THE AUCKLAND NETWORK OPERATING PLAN 2024-27 (ANOP)

Change History and Approval

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Revision Status

REVISION NUMBER:	IMPLEMENTATION DATE:	SUMMARY OF REVISION
Draft	26/07/2024	Working draft for ANOP 24-27
V 1.0	18//11/2024	Final
V 1.1	18/02/2025	Updates to approval tables

CONTENTS

1 SETTING THE SCENE

1.1 Purpose

The purpose of the Auckland Network Operating Plan 2024-27 (ANOP) is to document the agreed operational approach to managing and optimising the road network to deliver on the strategic objectives for the Auckland transport system. This plan provides a set of guiding principles for road use by transport mode, location and time of day to help with operational and investment decisions. It is not a detailed Concept of Operations or Standard Operating Plan, nor does it specify how outcomes are to be achieved, it is intended to ensure that operations align with overarching strategic intent when there are no such detailed plans available to spell out expectations.

In addition to providing the direction to make decisions on network operations, ANOP also guides the development of a targeted optimisation programme, developed every three years.

The ANOP has been developed collaboratively by NZTA and Auckland Transport and has been helping to guide decision making since 2014. This update for the 2024-27 RLTP and NLTP period ensures that it remains current and that the targeted optimisation programme aligns with the latest updated strategic objectives for the Auckland transport system, flowing down from the latest Government Policy Statement on land transport (GPS) and direction from Auckland Council. In general, ANOP principles have not changed as a result of policy changes, rather, these changes have a direct impact on investment decisions and the form of solutions to Auckland's transport challenges and needs.

1.2 Intended Audience

The primary audience for the ANOP are network managers and operations teams within Auckland Transport, NZTA, Auckland System Management (ASM) and Auckland Transport Operations Centre (ATOC). The operating principles and Levels of Service (LOS) defined through the ANOP are intended to be used for operational decisions relating to the management and operation of the Auckland network.

Secondary audiences include network planners, spatial and land use planners, system designers, events planners and project delivery teams to ensure that all projects, both small and large transformational projects, are aligned with the strategic intent and operational decisions. ANOP is also useful when undertaking communications and engagement, to clarify the short-term expectations and approaches to management of the network with customers and stakeholders.

1.3 Background

The Auckland region is the largest urban area in New Zealand, and its population is growing. The current population of 1.7 million is expected to increase to 2.5 million people over the next 30 years. This population growth brings increasing demand on Auckland's transport system, and its ability to move people, goods and services effectively.

Larger transformational projects are being delivered through the Regional Land Transport Plan (RLTP) and the Auckland Integrated Transport Plan (AITP) which is currently under development. The AITP will replace the Auckland Transport Alignment Project (ATAP), providing a longer term vision for transport in Auckland and ensure alignment between both Central and Local Government priorities for the region. Some of these changes can take decades to plan, fund and deliver. In the meantime, increasing poor performance of the transport system is continuing to impact Auckland's social, economic and environmental wellbeing.

The ANOP is a guiding document for the operation of the transport network in Auckland, providing operational strategy for tactical responses to current challenges, to support day to day network operational planning to get

the most out of the existing network for all modes of transport, based on time of the day. The ANOP also guides the development of improvement plans (both operational and physical), ensuring the outcomes deliver meaningful improvements to the transport system that align with our guiding strategies.

The ANOP uses Future Connect as the Network Operating Framework. Future Connect sets out the strategic networks and the high-level deficiencies on the Auckland network. This provides the strategic context which the ANOP is giving effect to. Figure 1 depicts how the ANOP gives effect to the agreed strategic intent for Auckland's transport network, from strategic objectives to 'Network Optimisation Activities' (operations and / or capital investment).

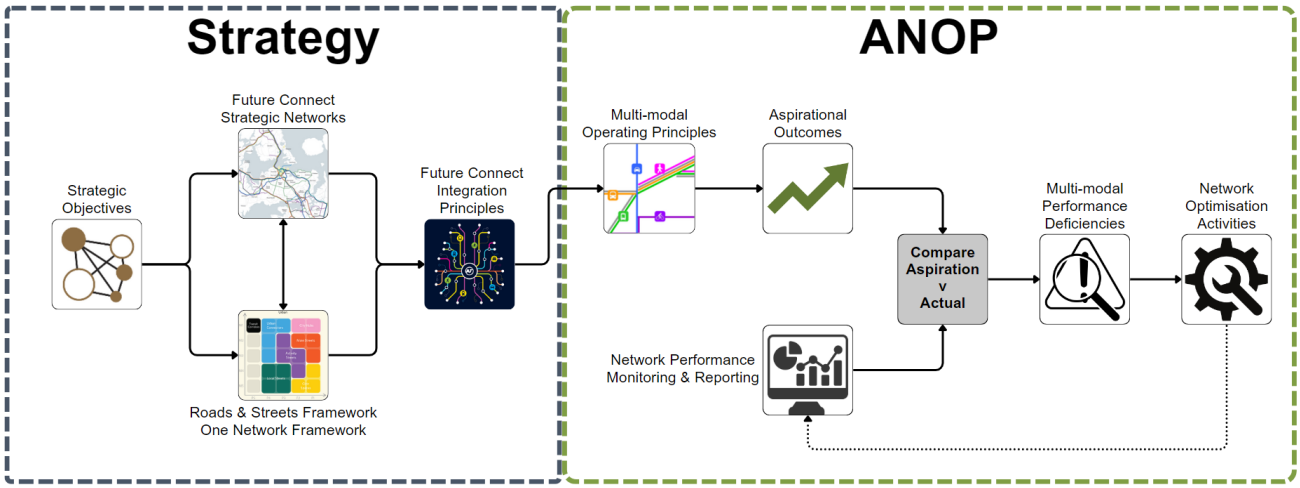


Figure 1: How the ANOP aligns with the strategic intent for Auckland's transport network

2 THE STRATEGIC CONTEXT

2.1 The strategic framework for Auckland

The strategic framework for Auckland has been set using a variety of strategic documents. These documents have a range of time horizon visions and focus areas. This includes land transport focused documents but also those that are urban design, land use, Māori and environmentally focused. Strategies and plans include;

Long Term

- **Auckland Integrated Transport Plan (AITP)** - The AITP is currently under development. When complete it will replace ATAP to provide the Government's and Auckland Council's aligned direction and priorities for transport in Auckland.
- **Auckland Plan and Future Development Strategy (FDS)** - The Plan is a long-term strategy for managing Auckland's growth and development up to 2050, which brings together social, economic environmental and cultural objectives.
- **Auckland Long Term Plan - Infrastructure Strategy** - sets out the long term thinking for significant decisions around investment in infrastructure and how Councils manage their infrastructure assets
- **Arataki** - NZTA's strategic plan outlining what is required to deliver on long-term objectives for the land transport system and sets out what the land transport system could look like in 30 years, what's driving change, plus the challenges and opportunities to be addressed.
- **NZTA Auckland Motorways Strategic Plan** - This is document is currently being developed and at time of writing has not yet been published. Purpose of the Auckland Motorways Strategic Plan is to outline how Auckland's motorway network needs to change over time to meet current and future requirements over the next 30 years. It will inform future project development work, as well as guide operational decision-making.
- **Vision Zero for Tāmaki Makaurau. A Transport Safety Strategy And Action Plan To 2030 (AT)** - By 2050, AT aims to eliminate transport deaths and serious injuries (DSI) in Auckland. This is the strategy and action plan, setting out a guiding map on how AT will actively work with road safety partners together to make Vision Zero a reality for Auckland communities.

