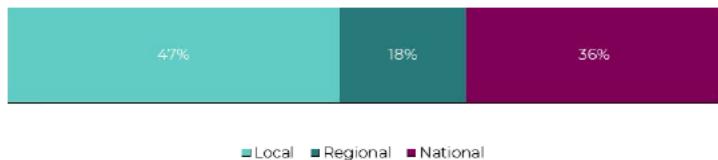
Identifying, quantifying and articulating the benefit received by different types of beneficiaries will be important in gaining social license for the project and for justifying the use of rating tools.

However, given its practical implementation considerations, beneficiary pays analysis should be taken as a guide and a range, rather than set quantums to be worked towards.

Summary of 'mid-point' benefit split



Note that emerging economic analysis suggests benefits to landowners may increase relative to IBC weighted allocation. TBC and re-estimated when benefit values become available.



2. Beneficiary identification

Beneficiary overview - Beneficiary types

'Averaging' is the principle of allocating costs between beneficiary groups, where the beneficiaries in each group derive a similar quantum of benefits. The first step in this assessment is identifying and defining beneficiary catchment groups where individuals are likely to derive similar benefits.

A range of different beneficiaries stand to benefit from the ALR project. The following categories have been considered throughout this report:

 Public transport user	<ul style="list-style-type: none">Users of ALR and the PT network throughout Auckland more broadly.Considers existing users, new users and users who may change mode as a consequence of ALR being implemented.PT user usually pay for part of the benefit they receive through fares. However, given fare subsidisation the benefits PT users receive also manifests itself in land value uplift (i.e. willingness to pay more for living near efficient PT services) (refer p20-21).
 Motor vehicle user	<ul style="list-style-type: none">Users of private and commercial vehicles in and transiting through Auckland.The current regime largely charges vehicle users via fuel excise duty (FED) and road user charges (RUC), and indirectly through property rates.
 Landowner	<ul style="list-style-type: none">Owners of residential and non-residential land throughout Auckland.This category is broad and includes owner occupiers, landlords and developers.The current regime for charging landowners is via rates and levies.
 Business owner	<ul style="list-style-type: none">Businesses operating within Auckland. Includes a wide range of types, scale and profitability.Business owners benefit from greater economic activity driven by the introduction of ALR.Other than corporation tax, there is currently no specific regime to target and charge business owners.Typically the rating/levy mechanism falls to business owners through 'net leases' where the business leases the commercial space. If the business owner also owns the land it bears the cost of the rate/levy directly.
 General beneficiary	<ul style="list-style-type: none">This reflects the fact that some benefits are expected to be felt by Aucklanders as a whole, or have national benefits (e.g. emissions reductions).

Beneficiary overview - Geography

s 9(2)(a)

The analysis in this report provides a split of benefits based on geography. This reflects the idea that, for example, some benefits will accrue more strongly to those closest to stations due to increased accessibility.

By their nature, some benefits are deemed to accrue more broadly across a wider population base and are less related to proximity.

This differentiation and classification is important in determining:

- the amount of benefits received by different beneficiaries
- the tools available to charge these beneficiaries
- the settings used in developing and shaping funding tools (i.e. quantum of rates/levies).

The map to the right indicates a widely used approach of 'local catchment' being within 1,600m of stations, with benefits intensifying with proximity to the station.

A range of options are available for designing and defining local catchments that will need to be considered as charging mechanisms are developed. This includes consideration of 'cliff' edges (i.e. person across the road falling into a catchment that results in higher rate than its neighbour) and political boundaries. Refer section 5 for further consideration.

In addition to the 'local', 'regional' and 'national' geographies, some benefits have been classified as 'citywide', where citywide reflects the entire Auckland area (i.e. both local and regional catchments). An approach to splitting citywide benefits is included on the following page.

In summary, benefits are allocated to the following geographical areas:

- **Local:** defined catchment around each station.
- **Regional:** remaining Auckland Council rating area, i.e. excluding Local areas.
- **Citywide:** entire Auckland Council rating area, includes both Regional and Local areas.
- **National:** beneficiaries outside the Auckland region.

There are different options for defining the 'local' catchment areas, which are outlined in section 5, including walking catchments, Transport MSM Zones and Local Board areas. The map above reflects the use of walkable catchments, which was the basis that was used for the IBC. This reflects economic analysis that shows uplift around stations generally dissipates as you move away from stations. Detailed analysis will consider further detail at 0-400m, 400-800m and 800-1,600m intervals to support IFF and other detailed funding tool analysis and quantification.

Citywide - allocating to local and regional

Citywide benefits

There are certain benefits quantified through the Economic Case, that are assumed to be derived equally across all Aucklanders (i.e. rather than allocated between local and regional), as a result of either:

- there being no robust underlying economic rationale that can be used to differentiate the proportion of benefits (e.g. air quality benefits and other non-excludable public goods); and / or
- the marginal difference between the magnitude of benefits derived between local and regional beneficiaries is very small (e.g. vehicle benefits).

Allocating the 'citywide' benefits uniformly across all ratepayers could be used as the method for targeting citywide beneficiaries. However, there is additional complexity associated with having three separate charges/ differentials (i.e. local, regional, city wide), which is unlikely to deliver a materially better alignment between costs and benefits. Accordingly, this approach is not recommended.

To simplify the articulation of benefits, the citywide benefits are proposed to be split between local and regional catchments using a simple rule of thumb.

There are a couple of different ways that this could be done:

- **population** (i.e. per capita) - i.e. % of the population that live within the local catchments

- **number of rating units** - i.e. % of rateable units within the local catchments
- **proportionate to property value** - i.e. % of land value or capital value within the local catchments.

As the benefits are derived equally by all people, the proportion of people living in the local catchments compared to the regional catchments is recommended to be the basis for the local/regional allocation. To reflect the the additional population growth within the corridor over time (i.e. as a result of the intervention), an adjustment will be made to the local catchment population to reflect 50% of the estimated additional growth.

Population estimates within/outside the local catchments was not available at the time this report was drafted, and therefore, the number of rateable units from the 2021 IBC was used as a proxy, which implies a **split of 13% local and 87% regional**. This will be updated once the population and land use information is available.

Policy makers could decide to use property values as the mechanism for the allocation, if they wanted to make the charges more progressive. However, this would be inconsistent with the beneficiary pays principle.

**Citywide to be split:
13% Local and 87% Regional**

3. Benefit allocation

Introduction

This section is focused on determining an **allocation for each individual benefit** by beneficiary type and geography.

Each benefit (transport and WEBs) has been considered in turn. Many of these benefits were considered in the IBC with five new WEBs considered for the CBC.

The following pages provide a high level overview of each benefit as well as a summary of where the benefit is assumed to lie. Further detail on each benefit and the basis for underlying assumptions and calculations is included in Appendix 1.

A summary table is provided on page 18 which shows an initial allocation for the split of each individual benefit. This should be read across the row. No weighting or relativity has been applied between benefits.

Where possible this allocation is made with reference to the underlying methodology used in building up the benefit. For other benefits, this is not possible and alternative assumptions have been made to allocate the benefit. This provides the initial benefit allocation.

Two further steps are undertaken to refine beneficiary allocations in section 3.b:

- Further consideration of how PT benefits manifest in reality given the underlying calculation and policy around PT fares
- Further consideration around the financial flow through of agglomeration benefits

The steps above are intended to better align the beneficiary allocation to where the benefit ultimately lies and therefore to how cost could be allocated (and recovered).

	Benefits	New since IBC
Transport benefits	Road user travel time savings	x
	Vehicle user* Vehicle operating costs	x
	Road user reliability	x
	PT user* PT travel time savings	x
	PT reliability	x
	PT user experience improvements	x
	Crash cost reduction	x
	Emissions - CO2	x
	Emissions - air quality	x
	Walking and cycling	x
Wider economic benefits	Agglomeration	x
	Imperfect competition	x
	Increased labour supply	x
	Move to more productive jobs	✓
	Option / non-use value	✓
	Higher land value	✓
	Whole of life carbon	✓
	Urban sustainability	✓

Note there may be some change to the benefits noted above as economic analysis is finalised

3.a. Initial benefit allocation

Transport benefits - initial allocation summary

Benefit	Type	Geography
Vehicle user benefits	Motor vehicle users	National (5%) Citywide* (95%)
Public transport user benefits	Public transport users <i>Note that further consideration around this benefit and how it manifests itself is included on page (refer pages 20-21)</i>	Regional (30%) Local (70%)
Crash cost reduction	Motor vehicle users General beneficiary	National (64%) Citywide* (36%)
Emissions - CO2		National (100%)
Emissions - Air quality	General Beneficiary	National (66%) Citywide* (34%)
Walking and cycling	PT users General Beneficiary	National (71%) Regional (8%) Local (21%)

