

Appendix 9. Assessment of whether the Austroads Bicycle Safety Audit Checklist was adequate

This appendix reviews the adequacy of the SMEC Bicycle Detour Audit Report in relation to the checklist in Austroads 14. The introduction of the Bicycle Detour Audit Report states:

"SMEC Australia Pty Ltd (SMEC) was commissioned by Transurban to conduct an audit of the alternate route to determine if it complies with the relevant Austroads Guidelines."
(SMEC, Bicycle Detour Audit Report, 2007)

"The audit was conducted using sample audit questions from the Appendix A "Example of Bicycle Safety Audit Checklist" of the AUSTROADS guideline ..." (SMEC, Bicycle Detour Audit Report, 2007)

Unfortunately the task was undertaken by using only a small sample of the checklist and we can find no indication as to why particular questions were chosen. The lack of a full checklist is a serious issue in the Audit and we believe the Audit needs to be recommissioned and undertaken in a complete and professional manner. We contend that critical questions which were not asked from the checklist should be included because they would completely change the outcome of the audit. For the information of reviewers,

1. The full checklist from Austroads is reproduced below.
2. The questions chosen by SMEC are **highlighted below with a blue background**. It should be noted that this is only about one third of the recommended questions. Most questions were omitted completely, and some were combined with others or had sections omitted. **[I have added some clarifying comments below in bold in square brackets.]**
3. The critical questions that Bike North insist be included in a new audit are **highlighted below with a yellow background**.

The pages below are reproduced from AUSTROADS part 14 (p143-146) to highlight the deficiencies in the SMEC audit report.

Appendix A.

Example of a Bicycle Safety Audit Checklist.

A.1 General

In accordance with AUSTROADS 'Road Safety Audit' guide, it is appropriate that audits of bicycle routes and other facilities are conducted at various stages from planning through to construction, and in relation to existing infrastructure.

The lists of items in the sections below represents the possible contents of a checklist to assist the identification of relevant safety issues or concerns associated with bicycle facilities. It is unlikely that it includes all of the issues that are of relevance or concern to cyclists, particularly given the wide variation in construction and design practice, and the conditions that exist.

It is therefore essential that personnel conducting audits of bicycle facilities are experienced in and knowledgeable on the provision of bicycle facilities.

Individual items provided in the lists may be applicable during several audit stages or may only relate to existing infrastructure.

Where existing infrastructure is to be audited, it is important that to some degree these are performed on a bicycle and on foot. The type of bicycle used should be representative of the most common type in the region of the audit, but should not have a suspension system or tyres thicker than 32 mm.

Similarly, it is important that safety audit personnel ride at speeds typical of most users - which may be in excess of 25 km/h. Riding at slower speeds may not reveal potential problems such as geometric limitations or pavement surface defects.

A.2 Appendix Structure

Section A.3 is generally applicable to roads, paths & intersections. The requirements that relate mainly to either to paths or roads are provided in Section A.4 and Section A.5 respectively.

In so far as roads are concerned, it is assumed that general road safety auditing processes exist, and hence the lists below represent additional considerations for bicycles.

A.3 General requirements (Roads and Paths)

- Are the designated crossing points and routes appropriate and acceptable for cyclists given the desire lines?
- Are the characteristic bicycle use patterns accommodated (i.e. categories of cyclists, volumes, times of travel)?
- Do the proposals account for surrounding bicycle network deficiencies and opportunities?
- Do consistent and suitable provisions exist for the respective categories of cyclists anticipated along the route, or can they be achieved; for instance, is a path required for child and inexperienced cyclists (sect. 2.3/2.4.1.1)?
- Are grade separated or controlled crossings required?
- Are traffic calming or local area traffic management measures required?
- Are the requirements of local codes of practice met?

A.3.1 Alignment and Cross Section

- Does the cross-section of the lane/path facility safely accommodate the anticipated cyclists (sect. 6.3.4)?
- Are stopping sight distances adequate for all traffic, accounting for paths, roads, driveways, railways etc.?
- Are sight lines applicable to the operation of cyclists obscured by obstacles such as signs, trees, pedestrian fences and parked cars?
- Is the horizontal and vertical alignment suitable? If not, are warning signs installed?
- Are there any sections of riding surface which may cause confusion for users, e.g.:
 - a) Is alignment of the riding surface clearly defined, particularly at unexpected bends or for dark conditions?
 - b) Have disused pavement sections been removed or treated?
 - c) Is sufficient route information or guidance provided?
- Does the design avoid or minimise the need for cyclists to slow or stop (sect. 3.4)?
- Do hazardous conditions (e.g. concealed intersecting paths, curves) exist at the bottom of steep gradients?

