Policy – Reduction of Risk from Objects Thrown From Overpass Structures onto Roads

Road Network Management Division
Context

In south-east Queensland alone there are approximately 150 structures on state-controlled roads from which objects of damaging size could be dropped onto vehicles passing below.

A dangerous practice is emerging worldwide of objects being deliberately thrown or dropped from overhead structures onto passing vehicles. Such incidents pose a high risk to vehicle occupants, other road users such as surrounding traffic and, in some situations, pedestrians. The practice has caused serious injuries and death to motorists.

The types of structures involved with these incidents include grade-separated roads (with and without pedestrian footway facilities) and dedicated pedestrian footbridges. Embankments and retaining walls may also pose a risk and should be considered in a similar context.

Within the broad objectives of Main Roads, this policy considers the safety of motorists and pedestrians and sets out a methodology for managing the risk to these road users. A risk assessment methodology is the basis for providing appropriate treatment for dealing with various risks. Fitting protective screens can be costly and may not be appropriate in all applications.

This policy is not intended to address the risk from objects thrown from road structures onto infrastructure facilities such as railways or over waterways (that are managed by other government authorities).

This policy should be read in conjunction with the Main Roads technical guideline, *Technical guidelines for the treatment of overpass structures – objects thrown or dropped* (Technical Guidelines).

This policy may be applied to existing structures or to structures proposed for the future.

Policy objective

The policy applies to state-controlled roads and is intended to give direction to reduce, and prevent where possible, the incidence of objects being thrown from overpass structures. This will create a safer state-road network for all Queenslanders while, at the same time, ensuring funds are used in a cost effective way.

The objective of this policy is to set out a framework whereby the risk from objects being thrown from overpasses may be assessed and, where necessary, mitigated. This will occur from the perspective of managing roadworks and potential safety hazards across the entire road network, and planning, designing and maintaining of individual structures on or over a state-controlled road.
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Network perspective
This policy sets out where Main Roads intends to consult with others, and the considerations and practices to reduce the risk of objects being thrown from all overpass structures.

Individual structures
The aim of the policy (and Technical Guidelines) is to set out a methodology for assessing risk, prioritising treatments and reducing and managing risk. It also is aimed at setting out Main Roads’ position on funding and designing of structures.

Policy statement

Network perspective

• Main Roads will consult with Queensland Police Service, Queensland Transport, local governments and schools to actively assist and support public awareness and education programs against objects being thrown at traffic or pedestrians.
• Main Roads will consult with and support enforcement, legislative change and other initiatives by Queensland Transport, Queensland Police Service, local governments or other agencies to eradicate the practice of throwing objects from overpass structures.
• Main Roads will adopt a risk management approach for determining appropriate measures for dealing with objects thrown from overpass structures at traffic or pedestrians on state-controlled roads.
• The relative risk to motorists near overpass structures can periodically be assessed (five years or as otherwise necessary) and risk amelioration works prioritised in the context of other road safety initiatives (such as elimination of roadside hazards) and available funding.
• During the road design process and during construction and maintenance activities, the potential of objects being thrown onto motorists and pedestrians from overpass structures will be considered. Network level risk will be reduced by ensuring loose objects are removed from the road pavement and surrounding areas in identified high risk situations.
• Within the risk assessment methodology in the Technical Guidelines, scores are assigned to each risk condition. These will require review in the light of future additional experience or specific local knowledge.

Individual structures
For new overpasses and existing overpasses in problem areas the critical factors that affect the risk to motorists will be identified and given a risk assessment score. When applying such a tool, it is important to consider that the risk assessment method is an aid and should not override sound decision-making.

Scores may be used to identify and comparatively rate areas that have high probability of objects being thrown or dropped. Risk assessment of structures would normally
only occur where a high risk is evident or where there are demonstrated frequent occurrences.

The *Technical Guidelines* set out a risk assessment method that may be applied. They also set out fundamental design criteria and aesthetic issues that should be considered when designing protective screens. Where a site requiring treatment has been identified, methods outlined in the *Technical Guidelines* will be applied to ameliorate the risk to an acceptable level.

Risk reduction methods may include:

- Improved maintenance practices near structures to remove loose stones, concrete fragments, litter and other objects that could potentially be used as missiles;
- Replacing of nearby heavy guideposts with lightweight alternatives;
- Modifying or removing of other road furniture that could be used as projectiles;
- Covering stony embankments with mulch (grade permitting), possibly including small shrubs. Involvement by community groups may be considered;
- Installation of lighting or enhancing lighting;
- Installation of surveillance cameras, which could be included when upgrading other traffic management strategies;
- Creating awareness of issues and discussing with local authorities and community groups;
- Publishing articles in local newspapers, neighbourhood watch newsletters and letterbox drops advising local residents of the issues. (Care will need to be exercised as giving high prominence to these activities could worsen the situation.)

An object impacting with a vehicle has greater consequences in a high-speed traffic environment than in a low speed environment.

Where the risk cannot be otherwise sufficiently reduced, and it is decided that protective screens are to be fitted to an overpass structure, the design should comply with the *Technical Guidelines*. This includes elements and considerations such as materials, configuration, aesthetics, intersection visibility, etc.