WEBs - initial allocation summary

Benefit	Overview	Type	Geography
Agglomeration	Improvements in transport infrastructure reduce travel costs between employees and firms and therefore increase the effective economic density of an area. The resulting agglomeration economies lead to firms experiencing productivity gains and increased GDP as a result. <i>Refer p22 for further detail on Flow-through impact of this benefit.</i>	Business Owners	Local (100%)
Imperfect competition benefits	Captures the economic welfare gain that accrues to businesses in the transport-using sector, as profit earned on the increased output as a result of transport-related time savings. The additional benefit is proportional to the margin between output prices and the costs to produce the output.	General Beneficiaries	Local (100%)
Increased labour supply benefits	Reduced commute time for workers is likely to reduce the perceived costs of working and, therefore, increase the labour supply. This results in increased labour hours and tax take.	General	National (100%)
Move to more productive jobs	Improved accessibility may induce workers to change jobs. Where this is a more productive job, there is a benefit to society of the average tax take on the marginal increase in wages.	General	National (100%)
Option / non-use value	The willingness to pay for the existence of a public transport service which an individual is not currently using, but may use in the future (option value), or one that they may never intend to use in the future (non-use value). <i>Split between Regional and Local to be confirmed when economic modelling complete.</i>	Landowners	Regional (5%) Local (95%)
Higher land value	Increase in the value of the land along the corridor that relates to the effect of changing the zoning or planning controls (i.e. 'up-zoning'). To avoid double counting benefits, this land value uplift is the increment over and above the uplift that is associated with proximity-based uplift (which is captured through the conventional transport benefits and option/non-use value).	Landowners	Local (100%)
Whole of life carbon	Monetised benefit (or disbenefit) relating to whole of life carbon emissions associated with ALR construction compared to urban sprawl.	General Beneficiaries	National (100%)
Urban sustainability	Reduced public expenditure on enabling infrastructure because of increased densification. <i>To be further refined as benefit is finalised.</i>	General Beneficiaries	National (20%) Citywide* (80%)

Initial allocation summary

Benefit class	Benefits	Monetised	National	Regional					Local					
				PT user	Car user	Business owner	Land- owner	General	PT user	Car user	Business owner	Land- owner	General	
Transport	Vehicle user benefits	✓		5%		83%					12%			
	Public transport user benefits	✓			30%					70%				
	Crash cost reduction	✓		64%		31%					5%			
	Emissions - CO2	✓		100%										
	Emissions - Air quality	✓		66%				30%					4%	
	Walking and cycling	✓		71%	7%			1%	18%				3%	
Wider economic benefits	Agglomeration	✓									100%			
	Imperfect competition benefits	✓									100%			
	Increased labour supply benefits	✓		100%										
	Move to more productive jobs	✓		100%										
	Option / non-use value	✓					5%					95%		
	Higher land value*	✓										100%		
	Whole of life carbon	✓		100%										
	Urban sustainability*	✓		20%				70%					10%	

The relativity has been assessed between beneficiary groups across each benefit (e.g. the national crash cost reduction benefit is not necessarily equal to the national agglomeration benefit).

3.b. Flow-through benefit allocation

Public transport benefits - PT users vs landowners

Overview of PT benefit estimation

Public transport user impacts are calculated by estimating the 'consumer surplus', which quantifies the economic benefits and disbenefits experienced by PT users after fare revenues have been accounted for.

Under Waka Kotahi's MCBM, the consumer surplus is calculated based on quantifying the **aggregate change in generalised cost for PT** users across the network.

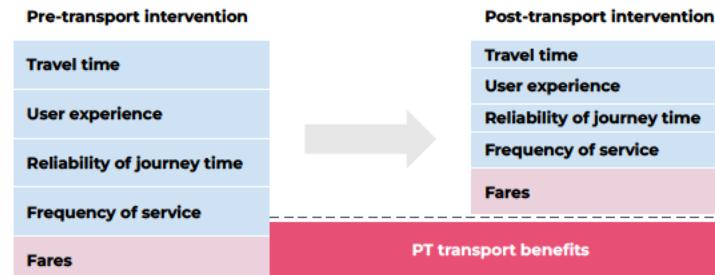
The **generalised cost (of travel) for a trip is the sum of all the monetary and non-monetary components of a trip**, including travel time (in vehicle, waiting, transfers, walking), user experience, reliability and frequency, expressed in dollar terms.

To estimate the generalised cost, the **component factors are expressed in minutes and then multiplied by a dollar factor**, which is summarised in the table below.

Travel time (in-vehicle, waiting, transfers and walking)	Expressed in minutes based on estimated total journey time (including any applicable weightings to the various aspects of travel time).
User experience	Preference surveys used to establish equivalent 'in-vehicle time' (IVT) benefits, which are applied to improved service or infrastructure attributes (e.g. addition of frequent and audible train announcements are equivalent to a reduction of 1.1 mins of IVT per passenger).
Reliability of journey time	Reducing the variation in journey times provides additional time savings (equivalent to IVT) per passenger.
Fares	Fare charged on the service.

Initial allocation: First order impacts

PT transport benefits are calculated through the **aggregate reduction in generalised cost** post the intervention (**blue shaded area** below).



As generalised cost is a direct usage benefit (i.e. what is the reduction in trip cost when using PT), the PT benefits can be directly attributed to PT users across Auckland (but focussed in the corridor).

The proportion of transfer boardings vs total boardings (on ALR) is the proposed allocation methodology between regional (i.e. transfer boardings) and local (i.e. within corridor trips) beneficiaries. Analysis from the IBC information shows that ~30% of ALR boardings are transfer boardings, and therefore, **a 70%/30% local/regional split is recommended**.

The land value uplift outputs could also be used as a basis, noting that those models are based upon changes in Effective Job Density (an accessibility measure), which is a slightly different lens to the PT benefits.

Initial allocation:
PT users
Local 70%, Regional 30%

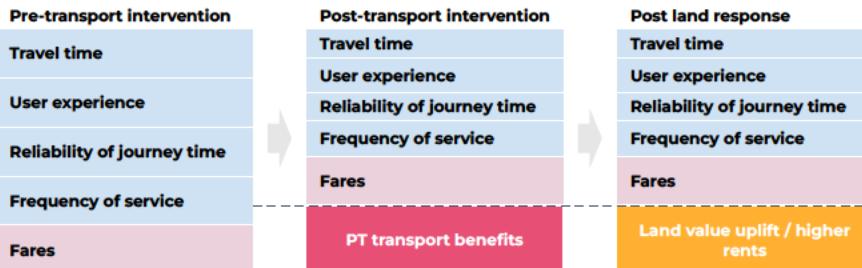
Public transport benefits - PT users vs landowners (cont'd)

Flow-through allocation: Second order impacts

While PT users benefit directly from the lower generalised cost of travel, the net overall benefit (in aggregate) can be somewhat eroded over time as land prices in the surrounding area increase. Land prices increase as a result of the increased willingness to pay by house purchasers and renters in the surrounding areas.

For example, if a PT user could reduce their generalised cost by \$5 per trip (\$50 per week travel cost reduction) by moving near to a new station, they would be economically better off to pay up to, but not exceeding \$50 more a week to live in that location, all else being equal. However, any increase in rent will reduce their aggregate benefit overall.

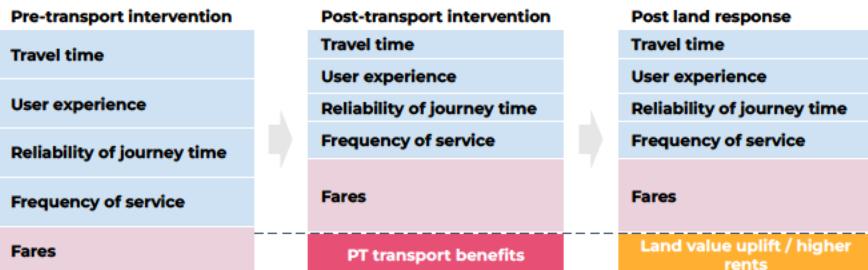
In efficient land markets, land prices adjust over time such that the economic impact is neutral (i.e. the increase in rents/land price is equivalent to the reduction in generalised cost), which outlined in the figure below.



If fares remain unchanged post intervention, 100% of the marginal benefit can be thought of as manifesting with landowners, with 0% remaining with PT users (noting many landowners will be PT users).

The additional PT patronage that will occur as a result of the project will deliver an increase in fare revenue. However, **for the purposes of the beneficiary analysis/allocations, this revenue is assumed to be available for operating expenditure and excluded from the allocation. A corresponding amount will be removed from the operating costs that are fed into the cost allocation.**

Further, because generalised costs include the monetary impact of fares, a change to the fare strategy would directly impact the magnitude of benefits that flow through to the landowner (and negatively impact patronage):



Economically, the decisions on the fare strategy at an aggregate level are 'zero-sum', i.e. for every dollar allocated to PT users, one dollar less will manifest itself into land prices. Accordingly, given the Project's benefits are largely driven by patronage, there is a strong policy rationale to maintain lower fares and instead tax the landowner.

Flow through allocation:
Landowners
Local 70%, Regional 30%

Agglomeration benefits - Financial benefit and flows

Agglomeration reflects increased GDP as a result of improved productivity.

Initial allocation: Agglomeration manifests as increased profitability for firms, and as such in the first instance local business owners stand to benefit.

Initial allocation: 100% local business owners

In order to further explore where the benefit lies, consideration has been given to the flow through effects of this (i.e. following the financial benefit). This is different to people's perception of benefit (consistent with economic benefit appraisal).

