Making Victorian Roads Safer with the SRIP Program

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VICROADS
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keeping victorians connected

This presentation includes:

- Overview of the Safer Road Infrastructure Program (SRIP)
- The Process
- The development of projects
  - Intersection program
  - Run off road program
  - Greyspot program
  - Innovative treatments program
- Program Evaluation

Victoria's Safer Road Infrastructure Program (SRIP) - Overview

- Victoria's largest road safety infrastructure program in record
- Aligned with Victoria's road safety strategy **arrive alive 2008-2017**
- Moving towards a **Safe System** approach
- Funded from the Transport Accident Commission (TAC)

Road safety – a snapshot

- While Victoria is regarded as a world leader in road safety, on Victoria's roads in 2009 ...
  - 290 people were killed
  - About 7,000 were seriously injured, including
  - 1,000 people with brain injuries or confined to a wheelchair
- Road trauma costs each Victorian household around $1,800 every year

A new strategy

arrive alive 2008-2017

- Aims to reduce deaths and serious injuries by 30 per cent
- Aims to reduce the severity of injuries
- 10 year strategy
- 3 short term action plans
- Community indicated strong support for road safety

Safe System approach

- Victoria's move towards a Safe System approach
- The Safe System recognises that crashes will occur
- The road system must be designed to reduce the likelihood of a crash and when a crash happens, death and serious injury are minimised

Safer vehicles

Safer roads & roadsides

Safer road users

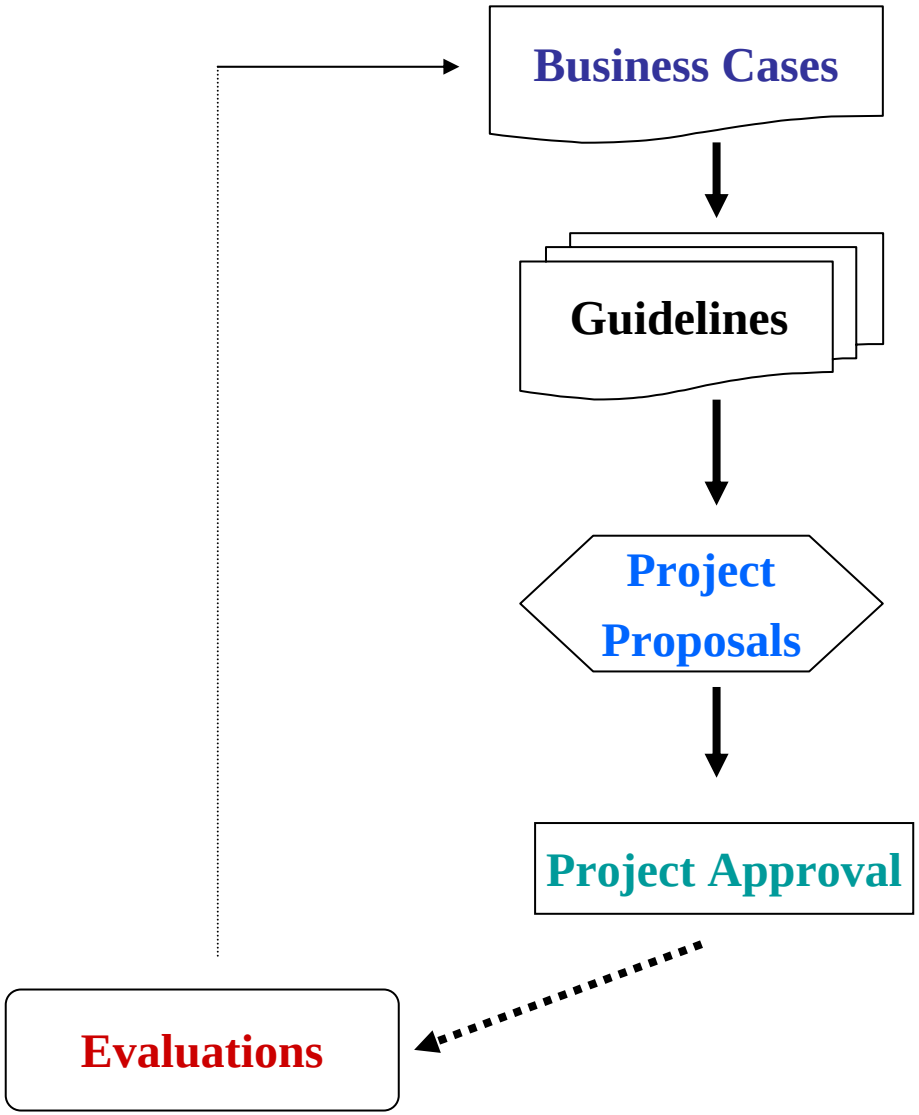
The SRIP Program to date

- 2004-2007: SRIP1 $130 million - completed
- 2006-2008: SRIP2 $110 million - completed
- 2007-2017: SRIP3 $650 million - on-going

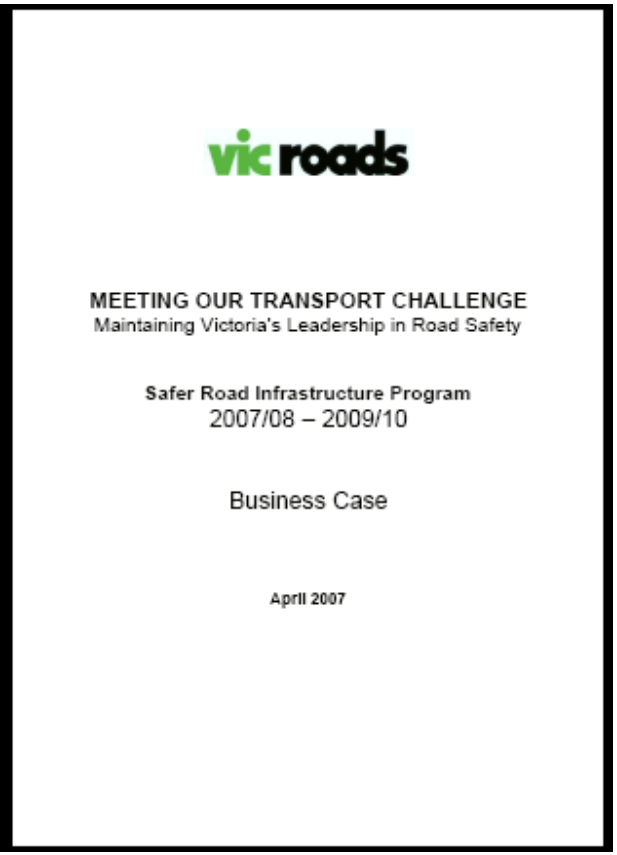
Some Statistics of SRIP3 to date

- **111 run off road projects @ $200m (1264 km)**
  - 247 km wire rope barrier @ $58m
  - 98 km guard fence @ $23m
  - 542 km sealed shoulders @ $62m
- **233 intersection projects @ $90m**
  - 19 new traffic signals @ $9.4m
  - 22 new roundabouts @ $22.5m
  - 135 signal remodels @ $14m including 52 FCRT @ $4m
- **148 Greyspot projects @ $31m**
  - 61 Y intersections @ $16.6m incl. realignment 43@ $11m
  - 83 RTL/LTL @$11.4m
  - 12 splitter islands/median @$1.4m
- **8200km edgeline for C roads @$9.4m**
- **1945km tactile centreline for A roads @ $3.2m**
- **24 strip shopping centres 40km/h speed reduction @$5m**
- **13 Innovative projects @$7.4m**