**Funding**

Risk amelioration measures determined under this policy will be prioritised and implemented by Main Roads regional and district offices depending on availability of funding and other competing requirements for roadworks.

For certain configurations of overbridges, local governments may participate in risk reduction activities, construction and ongoing maintenance of protective screens. Agreement on cost sharing should be made during early planning stages. The general principles of the cost sharing agreement, *Cost sharing based on responsibilities within state-controlled roads* (see References no. 7), may assist in these determinations. A cost sharing option is explored in Appendix A.
Sponsorship funding
Either Main Roads or local government may explore alternative funding methods for protective screens on overpass structures. One alternative is sponsorship agreements, whereby protective screens are provided in return for advertising rights on the structures for a prescribed term. Reference should be made to the Main Roads' policy and guidelines on roadside advertising. The primary considerations in this instance are advertising size and placement, road safety, transport efficiency, visual amenity and capital payback term. Such funding methods should only be considered where the risk assessment score justifies the safety screens. As visual amenity will be affected, Main Roads should consult with the relevant local government.

Rationale
In the development of the risk management approach, practices in other Australian states and in overseas countries were considered. These factors and their relative points rating are incorporated into tables in the *Technical Guidelines*¹. These tables should form the basis of assessment of risk. The intent is that, if the conditions are identified as being applicable to a site under investigation, the associated points are summed to give an aggregate total. The higher the assessed score, the higher the overall risk. Structures may then be ranked and prioritised according to the score.

References

1. Main Roads guidelines – *Technical guidelines for the treatment of overhead structures – objects thrown or dropped*
2. Main Roads policy – *Advertising on or near state-controlled roads*
3. Main Roads guidelines – *Guide to the management of roadside advertising*
7. Agreement of 7 March 2000 between Main Roads and Local Government Association of Queensland Inc. – *Cost sharing based on responsibilities within state-controlled roads*

¹ This risk assessment methodology is not intended to be authoritative and is intended as a guide only. It is compiled with the intent of being a base point for the development of a suitable methodology. The technical guide is expected to be amended in light of experience.
Appendix A

Cost sharing options

The following responsibilities are proposed as a possible cost sharing option (as a starting point for discussion); however, individual negotiations with local governments will be required.

a) **Local road passes over a state-controlled road with Main Roads owning the overpass structure (including an exclusive use pedestrian footbridge):**

**Risk reduction**
Where risk reduction is deemed appropriate:
- The local government is responsible for replacing heavy guideposts with lightweight alternatives on local roads;
- For batter treatments to cover loose stones:
  - The local government is responsible for batter treatment on the approaches to the overpass;
  - Main Roads is responsible for batter treatment beneath the structure.

**Screens and lighting**
Where such measures are appropriate:
- Main Roads will fund construction of a screen.
- The local government will fund lighting enhancements on the local road.

**Maintenance**
- Main Roads is responsible for the screen’s structural maintenance;
- Local Government is responsible for:
  - litter collection on the screen;
  - operating costs for lighting on the local road.

b) **Local road passes over a state-controlled road with a local government owning the overpass structure, (including an exclusive use pedestrian footbridge):**

**Risk reduction**
Where risk reduction is appropriate:
- The local government is responsible for replacing heavy guideposts with lightweight alternatives;
- For batter treatments to cover loose stones:
  - Main Roads is responsible for batter treatment beneath the structure;
  - The local government is responsible for batter treatment on the overpass approaches.

**Screens and lighting**
Where such measures are appropriate:
- Main Roads and the local government will have joint responsibility for funding construction of a screen. Generally costs will be shared equally;
however, the proportion may vary if the overpass was recently constructed and which party’s actions or responsibilities initiated the construction;

- The local government will fund lighting enhancements on the local road.

**Maintenance**

- The local government is responsible for:
  - structural maintenance of the screen;
  - litter collection on the screen;
  - operating costs for lighting on the local road.

**c) State-controlled road passes over a local road.**

**Risk reduction**
Where risk reduction is appropriate:

- Main Roads to be responsible for the replacement heavy guideposts with lightweight alternatives;
- Batter treatments to cover loose stones:
  - Main Roads is responsible for batter treatment.

**Construction of screens and lighting**
Where such measures are deemed appropriate:

- Main Roads and the local government will jointly fund construction of a screen. Generally costs will be shared equally, however the proportion may vary depending whether the overpass was recently constructed and which party’s actions or responsibilities initiated the construction.
- Main Roads will fund lighting enhancements on the state-controlled road.

**Maintenance**

- Main Roads to be responsible for:
  - structural maintenance of the screen;
  - litter collection on the screen;
  - operating costs for lighting on the state-controlled road.

**d) Graffiti**
The approach taken in the cost sharing agreement *Cost sharing based on responsibilities within state-controlled roads* should apply to protective screens. The general principle is that, where graffiti may be viewed from a particular road, the party responsible for maintaining that road should pay for remedial work.

**e) Other remedial work**
Other remedial work, such as surveillance video cameras and associated signage, may best be managed case by case.