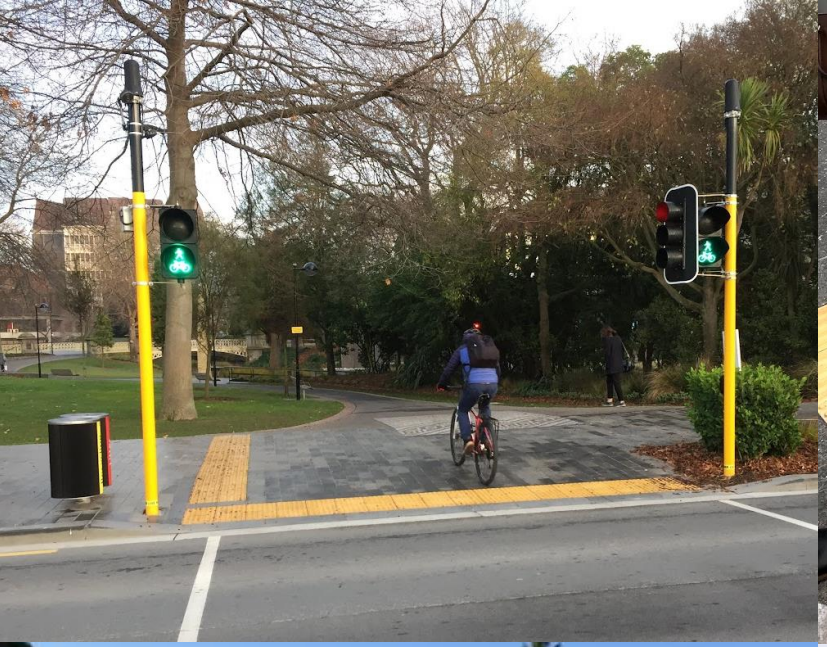
The right crossing in the right place

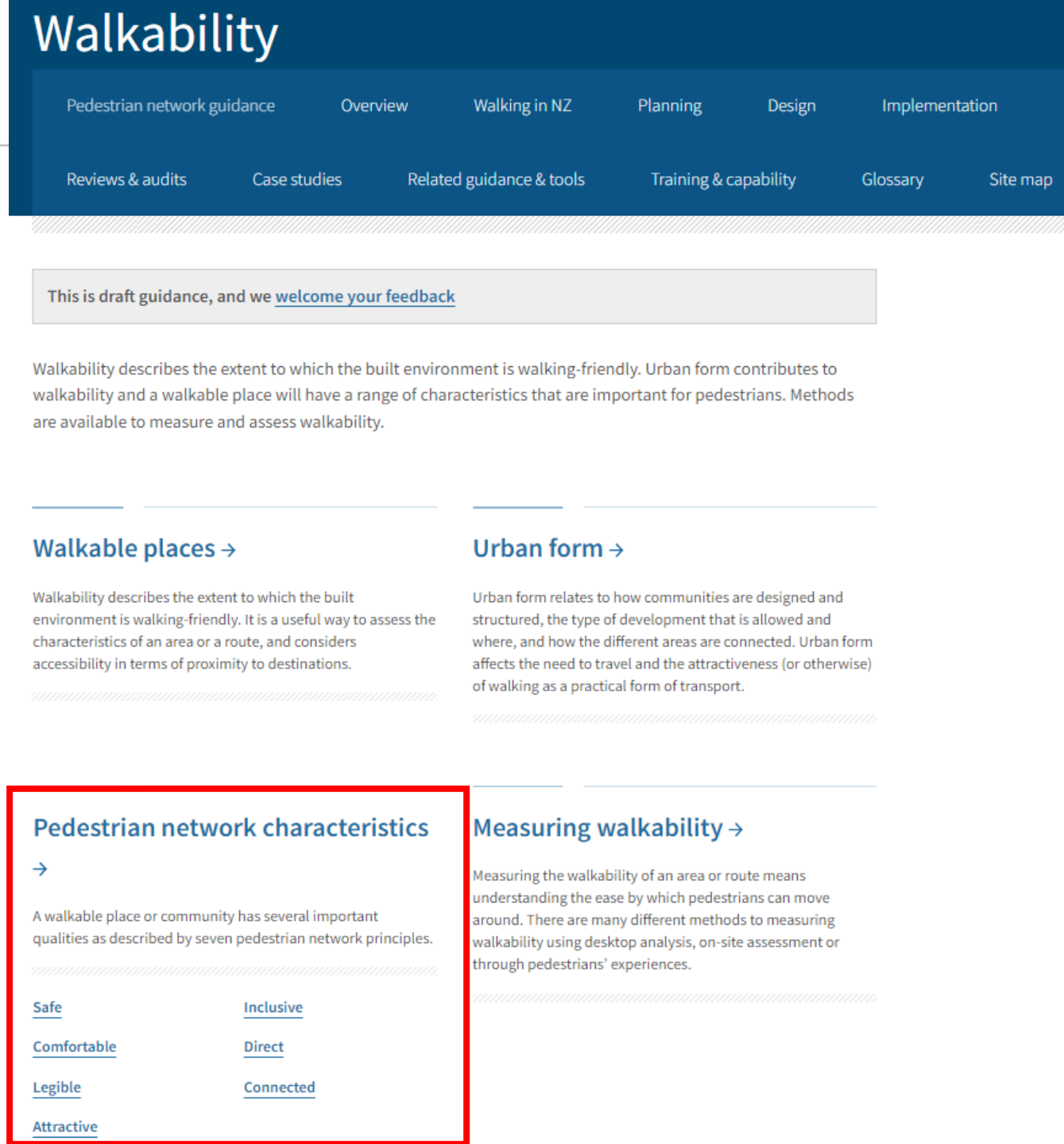
Ann-Marie Head
March 2023






Walkable places

- Crossings are a key component
- PNG>Planning>Walkability



Universal design principles

- Safe, Obvious, Step-free (SOS)

- For crossings, important aspects:
  - Smooth transitions to the roadway
  - Obvious who has right of way
  - Enough time for people to safely cross
  - Cues to warn and direct people
- PNG>Design>Pedestrian design principles>Universal design principles

Safe System Principles

- Places where pedestrians cross should align with Safe System principles. In general, safe system aligned measures for pedestrians either:
  - Separate pedestrians from motor vehicles, or
  - Ensure impact speeds are at or below 30km/h
- PNG>Design>Crossings>Introduction

Safe System Principles

- <u>Primary</u> Safe System treatment:

Pedestrian facilities that are Safe System aligned

- <u>Supporting</u> Safe System treatment:

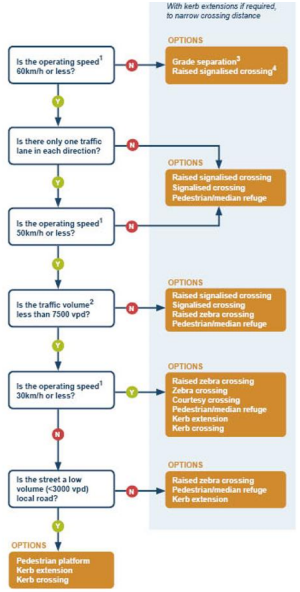
Those that are not fully aligned with Safe System principles but can support or make incremental improvements to safety and/or mobility for pedestrians

