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NETWORK OPERATING PLANS - CHANGING TRAFFIC ENGINEERING IN AUCKLAND

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ABSTRACT

Influencing and enabling modal shift in a growing city such as Auckland has its challenges. From a car dominant standing point, change requires intentional application of transport strategy from operational grassroots upwards. This is being applied in Auckland by Auckland Transport and NZTA through the introduction of Network Operation Plans, which have the capability to:

- generate a more balance multi-modal network deficiency picture and approach for targeted minor efficiency improvements
- provide clear direction for traffic signal operation, priorities and optimisation as business as usual
- influence new project designs and outcomes
- influence the timing and extent of major project investment.

Switching from vehicle dominated movements to people movement, considers a journey corridor approach looking at the productivity and other influencing factors such as travel choice and amenity (user experience). What does this mean? What once was Traffic Engineering 101, now requires significant advancement.

Traditional traffic engineering modelling and traffic signal operation techniques now require greater attention, greater expertise as multi-modal consideration and optimisation demands a simple ball tossing act to now become a complex juggling act.

Are win-wins possible? The Network Operating Planning approach gets us there - examples applied in Auckland demonstrate that results are tangible and achievable.

INTRODUCTION

In Auckland as in most growing cities across the world, there is a need to enable the safe and efficient movement of people across the network and city. This can no longer solely be in the form of moving cars. With increasing demand for travel and limited opportunities for increasing capacity within urban areas, there is a need to make more effective use of the available road space.

Influencing and enabling modal shift in a growing city such as Auckland has its challenges. From a car dominant standing point, change requires intentional application of transport strategy from operational grassroots upwards. This is being applied in Auckland by Auckland Transport and NZTA through the introduction of Network Operation Plans, which have the capability to:

- generate a more balance multi-modal network deficiency picture and approach for targeted minor efficiency improvements
- provide clear direction for traffic signal operation, priorities and optimisation as business as usual
- influence new project designs and outcomes
- influence the timing and extent of major project investment.

Switching from vehicle dominated movements to people movement, considers a journey corridor approach looking at the productivity and other influencing factors such as travel choice and amenity (user experience). This requires advancement to 'Traffic Engineering 101', whereby traditional traffic engineering modelling and traffic signal operation techniques now require greater attention, greater innovation and greater expertise as multi-modal consideration and optimisation demands a simple ball tossing act to now become a complex, yet manageable juggling act.

Win-wins are possible. The Network Operating Planning approach gets us there - examples applied in Auckland demonstrate that results are tangible and achievable.

WHY – BEYOND TRAFFIC ENGINEERING 101

The Auckland Plan is the city's leading strategic document, and the Integrated Transport Programme (ITP) has been developed by Auckland Transport and the New Zealand Transport Agency (NZTA) in collaboration with Auckland Council to give effect to the Auckland Plan.

Auckland's vision is to be '*The World's Most Liveable City'*, and so the Plan includes a number of outcomes, transformational shifts and strategic directions that are directly relevant to Auckland's transport system. The ITP's strategic framework was also developed in reference to the Government Policy Statement on Land Transport Funding (GPS). The GPS 2015 sets out central government's outcomes and priorities for the land transport sector. Its overarching goal for transport is –

"To contribute to an effective, efficient, and safe land transport system in the public interest".

Based on the GPS 2015, a land transport system is:

- effective where it moves people and freight where they need to go in a timely manner
- efficient where it delivers the right infrastructure and services to the right level at the best cost
- safe where it reduces the harms from land transport
- in the public interest where it supports economic, social, cultural and environmental wellbeing.

The One System approach adopted by AT and NZTA provides for the management and planning of transport networks with land use development as outlined in the Auckland Plan, and together

with the four staged intervention process aim to result in:

- Better use of existing transport networks
- Better alignment of transport provision with changing patterns of land use and demand
- A safer, more resilient national and regional network, where a greater range of resources and options is available to deal with unexpected events or future changes
- Better alignment of effort between network providers and elimination of overlap and duplication

Further to these, Auckland Transport has developed five strategic themes to drive the delivery of the transport components of the Auckland Plan. The themes are:

- Prioritise rapid, high frequency public transport to achieve the Auckland Plan outcome of moving to outstanding public transport.
- Transform and elevate customer focus and experience by delivering road, public transport, cycling and walking services which are user friendly, customer oriented, and meet the needs of the people of Auckland.
- Build network optimisation and resilience to get better value out of our existing services and assets and be resilient against future shocks (e.g. oil price changes), changing travel patterns and demands and natural events (e.g. flooding).
- Ensure a sustainable funding model to create certainty for maintaining and renewing our assets, improving service levels incrementally and adding additional capacity to the transport system to meet the needs of future growth.
- Develop creative, adaptive, innovative implementation of Auckland Transport's services, programmes and new projects.

