1 July 2009

Alexandra Douglas  
Executive Officer  
Parliament of Victoria  
Road Safety Committee  
Parliament House  
Spring Street  
EAST MELBOURNE VIC 3002

Dear Ms Douglas

**Inquiry into Pedestrian Safety in Car Parks**

Thank you for your invitation to make a submission to the Inquiry into Pedestrian Safety in Car Parks being conducted by the Road Safety Committee of the 56th Parliament of Victoria.

RACV is pleased to make a submission to this Inquiry.

Our submission is enclosed. If you have any queries, or require further information, please contact Mr Peter Daly, Chief Engineer Traffic and Transport, on 9790 2923.

Yours sincerely,

[Signature]

BRIAN NEGUS  
GENERAL MANAGER PUBLIC POLICY

---

RACV Public Policy Department  
Royal Automobile Club of Victoria (RACV) Ltd  
550 Princes Highway, Noble Park North Victoria 3001 Australia  
Telephone 03 9790 2863 Facsimile 03 9790 2629  
ABN 44 004 060 933 racv.com.au
Submission

Inquiry into Pedestrian Safety in Car Parks

Conducted by the

Parliament of Victoria
Road Safety Committee

June 2009
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>TABLE OF CONTENTS</td>
<td>1</td>
</tr>
<tr>
<td>1. INTRODUCTION</td>
<td>2</td>
</tr>
<tr>
<td>1.1 RACV PERSPECTIVE</td>
<td>2</td>
</tr>
<tr>
<td>1.2 TERM OF REFERENCE</td>
<td>2</td>
</tr>
<tr>
<td>1.3 REPORT STRUCTURE</td>
<td>2</td>
</tr>
<tr>
<td>2. DEFINITIONS</td>
<td>2</td>
</tr>
<tr>
<td>2.1 PEDESTRIAN</td>
<td>2</td>
</tr>
<tr>
<td>2.2 SAFETY</td>
<td>3</td>
</tr>
<tr>
<td>2.3 CAR PARKS</td>
<td>3</td>
</tr>
<tr>
<td>3. CURRENT RULES AND STANDARDS</td>
<td>4</td>
</tr>
<tr>
<td>3.1 THE VICTORIAN PLANNING SCHEME</td>
<td>4</td>
</tr>
<tr>
<td>3.2 AUSTRALIAN STANDARD 2890.1 PARKING FACILITIES PART 1: OFF-STREET CAR PARKING (2004)</td>
<td>5</td>
</tr>
<tr>
<td>3.3 AUSTRALIAN STANDARD 2890.2 PARKING FACILITIES PART 2: OFF-STREET COMMERCIAL VEHICLE FACILITIES (2002)</td>
<td>6</td>
</tr>
<tr>
<td>3.4 AUSTRADSG GUIDE TO TRAFFIC ENGINEERING PRACTICE (GTEP) PART 13 – PEDESTRIANS (1995)</td>
<td>6</td>
</tr>
<tr>
<td>4. RESPONSIBILITY FOR PEDESTRIAN SAFETY IN CAR PARKS</td>
<td>7</td>
</tr>
<tr>
<td>5. PEDESTRIAN CRASH AND INJURY STATISTICS IN CAR PARKS</td>
<td>7</td>
</tr>
<tr>
<td>6. PEDESTRIAN SAFETY ISSUES IN CAR PARKS</td>
<td>7</td>
</tr>
<tr>
<td>7. DISCUSSION</td>
<td>8</td>
</tr>
<tr>
<td>8. RECOMMENDATIONS</td>
<td>10</td>
</tr>
</tbody>
</table>
1. Introduction

1.1 RACV perspective

The Royal Automobile Club of Victoria (RACV) Ltd has nearly two million members, which means that on average three out of four Victorian households contain an RACV member. RACV thus claims very broad representation, and a community-wide responsibility in areas such as mobility and safety.

RACV welcomes the opportunity to respond to the Road Safety Committee of the 56th Parliament of Victoria’s Inquiry into Pedestrian Safety in Car Parks.