Medium Term

- **Unitary Plan** - gives effect to the Auckland plan over the medium to long term and sets out where and to what extent urban development is enabled in Auckland.
- **The Government Policy Statement on land transport 2024 (GPS)** - The GPS 2024 outlines the Government's land transport investment priorities, and guides annual expenditure of around $7 billion from the National Land Transport Fund (NLTF), and around $1.5 billion from local government. The 2024 GPS re-introduces investment into Roads of National Significance, a focus on increasing economic growth and [economic] productivity as a priority for expenditure, puts a greater focus on maintenance and resilience, and recognises the importance of ensuring the whole network is maintained to a reliable standard. The GPS states that moving people and freight as efficiently, quickly, and safely as possible is critical to achieving these priorities and that optimising the use of existing networks and services to deliver an appropriate level of service for users will be critical. The latest GPS puts greater importance on investment for freight and public transport, and reduced investment for walking and cycling.
- **Future Connect** - Auckland Transport's blueprint for the future regional integrated transport system, providing a strategic modal network and guidance for RLTP investment, investigation and delivery
- **One Network Framework (ONF)** - The ONF is NZTA's national classification system for the transport sector. It is an enabling tool to classify roads and streets based on their function and the ways people use them. Similar to ANOP, it puts people and place at the heart of planning to create a healthy, safe, sustainable and inclusive transport system. It is being integrated across all systems for the

development of the 2024-27 National Land Transport Programme (NLTP) and beyond. All projects funded by NZTA must demonstrate alignment with the ONF.

- **Roads and Streets Framework** - The RASF is AT's classification system for movement and place and closely relates to the ONF. It is an AT strategic planning tool that works together with Future Connect and Council's future land use vision to guide design decisions on Auckland's roads and streets. The Roads and Street Framework (RASF) provides a movement and place classification system for Auckland, refined for each section of the Auckland network.
- **Room to Move: Tāmaki Makaurau Auckland's Parking Strategy, May 2023** - Auckland Transport's parking strategy outlining a clear direction for the future management of public parking across the region. It contains setting out principles to guide parking delivery and management. It identifies key locations, where travel demand is highest and supply of space is lowest, that will be the prioritised for proactive management of parking to deliver better and fairer outcomes for everyone who travels and increased people movement productivity.
- **Regional Public Transport Plan (RPTP)** - The RPTP describes the public transport network that AT proposes for the region, identifies the services that are integral to that network over a 10-year period, and sets out the policies and procedures that apply to those services.
- **Regional Land Transport Plan (RLTP) and Programme** - The 10-year plan is refreshed on a 3 year cycle. It sets out the region's land transport objectives, policies, and measures. The programme in the RLTP provides for improvements to be made to the transport system to help to address congestion, and support for greenfield and urban redevelopment. This planning is based on integrated network deficiencies identified in Future Connect
- **Auckland Long Term Plan** - Auckland Council's 10-year budget to achieve the Auckland Plan outcomes.
- **Mode or Theme Specific plans** – Better Travel Choices (NZTA Creating a more accessible, healthy, safe and sustainable Auckland by reducing our reliance on private vehicles), Auckland Cycling and Micromobility PBC, Auckland Walking PBC and the Auckland Freight Plan.

Short Term

- **National Land Transport Programme** - A three-year investment package of projects from approved organisations that is prepared by NZTA to give effect to the GPS. The 2024-27 NLTP aligns with the GPS 2024, with a focus on a transport network that supports economic prosperity by enabling people and freight to move around efficiently, quickly, and safely. The NLTP ensures transport can be delivered nationally, regionally and on a local level.
- **NZTA Auckland Motorway Operational Strategy (AMOS)** - Sets out a strategy for how the Auckland motorway network should operate under both normal and abnormal conditions. It does not set out detailed operational procedures but is intended to be used as a reference by NZTA's network operational partners to develop Standard Operating Procedures. Defined 'Key Result Areas' include safety, network throughput and productivity, journey time reliability and network resilience. Currently in draft.
- **Auckland Network Operating Plan 2024-27(ANOP)** - Gives effect to Future Connect and the RLTP. Provides priorities for the next 3 years considering the strategic direction set through Future connect and Arataki.

2.2 RLTP 2024-2034

Auckland currently has more proposed transport projects than we can afford. The key role of the RLTP 2024-2034 is therefore to signal the region's priorities for investment. The proposed plan aims to deliver faster and more reliable public transport, and an improved and resilient transport network that drives regional economic productivity, targets congestion and improves journey times. The RLTP also signals a commitment to reducing transport-related deaths and serious injuries and decarbonising the transport system to help meet Auckland's environmental goals.

This RLTP proposes public transport projects be the highest funding priority, followed by smaller projects that can be delivered quickly to improve the speed and reliability of the bus and traffic networks, major state highway projects that will improve resiliency, reliability and travel times, those which expand the cycling network and investment in safety infrastructure to reduce transport-related deaths and serious injuries.

Auckland Transport has agreed with key partners and stakeholders five main transport challenges and objectives for the RLTP 2024 (Figure 2). These objectives guide investments made through the RLTP including investments in network management, operations and optimisation. These form the underlying basis of the strategic objectives for the ANOP and the establishment of the targeted network optimisation programme for 2024-27.

Problems	Objectives	Outcomes
Access and connectivity Existing deficiencies in the transport system and an inability to keep pace with increasing travel demand is limiting improved and equitable access to employment and social opportunities	Better connect people, places, goods and services	Improved access Travel speeds held steady or improved Improved travel time reliability
Asset management Reactive maintenance and low levels of investment are impacting the reliability of our transport network	Sound management of transport assets	Building back better Improved network resilience Minimise disruption
Climate change and resilience Emissions and other consequences of transport are harming the environment and contributing to the transport system becoming increasingly susceptible to the impacts of climate change	Improve the resilience and sustainability of the transport system and significantly reduce the GHG emissions it generates	Reduced emissions Improved network resilience Mitigation through design
Travel Options A lack of competitive travel options and high car dependency as the city grows is limiting the ability to achieve the quality compact urban approach for Auckland	Provide and accelerate better travel choices for Aucklanders	Improved Public Transport reliability
Safety The transport system has become increasingly harmful and does not support better health outcomes	Make Auckland's transport system safe by eliminating harm to people	Decrease in deaths and serious injuries Improved health and wellbeing of Auckland

Figure 2: The RLTP 2024 transport objectives which provide the base for the strategic objectives for the ANOP (source: Draft RLTP 2024)

Key outputs from Future Connect inform and guide RLTP investment prioritisation towards the most critical problems on the Strategic Networks. The RLTP's prioritisation and the subsequent investment programme considers deficiencies identified through Future Connect, but also other factors such as available funding, value for money objectives, and the maintenance and renewal programme, amongst others.

