Safe System In Practice

Safe System in Practice

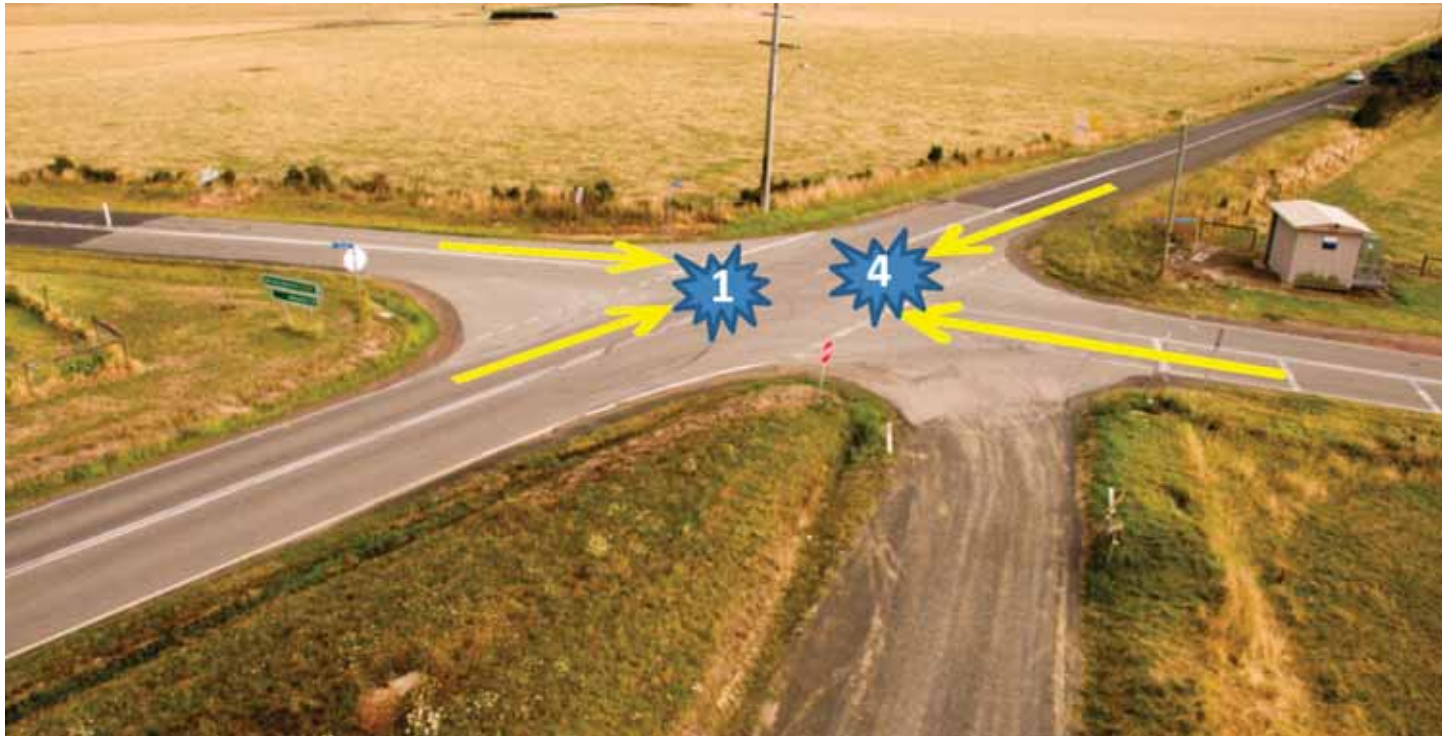
Wayne Moon

VicRoads

Safe System Infrastructure Program

Safe System in Practice

Safe System in Practice



Safe System in Practice

This is how I look at it…….