The above is very aspirational and yet necessary for Auckland to become a more liveable city.

Enabling greater ease of travel for people through enhancing road network efficiency in terms of the movement through the network is possible through several means, however it is these very people that then also walk the streets.

Whilst improved operation and user experience for public transport and higher-occupancy movements can be more easily justified, it becomes more complex for cycling and walking movements.

Providing the Auckland people with a choice of how to travel is now of paramount significance. Up until recently, our traffic engineering practice has resulted in a strongly vehicle-orientated network that has largely capped out and offered relatively limited accommodation for all other modes. Switching to a people movement focuc considers a journey corridor approach looking at the productivity and other influencing factors such as travel choice and amenity or user experience. This is of absolute necessity if Auckland is to be a more liveable city.

Traditional traffic engineering modelling and traffic signal operation techniques associated with ‘Traffic Engineering 101’ now require significant advancement – greater attention, greater innovation and greater expertise as multi-modal consideration and optimisation demands a simple ball tossing act to now become a complex juggling act to ensure appropriate user experience is enabled.

Without intentionally addressing user experience and perspectives of the different users, not much different will be enabled and therefore changed, leaving Auckland very much the same, more congested and still vehicle-dominant.

WHAT – NETWORK OPERTING PLANS AND SMARTROADS

Influencing change and enabling Auckland to operate to a plan has required an intentional response by Auckland Transport. The Auckland Plan sets out an inspirational vision to be the world's most liveable city. This is translated by Auckland Transport into strategic plans with multi-modal networks intended to enable the Auckland Plan. A final necessary link is the appropriate translation of this strategy into day-to-day operational application, so that what takes place today aligns with where the city is heading and wanting to be.

This intentional application of transport strategy from operational grassroots upwards is possible and being applied in Auckland by Auckland Transport and NZTA through the introduction of Network Operation Plans (NOPs).

The Network Operating Planning approach enables us to highlight modal priorities or emphases for every link of the road network as set out in the strategy, taking seriously into consideration the place function of different parts of the network, giving significance to the Auckland CBD, metropolitan centres, town and local centres, as well as segments along school frontages and important pedestrian-orientated areas.

The NOP effectively translates strategic multi-modal networks into aspirational performance benchmarks or targets against which actual experience can now be compared. This now enables an understanding as to how our strategic intent is being met, and where there are deficiencies to then be able to articulate what deficiencies there are and the extent of the current operating gaps being experienced.

Key strategic principles incorporated are as follows:

- Support "places" and activity centres
- Promote walking in high pedestrian areas
- Promote cycling links to activity centres and designated routes, reduce conflict
- Provide high priority for PT on designated routes
- Promote freight on freight network
- Promote general traffic on preferred traffic routes

As is typically the case, there are various competing objectives that arise from the above, however the NOP approach attempts to address this by separating some of these conflicts by time of day priorities, and looking to at least establish a best fit from a multi-modal and strategic perspective.

As an example, the above would generally translate to operating arterial routes well for commuting modes during commuting periods, unless where these pass through town centres where the aspirational performance is tempered over that section of the network. An arterial in the suburbs is therefore expected to have a better experience for users than the same arterial within the CBD or a town centre.

HOW – APPLICATION OF NETWORK OPERTING PLANS AND SMARTROADS

There are four important points to consider when applying the NOP process. These are:

1. Establishing multi-modal LOS or User Experience descriptors
2. Understanding multi-modal performance deficiencies or operational gaps
3. People movement is the 'common currency'
4. Keeping the aspirational intent in tact

1. Establishing multi-modal LOS or User Experience descriptors

A common 'measuring stick' is required so that aspirational performance benchmarks for the respective modes can firstly be established, and secondly, then used to adequately measure and represent the current experience.

Whilst there are numerous measures that may be used to describe operational performance for the various modes, this can be reasonably well accounted for by considering the more (or most) critical elements that best define performance for the respective modes.

The more traditional approach of using Levels of Service is a useful starting point as these can quite quickly be measured and understood from a technical point of view. Using more layman descriptors for the same terms can help broaden these definitions and better relate to actual user experience.

In this regard, Auckland Transport together with NZTA developed the following broad definitions for multi-modal operational performance indicators or User Experience levels (or Levels of Service). A good way of viewing these is to note what operational characteristics or measures tend to be what is most important for that mode in terms of user experience. Accordingly, for the more vehicle movement based modes (general traffic, freight and bus (PT)) travel time and travel time reliability tend to best describe user experience (noting that bus facilities both in and outside of buses is also of importance).

