

Technical note Lessons Learnt

in support of the Cycling and Micromobility Programme Business Case

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1 Introduction

This technical note summarises the lessons learnt from delivering the 2017 Auckland Cycling PBC and builds on the initial assessment of lessons learnt undertaken in April 2021¹. The lessons learnt discussed in this technical note include:

- cost escalations,
- development of SSBCs,
- implementation of cycling infrastructure, and
- comparison against delivery of cycling infrastructure in other parts of New Zealand.

This lesson learnt review has been undertaken to help inform the Auckland Cycling and Micromobility PBC (CAM-PBC) refresh.

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¹ Memorandum titled “*Cycling Infrastructure Delivery – Lessons Learnt*” and dated 21 April 2021

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2 Cost Estimate Escalation

Since 2017, the cost to deliver cycling infrastructure has gone from approximately \$3 million per km to \$8-11 million per km (excluding major streetscape improvements such as Karangahape Road). The key reasons for this cost increase include:

- The costs of construction and professional services have increased well above inflation in Auckland, particularly for large scale engineering projects. This has been experienced across New Zealand, with the Wellington and Christchurch urban cycleway programmes also increasing significantly in cost.
- Concern from local community groups regarding projects that reallocate street space in order to deliver safe and connected cycling infrastructure has, in many instances, been partially responsible for driving project scope creep to incorporate place-making, street beautification, planting, retention of on-street carparking etc. All of which significantly increase the costs of a project.
- Reluctance to reallocate road space for cycling internally within AT because of competing modal priorities. For example, there is often an assumption that parking can be reallocated as cycle lanes, but parking lanes often have multiple uses throughout the day with some being used as bus lanes in peak periods or being required for loading, so reallocating that space means removing the parking but also bus priority and loading. AT's Network Optimisation team is exploring ways to better utilise the road space available, such as dynamic lanes.
- Complementary utility and safety upgrades can also significantly widen the scope (and increase the cost) of cycling projects. It often makes sense to co-ordinate the delivery of, for example, street lighting and stormwater upgrades, bus stop upgrades and pedestrian crossings etc at the same time as cycling infrastructure is delivered. However, where these upgrades are funded from the cycling budget, it significantly reduces the funding available for the delivery of cycling infrastructure either within the specific project in question or across the programme as a whole. If a project is going through a town centre, approximately two thirds of the total infrastructure cost is apportioned to non-cycling infrastructure improvements such as utility upgrades and town centre beautification.
- Strategic changes within AT related to the provision of cycle infrastructure for All Ages and Abilities and adoption of Vision Zero, which have resulted in significant changes to the scope and design of cycle infrastructure. Original project budgets have therefore been too conservative for the new scopes and designs. Through the CAM-PBC, AT will need to retest whether the All Ages and Abilities level of infrastructure (Quality of Service 1 or 2 in the Transport Design Manual) is still the most appropriate method of attracting the 'interested but concerned' target market or whether a reduced quality of service would still attract this group. This would help to inform the quality-of-service requirements for cycle infrastructure delivery.
- Most scheme designs of the current cycle infrastructure projects have not had enough detail and did not address key issues such as 3D design, tree clearance, sub-surface challenges (e.g. services, concrete slabs under the road surface). In detailed design, these problems have emerged, with cost increases and time delays as a consequence.

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- Delays in cycle infrastructure delivery largely due to longer than expected consultation periods, negotiations with project partners, regulatory processes, as well as the COVID-19 Alert Level 4 Lockdown impacts.

Using information from the Henderson SSBC as an example, this cost escalation can be attributed as follows:

- 10-20% additional cost from general construction cost escalation (e.g. from supply shortages and other factors currently affecting industry).
- 10-20% cost increase from change to standards beyond cycling standards (e.g. vision zero, safe systems, urban forest), which means construction of more raised platforms etc.
- 50-70% from the need to move kerbs, which is in part attributable to the change in cycling standards requiring more width and in part attributable to the difficulty in reallocating road space.
- <5% other factors such as increased Management, Surveillance and Quality Assurance (MSQA) costs for cycling projects, which tend to need greater MSQA costs because of an existing lack of experience in delivering cycling infrastructure.