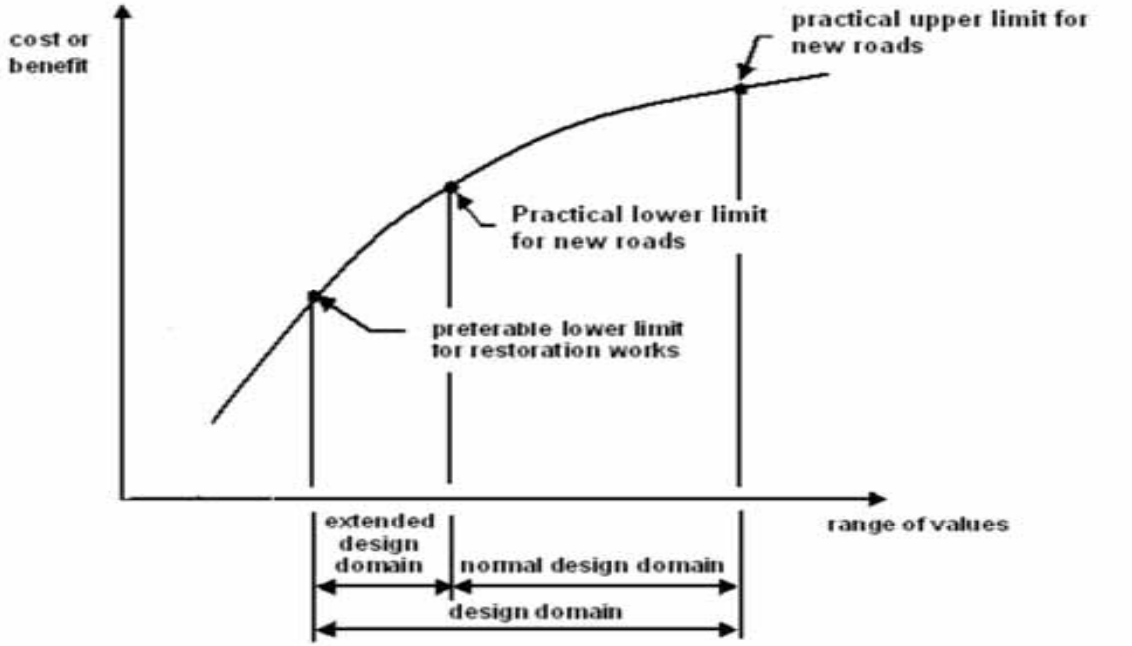
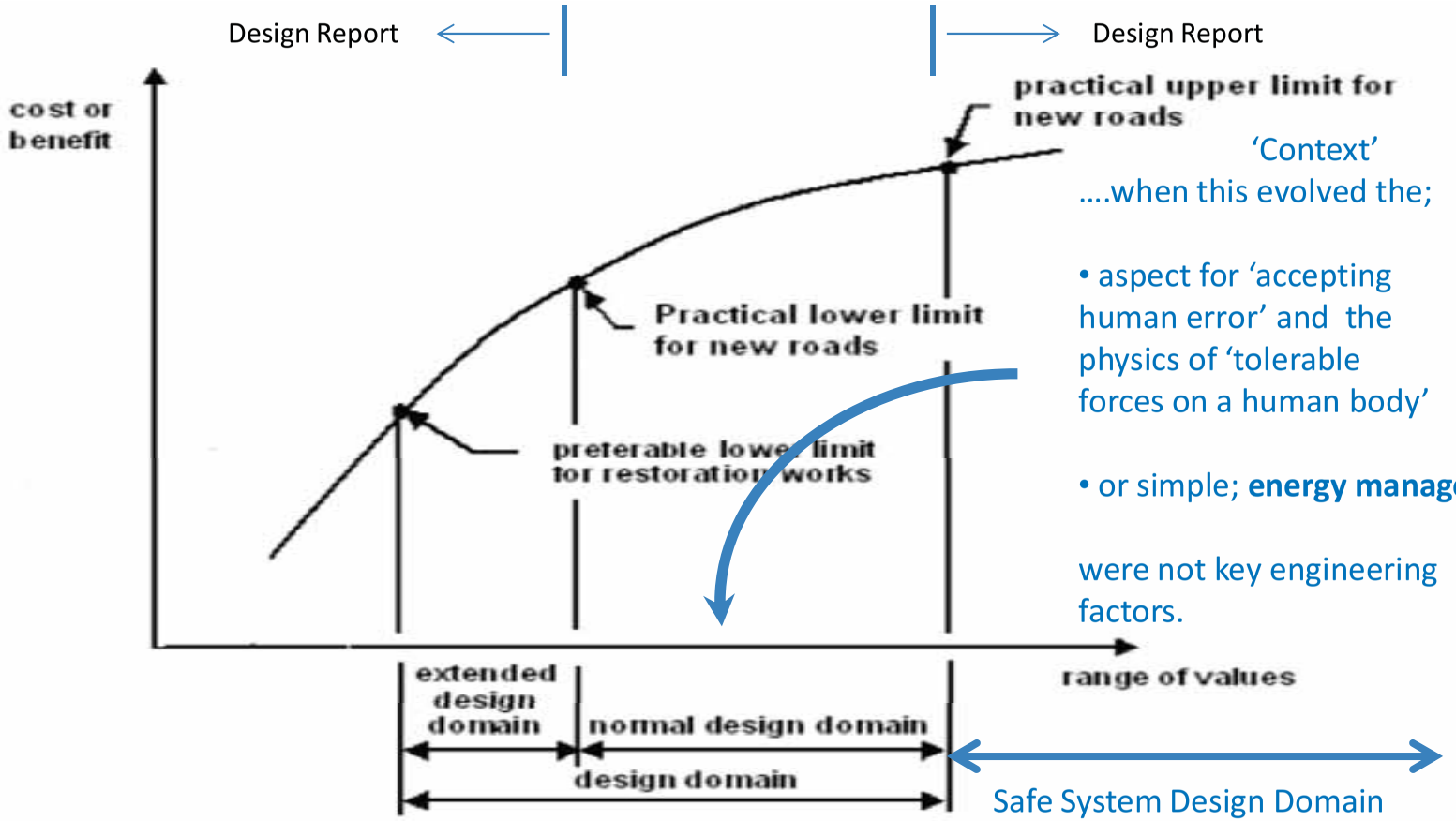