When considering the vulnerable road user modes, the experience becomes more to do with the extent of facilities provided, the enablers of that mode. Furthermore, the interplay of safety can also be a factor in determining user experience as this can directly affect mobility in the case of these modes. The general delay measure remains a tangible factor, where delay becomes a determinant of user experience (such as at traffic signals).

In assessing the current user experience, typically the worse of the various indicators would be used as the over user experience for that location, allowing for some acceptance of improved user experience where other key indicators exceed this lower experience level.

AT User Experience Table

LOS	Public Transport Travel Speed OR Delay	Freight and General Traffic Travel Speed OR Delay
A	Average Travel Speed greater than 70% of Posted Speed Limit **OR** No delay	Average Travel Speed greater than 90% of Posted Speed Limit **OR** No delay
B	Average Travel Speed greater than 70% of Posted Speed Limit **OR** Minimal delay	Average Travel Speed greater than 70% of Posted Speed Limit **OR** Minimal delay
C	Average Travel Speed greater than 50% of Posted Speed Limit **OR** Some midblock delay Stop at most intersection and clear next cycle No side friction	Average Travel Speed greater than 50% of Posted Speed Limit **OR** Some midblock delay Stop at most intersection and clear next cycle No side friction
D	Average Travel Speed greater than 35% of Posted Speed Limit **OR** Some midblock delay Stop at most intersection and clear next cycle Noticeable side friction	Average Travel Speed greater than 35% of Posted Speed Limit **OR** Some midblock delay Stop at most intersection and clear next cycle Noticeable side friction
E	Average Travel Speed greater than 20% of Posted Speed Limit **OR** Large midblock delay Stop at each intersection and take ≥ 2 cycles to go through Significant side friction	Average Travel Speed greater than 20% of Posted Speed Limit **OR** Large midblock delay Stop at each intersection and take ≥ 2 cycles to go through Significant side friction
F	Average Travel Speed less than 20% of Posted Speed Limit **OR** Significant midblock delay Significant delay at intersection	Average Travel Speed less than 20% of Posted Speed Limit **OR** Significant midblock delay Significant delay at intersection
	* Delay can be used when no Travel Speed information OR to supplement assessment of Travel Speed * Side friction: parking, bus stops, side road, lack of enforcement * Midblock delay: pedestrian crossings * A lower LOS should be considered if the reliability is poor	* Delay can be used: - When no Travel Speed information; OR - To supplement assessment of Travel Speed * Side friction: parking, bus stops, side road, lack of enforcement * Midblock delay: pedestrian crossings * A lower LOS should be considered if the reliability is poor

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Table 1: User Experience Table for Public Transport, Freight and General Traffic

AT User Experience Table

LOS	Pedestrians			Cycle
	Crossing Opportunities	Crossing Delay	Longitudinal Amenity	Facility and Separation
A	Crossing opportunity is within 25m or shared space	Average crossing delay less than 15s	High quality pedestrian facilities with appropriate separation Friendly speed environment Free flowing for pedestrians No street obstacles	Separate cycle path or well separated from all modes Provision for the full range of abilities Minimal conflict with other traffic at intersections
B	Crossing Opportunity is within 50m	Average crossing delay within 30s	Pedestrian facilities provided with appropriate separation Some street obstacles with minor conflicts for pedestrians	Copenhagen cycle lane, some conflict with other traffic at intersections, but no multi-lane roundabouts **OR** Cycle lane on arterial road Operating speed less than 40km/h **OR** Cycle facility on a local road with minimal traffic **OR** Shared off-road path with low pedestrian volumes
C	Crossing Opportunity is within 100m	Average crossing delay within 45s	Pedestrian facilities provided with appropriate separation Pedestrian speeds restricted	On road cycle lane. Some conflict with turning traffic at intersections Vehicle operating speeds less than 60 km/h **OR** Cycles share space on a local road with light traffic
D	Crossing Opportunity is within 200m	Average crossing delay within 60s	Narrow sealed footpath Restricted movement for most pedestrians	On road cycle lane, may include bus / transit lanes Conflict with turning traffic at intersections Vehicle operating speeds greater than 60 km/h
E	Crossing Opportunity is within 400m	Average crossing delay within 80s	Formed footpath Significantly restricted footpath by street obstacles Restricted movement for pedestrians	Cycles share with other vehicles Lane width greater than 4.2m
F	Crossing opportunity is more than 400m	Average crossing delay greater than 80s	No discernible footpaths **OR** Shuffling movement for pedestrians	Cycles share with other vehicles Lane width less than 4.2m **OR** Cycles share with other vehicles Lane width less than 4.2m
	* Use spacing of crossings as criterion only where there are shops both sides or other pedestrian desire lines * Spacing refers to the closest walking distance required for pedestrians to safely cross the road. Safe crossing areas can be signalised intersections or crossings, formalised unsignalised crossings (e.g. pedestrian refuges), zebra crossings, and school crossing areas when a school crossing supervisor is present * Consideration must also be given to the quality of the crossing, i.e. is it visible and legible to approaching drivers. A lower LOS should be considered for poor quality facilities		* Obstacles include street furniture (bus stop, street light / rubbish bin etc.) and other obstacles from the shops * Footpath should be >1.8m wide to be considered adequate quality. Within activity areas and on shared paths, the width should be >3.0m * A lower LOS should be considered for the following aspects: - Poor quality of the surface (i.e. if the surface uneven or in disrepair?) - Poor environment in relation to CPTED factors - Poor actual safety record or perceived safety risks	* A lower LOS should be considered, if the following are not considered appropriate - Route continuity (pinch points, driveway crossings) - High traffic volumes - Conflict with pedestrians - Surface quality - CPTED factors - Safety