The SRIP Process



SRIP Process – Development of Business Cases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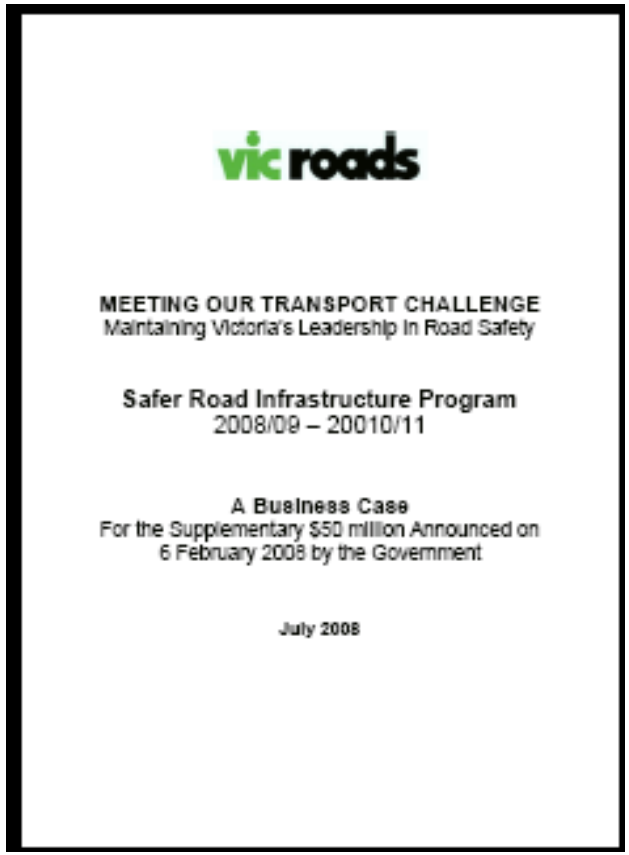
MEETING OUR TRANSPORT CHALLENGE
Maintaining Victoria's Leadership in Road Safety

Safer Road Infrastructure Program
2007/08 – 2009/10

Business Case

April 2007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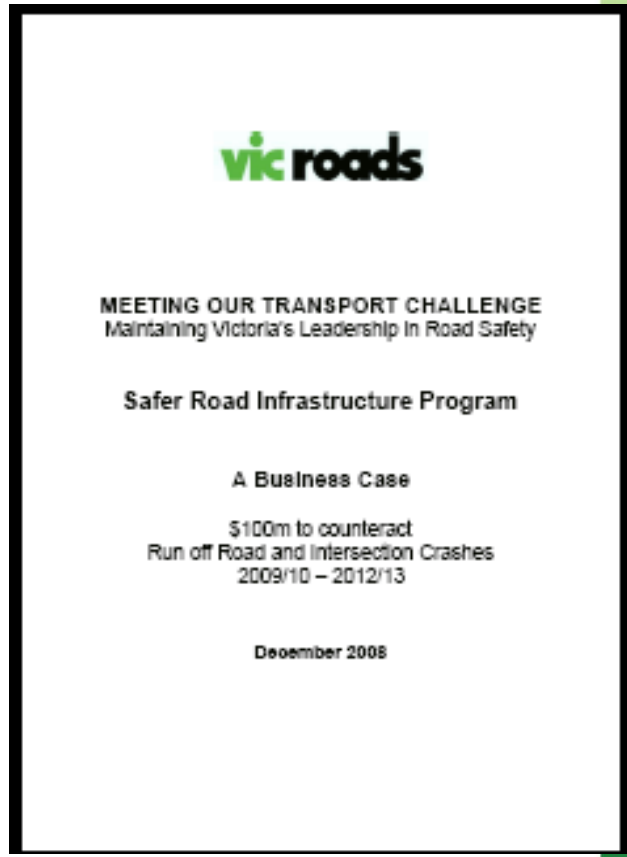
MEETING OUR TRANSPORT CHALLENGE
Maintaining Victoria's Leadership in Road Safety

Safer Road Infrastructure Program
2008/09 – 20010/11

A Business Case
For the Supplementary $50 million Announced on
6 February 2008 by the Government

July 2008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MEETING OUR TRANSPORT CHALLENGE
Maintaining Victoria's Leadership in Road Safety