Figure 1: The Design Domain Concept



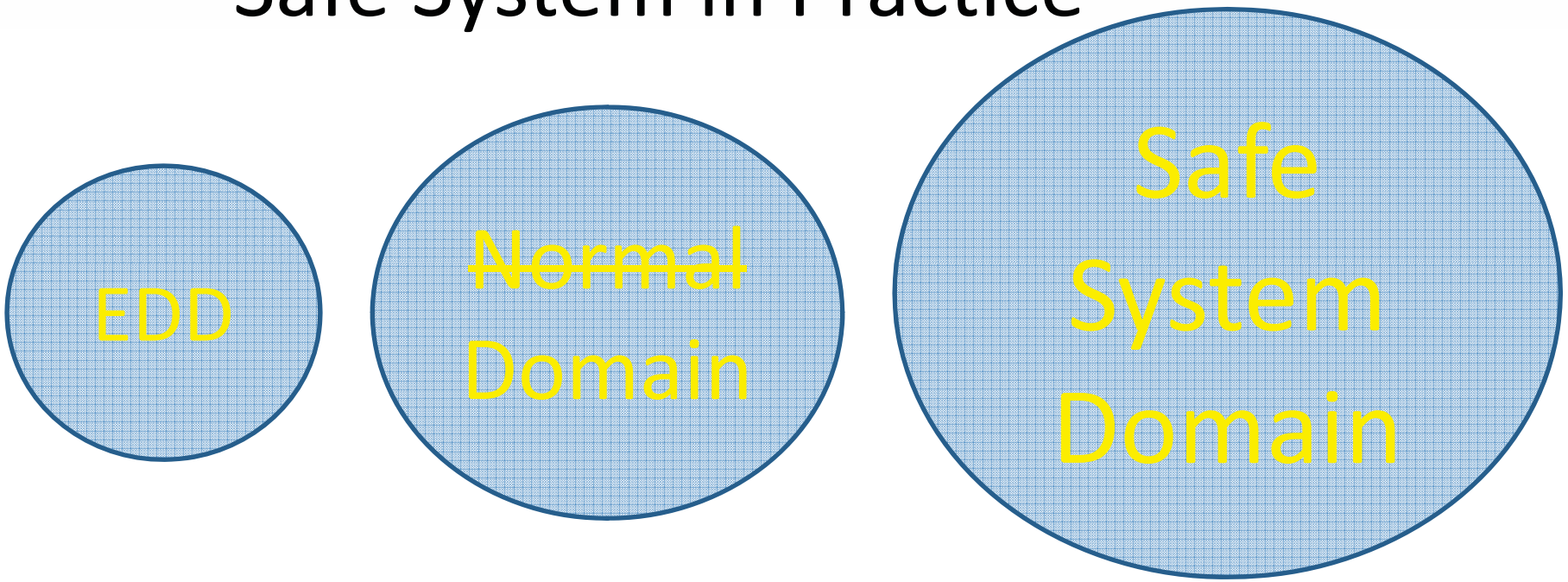
'Context'
....when this evolved the;

- aspect for 'accepting human error' and the physics of 'tolerable forces on a human body'
- or simple; **energy management**

were not key engineering factors.

