

**THE AUCKLAND NETWORK  
OPERATING PLAN 21-24  
(ANOP 21-24)**

# Change History and Approval

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## Revision Status

REVISION NUMBER:	IMPLEMENTATION DATE:	SUMMARY OF REVISION
Version 0.9	23/12/2020	First working draft for Auckland network optimisation SSBC development
Version 0.10	24/03/2021	Minor edits adding the term customers and multi-modal to some diagrams.
Version 0.11	20/10/2021	Minor edit adding how the ANOP21-24 provides operational strategy for ATOC tactical response. Remove DRAFT watermark. Direct readers to the Auckland Network Optimisation SSBC for the ANOP 21-24 programme. Include Network Performance paragraph, Clarify Concept of Operations references.

# 1 SETTING THE SCENE

## 1.1 Purpose

The purpose of the Auckland Network Operating Plan (ANOP 21-24) is to document the agreed operational approach to managing and optimising the strategic road network to deliver on the strategic objectives for the Auckland transport system.

In addition to providing the direction to make decisions on network operations, ANOP 21-24 also guides the development of a targeted optimisation programme, developed every three years.

## 1.2 Intended Audience

The primary audience for the ANOP 21-24 are network managers and operations teams within Auckland Transport, Waka Kotahi, Auckland System Management and Auckland Transport Operations Centre (ATOC). The operating principles and Levels of Service (LOS) defined through the ANOP 21-24 are intended to be used for operational decisions to manage and operate the Auckland network, and for the development of the Auckland optimisation programme, to target investment at making the most of the existing network.

Secondary audiences include network planners, spatial and land use planners, system designers and project delivery teams to ensure larger, transformational projects are aligned with the strategic intent and operational decisions. Externally the secondary audience would also include emergency services. ANOP 21-24 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 1.6 million is expected to increase by another million people over the next 30 years, which means an extra 263,000 jobs will be required. 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 Auckland Transport Alignment Project (ATAP) and the Regional Land Transport Plan (RLTP) and more recently through the New Zealand Upgrade Programme aimed at enabling and supporting Auckland's growth, focusing on intensification in brownfield areas and with some managed expansion into emerging greenfield areas;

- providing and accelerating better travel choices for Aucklanders
- better connecting people, places, goods and services
- improving the resilience and sustainability of the transport system, significantly reducing the greenhouse gas emissions the system generates
- making Auckland's transport system safe by eliminating harm to people

Some of these changes can take decades to plan, fund and deliver. In the meantime, congestion and excess car dependency is continuing to impact Auckland's social, economic and environmental wellbeing. ATAP recognises that we require a greater focus on making better use of the existing networks for network users, maximising opportunities to influence travel demand and travel choices, to make the optimal use of the space available.

The ANOP 21-24 is a guiding document for the operation of the Auckland network, providing operational strategy for tactical response, to support day to day network operations to get the most out of the existing network for all modes of transport, based on time of the day. The ANOP 21-24 also includes a programme of small-scale initiatives to close the gaps on some of the key areas of deficiency on Auckland’s strategic modal routes.

The original version was developed collaboratively by Waka Kotahi and Auckland Transport in 2014. ANOP 21-24 refreshes this plan to reflect the update strategic objectives for the Auckland transport system and changes to the strategic modal networks. The Auckland Network optimisation programme for 2021-24 will also form part of ANOP 21-24, once developed.

The ANOP 21-24 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 21-24 is giving effect to. Figure 1 depicts how the ANOP 21-24 gives effect to the agreed strategic intent for Auckland’s transport network.