Flow-through allocation: Business profitability flows through to other beneficiaries:

- Landowners through increased wages to workers
- National benefit from increased tax take (corporate, income and GST from increased activity)
- Business owners through retained profit to shareholders.

For example, a firm generates more profit and a worker in this firm receives additional income (as a 'share' of the increased profitability). The worker uses all the additional income to dine out at a restaurant. The restaurant owner then uses the increase in profit (once marginal costs are covered) to purchase goods from a local artist. There are benefits throughout that chain due to indirect and induced impacts - the multiplier effect - of the initial direct impact (the business' increase in productivity due to agglomeration effects).



This flow-through impact through a number of cycles has been considered to a point where its final incidence is estimated. This relies on a number of input assumptions (refer Appendix 2).

The following ranges for attributing the final incidence have been estimated:

- Government, received through taxation: 63% - 85%, with an adopted mid-point of 74%
- Aucklanders, through additional savings: 8% - 27%, with an adopted mid-point of 16%
- Rest of NZ, through additional savings: 6% - 11%, with an adopted mid-point of 10%.

It is practically challenging to charge the 'rest of NZ' for its share. As such it is added to the National share, taking the total to 84%.

Flow through allocation: Local landowners 16% National general beneficiaries 84%

The significant share to Government/National is due to the tax that is collected throughout that chain in the form of both GST and income tax.

The two allocations provide bookends for the allocation, with the real and likely flow of benefit, somewhere in between.

The interplay between benefit and charging should be considered. If business owners (where the initial benefit is received), are charged a rate/levy equal to the benefit they receive - there is no residual financial benefit that can then cascade its way through the economy. i.e. no flow on from the blue box opposite and therefore, no resulting increase in tax take for the Government. There is also no extra income for workers to benefit from (e.g. save or spend). Ultimately, the eventual flow through and mix of benefits, will depend on the mechanism and extent of charging to the business owner.

Flow-through allocation summary

Changes vs Initial allocation in **pink**

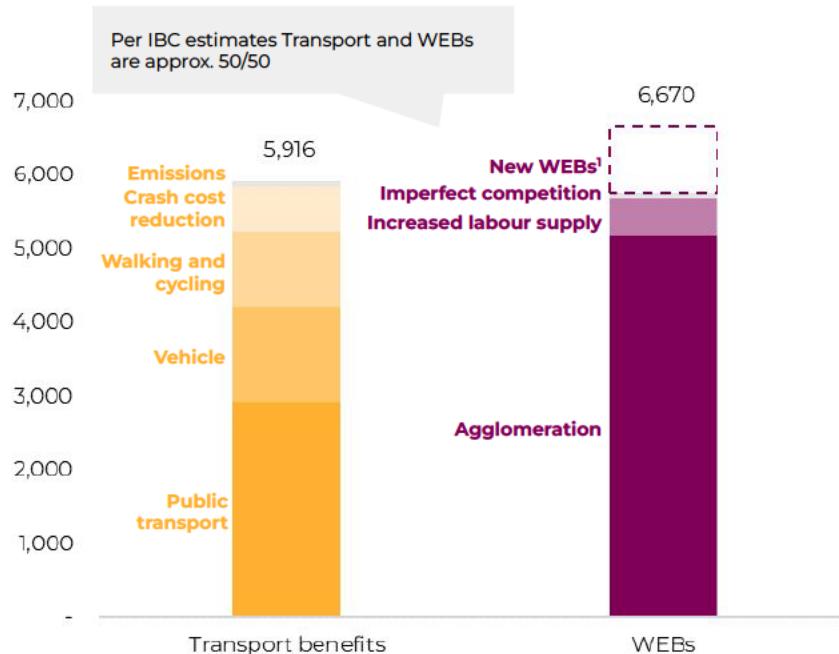
Benefit class	Benefits	Monetised	National	Regional				Local				
				PT user	Car user	Business owner	Land- owner	General	PT user	Car user	Business owner	Land- owner
Transport	Vehicle user benefits	✓		5%		83%				12%		
	Public transport user benefits	✓					30%				70%	
	Crash cost reduction	✓		64%		31%				5%		
	Emissions - CO2	✓		100%								
	Emissions - Air quality	✓		66%			30%					4%
	Walking and cycling	✓		71%	7%			1%	18%			3%
Wider economic benefits	Agglomeration	✓		84%							16%	
	Imperfect competition benefits	✓		84%							16%	
	Increased labour supply benefits	✓		100%								
	Move to more productive jobs	✓		100%								
	Option / non-use value	✓				5%					95%	
	Higher land value*	✓									100%	
	Whole of life carbon	✓		100%								
	Urban sustainability*	✓		20%			70%					10%

The relativity has been assessed between beneficiary groups across each benefit (e.g. the national crash cost reduction benefit is not necessarily equal to the national agglomeration benefit).

4. Illustrative weighted allocation

Illustrative beneficiary allocation

IBC benefits

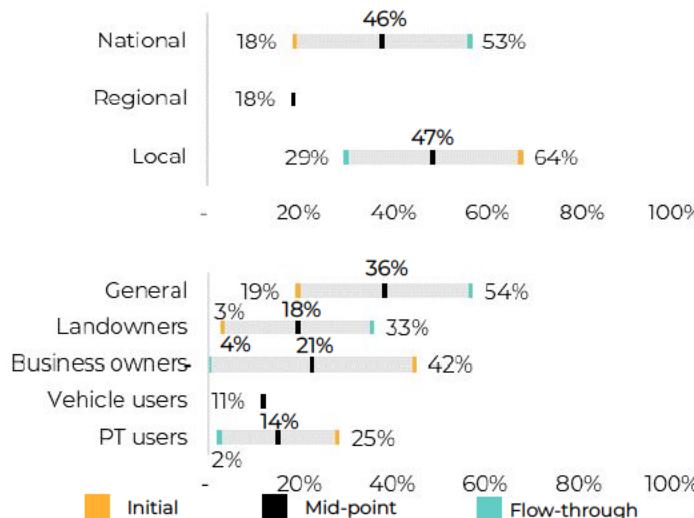


¹ New WEBS includes move to more productive jobs, option / non-use value, higher land value, whole of life carbon and urban sustainability

The diagram opposite shows the split of IBC benefits.

These numbers have been applied to the % splits per benefit summarised on pages 18 and 23 in order to provide a relative weighting between the benefits.

Agglomeration is by far the largest benefit, followed by PT user benefits. As such, the application of the Initial and Flow-through scenarios will have a significant impact on how the overall benefit allocation lands (see below).

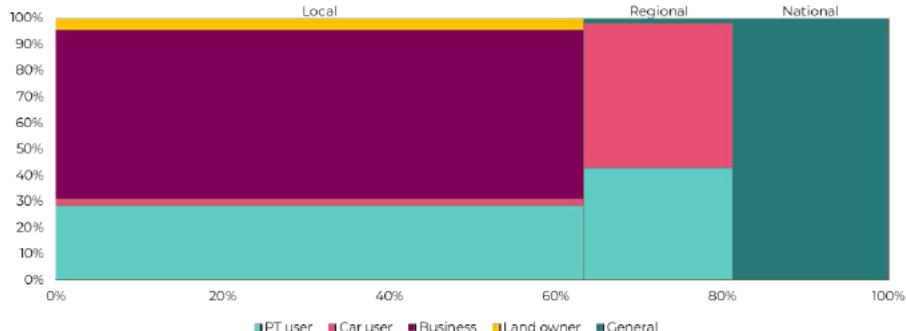


Illustrative beneficiary allocation

'Initial' allocation

Applying the initial allocation as a basis for beneficiary pays allocation would suggest:

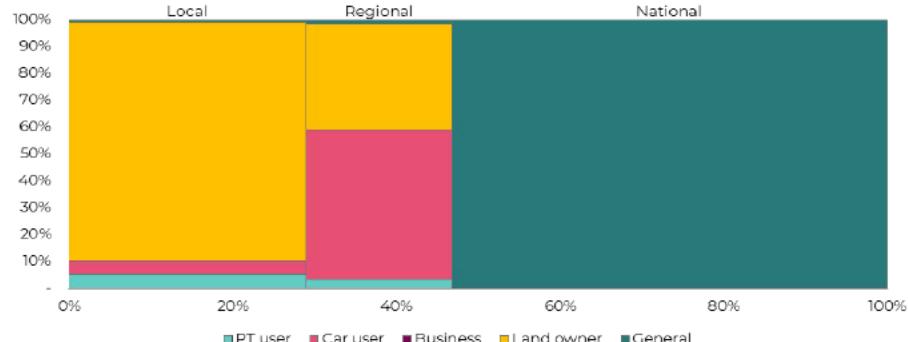
- Over **40%** of the benefit would be to local business owners.
 - Based on **24,393** non-residential units in the corridor, cost allocation would represent **~\$250,000 per rating unit**.
- Only **3%** of the benefit would accrue to landowners, which reflects only the land value uplift associated with option/non-use (i.e. the accessibility impact is captured through the transport benefits).
- It also implies that transport users (who derive the transport benefits) should fund the contribution rather than landowners.
- **25%** of the benefit would accrue to PT users.
 - Fully recovering this cost through fares would require an additional **~\$3.3bn** of fare revenue, which is a **~865%** increase from the base case.
- Only 19% of the benefit is National benefit, representing **~\$2.7bn**.