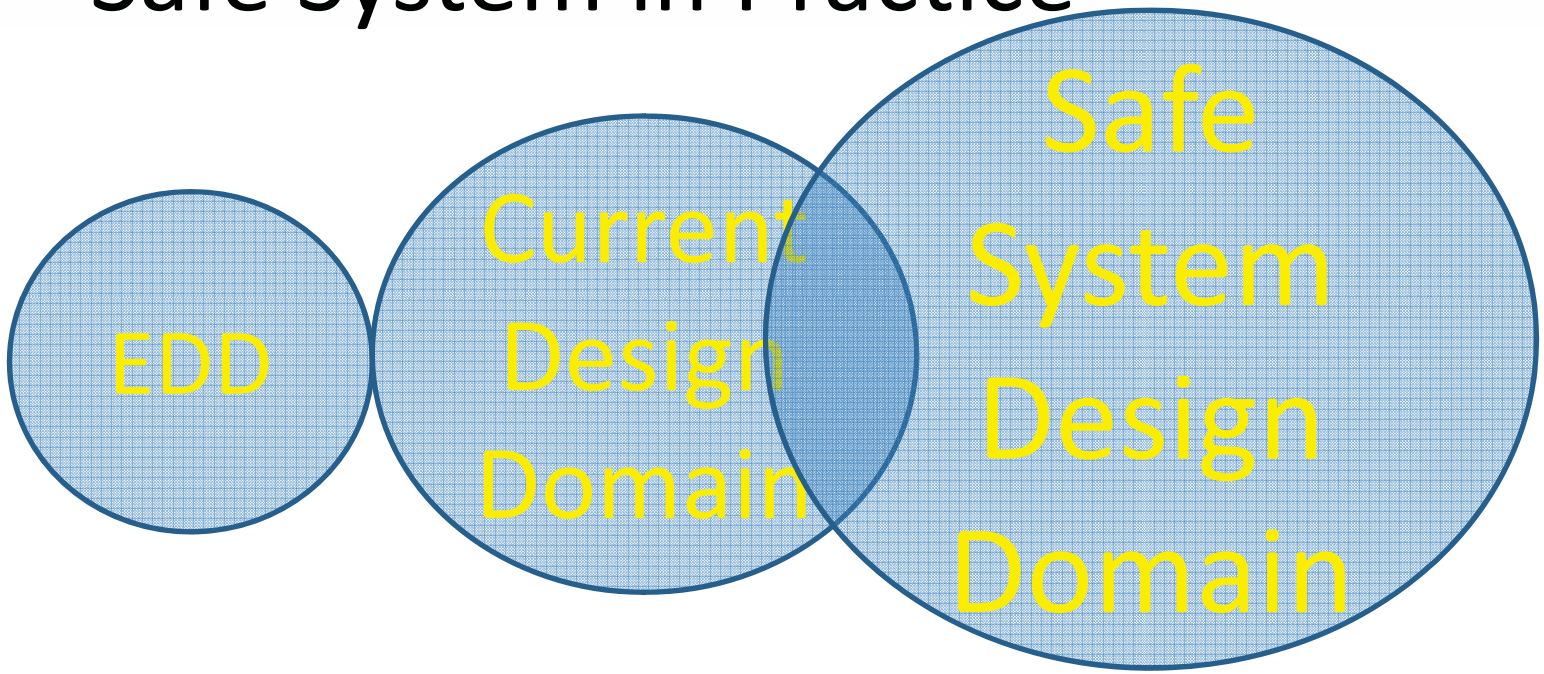
Figure 1: The Design Domain Concept

Safe System in Practice



EDD = Extended Design Domain

Safe System in Practice



EDD = Extended Design Domain

Safe System in Practice

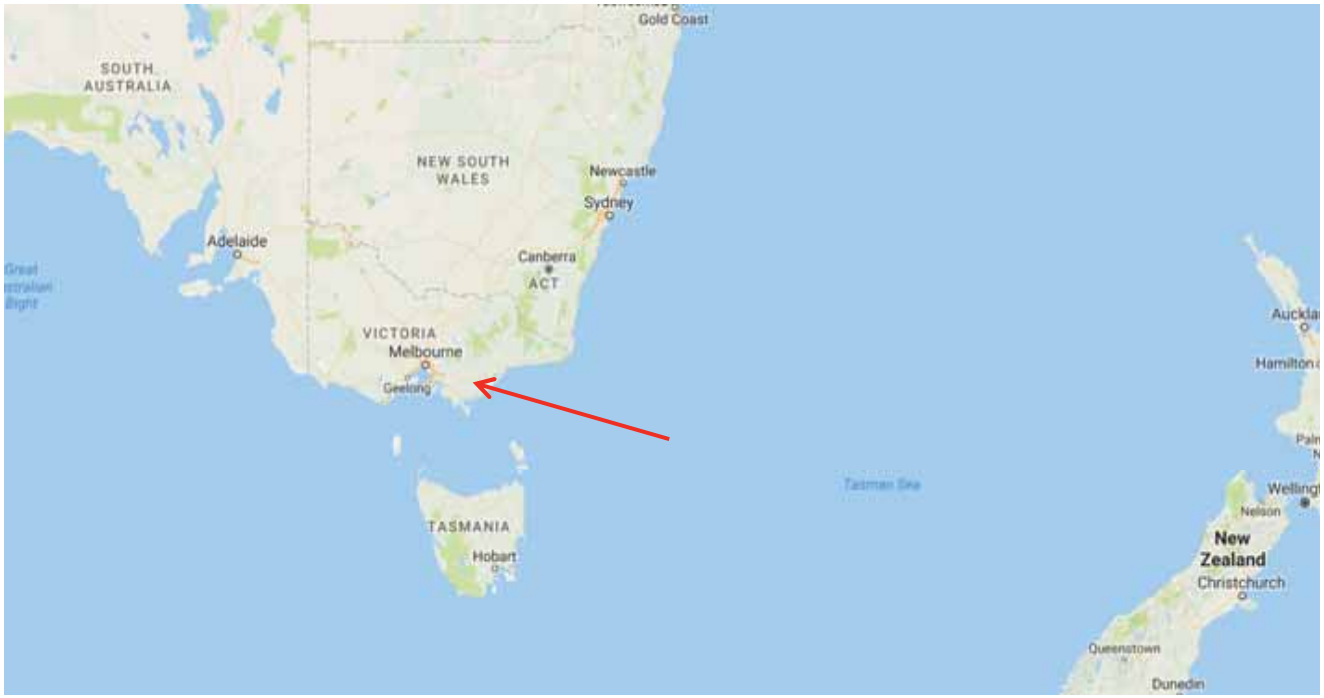
What is Safe System……..

A way of Thinking and Doing……..