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Table 2: User Experience Table for Walking and Cycling

2. Understanding multi-modal performance deficiencies or operational gaps

VicRoads in Melbourne developed a tool called SmartRoads that can facilitate this process, and is very useful in representing both the aspirational intent of individual parts of the network and the current operational deficiency thereof if applicable, referred to operating gaps. These operating gaps effectively equate network deficiency in terms of people movement (discussed further below), and combine the respective modal deficiencies to provide overall intersection deficiencies, noting that the intersections or nodes incorporate an element of the approaching link operational performance. These deficiencies are also moderated depending on the priority emphasis for that mode, so that a poor user experience of a particular mode is emphasised where this mode is a strategic priority.

Effectively, SmartRoads shows these as circles or bubbles, and the larger the bubble the greater the combined multi-modal deficiency. The bubble is in turn sliced up to show how each mode contributes to this deficiency – the larger the slice the greater the relative deficiency of that mode at that location. An example is given below.

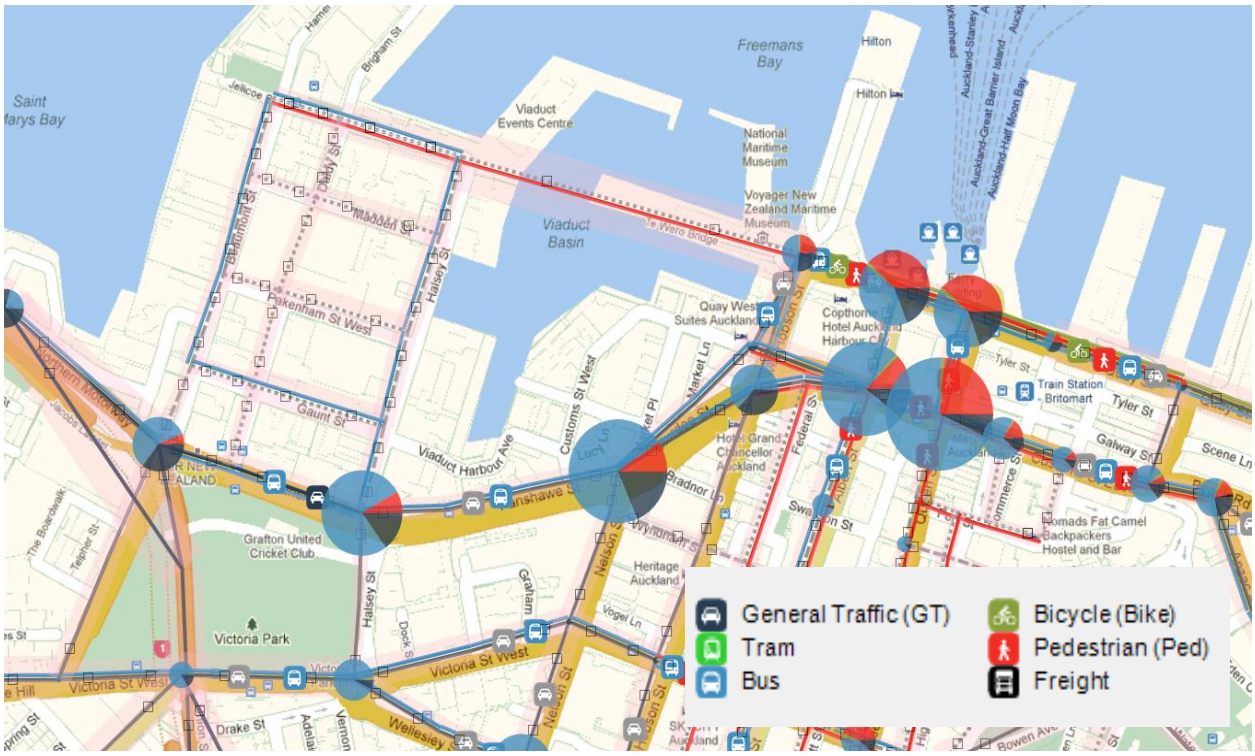

Figure 1: Multi-modal network deficiency along a corridor in SmartRoads

3. People movement is the 'common currency'

An important element of the NOP is the focus on people movement (delay) as opposed to vehicle movement (delay). This aligns well with other approaches adopted in Auckland such as the use of person trip corridor productivity as a network performance measure and the use of this measure to assist in the assessment and provision for bus and transit lanes on the Auckland network.

This common currency in turn enables a means of comparing multi-modal performance as an 'apples with apples' comparison, with freight being the odd one out requiring a scaled up (delay) cost associated with the movement of freight.

This has the effect of weighting modal deficiencies by the number of people affected.

4. Keeping the aspirational intent intact

One last key factor is that whilst all of the above provides a good basis for identifying network deficiencies from a multi-modal perspective, there is a need to cover a potential loop-hole whereby the number of people using a particular mode is low, thereby potentially under-valuing and under-estimating the deficiency of that mode.

This is particularly the case for the non-throughput emphasis modes; namely, walking and cycling. In well-established activity centres such as the CBD, this is less of a concern in terms of walking due to the high number of pedestrians involved, however where there are relatively fewer pedestrians, driving towards reducing the overall operational gap may well lead to further diminishing modes that are intended to be able to operate at reasonable levels.

This is also a particular consideration when considering cycling facilities. The provision of appropriate cycling facilities may for example only be achievable by replacing an existing general. In pure numbers, this could be more easily justified if there were close to 1,000 cyclists say travelling on the route – replacing the potential 1,000 people that would otherwise be using that lane in vehicles.