Of the cost to deliver the typical Henderson primary cycle route:

- Approximately 10-20% is attributed to an increase in other standards such as safe system measures e.g. raised platforms, which have benefits to other road users. It could be argued that these should be funded by the 'Promotion of road safety and demand management' activity class.
- Approximately 50-70% is attributed to kerb relocation, which requires new utilities, stormwater, trees and often pavement. This indicates that staging cycling projects to coincide with utilities works and/or pavement rehabilitation etc may enable a cost sharing arrangement and result in cost efficiencies. It also indicates that if locations where road space will be easier to reallocate are identified and prioritised, the cost and speed of delivery could be improved.

The cost breakdown demonstrates there is more opportunity for co-funding of cycling projects than has been explored in the 2017 PBC and that the reluctance to reallocate road space is causing cost increases as well as delays.

Although the cost of delivering cycling infrastructure has increased, it is worth noting that the value or benefits that can be claimed for cycling improvements have also increased because wider benefits can be claimed (such as benefits for pedestrians). Procedures in the Monetised Benefits and Cost Manual have also been updated to have higher monetary values for cycling. This means the benefit cost ratios are still healthy and fundable (typically low-medium BCRs). There is also an increased recognition of the value of non-monetised benefits through the non-monetised benefits manual, which did not exist in 2017. Furthermore, there is increased urgency put on addressing climate change through documents such as Te Tāruke-ā-Tāwhiri: Auckland's Climate Plan, Hīkina te Kohupara, the Ministry of Transport's discussion paper on transport emissions reduction and the latest Government Policy Statement on Land Transport (GPS).

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3 Lessons from SSBCs

Auckland’s Urban Cycleways Programme was given a three-year time period to deliver, however the business case development phase was time-consuming. AT is under pressure to deliver faster, however programmes and projects must still follow the same business case development process.

The two Single-Stage Business Cases (SSBC) that have been developed from the 2017 PBC have proven to be more time-consuming and expensive than originally anticipated. For example, the contract for the Henderson SSBC commenced in May 2019 and is due to be completed in September 2021. With a total of 22 focus areas as part of the area-based approach recommended by the 2017 PBC, this demonstrates the slow and costly approach to the planning phase of cycle delivery.

The delays in the development of the SSBCs mean that there is an insufficient pipeline of cycling projects that can be delivered over the next few years, even if additional cycling funding was made available.

Delivery of SSBCs have been slower than anticipated in the 2017 PBC in part because of the following:

- There has not been a blueprint (i.e. draft network map) from which to develop and assess the SSBC networks, meaning the SSBCs have had to develop the network from scratch. With the development of Future Connect, AT now has a Strategic Cycle and Micromobility Network for 2031, providing an opportunity to deliver future business cases faster, by having a blueprint to guide cycle planning and investment.
- The networks within these SSBC areas are large. For example the Henderson SSBC area would fill a substantial part of Hamilton or Christchurch, so assessing these networks takes time especially without a blueprint (see bullet point above) or a clear framework to work from (see two bullet points below).
- There is a lack of clear guidance on how to assess options (i.e. how to take the PBC criteria and assess at an SSBC level), meaning each SSBC needed to develop their own methodology and criteria, and agree these with stakeholders before undertaking their assessments.
- There is a lack of clear guidance on how to prioritise interventions. Similar to the point above, this has meant that each SSBC has developed their own methodology, which has taken time to develop, agree and undertake.
- The network is not a grid network in places (i.e. few alternative routes) meaning there is high demand for all modes to use the arterials and collectors. As a result, the option to move modes to alternative routes is not viable, so road space must be reallocated with competing modes.
- Traffic Calming / Street design rated highly in the 2017 PBC alternatives but has not carried through strongly to SSBCs; this could be because of emphasis more on routes within the PBC assessment but also lack of framework to follow and a lack of assessment available of street design (e.g. lack of a BCR for school streets and low traffic neighbourhoods that would demonstrate the monetised value relative to routes). There is also very little discussion in the 2017 PBC on which areas may benefit most from implementation of routes vs neighbourhood treatments.

