Government of **Western Australia**
Department of **Transport**

Empowering a thriving community

Planning and Designing for Active Transport in Western Australia

Local Bike Planning Guidance

Prepared by Department of Transport

About this report

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Amendment record

This document will be reviewed and developed as part of a suite of guidelines for the planning and designing for active transport in Western Australia, to ensure its continuing relevance to the systems and processes that it describes. If you would like to provide feedback or suggest any changes to this guidance, please contact the Department of Transport at activetransport@transport.wa.gov.au.

A record of contextual revisions is listed in the following table.

Revision number	Revision date	Description of key changes	Section/ page no.

Acknowledgment of Country

We acknowledge the Traditional Custodians throughout Western Australia and their continuing connection to the land, waters and community.

We acknowledge the lands on which all Western Australians live, work and play; we recognise the strong and invaluable connection that Aboriginal peoples have across this Country, from a cultural, social, environmental, spiritual and economic perspective.

Many of the paths, streets and trails where people walk, wheel and ride in Western Australia today, follow the song lines, trade routes and seasonal runs that Aboriginal peoples have followed for many thousands of years. Experiencing these actively, increases our sense of connection to place, and strengthens respect for the Traditional Custodians, their journeys and experiences, their place, their Country.

We pay our respects to all members of Western Australia's Aboriginal communities and their cultures; and to Elders past and present.

Image: Extract of "Songlines", a collaborative artwork by Deanne Tann, Sister Kate's Home Kids Aboriginal Corporation and Department of Transport staff following Cultural Awareness Training workshops.

Contents

Section 1. Introduction

1.1 About this guidance

This document provides a flexible framework for local bike planning in Western Australia (WA).

Sections 1-2 of the guidance provide planning context, Section 3 outlines key network planning considerations, and Sections 4-8 outline five planning stages that can be adjusted to suit the varying contexts of local governments (LGs) (Figure 1).

The process outlined underscores the following functions of a robust plan as:

- a tool to build consensus on community needs, aspirations and priorities for bike riding;
- the basis of programming capital and non-capital initiatives;
- the chief mechanism for the planning and validation of the long-term cycle network (LTCN) for WA (or for those LGs not covered by an LTCN strategy to apply the WA Cycling Network Hierarchy for consistency and alignment of cycle planning across the regions);
- a benchmarking and evaluation tool for bike friendliness, demand/propensity, and participation in the area; and
- a level of input or resilience to ad hoc external factors, such as new developments or major projects.

1.2 Bike planning at all levels

To make bike riding easier for everyday journeys and experiences, an integrated approach across all levels of government is essential.

The State Government supports bike riding as a safe, convenient and widely accepted transport mode through policy initiatives, infrastructure delivery, and behaviour change programs as outlined in the WA Bicycle Network Plan. Bike plans help by applying these measures at the local level, adapting them to local needs and promoting them within communities.

> Effective planning for cycling requires the coordination and integration of many different policy and design measures across agencies and hierarchies of government. How to 'do' a bike plan (McLeod, Babb and Barlow).

1.3 Walking, wheeling and riding

While this document focuses on bike planning, many LGs develop plans that also include walking and other forms of micromobility.

Some also adopt broader transport and movement strategies, while others integrate bike planning into community development or public health plans. LGs may also collaborate across boundaries, especially in smaller areas.

Whatever the scope of the plan, the bike planning process itself is a valuable activity for consulting the local community, exploring local transport issues, ensuring coordination with other organisations, and creating a blueprint of measures to encourage more people to walk, wheel and ride more often.

Feedback is welcome as this guidance is intended to evolve over time.

1.4 Reframing bike riding

Promoting inclusive language and images in bike plans is important for challenging stereotypes.

This involves shifting from the exclusive image of sports or fast commuting riders to a more inclusive, relatable image of bike riding as an everyday transport option for people of all ages and abilities.

Language and imagery in local bike plans should ideally reflect diverse demographics and trip types, avoiding sports cycling imagery unless discussing specific activities or training loops.

Research indicates that using 'bike rider/riding' instead of 'cyclists/cycling' humanises riders and can help promote a more inclusive perception of bicycling. 'Cycling' can evoke images of confident sports enthusiasts, potentially alienating others. 'Bike riding' broadens the appeal, making it more approachable and relatable to a wider audience for various journeys and experiences.

While this guidance mainly uses variations of the term 'bike riding', variations of 'cycling' may still be used when referencing existing guidance and approaches.

Definitions for key terms are available in the Planning and Designing for Active Transport Glossary.

1.5 Relationship to other guidance

This document serves as the primary reference for local bike planning in WA, complementing the Active Transport Planning and Design Guidance Suite being developed by the Department of Transport (DoT).

The overarching document in the guidance suite is the **All Ages and Abilities Contextual Guidance**, which outlines the two main foundations that guide DoT's approach to bike planning in WA.

- Planning for all ages and abilities
- Facilitating bike riding comprehensively through policy, behaviour change, and the physical environment.

There are many other inter-related strategies, plans, and frameworks that influence the development of bike plans, including – but not limited to – the following:

- WA Bicycle Network Plan and LTCN for WA
- Design WA policies and guidelines
- Austroads guidance, including WA-specific supplements
- *Disability Discrimination Act 1992* and associated standards
- Australian Standard AS 2890.3:2015 – Parking facilities
- Previous bike plans, plans of neighbouring LGs, and integrated transport strategies or movement plans (local and regional)
- Other local and state planning policies relating to the public realm, such as public health plans, community plans and urban forest or greening strategies.

Section 2. Rationale for approach of this guidance

2.1 A five stage framework for local bike planning

The local bike planning process typically follows the stage outlined in Figure 1 and includes information gathering, assessing current provisions, setting objectives, and identifying strategies and actions.

Steps and activities can be adjusted based on LG requirements, with flexibility built in to adapt the planning process as needed and also revisit certain steps to respond to new information.

This guidance integrates the VMOSA model (vision, mission, objectives, strategies, and actions) into the five stages. This model provides a logical structure for bike plan documents that focuses on a shared vision that is aspirational yet achievable.

2.2 A bike plan for everyone to use

As the content and formatting of bike plans varies based on local context, the five phases outlined can be referenced to help structure bike plans by ensuring the key elements are included and that the plan tells a story (Figure 1).

It is recommended that bike plans include visual elements, place detailed analyses in appendices, and avoid jargon. This will make them more compelling and easier to read for both a public audience and internal staff.

2.3 Consultation throughout the planning process

A robust public consultation process is essential for a successful bike plan. Involving the community and other stakeholders throughout planning provides a strong foundation for shared understanding and lasting solutions that benefit the whole community.

This guidance emphasises ongoing consultation, not as a checkbox or single stage, but as an integral activity spanning all planning stages.

Ongoing dialogue captures local issues early, allows feedback to be addressed along the way, and fosters a sense of ownership for smoother implementation and long-term success.

Section 4.4 provides more information on engagement planning and methods.

The Guide to Best Practice Planning Engagement in WA is a key reference for facilitating meaningful consultation that supports good planning.

> Consultation opportunities are highlighted throughout this document. Planners are advised to consider the range of these activities when planning their engagement approach.

Figure 1: A five stage framework for local bike plan development incorporating VMOSA

1. What is the project?	2. Where are we now?	3. Where are we going?	4. How will we get there?	5. What will we do and by when?
Outlines the purpose, resources and scope of the planning project.	Information gathering to set the scene and establish a baseline.	Culminates in a **vision** describing the ideal bike riding conditions that the bike plan will work towards.	Outlines the plan's goals (**mission**) and measurable results (**objectives**) that will make the vision a reality.	Identifies **strategies** to accomplish the plan's objectives and outline **actions** to implement them.

2.4 The six ‘E’s of bike planning

For some practitioners the use of behavioural theories may be unfamiliar, however if we look at bike riding as a behaviour that we either want to understand or change (or both), then these theories can help organise strategies by focusing attention on factors that can be influenced.

This guidance applies the six ‘E’s of bike riding (Figure 2) and draws from what is known as the ‘socio-ecological model’, which is described in detail in the Contextual Guidance.

The socio-ecological model looks at factors that influence people’s choice and ability to ride across four levels: personal influences, social and cultural influences, community and environmental influences, and system/public policy influences.