2.3 Network Operating Framework (Future Connect).

Network Operating Framework (NOF) is an integrated process that enables better planning, management and operation of the transport network, and explicitly links transport to the adjacent land uses. In the Auckland context, Auckland Transport utilise a planning framework called Future Connect. The purpose of Future Connect is to provide an integrated and strategically aligned transport plan for all major modal networks to enable better assessment, planning, investment, and operation. Future Connect is in effect Auckland's NOF.

Future Connect is a strategic vision for the coming decades and the ANOP provides a link to current and future operations and investment. Future Connect supports a system view, in line with partners and stakeholders, in order to provide strategic guidance for integrated planning as the first step in the intervention hierarchy (See figure 2). Arataki is the equivalent long-term plan for NZTA.

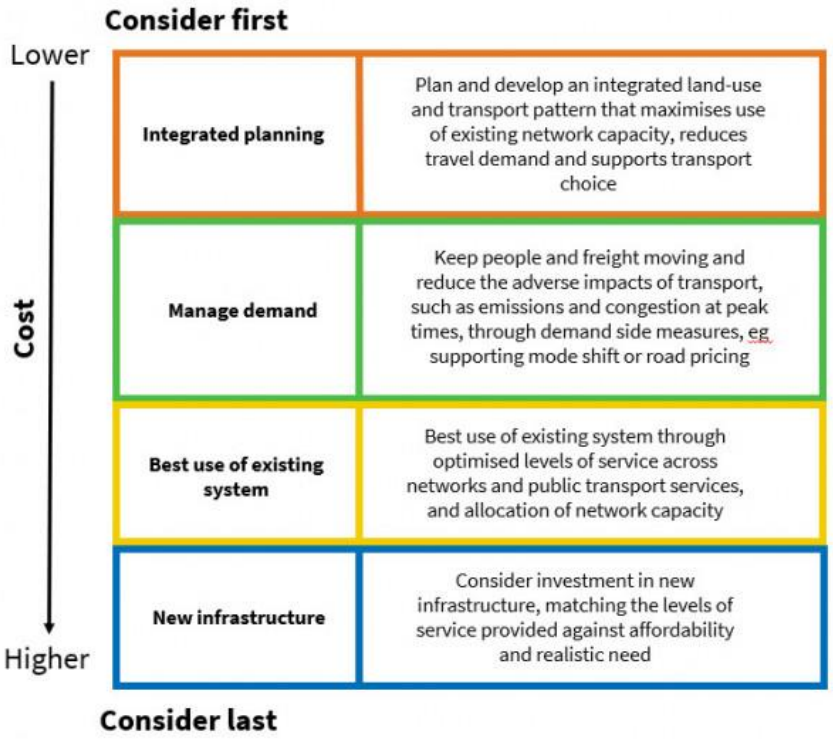


Figure 3: Intervention Hierarchy. Source: nzta.govt.nz

The ANOP 24-27 provides guidance for implementing the second two steps in the intervention hierarchy shown in Figure 3; namely managing demand and making the best use of existing system. Significant new infrastructure should always be considered as a final intervention, to be considered once all other options have been exhausted.

Future Connect provides four critical components, which set the strategic direction for the development of the ANOP.

1. Strategic context and objectives (confirmed through the RLTP).
2. Integration Principles - the main network planning principles applied to keep Auckland moving.
3. Strategic Networks - These are the network links that are most critical to the movement of people, goods and services across the region. The Strategic Networks include two time periods (Current and First Decade) and provide a core planning reference for everyone working to improve Auckland's transport network.
4. Transport System Analysis – Future Connect uses a data-driven Transport System Analysis, to

find deficiencies and opportunities on Strategic Networks in the next decade. These network deficiencies are displayed as deficiency maps which highlight the most significant problems and opportunities on the strategic networks, using the same modal deficiency metrics incorporated in the ANOP to ensure system-wide alignment.

Future Connect Strategic Context and Objectives

The Auckland Plan 2050 seeks integrated outcomes for the region over the long term, including three strategic directions for transport which guide Future Connect. These strategic directions are addressed in the following ways:

i. Better connect people, places, goods and services – through an integrated all mode system approach, including freight networks;

ii. Increase genuine travel choices for a healthy, vibrant and equitable Auckland – by integrating all the travel modes, highlighting travel deficiencies across space so that they can be remedied and encouraging mode shift to public transport, walking and cycling;

iii. Maximise safety and environmental protection – through surfacing the worst vulnerabilities and negative consequences of the transport system.

Future Connect Integration Principles

Future Connect sets out a number of 'Integration Principles', which are the main network planning principles applied to keep Auckland moving. Further information on how the ANOP gives effect to these themes is provided in 3.2 - Network Operating Principles.

Table 1: Future Connect Integration Principles

Future Connect Themes	Future Connect Integration Principles
Integrate land use and transport	• Enable a compact urban form through land use integration, • Support land use with complementary networks resulting in effective movement of people and goods, • Enable convenient and direct public transport, walking and cycling access to centres.
Provide access	• Provide direct and efficient access to centres and key destinations.
Connect nodes	• Provide connection between the common destinations that link people to people, goods, services and opportunities, • Support inter-regional connectivity
Modal priority	• When a corridor is part of a strategic network, this must be considered in the modal priority assessment. • Use RASF to identify modal priorities and potential conflicts in a corridor.
Connect Modes	• Provide for travel options and the ability to connect easily at interchanges, including changing between modes.
Place function as well as movement	• Enable the reflection of place value as well as movement in corridors.
Manage effect on environment	• Avoid, remedy or mitigate any adverse effects on the environment, • Adapt to a changing climate and respond to the microclimatic factors of each area, • Provide a transport system that supports more sustainable modes to enable reductions in emissions.
Mode shift	• Provide quality active mode and dedicated public transport routes to enable mode shift away from private car use, • Prioritise sustainable modes where needed to provide an improved throughput across the network.
Safe Network	• Provide a safe and secure transport network, free from death and serious injury for all users, • Provide a safe and convenient network of routes accessible to people of all ages, abilities and backgrounds, • Provide greater attention to modal networks for vulnerable users to avoid conflict,

	particularly where there is expected to be an increase in the movement function of a corridor and an increase in vulnerable users.

Future Connect Strategic Networks

Future Connect defines the strategic networks for all modes and provides a single integrated network map. This represents key modal networks for the movement of people, goods and services, as part of an integrated multi-modal system. In addition, Future Connect provides the current strategic networks and updates them for one further time period, first decade, with a view to expand to the second and third decade in the future. These strategic networks can be viewed in the Future Connect mapping portal (Future Connect mapping portal). These are split into 5 modal networks as shown in Figure 4. Each of the modal networks are assigned a hierarchy to indicate the relative importance of each link. The modal network hierarchies are shown in Figure 5.