Strategically, Auckland Transport have acknowledged the need to provide modal choice, and hence improvements can only be considered as such if there is good alignment with the NOP in terms of keeping multi-modal aspirational intent intact.

This may mean that operational gaps may not be reduced to the same extent as they could by dismissing the need to better provide for under-performing modes. This can be seen in Figure 1 where there are pedestrian deficiencies is not the greatest deficiency, however the poor user experience and LOS is underplayed by the relatively lower number of pedestrians on this part of the network. Where intersections form important pedestrian connections enabling appropriate accessibility, there is a need to address at least the obvious deficiencies.

HOW – SOME EXAMPLES

1. Providing clear direction for traffic signal operation, priorities and optimisation as business as usual

Current practise in Auckland in the network operations space is a two-fold approach to Network Optimisation. These are:

1. Routine Traffic Signal Optimisation or traffic signal review across the network, whereby all traffic signals are reviewed and optimised with ongoing NOP alignment at least every four years. In doing so, the network remains at a relatively high level of efficiency.

2. Apply a Network Operating Plan (NOP) Optimisation programme. The NOP Optimisation programme considers the wider network, more than the traffic signal component and multi-modal network, and incorporates the context of the One Network, combining with the Metro-Efficiency Projects (MEP) programme being developed jointly with NZTA regarding the arterial and State Highway network.

By applying the above approach, Auckland Transport (and NZTA) is better placed to understand where the larger deficiencies are across the network. This approach also provides some assurance that what takes place on the ground today, better aligns with strategic intent, and so better facilitates the fulfilment of the Auckland strategy and vision.

2. Generating a more balance multi-modal network deficiency picture and approach for targeted minor efficiency improvements

Routine Traffic Signal optimisation was undertaken in Auckland's CBD in 2013/14. With NOP approach was well-established enough to provide the optimisation with a more appropriate focus on all modes concerned. It became obvious that whilst the NOP highlighted the need for good public transport and pedestrian user experience, there were some areas where these modes were under-performing.

As a result significant benefits were able to be achieved, for example during the interpeak periods where there are high numbers of pedestrians and the opportunity to better improve user experience through several measures. These measures included:

- Reducing average waiting times for pedestrians at the traffic signals. This was achieved by reducing traffic signal cycle times and generally applied at all traffic signals during the interpeak, and to a lesser degree during peak periods where specifically appropriate and possible.