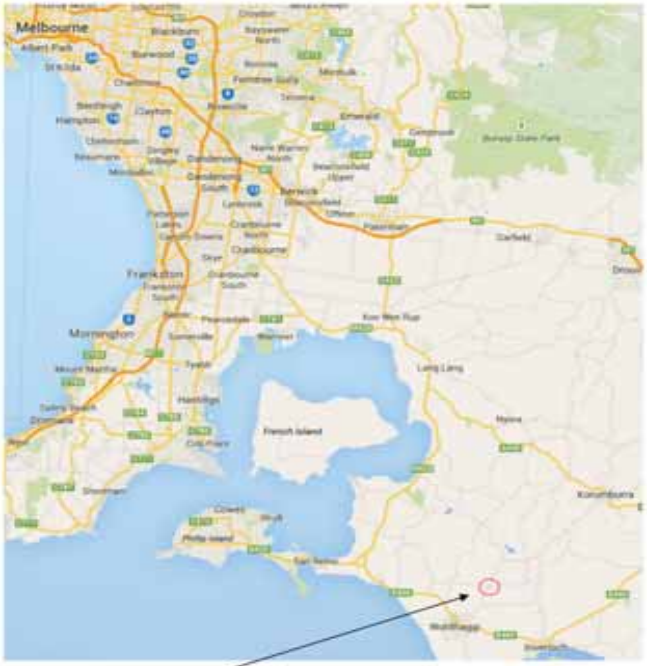
Safe System in Practice

A rural roundabout

Safe System in Practice



Safe System in Practice



Safe System in Practice

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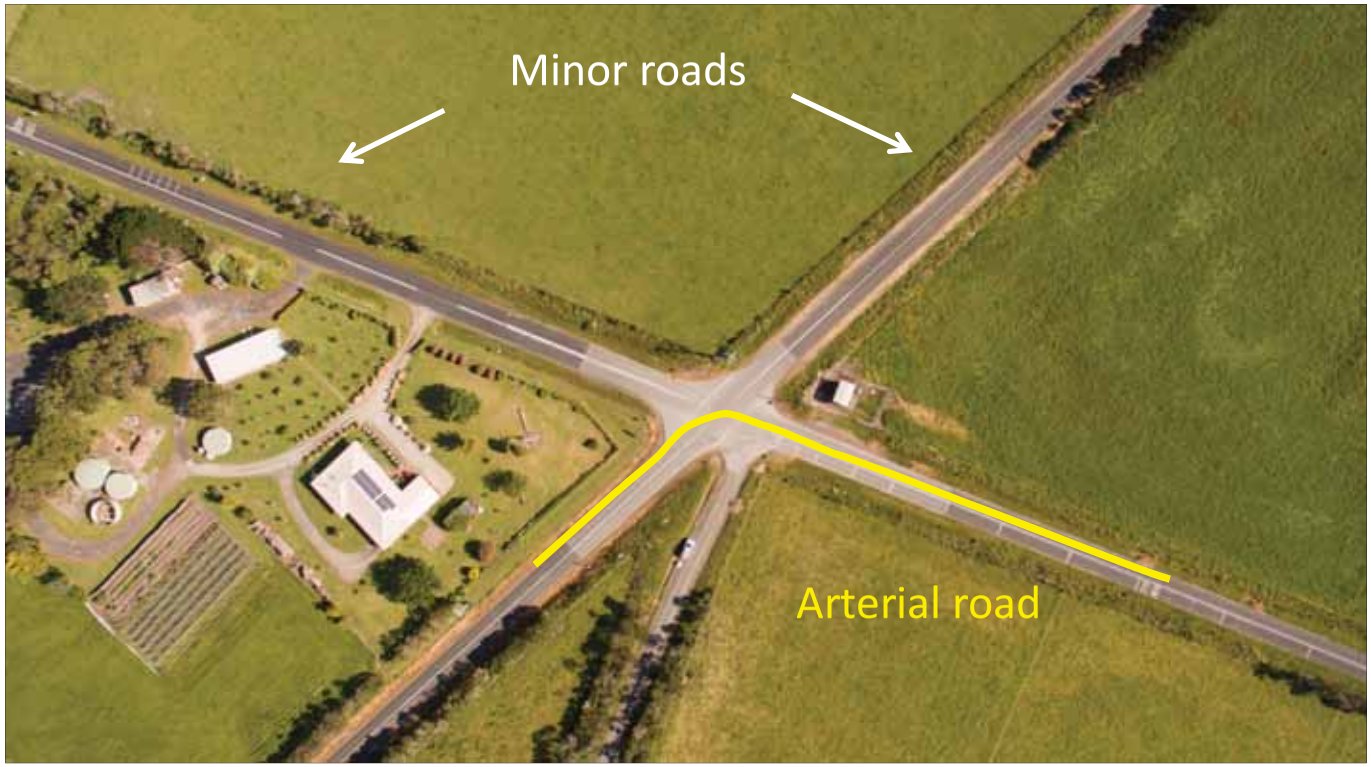
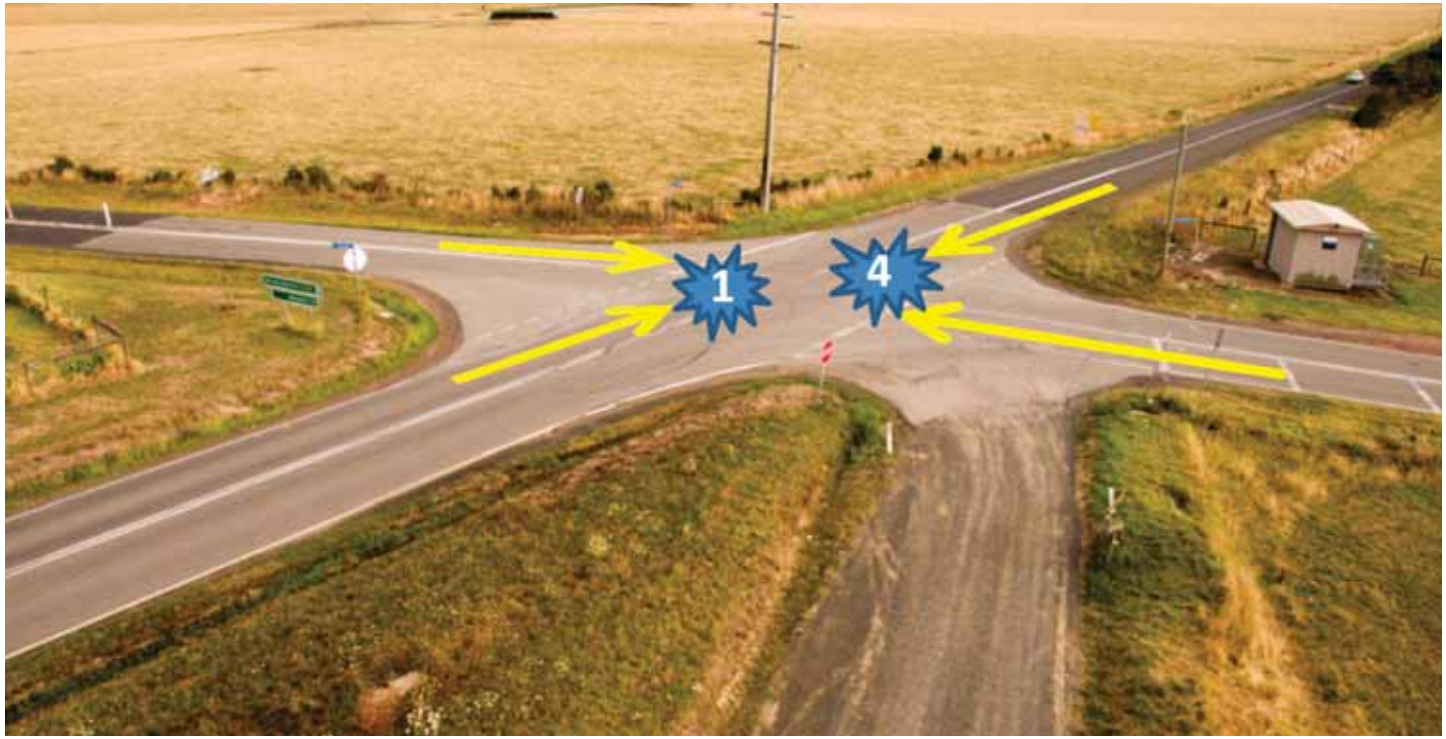