ANOP gives effect to the current Strategic Network priorities, supporting work looking towards the long-term strategic intent.

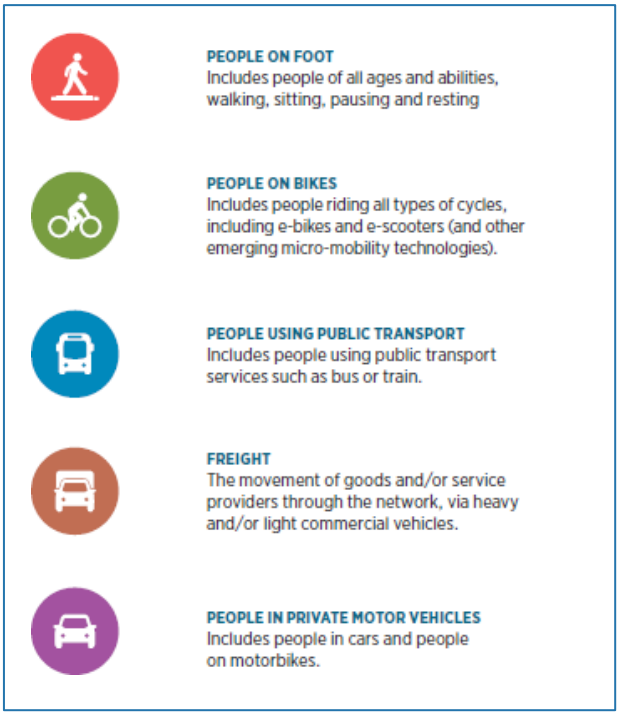


Figure 4: Future Connect modal networks. Source: Future Connect 2023

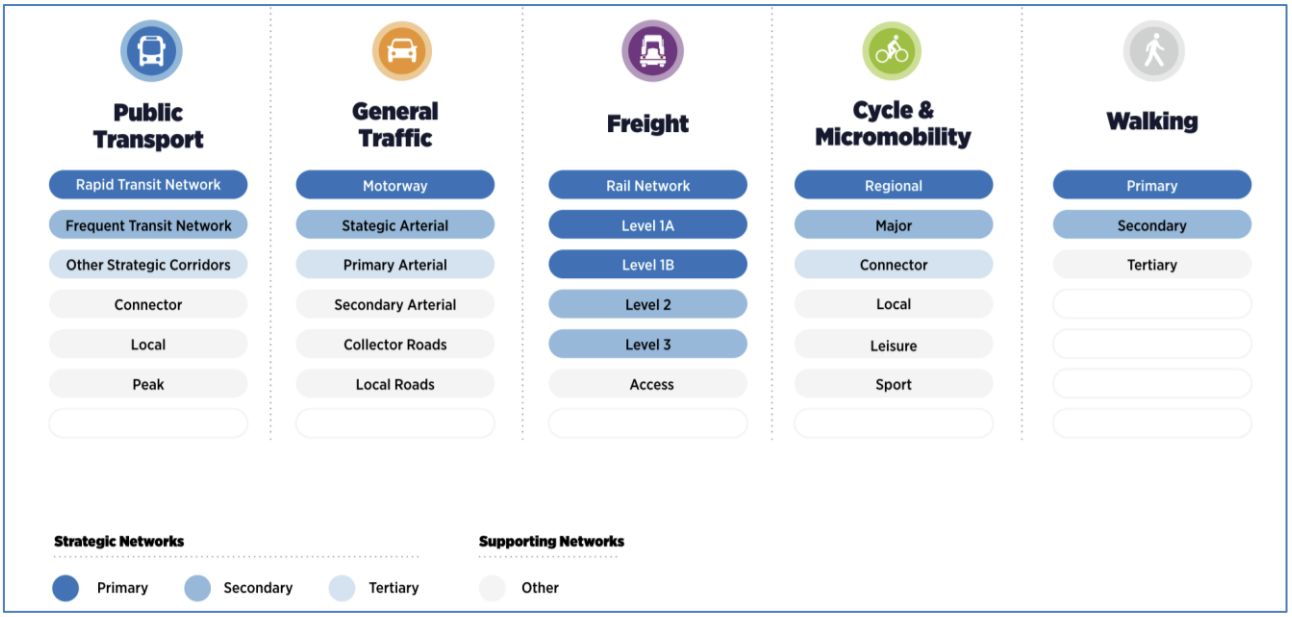


Figure 5: Future Connect modal network hierarchies. Source: Future Connect 2023 Main Report

Future Connect Transport System Analysis

Future Connect uses data driven analysis to identify the most significant problems and opportunities along the strategic networks. The most severe deficiencies on the most strategic links are identified and ranked as priority deficiencies. Where multiple priority deficiencies overlap, indicative focus areas are identified (Figure 5). These areas are critical locations for future infrastructure projects and programmes which directs interventions and inform the next Regional Land Transport Plan (RLTP).

The Future Connect deficiency analysis focuses on peak hours and provides a broad sieve of performance issues across the region. This analysis is undertaken periodically and, whilst it does provide a powerful overview of network wide issues, the ANOP uses intelligence gained from ongoing network performance monitoring to continually refresh and prioritise the programme to focus on the areas that are most deficient. This process is then further refined through the application of ANOP performance deficiencies. This is discussed further in section 3.

The ANOP uses a similar approach to quantifying deficiencies but due to its use as a more operational tool, more fine-grained performance information is generally appropriate, with the most up to date data available allowing for analysis to be undertaken at a more micro-level. Refer to section 4 for more information about this process.

3 ANOP

3.1 What is the ANOP?

The Auckland Network Operating Plan 2024-27 (ANOP) is jointly owned by Auckland Transport and NZTA. It is an agreed operational approach to managing and optimising the network to deliver on the strategic objectives for the Auckland transport system. ANOP provides guidance for all projects at design review stage to ensure understanding of the impact of any proposed development on the operation of the network.

ANOP also supports a range of projects and programmes and is the specific driver for optimisation and the Auckland Network Optimisation Programme. It provides an evidence based approach to support and help prioritise the Auckland Network Optimisation Programme, which identifies short term opportunities to address current deficiencies.

The ANOP contains three key outputs:

1. Network Operating Principles.
2. Level of Service descriptors and agreed aspirational levels of service for each mode by time of day. An assessment tool enables operators, planners and engineers to check intervention outcomes against ANOP and Future Connect aspiration.
3. A framework for network performance & reporting.

It provides operational strategy and direction to network operations teams from which operational tactics can be developed to ensure day to day operational decisions support the strategic network outcomes agreed for Auckland. This includes enabling the Auckland Transport Operating Centre (ATOC) to develop and refine Concept of Operations (CONOPS) and Standard Operating Procedures/Plans (SOPs) for operating the network in real-time in alignment with strategic intent.