- Providing pedestrian phase re-introduction (whereby a pedestrian phase is able to be re-introduced after it has already been run, during the same vehicle phase it is associated with). This particularly applies across one-way approaches and between traffic islands where appropriate. Examples are at all pedestrian crossings across Hobson Street at all intersections along the route; and across High Street at Victoria Street.

- Providing additional pedestrian crossings where these were previously missing. A good example is at the Sturdee St/Fanshawe St/Nelson St/Market Pl intersection, where additional pedestrian crossings are complete across Fanshawe Street east, Sturdee Street and Market Place.

- Extended pedestrian green times, where pedestrian green times are able to be greater than the standard 6 seconds, such as across Tangihua Street at Beach Rd.

- Introducing exclusive pedestrian phasing and Barnes Dance, such as introduced at Quay St/Lower Hobson St/Viaduct and Quay St/Lower Albert St.

Being the interpeak period, the benefits to pedestrians achieved came at little or no disbenefit to other modes and the network as a whole, as the changes effectively reduced the spare capacity that existed on the network. The benefits are shown visually using SmartRoads in Figure 2 below.

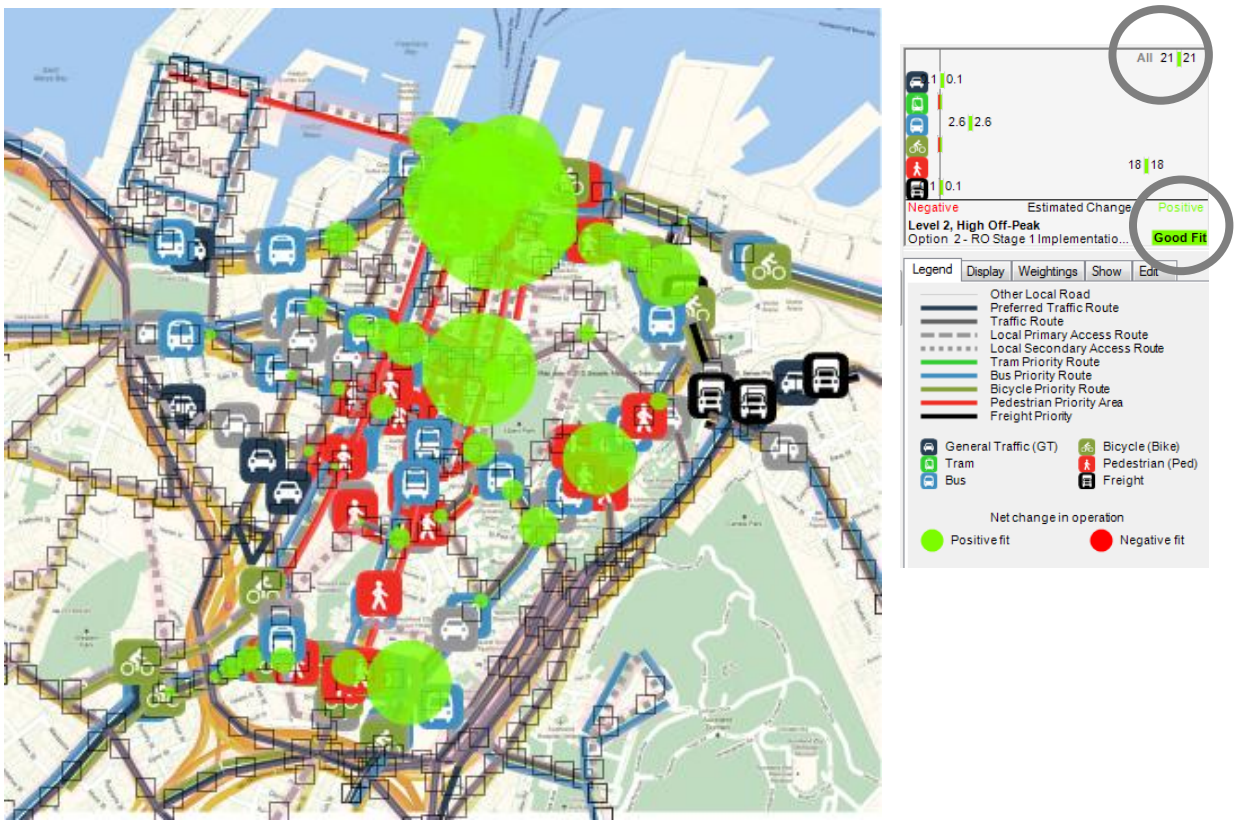

Figure 2: Benefits achieved in Auckland CBD during the interpeak periods

A second example in this regard has been the application of the NOP approach to the introduction of the westbound bus lane on Fanshawe Street. Figure 3 below shows a section of Fanshawe between Hobson Street and Nelson Street, before and after the introduction of the bus lane.