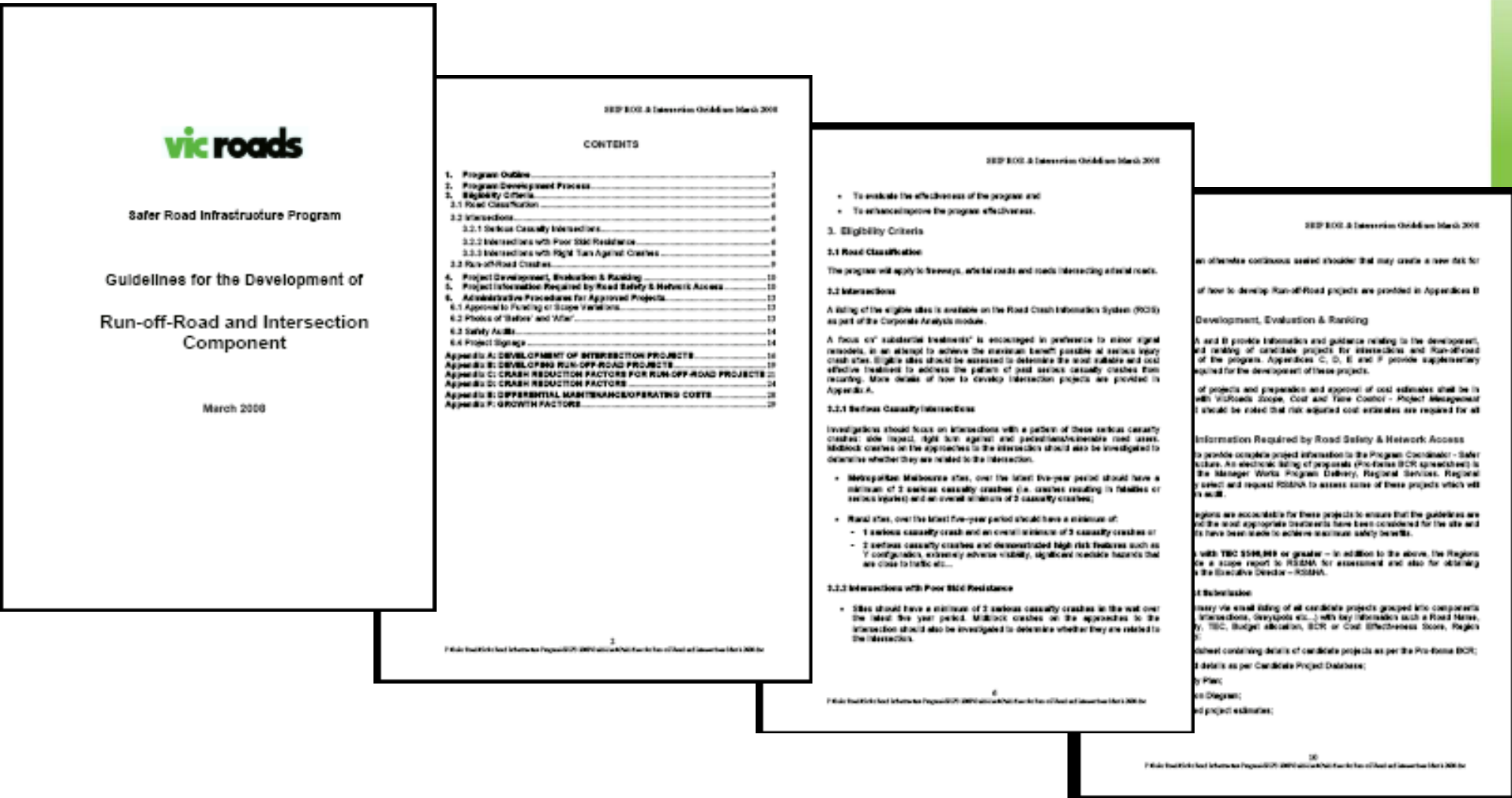
Safer Road Infrastructure Program

A Business Case

$100m to counteract
Run off Road and Intersection Crashes
2009/10 – 2012/13

December 2008

SRIP Process – Development of Guidelines



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Safer Road Infrastructure Program

Guidelines for the Development of

Run-off-Road and Intersection Component

March 2008

SRIP ROR & Intersection Guidelines March 2008

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SRIP ROR & Intersection Guidelines March 2008

- To evaluate the effectiveness of the program and
- To enhance/improve the program effectiveness.

3. Eligibility Criteria

3.1 Road Classification

The program will apply to freeways, arterial roads and roads intersecting arterial roads.

3.2 Intersections

A listing of the eligible sites is available on the Road Crash Information System (RCIS) as part of the Corporate Analysis module.

A focus on' substantial treatments' is encouraged in preference to minor signal remodels, in an attempt to achieve the maximum benefit possible at serious injury crash sites. Eligible sites should be assessed to determine the most suitable and cost effective treatment to address the pattern of past serious casualty crashes from occurring. More details of how to develop intersection projects are provided in Appendix A.

3.2.1 Serious Casualty Intersections

Investigations should focus on intersections with a pattern of these serious casualty crashes: side impact, right turn against and pedestrians/vulnerable road users. Midblock crashes on the approaches to the intersection should also be investigated to determine whether they are related to the intersection.

- Metropolitan Melbourne sites, over the latest five-year period should have a minimum of 3 serious casualty crashes (i.e. crashes resulting in fatalities or serious injuries) and an overall minimum of 5 casualty crashes;
- Rural sites, over the latest five-year period should have a minimum of:
  - 1 serious casualty crash and an overall minimum of 3 casualty crashes or
  - 2 serious casualty crashes and demonstrated high risk features such as Y configuration, extremely adverse visibility, significant roadside hazards that are close to traffic etc...

3.2.2 Intersections with Poor Skid Resistance

- Sites should have a minimum of 2 serious casualty crashes in the wet over the latest five year period. Midblock crashes on the approaches to the intersection should also be investigated to determine whether they are related to the intersection.

SRIP ROR & Intersection Guidelines March 2008

an otherwise continuous sealed shoulder that may create a new risk for

of how to develop Run-off-Road projects are provided in Appendices B

Development, Evaluation & Ranking

A and B provide information and guidance relating to the development, and ranking of candidate projects for intersections and Run-off-road of the program. Appendices C, D, E and F provide supplementary required for the development of these projects.

of projects and preparation and approval of cost estimates shall be in with VicRoads Scope, Cost and Time Control – Project Management I should be noted that risk adjusted cost estimates are required for all

Information Required by Road Safety & Network Access

to provide complete project information to the Program Coordinator - Safer tructure. An electronic listing of proposals (Pro-forma BCR spreadsheet) is the Manager Works Program Delivery, Regional Services, Regional y select and request RSANA to assess some of these projects which will 's audit.

egions are accountable for these projects to ensure that the guidelines are ed the most appropriate treatments have been considered for the site and ts have been made to achieve maximum safety benefits.

with TEC $500,000 or greater – in addition to the above, the Regions de a scope report to RSANA for assessment and also for obtaining s the Executive Director – RSANA.

t Submission

mary via email listing of all candidate projects grouped into components Intersections, Greyspots etc...) with key information such a Road Name, y, TEC, Budget allocation, BCR or Cost Effectiveness Score, Region's

sheet containing details of candidate projects as per the Pro-forma BCR;

l details as per Candidate Project Database;

y Plan;

n Diagram;

d project estimates;

Proposals targeting intersection crashes and run off road crashes

- Requires minimum crash rates to be eligible
- Scanning of road network using VicRoads' Road Crash Information System
- Serious casualty crash focussed
- Further examination of crash records of individual sites
- Develop project proposals
- Statewide Priority ranked on Benefit Cost Ratio

Intersection Projects - Criteria

Criteria based on the latest five year period:

- General crash types
- Skid resistance
- Right turn against
- Intersection grouping

Intersection Projects - examples

New roundabout and new intersection signals

Intersection Projects - examples

Installation of turning lanes, splitter island, linemarking, and roadside kerbs

A Fatal Run off Road Crash

Run off Road Projects - Overview

- Run off road crashes represent approximately 28% of all serious casualty crashes and approximately 41% of all fatal crashes
- Crashes scattered along a length of road

Why do ROR Crashes Happen?

- Driver related issues: speed, fatigue, inattention etc…
- Road environment issues: road width, alignment, maintenance, delineation, road & roadside hazards, wet, dark etc…
  - Road hazards: road alignment, narrow pavement, dark & wet conditions, pavement surface…
  - Roadside hazards: trees, poles close to traffic lane, culverts, embankment, steep batters…
- Single vehicle is common in run off road crashes
- Injury severity is high for run off road crashes due to high speeds and impact with roadside objects