1.2 Term of Reference

By resolution of the Legislative Assembly on 4 December 2008, The Road Safety Committee has been requested to consider the following Term of Reference:

“The current rules and standards that apply to pedestrian safety in car parks, and the Committee is to recommend potential measures that relevant authorities should consider to improve safety for pedestrians.”

1.3 Report structure

RACV’s submission contains the following sections:

- Definitions
- Current rules and standards
- Responsibility for pedestrian safety in car parks
- Pedestrian crash and injury statistics in car parks
- Pedestrian safety issues in car parks
- Recommendations

2. Definitions

RACV believes that it is useful to define some of the key words in the Term of Reference, in order to ensure clarity in our submission. Ultimately, the Committee will specify what exactly the Inquiry will address, but RACV notes that Term of Reference may possibly be broader than that envisaged by the Road Safety Committee, depending on how the terms ‘pedestrian’, ‘car park’ and ‘safety’ are interpreted.

2.1 Pedestrian

RACV’s submission has assumed that the term “pedestrian” includes all those who are on foot in the area. This includes those who have walked from some other place, those who have driven to the car park and who are walking between their car and some destination, and workers who may be walking around loading bays or accessing buildings via employee only accesses. It also includes those in wheelchairs or prams.
2.2 Safety

RACV’s submission will focus on road ‘safety’ as opposed to ‘security’. Issues relating to pedestrian conflict with cars, trucks, buses, bicycles and other pedestrians as well as trip hazards, will be discussed.

RACV’s submission does not discuss issues related to personal security as we consider these to be outside the scope of this inquiry. We do note, however, that issues of personal security in car parks are non-trivial since they potentially relate to attacks of a criminal nature such as theft and violence.

2.3 Car Parks

In relation to the term “car park”, it is important to recognise that car parks may have many different characteristics.

Car parks may range in size from very small one or two car space facilities up to car parks with many thousands of spaces. Spaces may be occupied for more than a day (e.g. long term airport parking), a whole day (e.g. park and ride facilities, employee parking), or on a medium or short term basis (e.g. shopping centres, supermarkets and parent drop off spaces at schools). Some car parks will be used by the same people every day who will become familiar with the car park (e.g. employee or resident parking) while other car parks will be used by a wide range of different people who may be totally unfamiliar with the car park (e.g. shopping centres). Some car parks will be used by large numbers of children (e.g. school car parks) while others will be used mainly by adults (e.g. office and employee car parks). Some car parks will need to cater particularly for elderly or disabled pedestrians (e.g. hospital car parks). Some car parks will be used mainly in the day time (e.g. employee parking, schools), some will be used in both day and night conditions (e.g. supermarkets) and some will be used only at night time (e.g. some restaurants).

Additionally, car parks can be in different types of ownership – e.g. Council owned, privately owned, or owned by some other organisation. Car parks can be located on-street, whether on the kerbside, a road shoulder or in the middle of the road. Pedestrians in some car parks will have suitcases or trolleys (e.g. the airport and supermarkets). Some car parks will only be accessed by people either arriving or departing in vehicles (e.g. airport, some employee parking areas and resident parking), while other car parks may be accessed by pedestrians walking through from the street footpath network to a building entry (e.g. some supermarkets, shopping centres).

It is important to note that given the wide range of facilities that come under the umbrella of “car parks”, standards and guidelines that may apply to the design of one type of car park may not apply equally to the design of other types of car parks, and the application of a one-size-fits-all approach is unlikely to be suitable.
3. Current rules and standards

Pedestrian safety in car parks is not covered in great detail in any of the commonly used documents, which include:

- The Victorian Planning Scheme
- Guide to Traffic Engineering Practice Part 13 – Pedestrians

Each of these documents is discussed separately below.

3.1 The Victorian Planning Scheme

Section 52.06 of the Planning Scheme – Car Parking, includes under the heading Purpose:

“To ensure that the design and location of car parking areas:

- Does not adversely affect the amenity of the locality, in particular the amenity of pedestrians and other road users.
- Achieves a high standard of urban design.
- Creates a safe environment for users, particularly at night.”

The planning scheme provides information about the minimum dimensions of car parking spaces and aisles, but rather than providing any details of how design should occur, the planning scheme continues that:

“Before any use commences or any building or works associated with that use or an existing use is constructed, a plan must be prepared to the satisfaction of the responsible authority showing all required car spaces, access lanes, driveways and associated works and landscaping.”