ANOP is applied when considering options for any change that has an impact on the user experience on Auckland's roads. Whether it's relating to operational advice, a short term change (such as a temporary traffic management plan or an emergency road closure) or a permanent improvement (such as signalising an intersection or new special vehicle lanes) the principles are applied in a similar way. This approach helps us to quickly and objectively weigh up the trade-offs that inevitably have to be made, to ensure that operational decisions are consistent with strategy.

Whilst the ANOP helps to interpret to the strategic direction and sets the scene for operating the network, it is important to recognise that for many locations there are more specific developed plans that dictate where investment is directed and how it is to be operated, such as a CONOPS which will set out in more detail how the network is to be operated, taking into consideration trade-offs between different movements as well as modes and wider network implications.

Further information on the ANOP can be found on the ANOP web page.

3.2 Network Operating Principles

The ANOP operating principles (highlighted in green in Table 2) provide a set of directions to network management and operations teams on how to operationalise the strategic objectives and networks. They take a system / integrated network view and provide mode specific direction. These principles remain largely consistent with ANOP 21-24. While the latest GPS prioritises different areas, this primarily impacts funding allocation rather than the fundamental network operating principles. The table also shows the connection back to the Future Connect Themes.

Table 2: ANOP network operating principles

Future Connect Themes	ANOP Operating Principles
Integrate land use and transport Provide access Connect nodes	• Utilise the strategic modal network to encourage inter-regional trips to use strategic routes. e.g. State Highways and 1A Freight routes. (Note - Inter regional is something that starts in Auckland region but ends outside Auckland region (and the reverse) or anything that crosses Auckland Region but starts and ends outside Auckland Region.) • Utilise the strategic modal network to guide the management of access to centres and key destinations by time of day. • Encourage general traffic to use the strategic traffic network at busy times.
Modal priority Connect Modes	• Apply modal priority in accordance with Future Connect Strategic Networks. • People and goods throughput is prioritised over vehicle movement according to the strategic modal network. • Actively manage strategic networks at peak times to achieve agreed modal priorities. • Where 'place' has high significance on a strategic network, people movement and active modes are prioritised, according to time of day. • Actively manage and operate the network in real time at key locations.
Place function as well as movement Manage effect on environment Mode shift	• Apply the modal strategic networks and level of service to determine the modal priority, by time of day. • Support and enable improved PT, walking and cycling movements where these strategic networks interact with the motorway or arterial network. • Prioritise access for strategic network modes to motorways and minimise disruption to strategic movements that traverse through interchanges.
Safe Network	• Safety is paramount for vulnerable road users especially where 'place' has high significance or where a strategic network is present. • Provide safe and appropriate travel speed across the network according to strategic modal network, place and time of day. • Manage safety risk where strategic networks intersect e.g. where walking or cycling networks cross strategic freight or general traffic. • Prioritise active network management at high-risk locations (e.g. wind on bridges, queued traffic in tunnels, hazards on the network).

3.3 Level of Service (LOS) by mode

As previously described, Future Connect has deficiency maps that highlight the most significant problems and opportunities on the strategic networks. These network deficiencies focus on peak hours and form the first step in targeting the interventions as part of the optimisation programme. These areas of deficiencies can be further refined through more detailed and current network performance information using the current Strategic Networks and LOS.

In order to provide common framework for measuring user experience, ratings have been defined for each mode. These describe the performance or quality of experience for each mode. ANOP uses six LOS ratings ranging from A, which defines a very good user experience, through to F, depicting a very poor user experience. These LOS ratings, defined in Appendix A, have been developed collaboratively, incorporating international best practice and lessons learned locally.

LOS definitions include both quantitative and qualitative measures (Table 3). These definitions are not intended to be exhaustive but provide general descriptions for what each level of performance looks like for the various modes at a general level. Qualitative measures are more likely to be applied when considering active modes where factors such as perceived safety and the lack of facilities can contribute to poor user experience. The LOS will be underpinned by good quality data, both quantitative and qualitative.

Table 3: LOS measures

Mode		Measures
Movement / throughput focused modes	Public Transport	Journey time / average speed Journey time reliability
	General Traffic	
	Freight	
Active modes	Walking	Physical facility Imposed delays
	Cycling and Micromobility	

Table 4 lists preferred levels of service by mode, strategic importance and time of day. The preferred level of service by mode will vary by location, depending upon on the strategic importance of that location, and by time of day. This means we can make best use of the network, by prioritising different modes at different times on the network, utilising the limited road space optimally.

Table 4: Preferred Level of Service by mode

Mode	Strategic network type	Preferred LOS			
		AM peak	Off peak	PM peak	Weekend peak
Walking	Primary	B	B	B	B
	Secondary	C	C	C	C
Cycling and Micromobility	Regional	B	B	B	B
	Major	B	B	B	B
	Connector	D	D	D	C
Public Transport	Rapid Transit	B	B	B	B
	Frequent Transit	C	C	C	C
	Other Strategic PT Corridors	C	C	C	C
General Traffic	Motorway	C	C	C	C
	Strategic and Primary Arterial *	C	C	C	C
	Secondary Arterial *	C	D	C	C
Freight	Level 1A *	C	B	C	C
	Level 1B *	C	C	C	C
	Levels 2 and 3 *	Refer to general traffic preferred LOS			

* General traffic and freight routes within activity centres, or where provision for PT and/or active modes demand higher priority, lower LOS for general traffic and freight will apply.

Performance deficiencies are identified and quantified by comparing the existing network performance to the preferred LOS. The greater the gap in LOS, the greater the operational deficiency for that mode.

The size of these LOS gaps can be reduced through improved operations or the introduction of physical improvements. In many instances, trade-offs across modes will need to be agreed so that these aspirational outcomes can be best achieved. The time of day is an important consideration as priorities often change depending on the time of day or day of week.

- One example of this would be changing the signal phasing of an intersection to improve the pedestrian LOS on a secondary arterial during the interpeak within an activity centre. To improve the pedestrian LOS, we may have to accept a reduction in the LOS for general traffic at this location during this period of the day.
- Another example would be the reallocation of road space, such as introducing a bus lane on a Frequent Transit network route, replacing parking during peak periods, thereby improving the LOS for public transport. In this example increased people movement is traded against a loss of amenity parking. These approaches are explored further in Section 4 – How to use the plan.

In some instances, optimisation activities may only be able to maintain an existing LOS despite increasing demand, or incrementally improve the LOS but without being able to realise the targeted aspirational outcome. This is still an important step, in line with the intervention hierarchy, as any residual gap will then be fed back into future planning through Future Connect and the RLTP process, as a more transformational project may be needed.

In many cases we may need to accept a lower LOS because it isn't possible or practical to achieve the preferred LOS. E.g. much of the motorway network operates below the target of C during peak periods due to high travel demands exceeding the capacity of the network. In these cases interventions are often implemented that will look to maximise corridor or network productivity, or balance competing demands (e.g. through use of the ramp signalling system or bus only shoulder lanes), but the localised deficiency will remain.