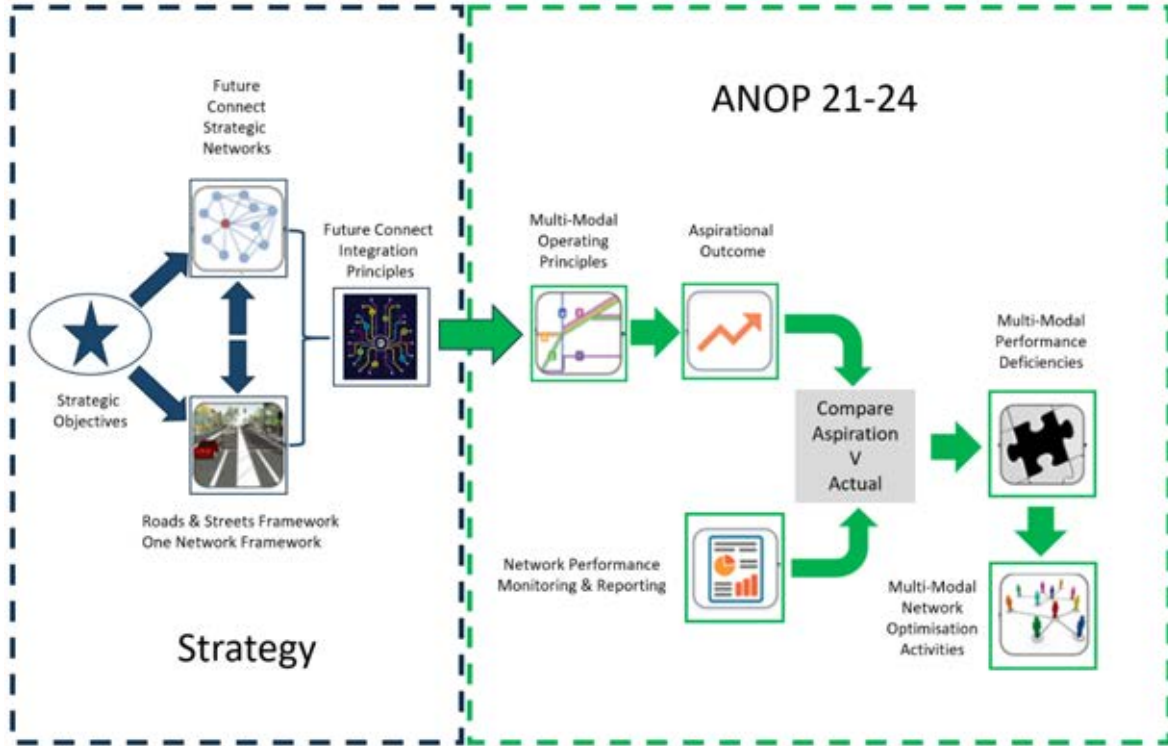


Figure 1. How the ANOP 21-24 aligns with the strategic intent for Auckland’s transport network.

## 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, Maori and environmentally focused. Strategies and plans include;

#### Long Term

- **Auckland Transport Alignment project (ATAP)** - The Government's and Auckland Council's aligned direction and priorities for transport in Auckland over the next 30 years. ATAP also seeks to address the critical transport challenges that Auckland faces in the next ten years.
- **Auckland Plan** - The Plan is a long-term strategy for managing Auckland's growth and development over the next 30 years, which brings together social, economic environmental and cultural objectives.
- **Auckland Transport Vision Zero** - Vision Zero for Auckland is an ambitious new transport safety vision that states that there will be no deaths or serious injuries on our transport system by 2050.
- **Road To Zero** – Road to Zero adopts Vision Zero, and a vision for Aotearoa where no-one is killed or seriously injured in road crashes, and where no death or serious injury while travelling on our roads is acceptable.
- **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

#### 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 Auckland unitary plan will also need to be amended over the next 16 months to give effect to the National Policy Statement on Urban Development (NPS-UD) and its requirement around intensification around rapid transit stops, key centres and other locations that have good public transport, walking or cycling accessibility.
- **The Government Policy Statement on land transport (GPS)** - The Government Policy Statement on land transport (GPS) sets the Government's priorities for land transport investment over the next 10-year period.
- **Arataki** - Waka Kotahi's strategic plan outlining what is required to deliver on the government's current priorities and long-term objectives for the land transport system.
- **Future Connect** - Auckland Transport's blueprint for the future regional integrated transport system, providing strategic guidance for RLTP investment, investigation and delivery
- **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 sets out the region's land transport objectives, policies, and measures. The programme in the RLTP provides for improvements to be made in public transport (including rapid transit) walking and cycling, network initiatives to help to address congestion, and support for greenfield and urban redevelopment. It also provides for a major focus on improving safety on Auckland's road network.

- **Auckland Long Term Plan** - Auckland Councils 10-year budget to achieve the Auckland Plan outcomes.

**Short Term**

- **National Land Transport Programme** - A three-year investment package that ensures transport can be delivered nationally, regionally and on a local level
- **Mode or Theme Specific plans** - Keep Cities Moving (Waka Kotahi Mode Shift Action Plan), Auckland Cycling PBC, Auckland Walking PBC and Auckland’s Freight Plan.
- **ANOP 21-24** - Gives effect to RLTP. Provides priorities for the next 3 years considering the strategic direction set through Future connect and Arataki.

**2.2 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 have developed a new system planning framework called Future Connect. The purpose of Future Connect is ultimately to provide an integrated and strategically aligned transport plan for all major modal networks to enable better assessment, planning, investment, and operation of the network. Future Connect is in effect Auckland’s NOF.

Future Connect provides:

- a vision of an integrated transport system that uses AT’s strategic transport objectives, and key indicators, to guide integrated transport and land use planning, developed in collaboration with partners and stakeholders.
- the strategic networks across modes to guide and streamline planning throughout a typical project lifecycle, including investigation, design, delivery, operations and maintenance.
- an overview of the critical problems and opportunities facing Auckland’s transport system.
- a shared evidence base for investigations, and guidance for several strategies and plans, including RLTP prioritisation.

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 Waka Kotahi.

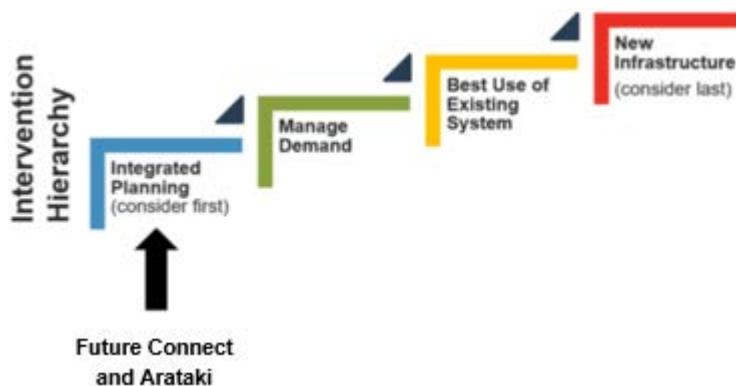


Figure 2. Intervention Hierarchy

Future Connect provides three critical inputs needed for the development of the ANOP 21-24.

1. Strategic Objectives (confirmed through the RLTP).
2. Strategic networks that outline the most important modal priorities for the movement of people, goods and services.
3. Network deficiencies- displayed as deficiency maps which highlight the most significant problems and opportunities on the strategic networks. Future connect focuses on peak hours and provides a broad sieve of performance issues, which is then further refined through the ANOP 21-24 performance deficiencies. This is discussed further in section 3.

The ANOP 21-24 provides guidance on the second two steps in the intervention hierarchy shown in figure 2; 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. These transformational projects would be developed through the business case process and fall outside of the remit of ANOP 21-24.

## 2.3 Strategic Objectives

Auckland Transport has agreed with key partners and stakeholders five main transport objectives for the draft RLTP which align with ATAP 2021 objectives (Figure 3). These objectives guide investments made through the Auckland RLTP including investments in network management, operations and optimisation. These form the underlying basis of the strategic objectives for the ANOP 21-24.



Figure 3. The RLTP transport objectives which provide the base for the strategic objectives for the ANOP 21-24

Key outputs from Future Connect inform and guide RLTP investment prioritisation towards the most critical problems on the Strategic Networks. 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.

## 2.4 Strategic Networks

Future Connect defines the strategic networks for all modes and provides a single integrated network. These represent 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 three further time periods (1st decade, 2nd Decade and 3rd Decade). These strategic networks can be viewed in the Future Connect mapping portal ([FC mapping portal](#)). The current strategic networks in Future connect (Termed Current Connect) are used as part of the ANOP 21-24, these are split into 5 modal networks as shown in Figure 4.

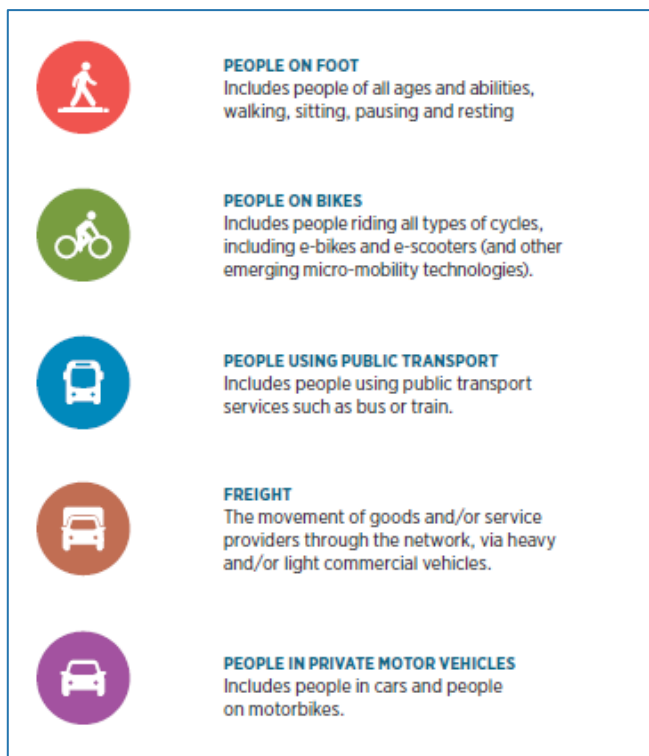


Figure 4: The Future Connect modal networks

The Roads and Street Framework (RASf) provides a movement and place classification system for Auckland, refined for each section of the Auckland network. This considers parking and loading, together with the five modal networks, The RASf, is therefore used to further inform the ANOP 21-24. For large infrastructure projects, RASf assessments are required. For operational decisions and the optimisation programme, the expectation is that teams will predominantly use the ANOP 21-24, rather than the RASf. In some instances, we may need to do a RASf assessment to support operations for example where there are particularly complex modal conflicts.

ANOP 21-24 gives effect to current connect i.e. the current strategic network priorities, supporting work looking towards the long-term strategic intent

The RLTP has defined objectives, and the problem statements identified in Future Connect have been mapped across to these objectives. A set of themes have been derived in Future Connect which are targeted towards these objectives. To deliver on these themes, integration principles have been developed to guide the modal networks. Table 1 shows how the RLTP objectives translate into the Future Connect integration principles. The principles were developed by the SME working group to continually guide the 'system view' and the integration of the five strategic modal networks. These integration principles have been used as the basis for the operating principles in ANOP 21-24. Therefore, integration principles identified in Future Connect and the Operating Principles defined in ANOP21-24 all help to deliver the objectives set out in the RLTP.



RLTP Objectives	Future Connect Themes (note not a one to one relationship to RLTP Objectives)	Future Connect Integration principles
Growth – Enable and support Auckland’s growth through a focus on intensification in brownfield areas and with some managed expansion into emerging greenfield areas	Integrate land use and transport	<p>Enable a compact urban form through land use integration</p> <p>Support land use with complementary networks that would result in effective movement of people, goods and services.</p> <p>Enable convenient and direct public transport and active modes to centres</p>
	Provide access	Provide direct and efficient multi modal access to centres and key destinations
Access and connectivity – Better connect people, places, goods and services  Asset management – Sound management of transport assets	Connect nodes	<p>Provide connection between the common destinations that connect people to people, goods, services and opportunities</p> <p>Support inter-regional connectivity</p>
	Make the best of existing networks	<p>Optimise people throughput to support current and future demand across different periods of the day</p> <p>Prioritise people throughput as the movement function and demand of the corridor increases</p> <p>Support access to public transport by active travel modes</p> <p>Limit on-street parking on arterial roads where it inhibits efficient people throughput or conflicts with the objectives of other strategic transport networks.</p>
Travel Choices – Provide and accelerate better travel choices for Aucklanders	Modal priority	<p>Apply modal priority to links of the network as per the RASF to enable routes to work better for designated modes at certain times of the day</p> <p>When a corridor is part of a modal strategic network, it provides it an inherent modal priority</p>
	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 opportunity for place as well as movement in corridors
	Manage effect on environment	<p>Avoid, remedy or mitigate any adverse effects on the environment</p> <p>Adapt to a changing climate and respond to the microclimatic factors</p> <p>Provide a transport system that support more sustainable modes to enable reductions in emissions</p>
	Mode shift	Provide quality active mode and dedicated public transport routes to enable mode shift away from private car use

RLTP Objectives	Future Connect Themes (note not a one to one relationship to RLTP Objectives)	Future Connect Integration principles
		Prioritise sustainable modes where needed to provide an improved throughput across the network
Climate change and the environment – Improve the resilience and sustainability of the transport system and significantly reduce the GHG emissions it generates	Reliable and resilient	Support journeys that can withstand unexpected events and severe weather conditions  Avoid disruption or minimise it when it occurs by adopting a whole-of-system approach
Safety – Making Auckland’s transport system safe by eliminating harm to people	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.

Table 1 shows the integration principles from Future Connect

## 2.5 Networks deficiencies

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 ANOP uses the Future connect high-level deficiencies (in peak hours) and focus areas as a coarse sieve of performance issues, these are then further refined through the ANOP 21-24 to create more fine-grained performance deficiency information for operations and optimisation.

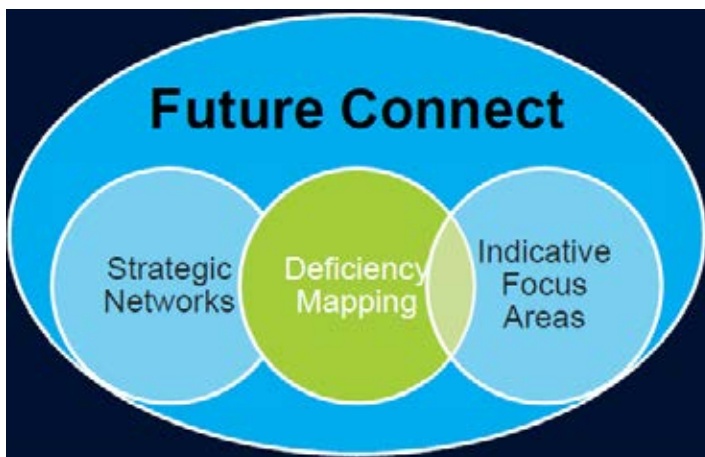


Figure 5. Future connect deficiency mapping

## ANOP 21-24

### 3.1 What is the ANOP 21-24?

Auckland Network Operating Plan (ANOP 21-24) is a jointly owned by Auckland Transport and Waka Kotahi. It is an agreed operational approach to managing and optimising the network to deliver on the strategic objectives for the Auckland transport system.

The ANOP 21-24 contains four key outputs:

1. Network Operating Principles
2. Level of Service descriptors and agreed aspirational levels of service for each mode by time of day,
3. Network Performance & reporting, and
4. An agreed Network Optimisation Programme for the 2021-24 period included in the Auckland Network Optimisation SSBC.

It also 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.

The focus of ANOP 21-24 is short-term (0-3 years).

### 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. The table also shows the connection back to the Future Connect Themes.

Future Connect Themes	ANOP Operating Principles
Integrate land use and transport	<ul style="list-style-type: none"> <li>Utilise the strategic modal network to encourage inter-regional trips to use strategic routes. e.g. preferred traffic route and freight route. (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.)</li> </ul>
Provide access	
Connect nodes	<ul style="list-style-type: none"> <li>Utilise the strategic modal network to manage the access to centres and key destinations by time of day</li> </ul>
Make the best of existing networks	<ul style="list-style-type: none"> <li>People and goods throughput is prioritised over vehicle movement according to the strategic modal network</li> <li>Apply modal priority detailed in Section 2 Strategic networks.</li> <li>Encourage general traffic to use the strategic traffic network during peak periods.</li> <li>Actively manage strategic networks at peak times to achieve agreed modal priorities</li> <li>Actively manage and operate the network in real time at key locations.</li> </ul>
Modal priority	<ul style="list-style-type: none"> <li>Where 'place' has high significance or on a strategic network, people movement and active modes are prioritised, according to time of day.</li> </ul>
Connect Modes	

Future Connect Themes	ANOP Operating Principles
Place function as well as movement	<ul style="list-style-type: none"> <li>Apply the modal strategic networks and level of service to determine the modal priority, by time of day.</li> <li>Support and enable improved PT, walking and cycling movements where these strategic networks interact with the motorway or arterial network.</li> <li>Prioritise access for strategic movements to the motorway and minimise disruption to strategic movements that traverse through the interchange.</li> </ul>
Manage effect on environment	
Mode shift	
Reliable and resilient	<ul style="list-style-type: none"> <li>For major incidents disperse the impact and balance the resulting traffic load across the strategic network.</li> <li>Minimise unplanned disruption using the collective powers of Police, Fire, AT and Waka Kotahi.</li> <li>Proactively plan and actively manage the network to minimise disruption from planned events e.g. new infrastructure, maintenance.</li> <li>Inform customers of incidents or upcoming planned events (e.g. roadworks) and alternative routes, modes and times to use prior to key decision points on the network</li> </ul>
Safe Network	<ul style="list-style-type: none"> <li>Safety is paramount for vulnerable road users especially where 'place' has high significance or where a strategic network is present.</li> <li>Provide safe and appropriate travel speed across the network according to strategic modal network, place significance, and time of day.</li> <li>Manage safety risk where strategic networks intersect e.g. where walking Cycling crosses strategic freight or general traffic</li> <li>Prioritise active network management at high-risk locations (e.g. wind on bridges, queued traffic in tunnels, hazards on the network).</li> </ul>

Table 2 – Auckland’s Network operating principles.

### 3.3 Level of Service (LOS) by mode

As 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 are then further refined through more detailed network performance information using “current connect” and LOS.

In order to provide a common ‘measuring stick’ for user experience ratings have been defined for each mode, these describe the aspirational outcomes for each mode, within the Auckland network. ANOP 21-24 uses six LOS ratings ranging from A, which defines a very good user experience, through to F, depicting a very poor user experience.

LOS include both quantitative and qualitative measures (Figure 6). 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. It is expected that the LOS will be underpinned by good quality data, both quantitative and qualitative. These measures are detailed further in Appendix A. These definitions continue to evolve, particularly for active modes. For the latest version please refer to future connect website. (Note: Any changes to these definitions will follow the same change management process used to amend the strategic networks under Future Connect).






	Mode	Measures
Active modes	 Walking	Physical facility
	 Cycling	Imposed delays
Movement/ throughput focused modes	 Bus / PT	Journey time
	 General traffic	Journey time reliability
	 Freight	

Figure 6 – LOS measures

The aspirational level of service by mode will vary by location, dependent upon on the strategic importance of that location and by time of day. Table 3 outlines the aspirational level of service by mode, strategic importance and 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.

Mode	Strategic network type	LOS AM peak	LOS Off Peak	LOS PM Peak
Walking	Primary	B	B	B
	Secondary	C	C	C
Cycling	Regional	B	B	B
	Primary	B	B	B
Public Transport	Rapid Transit	B	B	B
	Frequent Transit 1	C	C	C
	Frequent Transit 2	D	C	D
General Traffic	Motorway	C	C	C
	Strategic and Primary Arterial *	C	C	C
	Secondary Arterial *	C	D	C
Freight	Level 1A	C	B	C
	Level 1B	C	C	C

Table 3 – LOS Table

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

Fine grain performance deficiencies are found when comparing the existing network performance to the aspirational LOS. The greater the gap in LOS, the greater the operational deficiency for that mode.

We seek to reduce the size of these LOS gaps through improved operations or through the optimisation programme. In many instances, trade-offs across modes will need to be agreed in order to deliver these aspirational outcomes.

One example of this would be changing the signal phasing of an intersection to prioritise the pedestrian movement on a secondary arterial during interpeak in a high activity centre. In order to improve the pedestrian LOS, we may have to agree to a reduction in the LOS for general traffic at this location.

Another example would be the reallocation of road space. For example, introducing a bus lane on a frequent transit 1 network, in place of parking during peak periods, thereby increasing 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.

### **3.4 Network Performance & Reporting**

Having established aspirational or targeted levels of service by mode for the respective strategic networks, measurement of the network as a whole can be undertaken resulting in multi-modal network performance monitoring and reporting. AT produce monthly network performance ‘dashboards’ for each mode with key information incorporated into AT’s Statement of Intent performance outcomes commitment to Auckland Council. This information also forms the basis for network performance measures incorporated in Future Connect.

ATOC and Auckland System Management (ASM) also monitor and report on network performance using metrics that include the core metrics used in the ANOP 21-24, enabling alignment between all teams involved in managing and operating the Auckland network. Work is ongoing to further refine and align network performance reporting for the One Network.

### **3.5 An agreed Network Optimisation Programme for 2021-24**

ANOP 21-24 provides the evidence-based approach to support, enable and help prioritise the optimisation programme, which identifies short term opportunities from current deficiencies

The Auckland Optimisation programme 21-24 is included in the Auckland Network Optimisation SSBC final document.

## **4 HOW TO USE THE PLAN**

### **4.1 The who, the when and the how**

There are several different teams which will be able to utilise the ANOP 21-24 to improve operational decision making and investment decisions. Table 2 provides a summary of the different teams who should use ANOP 21-24, how they should be using it, and how to apply it.

The teams below will be consulted further, however the below captures in broad terms how these teams would use and apply the ANOP 21-24.

#### **Assumptions**

- ANOP 21-24 will be used to support decision making and to communicate the why to stakeholders and customers.
- Informed evidence-based decision making is the key to delivering operational outcomes. We evidence outcomes and apply learnings.
- We openly and transparently share information

Team, organisation.	The purpose and value of ANOP 21-24	How and when to use it.
<p>Network management and operations teams within Auckland Transport, Waka Kotahi, Auckland System Management and Auckland Transport Operations Centre.</p>	<ul style="list-style-type: none"> <li>The principles and target LOS should be used to make decision on how we manage and operate the Auckland Network</li> </ul>	<ul style="list-style-type: none"> <li>To support operational decisions on managing the network day to day and by time of day, addressing upcoming planned events and to inform planned and unplanned events and scenario testing.</li> <li>To act as a yardstick in determining the appropriate course of action and the appropriate infrastructure designs.</li> <li>To guide the development of operational programmes and packages of measures such as LCLR.</li> </ul>
<p>ASM</p>	<ul style="list-style-type: none"> <li>Provides a way of measuring the current performance of the network and the gap between the current performance and aspirational LOS.</li> <li>Provides guidance on what modes to prioritise based on location, and time of day through Section x LOS.</li> <li>The principles and target LOS should be used to make decision on how we manage and operate the Auckland Network</li> </ul>	<ul style="list-style-type: none"> <li>Operational decisions for Auckland Motorways</li> <li>Delivery of projects on the Auckland motorway network</li> <li>Interchange designs and reviews.</li> <li>Ramp signal design and operations.</li> <li>Use to develop Auckland Motorway Operating Strategy (AMOS)</li> <li>Use to develop a One Network Concept of operations CONOPS and communications plan.</li> </ul>
<p>ATOC (Optimisation Delivery, Real-time Operations teams)</p>		<ul style="list-style-type: none"> <li>Development of 3-year annual plan</li> <li>Signal optimisation programmes.</li> <li>Operational decisions regarding planned event management and co-ordination</li> <li>Incident response</li> <li>Resource planning</li> <li>TMP approvals</li> <li>Priority of surveillance at high-risk locations (e.g. wind on bridges, queued traffic in tunnels).</li> </ul>

Team, organisation.	The purpose and value of ANOP 21-24	How and when to use it.
		<ul style="list-style-type: none"> <li>• Interchange designs and reviews.</li> <li>• Ramp signal design and operations.</li> </ul>
Auckland Transport		<ul style="list-style-type: none"> <li>• Network performance measurement</li> <li>• TMP assessments</li> <li>• Resource consents</li> <li>• Network fit assessment</li> <li>• Routine network optimisation</li> <li>• Develop AMP.</li> <li>• LCLR programme</li> </ul>
System Design in Waka Kotahi and Network Management in Auckland Transport		<ul style="list-style-type: none"> <li>• Development of the 3-year optimisation programme. The operating principles and LOS's allow the deficiencies identified through Future connect to be further refined into an optimisation programme, providing the highest value for the money.</li> <li>• Inform business cases, more transformational projects.</li> </ul>
Journey Manager Auckland		<ul style="list-style-type: none"> <li>• LCLR efficiency programme development</li> <li>• Operational advice on planned events</li> </ul>



## 4.2 Giving effect to the ANOP operating principles

Below, are some practical examples of how to apply these operating principles. This list is not exhaustive and will be populated further.

### Safety

- Manage on ramps to provide safe merging onto motorway.
- Active detection and clearance of incidents from strategic network
- During incident management ensure that high volumes of traffic is 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.

### Connect the network

- Ramp signal strategy
- VMS
- Speed management
- Maintain journey time predictability on strategic freight routes to/from the Port and between key industrial and commercial centres.

### 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, walking and cycling networks where these networks cross the motorway and major roads at interchanges. Minimise delay to strategic PT by providing bus priority measures

### 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 Waka Kotahi.
- 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 such as America's cup planning.

## Effective communication of operational decisions making.

- Traveller information for customers
- Make Future Connect, NOP and RASF 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 the area and through
- 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, typically, the ANOP 21-24 would prioritise public transport, and walking/cycling, especially during the interpeak. During peak times, the movement of traffic and freight may be supported if they are on strategic routes.

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, 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.

## 5 IMPLEMENTING THE PLAN AND NEXT STEPS

### 5.1 Next steps

The ANOP 21-24 represents a 3-year operating and optimisation programme

Going forward the ANOP 21-24 will be refreshed every 3 years in line with the RLTP development. This process will be refined and agreed through the development of the Auckland Network Optimisation SSBC and further updates will be provided following the approval of the SSBC.

#### ***Next actions***

- All users of the ANOP 21-24 will be provided with access to Future Connect
- Place has been defined through Future Connect / RASF assessments
- Assess the need for training, guidance and support for users of the ANOP 21-24 such as ATOC and initiate the training, guidance and support as required.
- The Auckland Motorway Operation strategy will give effect to the ANOP 21-24 for Motorway operations.
- Agree change management process for ANOP (this includes applying and embedding the ANOP and the actual process to make changes to the ANOP 21-24).
- Develop Auckland optimisation Single Stage Business Case (SSBC)

## Appendix A

LOS	Pedestrians		Cycle	
	Facility	Crossing Delay	Facility	
A	<p>Crossing opportunity is within 50m* or shared space High quality pedestrian facilities with appropriate separation</p> <p>Friendly speed environment Free flowing for pedestrians No street obstacles</p>	<p>Average travel delay less than 10s</p>	<p>Unobstructed off-road facility for use by cycles only</p> <p>AND</p> <p>Cyclist operating speeds are largely unhindered</p> <p>AND</p> <p>Minimal conflict with other modes at intersections</p>	<p>Average travel delay less than 10s</p>
B	<p>Crossing opportunity is within 100m*</p> <p>Pedestrian facilities provided with appropriate separation Some street obstacles with minor conflicts for pedestrians</p>	<p>Average travel delay less than 20s</p>	<p>Protected cycle path OR shared path OR shared traffic environment with low volume &amp; low speed</p> <p>AND</p> <p>Cyclist operating speeds are largely unhindered</p> <p>AND</p> <p>Some conflict with other modes at intersections</p>	<p>Average travel delay less than 20s</p>
C	<p>Crossing opportunity is within 200m*</p> <p>Pedestrian facilities provided with appropriate separation</p>	<p>Average travel delay less than 30s</p>	<p>Shared path OR on-road cycle lane OR shared traffic environment with medium volume &amp; low speed</p> <p>AND</p>	<p>Average travel delay less than 30s</p>

	Pedestrian speeds restricted		Cyclist operating speeds are somewhat impeded  AND  Some conflict with other modes at intersections	
D	Crossing opportunity is within 400m* Narrow sealed footpath Restricted movement for most pedestrians	Average travel delay less than 45s	Shared path AND cyclist operating speeds are impeded  OR On-road cycle lane AND high traffic volumes  OR Shared traffic environment with medium volumes & low speeds  OR low volume & medium speed (e.g. bus or transit lane)	Average travel delay less than 45s
E	Crossing opportunity is within 800m*  Formed footpath  Footpath significantly restricted by street obstacles  Restricted movement for pedestrians	Average travel delay less than 60s	Shared path AND cyclist operating speeds significantly impeded due to obstructions that require getting off bike  OR Shared traffic environment with high volumes OR high speeds	Average travel delay less than 60s
F	Crossing opportunity is more than 800m*  No discernible footpaths  OR  Shuffling movement for pedestrians	Average travel delay greater than 60s	Shared traffic environment with high volumes AND high speeds	Average travel delay greater than 60s
	<p>A lower LOS should be considered for the following aspects:</p> <ul style="list-style-type: none"> <li>- Poor actual safety record or perceived safety risks</li> <li>- Poor quality of the surface (if uneven or in disrepair)</li> <li>- Poor quality crossing facilities (is it visible and legible to approaching drivers?)</li> <li>- Poor environment in relation to CPTED factors</li> <li>- Widths and design not as per the Transport Design Manual</li> </ul>		<p>A lower LOS rating is applicable where the following aspects might apply:</p> <ul style="list-style-type: none"> <li>- Poor actual safety record or perceived safety risks</li> <li>- Poor route continuity, obvious indirectness of route or inclusion of steep grades</li> <li>- Poor environment in relation to CPTED factors</li> <li>- Poor quality of the surface (if uneven or in disrepair)</li> <li>- High numbers of pedestrians on shared paths</li> </ul>	

\* Distance to crossing opportunities should be halved in activity centres and outside schools

Footpaths should be >1.8m wide or >3.0m within activity areas and on shared paths

- High volumes of traffic on any roundabouts along the route

- Widths and design not as per the Transport Design Manual

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 midblock 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	<p>Average Travel Speed greater than 40% of Posted Speed Limit</p> <p>OR</p> <p>Some midblock delay</p> <p>Stop at most intersections and clear next cycle</p> <p>Noticeable side friction</p>	<p>85th percentile journey time/ median journey time <math>\leq 1.7</math></p>	<p>Average Travel Speed greater than 40% of Posted Speed Limit</p> <p>OR</p> <p>Some midblock delay</p> <p>Stop at most intersections and clear next cycle</p> <p>Noticeable side friction</p>	<p>85th percentile journey time/ median journey time <math>\leq 1.7</math></p>
E	<p>Average Travel Speed greater than 30% of Posted Speed Limit</p> <p>OR</p> <p>Large midblock delay</p> <p>Stop at each intersection and take <math>\geq 2</math> cycles to go through</p> <p>Significant side friction</p>	<p>85th percentile journey time/ median journey time <math>\leq 2.0</math></p>	<p>Average Travel Speed greater than 30% of Posted Speed Limit</p> <p>OR</p> <p>Large midblock delay</p> <p>Stop at each intersection and take <math>\geq 2</math> cycles to go through</p> <p>Significant side friction</p>	<p>85th percentile journey time/ median journey time <math>\leq 2.0</math></p>
F	<p>Average Travel Speed less than 30% of Posted Speed Limit</p> <p>OR</p> <p>Significant midblock delay</p> <p>Significant delay at intersection</p>	<p>85th percentile journey time/ median journey time <math>&gt;2.0</math></p>	<p>Average Travel Speed less than 30% of Posted Speed Limit</p> <p>OR</p> <p>Significant midblock delay</p> <p>Significant delay at intersection</p>	<p>85th percentile journey time/ median journey time <math>&gt;2.0</math></p>
<p>Delay can be used when no travel speed information is available OR to supplement assessment of travel speed</p> <p>Side friction: parking, bus stops, side roads, lack of enforcement</p> <p>Midblock delay: pedestrian crossings</p>			<p>Delay can be used when no travel speed information is available OR to supplement assessment of travel speed</p> <p>Side friction: parking, bus stops, side roads, lack of enforcement</p> <p>Midblock delay: pedestrian crossings</p>	