Before deciding that any plan is satisfactory, the planning scheme lists a number of decision guidelines that the responsible authority must consider, including:

- Whether the layout of car spaces and access lanes are consistent with Clause 52.06-5 or a variation generally in accordance with Australian Standard AS2890.1 - 1993, Parking facilities, Part 1: Off-street car parking (note – should be updated to AS2890.1 – 2004).
- The provision for pedestrian movement within and around the parking area.
- The measures proposed to enhance the security of people using the parking area.
- The provision of parking facilities for cyclists and disabled people.

RACV believes that the existing Planning Scheme for car parking is not strong in its provision for good pedestrian design. The Planning Scheme is vague and assigns responsibility to the responsible authority, which in most cases would be local government, on the basis of “a high standard of urban design” and consistency with now antiquated Australian Standards. There is no specific quantifiable measure for the threshold for when car parks need to include access for public transport, footpaths, traffic calming measures such as speed humps, or parking for vehicles other than cars.

Section 1.1 sets out the scope of the Standard:

“This Standard sets out the minimum requirements for the design and layout of off-street parking facilities, including multi-storey car parks for motor cars, light vans and motorcycles. It includes access and egress requirements for both public and private car parks; and car parking on domestic properties.”

In Section 2.3.1 the Standard states that:

“Provision for traffic within a parking facility shall take into account the following:

a) The need for traffic to move to and from the frontage road with minimum disruption to through traffic and maximum pedestrian safety.

e) Safe treatment of points of conflict with pedestrians and other road users.

f) Provision of parking spaces and accessible pedestrian paths for people with disabilities.

The Standard includes information about the length of aisles as this relates to vehicle speed (which is important to reduce the impact of any pedestrian/vehicle or vehicle/vehicle conflicts that do occur). It also states in Section 2.4.5.1 that physical controls shall not obstruct accessible travel paths for people with disabilities, and that all kerbs, low barriers and other obstructions that could be a trip hazard to pedestrians shall be surfaced in a colour contrasting with their surroundings.

Section 4.1 of the Standard discusses Pedestrian Service, under the headings General (4.1.1), Parking Structures (4.1.2) and Surface Car Parks (4.1.3). The information in this section is fairly general but also fairly prescriptive – using the term “shall” rather than “should”. The information covers issues such as providing safe pedestrian crossing points of busy circulating roadways and providing alternatives for pedestrians in multi-level car parks so that they do not have to use vehicular ramps. Additionally 4.1.3(b) states that “Service yards shall be accessed separately from the car park”. In reality, this is not always able to be the case given site constraints and restrictions to the number of accesses that are permitted onto main roads.

RACV believes that the Australia Standards are generally a good start point for car park design.

The only mention of pedestrian issues in this Standard is in Section 4.1 which states that:

"The design of service areas shall include the following elements:

f) Separation, as far as practicable, from areas of car parking, pedestrian activity, entrances and exits."

RACV believes that the Australia Standards are generally a good start point for car park design.


This document is aimed to serve the needs of designers and engineers, with a consolidation of practices utilised in different States and Territories. Primarily it is to serve as a source document for guidelines, standards and practices, with references to further information where this is required.

It should be noted that this document was released in 1995 and is therefore unlikely to include the most up to date information. For example it references AS2890.1 (1993) which has now been replaced by AS2890.1 (2004). Additionally, the GTEP series was written as an Australian guide, and as such it does not refer to state based documents such as the Victorian Planning Scheme, which is the basis of development design in Victoria.

Chapter 10 of GTEP Part 13 is titled “Vehicle Parking Layout And Design To Assist Pedestrians”. This chapter starts by stating that:

"An important consideration in the design of parking facilities is the interaction of vehicles and pedestrians. Separation of these user groups, through the development of special walkways, is advantageous but not always possible. Therefore, parking areas and networks should be designed to minimise conflict, reduce relative speeds and exposure to risk. Parking spaces for people with disabilities should be located close to building entrances and provide a route clear of obstacles to the intended footpath or building access point."

