

- On local routes where a terminal locality (or community facility) is not immediately apparent, the designer should consult with local stakeholders (local councils, bicycle user groups, regional tourist associations etc) to determine the destination names to be included on local route direction signs.
- City and town centres are always important destinations. Principal routes leading in from the edge of a built-up area to the centre should be regarded as continuous even though they may pass through other important regional centres. The destination wording (City, CBD, Town Centre etc) should be continued right into the town/city centre.

Examples of cycle network focal point mapping practice

The letters a to h, shown in purple on Figure 11 are used in the examples below to illustrate the principles of focal point mapping.

Ipswich City to Swanbank Principal Cycle Route. When travelling towards Ipswich City this route passes through intersections a, b, c and d and e. At all these intersections the focal point for the route is Ipswich City. At intersection b (through to c) the University to Booval route shares the same street. At intersection c the Springfield to Ipswich City route shares the same streets through to their common focal point. The destination signed at intersections c, d and e is Ipswich City (see below for further details on signing the University to Booval route). Travelling in the opposite direction, the direction signs at intersections e and d should list both Springfield and Swanbank. At intersection c, separate fingerboards will list each destination (as well as Booval). At intersection a, a local route provides a useful connection through to the Ripley to University route. The focal point for this route will be University.

Booval to University Principal Cycle Route. At intersection c, this route overlaps the Ipswich City to Swanbank route through to intersection b where it turns westward towards University, its focal point. Fingerboard signage at intersection c could list both Swanbank and University as destinations but it is preferable to only sign Swanbank. University would be signed with an advance direction board on the northern approach to the intersection. For travel in the opposite direction, a similar procedure should be adopted at intersection b.

Table 5: Destination definitions for focal point cycle network mapping

| Location type | Symbol* | Definition |
|-----------------------|---------|---|
| Focal points | ● | Major cities, towns, regional centres and key localities located at the intersection of principal cycle routes. Where a focal point occurs outside a locality, the road junction (or nearest landmark) may be separately named. |
| Destination points | ■ | Cities, towns, city/town centres, regional centres, and major localities which are located at the ends of principal cycle routes but are not at a junction with other principal routes. |
| City and town centres | ☼ | The business centre of cities and towns. This area may be represented by multiple focal points depending on the size of the “CBD” or “City” precinct and the density of the cycle route network. |
| Terminal locality | | For principal routes this may be a focal point or a destination point or a city/town centre where a route starts/finishes. For local routes it may be a facility such as a park, school, library or rail station. |
| Key decision points | × | Cycle network junctions which are intersections only (not focal points). These points are rarely named on cycle network signage. |
| Sub-destination | ○ | An important intermediate locality listed on the sign which will be reached in advance of the route’s next focal point. |
| Local destinations | ▣ | Important local trip generators located at the termination of local routes (sporting/recreational and entertainment venues, community facilities, key local attractions and points of interest etc). |

* Symbol used in Figure 11 to denote location types.



Figure 12: Detail signing for intersection c and the Booval focal point intersection. Detail from Figure 11. Ipswich City to Brisbane route is Level of Signing (LOS) C1. All other principal routes are shown LOS C2.

Ipswich City to Pine Mountain Principal Cycle Route. This route has a number of important sub-destinations. Travelling out of Ipswich City, signage would list North Ipswich, Karalee and Pine Mountain as destinations. Karalee is included because of overlapping routes. At intersection g, one fingerboard would list Tivoli (sub-destination) above Karalee while another fingerboard would list Raymonds Hill Shops (sub-destination) above Pine Mountain. At intersection h, the Pine Mountain fingerboard would list Warrego Hwy as the sub-destination.

2.3.2 Assessing a route for signing

Before signing a cycle route it is recommended that a risk assessment be made so that any physical deficiencies can be corrected either immediately prior to signing, as part of regular infrastructure maintenance or as part of planned route upgrading. It is also advisable to undertake a similar assessment prior to the installation of cycle network infrastructure such as linemarking and engineering treatments.

The process outlined in this section is designed primarily for use by local councils but could be used by any government agency or private/community organisation with a management/ownership role of a cycle route.

Section 1.2 of this Guide provides information on the established processes for identifying and planning cycle networks and their component cycle routes. Once a cycle route has been identified for evaluation, the physical risk assessment should be planned, carried-out and documented as detailed below.