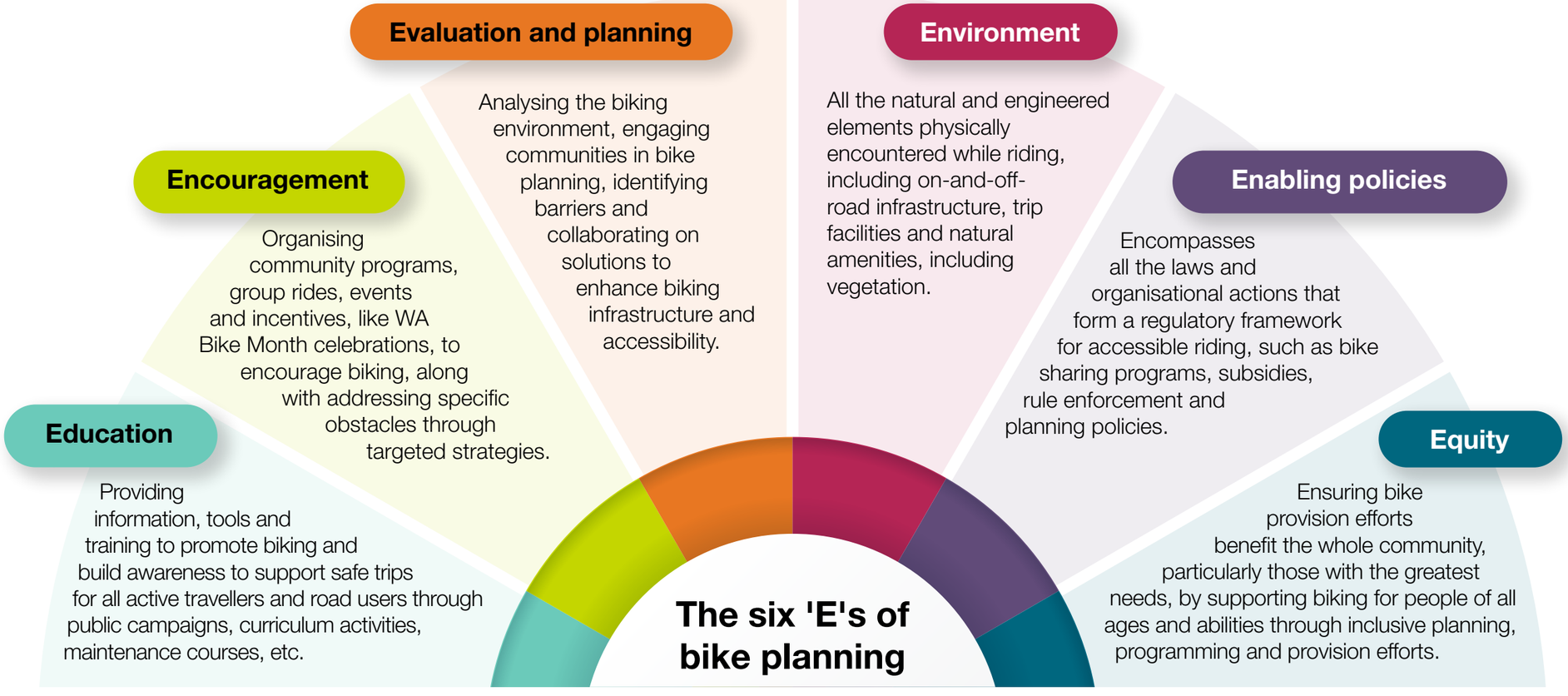
Each of the six ‘E’s represent a different area of influence on bike riding, and in combination they can help to blend an engineering approach with one that considers broader influences.

They also highlight the potential roles that various entities can play in improving bike riding conditions within a community, from planning departments to schools, advocates and local businesses.

The six ‘E’s are consistently referenced throughout this guidance during key parts of the planning process, including conditions analysis, barrier and enabler identification, and strategy development.

The ‘E’s have evolved over time. This guidance aligns with industry best practice by replacing ‘enforcement’ with ‘enabling policies’ for a more positive, comprehensive policy approach. It also expands ‘engineering’ to ‘environment’ to include both built and natural factors affecting the bike riding experience and includes ‘evaluation and planning’ as essential components.

Figure 2: The six ‘E’s of bike planning



2.5 Bike rider types and level of service

Understanding community characteristics and preferences when it comes to bike riding is integral to the bike planning process and guides evidence-based decision-making.

This information is especially valuable when gathered at the local level, however it can also be drawn from pre-existing sources, such as DoT's People's Pulse Report or the National Walking and Cycling Participation Survey, to help establish the broader context.

Western Australian research examining adults who have stated an interest in bike riding has identified four categories of riders based on confidence: interested but concerned, somewhat confident, highly confident, or unable or unwilling to ride. The first three types are captured in Figure 3.

Surveying the community to understand how people describe themselves based on these bike rider types can provide insight into the diversity of the bike riding population. It also helps planners understand the range of experiences and perspectives within the bike riding community.

The bike rider types are used in bike planning for:

- **Improving infrastructure:** preferences inform network planning and bike infrastructure design.
- **Targeted development:** tailored objectives and strategies based on local attitudes and needs.
- **Engagement and education:** addressing concerns guides outreach efforts.
- **Mode shift monitoring:** data tracks mode share changes and informs strategies.
- **Equitable access:** planning efforts aim for inclusivity and accessibility.

Rider types and their associated safety and comfort requirements also feed into level of service (LOS) assessments, with the focus being on providing infrastructure that the 'interested but concerned' cohort – who have the lowest tolerance for traffic stress – feel comfortable on.

The bike rider types, LOS, and level of traffic stress (LTS) are explained in detail in the Contextual Guidance.

Figure 3: Bike rider types

Low stress tolerance **High stress tolerance**

Interested but concerned **Somewhat confident** **Highly confident**

Section 3. Network planning

3.1 LTCN and bicycle network planning principles

The LTCN is an aspirational strategic network plan outlining continuous cycling networks across key regions of WA and is the main network planning input to be considered in local network planning.

The LTCN is outlined in twelve strategies, one for Perth and Peel and 11 regional strategies, which have been developed based on six bicycle network planning principles: safe, connected, widespread, legible, achievable and aspirational (Figure 4). Refer to the Contextual Guidance for detail on the network planning approach and principles.

Maintaining an agreed and accurate LTCN is essential to ongoing collaboration across multiple agencies and levels of government.

LGs with an endorsed LTCN are encouraged to review the network and propose amendments as required (see detail in Figure 11).

As the custodian of the LTCN, DoT should be involved in discussions on proposed amendments prior to bike plans being submitted for local council endorsement. This is particularly important in the context of maintaining agreement on alignments which interface with adjacent LGs and state government assets.

Figure 4: Bicycle network planning principles

Safe

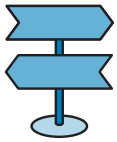
Everyone should be able to ride safely and confidently to the places they want to go with the appropriate level of protection from traffic provided.

Connected

Like a road network, all bike riding routes should connect to something along the way and at each end (whether that is a destination or another bike riding route).

Widespread

The network should be extensive enough for people to safely assume they can get to their destination without encountering hostile traffic or terrain conditions.



Legible

The network needs to be both intuitive and direct with coherent wayfinding and alignment of major routes parallel to natural land forms, such as rivers and coastlines, or within existing road and rail corridors.

Achievable

Network planning will consider tried-and-tested approaches while also embracing innovation and looking beyond existing levels of service and use towards a future where bike riding is a mainstream transport option.

Aspirational

The network proposed will demonstrate a long-term commitment to delivering a WA-wide network that supports bike riding as a viable form of mass transport for people of all ages and abilities.

3.2 The WA Cycling Network Hierarchy

Route alignments in the LTCN are classified by the WA Cycling Network Hierarchy, which has been developed to enable consistency in bike network planning and classification.

The Hierarchy features primary, secondary, and local routes, along with complementary networks such as road cycling routes and transport trails.

The Hierarchy is the starting point for route function and built form considerations.

- Route function considers the type of activities that take place along a route and level of demand (existing and potential).
- Route built form is based on the characteristics of the environment, including space availability, topography, traffic conditions (speed, volumes), and primary route users.

LGs not covered by an LTCN strategy are encouraged to still make use of the WA Cycling Network Hierarchy to develop and categorise their cycling network.

The LTCN has been developed through application of the Hierarchy using the following scales. These scales outline approximate geographic spacings between routes within the Hierarchy and have been developed to intentionally limit the number of routes to ensure the network remains strategic.

- Primary route density – 5 km x 5 km
- Secondary route density – 2.5 km x 2.5 km
- Local route density – 1.5 km x 1.5 km

These scales are a general guide and alignments may be closer together or further apart depending on factors such as where routes intersect, density of destinations, and duplication of routes along major corridors such as highways.

Refer to Appendix D for more information on network identification.

3.3 Route classification and community routes

Route classification plays a critical role in the bike planning process by providing a systematic approach to understanding local needs.

By categorising routes by function, planners can assess current conditions against an established LOS and identify what investments in bike infrastructure are most needed. For instance, high stress roads may require physically separated facilities to ensure the safety and comfort of riders, and whole low-traffic residential streets may benefit from traffic calming measures or mixed traffic facilities to encourage riding.

As the LTCN serves as a strategic network, and the WA Cycling Network Hierarchy as a strategic planning tool, they do not necessarily go to the level of detail a local bike planning process will.