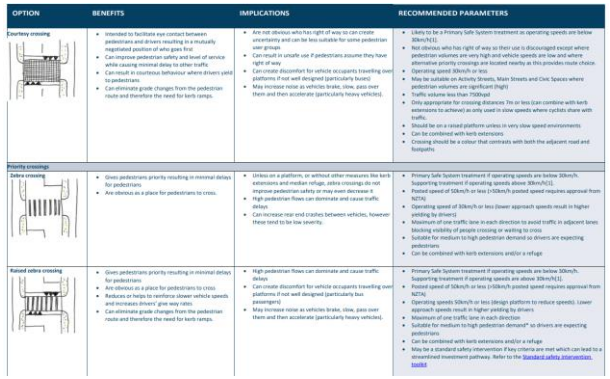
Crossing selection process

Street environment considerations → Selection flowchart → Crossing context table

Table: Street environment considerations

Question	Considerations
What is the street function?	What is the current or desired movement and place function of the street and to what extent should pedestrians be prioritised? The One Network Framework classification may assist. One Network Framework
What are the traffic volumes and composition?	Traffic volume affects the delays experienced by pedestrians. Facilities that give priority to pedestrians result in delays to other road users. Should the traffic volumes be reduced? Should the traffic composition be modified or restricted? The composition of traffic includes how many heavy vehicles, buses and cyclists use the road which influences facility choice and design.
What are the vehicle operating speeds?	Vehicle operating speeds over 30km/h increase the severity of injury or likelihood of death in crashes involving pedestrians. Higher speeds make it more difficult for pedestrians to judge safe gaps and require longer sight distances. Should traffic calming and speed management be used along the route/area?
Who is expected to use the crossing?	Who wants to cross? How many people want to cross? Who is the most vulnerable person likely to cross here? Is there suppressed demand to cross here? Are there crossing safety issues for existing or future pedestrians?
What is the road layout?	How many traffic lanes are there in each direction? Can road space be reallocated to reduce the number of lanes?
What are the surrounding land uses / place value?	What is the surrounding land use and how might it affect the types, times, and volumes of pedestrian? What would pedestrians expect in this area?
What is the best location of the crossing to match pedestrian desire lines?	Where do pedestrians cross now and where do they want to go or come from? Do they cross in one place or are they spread out along a link, or at an intersection. What other crossing opportunities are nearby and what type are they?