'Flow-through' allocation

Applying the flow through approach to beneficiary pays allocation would suggest:

- Local landowners would be apportioned **26%** of the cost.
 - Based on **64,700** residential units in the corridor, cost allocation would represent **~\$58,085 per rating unit**.
- PT users' share falls to 2%.
- The National share of overall benefits increases to **53%**, representing **~\$7.8bn** of cost.



Initial allocation summary

Benefit class	Benefits	Monetised	National	Regional				Local				
				PT user	Car user	Business owner	Land owner	General	PT user	Car user	Business owner	Landowner
Transport	Vehicle user benefits	✓		0.5%		8.4%				1.3%		
	Public transport user benefits	✓			7.0%					16.3%		
	Crash cost reduction	✓		3.1%		1.5%				0.2%		
	Emissions - CO2	✓		0.2%								
	Emissions - Air quality	✓		0.2%				0.1%				0.0%
	Walking and cycling	✓		5.8%	0.6%			0.1%	1.5%			0.2%
Wider economic benefits	Agglomeration	✓								41.2%		
	Imperfect competition benefits	✓								0.5%		
	Increased labour supply benefits	✓		4.0%								
	Move to more productive jobs	✓		4.0%								
	Option / non-use value	✓					0.0%				0.4%	
	Higher land value	✓									2.3%	
	Whole of life carbon	✓		0.2%								
	Urban sustainability	✓		0.0%				0.2%				0.0%

We note: the relativity has been assessed between beneficiary groups across each benefit (e.g. the national crash cost reduction benefit is not necessarily equal to the national agglomeration benefit).

Flow-through allocation summary

Changes vs Initial allocation in **pink**

Benefit class	Benefits	Monetised	National	Regional				Local				
				PT user	Car user	Business owner	Land owner	General	PT user	Car user	Business owner	Landowner
Transport	Vehicle user benefits	✓		0.5%		8.4%				1.3%		
	Public transport user benefits	✓					7.0%					16.3%
	Crash cost reduction	✓		3.1%		1.5%				0.2%		
	Emissions - CO2	✓		0.2%								
	Emissions - Air quality	✓		0.2%				0.1%				0.0%
	Walking and cycling	✓		5.8%	0.6%			0.1%	1.5%			0.2%
Wider economic benefits	Agglomeration	✓		34.6%								6.8%
	Imperfect competition benefits	✓		0.4%								0.1%
	Increased labour supply benefits	✓		4.0%								
	Move to more productive jobs	✓		4.0%								
	Option / non-use value	✓					0.0%					0.4%
	Higher land value	✓										2.3%
	Whole of life carbon	✓		0.2%								
	Urban sustainability	✓		0.0%				0.2%				0.0%

We note: the relativity has been assessed between beneficiary groups across each benefit (e.g. the national crash cost reduction benefit is not necessarily equal to the national agglomeration benefit).

Mid-point allocation summary

Averaged numbers in **pink**

Benefit class	Benefits	Monetised	National	Regional				Local				
				PT user	Car user	Business owner	Land owner	General	PT user	Car user	Business owner	Landowner
Transport	Vehicle user benefits	✓		0.5%		8.4%					1.3%	
	Public transport user benefits	✓			3.5%			3.5%		8.2%		8.2%
	Crash cost reduction	✓		3.1%		1.5%				0.2%		
	Emissions - CO2	✓		0.2%								
	Emissions - Air quality	✓		0.2%				0.1%				0.0%
	Walking and cycling	✓		5.8%	0.6%			0.1%	1.5%			0.2%
Wider economic benefits	Agglomeration	✓		17.3%							20.6%	3.3%
	Imperfect competition benefits	✓		0.2%							0.3%	0.0%
	Increased labour supply benefits	✓		4.0%								
	Move to more productive jobs	✓		4.0%								
	Option / non-use value	✓					0.0%					0.4%
	Higher land value	✓										2.3%
	Whole of life carbon	✓		0.2%								
	Urban sustainability	✓		0.0%				0.2%				0.0%

We note: the relativity has been assessed between beneficiary groups across each benefit (e.g. the national crash cost reduction benefit is not necessarily equal to the national agglomeration benefit).

5. Other considerations

Policy considerations & trade-offs

The policy considerations and trade-offs that will influence the selection and application of funding sources are explained in more depth in this section. The specific policy scenarios considered in further detail through this section are listed below.

Basis for identifying beneficiaries (pages 32-33)

Testing the basis and implications of using various beneficiary identification methods - noting there are multiple methods available for identifying beneficiaries, from a local perspective, such as Local Board areas, station catchments or MSM zones.

Implementing 'beneficiary pays' - key considerations (page 34)

There are implications of implementing a beneficiary pays approach in terms of affordability, equity and outcomes it would drive.

Land value uplift and transport benefits and WEBs (page 35)

Clarification around LVU and how it is or isn't reflected in transport benefits and WEBs discussed in this paper.

Basis for identifying beneficiaries

Background

Defining a geographic boundary is somewhat arbitrary and relies on the granularity / accuracy of the benefits estimation and analysis.

Accordingly, imposing a 'local charge' on 'local beneficiaries' requires the balancing of a set of competing trade-offs.

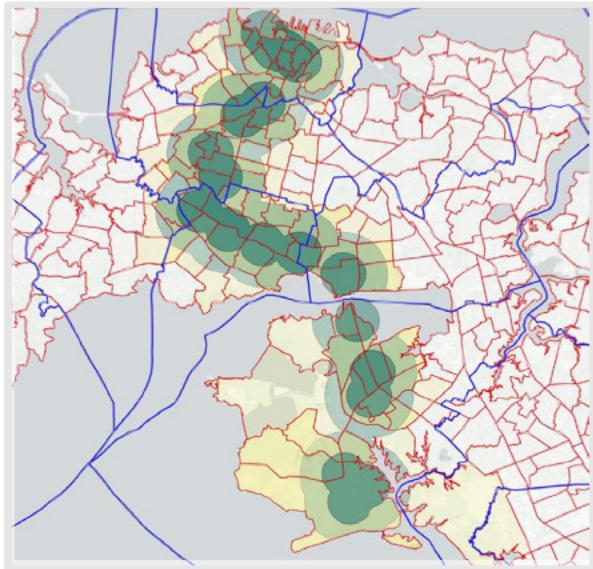
Considerations

- **Economic evidence:** International research on the impact of 'heavy and light rail' investment on land values indicates that land value uplift changes based on the distance between the land parcel and the stops / stations. Generally, the land value uplift benefits are similar within five, ten and 15 minute walking catchments (400m, 800m and 1,600m distances around stations respectively). The analysis also shows that the marginal land value uplift benefit dissipates to zero beyond 1,600m (with some exceptions).
- **Availability of data:** The Auckland Macro Strategic (Transport) Model (MSM), which is used to quantify the project's transport benefits is made up of some ~600 travel zones. These MSM zones vary in size (but are broadly consistent in terms of population size) and do not neatly align to any of the walking catchments for the proposed ALR stations. Accordingly, high level assumptions would be required to allocate benefits into walking catchments.
- **Arbitrary 'cliff edges':** Geographic catchments are arbitrary in nature, and therefore, will have properties on either side of the boundary that may pay substantially different charges (e.g. one property may be subject to an IFF levy, while another across the road isn't). Internationally, projects have favoured using existing boundaries (where possible) to avoid having to establish an arbitrary boundary that may be contentious.
- **Existing boundaries:** Alignment to existing boundaries (e.g. Local Board areas) can be easier to articulate and explain, which can reduce implementation risk. However, the current size of those boundaries is significantly larger than the areas of benefit implied by the economic analysis.

Three different options for defining local catchments are summarised and compared on the following page.

Basis for identifying beneficiaries (cont'd)

Options for defining the 'local' catchment area



- 800m catchment distance
- 1,600m catchment distance
- MSM zones partially in the catchment area
- MSM zones outside of the catchment area
- MSM zones outside of the catchment area

The 'local' catchment can be further disaggregated to reflect relationship between benefits (e.g. LVU) and distance to the station. This is being explored in the IFF workstream.

Three options are being considered by the project team, which are:

- Walking catchments (Dark/light green shading):** Walking catchments around each station. Opportunity to disaggregate between 400m, 800m and 1,600m.
- MSM transport zones (Yellow shading):** All MSM zones that are fully (or partially) in one of the walking catchments.
- Local Board areas (Blue lines):** Auckland Local Board areas.

The key considerations outlined on the previous page have been applied to each of the three options, which is summarised in the table below.

