VERSION 1.2
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KĀINGA ORA DESIGN GUIDELINES MASTERPLANNING FOR UNIVERSAL DESIGN

A guide to show how to include universal design in Kāinga Ora masterplans.

This document has been designed to be viewed at A3 size.

Kāinga Ora
Homes and Communities

RĀRANGI UPOKO CONTENTS

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KUPU ARATAKI
INTRODUCTION

Universal design is about designing places and spaces so they are easier, safer and more inclusive for all people, regardless of cognitive and physical abilities.

Masterplanning for Universal Design shows Kāinga Ora and its partners how to apply a universal design approach by using two key measures: **proximal accessibility** and **street-level accessibility**.

Existing Kāinga Ora design guidance looks at individual homes, but people's lives extend beyond their front doors. A universally-designed neighbourhood connects people with their community.

This approach reflects the commitment made by Kāinga Ora to "focus on removing barriers to full community participation for all [their customers] and their whānau"[1].

Universal design seeks to provide equity for all members of a community, residence, or household. It is important to remember that everyone – including Kāinga Ora customers – has the right to be in an environment that is welcoming and easy to understand and get around.

Importantly, this guide does not replicate existing material; it complements a range of widely-available exemplars and precedents (see Section 4: Supporting References).

This guide is for all streets, developments and neighbourhoods developed by, for and with Kāinga Ora.

1 Kāinga Ora (2019, p.3). Accessibility Policy: 2019-2022. Kāinga Ora – Homes and Communities: Wellington, NZ.

KUPU ARATAKI
INTRODUCTION

WHO IS THIS GUIDE FOR?

- Development managers
- Urban designers
- Urban planners
- Transport planners
- Landscape architects
- Public engagement specialists
- Local authorities
- Road-controlling authorities
- Procurement specialists
- External consultants
- **All built environment professionals**

USE THIS GUIDE TO:

Inform the masterplanning process

- Add universal design layers to a masterplan
- Embed universal design principles and outcomes in Kāinga Ora masterplans to inform detailed design
- Understand and apply Safe, Obvious and Step-free (SOS) principles
- Illustrate 'what will go where' on a given piece of land.
- Measure neighbourhoods and streets using two tools: **Proximal accessibility** and **street-level accessibility**.
- Audit existing streets and suggest improvements.

Deliver outcomes

- Shape masterplans, apply appropriate design guide standards and ensure high-quality delivery.
- Embed universal design in development agreements, contracts and other supporting delivery mechanisms or resources.
- Ensure that decisions on universal design are captured, tracking progress from design to completion.

Shape the conversation

- Be precise when talking about accessibility and universal design.
- Articulate the value of inclusive environments and refute common fallacies *against* universal design.
- Lead the public conversation around universal design.
- Inform state, market, and affordable Build Partners, helping them deliver universally-designed developments.

This guide does not:

- Replace existing best-practice guidance – use existing guidance as appropriate.
- Bypass co-design processes – these need to be followed.
- Provide detailed information on dimensions, gradients or materials. Use technical specs from Kāinga Ora [2] or the local authority.

2 All available from https://kaingaora.govt.nz/en_NZ/publications/build-partner-publications/design-guidelines/

1.0 BACKGROUND

1.1 WHAT IS UNIVERSAL DESIGN?

Universal design is “design that makes things easier, safer, healthier and friendlier for everyone”.[3] This guide shows how to add universal design layers to a Kāinga Ora masterplan.

Conventional design often assumes that people are all relatively similar with similar abilities and understanding. Universal design recognises that people are in fact different[4]. There are eight universal design goals.

BODY AWARENESS

1) **Body fit** – accommodating a wide range of body sizes and abilities.
2) **Comfort** – keeping demands within desirable limits of body function.
3) **Awareness** – ensuring critical information for use is easily perceived.
4) **Understanding** – making methods of operation and use intuitive, clear and unambiguous.

WELLBEING

5) **Wellness** – contributing to enhanced mental and physical health, avoidance of disease and prevention of injury.
6) **Social integration** – treating all groups with dignity and respect.
7) **Personalisation** – incorporating opportunities for choice and the expression of individual preferences.
8) **Cultural appropriateness** – respecting and reinforcing cultural and the social and environmental context of any design project.

Universal design is not the same as providing “ramps for the disabled” – it is a whole-design approach that supports independent use of the built environment. People’s abilities and moods vary according to a situation, such as whether they are carrying luggage, travelling with a young child or listening to music on headphones.

Similarly, people’s ability to navigate environments such as climbing stairs or reading a map also vary according to temporary or permanent abilities of their mind and body.

Simplifying this even further, **universal design is good design that works for as many people as possible**. This guide focuses on **S-O-S** (Safe, Obvious and Step Free) environments.

Refer to p. 20 of this document for specific information on **S-O-S** environments.

3 E. Steinfeld and J Maisel (2012) *Universal Design: Creating Inclusive Environments.*

4 *Waka Kotahi NZTA: Universal design principles (https://www.nzta.govt.nz/walking-cycling-and-public-transport/walking/walking-standards-and-guidelines/pedestrian-network-guidance/design/pedestrian-design-principles/universal-design-principles/.)*

1.2 WHY UNIVERSAL DESIGN?

The Kāinga Ora Accessibility Policy[5] says "when home environments are people-centred in design, convenient and a pleasure to use, everyone benefits". This is equally true for streets and neighbourhoods. Everyone should be able to access homes and communities safely and comfortably, irrespective of their ability, age, or stage of development.

Unfortunately, many many neighbourhoods in New Zealand fail to prioritise people in their design. Unsafe streets, illegible road layouts, harsh materials, steps and steep gradients can all make streets difficult to use. This is particularly noticeable for disabled people.

In the 2013 New Zealand Census, 24 per cent of the general population – 1.1 million people – identified as having a disability. This figure is increasing, due in part to an ageing population, and is disproportionately high for Pacific and Māori people.[6]

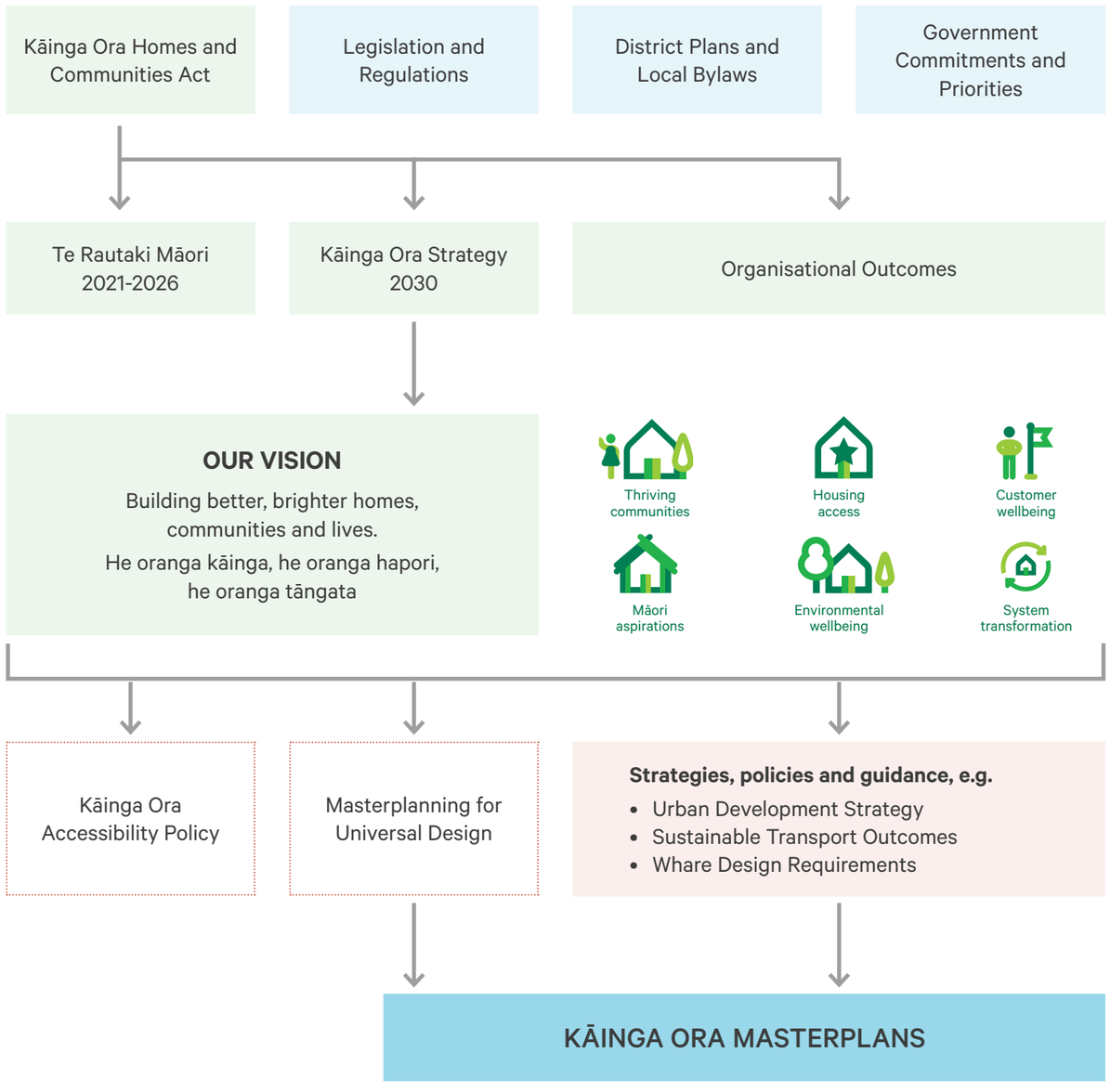
Kāinga Ora recognises the need to identify and remove barriers faced by disabled people – and lots of other people too. Poorly designed streets can exclude people who:

- do not speak English as a first language
- are visitors (e.g. grandparents, tourists, etc.)
- are pregnant
- are responsible for young children or prams
- are carrying luggage
- are children
- have physical or cognitive impairments
- have temporary injuries
- are carers.

These people make up the majority of the population. Remember that universal design does not focus solely on disabled people – it has a much broader reach than this.

By using universal design in our masterplans, we help those living with disability long term, enable people to participate fully in society and bring substantial economic benefit to New Zealand. This guide shows how to do it.

Many people benefit from universal design.



5 Kāinga Ora (2019, p.1) Accessibility Policy: 2019-2022. Kāinga Ora – Homes and Communities: Wellington, NZ.

6 Statistics New Zealand (2014, June 17). Disability Survey: 2013. Retrieved from: https://www.stats.govt.nz/information-releases/disability-survey-2013

1.3 CAN KĀINGA ORA AFFORD UNIVERSAL DESIGN?

Yes. Quite apart from the moral and human rights imperatives, it is actually better value to use universal design than to omit it. Research consistently shows a consistently positive return on investment.

A 2019 report[7] from the Australian Centre for Inclusive Design concluded that universal design:

- "should be used at the beginning of the design process because the cost to implement [universal] design increases the later it is introduced. Design that is not inclusive can lead to complaints, legal challenges, planning delays and costly retrofits as a product or service matures … The relative cost of retrofitting a product or service to become inclusive will increase significantly over time and **can reach up to 10,000 times the cost of introducing inclusive design earlier on**." [emphasis added]
- Having the option to move freely, whether walking, wheeling, pushing, riding or using shared services, is fundamental to people's wellbeing and sense of connection. Universal design is essential to realise the benefits of inclusive, healthy communities.
- Universal design is an aspiration for all buildings, streets and places. In some places, it is easy to design and build to an SOS (safe, obvious and step-free) standard. In other places, it is less straightforward.

1.4 WHEN, WHERE AND HOW TO PRIORITISE UNIVERSAL DESIGN

This guide shows how to identify which places are (and are not) accessible and to whom and, in this way, highlighting community opportunities and constraints.

Kāinga Ora *Masterplanning for Universal Design* provides a link between the masterplanning of streets and community spaces, commercial, mixed use and residential precincts.

It tells us whether or not a place is accessible, and how to make it more so, via specific interventions. It shows where to prioritise interventions to deliver the greatest public benefit.

By mapping an area in this way, we can identify where best to prioritise universally-designed buildings.

This clarity enables us to make communities as inclusive as possible while retaining honesty about which buildings, routes and public places are less accessible than others.

7 Australian Centre for Inclusive Design (2019, May, p. 1). The Benefit of Designing for Everyone. Retrieved from: https://centreforinclusivedesign.org.au/wp-content/uploads/2021/05/inclusive-design-report-digital-160519.pdf

1.5 MASTERPLANNING FOR UNIVERSAL DESIGN AT KĀINGA ORA

Kāinga Ora masterplans are inherently long-term projects. They contain substantial amounts of information and take a long time to develop and deliver.

This guide is aimed at masterplans, including, but not limited to:

- large-scale projects (LSPs)
- precinct and neighbourhood masterplans
- greenfield masterplans
- complex masterplans.

These masterplans have been chosen because they provide the greatest opportunity to reconfigure land use, street networks, transport systems and design details to deliver proximal and street-level accessibility.

Proximal accessibility shows what destinations are available from a particular point and how far away they are.

Street-level accessibility assesses whether or not the environment is safe, obvious and step-free. It should address cognitive, mobility, and sensory impairments, and associated disabilities, as well as considering neurodivergence.

For more detail, see sections 2 and 3.

For all Kāinga Ora masterplans, there are three main steps along a masterplanning pathway:

- Draft
- In-principle
- Change-managed

Each corresponds to a specific stage in the Kāinga Ora Investment Management Framework. They may be used for a few months or for many years.

This diagram summarises the tasks and outputs at each step to shape universal design. We refer to this diagram throughout the guide.

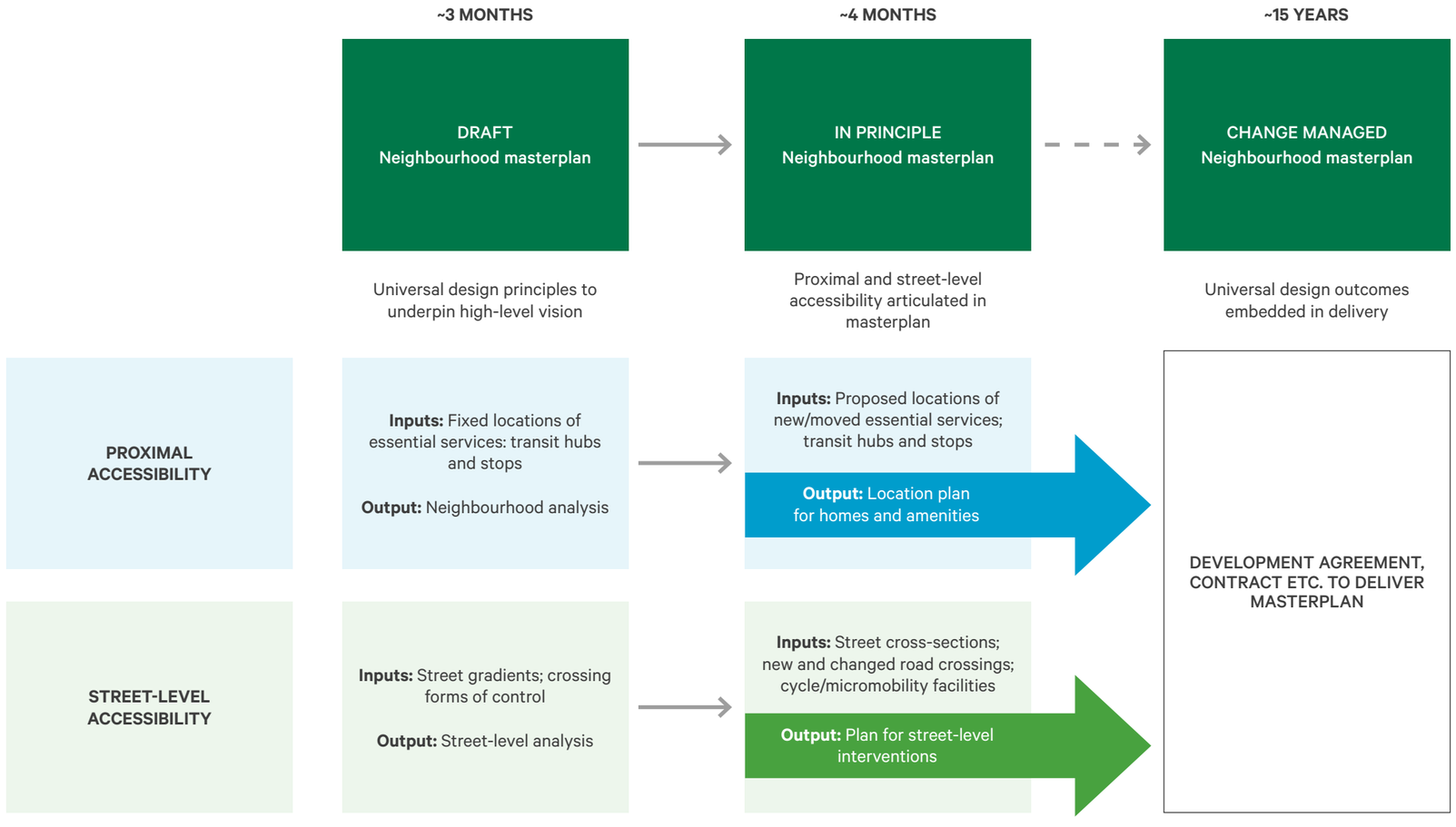


Diagram to show how proximal accessibility and street-level accessibility are incorporated in the masterplanning process.

2.0 PROXIMAL ACCESSIBILITY AND STREET-LEVEL ACCESSIBILITY

Proximal accessibility and **street-level accessibility** are the two most important measures in this document. They underpin the *Masterplanning for Universal Design* approach.

- **Proximal accessibility** measures distances to destinations.
- **Street-level accessibility** measures how easy it is for people to use streets

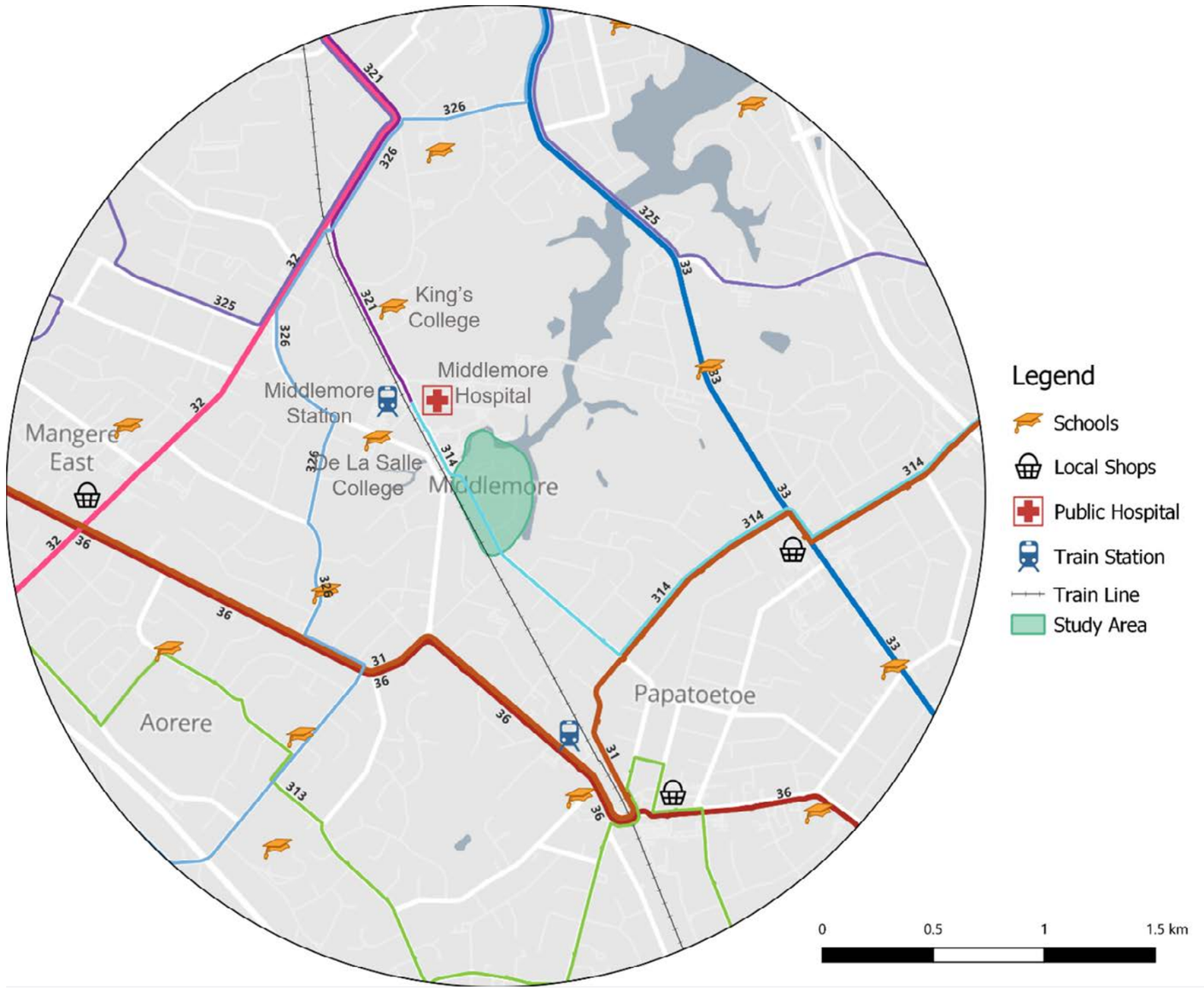
2.1 PROXIMAL ACCESSIBILITY

Proximal accessibility is concerned with creating neighbourhoods where people can easily access amenities, employment and services from a variety of housing types. It aims to create well-functioning mixed-use neighbourhoods.

Proximal accessibility measures distances to destinations. It shows what destinations are available from a particular point and how far away they are.

Use proximal accessibility to understand what kinds of trips are likely to be made and by what mode based purely on proximity.

Measure proximal accessibility using catchment isochrones (points on a map) to show distances within the masterplan area and to nearby destinations (including transit connections) by different transport modes: walking, cycling/micromobility[8], public transport and driving/car passenger.



Public transport and key destinations from Middlemore Crescent

8 Micromobility: A range of small, lightweight vehicles operating at speeds typically below 25 km/h and driven by users personally. Micromobility devices include bicycles, e-bikes, electric scooters, electric skateboards, shared bicycles, and electric pedal assisted (pedelec) bicycles. Source www.nzta.govt.nz

2.2 STREET-LEVEL ACCESSIBILITY

Street-level accessibility is concerned with **people** and how easy it is for them to use streets to access the services and amenities that they need.

Personas – exemplars that represent different categories or groups of people are used to identify requirements on a street-by-street basis. This information helps planners and designers to understand how to facilitate access for all. It can also highlight accessibility gaps in the surrounding street network and identify street-level improvements.

Section 3.5 provides further details on the personas and how to use them to access street-level accessibility.

8 YEAR OLD CHILD

WHEELCHAIR USER

BLIND ADULT

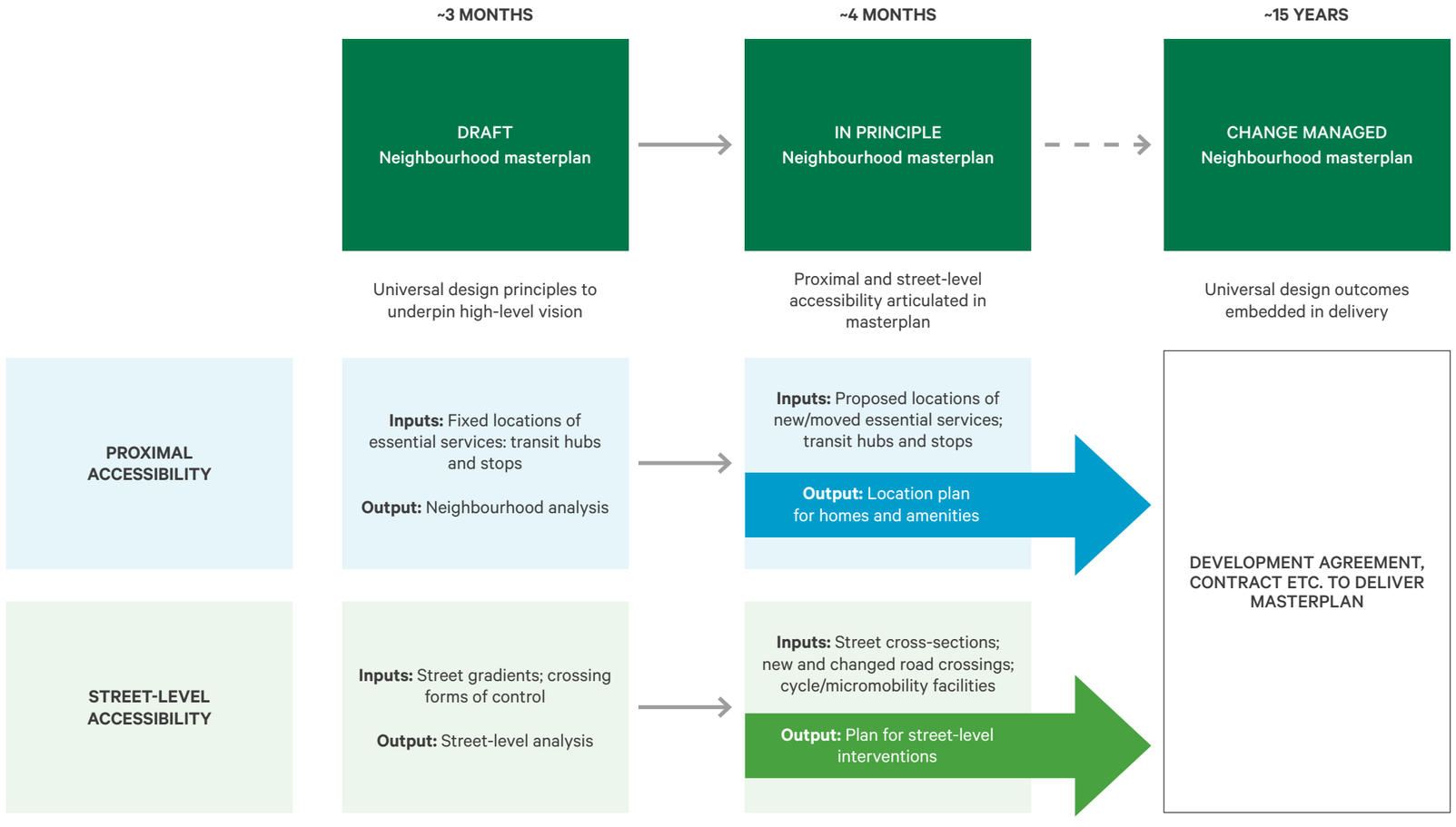
We use these three personas to assess whether each link and road crossing is accessible for each one. More personas will be developed over time.

3.0 WHAT TO DO

By mapping existing amenities and the quality of surrounding streets, a neighbourhood masterplan can identify how to deliver universal design outcomes. This process is shown in the adjacent diagram.

Information about existing amenities is collected at the **draft** stage. This information feeds into the **in-principle** masterplan, which contains layers of detailed information about proximal and street-level accessibility for the area.

Universal design outcomes are then delivered by the **changed-managed masterplan**, via development agreements, contracts, etc.

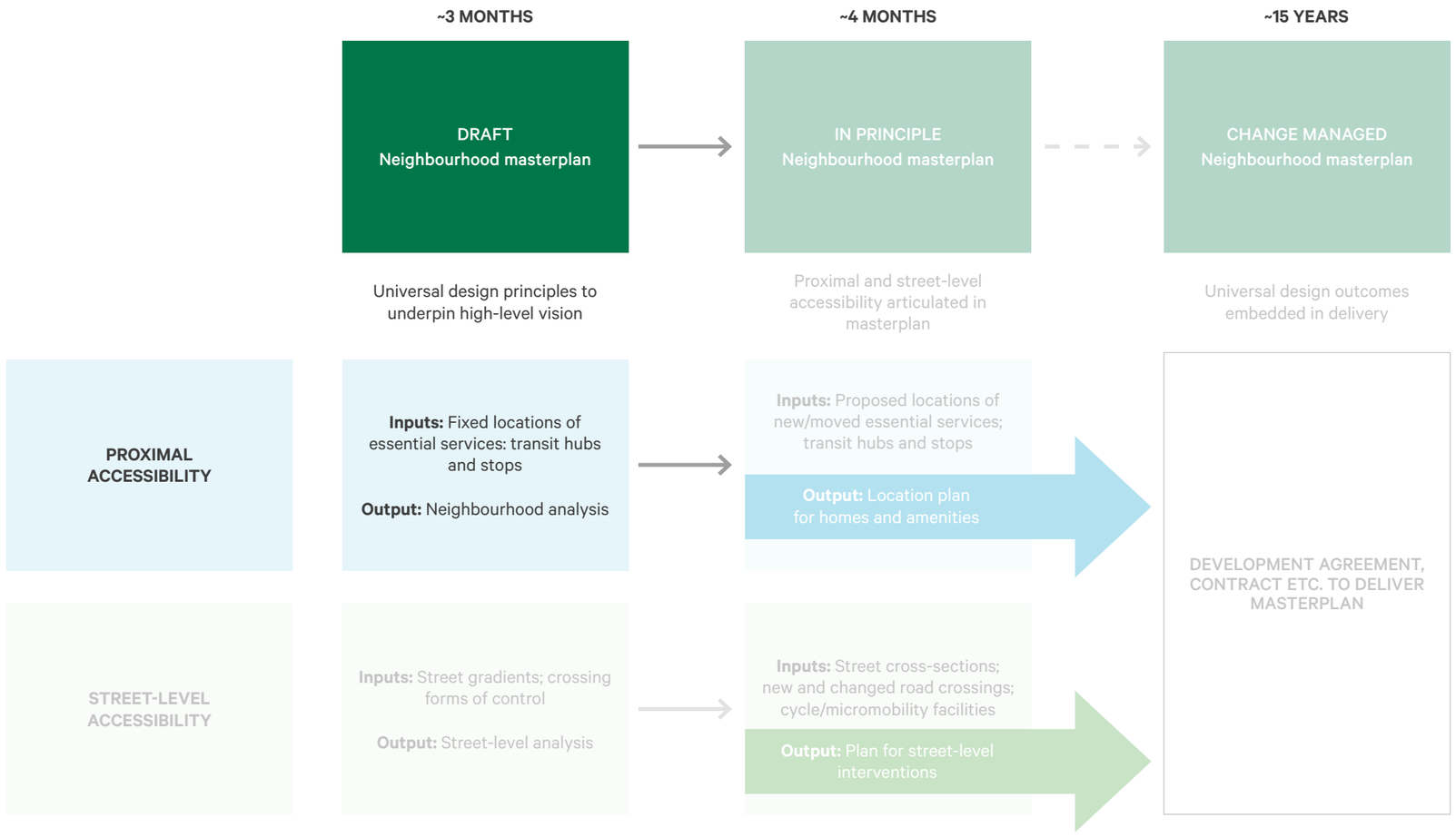


3.1 NEIGHBOURHOOD ANALYSIS – PROXIMAL ACCESSIBILITY

The first step in assessing proximal accessibility is to understand existing origins and destinations in the area being masterplanned. Larger sites can incorporate a wider range of services and facilities.

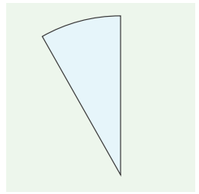
PROXIMAL ACCESSIBILITY – IDENTIFY THE DESTINATIONS PEOPLE ACCESS WITHIN THE COMMUNITY, THROUGH THE FOLLOWING STEPS

- Identify who lives here, who might live here and where might they wish to go? What type of housing types, sizes and tenures will be available?
- Identify existing amenities within a 400m walk or cycle/micromobility trip from homes, including work, education, parks, shops, community and cultural facilities.
- Identify homes' proximity to transport stops and stations on frequent bus and/or train routes. Can public transport be incorporated into the site for improved accessibility?
- Use Census data to test actual travel to work or school for the masterplan location via **https://commuter.waka.app/**.

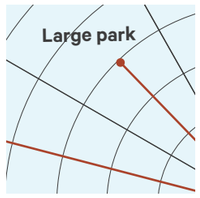


PROXIMAL ACCESSIBILITY – ONE WAY TO SUMMARISE THE DATA[9]

This chart shows the distances from a particular location to a range of core services within walking distances.



Blue wedges show the accessibility standards for 12 key services.

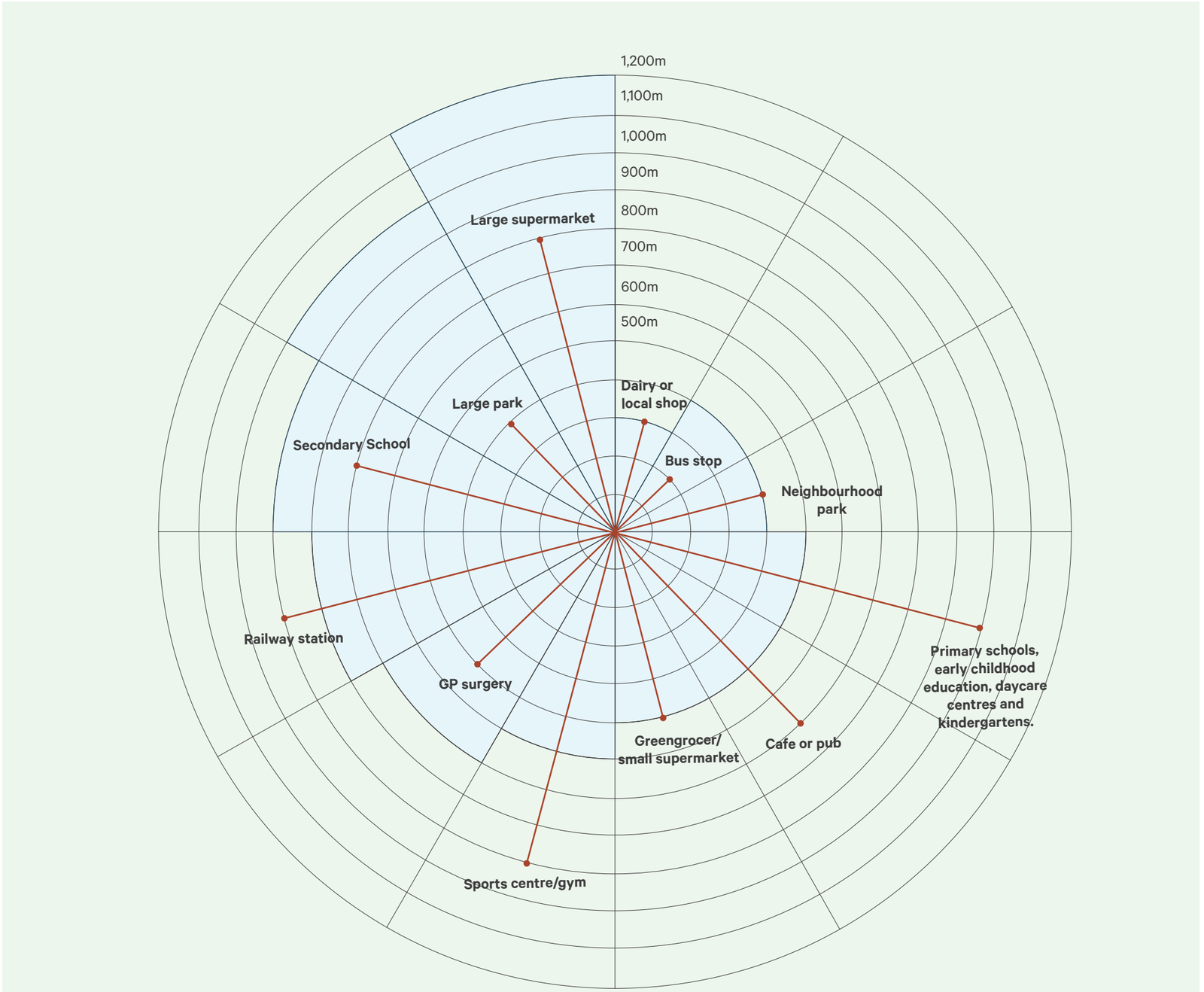


Red lines show the walking distance to a particular service.

If the red line is outside the blue wedge, it shows that this destination is further away than is ideal.

Use different colours to compare locations.

This is a guide. Factors like gradients and street condition will affect the distances that people are willing to travel.



9 Adapted From: The Plot: Designing Diversity in the Built Environment (Tarbatt, 2012)

3.2 CHOOSING WHERE TO LOCATE UNIVERSALLY DESIGNED HOMES

For disabled people and many other people, distance is a major barrier. When choosing where to locate universally designed and accessible homes, prioritise those locations most accessible by public transport and active modes, near to local centres.

Broadly speaking, locate accessible homes:

- on flat sites and/or parts of sites that are flatter
- in flatter areas
- close to amenities and destinations (identified as in section 3.1)
- near public transport – train travel is often more accessible.

PROVIDING ACCESSIBLE HOUSING ON SITES WITH GRADIENTS

- Slopes steeper than 1:12 are unlikely to support universally-designed and accessible for single-level and two-level typologies.
- Minimise steps and level changes across the site to ensure ease-of-access within the development.
- Design all steps and access ramps to meet Kāinga Ora design standards.
- Minimise gradients as much as possible

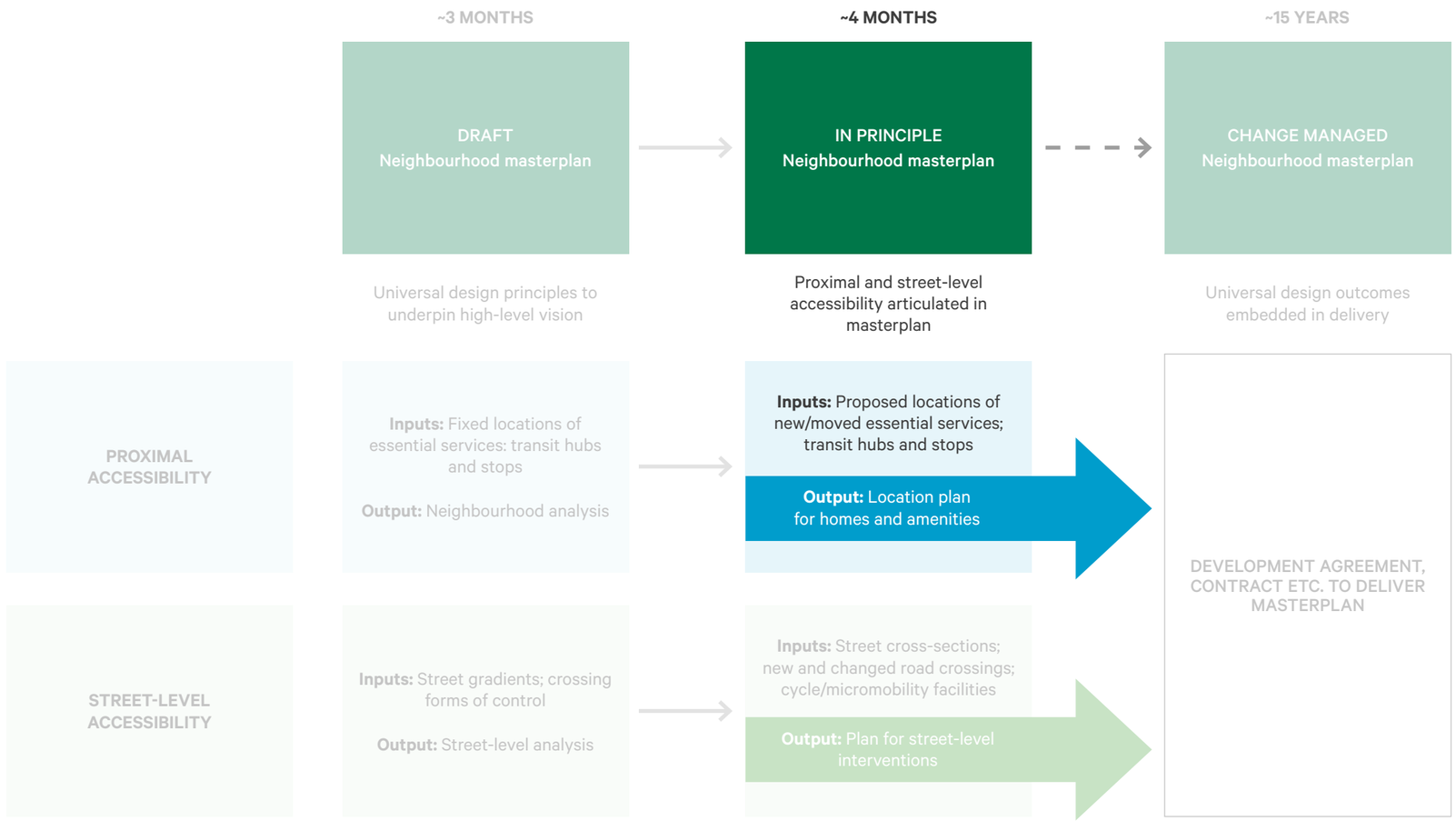
OUTPUT

A drawing set that shows where the universally-designed buildings are to be built. This will illustrate the relationship between homes, principal destinations and public transport services. Use this diagram to show the percentage of homes that could be delivered to a full universal design standard.

SEE

Kāinga Ora Accessibility Policy

KO459 Ngā Paerewa Hoahoa Whare Design Requirements.



3.3 STREET DESIGN – STREET-LEVEL ACCESSIBILITY

Good street design is vital for universally designed neighbourhoods. From the moment they leave their front door, people must feel welcome in the street. Relatively minor design details such as a flush footway can turn a hostile environment into an inclusive one and vice versa.

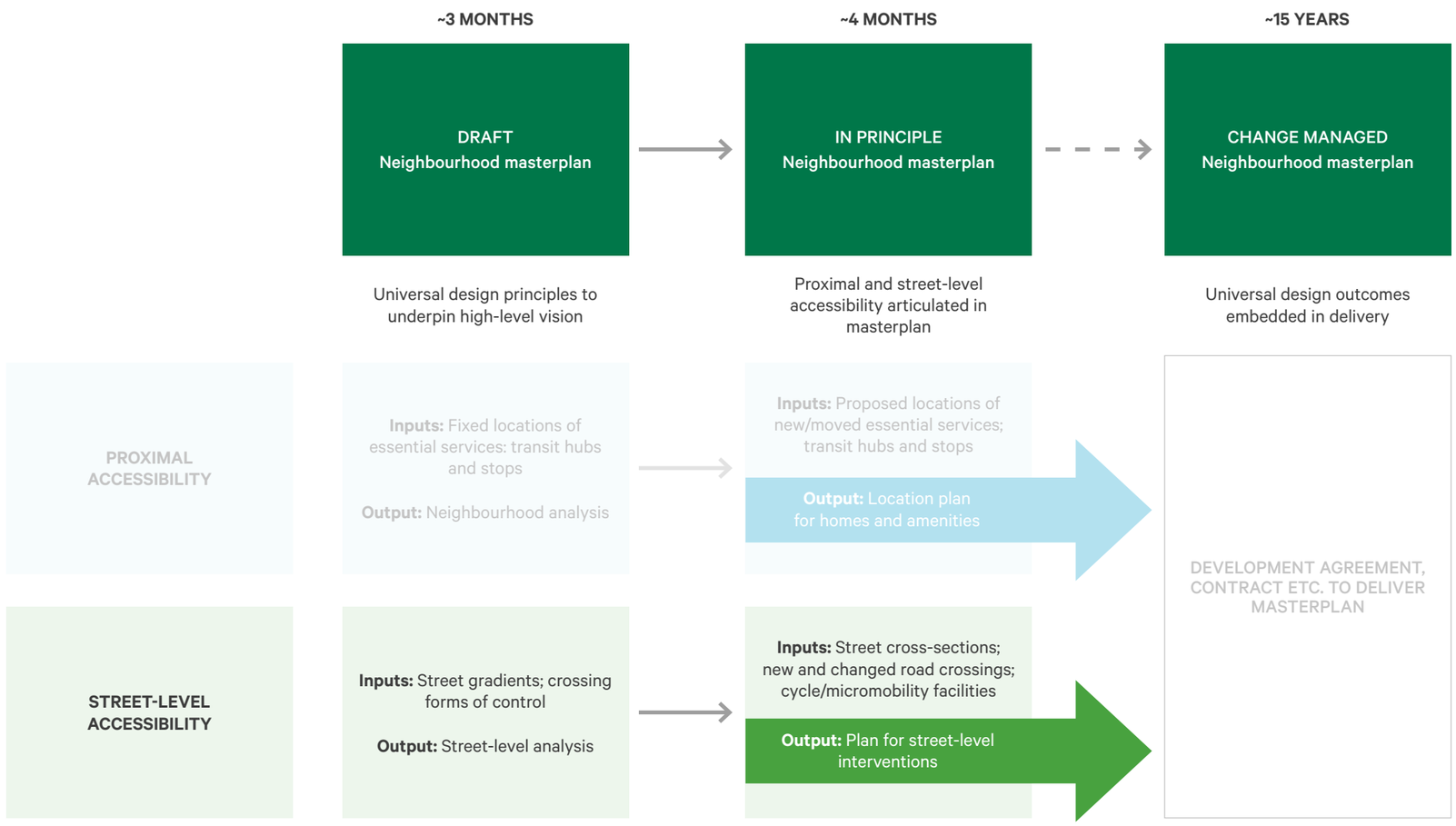
Healthy, legible streets, green spaces, peaceful neighbourhoods can also be great places for people who are who are neurodiverse. Green infrastructure can also mitigate climate change and deliver a more pleasant street.

MEASURING STREET-LEVEL ACCESSIBILITY WHO CAN USE THE STREETS WITHIN THE COMMUNITY?

- Use the universal design personas (see section 3.5) to rate each link and the main road crossings to assess street-level inclusion.
- Who can use these streets now? Identify gaps in inclusion. What can people not access? What are the gaps in inclusion that we need to close?
- Which links and crossings are the highest priority for retrofitting? Where should new ones go?
- Place universally-designed and accessible homes in places with the highest proximal accessibility and street-level accessibility.

OUTPUT

- A drawing set that includes plans to show:
  - Existing street-level accessibility
  - Future street-level accessibility
  - Interventions (location and type) to increase street-level accessibility



3.4 SAFE, OBVIOUS AND STEP-FREE – STREET NETWORKS AND SAFE ACCESS

Everyone should be able to access their home and move around their neighbourhood easily and safely regardless of how they travel. Access for private vehicles, including taxis, rideshare and community vehicles, is important for universal design because it enables drop-off and pick-up for people who need it. Total mobility taxis are vital for many disabled people, and carefully-designed car parking is also important.

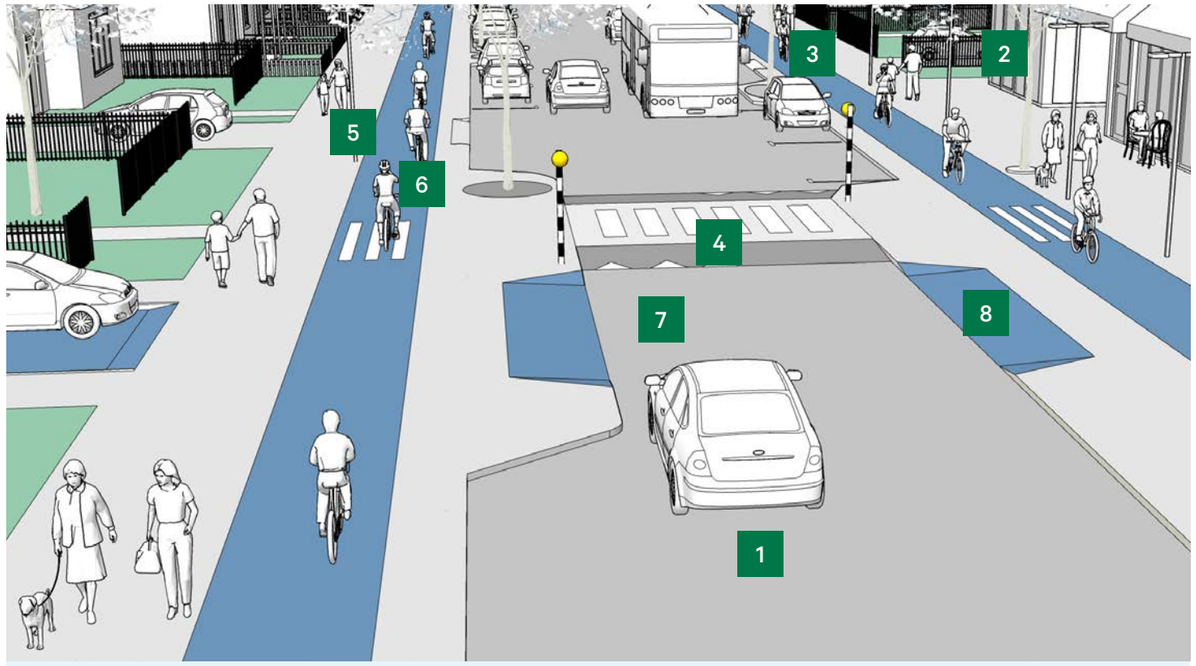
While providing freedom for some people, motor vehicles can also restrict others' movement, rendering spaces inaccessible, noisy and unsafe.

With universal design, the aim should always be to maintain safe, obvious and step-free characteristics. When designing streets where motor vehicles can travel, prioritise the needs of the different universal design personas and use a safe system approach.

Design examples may include:

Street level	Detail level
Safe and appropriate speeds. Supporting infrastructure that enhances the amenity of the street such as trees and landscaping areas.	Accessible parking and drop-off zones that are properly formed, identified and enforced. Space for wheelchair users to disembark, with sealed areas within berms.
Clear delineation between spaces for cars, space for cycling and micromobility, and space for pedestrians.	Cycling and walking should each have their own space. It can be very hard for visually-impaired people to use shared paths.
Continuous crossings that provide a clear, level path for pedestrians, with visual and legal priority over turning traffic.	Wide paths to/from car-parking areas.
Minimising the frequency of driveways, crossovers and other interactions with moving traffic.	Zebra crossings and traffic signals as necessary.
Sufficient width in road corridor for footways, bus stops, cycleways, etc.	Places to sit and rest. Avoid skimping on crossing widths, path curve radii, etc.
Generosity of space is always appreciated.	Spaces to park cycles and mobility devices.
Well lit; safe to use in daytime (natural light) or at night.	Lighting is designed to meet pedestrians' requirements.

Good example of an S-O-S street, from Auckland Transport Design Manual



This neighbourhood street is designed to be safe, obvious and step-free.
This design prioritises people. Motor traffic has access to the street but cannot dominate it.

Legend

1. **Appropriate speed limit** ≤30km/h
2. **Mixed uses** attract people throughout the day, providing social safety
3. **Public transport** connects this street with the city
4. **Raised zebra crossing**, level with the footway
5. **Street trees** make the street more comfortable
6. **Separated cycleway** open to all ages and abilities; clearly differentiated from footway
7. **Driveway design** maintains a level footway
8. **Efficient layout** with minimal road markings, narrow carriageway and clear, legible design

3.4 SOS – SAFE, OBVIOUS AND STEP-FREE[7]

Public realm should be **safe, obvious** and **step-free** – SOS. Use this checklist to see if plans meet SOS standards.

Safe: Pedestrians feel safe from harm

	Criteria for Safe	Standards	Y/N?
1	Safe speeds where pedestrians and vehicles can interact; collisions are survivable if someone makes a mistake.	85th percentile operating speed will be <30 km/h. Shared spaces need a design speed of 10 km/h.	☐
2	Vertical physical separation – pedestrians are separated from faster modes.	If 85th percentile operating speed is >20 km/h, separated space is needed.	☐
3	Sufficient width to allow users to pass each other.	Minimum usable footway width >2.1m	☐
4	Non-slip surfaces – surfaces are not slippery or in need of maintenance.	Meets NZ4586 P5 slip-resistance standard.	☐
5	Minimal hazards – routes are free from obstacles and trip hazards	Obstacles (e.g. bins, signposts, texture irregularities) are rare (<1 per 100m on average).	☐
6	Well-designed lighting – all public space and walkways are lit appropriately.	Complies with appropriate P-categories in NZS1158.3	☐
7	Public surveillance – public spaces and walkways are located in places where they are visible by the public.	See: National Guidelines for Crime Prevention through Environmental Design in New Zealand (2005)	☐

Obvious: Layouts are intuitive and unambiguous

	Criteria for Obvious	Standards	Y/N?
8	All road users understand where they are expected to be.	Is the street layout clear and obvious to all personas? Is it clear how each section is meant to work?	☐
9	Accessible transport choices are available.	Is there frequent public transport (<15 minutes interval, 7am – 7pm all week), SOS from door to door? Is information readily available in case of temporary changes in routes/services?	☐
10	There are clearly marked pedestrian-priority routes along paths and streets, through public spaces and across roads.	Is it clear and obvious – to all design personas – how people are meant to move through the area?	☐
		Are clear pedestrian routes fully reflected in plans?	☐
11	Routes are easy-to-navigate – wayfinding information is: • provided in digital, paper and on-street formats • visual, tactile and audible • consistent with standard NZ signs	Use Waka Kotahi NZTA wayfinding standards: • Universal design • Clear and effective • Simple and concise • Consistent	☐

Step-Free: Step-free route choices are available, easy to find and navigate

	Criteria for Step-free	Standards	Y/N?
12	Routes do not involve excessive diversions, nor require people to put themselves in danger to avoid a step.	Aim for step-free Pedestrian Route Directness (PRD) ratio of 1.00 – 1.50.	☐
		Step-free routes must follow desire lines, **not** circuitous secondary routes.	☐
13	Routes have gentle gradients and places to rest – for example, landings on ramps.	• <5% (1 in 20) average gradient • Sections steeper than 7% (1 in 14) must not exceed 5m in length. • Sections steeper than 8% (1 in 12) must not exceed 2m in length. (UN Design Manual; 2003-4)	☐
14	Step-free routes are provided **as the primary route** and can be negotiated independently.	If standards in rows 1-13 are met this criterion will itself be met.	☐
		Check repeatedly through the design process.	

Criteria are taken from the Waka Kotahi NZTA Universal Design Principles.
Standards are likewise obtained from Waka Kotahi unless stated otherwise.

3.5 STREET-LEVEL ACCESSIBILITY – PERSONAS

To help think about different people's requirements, Kāinga Ora uses universal design personas. This provide assessment criteria to map street-level accessibility and determine whether links and crossings are accessible.

Universal design aims to meet the needs of as many different people as possible. Here, street-level accessibility means measuring how accessible a street is, via criteria specific to each persona. More personas will be developed over time.

8-YEAR-OLD CHILD

Would like to travel independently to access school, parks and local shops and to visit friends and whānau in the community.

They need safe and obvious routes, connecting key relevant destinations with priority crossings on streets that are not too busy.

ADULT USING A MANUAL WHEELCHAIR

This person would like to access as much of the community as possible but would not travel as far as other adults so prefers direct, step-free, low-gradient routes.

Road crossings must be smooth, step-free and not to long with high-quality infrastructure so that they do not get stuck or risk tipping.

BLIND ADULT

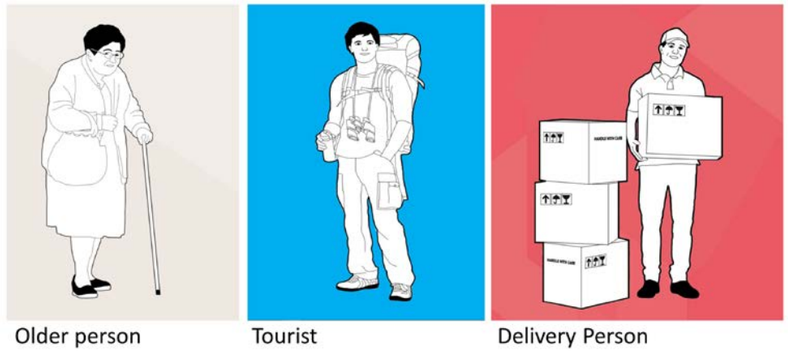
This person would like to access all areas of the community independently and safely, including travel to work, shopping and recreation.

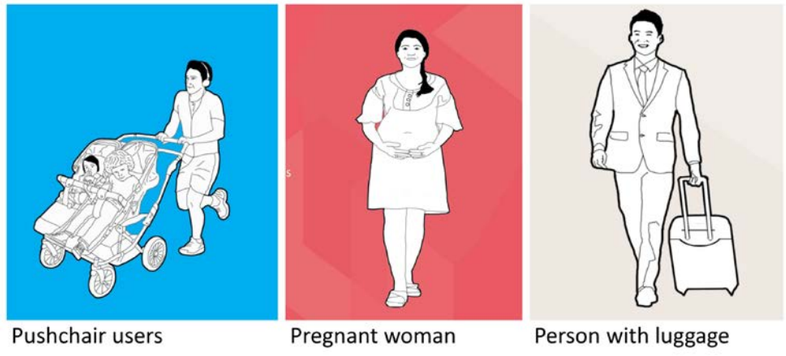
They also need safe routes, tactile wayfinding guidance, priority crossings or low-speed environments with accessible, identifiable routes.

These personas are not exhaustive. There are many more. Designing safe, obvious and step-free environments for these personas will also meet the needs of most others. Safe and obvious designs work well for neurodiverse people, for example.

For a wider understanding of street-level accessibility, use the universal design personas from the Auckland Universal Design Manual.[7]

Look at your design and consider: would this person be able to use it easily?



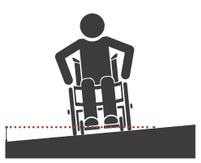


7. https://content.aucklanddesignmanual.co.nz/design-subjects/universal_design/Documents/Universal%20Design%20Personas.pdf

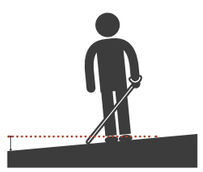
This table shows how to measure the street according to the universal design criteria for the 8 year old child persona.

 8 YEAR OLD CHILD	MEASURES TO ASSESS LINKS AND CROSSINGS BASED ON THIS PERSONA'S REQUIREMENTS		
	SOS = safe, obvious and step-free		
	Fully SOS	**Partly SOS**	**Not SOS**
For each road crossing, the overall standard reflects the lowest standard of any component			
Traffic volume: average annual daily traffic	<2,000 vehicles per day	2,000–5,000 vehicles per day	>5,000 vehicles per day
Traffic speed: 85th percentile operating speed	<20km/h (this cannot be posted as a signed limit, but you can design for 20km/h)	20–30km/h	>30km/h
Traffic composition: percentage heavy vehicles	<5%	5–10%	>10%
Footpath presence, width and condition	Present; minimum usable width >1.2m (ISO 21542:2021 6.3.3: Unobstructed width at least 1,200mm for infrequent two-way traffic)	Present; some barriers requiring diverting off the path onto a berm or similar but not into a roadway; maximum of one barrier or diversion per 100m	No or poor condition footpath; barriers requiring diverting off the path more than once per 100m
Footpath gradient 	n/a		
Footpath crossfall 	n/a		

This table shows how to measure the street according to the universal design criteria for the wheelchair user persona.

WHEELCHAIR	MEASURES TO ASSESS LINKS AND CROSSINGS BASED ON THIS PERSONA'S REQUIREMENTS		
	SOS = safe, obvious and step-free		
	Fully SOS	**Partly SOS**	**Not SOS**
For each road crossing, the overall standard reflects the lowest standard **of any component**			
Tactile paving	n/a	n/a	n/a
Traffic volume: average annual daily traffic	<5,000 vehicles per day	5,000–8,000 vehicles per day	>8,000 vehicles per day
Traffic speed: 85th percentile operating speed	<30 km/h	30–50km/h	>50km/h
Traffic composition: percentage heavy vehicles	<5%	5–10%	>10%
Footpath presence, width and condition	Present; minimum usable width 2.1m or greater; footpath barriers are rare (<1 per 100m on average)	Present; minimum usable width 1.2–2.1m or some barriers requiring diversion off the path onto a berm or similar but not into a roadway; maximum of one barrier or diversion per 100m	No or poor condition or narrow footpath <1.2m usable width; barriers requiring diversion off the path more than once per 100m
Footpath gradient 	• <5% (1 in 20) average gradient • Sections steeper than 7% (1 in 14) must not exceed 5m in length. • Sections steeper than 8% (1 in 12) must not exceed 2m in length	• <5% (1 in 20) average gradient AND • no more than one section of 7% gradient (1 in 14); this must not exceed 5m in length; or • no more than one section of 8% gradient (1 in 12); this must not exceed 2m in length.	• >5% (1 in 20) average gradient; OR • more than one section up to 9m long up to 7% (1 in 14) grade; OR • more than one section up to 2m long up to 8% (1 in 12) grade
Footpath crossfall 	• <2% average crossfall AND • no lengths of 10m or more with >3% crossfall	• <2% average crossfall • one length of no more than 10m with >2% but <6% crossfall	• >2% average crossfall; OR • more than one length of 10m or more with >4% crossfall

This table shows how to measure the street according to the universal design criteria for the blind adult persona.

 BLIND ADULT	MEASURES TO ASSESS LINKS AND CROSSINGS BASED ON THIS PERSONA'S REQUIREMENTS		
	SOS = safe, obvious and step-free		
	Fully SOS	**Partly SOS**	**Not SOS**
For each road crossing, the overall standard reflects the lowest standard of any component			
Tactile paving	Present; meets design standard; detectable condition	Present; minor defect(s) unlikely to affect meaning	Not present or present and defective affecting interpretation of cues
Traffic volume: average annual daily traffic	<5,000 vehicles per day	5,000–8,000 vehicles per day	>8,000 vehicles per day
Traffic speed: 85th percentile operating speed	<30km/h	30–40km/h	>40km/h
Traffic composition: percentage heavy vehicles	<5%	5–10%	>10%
Footpath presence , width and condition	Present; minimum usable width 1.5m or greater; footpath barriers are rare (<1 per 100m on average)	Present; minimum usable width 1.0–1.5m or some barriers requiring diverting off the path maximum of once per 100m	No or poor condition or narrow footpath <1.0m usable width; barriers requiring diverting off the path more than once per 100m
Footpath gradient 	n/a		
Footpath crossfall 	• <2% average crossfall; AND • no lengths of 10m or more with >4% crossfall	• <2% average crossfall; AND • no lengths of more than 10m with >4% crossfall	• >2% average crossfall OR • more than one length of 10m OR • more with >4% crossfall

For detailed information, see: Waka Kotahi (2015) *RTS 14 – Guidelines for facilities for blind and vision impaired pedestrians*.

BY THE END OF THIS PHASE OF THE DESIGN PROCESS, PROJECT TEAMS SHOULD HAVE DRAWINGS SHOWING:

Drawings showing:

- [ ] proximal accessibility
- [ ] essential amenities that are missing
- [ ] existing street-level accessibility
- [ ] future street-level accessibility; and
- [ ] information on potential partners (e.g., Ministry of Education, local iwi, supermarkets, or local councils) who can help provide local amenities.

Drawings are submitted as part of the masterplan; ensure they are reflected in the development agreement, contracts etc.

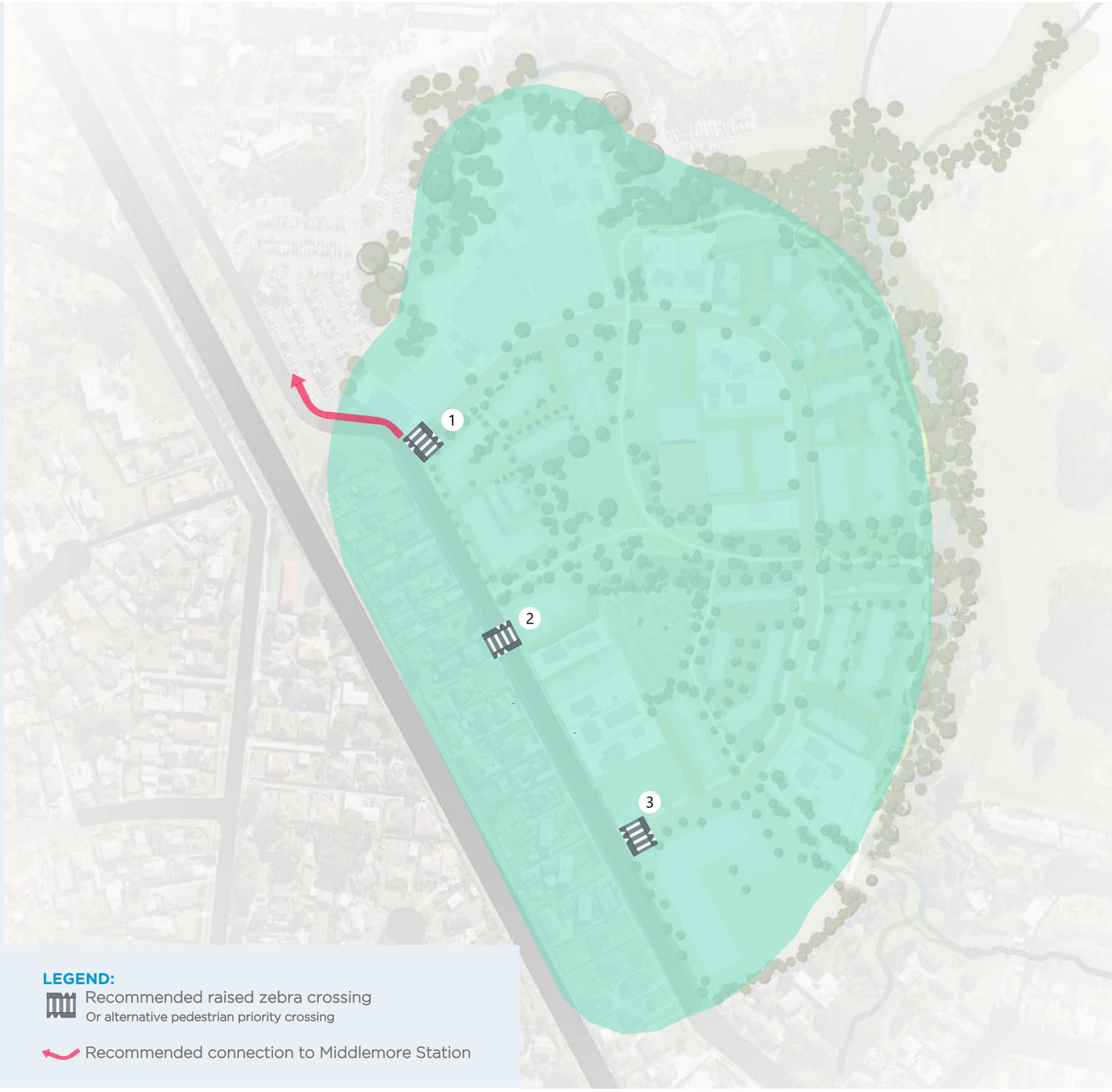


Diagram to show how to modify existing streetscape to deliver street-level accessibility.

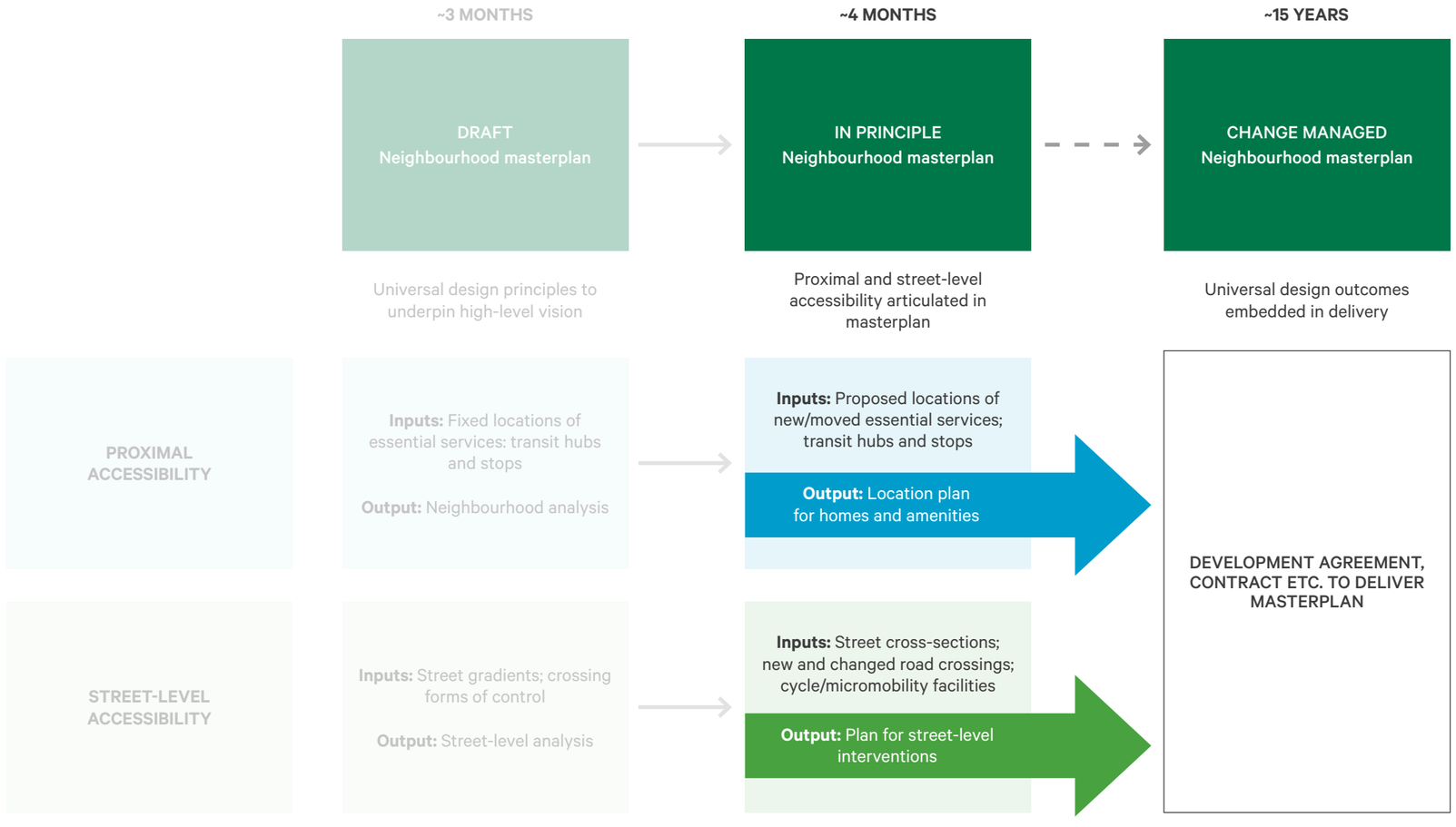
3.6 CHANGE MANAGEMENT – DELIVERING UNIVERSAL DESIGN

- Work in partnership with local authorities to identify and agree on masterplan outcomes, including detailed design, delivery and maintenance.
- Use development agreements, contracts and any other tool to coordinate with funding, design and delivery of paths, road crossings, cycleways, public transport and other transport infrastructure delivered by local authorities and utility companies.
- Undertake accessibility audits of designs and minor works using the personas using the personas, with input from suitably-qualified experts.
- Make frequent site visits to ensure that the work underway will deliver the desired outcomes.
- Include contract conditions stipulating that incorrectly-built infrastructure will be re-done to standard at contractors' expense.

PROJECT DESIGN

This guide does not cover the detailed design of individual sites. It focuses on masterplanning and public realm designs.

Use the information gained in the masterplanning process to inform more-detailed design requirements like plant selection and materiality.



DELIVERING THE MASTERPLAN

Consider the following as the plan is developed through detailed design and construction:

- [ ] Are all new local streets that allow for motor vehicles designed to prioritise low traffic speeds below 30km/h?
- [ ] Are there safe, obvious and step-free connections from all new buildings to the connecting streets and destinations?
- [ ] Are tactile pavers designed in accordance with best-practice design guidance?
- [ ] Has wayfinding signage been designed to be accessible to everyone, including people who do not speak English?
- [ ] Have temporary traffic management plans been audited to maintain safe and accessible street-level inclusion throughout construction?
- [ ] Has public mobility parking been designed to promote close drop-off to essential services and places of recreation?
- [ ] For all new street designs, repeatedly audit them against the universal design personas.
- [ ] If in doubt, revisit the eight universal design goals (see section 1.1).
- [ ] Prioritise investment to deliver these eight outcomes to as many people as possible.

This checklist is just a guide. For further details, see section 4.2.

A FINAL NOTE

Universal design enshrines human rights via an inclusive built environment. A universal design approach acknowledges this and takes steps to ensure that everyone can participate fully in society.

Ultimately, universal design is good design; an approach that delivers joyful, welcoming streets and spaces, open to everyone.

Credit: Crosson Architects

4.0 SUPPORTING REFERENCES

4.1 FURTHER RESOURCES FOR UNIVERSAL DESIGN

4.1.1 BEST-PRACTICE EXAMPLES

- **Urban Environment Development based on Universal Design Principles**
  https://www.e3s-conferences.org/articles/e3sconf/pdf/2018/06/e3sconf_icenis2018_09010.pdf
- **The Common Principles of Universal Design**
  The City of Oslo https://extranet.who.int/agefriendlyworld/wp-content/uploads/2015/06/The-Common-Principles-of-Universal-design-City-of-Oslo.pdf
- **Universal Design Principles for Veterans Capital Works Projects**
  https://www.vic.gov.au/sites/default/files/2019-05/Universal%20Design%20Principles_0.pdf
- **Queen Elizabeth Olympic Park Inclusive Design Standards**
  https://www.queenelizabetholympicpark.co.uk/-/media/inclusive-design-standards-low-res-final.ashx

4.1.2 DESIGN STANDARDS AND GUIDELINES – NEW ZEALAND

- **Kāinga Ora design guidelines**
  https://kaingaora.govt.nz/publications/design-guidelines/
- **Auckland Transport Design Manual**
  https://at.govt.nz/about-us/manuals-guidelines/transport-design-manual/
- **Auckland Design Manual**
  Universal Design https://www.aucklanddesignmanual.co.nz/design-subjects/universal_design
- **Waka Kotahi (2015) Road and Traffic Standards: RTS 14 – Guidelines for facilities for blind and vision impaired pedestrians**
  https://www.nzta.govt.nz/assets/resources/road-traffic-standards/docs/rts-14.pdf
- **Waka Kotahi universal design principles**
  https://www.nzta.govt.nz/walking-cycling-and-public-transport/walking/walking-standards-and-guidelines/pedestrian-network-guidance/design/pedestrian-design-principles/universal-design-principles/
- **Waka Kotahi designing for mobility scooters**
  https://www.nzta.govt.nz/walking-cycling-and-public-transport/walking/walking-standards-and-guidelines/pedestrian-network-guidance/design/pedestrian-design-principles/designing-for-mobility-scooters/
- **Waka Kotahi pedestrian network guidance**
  https://www.nzta.govt.nz/walking-cycling-and-public-transport/walking/walking-standards-and-guidelines/pedestrian-network-guidance/
- **Waka Kotahi cycling network guidance**
  https://www.nzta.govt.nz/walking-cycling-and-public-transport/cycling/cycling-standards-and-guidance/cycling-network-guidance/
- **Waka Kotahi One Network Framework**
  https://www.nzta.govt.nz/planning-and-investment/planning/one-network-framework/
- **Waka Kotahi Speed Management Guide**
  https://www.nzta.govt.nz/safety/partners/speed-and-infrastructure/safe-and-appropriate-speed-limits/speed-management-guide/
- **Roads and Streets Framework**
  https://at.govt.nz/about-us/transport-plans-strategies/roads-and-streets-framework/
- **Buildings for everyone: Designing for access and usability**
  https://www.building.govt.nz/building-code-compliance/d-access/accessible-buildings
- **NZS 4121:2001 Design for access and mobility: Buildings and associated facilities**
  https://www.standards.govt.nz/shop/nzs-41212001/
- **New Zealand Building Code compliance documents**
  https://www.building.govt.nz/building-code-compliance/
- **Office of Seniors Age Friendly Urban places guide**
  Age-friendly-urban-places-guide.pdf (officeforseniors.govt.nz))
- **Waka Kotahi Aotearoa Urban Street Planning & Design Guide**
  (Aotearoa urban street planning and design guide (nzta.govt.nz))

4.1.3 DESIGN STANDARDS AND GUIDELINES – INTERNATIONAL

- **United Nations Good Practices of Accessible Urban Development**
  https://www.un.org/development/desa/dspd/2016/10/good-practices-of-accessible-urban-development/
- **United Nations (2003): Accessibility for the Disabled – *A Design Manual for a Barrier Free Environment***
  https://www.un.org/esa/socdev/enable/designm/AD2-01.htm
- **The Centre for Excellence in Universal Design (Republic of Ireland)**
  https://universaldesign.ie/home/
- **Singapore Building Control Authority Universal Design Guide**
  https://www1.bca.gov.sg/regulatory-info/building-control/universal-design-and-friendly-buildings/universal-design-guide

4.1 FURTHER RESOURCES FOR UNIVERSAL DESIGN

4.1.4 LEGISLATION, POLICIES AND PLANS – NEW ZEALAND

- **Ministry of Social Development framework to accelerate progress towards accessibility in Aotearoa New Zealand**
  https://www.msd.govt.nz/about-msd-and-our-work/publications-resources/information-releases/cabinet-papers/2021/accelerating-accessibility-work-programme-update.html
  https://www.msd.govt.nz/about-msd-and-our-work/work-programmes/disability-system-transformation/ministry-for-disabled-people-establishment-unit/index.html#Relatedlinks8
- **Kāinga Ora Accessibility Policy 2019–2022 (currently being updated)**
  https://kaingaora.govt.nz/about-us/accessibility-at-kainga-ora/
- **New Zealand Disability Strategy 2016–2026**
  https://www.odi.govt.nz/nz-disability-strategy/about-the-strategy/new-zealand-disability-strategy-2016-2026
- **Auckland Transport Accessibility Actions Plan 2022–2024**
  https://at.govt.nz/media/1989002/accessibility-action-plan-2022-24.pdf
- **Road to Zero**
  https://www.nzta.govt.nz/safety/what-waka-kotahi-is-doing/nz-road-safety-strategy
- **Office for Seniors Better Later Life Strategy 2019–2034**
  https://officeforseniors.govt.nz/better-later-life-strategy/

4.1.5 RESEARCH

- **New Zealand Human Rights Commission (2015)** *The accessible journey: report of the inquiry into accessible public land transport.*
- **Valuing Wellbeing Outcomes**
  https://kaingaora.govt.nz/publications/valuing-wellbeing-outcomes/
- **Equity in Auckland's Transport System**
  https://www.transport.govt.nz/area-of-interest/auckland/equity-in-aucklands-transport-system/
- **Understanding and implementing intensification provisions for the National Policy Statement on Urban Development**
  https://environment.govt.nz/assets/Publications/Files/Understanding-and-implementing-intensification-provisions-for-NPS-UD.pdf
- **The Benefit of Designing for Everyone**
  https://centreforinclusivedesign.org.au/wp-content/uploads/2021/05/inclusive-design-report-digital-160519.pdf
- **Cost-benefit analysis of universal design**
  https://projects.nr.no/sites/default/files/files/NR1032-Cost-benefit%20analysis%20of%20unversal%20design-final.pdf
- **Measuring economic benefits of accessible spaces to achieve 'meaningful access' in the built environment: A review of recent literature**
  https://upcommons.upc.edu/bitstream/handle/2117/363191/274-Article%20Text-1410-2-10-20211130.pdf?sequence=1&isAllowed=y

Cities have the capability of providing something for everybody, only because, and only when, they are created by everybody.

Jane Jacobs, The Death and Life of Great American Cities, 1961.

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