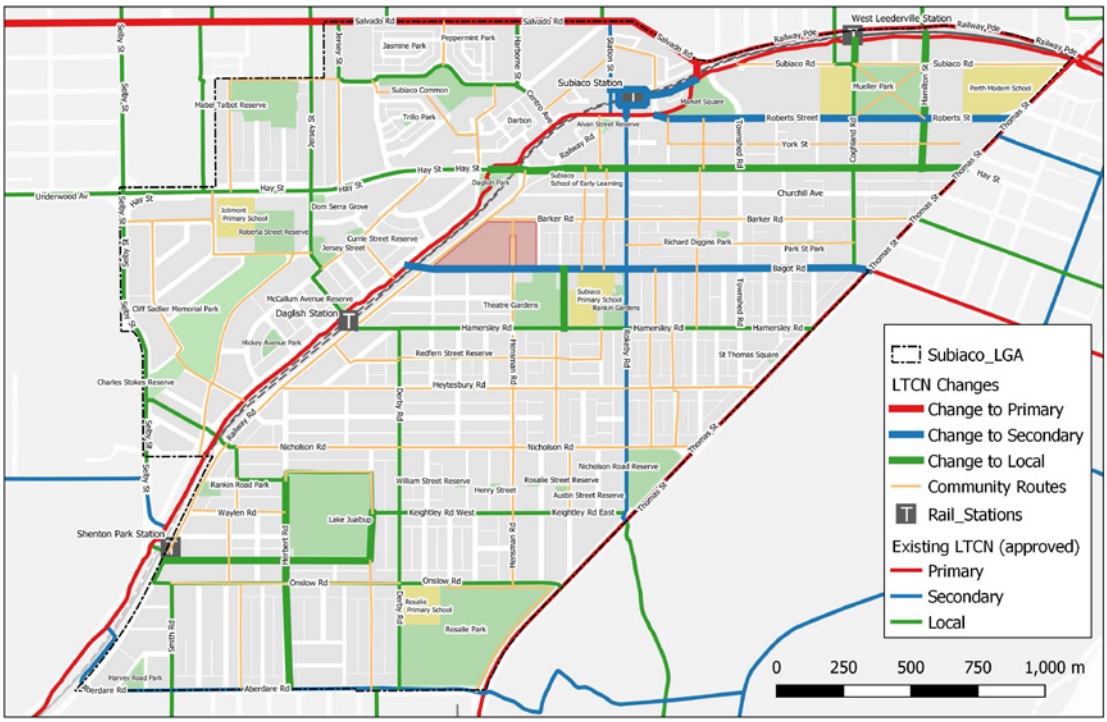
There will generally be additional routes that serve a bike riding function for the LG but do no fall on the designated LTCN, nor are they appropriate for labelling as local routes.

Some LGs categorise these routes as ‘community routes’ that are essential for local network density and therefore need to be acknowledged in the plan. Figure 5 shows how the City of Subiaco has captured community routes in their bike plan.

LGs may also identify spot improvements like bike parking or crossings to improve the riding experience and encourage uptake.

Figure 5: Adjusted Subiaco long-term cycle network with community routes (indicative)

The City of Subiaco's Bike Plan 2021-2025 identifies additional community routes that 'serve a cycle function for the City but do not fall on the designated LTCN have been categorised as 'Community Routes' to ensure their distinction exists'. These routes are indicated alongside their adjusted LTCN.



Graphic attributed to City of Subiaco Bike Plan 2021-2025 [PDF 9.182KB], page 30. Used with permission.

Section 4. Stage 1: What is the planning project?

Stage 1 outputs checklist:

- ☐ Review resources, capabilities, leadership, and project expectations.
- ☐ Determine governance structure, project lead and cross-functional team support.
- ☐ Outline key stages, activities, resources, and expected deliverables.
- ☐ Map stakeholders based on impact or influence.
- ☐ Start engagement planning based on needed inputs, audience suitability, and methods available.

4.1 Project purpose and governance

A review of resources, capabilities, leadership, and project expectations informs the development or update of the bike plan and shapes its scope.

At this stage LGs will generally consider joint planning options, funding requirements, and integration with broader documents like integrated transport plans.

Governance for the planning project is also determined, adapting as necessary the structure outline in Table 1 and typically led by a dedicated officer or consultant with a cross-functional team to support. This team may include staff from areas such as engineering, transport, sustainability, parks and recreation, community development, etc.

Some tasks, such as community engagement and network planning, may need specialised skills that will have to be booked, hired, or sub-contracted.

It is advised to establish terms of reference, and clearly define roles, responsibilities and authority. Planners can also consider maintaining working or steering groups post-plan completion to aid implementation.

Consultation opportunity: Consult stakeholders and community to align expectations for the bike plan and secure any necessary approvals. Consider previous consultation efforts and/or bike plan iterations.

Table 1: Governance structure for local bike planning

Group	Role	Members
Endorsers	Endorse the plan or components of it	LG executive, Council, state government, funding providers
Steering committee	Guide and sign off on the draft plan	Stakeholders, external agencies, neighbouring LGs, advocates
Internal review committee	Ensure compliance with policies, identify recommendations, and advise on implementation	Senior or specialist LG staff
Project working group	Develop the plan, provide coordination, expert input, and practical assistance	Staff from various divisions involved in plan creation and implementation
Project coordinator/s	Lead preparation of the plan	Specific LG officers or consultants appointed or contracted

4.2 Project scoping

Important: This guidance document outlines typical elements of a bike plan scope at the beginning of each planning stage. A full list is provided in Appendix C.

The project scope usually outlines the key stages, activities within them, resources required, and deliverables expected. Time will need to be allowed for internal resource scheduling or procurement.

Expenses for bike plan delivery, whether by LG staff or consultants, can vary greatly depending on local factors and regional complexities. While specific costs for bike plans in WA aren't provided in this guide, advice can be sought from DoT and other LGs.

Delivery timeframes also vary but tend to span 12-18 months. Table 1 outlines approximate time periods for different tasks, depending on context. These durations are a starting point and it is advisable to allow for unforeseen delays and enable flexibility in the planning process by allocating funds over two financial years.

Consultation opportunity: Key stakeholders, such as other LGs, DoT and WALGA, can provide guidance on bike planning scoping, methods, and resources.

4.3 Stakeholder identification

Early stakeholder identification sets the groundwork for effective engagement, with a first step being to map stakeholders based on their impact or influence on the project.

Consider a range of stakeholders, such as:

- Internal: LG decision makers, elected members, multidisciplinary staff from various departments.
- Community: community members, Aboriginal and Torres Strait Islander people, local businesses, education centres and schools.
- Advocacy and non-profits: bike advocacy and user groups, community organisations, disability groups.
- Government agencies: state government agencies, adjacent LGs, etc.

Planners should also be prepared to evolve the stakeholder list throughout the project.

Consultation opportunity: It's advisable to liaise with internal communications and engagement teams when developing the list of relevant people and organisations who should be engaged during the planning process, and DoT may be able to provide contact details for identified stakeholders. The Guide to Best Practice Planning Engagement in WA includes a stakeholder mapping tool.

Table 2: Indicative time ranges for local bike plans based on context

Task	Metropolitan and major regional cities/towns	Regions	Regional townships
Planning and scoping	2-3 months	2-3 months	1-2 months
Tendering and appointing consultant	2-3 months	2-3 months	2-3 months
Develop draft plan	6-8 months	7-9 months	5-7 months
Finalise plan	1-2 months	1-2 months	1-2 months
Council adoption	1-2 months	2-3 months	1-2 months
Total estimated timeframe	12-18 months	14-20 months	10-16 months

4.4 Engagement planning and methods

As outlined in Section 2.3, this guidance advises consultation opportunities throughout all stages of plan development and shows key consultation activities throughout the document.

Most LGs will create an engagement plan in the early stages of the project and then revise it to respond to new information and feedback.

Before selecting methods, consider:

- the goal of the engagement;
- what input is needed and how it will be used;
- what consultation has already taken place;
- who needs to be consulted; and
- the information required for effective participation.

Consultation methods vary and may not always involve all stakeholders and the whole community.

Targeted engagement, such as reference groups, can be used based on specific needs.

In selecting engagement methods, consider:

- available resources (existing or procured);
- stakeholder needs (with attention to demographics, preferences and accessibility requirements);
- methods suitable to the audience; and
- information needed (with a focus on catering to a diverse cross-section of affected populations).

Table 3 shows commonly used methods that can be tailored for various LG needs and capacities. A mix of methods is recommended.

For further guidance on planning engagements see:

- WA Bicycle Network Grants Program Activation, Consultation and Evaluation Guidance; and
- Guide to Best Practice Planning Engagement in WA.

Table 3: Engagement methods commonly used in bike plan development

Method	Description
General surveys	Used to gather feedback broadly using online or paper surveys, targeting specific demographic groups or stakeholders as needed.
Saddle surveys	On-bike surveys conducted to assess existing network conditions, involving community reference groups or specific bike rider types.
Intercept surveys	In-person surveying of people at key locations (on streets/paths/stations/major trip attractors) to inquire about travel decisions and influencing factors.
Community forums or workshops	Targeted sessions hosted to gather ideas, present planning developments, and address questions. Particularly important for special interest and/or vulnerable groups.
Charrettes	Workshops for stakeholders to collaborate and agree on planning priorities and strategies.
Interactive mapping	Online tools used to collect spatial information on preferred routes, infrastructure preferences, and network experiences.
Social media	Platforms used for updates, feedback, and discussions.
Focus groups	Facilitated in-depth discussions on specific planning aspects, with an emphasis on recruiting diverse or specific participants.
Interviews	Generally one-to-one or small group sessions used to generate in-depth information or focused topics.
Collaboration with community groups	Outreach through groups, ensuring diverse representation and tapping into existing networks.
Online platforms	Online platforms used for discussions, feedback, and project updates.
Educational outreach	Activities with students, families and faculties used to capture school focused inputs, ranging from workshopping to street audits, surveys, etc.

Section 5. Stage 2: Where are we now?