Physical assessment of the cycle route

A route assessment aims to identify any physical deficiencies which may present serious risks to cyclists. General issues on mid-block street-sections (between intersections or crossing points) to be assessed are:

- The availability of operating space for cyclists. This may be a wide kerbside lane or street conditions suitable for

mixed traffic spacious profile or existing marked bicycle facilities;

- Potential squeeze points where traffic islands or kerb extensions may restrict bicycle operating space for short distances;
- Potential conflict points with pedestrians;
- Smooth, paved surfaces for the bicycle path of travel, with bicycle-safe drainage grates;
- Desirable sight distances (measured from expected bicycle path of travel); and,
- Consistent treatment (path of travel, warning/guidance signing, safety measures, etc.) throughout the proposed route corridor.

Specific intersection and crossing point issues to be assessed are:

- Manageable crossing opportunities at all intersection route turnings or crossings of low to moderate traffic-volume roads. Crossings of high traffic-volume major roads, highways and State Controlled Roads should preferably be at controlled or grade separated crossing points;
- Potential conflict points with pedestrians at crossing points; and,
- Connection to existing or planned bicycle routes at either end of the route or at intermediate points.

Table 6: Pre-signing cycle route assessment analysis

| Issue | Description | References | Short-term remedial actions | Longer-term remedial actions |
|---|---|--|---|---|
| Roads/paths general | Is there adequate operating space on the road or path to accommodate cyclists? | <i>Austrroads Part 14, Sections 4, 6, 7 and 8 and QT Cycle Notes B3 and B4</i> | Signing and marking narrowings | Road realignment and engineering treatments to remove narrowings |
| Provision for wide range of users | Does the route provide alternative off-road routing (parallel route) on road-based cycle routes where vehicle speeds and volumes are high (> 5,000 vpd, >60 km/h)? | <i>Austrroads Part 14, Sections 2 and 3 and QT Cycle Notes C1 and B2</i> | Signing both on-road and off-road alternatives. Creating a continuous shared path along off-road alternative sections | Locating entire route off-road by constructing a separated cycleway |
| Sealed shoulders | Is there adequate operating space in the shoulder? Is the shoulder surface free of obstructions? | <i>Austrroads Part 14, Section 4 and QT Cycle Note B4</i> | Repair surface imperfections and serious hazards | Reseal shoulder with smooth grade asphalt |
| Major roads >5,000 vpd | Is there adequate operating space on the road shoulder or wide kerbside lane to adequately accommodate cyclists? | <i>Austrroads Part 14, Section 4 and QT Cycle Note B4</i> | Signing and marking. Repair road imperfections and serious hazards | Develop on-and off-road routes as a parallel system |
| Minor roads <5,000 vpd | Is there adequate operating space on the road or path to accommodate cyclists? | <i>Austrroads Part 14, Section 4 and QT Cycle Note B4</i> | Repair road imperfections and serious hazards | Install intersection treatments where needed |
| Physical hazards in the road or path environment | Are there physical deficiencies or hazards on the road or path (drainage grates, large cracks, blind driveways or hidden entrances, bollards and poles on paths etc)? | <i>Austrroads Part 14, Section 8</i> | Signing and marking of hazard | Complete removal of hazard |
| Sight lines and clearances | Are sight lines applicable to cyclists obscured by obstacles such as signs, trees, pedestrian fences and parked cars? | <i>Austrroads Part 14, Sections 4, 6, 7 and 8</i> | Signing and marking | Complete removal of hazard |
| Intersections, general | Is there adequate operating space in the intersection to accommodate cyclists needs? | <i>Austrroads Part 14, Section 5 and QT Cycle Note B6 and B7</i> | Signing and marking. Repair road imperfections and hazards | Develop on-and off-road routes as a parallel system |
| Intersections at route turning points | Can cyclists easily negotiate turns on-road? Is an off-road alternative available? | <i>Austrroads Part 14, Section 5 and QT Cycle Note B6 and B7</i> | Signing and marking. Repair road imperfections and serious hazards | Redesign and reconstruction of intersection to include provision for cyclists |
| Signalised intersections | Can cyclists comfortably negotiate the intersection? Is an off-road crossing possible for young, elderly and traffic-shy cyclists? | <i>Austrroads Part 14, Section 5 and QT Cycle Note B6 and B7</i> | Signing and marking. Repair road and path imperfections and serious hazards | Install bicycle lanes and holding boxes at intersection. Include cyclists needs in signal phasing |
| On-road to off-road transitions | Can cyclists comfortably negotiate transitions? Are sightlines preserved at transitions by signed parking restrictions? | <i>Austrroads Part 14, Section 4-5.3</i> | Signing and marking. Repair imperfections and serious hazards | Install protected transition (see <i>Austrroads Part 14 Section 4-5.3</i>) |
| Shared paths and footpaths | Is the design of the shared path adequate to accommodate the estimated volumes of cyclists and pedestrians? Are good sightlines maintained, and blind driveways and building entrances minimised? | <i>Austrroads Part 14, Section 5 and QT Cycle Note C1 and C2</i> | Signing and marking. Repair path imperfections and serious hazards. Signing or marking blind entrances or driveways. | Rebuild path along clearer alignment. Locate path away from property boundary. Relocate obstructions such as power poles, trees, signage. |
| Path crossings of roadways | Are provisions for car parking near the path satisfactory in relation to the operation and safety of path users, e.g. cars cannot encroach onto path? | <i>Austrroads Part 14, Section 6</i> | Ensure correct parking set-backs are marked by regulatory signage | Installation of refuge crossing or other engineering treatment (see <i>Austrroads Part 14 Section 6.7.2.3</i>) |