Road and Roadside Risks

Bridge and deep gully

Right hand bend downhill

Road and Roadside Risks

Roadside hazards

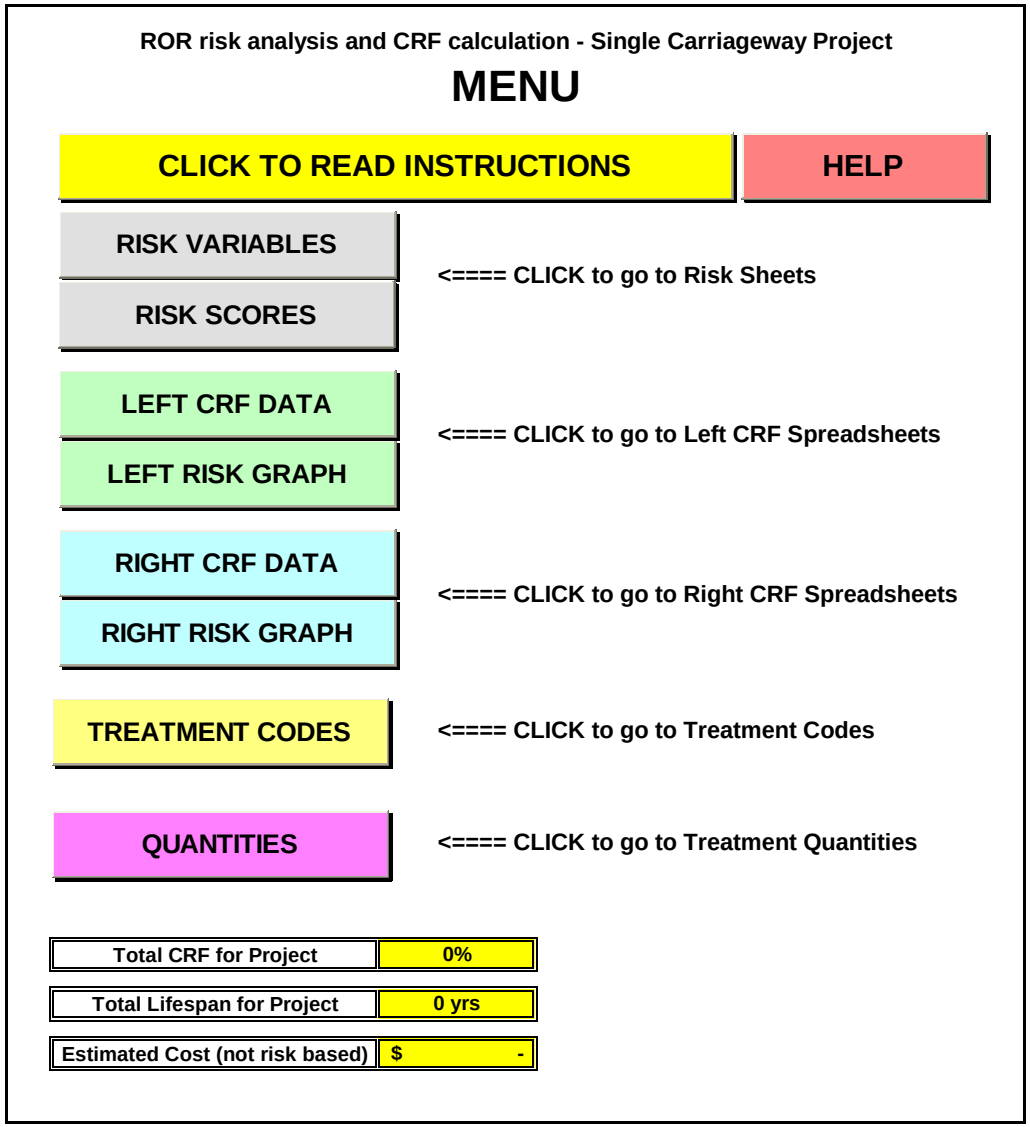
Culvert close to road

Development of Run Off Road Projects

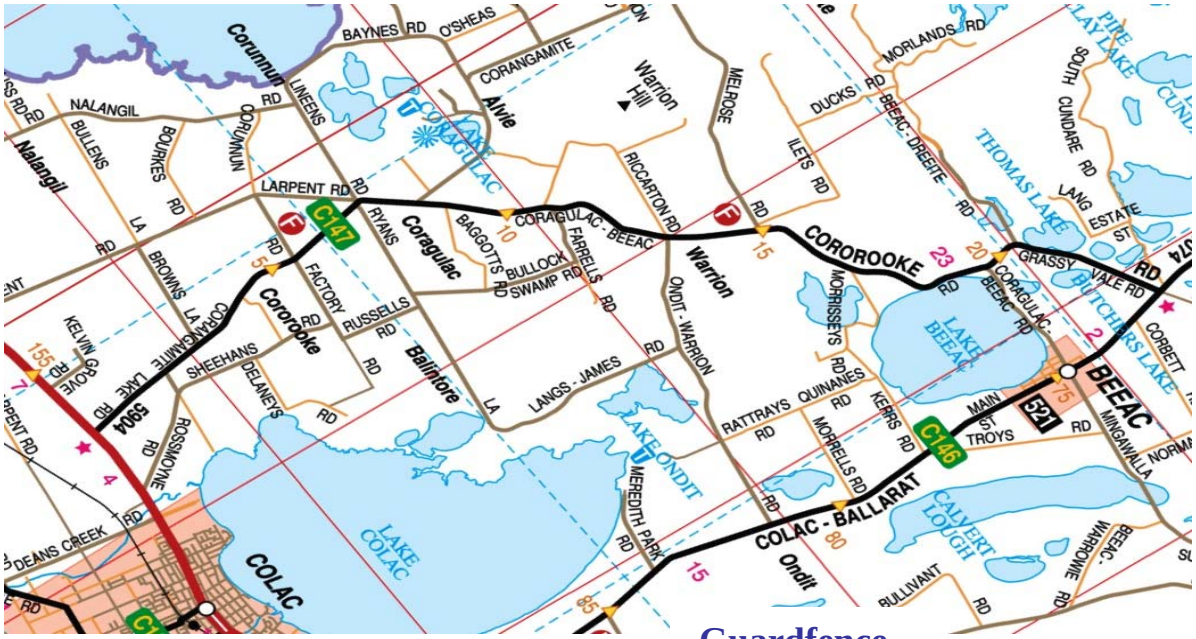
- Identify road lengths that meet program criteria
- Determine various level of risk along the length
- Select most cost effective treatments
- Run the Run off Road Risk Model to obtain overall crash reduction factors (CRF) and treatment life (TL)