Figure 3: Fanshawe Street before and after the introduction of the bus lane

Positive overall people-movement benefits achieved through this particular improvement during the afternoon peak periods are represented in Figure 4 below. From the diagram to the top-right of the figure, it can be seen that the significant benefits achieved for commuters travelling by bus outweigh the moderate dis-benefit incurred by general traffic commuters.

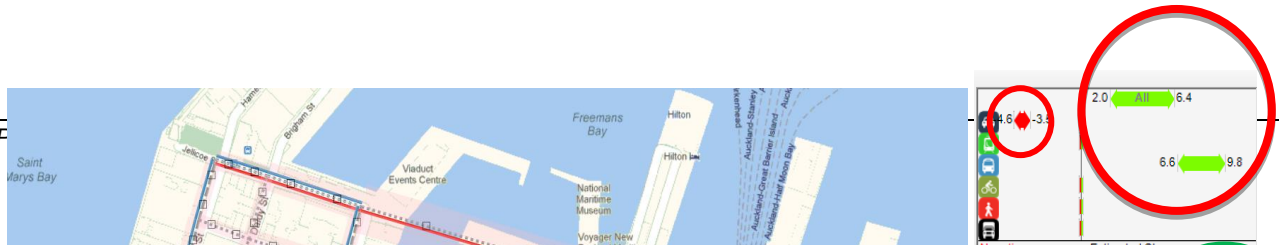

Figure 4: Overall benefit of the introduction of the Fanshawe Street westbound bus lane.

In some instances, the increase in benefits to pedestrians resulted in some disbenefit to general traffic and to a lesser degree public transport. However, in all instances the overall net benefit was positive and was in alignment with the NOP. This is evident in the recent improvements at the complex Sturdee Street / Fanshawe Street / Nelson Street / Market Place intersection where previously missing pedestrian crossings and phasing (highlighted in Figure 5 below) have now been added to complete the NOP optimisation of this intersection.

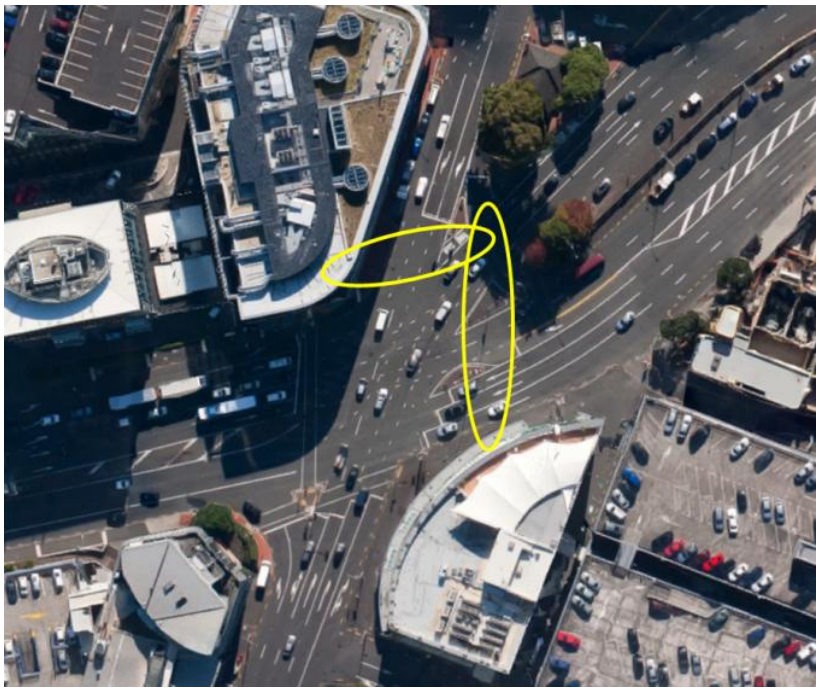

Figure 5: Missing pedestrian crossings at the Sturdee Street / Fanshawe Street / Nelson Street / Market Place intersection

The NOP-optimised intersection now appears as shown in Figure 6 below.