Safe System in Practice

Safe System in Practice

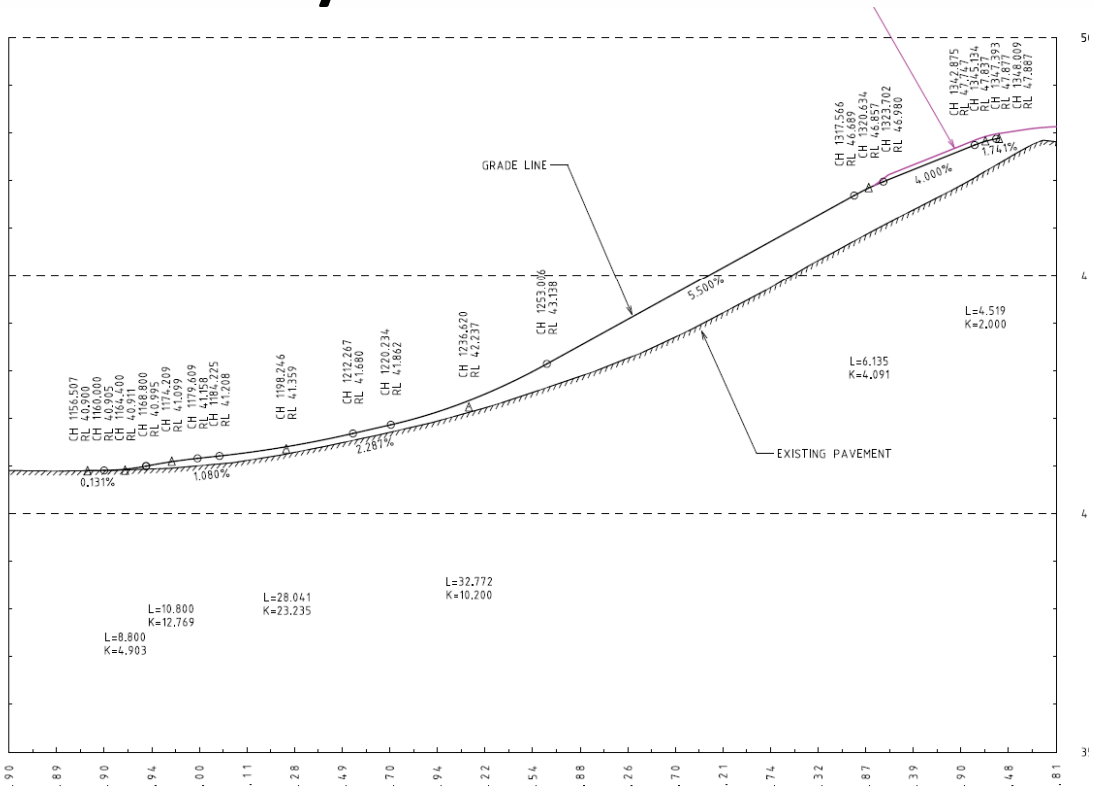


Safe System in Practice

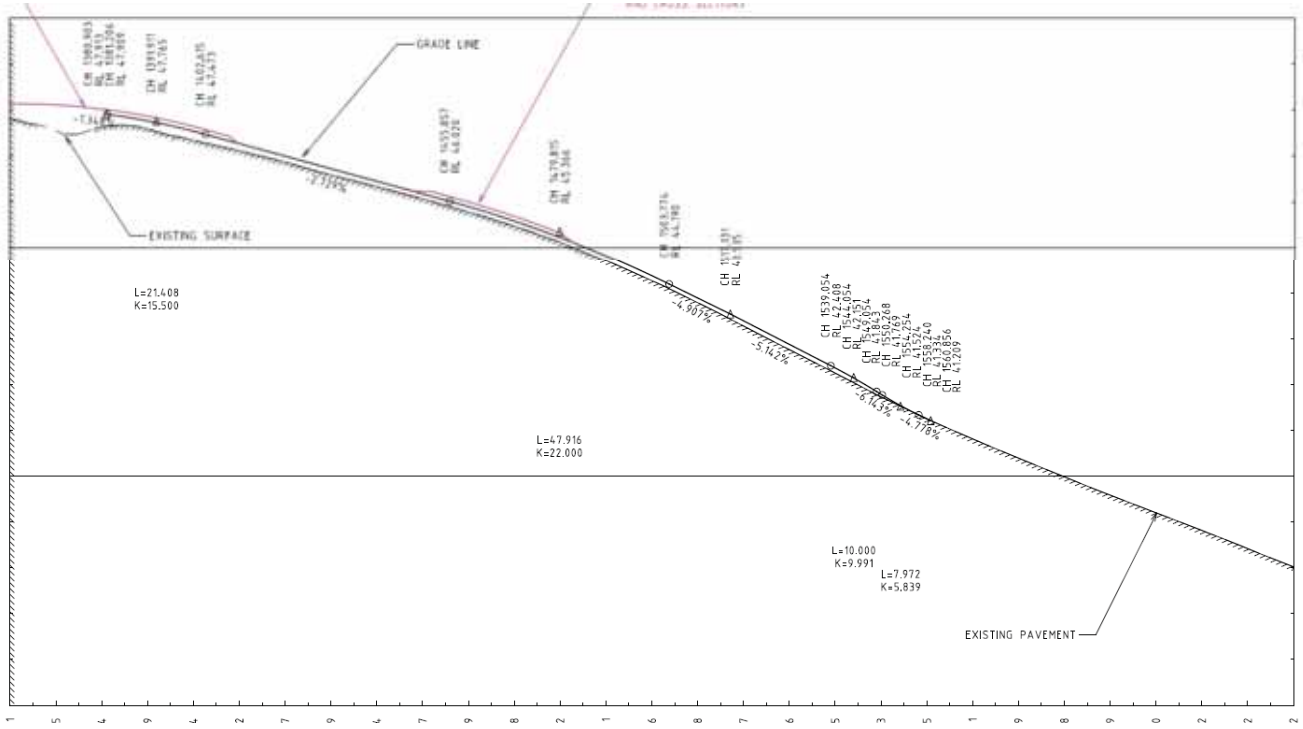
Photo 2.1: View from south west side of intersection looking north east.

Drone footage…..