Considerations	Walking catchments	MSM zones	Local Board areas
Economic evidence:	<ul style="list-style-type: none">✓ Strong alignment - catchments directly reflect estimated allocation of benefits	<ul style="list-style-type: none">- Generally aligned to 1,600m walking catchments, with some exceptions at the Southern end of the alignment. Less aligned to the 800m catchments.	<ul style="list-style-type: none">✗ Very weak alignment - areas are too large for aligning with LVU benefits.
Availability of data:	<ul style="list-style-type: none">- High level assumptions required, which may not have a strong economic base	<ul style="list-style-type: none">✓ All transport modelling (which is the input to the land use modelling) based on MSM	<ul style="list-style-type: none">- Some high level assumptions required to align to MSM Zones (i.e. level benefits assessed at).
Arbitrary 'cliff edges':	<ul style="list-style-type: none">- Likely to be large 'cliff edges', but the walking catchments more closely reflect the LVU relative to the other options, noting there is a sloping LVU line.	<ul style="list-style-type: none">✗ Likely and cannot be justified by economic theory (i.e. simply a transport model construct)	<ul style="list-style-type: none">- Using pre-existing boundaries can help articulate/explain the 'cliff edge'. However, still arbitrary.

Implementing 'Beneficiary Pays' - key considerations

Background

This report identifies beneficiaries and provides a notional cost allocation to each beneficiary type and geography. There are different ways that these beneficiaries can be charged for 'their share' of the project and to varying degrees.

In general this will require careful balancing of achieving meaningful revenue / contribution, affordability, equity and outcomes/incentives being sought. As a general principle, benefit will need to be considered when looking at affordability to ensure beneficiaries do not pay more than the benefit they receive.

Key considerations

PT users: while they receive a material proportion of the benefit (under the initial allocation), increases in fares will need to be carefully considered in terms of ridership, implications on mode-shift and network integration challenges. While elasticity is relatively low (and therefore relatively low revenue impact), the behavioural and longer term implications are important.

Motor vehicle users: the desire to encourage people to transition out of private vehicles into PT appears to support charging this beneficiary class. Many of the possible charges are user pays in nature (e.g. congestion charging, fuel tax, parking charges etc) providing a direct link to usage. There are, however, implications to consider including the potential to double charge and importantly equity issues, specifically in relation to alternative access and transport poverty.

Business owners: There is no existing direct way to target business owners. The current assumption is that rates/levies on the commercial landowners are passed through as rents/lease from landlords through the net lease mechanism. Increased rental costs will need to be offset by increased business activity generated by ALR for business owners to choose to remain, or to locate, within the corridor.

Landowners:

- **Developers:** directly targeting developers provides a potential important source of revenue but needs to be considered against the potential disincentive to development in the corridor relative to elsewhere in Auckland. The overlap with developer contributions (DCs or negotiated) to fund urban enabling infrastructure also needs to be considered.
- **Landowners (residential):** the Affordability report (Volume 1) highlights the current affordability challenges faced by homeowners due to high household costs and cost of living more broadly. The implication of charges to gentrification also need to be considered.
- **'Large beneficiaries':** This report assumes that beneficiaries in each group derive a similar quantum of benefits, given they derive similar benefits. Along the corridor there are a small number of landowners that are large relative to other residential and commercial landowners. The approach to recovering costs from these landowners could be different and provides an opportunity for a more commercial negotiation and to capture some benefit, including land value uplift, that will accrue to the beneficiaries. This includes:
 - Auckland International Airport Limited (Māngere)
 - Skycity Group (City Centre)
 - Eden Park (Kingsland)
 - Scentre Group (St Lukes)
 - Lendlease (Onehunga)
 - Auckland Council Group (throughout the corridor)
 - Crown (throughout the corridor incl. University, Kāinga Ora, schools etc).

LVU and Transport Benefits / WEBS

Background

The ALR project is expected to drive material LVU through the corridor and, to a lesser extent, across the Auckland region.

While this provides a significant financial benefit, it is not specifically quantified or measured in the Transport Benefits or WEBS given it would lead to double counting of overall benefits.

Accessibility improvements drive an uplift in land value. The benefits of increased accessibility are quantified through the conventional transport benefits.

Page 20-21 highlights how these transport benefits manifest in LVU and benefits to landowners.

Including LVU as a separate benefit as well as the traditional transport benefits would result in double counting the benefits.

The 'higher land value' benefit seeks to work out the overall land value uplift, and then isolate the accessibility-related portion, and therefore calculate an 'incremental' land value uplift, which (in theory) is not captured elsewhere in the CBA. It can therefore be included as a separate benefit.

LVU still serves as an important metric and measure from a beneficiary assessment and cost allocation measure as it:

- Provides a benefit that can be understood and monetised
- Provides a mechanism to determine the relative benefit received in different locations to support shaping and defining rating/levy tools.

Appendix

Appendix 1. Benefit summaries

Transport benefits - vehicle user benefits

What is it?

Reduced vehicle travel, providing benefits in vehicle travel time, congestion, and vehicle operating costs for those who continue to drive. This also encompasses improvements in car travel reliability which results from the decrease in traffic on the network.

There are potentially disbenefits to vehicle users if increased intensification in the corridor or reallocation of road space adds to vehicle travel times and congestion.

Who benefits?

Motor vehicle users (e.g. it now takes a shorter amount of time to travel by car from one location to another).

Proposed split	National	Citywide	Regional	Local
<p>Vehicle user benefits occur for road users aggregated at a regional level as a result of mode shift away from private vehicle. The removal of those trips may mean some minor benefit on nationally significant corridors.</p> <p>Vehicle user benefits (across the various sub-benefits in this category) are calculated in aggregate across the region, by trip purpose.</p> <p>Obtaining meaningful information at a more granular level to try to determine a regional/local split is likely to be difficult. Data could be obtained at the transport model zone level, however given the dynamic nature of the model, this is problematic to unpick and requires further limiting assumptions (e.g. do you choose the origin or destination zone?)</p> <p>Given Auckland's transport network's important role in the national supply chain, a portion of the benefit is likely to be regional.</p> <p>Two options were considered:</p> <ol style="list-style-type: none">1. Adopt the heavy commercial vehicle (HCV) share of vehicle user benefits as a proxy for national benefits as these predominantly relate to freight movements. However, this will be overstating the national aspect, as many of the HCV trips will be being made by local Auckland businesses.2. Adopt the share of external vehicle trips (i.e. one trip-end outside Auckland) of total vehicle trips from the transport model as a proxy for national beneficiaries. <p>While not a perfect representation, option 2 is considered to be a better proxy than option 1. The proportion of national benefit is likely to be small. At this stage 5% has been used for illustrative purposes.</p> <p>Allocation will be finalised when benefits calculated.</p>	5% To be confirmed through transport model output analysis	95% To be confirmed through transport model output analysis	No regional/local split is practical	No regional/local split is practical

Transport benefits - PT benefits

What is it?

The improved level of service and capacity that ALR provides generates considerable public transport user benefits. There are benefits that accrue for each new passenger (both those using ALR and across the network), as well as those that accrue to existing public transport users (eg bus customers in the without-project case, who become users of ALR).

Public transport reliability increases as the project provides public transport users with a more reliable service than the bus services that it replaces. The higher quality of service and infrastructure that ALR provides also generates improvements to the users' experience.

Who benefits?

Public transport users (existing and new) benefit from a lower generalised cost (i.e. shorter, more reliable and higher quality services). However, these benefits increase PT users willingness to pay to live near stations (i.e. to access the services), which means the benefits **ultimately manifest in higher rents/land value uplift, which landowners benefit from**.

Proposed split	National	Citywide	Regional	Local
<p>These benefits accrue to the direct users of public transport (both using ALR and across the wider network from increased accessibility) and are therefore attributable locally and regionally. These benefits are typically calculated in aggregate across the region, by trip purpose, but not by public transport mode.</p> <p>The approach we have adopted is the use of boarding/alighting types (i.e. initial/final vs transfer) as a proxy for the allocation between local and regional. Comparing the total number of transfer boardings and alightings in the corridor against all boardings and alightings and treat this as representative of a regional allocation. These transfer boardings are using other parts of the public transport network in addition to the ALR service in the corridor, so reflect a journey not confined to 'local'.</p> <p>This is proposed to remain at the local level, i.e. no further differentiation between local station catchments.</p> <p>Refer page section 3.b for further detail and consideration around how PT benefits manifest and a illustrative revised allocation.</p>	Considered to be negligible (if any)	Split at the regional / local level	30%	70%

Transport benefits - crash cost reduction

What is it?

Crash cost savings occur as a result of reduced exposure to crashes from reductions in vehicle km travelled (vkt) as people shift mode to public transport.

Who benefits?

Motor vehicle users (e.g. passengers travelling by car who might have experienced an accident) and **general beneficiary** given the benefit society as a whole of reducing harm.