Other relevant issues included in this chapter include the desirability of reducing traffic flow in main pedestrian flow areas, the benefits to be gained by channelising pedestrian movements away from internal circulation roads, and the need to locate car park entrances and exits where conflicts with pedestrians and cyclists are minimised. Additionally, the chapter includes in 10.2.2 some information about the need for pedestrian facilities to reflect pedestrian desire lines. It states that in general, the parking layout should encourage walking along aisles rather than across them.
4. Responsibility for pedestrian safety in car parks

In most cases, car parks are the responsibility of the property owner or operator. Some aspects of the design and planning of a car park development or redevelopment requires statutory approval from the responsible authority.

The responsibility for ensuring that car park safety issues are addressed is largely self-regulated by the property owner or operator. However, State and Local Government may have legislative powers to address particular safety issues. Government departments and agencies may include Victoria Police, Department of Transport, VicRoads, Environmental Protection Agency, Department of Planning and Community Development, Department of Sustainability and Environment, WorkSafe, and Local Laws.

5. Pedestrian crash and injury statistics in car parks

It is far from clear that there is actually a problem of pedestrian safety in car parks. Data is not centrally collected about any safety incidents that do occur, as the majority of car parks are on private property.

It would appear that one of the initial outcomes of this review should be the central collation of data relating to any pedestrian accidents that do occur, irrespective of whether they are on private or public property. This data can then inform the Committee on the severity of this issue.

RACV recommends that the Committee investigate the nature, availability and suitability of current data sources and recording methods for casualty and less severe crashes in car parks.

6. Pedestrian safety issues in car parks

RACV has considered the following pedestrian safety issues in car parks:

- Impact with a moving motor vehicle
- Impact with another pedestrian, cyclist or non-motorised vehicle
- Impact with a stationary object
- Trip and fall hazards

Information on issues with pedestrian safety in car parks is largely anecdotal. While it is possible for fatal or serious permanent injury to occur to pedestrians in car parks, the majority of injuries are likely to be minor, requiring basic first aid.

A number of factors will also increase the severity of an injury to a pedestrian should an accident occur in a car park. These include:

- Speed of the colliding vehicle – the higher the speed, the greater the risk of death of serious injury to the pedestrian
- Size of the colliding vehicle – the larger the vehicle, the more force that will be exerted to the pedestrian and therefore the greater the injuries.
• The car park surface – the surface of a car park and any imperfections such as pot holes or unevenness can be the cause of or exacerbate a pedestrian injury.

These factors can be addressed by eliminating, substituting or engineering out some of the risks:

• Elimination
  • Either eliminate pedestrians or the hazards that may be present in a car park, such as cars, bicycles, trucks, buses, motorised scooters, skateboards
• Fill in holes and remove trip hazards
• Remove sight impediments for better conspicuity
• Substitution
  • Separate pedestrian traffic from other traffic through footpaths and walkways
• Engineering
  • Reverse sensors and/or cameras in vehicles to improve driver vision
  • Construct paths around areas of conflict
  • Construct pedestrian crossings, bridges or tunnels
  • Construct barriers to protect pedestrians
  • Slow vehicles in a car park with traffic calming measures such as speed humps
  • Improve lighting for better conspicuity
  • Construct more open car parks that improve vision for all users.

7. Discussion

It is important to note that a one-size-fits-all approach for pedestrian safety in car parks is unlikely to be satisfactory given the many car parks available.

Car parks with very low numbers of pedestrian and vehicle movements (e.g. long term airport parking, employee parking) are unlikely to require footpaths or walkways on safety grounds alone, although they may be desirable on other grounds.

Even for car parks with higher numbers of pedestrians and vehicle movements, one of the issues with pedestrians in car parks is that there is often no particular desire line that would justify the provision of a footpath or walkway. For many pedestrians, this will mean taking the shortest route between their particular space and the building entry, meaning that most pedestrians will take a different route. This makes it impractical to provide walkways for all but the movements closest to the building entry.

The aim of most developers is to maximise the amount of development on their site. Provision of extensive walkways and footpaths is likely to be an unreasonable imposition on smaller sites, particularly if the issue of pedestrian safety in car parks cannot be shown to be a “real” issue.