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As well as slowing down the SSBC development, the lack of guidance means each SSBC has assessed and prioritised their networks differently, meaning they are difficult to compare at a PBC level (i.e. it is difficult to determine if a route or neighbourhood in one SSBC has more merit in being implemented than a route or neighbourhood in another SSBC area).

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4 Lessons from NZ

Waka Kotahi are currently undergoing an investigation into the delivery of cycling infrastructure nationally, which is expected to be complete in mid-2022.

In the interim, the CAM-PBC Project Working Group have gathered anecdotal evidence from people delivering cycling projects nationally. Feedback has included:

- Many road controlling authorities, including Auckland Transport, are including micro-mobility in their cycling strategies. The omission of micro-mobility in the 2017 PBC is therefore dated and fails to recognise the compatibility of micro-mobility with cycling.
- E-bikes are becoming increasingly popular, which has the potential to improve uptake of cycling in areas that would have otherwise had low demand (e.g. hilly areas) and increased the distance some people choose to commute/travel (i.e. has affected catchments).
- Costs in other parts of New Zealand tend to be lower than in Auckland because of lower standards being sought (e.g. no raised platforms or separation) and lower traffic volumes (i.e. lower traffic management costs and works durations). Where traffic volumes and standards are similar, the costs tend to be similar.
- A review of the Wellington Urban Cycleways Programme was undertaken by Waka Kotahi in 2016² and found:
 - Reluctance to reallocate road space is an issue with Wellington City Council not being able to dispel a “*perception that their programme is about cyclists “winning” over other road and footpath users.*” “*International evidence suggests that cycleways are inherently difficult to successfully deliver because of sometimes polarised public attitudes and a sense that cyclists are being favoured over other road and footpath users.*”
 - “*The scale of proposed works is large if all works are undertaken in each proposed area*” and “*It would be very challenging to manage a programme at this scale and maintain public support given the probable scope and duration of disruption.*”
 - It was perceived as having inadequate consultation and there was an erosion of community trust in Wellington City Council and NZTA.
 - Interdependencies with other routes and projects held up some parts of the cycleways programme.
 - There were opportunities to improve governance and funding arrangement to improve delivery.
- Feedback on the Christchurch Major Cycle Routes work identified the following implementation challenges:

² Source: <https://www.nzta.govt.nz/assets/resources/review-of-wellington-city-councils-urban-cycleways-programme/Review-of-wellington-city-councils-urban-cycleways-programme.pdf>

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- Consenting - Christchurch has a global consent for the Major Cycle Routes, which speeds things up but some routes such as those adjacent to waterways often need separate consenting.
 - Consultation – In Christchurch the preferred option has sometimes had to be compromised as a result of consultation feedback. This had often led to additional issues that need solving through detailed design. An example in Christchurch of this is where changing a street to one-way was proposed, this was not favourable through consultation and was therefore changed to remain two-way, resulting in a kerb requiring moving on top of an existing power cable.
 - Budgets – In some cases in Christchurch, funding/budgets were delayed resulting in additional issues popping up as development continues when design was completed. An example of this is that a petrol station was constructed while a route was on hold, resulting in additional design, modelling work, consultation and survey for the site.
 - Underground utilities – Issues with moving kerbs seems to be a common problem with all projects seeking high standards for cycling like those in Auckland. When moving a kerb, this will have a flow on effect relating to underground services, stormwater will require changing, existing services may require relocation.
 - Contractor - The contractor chosen can have a large effect on the MSQA costs on a project. The cheapest option during the tender phase may require additional MSQA work because of contractor inexperience with cycling projects, which doesn't necessarily make them the cheapest option overall.
 - Standards – Similar to Auckland the Christchurch Major Cycle Routes have a high standard to suit 8-80 year olds which require protection via a kerb separator or similar. These standards often get compromised for one reason or another (more often due to space constraints).
 - Environmental - Christchurch have seen an increase in environmental requirements since the inception of the Major Cycle Routes. These include lizard surveys / relocation, ecology surveys and reports.
- Governance on other PBCs seems stronger, enabling quicker delivery. The safety PBC was used as one such example.