Safe System in Practice



Safe System in Practice



Safe System in Practice

Options

Safe System in Practice

Safe System in Practice

Design for ‘the full monty’

v’s

compact roundabout

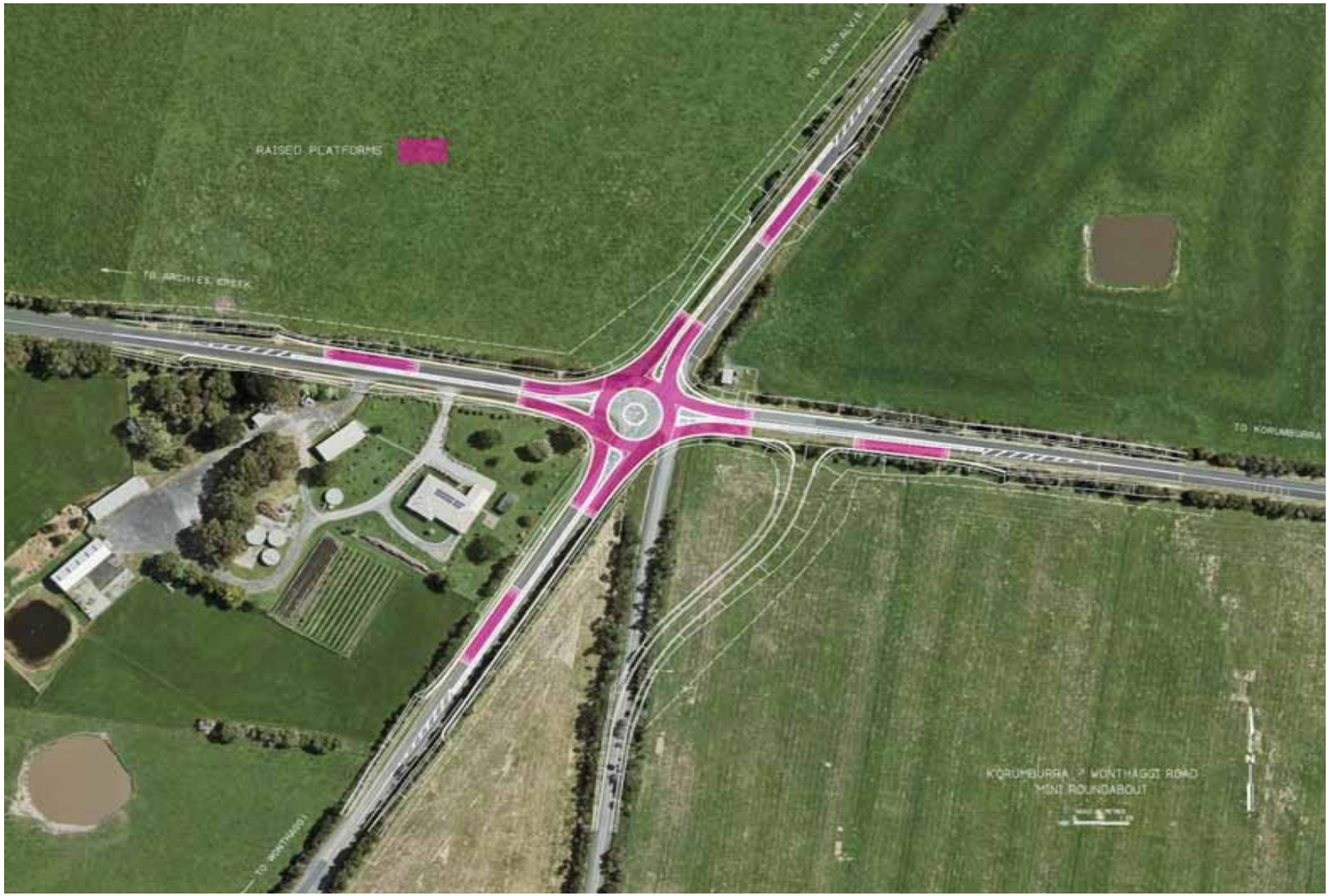
Safe System in Practice

- A - the roundabout should be clearly visible in advance of the roundabout approach
- B - restrict drivers to a safe speed on entry to the roundabout
- C - enable vehicles to depart efficiently
- D - accommodate all entries and exits without them overlapping
- E - accommodate relevant road users (incl. consideration of swept paths)
- F - provide visibility of traffic entering, and on, the roundabout
- G - ensure that the roundabout operates at an appropriate level of service
- H - provide forgiving angles of impact