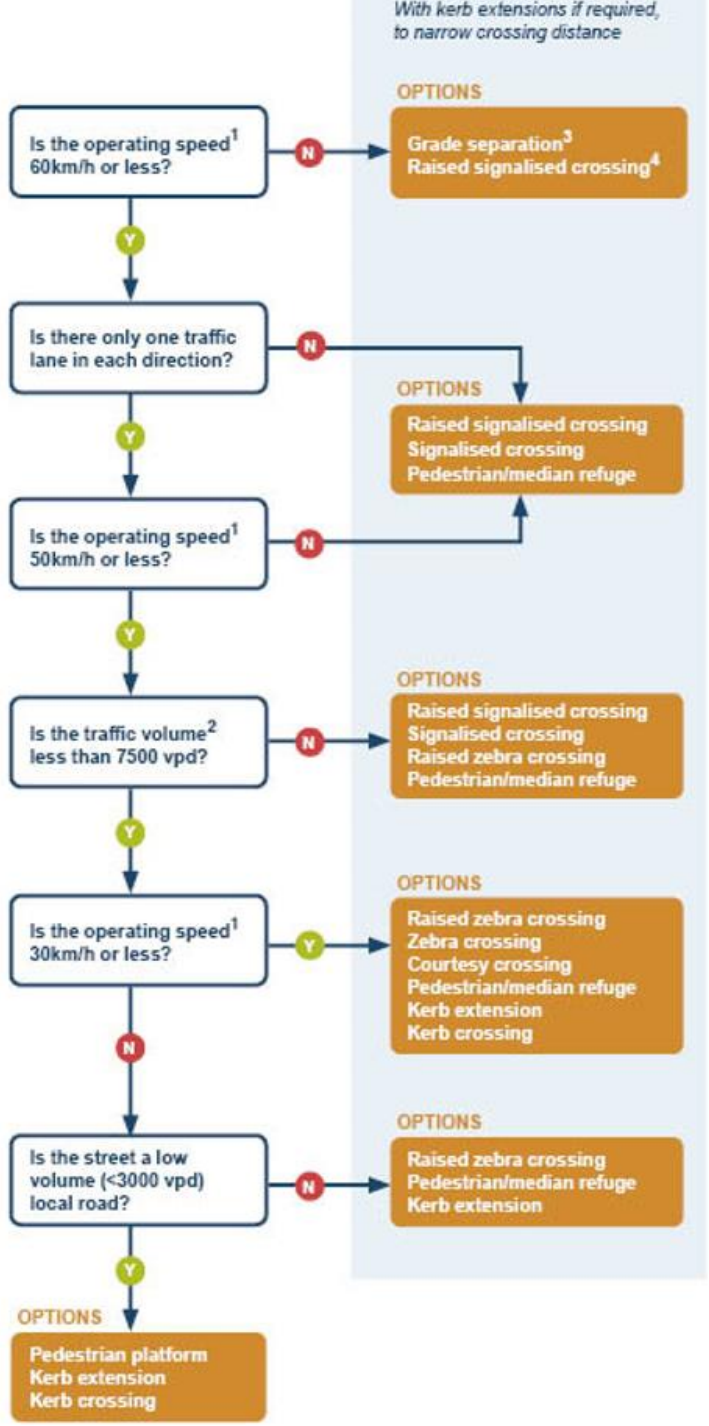


Street environment considerations

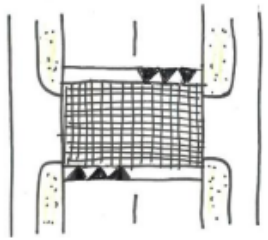
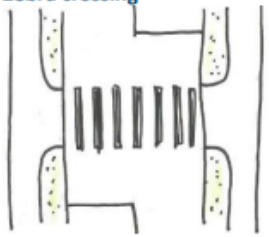
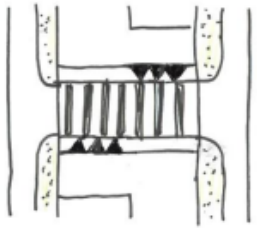
- Street function
- Traffic volumes and composition
- Vehicle operating speeds
- Road layout
- Surrounding land uses
- People crossing: How many, who, suppressed demand, where are people crossing, nearby crossing opportunities

Selection flowchart

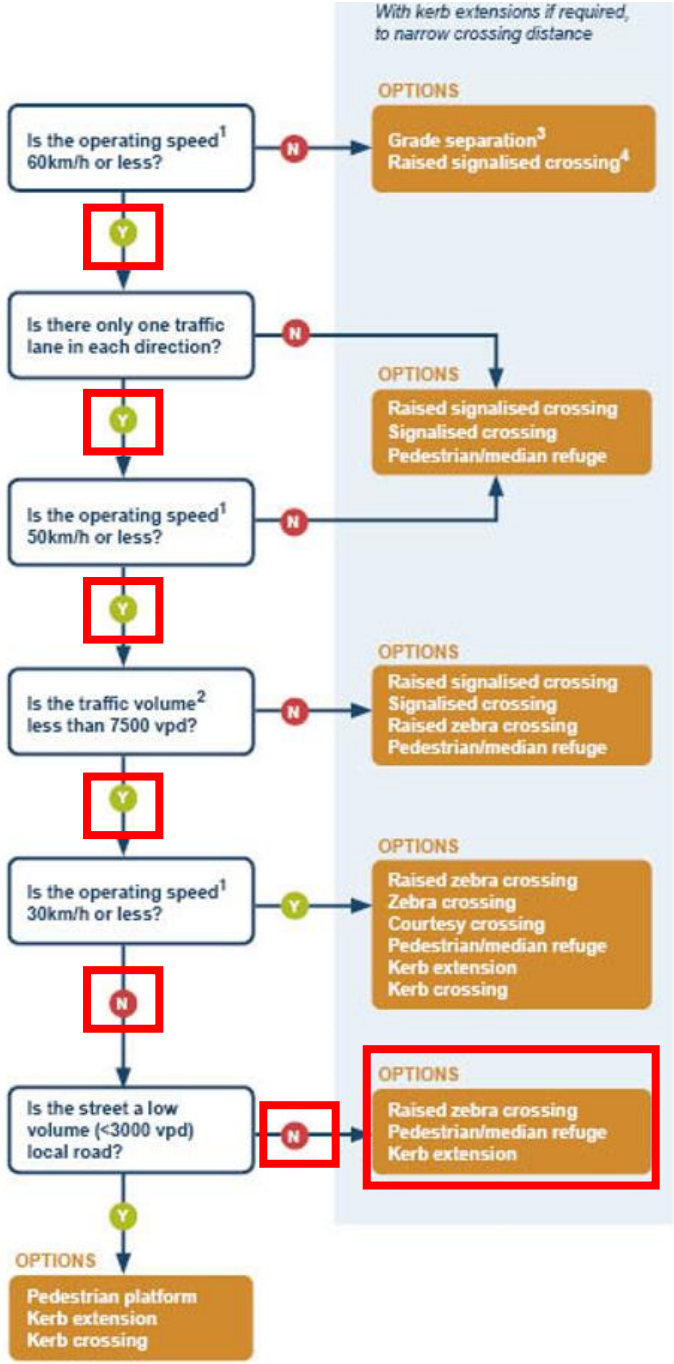
- A flow chart for mid-block crossings based on operating speed, number of lanes and traffic volumes



Crossing context table

OPTION	BENEFITS	IMPLICATIONS	RECOMMENDED PARAMETERS
Courtesy crossing 	• Intended to facilitate eye contact between pedestrians and drivers resulting in a mutually negotiated position of who goes first • Can improve pedestrian safety and level of service while causing minimal delay to other traffic • Can result in courteous behaviour where drivers yield to pedestrians • Can eliminate grade changes from the pedestrian route and therefore the need for kerb ramps.	• Are not obvious who has right of way so can create uncertainty and can be less suitable for some pedestrian user groups • Can result in unsafe use if pedestrians assume they have right of way • Can create discomfort for vehicle occupants travelling over platforms if not well designed (particularly buses) • May increase noise as vehicles brake, slow, pass over them and then accelerate (particularly heavy vehicles).	• Likely to be a Primary Safe System treatment as operating speeds are below 30km/h[1]. • Not obvious who has right of way so their use is discouraged except where pedestrian volumes are very high and vehicle speeds are low and where alternative priority crossings are located nearby as this provides route choice. • Operating speed 30km/h or less • May be suitable on Activity Streets, Main Streets and Civic Spaces where pedestrian volumes are significant (high) • Traffic volume less than 7500vpd • Only appropriate for crossing distances 7m or less (can combine with kerb extensions to achieve) as only used in slow speeds where cyclists share with traffic. • Should be on a raised platform unless in very slow speed environments • Can be combined with kerb extensions • Crossing should be a colour that contrasts with both the adjacent road and footpaths
Priority crossings			
Zebra crossing 	• Gives pedestrians priority resulting in minimal for pedestrians • Are obvious as a place for pedestrians to cross.	extensions and median refuge, zebra crossings do not improve pedestrian safety or may even decrease it • High pedestrian flows can dominate and cause traffic delays • Can increase rear end crashes between vehicles, however these tend to be low severity.	Primary Safe System treatment if operating speeds are below 30km/h. Supporting treatment if operating speeds above 30km/h[1]. • Posted speed of 50km/h or less (>50km/h posted speed requires approval from NZTA) • Operating speed of 30km/h or less (lower approach speeds result in higher yielding by drivers) • Maximum of one traffic lane in each direction to avoid traffic in adjacent lanes blocking visibility of people crossing or waiting to cross • Suitable for medium to high pedestrian demand so drivers are expecting pedestrians • Can be combined with kerb extensions and/or a refuge
Raised zebra crossing 	• Gives pedestrians priority resulting in minimal delays for pedestrians • Are obvious as a place for pedestrians to cross • Reduces or helps to reinforce slower vehicle speeds and increases drivers' give way rates • Can eliminate grade changes from the pedestrian route and therefore the need for kerb ramps.	• High pedestrian flows can dominate and cause traffic delays • Can create discomfort for vehicle occupants travelling over platforms if not well designed (particularly bus passengers) • May increase noise as vehicles brake, slow, pass over them and then accelerate (particularly heavy vehicles).	• Primary Safe System treatment if operating speeds are below 30km/h. Supporting treatment if operating speeds are above 30km/h[1]. • Posted speed of 50km/h or less (>50km/h posted speed requires approval from NZTA) • Operating speeds 50km/h or less (design platform to reduce speeds). Lower approach speeds result in higher yielding by drivers • Maximum of one traffic lane in each direction • Suitable for medium to high pedestrian demand* so drivers are expecting pedestrians • Can be combined with kerb extensions and/or a refuge • May be a standard safety intervention if key criteria are met which can lead to a streamlined investment pathway. Refer to the Standard safety intervention toolkit

Example 1 - Opawa Road



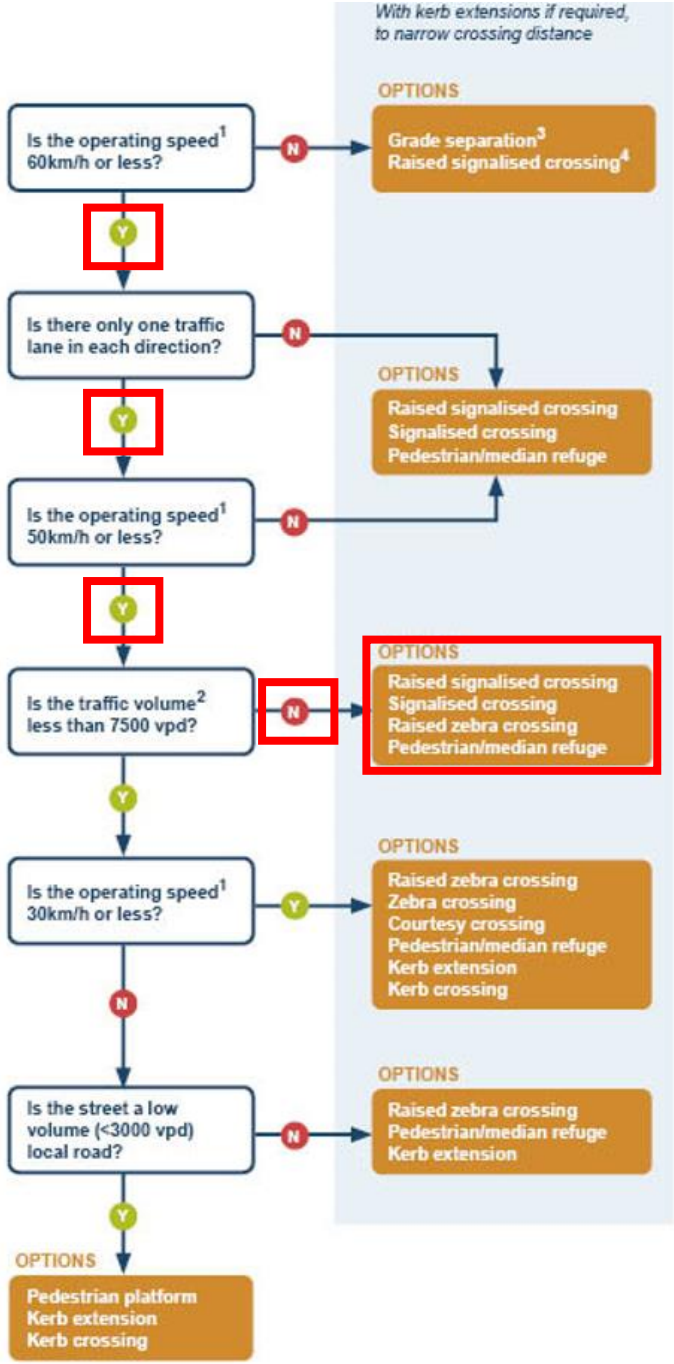
Example 1 - Opawa Road

Options	Comment
Raised zebra	Primary treatment. Appropriate and would help to reduce vehicle speeds.
Median refuge	Supporting treatment. Not enough priority given pedestrian demand.
Kerb extension	Supporting treatment. Not sufficient given pedestrian demand.

After

Example 2 - Wilsons Rd (school)

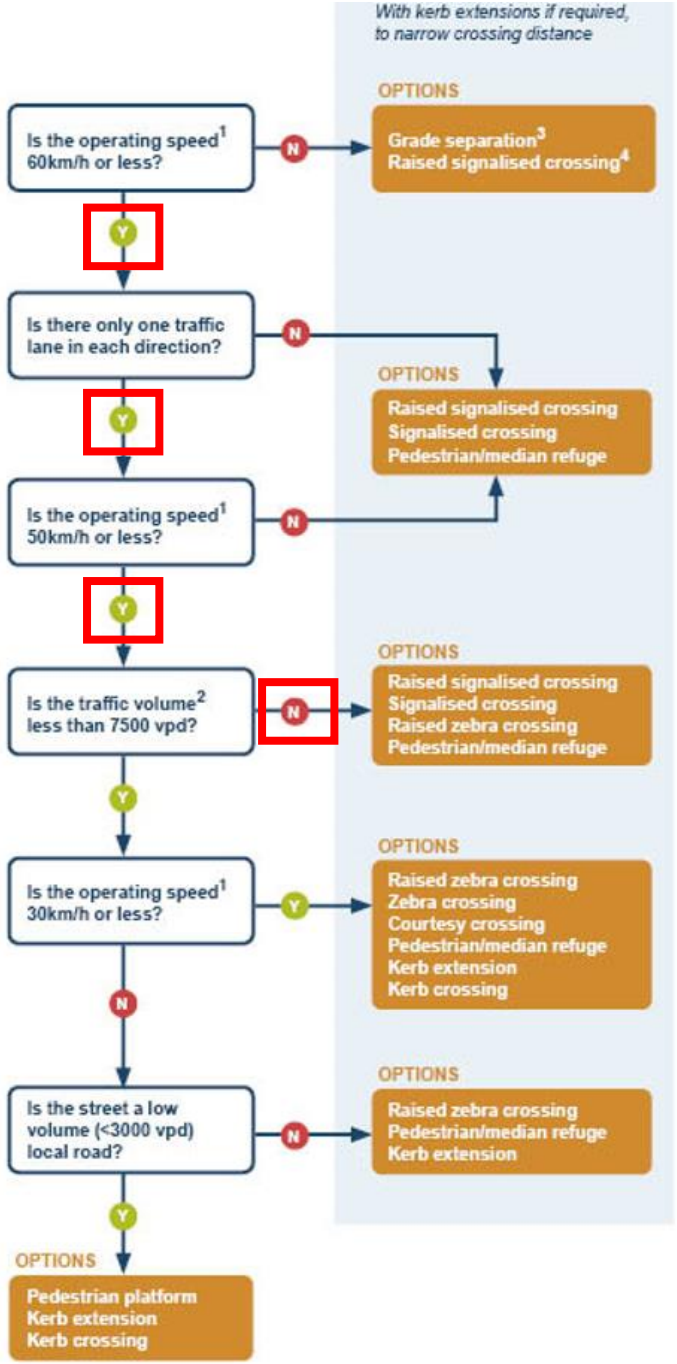
Before



Example 2 - Wilsons Rd (school)

Options	Comment
Raised signalised crossing	Primary treatment. Appropriate and would help to reduce vehicle speeds.
Signalised crossing	Supporting treatment. Appropriate and allows children to cross independently.
Raised zebra crossing	Primary treatment but more difficult for children to negotiate.
Median refuge	Supporting treatment. Not sufficient given pedestrian demand, children crossing in groups.

Example 3 - Wilsons Rd (shops)



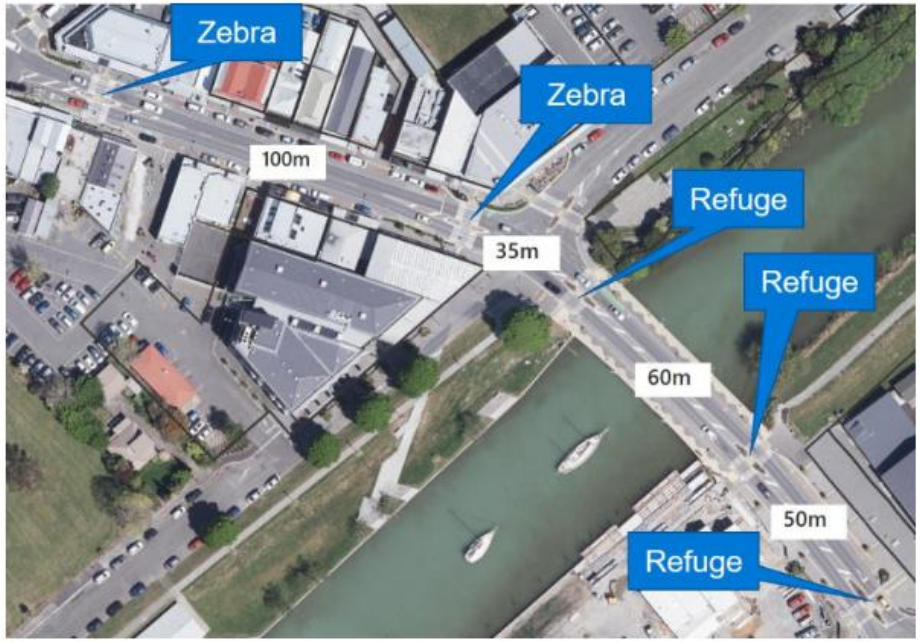
Example 3 - Wilsons Rd (shops)