3.4 Network Performance & Reporting

Having established an expected, aspirational or preferred LOS by mode for the respective strategic networks, measurement of the network against these aspirations can be undertaken, providing multi-modal network performance monitoring and reporting. A dashboard reporting tool that will provide access to current network performance data and metrics is currently in the process of being built and will soon be available to enable performance gaps on the network to be assessed with the most currently available data. This same network performance data is also used in the Future Connect Network Deficiency Analysis, which is updated on a three year cycle to align with the RLTP refresh. It is increasingly important to use the most relevant and current available data to ensure a more agile and relevant response to network deficiencies through operational interventions and the network optimisation programme. Travel demands change over time due to land use developments and events, such as the impact COVID has had on travel behaviour.

ATOC and Auckland System Management (ASM) also monitor network performance, focusing on real-time, to identify incidents and unusual congestion. This network monitoring uses metrics that include the core metrics used in the ANOP, enabling alignment between all teams involved in managing and operating the Auckland network.

4 HOW TO USE THE PLAN

4.1 Who Does it Apply to and When to Use ANOP

ANOP is to be used to support decision making and to communicate the why to stakeholders and customers. CONOPS have been developed to set out in detail the operational requirements for certain locations on the network, but were these aren't available the ANOP helps to provide that direction. There are many different teams across NZTA and AT that should utilise the ANOP to improve operational decision making and investment decisions. Informed evidence-based decision making is the key to delivering operational outcomes that align with strategy. This relies on open and transparent sharing of information and learnings.

Table 5 provides a summary of the different teams who should use ANOP, how they should be using it, and how to apply it.

Table 5: When to use ANOP

Team, organisation.	The purpose and value of ANOP	When to use it.
Network management and operations teams within AT and NZTA.	Provides direction on how to benchmark and measure the current performance of the network and the gap between the current performance and aspirational LOS. Provides guidance on what modes to prioritise based on location, and time of day through Section 3.3.	• Network performance measurement • To support day to day operational decisions, to inform planned events, unplanned events and temporary traffic management, and to guide scenario testing and resource consenting. • To serve as a benchmark for evaluating the most suitable course of action and the most effective infrastructure designs. To guide the development of operational programmes and packages of measures such as LCLR • Network fit assessment for projects • Development of the 3-year optimisation programme. The operating principles and LOS's allow identified network deficiencies to identify the need for infrastructure improvements, feeding into an optimisation programme. • Inform business cases, more transformational projects.
ASM		• Operational decisions for Auckland Motorways • Delivery of projects on the Auckland motorway network • Interchange designs and reviews. • Ramp signal design and operations. • Use to develop Auckland Motorway Operating Strategy (AMOS) • Use to develop a One Network Concept of operations CONOPS and communications plan.

Team, organisation.	The purpose and value of ANOP	When to use it.
ATOC (Optimisation Delivery, Real-time Operations teams)	Provides direction on how to benchmark and measure the current performance of the network and the gap between the current performance and aspirational LOS. Provides guidance on what modes to prioritise based on location, and time of day through Section 3.3. The principles and preferred LOS should be used to make decisions on how we manage and operate the Auckland Network.	• Development of 3-year annual plan • Signal optimisation programmes. • Operational decisions regarding planned event management and co- ordination • Incident response • Resource planning • Priority of surveillance at high-risk locations (e.g. wind on bridges, queued traffic in tunnels). • Routine network optimisation • Interchange designs and reviews. • Ramp signal design and operations. • Inform real-time motorway management.
NZTA Transport Engineering	Provides direction on how to benchmark and measure the current performance of the network and the gap between the current performance and aspirational LOS. Provides guidance on what modes to prioritise based on location, and time of day through Section 3.3.	• Efficiency and optimisation programme development • Operational advice on planned events
Development Planning, Auckland Transport		• Resource consent assessments, consideration of modal outcomes resulting from developments.
AT and ASM Corridor Access Request (CAR) teams		• TMP assessments, consideration of network outcomes
AT Planned Events, Real-time planned and unplanned events, Day of Operations		• To inform event planning, understand preferred modal LOS • Operational decisions regarding planned event management and co- ordination
AT PT		• Network performance measurement • Identification of network deficiencies on bus routes
Infrastructure Delivery / Project Managers		• Network fit assessment for projects • Temporary Traffic Management and resource consents
Communications and Marketing Teams		• Provide insights to customers for communicating the intended use and outcomes for the roading network.

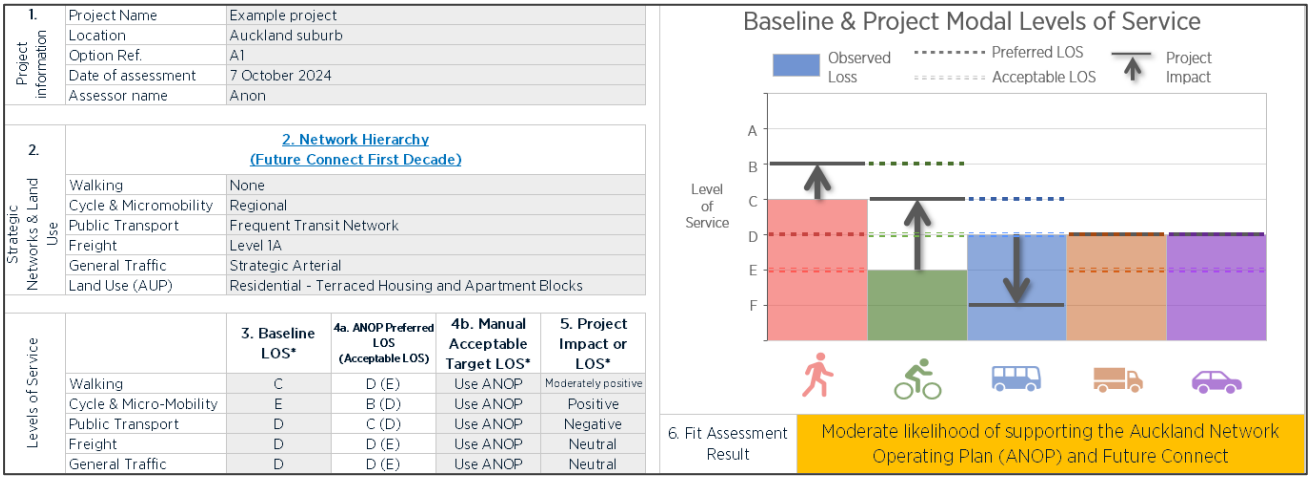
4.2 How – The ANOP Assessment Tool

To facilitate the application of the ANOP, AT have developed an easy to use tool to enable quick assessments to be made on projects and other changes that impact on road users. The tool requires inputs for the network hierarchy for each mode (from Future Connect) and land use from the Unitary Plan. The final inputs required are for existing LOS by mode and the "assessed project impact" LOS, i.e. what changes will occur as a result of the project or change. The project LOS impacts should be evaluated using a methodology that is fit for purpose for the type of project, such as traffic or network modelling for vehicular modes.