Proposed split	National	Citywide	Regional	Local
<p>The reduction in exposure to crashes will be experienced at the regional level as a result of less vehicle travel. There is also an associated reduction in national system (eg healthcare) costs as a result of fewer crashes. Reduction in vehicle travel (as the driver of crash cost reduction) is not expected to be confined to the corridor no differentiation between regional and local beneficiaries is proposed.</p> <p>The social cost of crashes (i.e. the valuation input) is made up of the following components, which guides the proposed split:</p> <ul style="list-style-type: none">Value of Statistical Life (VoSL) (91.6%): 66/34 split national/citywide based on population (i.e. Auckland is home to 34% of the total population). We adopt this split given that the underlying methodology to determine the VoSL takes an individual's willingness to pay to reduce the risk of death from a road crash and scales it up to the population level (either across the sum of individuals or households) to give a societal view. This then reflects society's willingness to pay to save one statistical life.<ul style="list-style-type: none">Waka Kotahi's recent Research Report 698, titled <i>Monetised benefits and costs manual (MBCM) parameter values</i>, notes these values apply to everyone, whether transport users or not. For example, on average, individuals are willing to pay \$4.30 per annum for one less annual road death. To estimate a total value for this reduction, the individual values are multiplied either by the national adult population or households.In practice, the safety benefits will primarily accrue to Aucklanders, but this concept of societal contribution is consistent with national road safety initiatives (i.e. the costs are not targeted to the regions where they are implemented).Lost output (0.3%): akin to lost GDP so 84/16 national and citywide (see agglomeration for further detail)Health system costs (2.2%): national benefitLegal costs (1.2%): national benefitProperty costs (4.6%): impact will vary but will incorporate flow on impact to insurance premiums (as an e.g.). Given the reduction in impact will occur within Auckland, we allocate 100% of this portion to citywide. <p>Transport model outputs could be used to apportion a share nationally, to reflect the reduced exposure to crashes for non-Auckland traffic while travelling within Auckland (as described above for vehicle user benefits). However, this would only be limited to the first round of impacts of effects (as noted in the MBCM) and not reflect any flow through benefits of improving road safety in Auckland. As such, the allocation method less suitable proxy for informing the national allocation of this portion of the benefit that for vehicle user benefits.</p>	64%	36%	No regional/ local split is practical	No regional/ local split is practical

Transport benefits - Emissions (CO2 & air quality)

What is it? (CO2)	Proposed split (CO2)	National	Citywide	Regional	Local
Reduced vehicle trips lead to a reduction in transport related CO2 emissions.	The reduction in greenhouse gas emissions is generated as a result of less vehicle travel within the region, but is considered to accrue nationally given climate impacts are felt nationally.	100%			
Who benefits? (CO2)					
General beneficiary (e.g. the reduction in greenhouse gas emissions benefits society as a whole).					
What is it? (air quality)	Proposed split (air quality)	National	Citywide	Regional	Local
Reduced vehicle trips lead to a reduction in transport related CO2 emissions.	The reduction in air pollutant emissions is generated as a result of less vehicle travel within the region . There is also an associated reduction in national system (eg healthcare) costs as a result of reduced exposure to pollutants.				
Who benefits? (air quality)					
General beneficiary (e.g. the reduction in greenhouse gas emissions benefits society as a whole).	The valuations for the various air pollutants are based on the damage cost approach and trace back through to the VoSL. As such, the 66/34 allocation between national and regional (as described earlier for crash cost reductions) is proposed. The benefits come from a reduction in vehicle travel, which will occur citywide as a result of the project - no delineation between regional and local is proposed. There are some limitations in the valuations (e.g. environmental costs are not quantified). However, given quantifiable benefits are the only ones being allocation, this is not considered to be a limitation.	66%	34%	No regional/ local split is practical	No regional/ local split is practical

Transport benefits - Walking and cycling

What is it?	Proposed split	National	Citywide	Regional	Local
<p>What is it?</p> <p>This benefit represents the health benefits associated with additional active travel which comes from two aspects of ALR.</p> <p>Firstly, there is additional active mode travel within the corridor that ALR incentivises / generates.</p> <p>Secondly, the additional public transport patronage associated with ALR also generates the same type of effect as all public transport trips have some degree of walking associated with them.</p> <p>Who benefits?</p> <p>Public transport users (e.g. people now incorporate a brief walk or bike to and from the new transport nodes).</p> <p>General beneficiary (e.g. people who live in the area benefiting from more active travel and lower overall NZ-wide health costs).</p>	<p>Proposed split</p> <p>These benefits are mostly generated by the associated reduction in national system (eg healthcare) costs as a result of increased physical activity. Local population who now add walking or cycling to their journeys, but may also minimally accrue across the wider region as the result of a better public transport and active mode network. The split of the valuation input is proposed to be used to allocate between national and regional/local.</p> <p>The health benefit valuation for increased physical activity (e.g. walking and cycling) is made up of the following components (with each component's contribution in brackets):</p> <ul style="list-style-type: none"> Increasing healthy life quality and expectancy (77%): Many of the same considerations as apportioning the VoSL outlined under crash cost reductions apply. It includes mortality and morbidity considerations, with the mortality component using the VoSL in its calculation. 66/34 allocation between national and regional proposed for this portion of the valuation. Health system cost savings (6%): Considered to be fully national benefits. Reducing lost output (16%): Assumed as being akin to GDP, so split this 84/16 national to citywide (refer later discussion on agglomeration). <p>Total 71% allocation nationally.</p> <p>In terms of regional/local split, most of the benefits are expected to come from public transport trips. This supports allocating the residual 29% using the split of public transport user benefits (70% local, 30% regional). However, there will also be a small proportion of this benefit category that comes from new active mode trips in the corridor, which are assumed to fully accrue 100% locally.</p> <p>An assumption that 90% of walking and cycling benefits accrue from public transport trips and 10% from new active mode trips has been made (to be confirmed by the transport modelling/planning teams). This means the local allocation is 21% (based on 29% (regional and local combined total) x (10% (benefits from new active mode trips, all assumed to be local) + 90% (benefits from public transport trips) x 70% (local share of public transport user benefits))). The regional allocation is the residual 8% (i.e. 29% - 21%).</p>	71%	Split at the regional / local level	8%	21%

WEBs - Agglomeration benefits

What is it?

Improvements in transport infrastructure reduce travel costs between employees and firms and therefore increase the effective economic density of an area. The resulting agglomeration economies lead to firms experiencing productivity gains and increased GDP as a result.

Who benefits?

Businesses are the first round beneficiaries as they experience the growth in output.

An expectation is that some benefit is shared with **workers** through higher wages. There is also a **general benefit (via taxation to the government)** to wider society.

Proposed split

An increase in gross domestic product (GDP) as a result of agglomeration benefits reflects an increase in economic growth since GDP is a measure of all the activity of companies, governments and individuals in a country. One of the main benefits of economic growth is higher living standards – higher real incomes and the ability to devote more resources to areas like healthcare and education. In other words, when GDP increases, everybody wins. However, there can also be negative impacts of economic growth, for example costs to the environment associated with that growth.

Since GDP affects society on the whole through the nature of the economy, there will be attribution both **nationally** and in Auckland.

Within Auckland, the immediate (or first round) impact will be **locally**, as a result of the direct effects within the corridor of increased productivity. However this represents an incomplete picture as the final incidence is overlooked (as noted in the MBCM).

While the increase in productivity that drives the agglomeration benefit occurs within Auckland, the nature of the flow on impacts of an increase in GDP also leads to national benefits. For example, a city centre business may generate some of the increase in GDP, but its workers will live and spend in a wide range of areas across Auckland (and other parts of the country), especially with the rapid adoption of e-commerce. Increased tax income (business, income and GST) as a result of the increased output and economic activity will subsequently flow through to the national tax take.

***Refer section 3.b for further detail and consideration around how Agglomeration benefits flow-through to result in benefit for national general beneficiaries and local landowners.**

National Citywide Regional Local

Initial allocation
100%*

WEBs - Imperfect competition benefits

What is it?

Conventional economic cost-benefit-analysis assumes that industries operate under perfect competition. This means that if transport infrastructure investments reduce transport costs, then the value of these travel time savings are treated as a saving in gross labour cost. However, if the reality is that there is imperfect competition, travel time savings result in an additional benefit proportional to the margin between output prices and the costs to produce the output.

The imperfect competition benefit captures the economic welfare gain that accrues to the business, as profit earned on the increased output.

Who benefits?

Businesses that use the transport network will initially benefit from the additional output they can achieve. Flow-through impact as per agglomeration (assumed).

Proposed split	National	Citywide	Regional	Local
<p>For the purposes of this analysis we assume the allocation of imperfect competition benefits mirrors that of the agglomeration benefits (in that the initial result is an increase in profit for the business, albeit as a result of different effects). The rationale for this is that the benefit is the economic welfare gain that accrues to the business as profit earned on the increased output that comes from transport-related savings for businesses using the transport network. Conceptually, the same approach as outlined above for agglomeration (also reflecting increased output, albeit as a result of increased productivity) is an appropriate proxy.</p> <p>The nature of this benefit, which occurs in transport-using sectors sets it apart from the agglomeration benefit and means a different mechanism for cost recovery could be appropriate.</p> <p><i>*Refer section 3.b for further detail and consideration around how Agglomeration benefits flow-through to result in benefit for national general beneficiaries and local landowners.</i></p>				Initial allocation 100%*

WEBs - Increased labour supply benefits

What is it?	Proposed split	National	Citywide	Regional	Local
<p>What is it?</p> <p>Individuals make work decisions by trading off the marginal costs and marginal benefits of working. A transport infrastructure project which reduces the commute time for workers is likely to reduce the perceived costs of working and, therefore, increase the labour supply.</p> <p>The wider economic impact of increased labour supply arises when reduced costs of travelling to and from work lead to an increase in total labour hours and a higher tax take.</p>	<p>As this benefit is only calculating the additional tax take, and this is administered nationally in NZ, we propose that 100% of the allocation sits in national.</p>	100%			
<p>Who benefits?</p> <p>General beneficiaries due to the benefits to the wider economy.</p>					

WEBs - Move to more productive jobs

What is it?