A.3.2 Signs, Delineation and Lighting

- Are all necessary pavement markings provided?
- Are there any redundant pavement markings? Have redundant pavement markings been properly removed?
- Are all necessary regulatory, warning and direction signs provided and located appropriately? Are they conspicuous and clear in their intent? Are they at a safe distance/height with respect to the riding surface?
- Are signs in good condition and of an appropriate standard?
- Are there any redundant signs?
- Are fixed objects close to or on the path (trees, fences, holding rails, etc.) treated to ensure visibility at night (e.g. painted white and fitted with reflectors or reflective tape)?
- Are pavement markings clearly visible and effective for all likely conditions (e.g. day, night, rain, fog, rising or setting sun, oncoming headlights, light coloured pavement surface, poor lighting)?
- Are user movements obvious or delineated through intersections?
- Is public lighting of [SMEC has "or"] facilities required? Is the lighting design satisfactory, particularly at tunnels, underpasses and areas of high pedestrian activity? Is it operating satisfactorily?
- Are raised pavement markers recessed flushed with surface or located outside of the paths of travel of cyclists, or outside of bicycle lanes?
- Are thermoplastic markings chamfered?

A.3.3 Riding Surface

- Is [SMEC added “the”] riding surface suitable for cycling?
- Is the riding surface and edges, smooth and free of defects (e.g. grooves, ruts or steps) which could affect the stability of cyclists or cause wheel damage (sect. 8.5.1)?
- Is the pavement design/construction of a satisfactory standard (sect. 8.5.2)?
- Can utility service covers, grates, drainage pits etc., be safely negotiated by cyclists (sect. 8.2)?
- Are smooth and flat gutters/channels provided at stormwater drainage pit inlets?
- Is the riding surface free of loose materials (e.g. sand, gravel), broken glass, concrete spills)?
- Is there suitable protection to prevent sand or other debris from depositing on the riding surface?
- Does the riding surface have adequate skid resistance, particularly at curves, intersections, [SMEC added “etc.”] bridge expansion joints and railway crossings?
- Is the riding surface generally [SMEC joined to another question] free of areas where ponding or flow of water may occur?
- Is special protection required to prevent cyclists from running off the riding surface (sect. 7.6.2)?

A.3.4 Vegetation, Maintenance and Construction

- Is suitable access for cycling available during maintenance and construction [SMEC added “Wicks Road”) even for audit sections not containing Wicks Road.] activities? (refer Appendix B)
- Are all locations free of construction or maintenance equipment?
- In the absence of an appropriate and regular maintenance program:
 - a) Is there a possibility of the ingress of grasses into bituminous riding surfaces (e.g. Kikuyu) or similar circumstances that could result in poor edge conditions or pavement degradation?
 - b) Do thorn bearing grasses (e.g. Caltrop) exist, or are they likely to be introduced adjacent to the riding surface?
 - c) Are channels, kerb slots or similar treatments over which cyclists ride, located under deciduous trees etc., or otherwise likely to experience a build up of debris due to poor drainage conditions?
- Will crack sealing processes or the application of spray seals result in the presence of loose/granular material/sand on the riding surface?
- Does landscaping allow adequate clearances, sight distance etc. [included as part of another question] and will these be maintained given mature plant growth (also see sect. 3.2)?
- Could personal [SMEC have used the work “Public”] security of path users be adversely affected due to the position of bushes and other landscape features?
- Is landscaping required as a wind break?
- Will the positioning of trees and the species used contribute to the degradation of the pavement (e.g. through undermining or moisture variation)?

A.3.5 Traffic Signals

- Are separate pedestrian and/or bicycle phases provided where necessary?
- Do traffic signals operate correctly? Are signal displays located appropriately for all users?
- Does the design of the signals prevent conflicting motor vehicle movements during crossing phases for pedestrians and cyclists?
- Where a permanent demand for individual phases does not exist, have suitable detection facilities been provided for cyclists? Are these operating satisfactorily (sect. 5.4.1)?
- Are inductive detector loops provided for bicycle users, are they located appropriately, of a suitable design and do they operate correctly for bicycles in the various stopping positions (sect. 5.4.1)?

Appendix 9. Assessment of whether the Austroads Bicycle Safety Audit Checklist was adequate

- If push-button actuators have been provided, are they located to allow convenient and legal operation from the normal stopping position (e.g. on left of riding surface or kerb ramp, behind stop line)? Do they operate correctly (sect. 5.4.1(c))?
- Are phasing and phase times acceptable? Are suitable warning signs or guidance for cyclists erected where intersection crossing times are insufficient (sect. 5.4.3)?