Photo 11: Assessing a route for signing aims to identify any physical deficiencies in a route that may present a serious risk to cyclists.

Signing routes with and without cycle infrastructure

Bicycles are legally defined as vehicles and can use public roads unless specifically prohibited for operational safety reasons (eg: urban motorways). The lack of bicycle infrastructure along a route, such as cycle lane markings, regulatory and warning signage and bicycle pavement symbols, does not necessarily mean that the route is unsuitable for cycling. Cyclists have differing levels of competency and sensitivity to traffic. Experienced cyclists often will prefer unmarked wide kerb-side traffic lanes to marked bicycle/car parking lanes due to the close proximity in the latter to opening car doors. Others (such as children and the elderly) may prefer to avoid trafficked roads altogether and ride off-road.

Fitting a route with a system of directional signage provides all cyclists with important wayfinding information which helps them to more effectively use their bicycles for a wide range of local and regional trips. Without this signage it is difficult for them to take full advantage of the road system and to use their bicycles as an efficient means of transport.

A pre-signing assessment of a route with or without cycle infrastructure should aim to identify any specific road

hazards which would cause unacceptable operating risks for cyclists using these streets and roads. These may be road narrowings where cyclists are ‘squeezed’ into risky situations, hazardous drainage grates and difficult turns on busy multi-laned roads.

Table 6 shows recommended issues analysis for a cycle route pre-signing assessment where various types of potential hazards have been identified and remedial action taken on a short- or long-term basis if potential hazards and deficiencies exist. Guidance is provided for optimal cycling operating conditions on streets and roads in *Austrroads GTEP Part 14*. In particular *Austrroads Part 14* contains technical details for the provision of cycling on all streets and roads such as recommended lane widths for safe sharing with motor vehicles.

The aim of the route assessment is to document road, street and path conditions and from that formulate a program of remedial actions with a defined time frame. High risk items will require immediate attention. Remedial actions may range from short-term signing and marking of hazards to longer-term engineering works to physically remove the hazard by major road works.

2.3.3 Level of signing, numbering and branding

Level of signing for bicycle networks is set out in *TRUM 1.36* and uses a methodology for the signing of route intersections and decision points based on the importance of the route and its place in the cycle network route hierarchy. Level of signing for cycle routes is expressed in descending order of signing hierarchy (ie Level C1 is the highest level of signing). Different levels of signing may be required at each signed intersection along a route depending on intersecting cycle route types. Table 7 lists the signing requirements for each level. Figures 13 to 16 on the following pages provide graphical examples of the methodology for the four levels of signing.