By improving accessibility for commuters, an infrastructure project may induce workers to change their location of work.

If the project induces the worker to take up a more productive job, there is an additional benefit to society.

This benefit is the average tax take on the marginal increase in wages that the worker earns as a result of the move to a more productive job (as opposed to working more hours, which is captured in the labour supply benefit).

Who benefits?

General beneficiaries due to the benefits to the wider economy.

Proposed split	National	Citywide	Regional	Local
As this benefit is only calculating the additional tax take, and this is administered nationally in NZ, we propose that 100% of the allocation sits in national .	100%			

WEBs - Option / non-use value

What is it?	Proposed split	National	Citywide	Regional	Local
<p>What is it?</p> <p>This captures the willingness to pay for the existence of a public transport service which an individual is not currently using, but may use in the future (option value), or one that they may never intend to use in the future (non-use value).</p>	<p>This benefit manifests in increased property values, but is isolated so to avoid any double counting of benefits relating to land value uplift which are generally captured through the quantification of conventional transport benefits or the non-accessibility based uplift described below.</p> <p>We expect this to predominantly be confined to local (i.e. in the corridor), and depending on the nature of the analysis could be disaggregated further (e.g. concentric catchments around stations). Some dispersed regional benefits might also be expected (to a considerably lower level).</p> <p>Split to be validated when economic modelling complete.</p>			Split at the regional / local level	5% To be confirmed 95% To be confirmed
<p>Who benefits?</p> <p>Landowners due to the manifestation of this benefit coming through land value uplift.</p>					

WEBs - Higher land value

What is it?

Increase in the value of the land along the corridor as result of rezoning land for additional development potential.

Given the need to avoid double counting benefits, this land value uplift is the increment over and above the uplift that is associated with accessibility improvements (which is captured through the conventional transport benefits).

Who benefits?

Landowners due to changes in zoning and planning controls, leading to gained potential of land use/productivity.

Proposed split	National	Citywide	Regional	Local
<p>Increase in the value of the land along the corridor that relates to the effect of changing the zoning or planning controls (i.e. 'up-zoning').</p> <p>Land value uplift as a result of proximity-based benefits (accessibility improvements and option value) are controlled for to avoid any double counting.</p> <p>We expect this to be confined to local (i.e. in the corridor), given changes to planning controls are expected to be confined to this area alone. Depending on the nature of the analysis, the effects could be disaggregated further (e.g. concentric catchments around stations, or confined to specific station catchments).</p>				100%

WEBs - Whole of life carbon

What is it?	Proposed split	National	Citywide	Regional	Local
What is it? Monetised benefit (or disbenefit) relating to whole of life carbon emissions associated with ALR construction compared to urban sprawl. This excludes the transport emissions from the MSM model.	As with the CO2 emission benefit allocation, we propose that this is allocated as 100% national given climate impacts are felt nationally.	100%			
Who benefits? General beneficiaries as the amount of carbon produced by the project affects everyone whether or not directly benefiting from the new transport network.					

WEBs - Urban sustainability

What is it?

Reduced public expenditure on enabling infrastructure because of increased densification.

Further detail relating to the methodology used to calculate this benefit, and its magnitude, will be provided when economic modelling is complete.

Who benefits?

General beneficiaries as these benefits come due to the no longer need for increased expenditure in other areas.

Proposed split

Most growth infrastructure is funded regionally, so reducing public expenditure on enabling infrastructure would provide **regional** benefits to ratepayers through lower contribution requirements.

There would be some national benefit due to transport funding arrangements and potentially crossing into lower costs for nationally funded infrastructure (e.g. schools, hospitals etc), although these benefits would be expected to be lower (if they can be estimated).

Propose splitting this benefit between Auckland Council (i.e. regional) and Government (i.e. national) depending on the type of enabling infrastructure expenditure avoided.

The numbers at right are indicative until further details of the methodology are available.

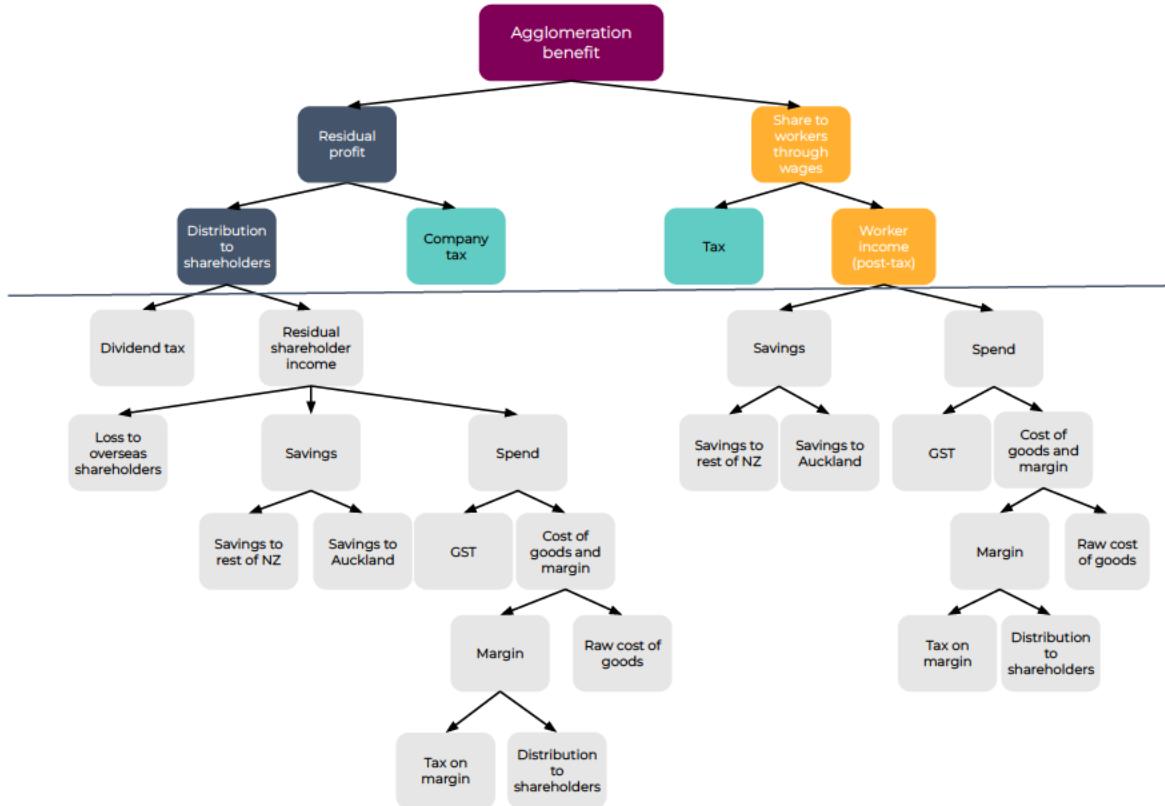
National Citywide Regional Local

20%
To be confirmed

80%
To be confirmed

Appendix 2. Agglomeration assumptions

Agglomeration - financial flows



Agglomeration represents increased profitability and productivity for firms. This flows through to workers (yellow), shareholders as residual profit (blue) and in tax (turquoise).

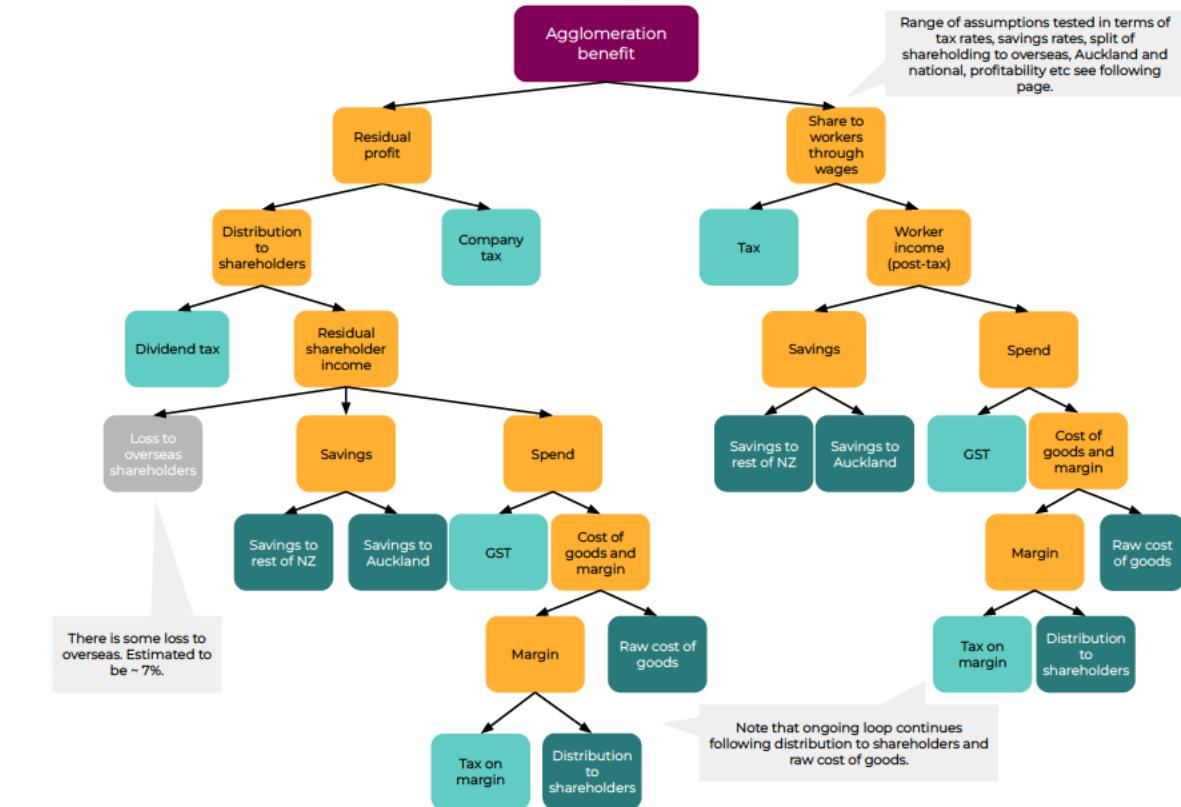
Based on assumptions noted later in this section, this would result in benefit being split as follows::

- National (tax take): 27%
- Business owners: 48%; and
- Aucklanders (landowners): 25%

However, the impact continues to flow through the system as further spending, saving and taxation occurs (grey boxes).