A.3.6 Physical Objects

- Are fences, guard rail or other objects located adjacent to the path(s) of cyclists free of sharp edges, exposed elements or corners to minimise the risk of injury in the event of being struck by a cyclist (sect. 7.6.2)?
- If there are any obstructions located adjacent to the paths of cyclists, are they adequately delineated (sect. 6.3.5/7.6.2)?
- Are clearances to the operating space of cyclists acceptable (sect. 3.2/6.3.5/7.6.2)?

A.4 Paths

This section should be read in conjunction with Section A.3.

A.4.1 General

- Are automatic reticulation systems timed to avoid periods of significant path use? Do sprinklers spray away from path (rather than across it)?
- Do irrigation hoses need to be placed across path surfaces?
- Are provisions for car parking in the vicinity of the path satisfactory in relation to the operation and safety of path users?
- Are there any potential problems of conflict between the various path users (e.g. pedestrians and cyclists)?
- Is path subject to flooding? If so, are warning signs provided and located appropriately (sect. 6.3.8)?

A.4.2 Alignment and Cross-Section

- Where paths are located adjacent roads, is there sufficient separation and/or protection from the carriageway (sect. 6.5.2)?
- Are adequate overtaking opportunities provided?
- Is the path width, at structures or otherwise, adequate for the likely usage levels of pedestrians and cyclists (sect. 6.6/7.4)?
- Is the geometric alignment and gradient satisfactory (sect. 6.3)?
- Is the design speed appropriate (sect. 6.3.1)?
- Is path crossfall suitable for the anticipated path users (sect. 6.3.8)?

A.4.3 Intersections

- If justified, is path priority assigned to path users at road crossings (sect. 6.7.2.1)?
- At intersections with busy roads, are appropriate facilities provided, e.g. traffic signals, underpass, overpass or median refuge, to allow path users to safely cross (sect. 6.7.2.3)? Are the intersection controls satisfactory?
- Is the location of road/path or path/path intersections satisfactory and obvious with respect to horizontal and vertical alignment?
- Is the presence of intersections obvious to road/path users?
- Is a refuge required at road crossings? Would it adversely affect (e.g. squeeze) cyclists travelling along the road?
- In relation to path entry controls:

Appendix 9. Assessment of whether the Austroads Bicycle Safety Audit Checklist was adequate

- a) Are 'terminal' devices required? If so, does the device design meet the requirements listed in sect. 6.7.3.1(b).
- b) If central holding rails or bollards exist, is there a legitimate reason why they are needed, and if so is there sufficient pavement width either side (sect. 6.7.3.1(e))?
- Are kerb ramps adequate and suitable for all users (width, slope, flush surface)? Are turning radii adequate (sect. 6.7.3.3)?
- Are holding rails provided? Are they positioned so as to not unduly interfere with access for cyclists and other users (consider tandem bicycles, bicycles with trailers etc. - sect. 6.7.3.2)?
- Are the controls associated with path/path intersections satisfactory (sect. 6.8)?

A.5 Roads

This section should be read in conjunction with Section A.3.

A.5.1 General

- Are bicycle lanes required (sect. 2.4.1.2/4.3.1)
- Are bicycle lane or the left traffic lane widths adequate to accommodate cyclists (sect. 4.4)? Can sufficient space be obtained (sect. 4.3.2)? Are there any squeeze points for cyclists?
- Does the construction of the lane facility conform to this guide and other relevant standards?
- Are special provisions required along curving roads (sect. 4.5.1)?
- Are road markings for cyclists suitable and adequate, and do they meet relevant standards?
- On controlled access roads, is a commuter path required within the reservation?
- Are Local Area Traffic Management treatments appropriate for bicycles (sect. 4.7)?
- Do drainage pits require treatment because road surfacing has been deferred (sect. 8.2)?
- Is the positioning of bicycle pavement symbols potentially hazardous to motorcyclists?
- Are sealed shoulders at least as smooth as traffic lanes?

A.5.2 Intersections

- Are the intersection treatments appropriate (sect. 5)?
- Are there any common cyclist movements (legal or otherwise) that differ from typical traffic movements? Are these likely to be anticipated by other traffic? Can these movements be made safely and if not what remedial measures are required (sect. 5.2)?
- Are 'head start' storage areas required due to conflicting manoeuvres of bicycles and other traffic, or due to high cyclist volumes (sect. 5.4.2.3)?
- Are special provisions for cyclists required at roundabouts (sect. 5.5.2)?
- Are there continuity lines marked where appropriate (e.g. sect. 5.3.1)?