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5 Lessons from Auckland Implementation

Auckland Transport completed a Lessons Learned of the Urban Cycleway Programme (UCP) in July 2021, capturing the key lessons learned through the delivery of Tranche 1 of the UCP. The key findings in the report are summarised in Table 1.

Table 5-1 Overview of key lessons learned

	Good practices to retain	Opportunities for improvement
Programme definition and planning	<ul style="list-style-type: none"> When a programme or project is going off track, stop, regroup and restart. Take the opportunity to reassess the initiative and consider what's not working; why is it not working and how can it be changed? Formulate new delivery strategies and approaches and restart. 	<ul style="list-style-type: none"> Appoint a programme management team to guide the initiation, organisation, management and delivery of a programme from the outset. Develop an organisational program delivery framework to guide the activities of programme management teams.
Governance and oversight	<ul style="list-style-type: none"> If programme governance is ineffective, review the membership and composition of the governance groups. Consider whether the right people (i.e. with the relevant decision-making authority, interest in the project, time and subject matter knowledge and expertise) are on the governance bodies and whether the size of the governance bodies facilitates robust discussion and decision making without having to involve too many stakeholders. 	<ul style="list-style-type: none"> Develop and implement a Project Governance Manual and provide training to programme and project control group members to improve their effectiveness on programme or project governance groups. As part of the development of the Project Governance Manual, assess current project approval structures in the context of wider organisational approval processes and consider how these can be streamlined and simplified to facilitate faster approvals and decision making for programmes and projects.
Programme and project management	<ul style="list-style-type: none"> Appoint a dedicated programme manager (with strong communication, leadership and decision-making skills) to oversee the planning, delivery and closeout of the project. 	<ul style="list-style-type: none"> Continue to rollout the updated Enterprise Project Management Framework and training to all relevant parts of the business to improve project management maturity. Link the EPMF to an overarching programme delivery framework (when it has been developed) to show how programmes and projects interface.

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<p>Stakeholder engagement and communication</p>	<ul style="list-style-type: none"> For large complex programmes consider establishing a Community Liaison group that will provide local communities and stakeholders with a channel to obtain information on what is happening on the programme, provide input to various proposals and designs and monitor and give feedback on the effects and impact of construction on their community. 	<ul style="list-style-type: none"> Consider formalising working practices with other delivery agencies including identification of key personnel (including backups and escalation roles) to promote smooth working practices and efficiency between the two agencies.
<p>Programme resourcing</p>	<ul style="list-style-type: none"> Continue to foster collaboration and sharing across project teams to build on the strong team culture already in place on the programme. 	<ul style="list-style-type: none"> Formalise working practices between functional project delivery managers and programme leads. Clarify reporting lines and ensure that project managers are aware that day to day oversight and direction for the programme will come from the programme management team not their functional managers. The use of matrix structures may help to embed this across programme and project teams.

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6 Other lessons from 2017 PBC Review

There has been a lack of agility with the 2017 PBC to respond to changes, such as COVID lockdowns or the NZUP programme, which prioritised the Northern Pathway. Auckland Transport have been criticised by some external parties for not making the most of the opportunity that COVID lockdowns provided for rapid implementation of trial cycle facilities.

The targets within the 2017 PBC and funding available, are inadequate to support current climate goals, such as those within Te Tāruke-ā-Tāwhiri: Auckland's Climate Plan, which requires cycling mode share by distance to increase from 0.9% to 7% by 2030.

External levers, such as congestion charging and land use planning, could have a significant impact on cycling mode share but were not discussed or recommended within the 2017 PBC.

There is potential to improve the messaging within the CAM-PBC to recognise the wider benefits of cycling and reduce the tendency for people to view cycling infrastructure as taking away space from other modes (e.g. safety, liveability, pedestrian and emissions benefits need more emphasis especially for neighbourhood work that have limited specific cycling infrastructure such as low traffic neighbourhoods).

There has been a significant drop in cycle volumes on the traditional commuter routes into the city since the COVID pandemic began. This can only partially be attributed to lockdowns. It is also likely to be because of the higher number of people working from home. This working from home trend may increase the volume of people making local village trips (that aren't currently being counted) compared to commuter trips into the city.