The tool is designed to provide an indicative evaluation of whether a project or option is well aligned with Auckland's strategic direction. It is not intended to be used to rank projects or options, nor provide an indication of value for money, but it will indicate whether the project is taking us in the right direction and will show what modes the project is addressing.

This tool should be used by planners, engineers or operators at any time when trade-offs between modes are required, be that for an operational change or a capital project. The assessment should be undertaken in consultation with SMEs from the Network Operations Planning team in AT or the Transport Engineering team in NZTA.

This tool is available for download from the ANOP web page.



1. Project information	Project Name	Example project
	Location	Auckland suburb
	Option Ref.	A1
	Date of assessment	7 October 2024
	Assessor name	Anon

2. Strategic Networks & Land Use	2. Network Hierarchy (Future Connect First Decade)	
	Walking	None
	Cycle & Micromobility	Regional
	Public Transport	Frequent Transit Network
	Freight	Level 1A
	General Traffic	Strategic Arterial
	Land Use (AUP)	Residential - Terraced Housing and Apartment Blocks

Levels of Service	3. Baseline LOS*	4a. ANOP Preferred LOS (Acceptable LOS)	4b. Manual Acceptable Target LOS*	5. Project Impact or LOS*
Walking	C	D (E)	Use ANOP	Moderately positive
Cycle & Micro-Mobility	E	B (D)	Use ANOP	Positive
Public Transport	D	C (D)	Use ANOP	Negative
Freight	D	D (E)	Use ANOP	Neutral
General Traffic	D	D (E)	Use ANOP	Neutral

Figure 6: Screenshot from the ANOP Assessment Tool

4.3 Giving Effect to the ANOP Operating Principles

Below, are some practical examples of how to apply the ANOP Network Operating Principles.

Safety	Manage on ramps / ramp signals to provide safe merging onto motorway
	Active detection and clearance of incidents from the strategic network
	During incident management ensure that high volumes of traffic are not diverted through areas of high place value
	Increasing pedestrian phasing provision at signals in areas with high place significance
Make best use of existing networks	Utilise lane layouts, signage and active management tools that minimise lane changing required to access/exit the motorway and strategic networks evenly distribute traffic load across lanes
	Support strategic PT and freight routes through use and layouts of ramps and hard shoulders and motorway and repurposing of lanes on key arterials
	Limit on-street parking on arterial roads where it inhibits efficient people throughput or conflicts with the objectives of other strategic transport networks
	Utilising technology to improve active management and incident management
	During interpeak - actively manage motorway inflows and lane capacity to maximise network productivity
Modal priority	Increasing pedestrian phasing provision at signals in areas with high place significance Use modal priority, by time of day to inform traffic signal plans and optimisation
	Manage on/off ramps by time of day and minimise delay to strategic PT, freight, walking and cycling networks were these networks cross the motorway and major roads at interchanges
	Minimise delay to strategic PT and freight by providing priority access to and egress from the motorway for strategic PT and freight networks
	Encourage use of the motorway and SH network for inter-regional freight movements
	Maintain journey time predictability on strategic freight routes to/from the Port and between key industrial and commercial centres
Resilience	Prioritise people and goods movement when managing the impact of major incidents.
	For major incidents disperse the impact and balance the resulting traffic load across the strategic network.
	Minimise unplanned disruption using the collective powers of Police, Fire, AT and NZTA.
	Proactively plan and actively manage the network to minimise disruption from planned events
	Actively manage and operate the network in real time at key locations
	Prioritise active network management at high-risk locations (e.g. wind on bridges, queued traffic in tunnels, hazards on the network)
	Gather data to maintain a high level of situational awareness across the strategic network through the continued monitoring and analysis of collected information, event planning and learnings from past events
	Develop a Concept of Operations for planned and unplanned events (including opening of new infrastructure) and events
	Proactive planning and adaptation to climate risks
Effective communication of operational decision making	Provision of traveller information for customers
	Ensure relevant plans (such as Future Connect, ANOP and RASF) continue to be publicly available
	Develop a comms plan to explain the process and decision making

Town centre example

Town centres present an example of competing modal priorities throughout different times of the day. They often experience:

- high pedestrian demand during shopping hours both on weekdays and weekends
- a need for servicing in the early morning
- public transport demand throughout the day both to and through the area
- high general traffic demand during weekday peaks

In these locations assigning priority to different modes dependant on the time of the day, can help optimise the use of the limited space.

In this instance, application of the ANOP would typically prioritise public transport and walking/cycling, especially during the interpeak and on weekends. During peak times, the movement of general traffic and freight would need to be supported if they are on strategic routes.

E.G. Broadway, Newmarket (Metropolitan Centre)

Mode	Future Connect Hierarchy	Preferred LOS (peak)	Preferred LOS (off peak & weekend peak)
Public Transport	Frequent Transit Network	C	C
General Traffic	Primary Arterial	D *	E *
Freight	None (OD& OW only)	F	F
Cycle and Micromobility	Regional	B	B
Walking	Primary	B	B

* Within activity centres where the same road is important for public transport and general traffic, a lower preferred LOS for general traffic and freight would apply, so that greater priority is assigned to public transport due to the greater people movement efficiency outcomes.

4.4 Lessons Learned

Application of ANOP 2021-24 has helped improve the alignment between strategy and operation. However, a number of areas have been identified where improvements an be made to further enhance the effectiveness of ANOP. Some key lessons learned and opportunities are listed below.

ANOP is not well understood across the business

Aspects of the ANOP are not well understood across the wider business. Some people know of ANOP but don't understand how it might relate to their work, or don't feel they have time to compare performance to ANOP. E.g. teams responsible for managing events or incidents.

> **Opportunity**
> Incorporate the requirement to apply ANOP within project frameworks and systems. Embed the use of the ANOP assessment tool for assessing outcomes or impacts e.g. within development planning (Integrated Transport Assessments and Traffic Impact Assessments). Communicate the ANOP to ensure all operational teams are aware of it and understand how it applies to their roles.

Lack of good data to support operations

Good quality data on network performance is needed to support decision making. In many cases data isn't available (such as pedestrian or cycle volumes in many areas), or is of poor quality (such as SCATS traffic counts at many sites). Data is recorded and stored in many different systems, meaning that in many cases the data isn't directly available to the people who could benefit from it. At best, accessing the range of information is cumbersome and the format of data varies significantly.

> **Opportunity**
> Numerous projects to address these issues and gaps have been identified through the Auckland Network Optimisation Programme. As these project are implemented in stages, data availability and accessibility is expected to improve.

ANOP not considered in events management planning

Teams responsible for managing planned and unplanned events do not routinely measure network performance in terms of ANOP Levels of Service and therefore KPIs are not fully aligned with ANOP aspirations.