Stage 2 outputs checklist:

- ☐ Assess current conditions, past initiatives, and future needs.
- ☐ Adopt an LG-wide or a localised neighbourhood perspective for tailored information gathering.
- ☐ Use existing data sources and consultation for contextual and benchmarking data.
- ☐ Evaluate existing physical infrastructure and social policies and programs.
- ☐ Generate a comprehensive overview of the current bike riding landscape.

5.1 Context analysis

This stage involves assessing current conditions, past initiatives, and future transport and land use needs. This information aids in identifying local challenges, setting goals for future planning, and establishing benchmarks for measuring bike friendliness and participation.

The extent of the analysis depends on the project scope and generally includes literature review, data collection, and existing conditions analysis.

The Guide to Best Practice Planning Engagement in WA provides detailed guidance on context analysis.

5.2 Neighbourhoods approach

During context analysis planners can adopt both LG-wide and localised neighbourhood perspectives for more tailored information gathering, and to enable targeted strategies and improvements.

For example, the City of Vincent divided its area into five neighbourhoods, selecting (as practical) neighbourhood perimeters based on busier roads or railways that frame communities and influence transport movement borders.

5.3 Literature review

The literature review generally provides insights into current best practices, methods, and tools.

Reviewing and referencing related plans (previous bike plans, neighbouring or comparable bike plans, strategic plans) will help ensure alignment with broader goals and cycling networks and strengthen the case for plan recommendations.

Relevant LTCN strategies should also be reviewed at this stage.

5.4 Data collection

Gathering demographic, behavioural, and safety data helps understand current bike usage and establishes a baseline for the plan's goals to make sure suggested changes and actions are relevant.

Existing data sources can offer access to large samples that can often be disaggregated at the LG level (Table 4).

Many of the active transport data sources can be displayed or analysed in a geographic information system (GIS) if the LG has this resource available (refer to Appendix D for guidance on GIS).

Consultation opportunity: LGs may opt for early engagement to collect contextual and benchmarking data, including bike usage, ownership, demographics and attitudes (especially how individuals self-identify based on stress levels).

The WA Bicycle Network Data and Monitoring Strategy summarises data sources for active transport monitoring that DoT either currently uses or has under investigation. Some of these sources are included in this guidance, however practitioners should review the strategy for more information.

5.5 Assessing existing conditions – physical and social

An assessment of the infrastructure both on the ground (physical infrastructure) and policies and programs (social infrastructure) currently in place in the specific planning area will provide a benchmark for the bike plan.

Assessment methods generally include a desktop review, site visits, consultation, and conditions analysis (e.g. LTS assessment).

Social infrastructure assessment usually starts with desktop analysis of LG resources, looking at the LG's policy manual, website, etc., followed by further research and consultation. Key questions will explore existing policies, initiatives, community involvement, and evaluation approaches.

Assessing current physical conditions involves examining bike facilities, land uses, connectivity to public transport and traffic data.

5.5.1. Desktop review

Desktop review uses GIS data and other sources to gather information on the existing physical environment (built and natural). This data aids assessment, monitoring efforts, and provides a baseline for understanding the network as a whole.

Common spatial data sources include GIS topography layers, topographic data, Google Maps/Nearmaps/MetroMap, site visit data, and LG tourism maps/data. Table 5 outlines key physical infrastructure assessment items and sources.

Many LGs or state government agencies will have GIS data on existing facilities (streets, principal shared paths, footpaths, shared paths, bicycle lanes, etc.), traffic volumes, current and planned land use, crossing locations, trails, rivers, schools, aerial imagery, etc.

Note: If GIS data isn't available, it's advisable to create it for existing and planned facilities during the planning stage. Appendix D provides more information on network mapping and GIS data requirements.

5.5.2. Site visits and saddle surveys

Site visits offer firsthand verification of on-ground conditions, providing planners and stakeholders with insights into riding experiences, local habits, preferences, and challenges.

Key outcomes:

- Understanding conditions by assessing terrain, traffic, and existing infrastructure.
- Safety and comfort evaluation, including identifying hazards and measuring comfort or stress levels.
- Gathering direct stakeholder and community input into the planning process.
- Collection of specific data, such as traffic counts, rider volumes, etc.
- Opportunity identification, including spotting new routes and improvement areas.

Findings inform site assessment reports and mapping data used for visualisations, engagement materials, and in the final plan document.

Table 4: Commonly used active transport data sources

Source	Insights
LTCN for WA	Provides network information, including existing and planned routes within a specific region or jurisdiction. LTCN mapping for Perth and Peel and regional strategies.
ABS Census data	Measures the journey to work, bike ownership by household and demographic information every five years at a national level.
General population surveys	The National Walking and Cycling Participation Survey has been conducted biennially since 2011 and measures travel frequency, trip purpose, attitudes toward biking (including self-description to the bike rider types) and demographics. Data is segmented both nationally and at the jurisdictional level.
Community surveys	Annual surveys, like DoT's People's Voice Survey, that capture sentiment and behavioural data to provide insights into attitudes, perceptions and bike network use. Reported annually in DoT's People's Pulse Report. LG surveys can capture biking habits and preferences, including trip purpose, frequency of bike use, preferred routes, satisfaction with existing infrastructure, favourite places to ride, barriers to cycling, and suggestions for improvement. Online engagement platforms such as CrowdSpot and EngagementHQ facilitate community surveying and interactive mapping.
Intercept surveys	Used to collect information at particular locations, such as shared paths, bike-sharing stations, and bus/train stations. Conducted in real-time with people using the facilities or engaging in related activities, and commonly used to gather data on biking habits, preferences, and behaviour directly from bike riders.
Bike network counts	Conducted at locations statewide and analysed for trip trends. DoT's bike counter insight reporting occurs annually in the Making Tracks Report, based on counter locations on Trafficmap. Raw data from these counters can also be requested from Main Roads. Some LGs also have their own permanent counter sites, not accessible via Trafficmap.
Traffic counts	Various counts aiding route planning and measuring LTS (refer to Contextual Guidance). LGs may have counts from their own records and information is available at Trafficmap.
Crash and incident data	Accessed through the Main Roads Crash Map application. GIS-compatible crash data is also available through Main Roads or via Landgate's Shared Location Information Platform (SLIP) portal.
Hazard and/or maintenance reporting data	Applications such as Snap Send Solve or LGs' own reporting tools are common sources for local hazard reporting and maintenance requests.
Origin/destination data	Common sources include Strava Metro and ride share usage data. Data on short car trips can be used to identify potential mode shift targets, while ride share tracking information can show use patterns on specific routes or sections of the network. See the WA Bicycle Network Data and Monitoring Strategy for more information.

5.5.3. Community and stakeholder input

Community and stakeholders have firsthand insights into factors affecting local biking.

Various engagement methods can be used to inform the analysis by gathering input on:

- usage patterns, including current riding habits, popular routes, and destinations;
- existing initiatives and policies that either promote or hinder biking;
- safety concerns, reports of hazardous areas and infrastructure deficiencies; and
- accessibility needs, such as desired connections between neighbourhoods, public transport, and key destinations.

5.5.4. Level of traffic stress assessment

An LTS assessment informs the conditions analysis for a local bike plan. It provides a systematic way to evaluate the suitability of roads for bike riding based on the perceived stress levels experienced by riders.

As outlined in the Contextual Guidance, LTS assessments generally consider factors such as traffic volume, speed, and road design to categorise streets into four different stress levels, ranging from low stress (suitable for most riders) to high stress (only suitable for highly confident riders).

Stress Level 1: suitable for all ages and abilities.

Stress Level 2: comfortable for most adults.

Stress Level 3: comfortable for confident riders.

Stress Level 4: uncomfortable for most.

DoT Victoria has developed a tool to measure the LTS on any given road segment. LGs can seek permission to use the tool.

In the conditions analysis, the LTS assessment:

- helps identify routes with low stress levels that are suitable for encouraging bike riding among a broader demographic, including children and novice riders of all ages and abilities;
- highlights areas and/or LTCN routes with high stress levels, indicating the need for targeted improvements such as dedicated bike facilities, traffic calming measures, or alternative routes; and
- informs evaluation by providing a quantitative measure of the perceived stress experienced by bike riders, complementing qualitative observations during site visits and providing a benchmark to measure against.

The City of Vincent applied an LTS assessment in their bike plan, emphasising that concerns about danger from traffic is a key factor in people's choice to ride or not. Their plan shows the LTS assessment of the City's LTCN routes (Figure 6).

5.6 Summarising the baseline

The information collected in Stage 2 creates a comprehensive overview of the current biking landscape, shaping the plan's goals and strategies.

The data will help inform the development of bike projects (built and social), identify areas for improvement and investment, and tailor projects to better meet the needs of the community.