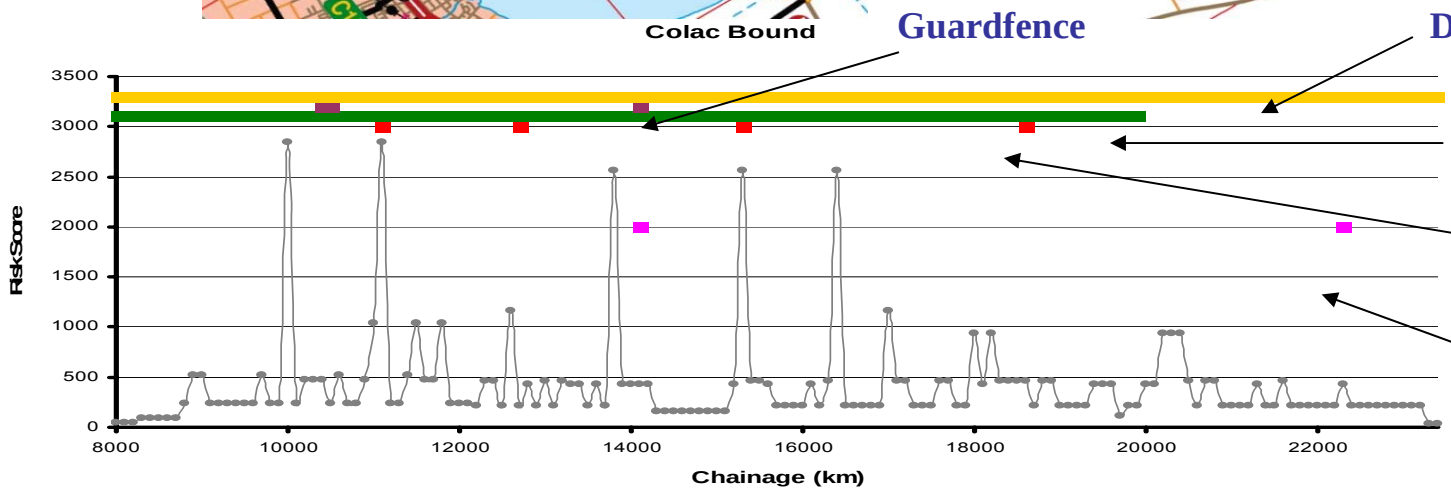
Run Off Road Risk Model

to determine total Crash Reduction Factor and Treatment Life for each proposal

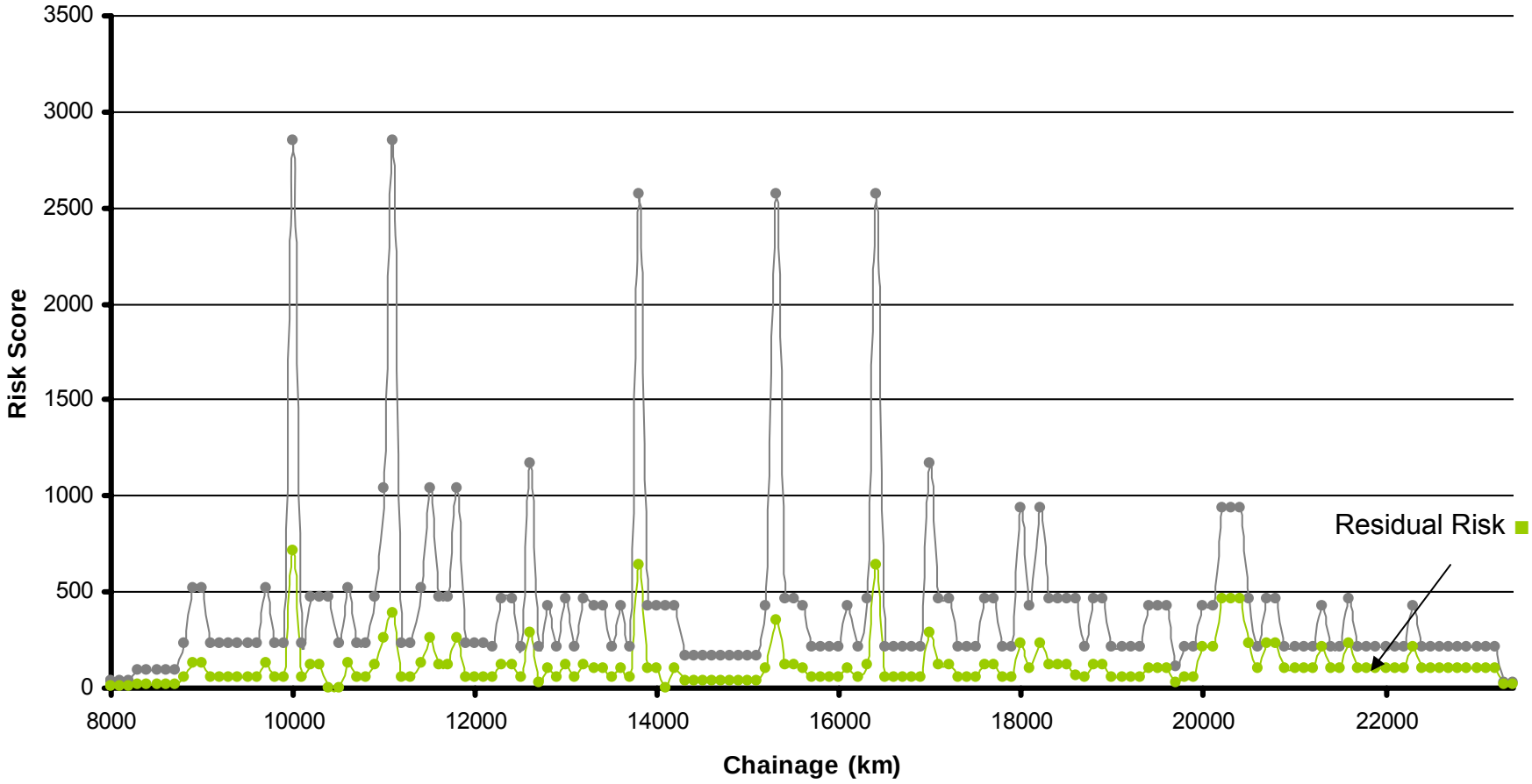


Example of Pre Treatments Risk Score





Example of Post Treatments Risk Score



Typical Treatments for ROR Projects

- Delineation: Linemarking, raised pavement markers, tactile edgeline/centreline, curve alignment markers, guideposts
- Surface recovery: Shoulder sealing, bellmouth sealing
- Hazard shielding: Safety barriers
- Hazard removal: culvert works, vegetation, poles, steep batters, embankment
- Pavement widening including right turn bypass at intersections

Shoulder Sealing

Wire rope safety barriers

Wire Rope Safety Barriers and removal of trees

Guard fence and Curve Alignment Markers

Poles shielded by Guardfence

Guard fence and Linemarking

Driveable Culvert Endwalls

Culvert Extension

Reducing Risk of run off road crashes with vehicle activated warning signs on the approach to a series of curve

Greyspot Program - Overview

- Total program value $31m with 148 projects
- Intersections not qualified as blackspots but represent a risk to road users and require infrastructure improvements to prevent potential serious crashes in the future
- Perceived as ‘high risk’ by the travelling public or by road authorities.
- Priority ranked based on Risk Reduction and Treatment Cost Effectiveness
- Common treatments include: realignment, Y to T conversion, signing including vehicle activated sign, signals, roundabout, channelisation…

A Greyspot Intersection - Example

The Development of Greyspot Program

- Source of site identification: VicRoads, local councils, public, emergency and police
- Site inspection and survey
- Examine crash record
- Develop treatments
- Risk Score - determined using risk factors associated with geometric layout, speed zone, traffic volumes, and speed
- Cost Effective Score - determined by Risk Score, crash reduction factors and treatment costs
- Statewide ranking and approval