> **Opportunity**
> Implement a communication and training program for the ANOP to ensure all operational teams understand its importance and can effectively incorporate it into their planning and operations.

5 NEXT STEPS

The ANOP 24-27 represents a 3-year operating and optimisation programme. The ANOP will be refreshed every 3 years in line with the RLTP development.

Should there be a change to strategic objectives during the 2024 to 2027 period, ANOP 24-27 will be revised accordingly.

Appendix A – Modal LOS Definitions

LOS	Pedestrians		Cycle	
	Facility	Crossing Delay	Facility	Crossing Delay
A	Crossing opportunity is within 50m* or shared space High quality pedestrian facilities with appropriate separation Friendly speed environment Free flowing for pedestrians No street obstacles	Average crossing delay less than 10s	Unobstructed off-road facility **OR** protected cycle path for use by cycles only **AND** Cyclist operating speeds are largely unhindered **AND** Minimal conflict with other modes at intersections	Average crossing delay less than 10s
B	Crossing opportunity is within 100m* Pedestrian facilities provided with appropriate separation Some street obstacles with minor conflicts for pedestrians	Average crossing delay less than 20s	Protected cycle path **OR** separated shared path OR shared path **AND** Cyclist operating speeds are largely unhindered **AND** Some conflict with other modes at intersections	Average crossing delay less than 20s
C	Crossing opportunity is within 200m* Pedestrian facilities provided with appropriate separation Pedestrian speeds restricted	Average crossing delay less than 30s	Protected cycle path **OR** separated shared path **OR** shared path **OR** shared spaces with low volume & low speed **AND** Cyclist operating speeds are somewhat impeded **AND** Some conflict with other modes at intersections	Average crossing delay less than 30s
D	Crossing opportunity is within 400m* Narrow sealed footpath Restricted movement for most pedestrians	Average crossing delay less than 45s	Shared path **OR** traffic environment with low volume & low speed **AND / OR** Cyclist operating speeds are impeded **AND** Some conflicts with other modes en-route and at intersections	Average crossing delay less than 45s
E	Crossing opportunity is within 800m* Formed footpath Footpath significantly restricted by street obstacles Restricted movement for pedestrians	Average crossing delay less than 60s	On-road cycle lane **OR** shared traffic environment with medium volume & low speed **OR** low volume& medium speed (e.g. bus or transit lane) **AND** Cyclist operating speeds significantly impeded due to obstructions that require dismounting **OR** Conflict with other modes at intersections	Average crossing delay less than 60s
F	Crossing opportunity is more than 800m* No discernible footpaths **OR** Shuffling movement for pedestrians	Average crossing delay greater than 60s	Shared traffic environment with high volumes **AND** high speeds	Average crossing delay greater than 60s
	A lower LOS should be considered with the following aspects: • Poor actual safety record or perceived safety risks • Poor alignment with the Transport Design Manual (TDM). Layout, widths and design not as per the TDM. • Poor environment in relation to CPTED factors • Poor quality crossing facilities (is it visible and legible to approaching drivers?) • Where cycling on shared paths or footpaths result in poorer outcomes for pedestrians * Distance to crossing opportunities should be halved in activity centres and outside schools		**A lower LOS rating is applicable where the following aspects might apply:** • Poor actual safety record or perceived safety risks • Poor alignment with the Transport Design Manual (TDM). Layout, widths and design not as per the TDM. • Poor route continuity, obvious indirectness of route or inclusion of steep grades • Poor quality of the surface (if uneven or in disrepair) • Poor environment in relation to CPTED factors • High numbers of pedestrians on shared paths • High volumes of traffic on any roundabouts along the route	

LOS	Public Transport		Freight and General Traffic	
	Travel Speed OR Delay	Travel Time Reliability	Travel Speed OR Delay	Travel Time Reliability
A	Average Travel Speed greater than 90% of Posted Speed Limit **OR** No delay	85th percentile journey time/ median journey time ≤ 1.1	Average Travel Speed greater than 90% of Posted Speed Limit **OR** No delay	85th percentile journey time/ median journey time ≤ 1.1
B	Average Travel Speed greater than 70% of Posted Speed Limit **OR** Minimal delay	85th percentile journey time/ median journey time ≤ 1.3	Average Travel Speed greater than 70% of Posted Speed Limit **OR** Minimal delay	85th percentile journey time/ median journey time ≤ 1.3
C	Average Travel Speed greater than 50% of Posted Speed Limit **OR** Some mid-block delay Stop at most intersections and clear next cycle No side friction	85th percentile journey time/ median journey time ≤ 1.5	Average Travel Speed greater than 50% of Posted Speed Limit **OR** Some midblock delay Stop at most intersections and clear next cycle No side friction	85th percentile journey time/ median journey time ≤ 1.5
D	Average Travel Speed greater than 40% of Posted Speed Limit **OR** Some mid-block delay Stop at most intersections and mostly clear next cycle Noticeable side friction	85th percentile journey time/ median journey time ≤ 1.7	Average Travel Speed greater than 40% of Posted Speed Limit **OR** Some midblock delay Stop at most intersections and clear next cycle Noticeable side friction	85th percentile journey time/ median journey time ≤ 1.7
E	Average Travel Speed greater than 30% of Posted Speed Limit **OR** Large mid-block delay Stop at each intersection and take ≥ 2 cycles to go through Significant side friction	85th percentile journey time/ median journey time ≤ 2.0	Average Travel Speed greater than 30% of Posted Speed Limit **OR** Large midblock delay Stop at each intersection and take >_ 2 cycles to go through Significant side friction	85th percentile journey time/ median journey time ≤ 2.0
F	Average Travel Speed less than 30% of Posted Speed Limit **OR** Significant mid-block delay Significant delay at intersection	85th percentile journey time/ median journey time >2.0	Average Travel Speed less than 30% of Posted Speed Limit **OR** Significant midblock delay Significant delay at intersection	85th percentile journey time/ median journey time >2.0
	• Delay can be used when no travel speed information is available **OR** to supplement assessment of travel speed • When assessing an intersection rather than a link, Highway Capacity Manual definitions of LOS for At-Grade Intersections can be used. These are consistent with SIDRA Intersection analysis results outputs. • Side friction: parking, bus stops, side roads, lack of enforcement • Mid-block delay: pedestrian crossings • LOS can also be influenced by Quality of Service and should be considered • Poor alignment with the Transport Design Manual (TDM). Layout, widths and design not as per the TDM		• Delay can be used when no travel speed information is available **OR** to supplement assessment of travel speed • When assessing an intersection rather than a link, Highway Capacity Manual (HCM) definitions of LOS for At-Grade Intersections can be used. These are consistent with SIDRA Intersection analysis results outputs. • The HCM definition for LOS for motorways is based on traffic density rather than speed and this methodology is generally preferred by NZTA and ASM • Side friction: parking, bus stops, side roads, lack of enforcement • Mid-block delay: pedestrian crossings • Poor alignment with the Transport Design Manual (TDM). Layout, widths and design not as per the TDM.	