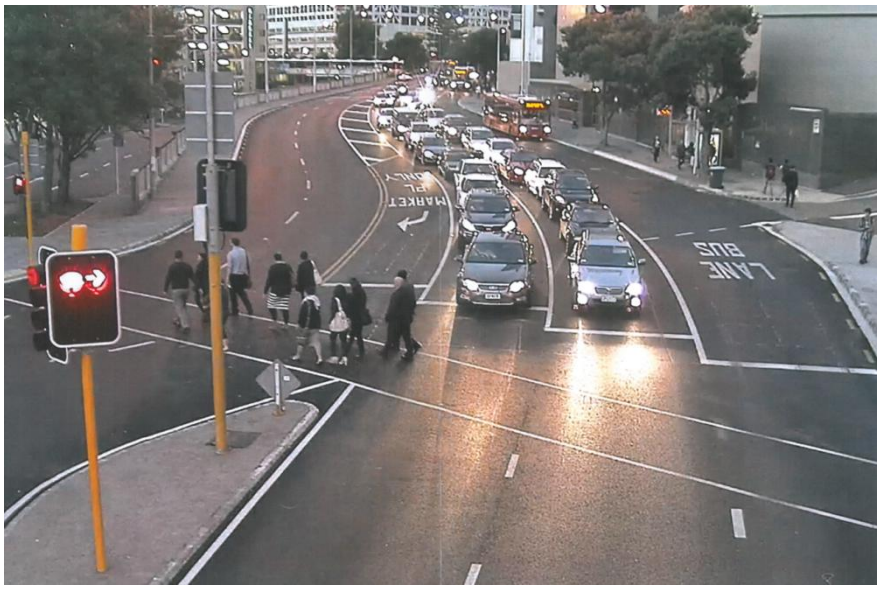

Figure 6: A NOP-optimised Sturdee Street / Fanshawe Street / Nelson Street / Market Place intersection

3. influencing new project designs and outcomes

By having a NOP as a reference, it is increasingly more possible to influence project designs to better align with strategic intent. Whilst projects may vary in size, alignment to the NOP ultimately has a significant bearing on the overall multi-modal performance of the network.

Examples where the NOP has provided clarity and influenced outcomes include the following:

- The current Central Rail Link (CRL) project in the Auckland CBD has required the need for an extensive temporary management plan to enable these works. A key contributor has been the formulation of a temporary Auckland CBD NOP to enable the city centre to still be accessible and operate as a CBD, despite the extensive disruption. This has resulted in mitigations that prioritise PT and pedestrians within the core CBD, whilst maintain good connections to the state highway network. Provision of cycling needs to be accommodated alongside this on key cycle routes.

- New cycling projects in Auckland including the city centre, have required increased focus n how the network is managed. Providing the standard 5 or 6s of green used for pedestrians and cycling becomes inappropriate, particularly along key cycling routes that outside of the intersections have good user experience (or LOS). Accordingly, banning of left turning movements have now been implemented at some intersections such as on Nelson Street / Cook Street, and the deliberate tactic of holding up left turning movements for longer periods, to enhance cycling user experience, such as at Beach Road / Tangihua are now becoming the norm.

- Road safety projects aimed at delivering safe outcomes now include a NOP check-in, to better ensure the safe and efficient delivery of the project. An example being a safety proposal at Salesyard Road / Portage Road that initially would have resulted in efficiency deficiencies on the corridor, however being a key freight route, the NOP was able to encourage the development of an alternative safety solution that would have no or ;less than minor impact of the freight connection.

4. Influencing the timing and extent of major project investment.

Applying the NOP principles and approach to major project investment assists in ensuring that key outcomes are being achieved through the investment. In some instances, the use of the NOP can assist in the testing of alternative options by considering estimated or modelled performance of the alternatives.

An example is the investigation of alternatives relating to bus way and general traffic accommodation around Pakuranga town centre. A key influence has been the highlighting of potential impacts the proposals have on the strategic network for general traffic, the need for appropriate operation experience for buses, and the significance of place of the relevant road frontages.

CONCLUSION

In Auckland as in most growing cities across the world, there is a need to enable the safe and efficient movement of people across the network and city. Moving cars alone is no longer the only consideration for establishing a successful and liveable city. With increasing demand for travel and limited opportunities for increasing capacity within urban areas, there is a need to make more effective use of the available road space, considering all users, providing differing levels of provision and user experience depending on time of day and location.

The NOP applied by AT and NZTA is able to influence and enable modal shift in a growing city such as Auckland. The NOP has enabled intentional application of transport strategy from operational grassroots upwards.

Switching from vehicle dominated movements to people movement, considers a journey corridor approach looking at the productivity and other influencing factors such as travel choice and amenity (user experience). It means that ‘Traffic Engineering 101’ now requires significant advancement. There is a need for greater attention, greater innovation and greater expertise as emerging multi-modal consideration and optimisation demands a simple ball tossing act to now become a complex juggling act.

Win-wins are possible! The Network Operating Planning approach gets us there as is being shown in Auckland. Enjoy a walk in our city, and whilst not perfect, we’re at least walking in the direction of being a safe, efficient and liveable city.