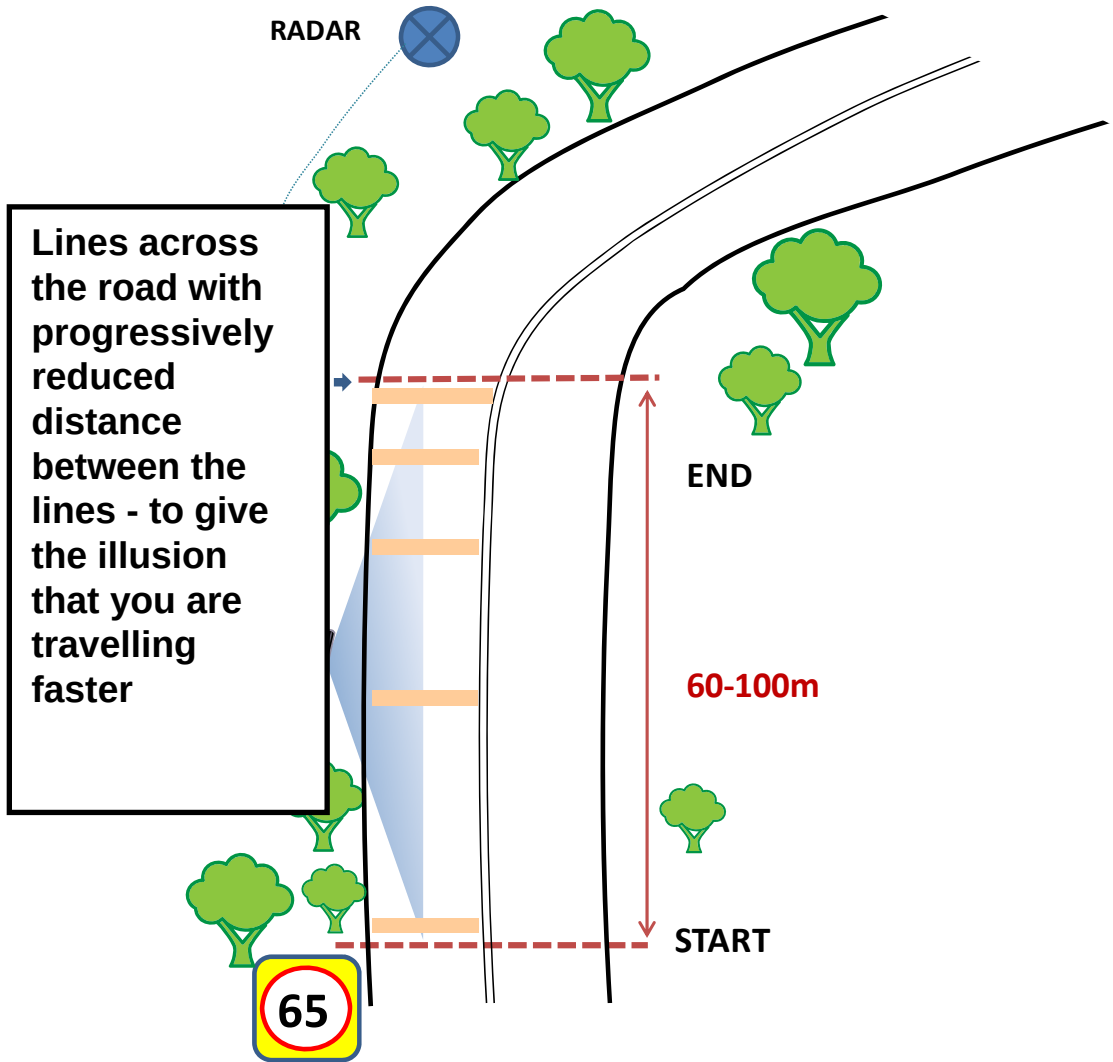
The Innovation Fund – Overview

- Up to $3 million per annum available
- Unique infrastructure based solutions targeting road trauma
- Can vary from larger projects (such as unique roundabout designs, or intersections configurations) to lower cost projects (such as linemarking initiatives)
- A number of unique solutions from Europe have been under consideration

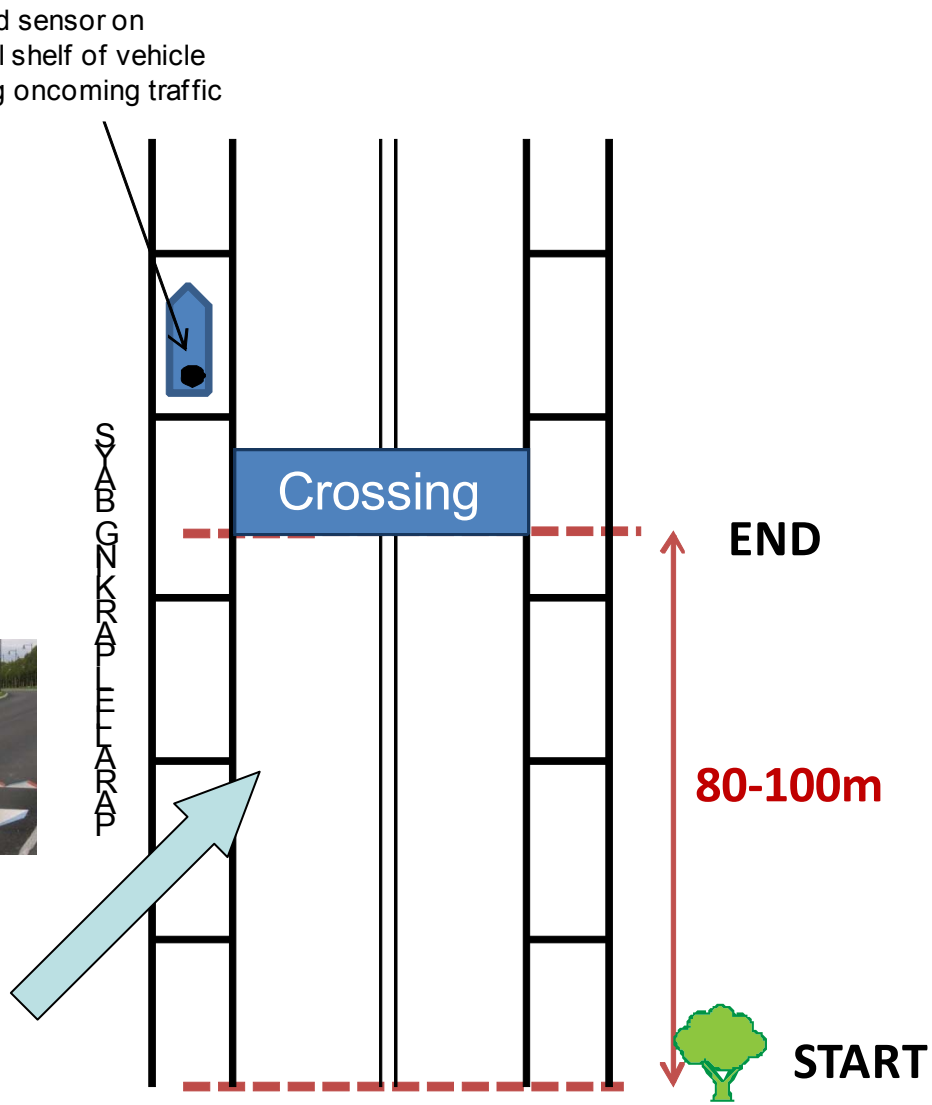
Trials funded in Victoria

- A number of trial projects have been funded to date
- Many of these are not yet installed/constructed, and evaluated. Some of the projects include:
  - Various linemarking initiatives including narrowing/perceptual Vehicle Activated Signs detecting vehicles on the side road
  - Dynamic Speed Reduction Signs on interstate freeway
  - Signalised roundabout
  - Centreline wire rope safety barrier
  - Virtual speed humps
  - LED lights defining the edges of the Great Alpine Road during the snow season