This level of signing allows for a degree of redundancy in the signage system. A signage system with only one sign at each change of direction risks a breakdown in the provision of important wayfinding information to the user. If one sign is removed the system fails. Only local routes pointing directly to destinations have one sign per intersection (see Table 7).

Table 7: Level of signing for cycle network routes

| Level of signing | C1 | C2 | C3 | C4 |
|----------------------------------|---|---|-------------------------------------|---|
| Type of route | High-speed, limited-access, principal routes usually paralleling State Controlled Roads or major regional roads | All other principal cycle routes | Local routes | Off-road, shared path and tourist/recreational routes |
| Advance direction signs | Yes, before route junctions with other C1 or C2 routes | Yes, at junctions where the route changes direction | No | No |
| Fingerboards at intersection | Yes, at route junctions with other C1 or C2 routes | Yes | Yes, integrated with street signage | Yes |
| Reassurance signs with distances | Yes, after route junctions with other C1 or C2 routes | Only if advance direction signs are not used | No | Route markers only |
| Route markers | No | No | Yes | Yes |
| Route numbering | Yes | No | No | No |
| Branding logos | Yes | Yes | No | Yes |
| Street signs | Yes, if none exist | Yes, if none exist | Yes, if none exist | Yes, if none exist |

Figure 13: Example of Cycle Network Level of Signing C1

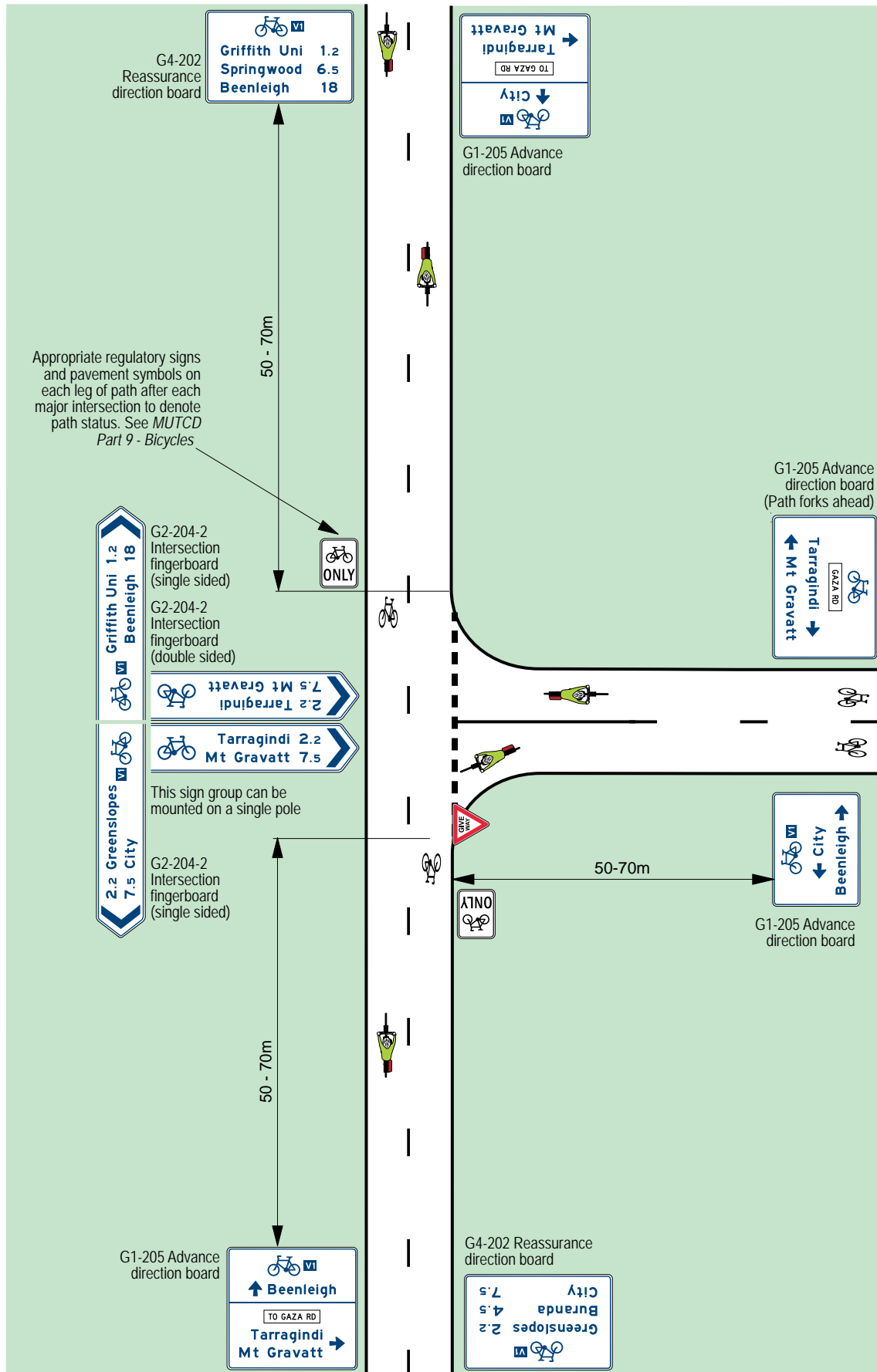


Figure 14: Example of Cycle Network Level of Signing C2

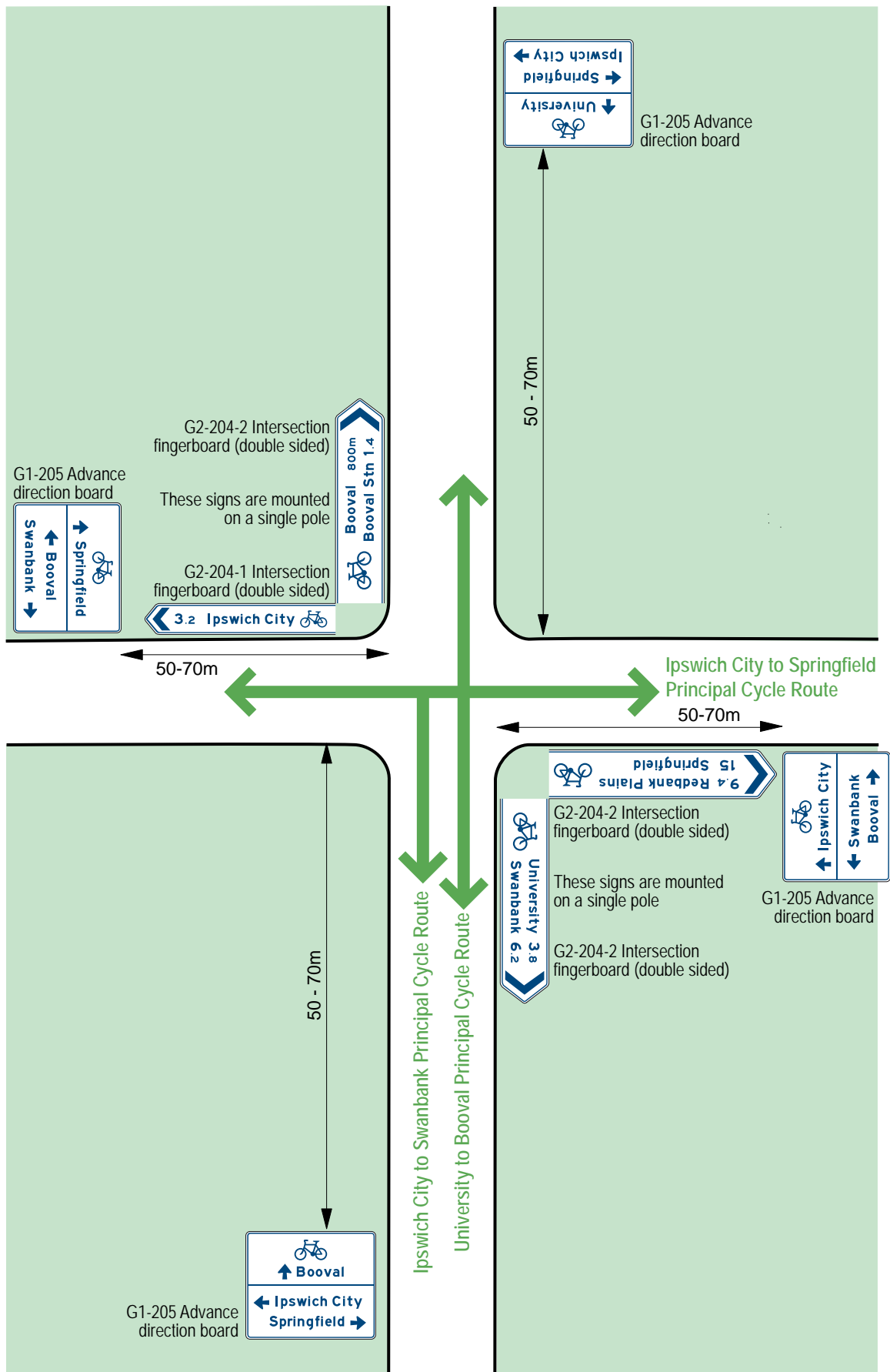


Figure 15: Example of Cycle Network Level of Signing C3

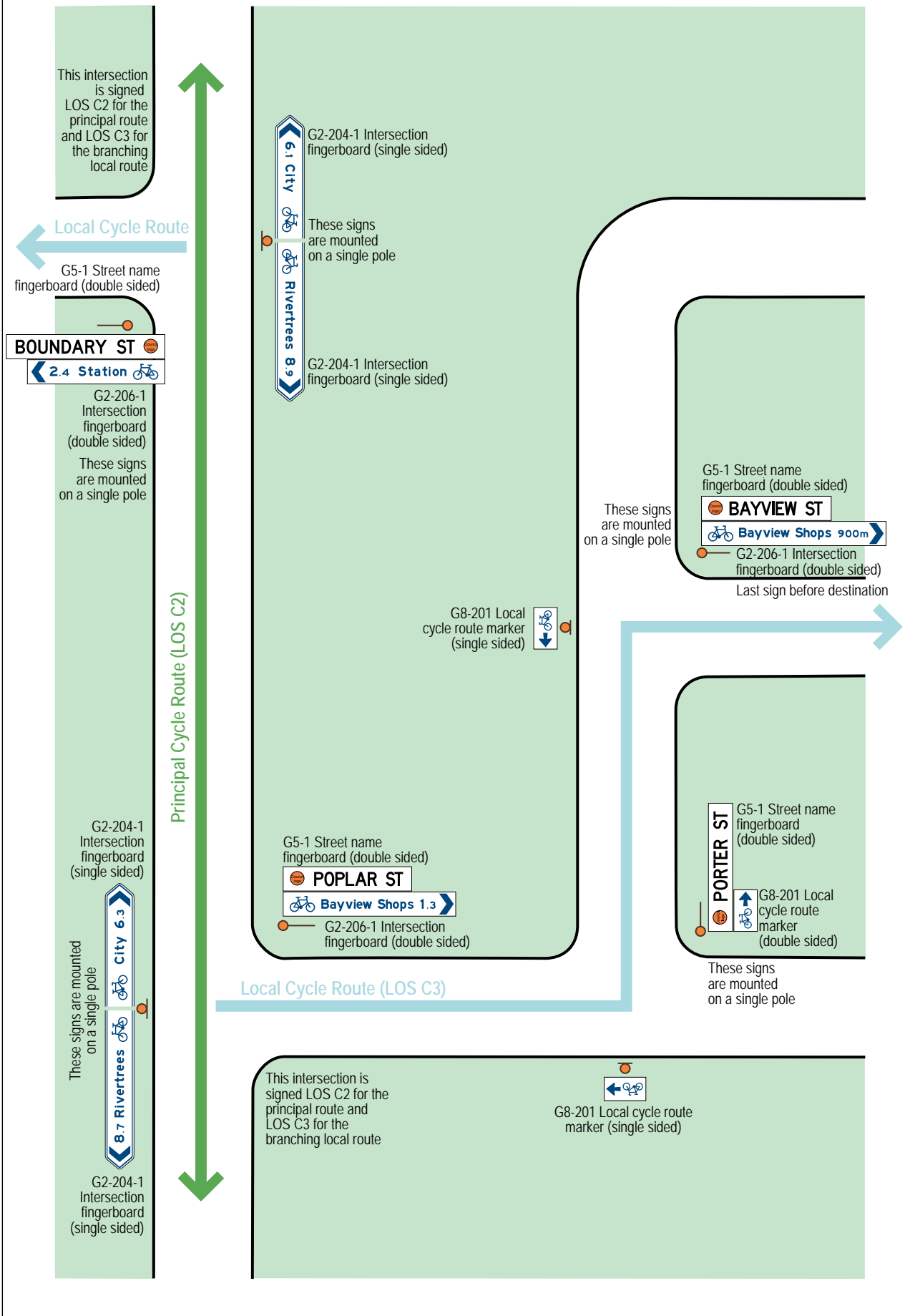


Figure 16: Example of Cycle Network Level of Signing C4

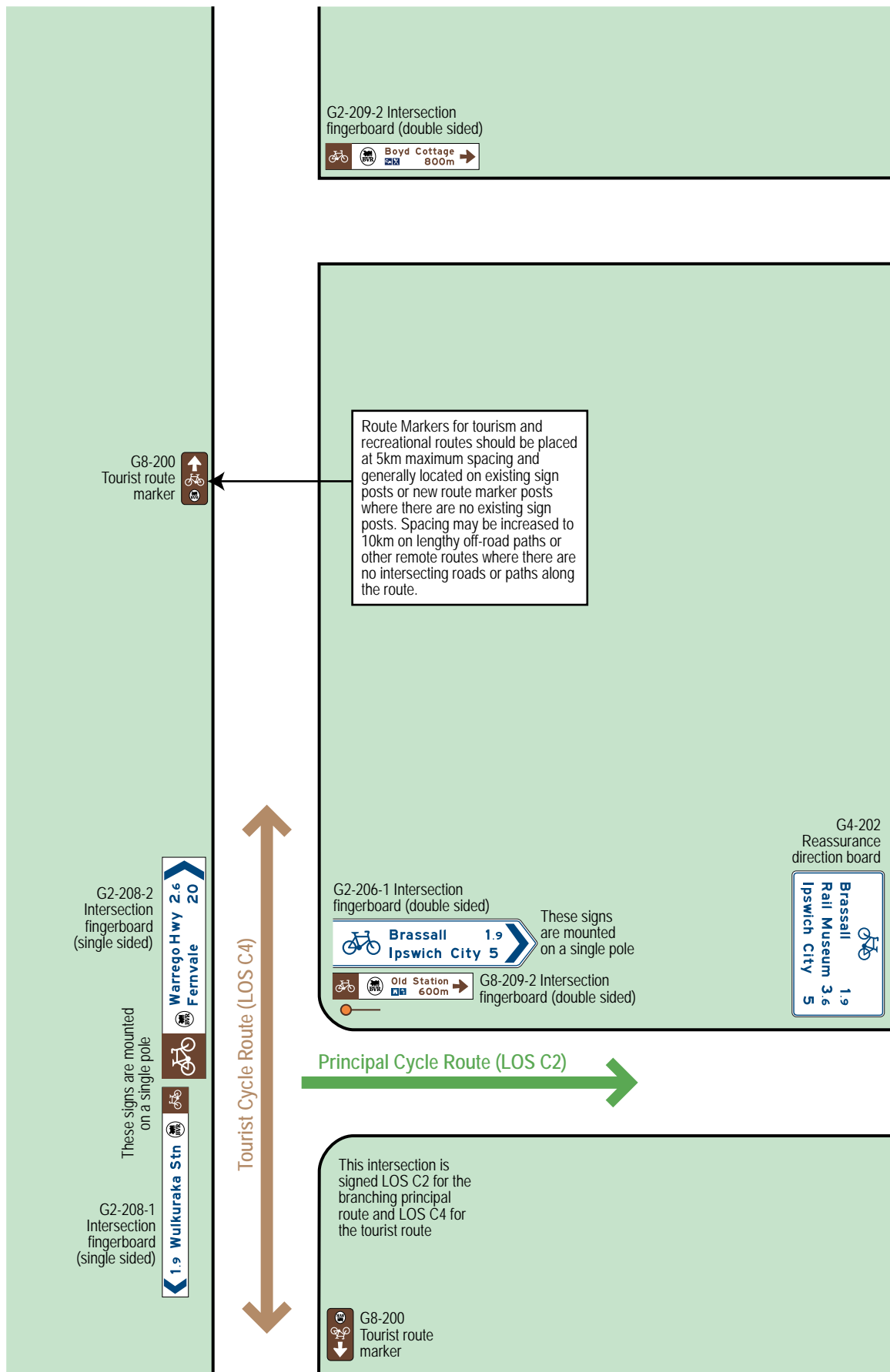




Figure 17: Example of route numbering used on principal cycle route signage. The V1 is Queensland’s first numbered cycle route and is a high speed limited access route linking Brisbane to the Gold Coast.

Route numbering

In densely populated cities where there are far more route options than in smaller centres, route numbering may make it considerably easier for users to navigate around the network. Route numbering may also be appropriate on longer distance (inter-city) routes and may reflect existing road system route numbering where appropriate.

Route numbering, used for C1 routes only, should be based on an alphanumeric code comprising the letter ‘V’ (for veloway) followed by the route number in the series. The use of route numbering should be limited to a small number of high-speed, limited-access, principal cycle routes usually paralleling State Controlled Roads or major regional roads within a city or between cities and within a densely populated region (such as southeast Queensland).

Maintenance of the system of cycle route numbering within a city or region is the additional responsibility of the organisation which maintains the Focal Point Signing Map for cycle network signage within that city/region.

Route branding for principal, tourism and recreational cycle routes

The principal cycle route signage system makes provision for the naming of cycle routes where these already exist (see Figure 6). Naming routes is, however, cumbersome. Naming routes does not necessarily improve wayfinding and can place heavy demands on available sign space and can consequently increase the size of signs.

Photo 12: The lower sign in this example shows branded routes in Munich, Germany. The lower sign indicates a 200m connection to a riverside path which carries three branded routes - the Inner Ring Route and the River Isar Route which carries the national cycle route D-11 through the city. This route runs from Upper Bavaria to the Baltic Sea and is part of a twelve route 11,700km cycle tourism network.



Lengthy route names should be avoided. Where the length of a route name exceeds the available sign length (usually determined by the length of the longest listed destination) an abbreviated form or a smaller letter size may need to be used. When used, named route indication should be limited to signs at the start and finish of the named route and to important junctions where other major routes enter.

Longer recreational and tourist routes are being developed throughout Queensland for a variety of purposes ranging from local recreational paths to long distance rail trails. These routes often pass through a number of local government areas. To give the route its own identity, local governments could cooperate to give the route a distinctive branding and a promotional identity which encompasses design elements such as path logo, specialist wayfinding and facilities signage designs.

The preferred way to identify tourism and recreational routes, along with more easily identifiable urban routes, is by branding – using an easily recognisable logo or symbol to mark the route. Humans respond quicker to symbols and graphical shapes and can read them from far greater distances than lettering or words. Logos are very compact and so require very little precious sign space.

Where a cycle route uses part or all of a route with a branded identity, the logo for this route may be integrated into the sign design (for new tourism and recreational cycle route signage installations) or affixed to existing signage as shown in Figure 8. Principal cycle route signage branding should be integrated into the sign design as shown in Figure 6. Local routes do not use branding logos.

Route branding logos can be used to indicate different routes by locating them on the same line as the relevant destination (see Photo 12). Where route identity branding logos are used for individual destinations, they should be located on the same line as the related destination name and placed at the opposite end of the text line to the distance indication numerals. Where branding logos are primarily associated with the route (ie all listed destinations), they should be located at the top of the sign adjacent to the bicycle symbol as for numbered routes (see Figure 6). Logos, when used in conjunction with individual destinations should always match the height of the associated destination lettering.

Facilities and services signage and symbols

An important additional role for cycle network signage is to direct cyclists and other users to the services, attractions and tourist support facilities along a cycle route or nearby. Examples of recommended facilities and services signage for principal and local routes within urban areas are detailed in Figure 19. Further guidance on local services signage can be obtained from the *MUTCD – Part 5*, or from Council signage guidelines for pathway systems, parks and the public domain wherever applicable.

Effective facilities and services signage is an essential element in making tourism and recreational routes more accessible and attractive to the public. Fingerboard signage for tourist and recreational cycle routes (see Figures 8 and 19) can indicate facilities of use to cyclists along the route such as toilets, food (shops), water, accommodation, transport terminals, points of interest and heritage sites etc.