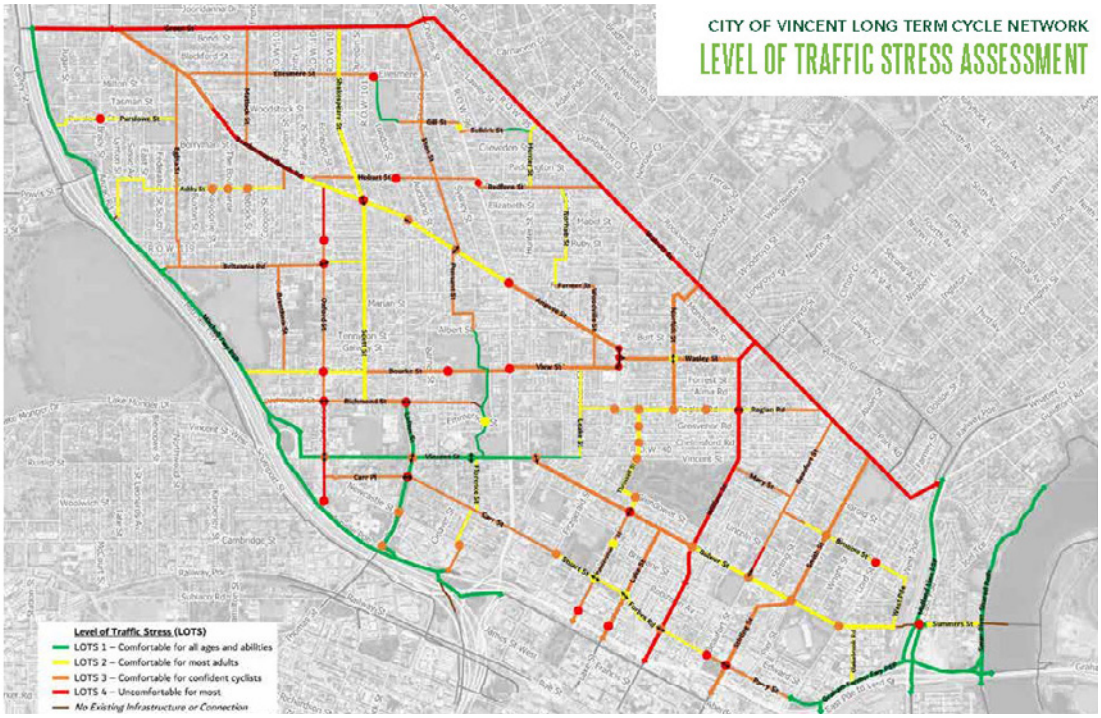
This summary, usually included in a findings report, can take many forms as shown in Table 6, and may be condensed and published in the final plan document, with detailed data provided separately to keep the plan concise.

Figure 7 shows how the City of Vincent represented the community profile of one of its neighbourhoods.

Table 5: Key items in physical infrastructure assessment

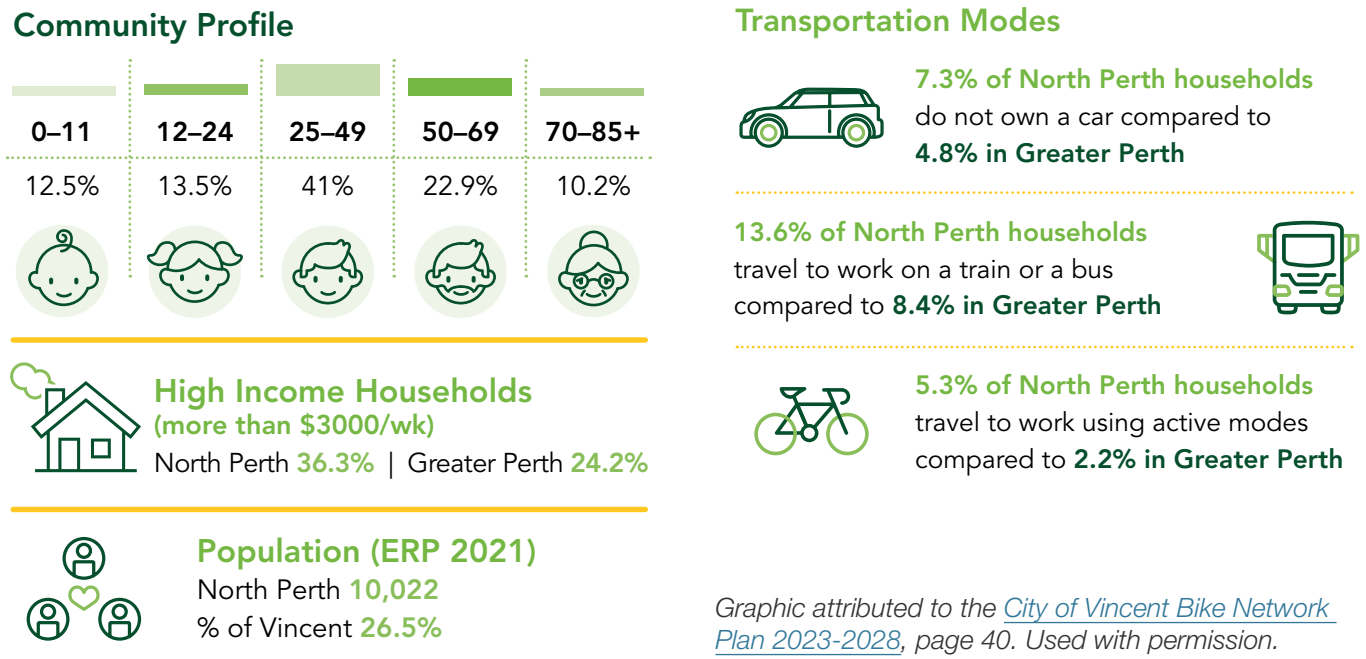
Analysis	Importance	Guidance
Network gaps	Strategic analysis to pinpoint gaps in the network, especially areas where there's a demand for biking, identify priority projects, and validate the LTCN (proposed routes and gap analysis).	The LTCN for Perth and Peel shows the status of routes, including network gaps and existing infrastructure. Refer to the map for the route segmentation scale used in the gap analysis. Regional strategy documents include network statuses at the time of publishing (Appendix D).
Infrastructure/route conditions and analysis of bike friendliness	Evaluate the condition of existing facilities where people may ride (including paths, trails, streets, roads, and crossings) – analyse conditions to prioritise bike-friendly improvements and enhance comfort.	Consider LG asset management procedures and LTS assessment (Section 5.5.4). Refer to Contextual Guidance for information on LOS and LTS tools.
Connection to public transport services	Review bike facilities (connections, secure parking) at public transport stations/ stops, especially relevant in rural areas where door-to-door travel is provided but people may need to travel to stops.	The LTCN for Perth and Peel allows buffering based on key destination types, including train stations. These buffers represent generally accepted and research-based catchment areas for active travel to each destination type and can be applied more broadly. Station access strategies can be requested from the Public Transport Authority for metropolitan train stations.
Key land uses (existing and future) and connection to origins/destinations	Identify key origins and destinations and their catchment areas to map desire lines and prioritise projects.	

Figure 6: City of Vincent LTCN LTS (Cycling) assessment case study



Graphic attributed to the City of Vincent Bike Network Plan 2023-2028, page 17. Used with permission.

Figure 7: North Perth community profile



Graphic attributed to the City of Vincent Bike Network Plan 2023-2028, page 40. Used with permission.

Table 6: Summarising the baseline

Analysis type	Documents/illustrations	Format/s
Research	Progress on previous plans, gaps in current plans, best practice examples and case studies, and demographic factors.	Report, infographic (e.g. Figure 7)
Community feedback	Findings on biking habits and preferences.	Infographic (e.g. Figure 7, Figure 10)
Infrastructure inventory	Current infrastructure conditions, type, etc.	Map, asset register
Network connectivity/ condition	Existing bike network connectivity, highlighting gaps and LTS.	Map (Appendix D.5)
Usage data	Areas with high or low bike ridership and factors affecting these patterns.	Map
Safety analysis	Identify safety issues and local concerns.	Map, infographic (e.g. Figure 10)
Barriers and enablers	Challenges and opportunities for bike riders (Section 7.2).	Report, map (Table 12), infographic (e.g. Figure 10)
Environmental considerations	Existing natural features (shade, shelter and greenery) or natural barriers.	Map (Table 12)

Section 6. Stage 3: Where do we want to get to?

Stage 3 outputs checklist:

- ☐ Use research, data and engagement to create informed, strategic goals aligned with community dynamics and policy aims.
- ☐ Capture goals in a vision, mission, and objectives.

6.1 Goals – vision, mission, objectives

The 'goals' of the plan are captured in a vision, mission and objectives, each of which serve distinct purposes (Figure 8).

These goals will help inform the strategies and actions included in the plan and together, these components create a strategic framework for developing a bike-friendly community, serving as benchmarks to measure progress against.

Some LGs may combine the vision and mission into a concise statement, while others may use terms like goals instead of objectives.

A vision from a related (and recent) planning process, such as an integrated transport plan or strategic community plan, might be appropriate for the bike plan.

6.2 Priorities, key issues and streams

The engagement and analysis done in Stage 2 will likely have raised some recurring priorities, policy alignments, key issues and/or focus areas.

Some LGs turn these into thematic priorities or streams. For the plan, which can guide the goals and strategies for the plan.

Streams can also be important for assigning funding. For example, instead of agreeing to fund specific actions, Council may approve fundings packages against specific streams.

Figure 8: Vision, mission and objectives

Examples of common streams include schools, connections to transit hubs, access to employment centres, recreational and green spaces, healthcare and aged care facilities, tourism and cultural sites, and so on.

Themes are further unpacked in Section 6.2 and Section 6.3.

Consultation opportunity: It can be beneficial to seek agreement on priorities before setting objectives and developing strategies and actions. The goals of the plan should align to the priorities identified.

6.3 Participatory goal setting

Engaging stakeholders and community helps create equitable, supported goals. A process to generate goals with broad support may include:

- data review on biking patterns, facilities and community preferences in the local area;
- brainstorming aspirations and drafting statements for the desired future biking conditions in the community (vision) and what the LG is going to do (mission);
- converting the vision and mission into specific, measurable, achievable, relevant, and time-bound (SMART) objectives; and/or
- inviting feedback, revising and finalising.
  - If a steering committee has been formed they can help ensure the goals have relevancy to the organisation and key stakeholders.

The next step is to develop strategies and actions for achieving these goals.

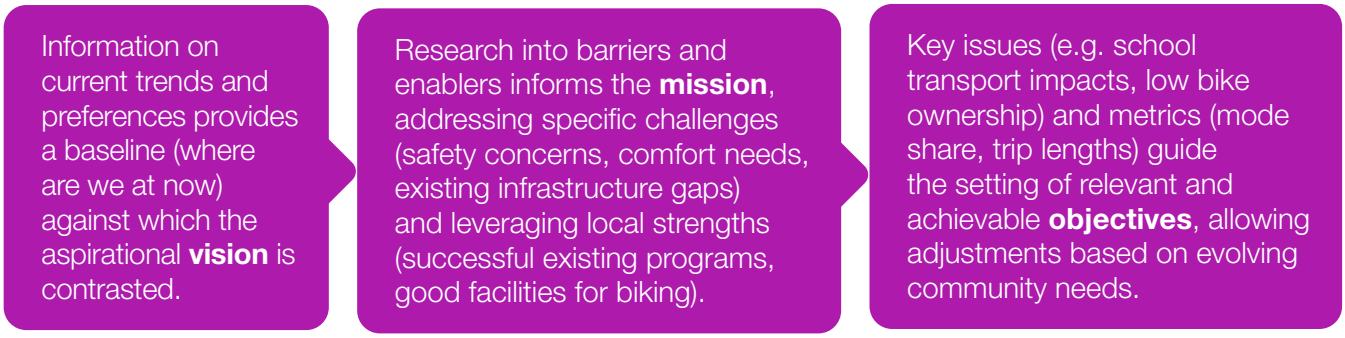
Consultation opportunity: Some LGs may seek input from the community before drafting goal statements, while others may combine engagement on the goals with questions that assess the barriers and enablers to achieving them.

6.4 How research and data informs goals

By leveraging research and data, goals become more than aspirational statements – they become informed, strategic tools that align with the community's dynamics and broader policy aims (Figure 9).

This makes the bike plan a more responsive guide for achieving a bike-friendly community.

Figure 9: How data informs the bike planning goals



6.5 Case studies

Case study 1: Create a vibrant, welcoming and supportive community

The Esperance 2050 Cycling Strategy (2018) includes the Shire of Esperance's vision "to create a vibrant, welcoming and supportive community that values its social connections and natural landscape" as the basis for the strategy, with the mission to support this goal by creating a safe, direct, comfortable, and integrated cycling network.

Case study 2: Increase the number of people cycling

The City of South Perth/Town of Victoria Park Joint Bike Plan (2018) outlines the following mission: "The desired outcome of this Plan is simple – to increase the number of people cycling. Specifically, the Plan aims to double the number of people cycling in the City of South Perth and Town of Victoria Park over the next five years."

Case study 3: Make bicycling a part of everyday life in San Francisco

The San Francisco Municipal Transportation Agency (SFMTA) has a vision to "make bicycling a part of everyday life in San Francisco".

Underpinning this vision are four key objectives:

- Improve the safety and connectivity of San Francisco's Bike Network
- Make bicycling a more convenient transportation option through amenities like better bike parking and an expanded bike sharing system
- Use outreach and education to increase bicycle ridership, especially in underserved populations
- Plan and deliver projects that make bicycling, and other non-private auto modes, the preferred way of getting around.

See the SFMTA's Pedaling Forward report for information on their comprehensive vision and five-year work plan.

Section 7. Stage 4: How are we going to get there?

Stage 4 outputs checklist:

- ☐ Summarise key challenges (barriers) and facilitators (enablers) into themes.
- ☐ Use themes to develop responsive strategies to achieve plan objectives.
- ☐ Outline network infrastructure strategies to support more bike riding.
- ☐ Develop a bike network focusing on connectivity to key destinations within the community.
- ☐ Reference LTCN strategies for regional network themes, strategies and networks.
- ☐ Submit proposed LTCN amendments for feedback and approval.

7.1 Strategies for achieving the plan's goals

After setting the goals, the next step is to decide on strategies to bridge the gap between the existing conditions noted in Stage 2 (where we are now) and the desired future described in Stage 3 (where we want to get to).

Strategies are more general than actions (which specify who/what/when) and consider the barriers and enablers to reaching the goals of the plan.

Good bike plans will use various strategies – providing information, increasing support, removing barriers, providing resources, etc. – ensuring a balance across The six 'E's.

Strategies may apply to more than one objective or theme, and each may be addressed by multiple strategies.

Figure 10: Example of summary of findings from community survey

Graphic attributed to the Northwest Municipal Conference Multimodal Transportation Plan (March 2020), page 113. Used with permission.

7.2 Turning barriers and enablers into themes and strategies

The planning process will have flagged key challenges faced by bike riders (physical obstacles, traffic congestion, lack of amenities, prohibitive policies, absence of skills training, etc.), as well as enablers (high quality facilities, events, etc.).

Bike network constraints and opportunities mapping may also have occurred in Stage 2 (Appendix D.3). In the regional context, LTCN strategies provide guidance on issues and opportunities relevant to the area (Section 7.3).

These items can be summarised into themes that represent categories of barriers and enablers to achieving the plan's objectives.

With these themes in mind, the project team can work on developing responsive strategies to achieve the objectives of the plan.

Example themes and strategies have been provided in Table 7 while Figure 10 shows an example of how this information can be summarised for the community in infographic form.

Priority areas: Themes may be referred to as – or further refined into – plan 'priorities'. For example, the City of Baywater identified five priority areas in their plan: path widths, schools, train stations, principle shared path access, and green network.

Consultation opportunity: While the inputs of expert stakeholders and data are essential, community feedback usually has the most influence on identifying themes and strategies based on specific needs and solutions. Some LGs choose to engage specifically on barriers and enablers, asking the community what will influence achievement of the agreed goals.

7.3 Regional LTCN themes

Regional strategies include central themes for enabling bike riding across the region.

These have been developed based on community expectations about where key routes are most needed, the requirements for different user groups, what types of programs and projects would help encourage more people to ride, and region-specific focus areas such as supporting tourism.

Key opportunities have been identified within each of the themes, highlighting the potential for bike riding in and around the region and targeting specific barriers and enablers. These opportunities are a mixture of infrastructure and non-infrastructure strategies and actions.

Case studies have been used to illustrate where similar outcomes have been achieved elsewhere.

For example in the Pilbara 2050 Cycling Strategy the central theme of 'supporting youth cycling' has three opportunities, including:

- safer routes to schools;
- ensure cycling routes are optimised for young riders; and
- linking to skills-building facilities and programs.

The two case studies are the Busselton School Link Project and Dismantle's Bike Rescue Program.

Table 7: Examples of themes with barriers, enablers, and strategies

Theme/priority	Barriers	Enablers	Example strategies
Safety on residential streets	• Inadequate separated facilities and/or traffic speeds, and volumes too high for safe road sharing • Lack of safe crossings • Lack of awareness and respect from drivers	• Smooth, well-maintained streets • Existing education and bike skills training programs	• Traffic calming and speed reduction • Public awareness campaigns • Street maintenance programs • Prioritised crossings • Street and path upgrades
Safer streets	• Existing speed zoning policies pose barriers to implementing bike-friendly facilities • Speeds too high • Rat running	• Some streets have traffic calming	• Speed zoning policy reforms • Speed reduction trials and enforcement • Education campaigns on benefits of lower speed limits • Local area traffic management, safe active streets, and network configuration
Active travel to school	• Lack of safe facilities and crossings for students • Safety concerns • Traffic speeds and volumes	• Parent and community support • Bike parking/ end-of-trip facilities	• Bike education • Safe routes to school • Community-led events • School zone speed reduction • Your Move Schools program
Accessibility and affordability	• Lack of access to bikes or bike-sharing programs	• Existing LG bike library	• Bike-sharing subsidies • Bike purchasing incentives • Bike library
Integration with land use and amenity	• Lack of integration of bike riding into urban planning • Limited tree canopy, exposure to heat/sun • Visually uninteresting • No rest stops or drinking water	• End-of-trip facility policies • Existing vegetation • Community support • Urban greening policies	• Mixed-use development • Complete street designs that prioritise bike riding as a mode of transport • Greening programs • Community/school planting events • Water/rest facilities
Active travel to public transport	• No connecting facilities • Heavy traffic and unsafe road conditions • Theft and security concerns for bikes • Limited bike maintenance facilities	• Well-lit station precincts • Provision of covered bike parking areas at train stations • End-of-trip facilities	• Ride to station campaigns • Infrastructure improvement • Speed reduction trials • Traffic-calming measures • Enforcement and security measures to deter theft

7.4 Network infrastructure strategies

Infrastructure strategies will be developed to address the barriers and enablers identified throughout the planning process, including in constraints and opportunities mapping (Appendix D.3).

It is not usually the intent of local bike planning to specify micro-level treatments, rather to consider what types of network improvements will support more bike riding. These may include:

- route treatments;
- intersection treatments;
- bicycle parking;
- signing and wayfinding;
- end of trip facilities, e.g. shower and lockers;
- bicycle pump and maintenance facilities;
- rest/refreshment stops, e.g. water fountains and covered areas; and
- innovative schemes.

Non-network infrastructure improvements can also be considered, such as BMX tracks, trails, pump tracks, closed circuit criterium tracks, velodromes, etc. Although these are not all transport cycling focused, these types of facilities are considered gateway or promotional sporting activities.

LTCN strategies can be referenced for infrastructure identified for specific regional networks.

7.5 Network planning and amendments

A network plan is one of the most important strategies in a local bike plan.

When planning the local network, it's essential to focus on connectivity beyond simply filling gaps between existing facilities. Though that is also important, the focus should be on connecting people to key destinations within the community.

In developing a bike network, it's important to observe the bicycle network planning principles as these help ensure that the network is safe, well-connected, accessible throughout the area, easy to navigate, realistic to implement, and aligned with long-term goals.

Relevant neighbouring or regional plans should also be considered, including existing LTCN strategies.

Proposed new networks or amendments to the LTCN should be checked with adjacent LGs and submitted to DoT to ensure strategic alignment and ongoing eligibility for funding through state government programs such as the WA Bicycle Network Grants Program.

Along with this guidance, key resources for network planning include:

- existing LTCN strategies and the WA Cycle Network Hierarchy;
- bike network planning principles (available in the Contextual Guidance); and
- the LTCN change management process, which includes information on when an LTCN is required.

Section 8. Stage 5: What will we do and by when?

Stage 5 outputs checklist:

- ☐ Integrate VMOSA elements into an implementation (action) plan with clear strategies, prioritised actions, detailed schedule, responsible groups, and budget allocation.
- ☐ Detail monitoring, evaluation and maintenance approach for the plan, including resources.
- ☐ Finalise plan, seek approvals, publish and deliver.

8.1 Implementation planning

Action planning integrates VMOSA elements into an implementation plan, detailing strategies to achieve the objectives developed earlier in the process.

Key elements generally include prioritised initiatives across the six 'E's, a detailed schedule, responsible groups/partners, and budget allocation.

Implementation is the primary goal of a bike plan, with actions divided into short, mid, and long-term timeframes. Funding short-to-mid-term projects prevents stagnation, while aspirational longer term projects guide future development despite funding constraints.

While some actions take longer, short-term results are vital for community support and staging projects with clear milestones is advised, along with regular testing, review, and revision to ensure the plan's effectiveness over time.

Consultation opportunity: It's advisable to talk to nearby LGs and other relevant stakeholders to align any actions (including LTCN routes) and find potential partners for delivery.

8.2 Prioritising actions

LGs may use a multi-criteria assessment (MCA) to prioritise actions, considering:

- strategic alignment with plan and organisational goals;
- community preferences and expressed needs;
- mode share potential for increased safety, comfort, and bike usage in specific demographics or geographic areas;
- priority network improvements (Section 8.3);
- environmental impact, e.g. on conservation, air quality, emissions, climate resilience;
- feasibility based on available resources and integration into major transport projects or initiatives;
- collaboration opportunities for delivery partnerships and cross-jurisdictional alignment; and
- equity in benefits distribution among diverse groups and underserved communities.

Consultation opportunity: Different engagement methods, such as workshops and online tools, can be used to rank action ideas.

8.3 Prioritising infrastructure improvement projects

In addition to general considerations outlined in Section 8.2, there are other specific factors that should be considered when prioritising infrastructure improvements.

- **Safety:** infrastructure that most enhances rider safety, considering data collected.
- **Comfort:** measures such as precinct wide improvements to reduce traffic stress levels.
- **Connectivity:** priority routes to complete the network and link key destinations and residential areas.

- **Demand and usage:** target areas with high bike traffic and potential for increased cycling (including potential to attract new bike riders).
- **Public input:** projects or preferences highlighted in community feedback.
- **Integration:** improvements that integrate with other transport modes and land uses (existing and planned).
- **Cost-effectiveness:** construction costs and potential integration with other programs (e.g. street maintenance).

The City of Bayswater note in their bike plan that feedback from elected members and the community survey highlighted safety as one of the primary criteria to prioritise cycling infrastructure.

8.4 Monitoring and evaluation

Implementation plans should be regularly reviewed to adapt to changes, adjust strategies, celebrate successes, and review goals.

Evaluation generally occurs at two levels:

- Actions completed: these are generally outputs-focused and may include projects delivered, program participation, funding allocation, and network completion.
- Progression towards goals: these will depend on the vision, mission and objectives, but typically these relate to outcomes such as mode shift, bike trip frequency, perceived safety and other attitudes towards riding, and broader impact indicators.

To ensure accountability, the plan should specify review timelines, responsible parties, data collection methods (and resources), and accountability measures.

Table 9 details a range of performance measures against the six 'E's.

8.5 Finalising the plan

Feedback on the drafted plan is generally sought from project groups and key stakeholders.

To enhance engagement and avoid overwhelm, circulating entire draft plans for community feedback is generally not advised. Instead, iterative engagement, presenting smaller sections or key aspects of the plan at various stages of development, is encouraged. This avoids misinterpretation on what inputs are being sought or people perceiving the planning process to already be finished.

Highlighting the engagement methods during plan endorsement helps build confidence in the outcome.

Consultation opportunity: Before endorsement by the Council, a draft plan should be issued to key stakeholders for their comments and any required approvals.

Table 8: Action planning

Action step/s	Responsible parties	Date to be completed	Resource required	Barriers or enablers	Collaborators
What will happen	Who will do what	Scheduling of steps in the action / status (e.g. identified, planned, underway, etc.)	Resources and support (both what is needed and what's available)	Items that will help or hinder the action, and a plan to use or overcome them	Who else should know about this action/could help deliver it

8.6 Ongoing maintenance and capacity

Local bike plans have various lifespans and require updates for relevance.

Adequate budget allocation for plan maintenance and future development, along with periodic communication and reporting to stakeholders, is crucial.

Maintaining relevant project groups ensures ongoing implementation and accountability, with regular updates on achievements.

Capacity building within the LG is vital, including investing in training programs for staff involved in active transport initiatives.

Collaborating with external specialists through workshops, conferences, and certifications can also contribute to the sustained success of the bike plan.

Table 9: Example performance measures

Category	Performance measures
Education	• Number of participants in safety courses. • Campaign awareness. • Incorporation of bike-related curriculum activities in schools.
Encouragement	• Participation rates in activities and events. • Effectiveness of targeted strategies in overcoming specific riding obstacles (usually gathered through before/after surveys).
Evaluation and planning	• Attitudinal surveys – number of people identifying as bike riders, riders' rating of amenity, comfort and safety. • Community engagement in bike plan development. • Impact assessment of implemented actions on biking environment. • Bicycle count data.
Environment	• Quantity and quality of bike infrastructure implemented (and improvement of LOS). • Availability and usage of trip facilities (amenities, wayfinding, bike parking). • Assessment of natural environments and landscaping impact on biking (e.g. Healthy Streets Assessments, vegetation quality/tree canopy measurement).
Enabling policies	• Effectiveness of traffic rule enforcement for bike safety. • Integration of active transport priorities in planning and infrastructure development. • Increase in the number of staff members with active transport responsibilities.
Equity	• Accessibility of bike-related efforts and infrastructure to people of all ages and abilities. • Evaluation of benefits reaching the entire community.

Appendices

Appendix A: List of Figures

Appendix B: List of tables

Appendix C: List of outputs

Stage 1 outputs

- ☐ Review resources, capabilities, leadership, and project expectations.
- ☐ Determine governance structure, project lead and cross-functional team support.
- ☐ Outline key stages, activities, resources, and expected deliverables.
- ☐ Map stakeholders based on impact or influence.
- ☐ Start engagement planning based on needed inputs, audience suitability, and methods available.

Stage 2 outputs

- ☐ Assess current conditions, past initiatives, and future needs.
- ☐ Adopt an LG-wide or a localised neighbourhood perspective for tailored information gathering.
- ☐ Use existing data sources and consultation for contextual and benchmarking data.
- ☐ Evaluate existing physical infrastructure and social policies and programs.
- ☐ Generate a comprehensive overview of the current bike riding landscape.

Stage 3 outputs

- ☐ Use research, data and engagement to create informed, strategic goals aligned with community dynamics and policy aims.
- ☐ Capture goals in a vision, mission, and objectives.

Stage 4 outputs

- ☐ Summarise key challenges (barriers) and facilitators (enablers) into themes.
- ☐ Use themes to develop responsive strategies to achieve plan objectives.
- ☐ Outline network infrastructure strategies to support more bike riding.
- ☐ Develop a bike network focusing on connectivity to key destinations within the community.
- ☐ Reference LTCN strategies for regional network themes, strategies and networks.
- ☐ Submit proposed LTCN amendments for feedback and approval.

Stage 5 outputs

- ☐ Integrate VMOSA elements into an implementation (action) plan with clear strategies, prioritised actions, detailed schedule, responsible groups, and budget allocation.
- ☐ Detail monitoring, evaluation and maintenance approach for the plan, including resources.
- ☐ Finalise plan, seek approvals, publish and deliver.

Appendix D: Network planning and GIS data requirements

Appendix D.1: Network planning process

As outlined in Section 3, the LTCN is an aspirational vision for a comprehensive all ages and abilities network across WA.

The LTCN helps agencies to plan, prioritise and implement routes that are consistent across jurisdictional boundaries, ensuring cohesive, accessible networks across regions.

The LTCN is not fixed, but a flexible and evolving blueprint that responds to changing needs, opportunities and contexts.

While not all LGs (and/or specific areas within LGs) are covered in an LTCN, all LGs should consider applying the WA Cycling Network Hierarchy and network planning principles for consistency in planning.

Table 11 outlines typical steps taken by LGs in planning networks, based on whether the area is covered in an LTCN strategy or not.

Detail on the network planning approach for the LTCN is described in the Contextual Guidance, including bicycle network planning principles, network classification using the WA Cycling Network Hierarchy, and integration of the LTCN with other policies and networks.

Figure 11: Typical steps in network planning (with or without LTCN strategy)

Type 1: LGs that are part of an LTCN strategy

1. Understand the vision for an all ages and abilities network and application of the network planning principles and WA Cycling Network Hierarchy (as outlined in the Contextual Guidance).
2. Analyse bike riding demand (current and potential) for specific bike rider types (noting the LTCN target design user is the 'interested but concerned' rider).
3. Analyse existing conditions (Section 5.5) and identify opportunities and constraints (Appendix D.3).
4. Engage stakeholders to identify strategic alignments and validate findings from conditions analysis.
5. Identify routes options based on existing and potential routes and prioritise based on the bicycle network planning principles.
6. Review and update existing LTCN based on findings.
7. Consult community and/or stakeholders, including DoT and adjacent LGs, to validate proposed LTCN updates and identify priority projects/ improvements:
   - Perth and Peel: submit proposed updates through the LTCN change management process.
   - Regional: send proposed changes to activetransport@transport.wa.gov.au for inclusion in next review.
8. Seek Council endorsement.
9. Integrate the network into local and regional plans.

Type 2: LGs that are not part of an LTCN strategy

1. Understand the vision for an all ages and abilities network and application of the network planning principles and WA Cycling Network Hierarchy (as outlined in the Contextual Guidance).
2. Analyse bike riding demand (current and potential) for specific bike rider types (noting the LTCN target design user is the 'interested but concerned' rider).
3. Analyse existing conditions (Section 5.5) and identify opportunities and constraints (Appendix D.3).
4. Engage stakeholders to identify strategic alignments and validate findings from conditions analysis.
5. Identify routes options based on existing and potential routes and prioritise based on the bicycle network planning principles.
6. Draft local network plan, applying the Hierarchy.
7. Consult community and/or stakeholders to validate proposed network and identify priority projects.
8. Finalise network and outline priority projects.
9. Seek Council endorsement.
10. Integrate the network into local and regional plans.

Appendix D.2: Network identification – principles and WA Cycling Network Hierarchy

Bike network planning efforts should ultimately result in a cohesive system of comfortable, low stress routes connecting all origins and destinations.

As outlined in Section 3, application of the Hierarchy focuses on the function of routes, considering factors like demand, route activities, and connectivity, rather than form. Selection of appropriate facilities for various routes generally occurs next as an additional layer and can be informed by the Contextual Guidance. It is important to note that the bike network is not being mapped by form (i.e. the network is not a 'shared path network'), though this is a consideration as the identified network is assessed for condition and feasibility.

Not all streets will be included in the bike network as some may not be suitable for bike riding due to factors like high traffic volumes, limited space, steep gradients, or lack of connectivity. Instead, planning will focus on connectivity and prioritise routes that meet the bicycle design outcomes (safe, comfortable, coherent, direct, attractive and adaptable).

Planning usually starts broad, looking at origins/destinations, existing routes, and logical alignments. The Hierarchy is applied based on route function, which considers level of demand (existing and potential) and the activities along the route (key trip attractors, transport corridors, etc.). Primary, secondary and local routes are assigned based on various criteria (refer to Section 3 and Contextual Guidance Section 4.2.)

Routes are then tested against opportunities and constraints (Appendix D.3) and an MCA can be applied to refine routes based on other relevant factors. Table 10 outlines an MCA based on the network planning principles. These criteria can be customised to include local priorities, such as a focus on tourism destinations. The approach used, whether it includes an MCA or not, will likely be communicated as part of community and stakeholder consultation and should therefore be logical and easy to explain.

Appendix D.3: Network mapping – constraints and opportunities

A good way to assess the importance of identified issues, and to identify constraints and opportunities across the existing bike network, is to overlay different layers on a map. For instance, overlaying crash data on areas of the LTCN that lack suitable bike facilities may identify areas where providing infrastructure or traffic calming measures is likely to have the biggest impact on safety. Community consultation may also identify key geographic areas in need of improvement for active transport users.

Some constraints and opportunities can reverse over time. For example, land use planning can be a short-term barrier but long-term enabler, such as in instances where ongoing development causes disruptions to the existing bike network but eventually improves connectivity.

Overlaying those areas with programmed future infrastructure projects can assist in finding synergies in infrastructure that benefit all users.

A list of possible constraints and opportunities for assessment using GIS is provided in Table 11, noting this list is not exhaustive.

Table 10: Network planning MCA based on network planning principles and the Hierarchy

Criteria	Example considerations
Function	Type of trips and bike rider types served
Safe	Traffic volumes and speeds, existing facilities, personal safety factors, ease of riding, addresses crash/conflict sites
Connected	Links destinations, connects to existing routes/networks, improves accessibility to specific areas/trip attractors (e.g. schools), addresses network gaps
Widespread	Expands existing network, follows direct alignments, increases network density, removes barriers and obstacles, reaches underserved areas, populations or trip purposes
Legible	Alignment of routes to parallel natural land forms (rivers, coastlines) or within existing road and rail corridors, increases recognition and visibility of the bike network
Achievable	Feasible in current available space, runs parallel to an aspirational route
Aspirational	Ideal alignment based on desire lines, considers future planned land use, major transport projects ideal alignment

Table 11: Example constraints and opportunities

Constraints	Opportunities
Certain forms of subdivision planning	Underutilised roads
Protected/restricted areas	LTCN
Utilities*	Proposed infrastructure projects
Land tenure	Land use changes
General availability of space between adjacent land uses (e.g. residential development, utilities, and road)	New land development
Topography*	Local roads requiring improvement/asset renewal
Watercourses	Utilities easements
Freight routes (for on-street cycling)	State transport corridors
Bridges with limited extra capacity	Firebreaks and dormant rail formations
Land use changes*	State and local planning schemes
Protected areas	Existing natural form and greenery/vegetation regeneration schemes

**Can also be an opportunity*

Appendix D.4: GIS data requirements and shapefile

This guidance recommends the capture of spatial data for existing and proposed facilities. Spatial data can be used in a GIS for analysis and mapping.

Creating spatial data, and keeping it up to date, can benefit LGs by providing a way to chart progress toward the completion of infrastructure for bike riding. This may also support better works planning and management on the LG level.

Spatial data shows the location of existing and proposed facilities together with important attributes about each facility, such as type, condition, asset ownership, or facility width. It can be used to perform helpful analyses (e.g. buffering, gap analysis, connectivity analysis) and for making hardcopy or digital maps. For these reasons, it is strongly recommended that LGs capture and update spatial data for bicycle facilities.

DoT provides a standard schema (dataset structure) for spatial data in shapefile format for bike planning in WA. Shapefile format can be used in most GIS software.

Use of this shapefile and its associated attributes means that LG datasets can be easily integrated into a single dataset by DoT. Request the shapefile via activetransport@transport.wa.gov.au

Appendix D.5: Visualising spatial data

In any bike plan, providing a visual representation of the spatial data will support the overall narrative and will help make the plan more relatable to readers. The following is not an exhaustive list of maps, but instead gives an idea of which maps might support the plan (Table 12). Maps may be generated in static or dynamic forms, or a combination of both depending on intended uses.

Table 12: Map types to visualise spatial data

Map types	Description
Context map	The area in relation to other areas
Sub-geography map	Sub-areas/suburbs/wards/etc., located in the area
Growth/demographics	Different characteristics of each sub-area
Bike crashes	Showing where bicycle crashes are occurring, differentiated by severity
Current land use	Where people live/work/play/learn
Future development	Proposed future developments in the area
Origins/destinations	Key origins/destinations in the area
Network obstructions	Terrain or major infrastructure that makes riding difficult or impractical (rivers, freeways, steep slopes)
Current bicycle facilities	Location and condition of existing bicycle facilities
Current regional linkages	How current bicycle facilities relate to neighbouring jurisdictions
Existing traffic volumes and speeds	Existing traffic volumes and speeds in an area
LTCN alignments	Current LTCN alignments indicated in the study area
Gaps/connectivity analysis	Significant gaps in the bike network/LTCN
Analysis of bicycle friendliness	Most and least stressful routes to bike ride in the area

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