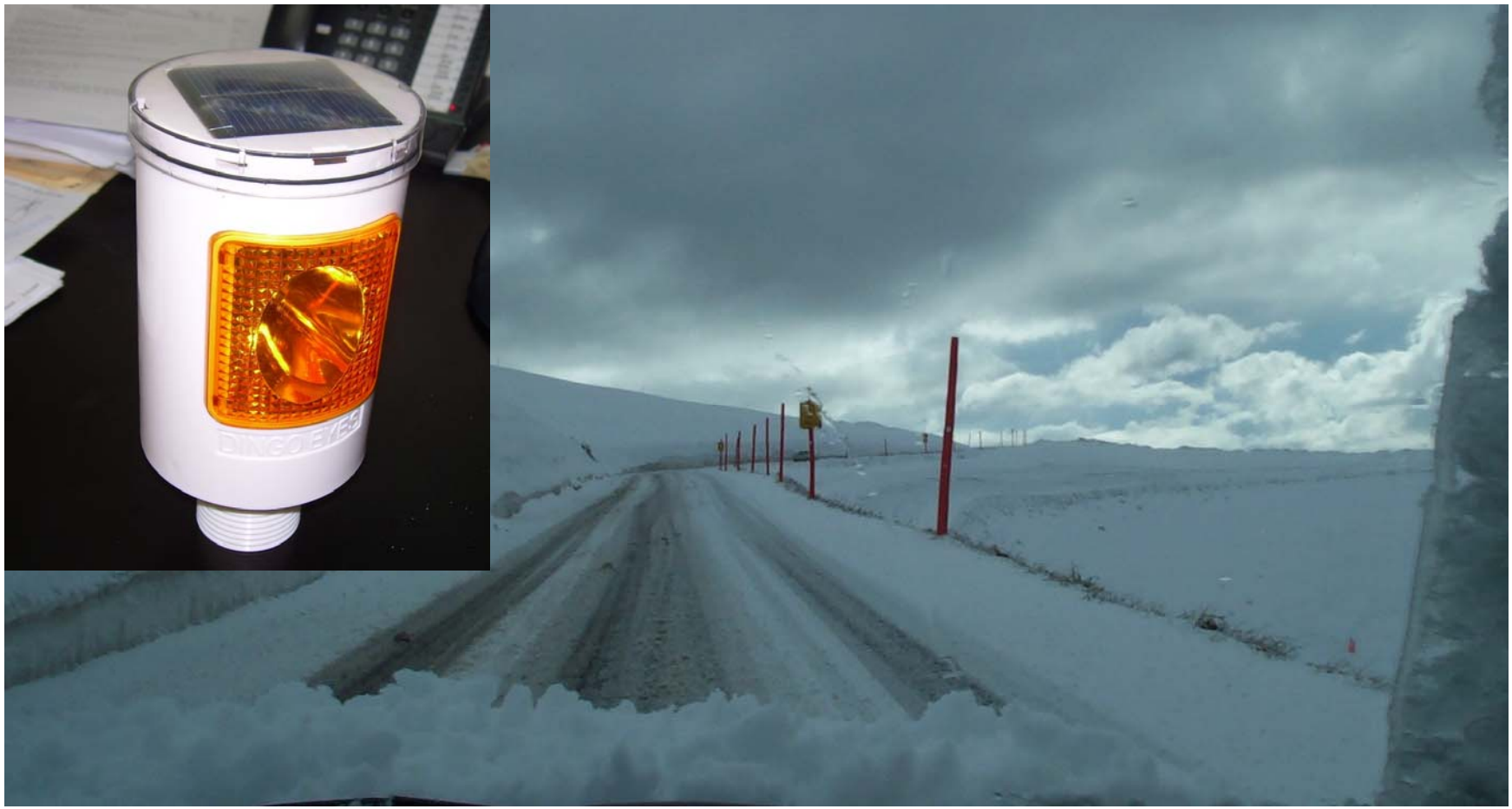
Perceptual Transverse Lines on approaches to Curves