The flow-through impact through a number of cycles has been considered to a point where its incidence is found. This relies on a number of input assumptions and is summarised on the following page.

Agglomeration - financial flows



The following ranges for attributing the final incidence have been estimated:

- Government, received through taxation: 63% - 85%, with an adopted mid-point of 74%
- Aucklanders, through additional savings: 8% - 27%, with an adopted mid-point of 16%
- Rest of NZ, through additional savings: 6% - 11%, with an adopted mid-point of 10%.

It is practically challenging to charge the 'rest of NZ' for its share. As such is is added to the National share, taking the total to 84%.

The significant share to Government/National is due to the tax that is collected throughout that chain in the form of both GST and income tax.

Invariably some of the financial benefit flows overseas as part of the chain of income, consumption etc. This is estimated to be ~7%.

This approach provides a 'bookend', with the actual split of benefit dependent on where charges / levies are applied. i.e. if businesses are charged high levies/rates - the flow through will not occur.

For the purpose of this report, the 84% national and 16% local benefit split has been adopted to provide a bookend for the Flow-through allocation.

Agglomeration - financial flow key assumptions (1 of 2)

Model input variable	Range	Adopted mid-range	Notes	Supporting source(s)
Worker benefit share	25%-50%	33%	The benefit of increased output from improved productivity should result in an increase in wages for workers - as a share of the benefit to the business.	Assumption
Company tax rate	n/a	28%	The typical corporate income tax rate in NZ is 28%	https://www.ird.govt.nz/income-tax/income-tax-for-businesses-and-organisations/tax-rates-for-businesses
GST	n/a	15%	Goods and services tax (GST) is a consumption tax added to the price of most goods and services, including imports.	https://www.ird.govt.nz/gst
Individual income tax rate	20%-30%	25%	Agglomeration effects occur most in knowledge-based industries where wages are typically higher. Effective tax rates of 20% - 30% reflect equivalent incomes of between \$70,000 - \$220,000, with an income of \$114,000 resulting in an effective tax rate of 25%. We believe this range reflects a representative income range for workers in knowledge-based industries.	https://www.ird.govt.nz/income-tax/income-tax-for-individuals/tax-codes-and-tax-rates-for-individuals/tax-rates-for-individuals
Individual savings rate	10%-30%	20%	People's savings habit will naturally vary. A third of NZers were found to save around 10% of their income, with 15% saving 20%. Given the workers in knowledge-based industries typically have higher wages, we adopted 20% as reflection of a higher ability to save, and went further to provide an upper bound value of 30%.	https://www.newshub.co.nz/home/money/2023/04/nearly-40-percent-of-kiwis-don-t-have-5000-saved-for-emergencies-survey-finds.html
Overseas consumer spending	0%-2.5%	1%	Consumers now have more choice when spending, including directly purchasing from overseas vendors. Domestic spending on international goods was around 0.5% in 2021, noting this excludes spending while overseas (e.g. while on holiday). If that overseas spending was considered it would increase this amount, and we adopt 2.5% as an upper bound (i.e. 5x the domestic level spending).	https://figue.nz/chart/vZK12bW5YuWExtw - source data is Stats NZ, National Accounts https://www.stats.govt.nz/information-releases/national-accounts-income-and-expenditure-year-ended-march-2022
Domestic shareholding/ownership: Auckland	33.5% - 80%	67%	The lower bound value adopts a population-based share of total domestic ownership. To reflect the fact that many small and medium sized business in Auckland (which are assumed to be primarily locally owned) will be benefiting from the flow on effects, we double this share as a 'base' value. For an upper-bound value we adopt 80% as an assumption. The remainder (i.e. to get to 100%) is allocated to 'rest of NZ'.	https://www.ehinz.ac.nz/indicators/population-vulnerability/population-size-and-change/

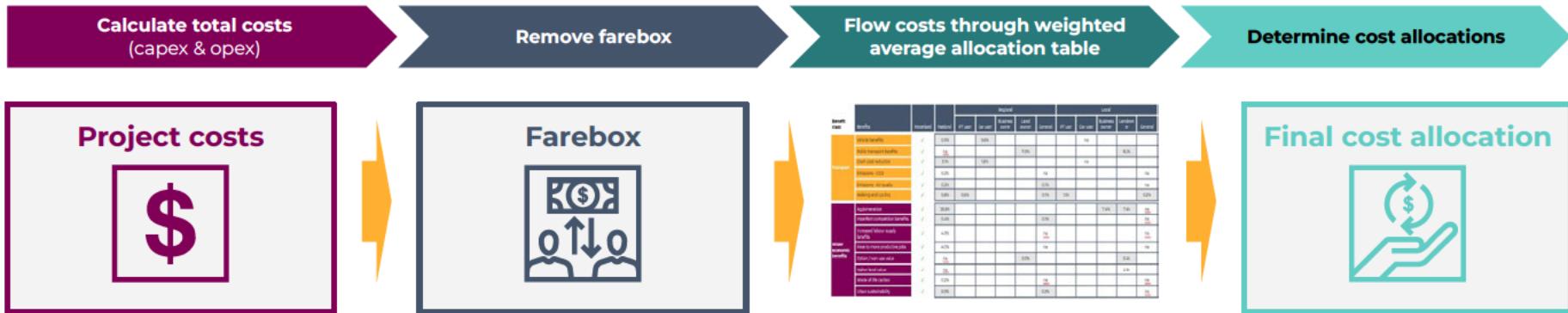
Agglomeration - financial flow key assumptions (2 of 2)

Model input variable	Range	Adopted mid-range	Notes	Supporting source(s)
Overseas shareholdings/ownership	15%-35%	20%	<p>In 2015, Foreign Direct Investment was around 38% of GDP and concentrated in the largest and most productive firms. On average, these firms employed more people and paid higher wages than domestic firms. These would be the same firms that would benefit from agglomeration effects in the initial impact. However as the flow of those benefits cascades through the economy, we propose that it would be spread amongst a higher number of domestic firms, meaning that the 'average' overseas shareholding would reduce in our model.</p> <p>We acknowledge that this ownership rate is variable, but note that the analysis is not overly sensitive to movements in this variable.</p>	<p>International Investment for Growth (2015), Treasury https://www.treasury.govt.nz/publications/information-release/international-investment-growth-report</p>
Net profit on sales (to be taxed)	5%-20%	10%	<p>The net profit across the retail sector sits around 4% on average, with a range of 1.6% to 6%. Hospitality can be higher, potentially around 10%. There will be spending on a wide variety of goods and services with varying net profit margins, so we adopt a reasonable range for the purposes of modelling the flow through of the benefits.</p> <p>Note that the analysis is not overly sensitive to movements in this variable.</p>	https://retail.kiwi/wp-content/uploads/2020/09/RetailNZReport-RetailingNow.pdf https://www.restaurantnz.co.nz/2023/01/23/theres-only-100-in-100/
'Share' of overseas losses: Govt	n/a	50%	<p>As some of the agglomeration benefit will flow offshore as a result of overseas shareholdings/ownership (noted above), we account for this loss by 'sharing' it between the Government and general public.</p> <p>The remainder (i.e. to get to 100%) is allocated to the public (i.e. all NZers) and split by population between Auckland and rest of NZ to reflect the broad benefits that foreign investment bring.</p> <p><i>An alternative to apportioning the overseas loss, is to ignore it and split the benefits that remain within NZ proportionally. Given most scenarios result in >50% share to Government, this approach compounds the bias to Government by a few extra percentage points.</i></p>	Assumption

Appendix 3. Overall cost allocations

Overall cost allocations - dealing with the farebox

As outlined in section 3, because fares are included in the generalised cost, there is some cost allocated to PT users, which flows through as fare revenue without being reflected in the marginal project benefits and should, therefore, not be included in the cost allocation. The recommended approach to determining the overall cost allocations is outlined below.



Illustrative example:

