Global Benchmarking Webinar Series:
Improving Pedestrian Safety on Urban Arterials (Part 2)

The Movement and Place Framework

Jonah Chiarenza  USDOT Volpe National Transportation Systems Center
Wayne Sharplin  Waka Kotahi NZ Transport Agency (NZTA)
Andrew McGill  Auckland Transportation
Housekeeping

- Submit your questions
- Webinar archive: www.pedbikeinfo.org/webinars
- Certificates and professional development hours
- Follow-up email later today
- Review previous episodes and sign up for upcoming sessions
Improving Pedestrian Safety on Urban Arterials

Part 1  Sept 5, 2023
Introduction and Overview of Study Findings

Part 2  Oct 2, 2023
The Movement and Place Framework

Part 3  Oct 23, 2023
Safe System Approach to Road Safety Audits

Part 4  Nov 7, 2023
Speed Management Policies and Practices
Improving Pedestrian Safety on Urban Arterials: Learning from Australasia

U.S. DOT Federal Highway Administration
Office of International Programs
October 2023
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Special Guests... from tomorrow morning!

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in coordination with:

Te Kāwanatanga o Aotearoa
New Zealand Government
Global Benchmarking Program:
Reducing Pedestrian Fatalities and Serious Injuries on Urban Signalized Arterials

U.S. Department of Transportation
Federal Highway Administration
Office of International Programs
FHWA PL-22-429
September 2022

Improving Pedestrian Safety on Urban Arterials:
Learning from Australasia
FINAL REPORT
June, 2023

FHWA Global Benchmarking Program
RFP No. 110216-PL-22-002
Pedestrian Fatality Trends 2010 – 2021

Data Source: ITF and FARS

Fatality Rate per 100,000 Population

Percent of 2010 Pedestrian Fatality Count

USA
Australia
New Zealand

71% increase since 2010
The Problem with Stroads

52% of all fatal crashes

60% of fatal pedestrian crashes

occurred on principal & minor arterials in 2021

Source: FHWA
How do we know where to build what?

Source: Transport for New South Wales
From the Report...

Movement and Place helps practitioners take an objective and proactive approach to the ongoing evolution of the transportation network.

Planning with the Movement and Place framework establishes a defensible logic for each project and project management team that subsequently sets out to transform the network, one segment or corridor at a time, as contributing to the implementation of a larger strategic plan at a network-scale.
Core Principles of Movement & Place

1. Establish a common basis for decision making
2. Consider the role and capabilities of different modes
3. Coordinate the transformation of land use and transportation

“The complex requirements of building a safe and connected multimodal network can only be met at the network scale, linking land use and transportation decision making to achieve broad equity, climate, public health, and economic opportunity goals.”

— FHWA Global Benchmarking Report
Movement & Place as Change Agent

- Consider the role roads and streets play as Places (destinations in their own right) as well as movement corridors.
- Consider the current performance and future view of the corridor.
- Classify modal networks for multi-modal network planning, including 'off-road' routes.
- Shift the emphasis to the overall movement of people and goods, rather than vehicles.

Source: Waka Kotahi NZTA
PBIC Webinar #1 Q&A:

“Jonah, a Link and Place framework was published in 2007. It was used in ITE-CNU guides, Toronto, and others. What explains the rest of the USA not using it?” – Michael King
This guide introduces a new paradigm for planning and designing urban streets, based on the dual principles of link and place street functions.

As a link, a street is designed for users to pass through it as quickly as possible... to minimize travel time.

As a place, the street is a destination... where people are encouraged to spend time.

The guide presents an integrated approach to street planning, creating a street plan that defines the intended role of each street with the characteristics of the whole street network, to guide the design of individual streets, in accordance with their role in the street plan.

The greatest design challenges lie on the traditional high streets, which combine a high link status with a high place status.

Source: Jones, P. et. al, 2007
Context Sensitive Design

Sources: ITE-CNU (EPA | FHWA); Duany Plater-Zyberk and Company; FDOT; Kittelson & Associates
Florida DOT Context Classification

- The context classification of a roadway informs decisions made during FDOT’s various project development phases, so that state roadways are planned, designed, constructed, and maintained to support safe and comfortable travel for their anticipated users.

- It is important that the users and their respective needs are understood early in the life of a project:
  - During the planning phase and prior to the development of the design scope of services, for resurfacing, restoration and rehabilitation (RRR), traffic operations, safety, and other projects.

- Context classification is required to identify the appropriate design criteria in the FDOT Design Manual.
  - The context classification and users inform key design elements, such as the design speeds, lane widths, and types of pedestrian, bicycle, transit, and freight facilities to be included in the design concept.

Sources: FDOT; Kittelson & Associates
All streets are safe and walkable

Desirable places where different modal networks overlap

A web of streets and modes to maximize connectivity

Varied array of street types, modal emphases, and roles
Understanding Movement and Place

Source: Austroads | Transport for New South Wales
Movement Characteristics

Source: Austroads | Transport for New South Wales
Place Characteristics

Activities
Economics

Physical Form
Environment
Social/Cultural and Meaning

Source: Austroads | Transport for New South Wales
How Movement & Place can work for U.S.

Policy
What outcomes do we want to achieve?

Planning
How should our system grow and change?

Programming
What changes should we make to the overall network?

Design & Engineering
What changes should we make to individual segments?

Operations & Evaluation
How are we performing compared to our goals?

Measurable Goals
LRTP / MTP
STIP / TIP
Design Standards
Performance Management

Movement & Place
Linking land use and transportation through context classification

23 USC § 134
23 USC § 135
23 CFR § 450
NSW Movement and Place Framework

Source: Transport for New South Wales
Modal Prioritization at Network Scale

One system integrated
Public Transport
General Traffic
Freight
Cycle & Micromobility
Walking
Land use/Place

Source: Auckland Transport
### Moving Vehicles...

#### Hourly capacity of a car-oriented street

<table>
<thead>
<tr>
<th>Pedestrians</th>
<th>Cars</th>
<th>Total Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>4500</td>
<td>1100</td>
<td>2 = 9000 people</td>
</tr>
<tr>
<td>0</td>
<td></td>
<td>2 = 0 people</td>
</tr>
</tbody>
</table>

**Total people capacity per hour**: 12,300

*Source: Transport for New South Wales*
...or Moving Goods and People

<table>
<thead>
<tr>
<th>Mode</th>
<th>Capacity per hour</th>
<th>Total Capacity per hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedestrians</td>
<td>8000</td>
<td>16,000</td>
</tr>
<tr>
<td>Cars</td>
<td>1100</td>
<td>1100</td>
</tr>
<tr>
<td>Bicycles</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Buses</td>
<td>6000</td>
<td>6000</td>
</tr>
</tbody>
</table>

Total people capacity per hour **24,100**

Source: Transport for New South Wales
Linking Classification to Design Standards

<table>
<thead>
<tr>
<th>Main streets</th>
<th>Transit way</th>
<th>Transit boulevard</th>
<th>Transit street</th>
<th>Arterial high street</th>
<th>High-activity mall</th>
<th>Connector avenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>General</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Place contexts</td>
<td>Urban and Suburban</td>
<td>Urban Centre, Urban and Suburban</td>
<td>Urban Centre, Urban and Suburban</td>
<td>Urban Centre, Urban and Suburban</td>
<td>Urban Centre, Urban and Suburban</td>
<td>Urban Centre, Urban and Suburban</td>
</tr>
<tr>
<td>Land uses</td>
<td>Various urban land uses</td>
<td>Mixed uses</td>
<td>Medium to high density mixed uses</td>
<td>Mixed uses</td>
<td>Medium to high density mixed uses</td>
<td>Mixed uses</td>
</tr>
<tr>
<td>Built form frontages</td>
<td>Set back secondary frontages</td>
<td>Active retail frontages or other frontages set back</td>
<td>Active retail frontages or other frontages set back</td>
<td>Active retail frontages</td>
<td>Active retail frontages</td>
<td>Active retail frontages or other frontages set back</td>
</tr>
<tr>
<td>Access to properties</td>
<td>Option for direct pedestrian access to frontages, primary direct access to properties from adjacent streets</td>
<td>Direct pedestrian access to frontages with vehicle access to rear of properties</td>
<td>Direct pedestrian access to frontages with vehicle access to rear of properties</td>
<td>Direct pedestrian access to frontages with vehicle access to rear of properties</td>
<td>Direct pedestrian access to frontages with vehicle access to rear of properties</td>
<td>Direct pedestrian access to frontages with vehicle access to rear of properties</td>
</tr>
<tr>
<td>Paved speed (km/h)</td>
<td>60-90</td>
<td>60-70</td>
<td>30-60</td>
<td>40-50</td>
<td>30-50</td>
<td>40-60</td>
</tr>
<tr>
<td>Design speed (km/h)</td>
<td>60-100</td>
<td>60-80</td>
<td>30-60</td>
<td>40-50</td>
<td>30-50</td>
<td>40-60</td>
</tr>
<tr>
<td>Active transport</td>
<td>Separated</td>
<td>Separated</td>
<td>Separated</td>
<td>Separated</td>
<td>Separated</td>
<td>Separated</td>
</tr>
<tr>
<td>Environment</td>
<td>Tree canopy cover target(s)</td>
<td>Apply local council tree canopy targets</td>
<td>Apply local council tree canopy targets</td>
<td>Apply local council tree canopy targets</td>
<td>Apply local council tree canopy targets</td>
<td>Apply local council tree canopy targets</td>
</tr>
<tr>
<td>Intersections</td>
<td>Intersection type</td>
<td>At grade or separated</td>
<td>At grade</td>
<td>At grade</td>
<td>At grade</td>
<td>At grade</td>
</tr>
<tr>
<td>Kerbs extensions at intersections</td>
<td>Where appropriate</td>
<td>Where appropriate</td>
<td>Required</td>
<td>Required</td>
<td>Required</td>
<td>Required</td>
</tr>
<tr>
<td>Continuous footpaths/shoulder path on low volume-side streets?</td>
<td>Use with caution</td>
<td>Use with caution</td>
<td>Use with caution</td>
<td>Required</td>
<td>Required</td>
<td>Required</td>
</tr>
<tr>
<td>Vehicles</td>
<td>Buses</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Where appropriate</td>
</tr>
<tr>
<td>Can check vehicle except at intersections?</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Parallel car parking lane</td>
<td>n/a</td>
<td>Permitted</td>
<td>Use with caution</td>
<td>Use with caution</td>
<td>n/a</td>
<td>Permitted</td>
</tr>
<tr>
<td>Sight distance</td>
<td>Greater than 50m</td>
<td>Greater than 50m</td>
<td>-</td>
<td>45</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Source: Transport for New South Wales
Matching Speed to Context

Street types
- Default speed limits
  - Built-up areas
  - Shared zones
  - Local traffic areas and school zones
  - Other notable speed limits

Road types
- All other roads
- Motorways

Design speed matches posted speed
- Design speed matches context
- Design speed is 10km/h higher than posted speed

Source: Transport for New South Wales
Each corridor may do many different jobs

“Understanding how corridors change along their length in response to context is fundamental to the practice of street design.”

Source: Auckland Transport
3 Lanes + parking @ 60km/h
3 lanes + parking @ 60km/h
3 lanes – no parking – 25km/h speed table

Source: Google Streetview
3 lanes – 2 must divert left
1 lane – edge island neck down @ 40km/h
1 lane – signs, lines, and limits

Source: FHWA, Google Streetview
Continued traffic diversion with L/R turn lanes
Repeated edge island treatments
(looking in reverse)
Arrival at Church Street Light Rail Corridor

Source: FHWA
Church Street Light Rail Corridor

Source: FHWA
Public Engagement
Public Engagement

YOUR DRIVE ON QUEEN ST IS CHANGING

We’re transforming Queen Street into a more people friendly place that’s beautiful, functional and safe, with less cars, wider footpaths, and planters filled with native plants. It’s all thanks to the Wai Horotiu Queen Street Project.

Essential Vehicle Area

To create a free congested and more inviting city centre we are creating an Essential Vehicle Area (EVA) on Queen Street between Wakefield and Wellesley Streets, to stop general traffic using Queen Street as a through-route.

What this means for you

From 1 July 2021, only buses, bikes, mopeds, motocycles, emergency service and delivery vehicles will be able to access the area. The EVA will be monitored 24 hours a day, 7 days a week, and vehicles driving through it unless you’re using one of the approved vehicles.

Take a bus or bike it, or if you’re driving, use the new car lane, pick up and drop off areas on Queen Street, near the Town Hall and the Civic Precinct. Mobility parking is also available (see the map on the back).

We’re on our way to creating a safer Wai Horotiu Queen Street Valley for everyone and we’d love you to be part of it.

Find out more about the changes at www.at.govt.nz/betterwaydriving

AUCKLAND’S FUTURE IS IN PROGRESS
Public Engagement

HELLO, I'M NEW.

Your new shared space is coming together here.

Access station via Tyler Street.

Viaduct cycleway upgrade

From July to November we're working in stages to upgrade the cycleway and enhance the street.

Follow the detour signs for safe cycling around the harbour edge.

For more information visit www.aucklandnz.govt.nz and check out the Q Street Project.

Access Te Komititanga and Commercial Bay via Customs Street West or Tyler Street.

Auckland's future in progress

Follow the detour signs for safe cycling around the harbour edge.
Public Engagement

I’m a Parklet
This Parklet is brought to you by Transport for NSW, all seating is open to the public. Please enjoy this space. Children love exploring, best to keep an eye on them at all times.

- Share a photo with #parramattalighttrail
- Leave the plants for others to enjoy
- Respect the space put rubbish in bins
- No Smoking

NSW

U.S. Department of Transportation
Federal Highway Administration
Office of International Programs
Presentation for US Global Benchmarking practice webinar

Auckland’s transport planning lifecycle
Our strategic transport planning framework at a high level

Unique situation in NZ – single transport entity responsible for almost all aspects of transport
Our strategic transport planning framework at a high level

Unique situation in NZ – single transport entity responsible for almost all aspects of transport
In a simplified version....

1. Future Connect
2. Roads and Streets Framework
3. Transport Design Manual
4. Network Operating Plan
1 Future Connect
First, Future Connect

The Network Plan

Our big picture view of the region’s transport system:

• Our strategic networks for each mode of transport (both now and in 10-years’ time)
• Analysis of the networks to identify issues and opportunities
• Recommended Focus Areas for investigation and investment over the coming decade
• (and a lot of supporting contextual data)

In short – tells us what is important on each road and what we need to do about it!

AT.govt.nz/FutureConnect
Our Strategic Networks

The most important routes for the movement of people and goods

- cycling
- walking
- PT
- general traffic
- freight
Bringing them together
# The system analysis

**High level summary of data considered for each mode and problem**

<table>
<thead>
<tr>
<th>Public Transport</th>
<th>Walking</th>
<th>Cycling</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Deficiencies</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| • AM and PM Speed Level of Service  
• AM and PM Reliability Level of Service  
• Patronage/Capacity Ratio changes (forecast) | Deficiencies  
• Footpath width compared to TDM Standard  
• Distance between priority crossings on busy roads | Deficiencies  
• Unsafe or no facilities |
| **Opportunity**   |         |         |
| • Routes identified for service improvements in the RPTP | Opportunity  
• Footpaths inside intervention areas identified in the Walking Programme Business Case | Opportunity  
• Routes without facilities in the catchment of centres, schools, RTN Stations  
• Routes without facilities connecting to built/committed facilities |

<table>
<thead>
<tr>
<th>General Traffic</th>
<th>Freight</th>
<th>Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Deficiencies</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| • AM and PM Speed and Productivity Level of Service  
• AM and PM Reliability Level of Service  
• AM and PM volume/Capacity Ratio changes (forecast) | Deficiencies  
• AM and Interpeak Speed Level of Service  
• AM Volume/Capacity Ratio Changes (forecast) | Deficiencies  
• Untreated Stormwater Runoff  
• Coastal Erosion and flooding risk |
| **Opportunity**  |         |             |
| • Routes with significant forecast freight volumes | Opportunity  
• Routes with significant forecast freight volumes | Opportunity  
• High place value areas with high heat vulnerability and few street trees. |

- **Deficiencies**: where our customers or the environment experience outcomes that fall short of AT’s strategic objectives, either now or in the future.
- **Opportunities**: where proactive improvement initiatives would likely achieve the highest impacts on customer experience, environment, or other strategic outcomes.
A new element – transport equity
We are focusing on outcomes that are influenced by where people are living

**Local Access**
I can't easily get to my essential places in my neighbourhood

**Regional Access**
I can’t access people and jobs across the region using various modes.

**System Disbenefits**
The movement of others negatively impacts my community.

**Vulnerable Populations**
Areas of high social deprivation

**Equity Priority Areas**
Where multiple overlap: vulnerable populations experience poor outcomes across more than one domain.
Future Connect Focus Areas

Bringing it all together, and informing our investment

- Deficient Movement Patterns
  - Key regional commuting flows reliant on congested motorways with little alternative options.

- Multimodal Streets with Space and Safety Constraints
  - Local Roads with significant land use interactions that are relied upon for many modes.

- Major Destinations with complex transport interconnections
  - Key hubs around the city where people work and study, and key transport networks interchange

- Transport Deprivation Priority Areas
  - Areas experiencing poor outcomes across two or three equity domains
2 Roads and Streets Framework
RASF – the movement and Place framework for Auckland

Where we set our Movement level, Place level and relative modal priorities for each road
RASF – the movement and Place framework for Auckland

Where we set our Movement level, Place level and relative modal priorities for each road

Place is about:

- To what extent is this road/street (and its adjacent land use) a destination? i.e. how many people, and by how much of the region, travel here?
- For automated assessment we use land use zoning as a proxy. So high level places are hospitals, stadiums, ports, train stations etc.
- Lower-level places are houses / suburbia.

We assess the Place value as it is now, and then look ahead 10 years to see if it changes... so if a new hospital is being built there then the Place value will increase.

<table>
<thead>
<tr>
<th>INFORMATION GATHERING</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Place</td>
<td>Movement</td>
</tr>
<tr>
<td>Land use zoning</td>
<td>Road Hierarchy</td>
</tr>
<tr>
<td>Centre hierarchy</td>
<td>PT Network</td>
</tr>
<tr>
<td>Area Plans</td>
<td>Cycle Network</td>
</tr>
<tr>
<td>Structure Plans</td>
<td>Freight Network</td>
</tr>
<tr>
<td>Trip generators</td>
<td>Traffic Counts</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TYPOLOGY ASSESSMENT FOR EXISTING AND FUTURE</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing</td>
<td>Future</td>
</tr>
<tr>
<td>What is the catchment?</td>
<td>What is the level of strategic importance?</td>
</tr>
<tr>
<td>P1</td>
<td>P2</td>
</tr>
<tr>
<td>P1</td>
<td>P2</td>
</tr>
</tbody>
</table>

P1 – places only small number of local people go to

P2 – places a moderate number of people/goods travel do, from a sub-regional level

P3 – places large numbers of people/goods travel to, from all over the region
RASF – the movement and Place framework for Auckland

Where we set our Movement level, Place level and relative modal priorities for each road

Movement is about:

• To what extent is this road/street important for the movement of people / goods? i.e. is it an important link in the network for any mode?

• We use the Future Connect strategic networks for this – with the hierarchy guiding the level.

• If it is a high level in the hierarchy for even one mode, then it is high overall. A pedestrian mall in the centre of the City is high movement, a highway is high movement, a busway is high movement.

We assess the Movement value as it is now, and then look ahead 10 years to see if it changes… if there are changes to the strategic networks in that time then it will change the Movement value.

M1 – only local travel, nothing strategic

M2 – some lower level strategic travel occurring, including by multiple modes

M3 – corridors where important regional movement is occurring, across any mode
RASF – the movement and Place framework for Auckland

Where we set our Movement level, Place level and relative modal priorities for each road

Then you bring it together and determine a Movement AND Place value (current and future)
RASF – the movement and Place framework for Auckland

Where we set our Movement level, Place level and relative modal priorities for each road
RASF – the movement and Place framework for Auckland

Where we set our Movement level, Place level and relative modal priorities for each road
RASF – the movement and Place framework for Auckland

Where we set our Movement level, Place level and relative modal priorities for each road

Modal example...

<table>
<thead>
<tr>
<th>Theme</th>
<th>Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facility type</td>
<td>Are there facilities? Are they on both sides of the road; or at least where the land-use requires it? Is the path direct?</td>
</tr>
<tr>
<td>Crossings and conflict points</td>
<td>Are there enough crossings along and across the road and at key locations (bus stops and major destinations)? If so, are they suitable (consider priority, distance, speed of road)? Do intersections provide pedestrian crossings at each leg?</td>
</tr>
<tr>
<td>Dimensions</td>
<td>At least 1.8 metres wide, or 2.4 metres near major trip generators?</td>
</tr>
<tr>
<td>Degree of separation</td>
<td>Is there horizontal/vertical separation from moving traffic on high speed roads, and pedestrians at key pedestrian destinations?</td>
</tr>
<tr>
<td>Continuity</td>
<td>Is there a continuous and direct footpath? Are there obstacles on the path, such as utility boxes/poles?</td>
</tr>
<tr>
<td>Accessibility</td>
<td>Are there tactile pavers, or crossfalls/driveways/other obstacles that would be hazardous for people with a accessibility needs?</td>
</tr>
<tr>
<td>Safety (non-traffic)</td>
<td>Is there the footpath sufficiently lit, is there passive and active surveillance, so people feel safe?</td>
</tr>
</tbody>
</table>
RASF – the movement and Place framework for Auckland

Where we set our Movement level, Place level and relative modal priorities for each road

**ROADS AND STREETS FRAMEWORK ASSESSMENT**

| Lead Working Group members: | INP | ADO | D&S |
| Steering Group members: | INP | ADO | D&S |

**Typology Assessment**

<table>
<thead>
<tr>
<th>Road/Street section</th>
<th>Place Assessment</th>
<th>Movement Assessment</th>
<th>Existing Typology</th>
</tr>
</thead>
</table>

**Future Typology Assessment**

<table>
<thead>
<tr>
<th>Assumptions</th>
<th>Place Assessment</th>
<th>Movement Assessment</th>
<th>Future Typology</th>
</tr>
</thead>
</table>

**MODAL PRIORITY ASSESSMENT**

<table>
<thead>
<tr>
<th>Observed Modal Priority</th>
<th>Optimal Modal Priority</th>
<th>Future Modal Priority</th>
</tr>
</thead>
</table>

**APPLICATION OF RASF AND TDM**

For design development, business case or network operational planning
RASF – the movement and Place framework for Auckland

Where we set our Movement level, Place level and relative modal priorities for each road
3 Network Operating Plan
Turning strategy into reality

Our central approach to translating guidance provided by Future Connect and Roads and Streets Framework into on-the-network changes in the short term

Across five areas:

- Operations performance monitoring
- Network operation
- Network optimisation
- Network fit assessments
- Temporary traffic management assessment
Turning strategy into reality

Our central approach to translating guidance provided by Future Connect and Roads and Streets Framework into on-the-network changes in the short term

Across five areas:

- Operations
- Performance
- Monitoring
Turning strategy into reality

Our central approach to translating guidance provided by Future Connect and Roads and Streets Framework into on-the-network changes in the short term

Across five areas:

Network operation
Turning strategy into reality

Our central approach to translating guidance provided by Future Connect and Roads and Streets Framework into on-the-network changes in the short term

Across five areas:

Principles

- Promote walking in high pedestrian areas
- Promote cycle links to activity centres and designated routes
- Promote high priority on designated bus routes
- Promote the designated freight network
- Promote preferred traffic routes
- Specify requirements by time of day
- Promotes safe outcomes
- Support ‘places’ and activity centres

Network optimisation
Turning strategy into reality

Our central approach to translating guidance provided by Future Connect and Roads and Streets Framework into on-the-network changes in the short term

Across five areas:

Network optimisation

<table>
<thead>
<tr>
<th>USER / MODE</th>
<th>ASPIRATIONAL USER EXPERIENCE OR LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedestrians</td>
<td>B/C At high pedestrian demand locations and times</td>
</tr>
<tr>
<td></td>
<td>C/D At all other locations</td>
</tr>
<tr>
<td>Cycling</td>
<td>B Within activity areas with cycle network connections</td>
</tr>
<tr>
<td></td>
<td>B/C On the strategic cycle network</td>
</tr>
<tr>
<td>Public Transport</td>
<td>B On dedicated bus ways</td>
</tr>
<tr>
<td></td>
<td>B/C On frequent service network routes</td>
</tr>
<tr>
<td></td>
<td>C/D On remaining bus network</td>
</tr>
<tr>
<td>General traffic</td>
<td>C/D On the strategic general traffic network during the commuting peaks</td>
</tr>
<tr>
<td>Freight</td>
<td>C/D On key freight networks during the commuting peaks</td>
</tr>
<tr>
<td></td>
<td>B On key freight networks during the interpeak</td>
</tr>
</tbody>
</table>
Turning strategy into reality

Our central approach to translating guidance provided by Future Connect and Roads and Streets Framework into on-the-network changes in the short term

Across five areas:

<table>
<thead>
<tr>
<th>LOS</th>
<th>Public Transport</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Travel Speed OR Delay</td>
</tr>
<tr>
<td>A</td>
<td>Average Travel Speed greater than 90% of Posted Speed Limit OR No delay</td>
</tr>
<tr>
<td>B</td>
<td>Average Travel Speed greater than 70% of Posted Speed Limit OR Minimal delay</td>
</tr>
<tr>
<td>C</td>
<td>Average Travel Speed greater than 50% of Posted Speed Limit OR Some midblock delay Stop at most intersections and clear next cycle OR No side friction</td>
</tr>
<tr>
<td>D</td>
<td>Average Travel Speed greater than 40% of Posted Speed Limit OR Some midblock delay Stop at most intersections and clear next cycle OR Noticeable side friction</td>
</tr>
<tr>
<td>E</td>
<td>Average Travel Speed greater than 30% of Posted Speed Limit OR Large midblock delay Stop at each intersection and take up to 12 cycles to go through OR Significant side friction</td>
</tr>
<tr>
<td>F</td>
<td>Average Travel Speed less than 30% of Posted Speed Limit OR Significant midblock delay Significant delay at intersection</td>
</tr>
</tbody>
</table>

Delay can be used when no travel speed information is available OR to supplement assessment of travel speed.

Side friction: parking, bus stops, side roads, lack of enforcement
Midblock delay: pedestrian crossings

LOS can also be influenced by Quality of Service and should be considered.

Network optimisation
Turning strategy into reality

Our central approach to translating guidance provided by Future Connect and Roads and Streets Framework into on-the-network changes in the short term

Across five areas:
Turning strategy into reality

Our central approach to translating guidance provided by Future Connect and Roads and Streets Framework into on-the-network changes in the short term

Across five areas:

Network fit assessments

ANOP assessment tool
Our design guide – where we outline our expectations for transport system design

Principles-based, instructs how to design roads and streets to meet strategic modal priorities as outlined in earlier documents

System design: Movement through places

System design requires the designer to understand the components of a system and how they interact to result in all-encompassing safe and efficient movement. Conventionally, design has focused on places and the constraints of vehicles operating within them. This does not lead designers to consider the whole human system, which is what this guide seeks to address.

The designer should think of the choices people can make – how they will see a place, where and when they walk and travel and how long their journey will be. This should determine what constraints to set on how various vehicles may be directed within the place, and how the place should be laid out to provide for people’s actions.

People, looking, deciding & acting

Looking at vehicle and people actions depends on what they want to do, where they want to go. Design must consider the full range of people and behavior that can be expected.

Vehicles to carry out their actions

Vehicles are chosen by people – to get from A to B, to work, school, and so on. We include bikes, scooters, wheelchairs.

Places that they act within

Places provide opportunities and constraints for what people may do, and how their chosen vehicle may operate.

Guiding principles

DESIGN FOR PEOPLE
People are the basic design unit for cities and livable streets. Designing for people requires the understanding of how fast people move, how far they can walk, and how they act in different environments. In addition to transport considerations, designing for people takes into consideration the spatial scale, activities, and interesting things that make places safe, attractive, and lively.

DESIGN FOR SAFETY
The safety of all street users, especially the most vulnerable users (children, the elderly, and disabled) and modes (pedestrians and cyclists) should be paramount in any street design. The safety of streets can be dramatically improved through appropriate geometric design, facility design, and transport operations. Safe System Assessment Frameworks must be used in design.

DESIGN FOR CONTEXT
For several decades, streets have been defined by their functional classification, which resulted primarily to car flow. Today, streets are expected to reflect and support adjacent land use. Well-designed streets promote appropriate speeds, modes and footpath activities. This context-sensitive approach considers and enhances the existing built, natural, and heritage elements, seeking to renew and celebrate a place’s identity.

Aucklanders suffer from a deficit of physical activity, which plays a part in growing levels of chronic disease and obesity. Street designs can help people make healthy decisions by supporting walking, cycling, and public transport. Street and neighborhood design play a role in how people move around safely. In their exercise and activity levels, and personal well-being.

STREETS AS ECO SYSTEMS
Street designs, including street trees and other green infrastructure, can improve water quality and improve water health. Green infrastructure creates and reduces water storage, which extends the life of the aging sewer system and makes it operate more efficiently. Green infrastructure brings nature into the city, which can improve both mental and physical health, increase amenity, improve air quality, conserve energy, and enhance habitat. In urban areas that are increasingly intensified.
Thank you

AT.govt.nz/FutureConnect

andrew.mcgill@at.govt.nz
One Network Framework

www.nzta.govt.nz/onf
How we’ve been doing it

The One Network Road Classification (ONRC) was based on the volume of vehicles on the network.
Timeframes

STAGE 2: DETAILED DESIGN
Sep ‘20-Feb ‘21

ROLLOUT GUIDANCE
Apr 2021

RE-CLASSIFICATION
Apr-Jun 2021

STAGE 3: IMPLEMENT
Jun 2021 onwards
How the ONF changes things

A shift in focus to people, place and movement

Putting people, place and movement at the heart of planning and investment

- Considers role roads and streets play as places (destinations in their own right) as well as movement corridors.
- Considers the current and future network function.
- Classifies modal networks for multi-modal network planning, including off-road routes.
- Shifts the emphasis to the movement of people and goods, rather than vehicles.
Integration of movement and place

The ONF Street Classifications
The extent to which the land use along the side of a road or street is a destination that people want to visit or spend time in.

Relate to the on-street activity generated by adjacent land-use and its need for access.

Be informed by adjacent land-use, and the density of activity occurring off-street.
Megamaps

Urban
- Commercial Big Box/Industrial
- Commercial Strip Shopping
- Urban Residential
- Controlled Access
- Rural Town

Rural
- No Access
- Rural Residential
- Remote Rural
- Urban Fringe
Defining Movement

The movement of people and goods along road and streets by any mode

- AADT
- ONRC classifications

Could also use:

- Pedestrian counts
- Cycling counts
- Freight vehicle weights
- Public Transport schedules
Functions change along a corridor before after
ONF on a Map

Used at network level

Demonstrates changes in functions traveling along a corridor

Detailed street information
Using ONF to determine Levels of Service – DRAFT

<table>
<thead>
<tr>
<th>ONF Category</th>
<th>Mode</th>
<th>What’s important for people that use this ONF category?</th>
<th>What is the desired Level of Service?</th>
<th>Whats the action from an activity/lever perspective? (examples)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Local Street</strong></td>
<td>Walking</td>
<td>Footpaths are safe for all users</td>
<td>Safe space for pedestrians, streetlighting provides security</td>
<td>Place making initiatives</td>
</tr>
<tr>
<td></td>
<td>Cycling</td>
<td>Footpaths and carriageways are safe for cyclists</td>
<td>Safe space for cyclists, streetlighting provides security</td>
<td>Cycling infrastructure</td>
</tr>
<tr>
<td></td>
<td>Public Transport</td>
<td>Local access is available only</td>
<td>Maintain localised PT services</td>
<td>Only prioritise local access and coverage, or</td>
</tr>
<tr>
<td></td>
<td>Freight</td>
<td>Access for courier light vehicles.</td>
<td>Heavy vehicles discouraged</td>
<td></td>
</tr>
<tr>
<td></td>
<td>General Traffic</td>
<td>Local use only</td>
<td>Accessibility is important, efficiency is not</td>
<td>Traffic calming initiative</td>
</tr>
<tr>
<td><strong>Transit Corridor</strong></td>
<td>Public Transport</td>
<td>PT services are frequent and reliable</td>
<td>PT given priority on rapid transit routes</td>
<td>Bus lane is required</td>
</tr>
<tr>
<td></td>
<td>Freight</td>
<td>Efficient movement of Freight</td>
<td>High volume, higher speed reliable travel</td>
<td>Freight</td>
</tr>
<tr>
<td></td>
<td>General Traffic</td>
<td>Travel is frequent and reliable</td>
<td>Roads are smooth and there is no congestion</td>
<td></td>
</tr>
<tr>
<td><strong>Inter Regional Connector</strong></td>
<td>Public Transport</td>
<td>Efficient and reliable journey times</td>
<td>PT de-prioritised but can rely on predictable journey times</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Freight</td>
<td>Freight moves efficiently</td>
<td>Freight is a priority</td>
<td>Freight lane or increased pavement cost</td>
</tr>
<tr>
<td></td>
<td>General Traffic</td>
<td>Travel is frequent and reliable</td>
<td>Fast, safe and reliable long distance journeys</td>
<td>High road maint costs/emphasis</td>
</tr>
<tr>
<td><strong>Main Street</strong></td>
<td>Walking</td>
<td>Safe for all users</td>
<td>Reliable travel, access to services</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cycling</td>
<td>Its safe and reliable to cycle in these spaces</td>
<td>Reliable travel, access to services</td>
<td>Separated cycleway</td>
</tr>
<tr>
<td></td>
<td>Public Transport</td>
<td>There is a choice of PT available to me</td>
<td>PT a priority for access to services</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Freight</td>
<td>Goods delivery to businesses</td>
<td>Freight use for pickup/delivery of goods</td>
<td></td>
</tr>
<tr>
<td></td>
<td>General Traffic</td>
<td>Travel is reliable</td>
<td>Reduced speeds through these routes to create a safe space for active modes</td>
<td></td>
</tr>
<tr>
<td>Performance</td>
<td>Level of Service</td>
<td>Public Transport</td>
<td>Walking</td>
<td>Cycling</td>
</tr>
<tr>
<td>-------------</td>
<td>-----------------</td>
<td>------------------</td>
<td>---------</td>
<td>---------</td>
</tr>
<tr>
<td></td>
<td>Best</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>No route delay, always runs to timetable</td>
<td>Opportunities to cross within 25m. Minimal crossing delay</td>
<td>High degree of separation, minimal delay</td>
<td>No delay no variability</td>
</tr>
<tr>
<td>B</td>
<td>Minimal route delay and slight manoeuvring restrictions</td>
<td>Opportunities to cross within 50m. Average crossing delay is 30 sec</td>
<td>Well separated at mid block with some conflict at intersections</td>
<td>Minimal intersection delay</td>
</tr>
<tr>
<td>C</td>
<td>Stops at every set of signals, within 5 min of timetable</td>
<td>Crossing within 100m. Average crossing delay is 45 sec</td>
<td>On-road bicycle lane</td>
<td>Stop at every set of signals</td>
</tr>
<tr>
<td>D</td>
<td>Always joining the back of an existing queue at an intersection and take 2 signal cycles to clear</td>
<td>Crossing within 200m. Average crossing delay is 60 sec</td>
<td>On-road bicycle lane but no lane approaching major intersections</td>
<td>Always joining the back of an existing queue at an intersection and take 2 signals cycles to clear</td>
</tr>
<tr>
<td>E</td>
<td>Takes at least 3 signal cycles to clear intersection</td>
<td>Crossing within 400m. Average crossing delay is less than 90 sec</td>
<td>Bicycles share traffic lanes</td>
<td>take 3 signals cycles to clear intersection</td>
</tr>
<tr>
<td>F</td>
<td>Very low speeds, backups from downstream or right turning traffic ahead and significantly impacts traffic flow</td>
<td>Crossing opportunities are more than 400m from demand. Average crossing delay is more than 90 sec</td>
<td>No special bicycle facility</td>
<td>Very low speeds, backups from downstream significantly impacts traffic flow</td>
</tr>
</tbody>
</table>
Future Network Planning Process – overview

Strategic Inputs:
• Government Policy
• 30 year plans
• Spatial Plans/Strategies
• National Policy Direction
• Regional Policy Statements
• VKT Reduction
• Local input

Future Network Planning Process

Outputs:
• Activity Management Planning
• 10 year planning processes
• Investment priorities
• National and regional plan land transport plans
ONF Hierarchy

ONF Street Family
(Urban/Rural)

ONF Street Category
(Place/Movement ranking)

Walking
Freight
Public Transport
Cycling
General Traffic
## Walking

Uses 4 levels of classification

<table>
<thead>
<tr>
<th>Class</th>
<th>Strategic Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>W1 - Primary</td>
<td>The primary strategic walking network provides the backbone and is the most intensely used pedestrian network</td>
</tr>
<tr>
<td>W2 - Secondary</td>
<td>The secondary strategic walking network joins local roads to the primary strategic walking routes. They also support key local walking trips.</td>
</tr>
<tr>
<td>W3 - Supporting</td>
<td>The supporting network is the remaining part of the recognised walking network that typically links to W2.</td>
</tr>
<tr>
<td>WS - Special</td>
<td>These routes typically occur in the rural context and provide for recreation or tourism and so provide a reduced transport function. Includes rural parts of Te Araroa, DoC tracks.</td>
</tr>
</tbody>
</table>
Freight
Public Transport
Walking

Includes Off-road
Speed Management Guide

**Safety**
Set speed limits that minimise the risk of fatal and serious injury to all road users by reducing impact speeds and crash forces.

**Whole of system**
Support speed limits with other speed management activities such as regulation, enforcement, communications, engagement and monitoring.

**Community wellbeing**
Set speed limits to enable equitable access to a variety of safe and healthy transport options, and generate public health, accessibility, environmental and amenity co-benefits.

**Movement & place**
Set speed limits in accordance with the One Network Framework street categories, design and infrastructure.
ONF categories and speed limit ranges
Implementation Goal Areas & Upcoming Webinars

- **Goal 1: Opportunities to integrate Movement & Place**
  - Context Classification @ State/Metro Planning (LRTP/MTP)
  - AASHTO Green Book 8
  - FHWA Resources

- **Goal 2: Opportunities to integrate RSA “transportation lifecycle process”**
  - State/Metro Process Integration
  - AASHTO Safety Summit – Mid-October

- **Goal 3: Opportunities to integrate Speed Management**
  - FHWA / NCHRP Resources (USLIMITS 2, etc.)
  - Speed Limit Setting Guidance
  - Camera-based Enforcement

**Movement & Place**
Linking land use and transportation through context classification

**Road Safety Audit Process**
Integrating safety auditing into all stages of the transportation lifecycle

**Speed Management**
Policies and practices that achieve safe and appropriate vehicle speed limits and behavior

**Webinars**
- **Monday, October 2**
  - 2:30pm to 4:00pm ET
- **Monday, October 23**
  - 2:30pm to 4:00pm ET
- **Tuesday, November 7**
  - 2:30pm to 4:00pm ET

**Sunday Workshop – Jan 7, 2024**
FUNDING SAFETY FOR ALL.

FHWA encourages implementation of projects and programs that improve safety, equity, and accessibility for all road users. Take the first step toward exploring federal funding opportunities for your Complete Streets Network.

https://highways.dot.gov/complete-streets/make-complete-streets-default-approach
Q&A

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Source: USDOT/Getty
Discussion

⇒ Send us your questions

⇒ Follow up with us:
  ⇒ General Inquiries pbic@pedbikeinfo.org

⇒ Archive at www.pedbikeinfo.org/webinars