---

1 The desire line is the preferred path a pedestrian takes and often does not follow where the designer plans for pedestrians to walk.
Without specific evidence of a pedestrian safety problem in car parks, it is difficult to recommend potential measures that would be used to improve safety, other than adherence to the general guidelines already included in the various documents.

Any recommendations to improve safety (assuming it needed to be improved) would most likely involve increased separation of vehicles and pedestrians. This, to an extent, contrasts to the current push from planners for “shared areas” where cars and pedestrians share the same road space with courtesy. A car park is clearly a shared area, and the sharing of the area by pedestrians and vehicles should be appropriate in many cases.

In relation to minimising trips and falls, the use of improved lighting and the careful use of any grade changes or trip hazards (including car stops) should be implemented. Many trip hazards arise over time, and relate more to maintenance of pathways and car parks (and the lack thereof) rather than the original design. This should therefore be addressed through changes to maintenance practice, rather than in any other way.

A further issue is that any pedestrian crossing points within a car park should make clear who gives way. Either proper zebra crossings should be provided (that actually meet the requirements of VicRoads, as is required within Victoria for Major Traffic Control Items such as pedestrian crossings), or it must be made abundantly clear that pedestrians must give way. Under no conditions should white strips be installed without the appropriate “walking legs” signs, as this situation is not clear to either drivers or pedestrians as to who gives way. Should signalised pedestrian crossings be required in the car park, then they too will also need to meet VicRoads’ requirements in Victoria as they are considered Major Traffic Control Items.

RACV consider that for large car parks (without being able to define the size of a large car park), pedestrians should be provided with a proper entry from the street footpath network – i.e. not sharing the vehicular crossover. If the building abuts a street footpath then this is adequate to provide pedestrian access, but if the building does not abut the street footpath network then an additional pedestrian walkway is required.

In on-street car parks, there is a greater need to separate pedestrians from road traffic, as vehicle speeds and volumes are more likely to be higher than in off-street car parks. It is important that pedestrians have adequate footpaths and safe crossing points to keep them safe when on the road and roadside. In some cases, it may be appropriate to lower the speed limit on some roads to cater for the increased pedestrian activity, such as around schools and shopping strips. RACV believes that clearways could also be beneficial to pedestrian safety by removing on-street parking at peak times thereby improving the line of sight for all road users on busy roads. RACV believes that clearways should cover more arterial roads, and their hours extended to better cover peak times.
8. Recommendations

1. That the Road Safety Committee better define the Term of Reference in this inquiry with respect to the terms "pedestrian", "safety" and "car park".

2. That the Road Safety Committee consider measures to address the difficulty of central collation of data relating to pedestrian accidents that occur in car parks, irrespective of whether they are on private or public property, to quantify the nature and extent of pedestrian injury in Victorian car parks.

3. That the Road Safety Committee investigates and (if possible) quantifies the nature and extent of the road safety issues involving pedestrians in car parks.

4. That if the Committee determines that the issue with pedestrian safety in car parks warrants strengthening of existing guidelines, the following principles be examined:
   a. Public transport access including taxis, to be located adjacent to the building to avoid walking through a car park. This is particularly important for those visually impaired.
   b. The provision of segregated footpaths in car parks of a certain size or serving a specific need (i.e. childcare centre or hospital) where strollers or wheelchairs are common.
   c. Traffic calming treatments such as speed humps be used, where necessary, to reduce the incidence of speeding.
   d. Larger vehicles such as trucks, buses and caravans, be segregated from standard car park areas, with more generous parking space dimensions and accessways.
   e. That adequate sight triangles be provided at intersections and pedestrian crossings to ensure motorists can see pedestrians.
   f. That pedestrian bridges, tunnels, stairs, lifts, fencing and barriers be used, where necessary, to improve pedestrian accessibility and safety.
   g. That lighting in car parks actually meets Australian standards, especially at areas of conflict for pedestrians and vehicles.
   h. That any Major Traffic Control Item installed in car parks, such as pedestrian crossings, signs and traffic signals, actually meet the requirements of the responsible road authority VicRoads in Victoria.

5. Car park operators/owners must adhere to more rigorous maintenance practices.

6. That public transport is boosted to some developments to reduce car park demand.