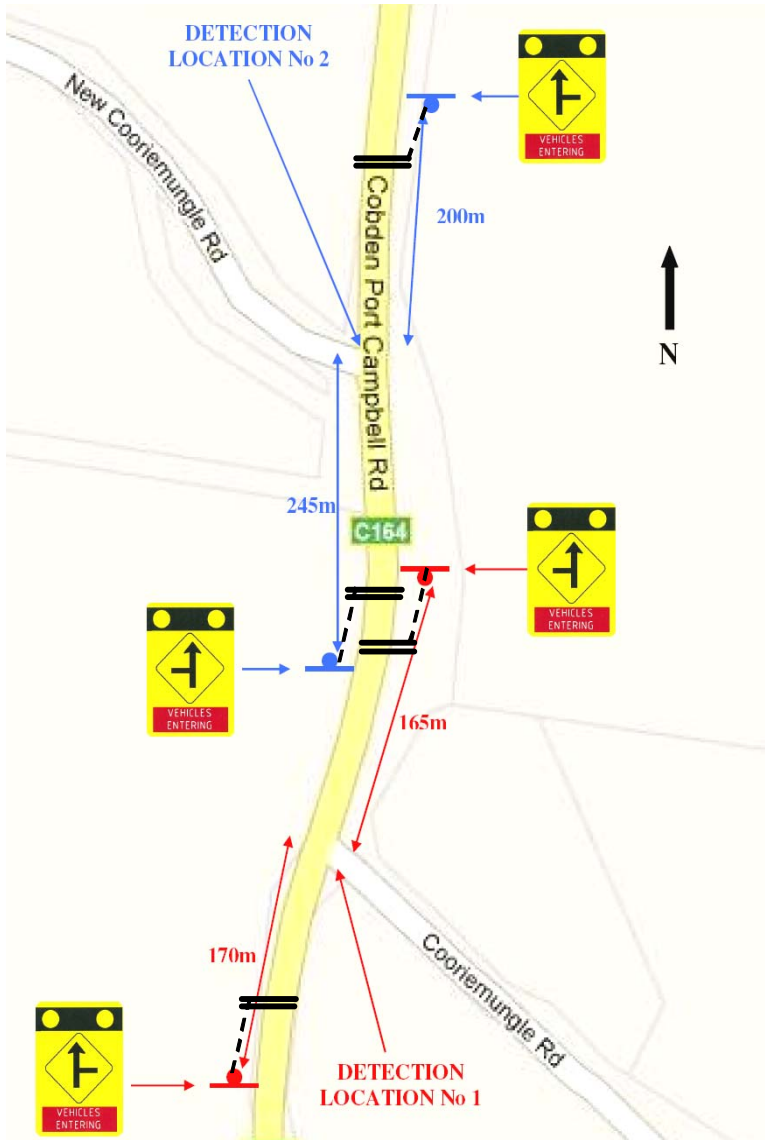
Swedish Road Hump



LED Lights on Snow Poles



VAS on major road approach to minor road intersection



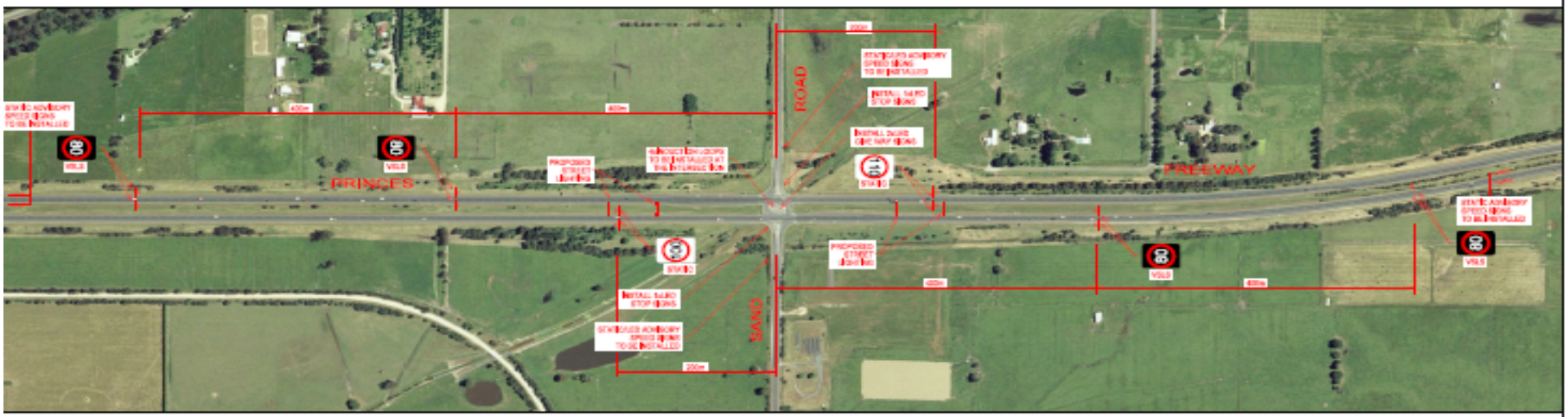
Vehicle Activated Sign on major road (detecting vehicles on minor road)

Cobden - Port Campbell Rd, looking north towards New Cooriemungle Road

VAS on major road approach to minor road intersection

Cobden - Port Campbell Rd, looking south towards New Cooriemungle Road

Vehicle Activated Sign (VAS) for speed limit change on major road activated by minor road traffic volumes



Princes Freeway East view to Sand Road

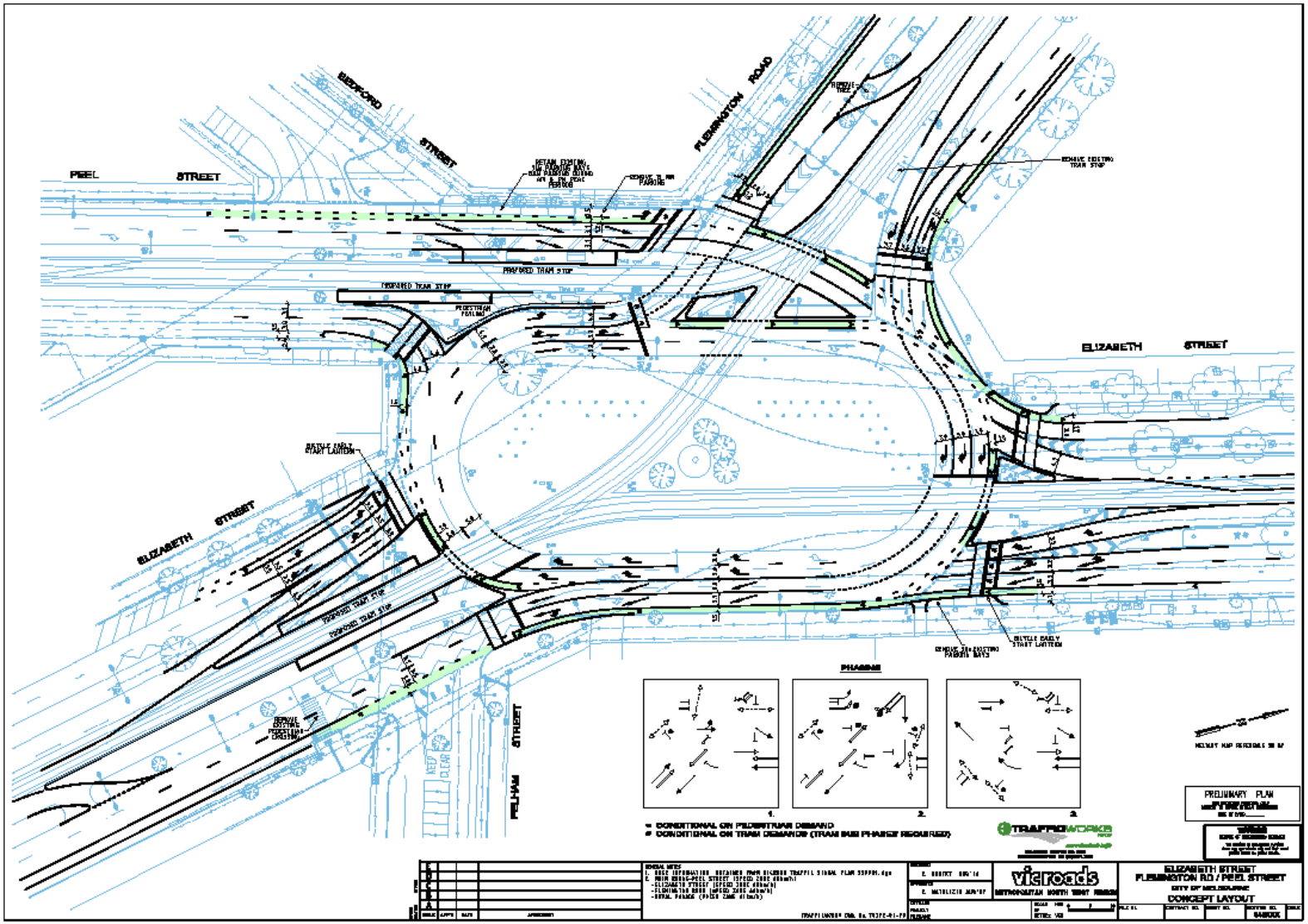
Vehicle Activated Sign (VAS) for speed limit change on major road activated by minor road traffic volumes

Sand Road looking towards Princes Freeway East

Vehicle Activated Sign (VAS) for speed limit change on major road activated by minor road traffic volumes

Princes Freeway East view to Sand Road

Signalised Roundabout



Preliminary Evaluation of SRIP1 (Oct 2008) Key Findings

- SRIP1 has been effective in reducing casualty crashes at treated sites
  - 19% of casualty crashes
  - 21% of serious casualty crashes
- SRIP1 provides economic benefits from crash savings
  - BCR 2.3
  - NPW $153 million
- Analysis by category - estimated reduction in crashes
  - Run off road projects: 16% all casualty; 15% serious casualty
  - Intersection projects: 44% all casualty; 54% serious casualty
  - Metro Melbourne area: 30% all casualty; 44% serious casualty
  - Rural area: 14% all casualty; 9% serious casualty

Evaluation of SRIP

- SRIP1 (Final) - late 2010
- SRIP2 - late 2010
- SRIP3 - early 2011
- SRIP3 Innovative projects – in progress

Acknowledgements

The SRIP program was possible thanks to the provision of funding by the Traffic Accident Commission (TAC).

Special acknowledgements are directed to the following members of the SRIP Joint Committee for setting the program direction and endorsing projects.

- TAC: Samantha Cockfield, Michael Nieuwesteeg, David Healy (past member);
- VicRoads: Con Stasinos, James Holgate (past member), Nial Finegan (past member).