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7 Conclusions

- The SSBCs would benefit from additional guidance at the PBC level to ensure the SSBC process can be sped up and ensure consistency in approach.
- For the standards being achieved, Auckland is not unique in its challenges with delivering cycle facilities. Both Wellington and Christchurch have encountered similar issues with delivery, and costs are similar for those projects seeking similar standards.
- Approximately 20% of the cost escalation since 2017 is attributable to increased safety standards to meet Vision Zero, meaning co-funding options could be explored.
- Approximately 50-70% of the cost escalation since 2017 is attributable to kerb relocation:
 - Part of this is attributable to the internal and external reluctance to reallocate road space, meaning addressing this reluctance could reduce the extent of kerb relocation and therefore cost.
 - Part of this is attributable to the high standards being sought for cycling. Kerbs may need to be relocated to achieve the cycle separation, but in this scenario, much of the cost of the relocation is stormwater, utilities, trees and pavement works to be undertaken, so cost sharing is possible if staged to coincide with other works.
- Undertaking pre-implementation tasks (e.g. consents) at a programme level rather than at a project level may aid in speeding up construction.
- There is a lack of agility with the 2017 PBC, which means it has not been able to respond to changes in the programme context that have resulted in a critical need for cycle investment at a particular location.

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8 Recommendations

To address the challenges that have slowed delivery of cycling infrastructure in Auckland and increased costs, the CAM-PBC propose to consider the following:

- Including discussion of micro-mobility and e-bikes in the CAM-PBC to align with Future Connect and to ensure the part they play in active mode uptake is not overlooked;
- Using the Cycle and Micromobility Strategic Network in Future Connect as a blueprint together with a CAM-PBC framework document for how it should be used to inform SSBCs;
- Providing a framework for assessment and prioritisation for SSBCs to follow to speed up the SSBC process;
- Providing a framework for reallocating road space or working within kerbs. The framework could identify where road space can be reallocated and where it is more challenging and therefore may be more difficult to deliver cycling infrastructure;
- Utilising more cost-effective approaches to cycle facility delivery by utilising different methods of design and construction such as low-cost tactical urbanism principles and interventions;
- Additional provision for non-infrastructure interventions (e.g. policy changes, behaviour change campaigns) including discussion of external policies and interventions that could have a significant impact on cycling mode share within Auckland (e.g. congestion charging);
- Allowing for flexibility in the CAM-PBC recommended programme through a 'discretionary funding bucket' to respond to changes in the programme context that result in a critical need for cycle investment at a particular location (e.g. COVID and NZUP);
- Governance like the Safety PBC;
- Assessment and framework of street design (e.g. school streets and low traffic neighbourhoods) such that SSBCs are not overly route focussed (subject to option assessment);
- Seeking funding from a wider range of activity classes, including 'Promotion of road safety and demand management' or co-funding from existing programmes and projects where there is compatibility;
- Undertaking some pre-implementation and construction stage tasks (e.g. consents) at programme level (i.e. have separate funding for work that is common across projects);
- Investigate opportunity to undertake consultation at the programme level / network level, as opposed to at individual project / route level (to dispel negative perception);
 - Work with elected members and community groups to build social license to enable road space reallocation for active modes;
 - Changing the messaging for the CAM-PBC to help dispel the negative perception of cycling infrastructure taking road space from other modes (i.e. consider emphasising safety and liveability, especially for interventions such as low traffic neighbourhoods);

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- Ensure AT's internal business case processes are streamlined to address current delays and provide a pipeline of cycling projects;
- Sync renewals with cycling capex investment and work with Waka Kotahi to remove any potential regulatory barriers;
- More local village and neighbourhood interventions considering the higher incidence of working from home;
- Reassessing the 2017 PBC alternatives and options considering the delivery challenges; and
- New targets / KPIs:
 - Desirable targets - with consideration of wider outcomes being sought, such as Auckland's Climate Action Plan.
 - Achievable targets – with consideration of achievability (i.e. SMART objectives).
 - Comparing desirable targets with achievable targets to determine if the match and if not, to highlight that the CAM-PBC cannot achieve desirable targets without external interventions such as congestion charging.

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