Options	Comment
Raised signalised crossing	Primary treatment. Not necessary as would provide limited ped benefits and would increase delay.
Signalised crossing	Supporting treatment. Not necessary for same reasons as above
Raised zebra crossing	Primary treatment. Would slow speeds. Convenient for peds and vehicles
Median refuge	Supporting treatment. Not sufficient given pedestrian demand and types

My pick!

Location and spacing

- The spacing and frequency of crossings along a street depends on the street type, land use and built environment, and pedestrian desire lines
- Provide crossings every 80 to 100m in urban environments
- PNG>Design>Crossings>Location and Spacing
- Consider bus stop locations (PTDG>Bus stops>Walking access)

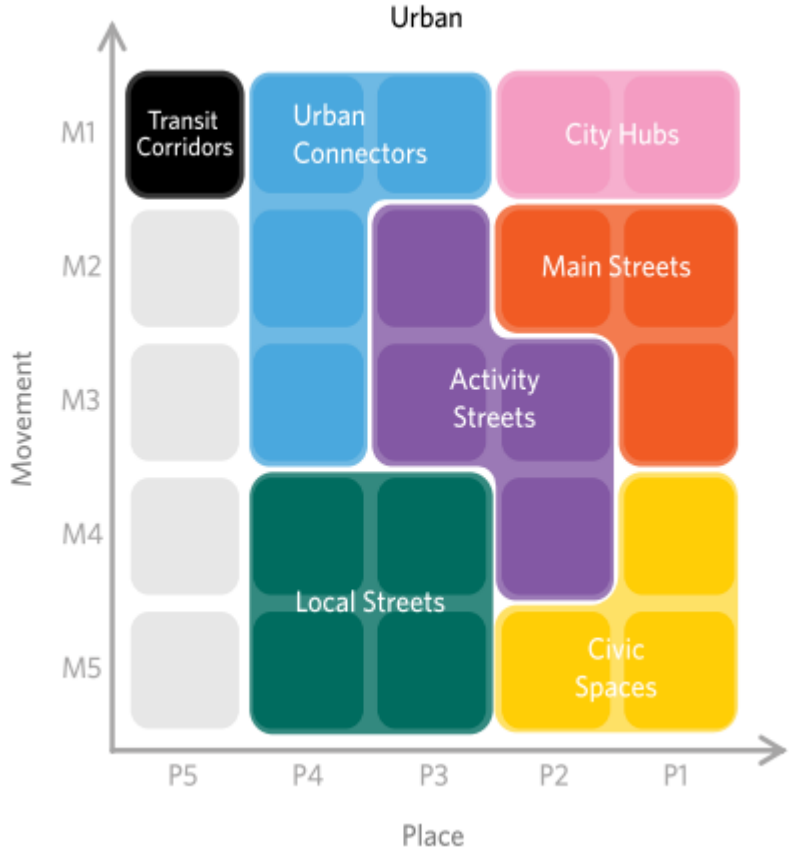


What about crossings at intersections

- Many considerations
- Direct and short crossings are best
- Multi-modal intersections webinar

Worcester/Stanmore intersection, Christchurch

- ONF adopted and Safe and Appropriate Speeds for the street categories
- We're looking at developing crossing selection guidance by street category/speed



Wrap up

- Lots of guidance and resources to help
- Consider context
- Better crossings = healthier people

PNG Guidance

- Crossing and intersection guidance and design details
- PNG>Design>Crossings
- PNG>Design>Intersections

Crossings →

Pedestrians generally need to cross roads on every walking trip and may also need to cross railways, waterways and other natural features. Safe and appropriate crossings are therefore key elements in providing a connected network for pedestrians.

Intersections →

Crossing activity often occurs at intersections where it is generally more complex to provide for pedestrians than mid-block locations.

Want to know more?

- Pedestrian and cycle crossings
- Multi-modal intersections
- Tactile indicator installation
- All webinars on PNG>Training and capability