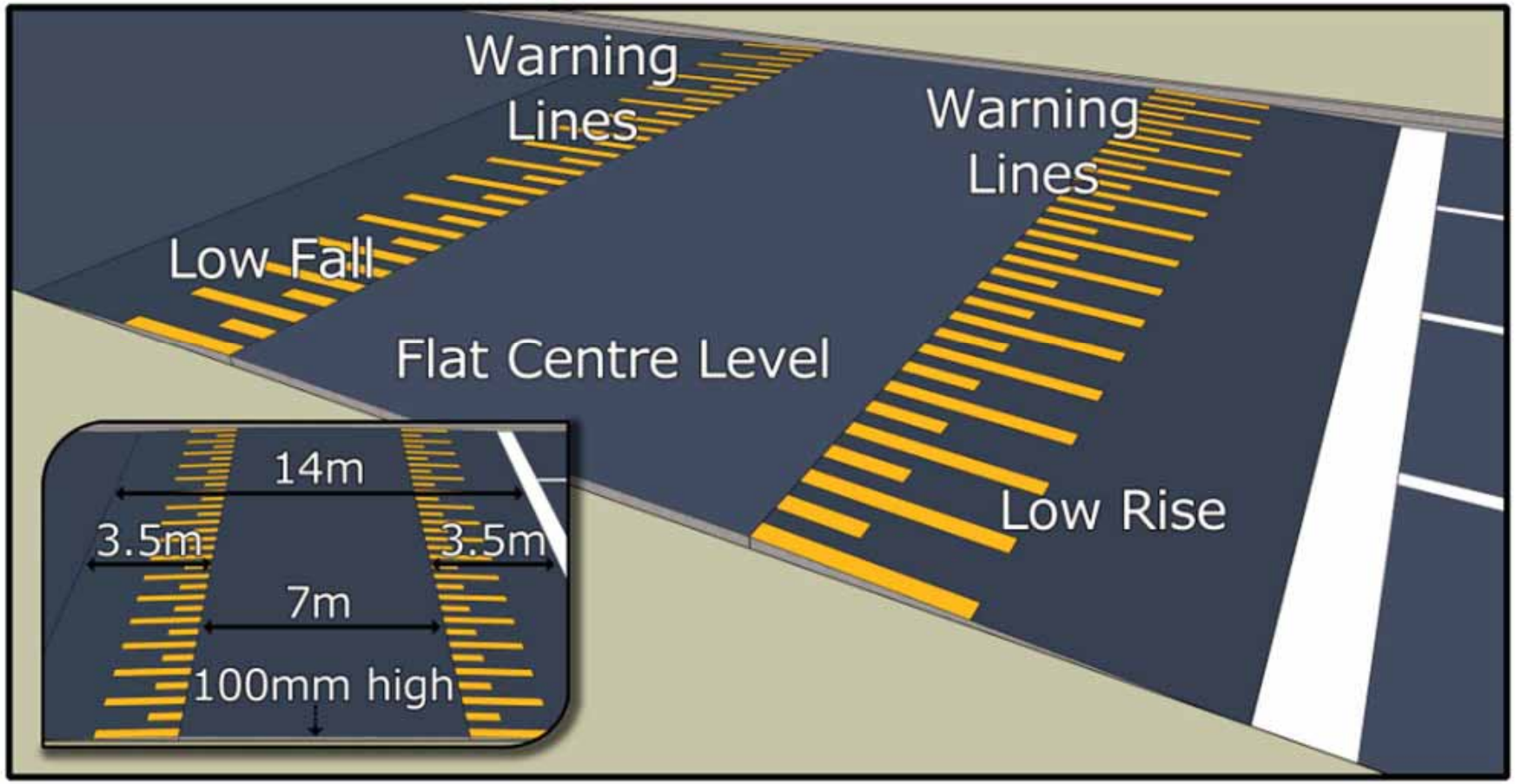
Safe System in Practice

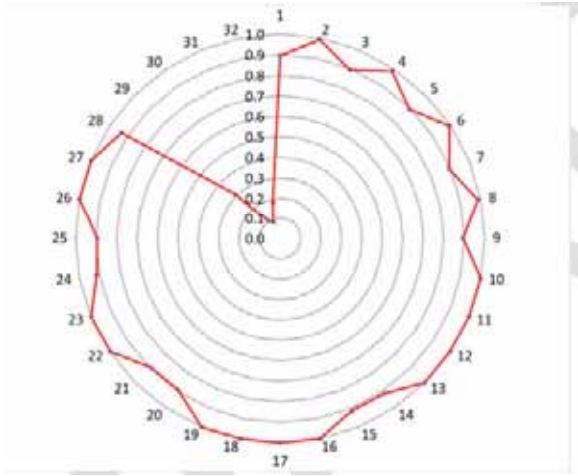
- Key Steps…….

- Took the key principles for roundabouts from AustRoads – and ignored the prescribed design
- Used alternate counter measures to achieve same
- Undertook risk assessments, road safety audit, peer review safe system audit, non conformance design report
- Normal steps; services, enviro, cultural heritage, comms, etc
- Speed and behaviour data
- And so on……


RAISED PLATFORMS
TO GLEN ALVIE
TO ARCHIES CREEK
TO KORUMBURRA
TO WONTHAGGI
KORUMBURRA / WONTHAGGI ROAD
MINI ROUNDABOUT

RAISED Safety Platform

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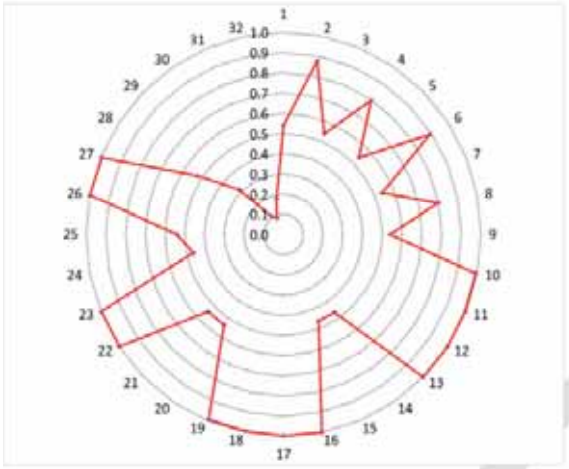
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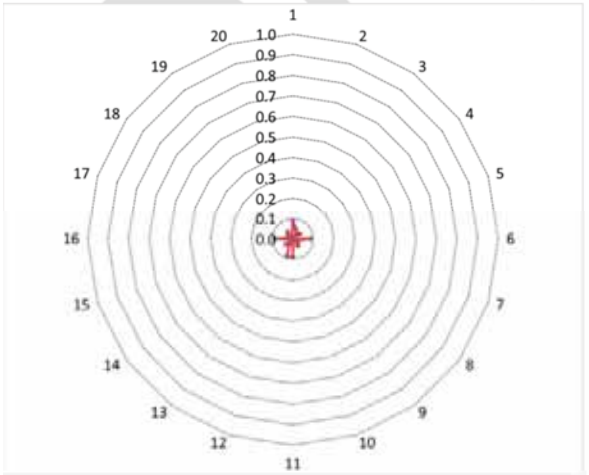
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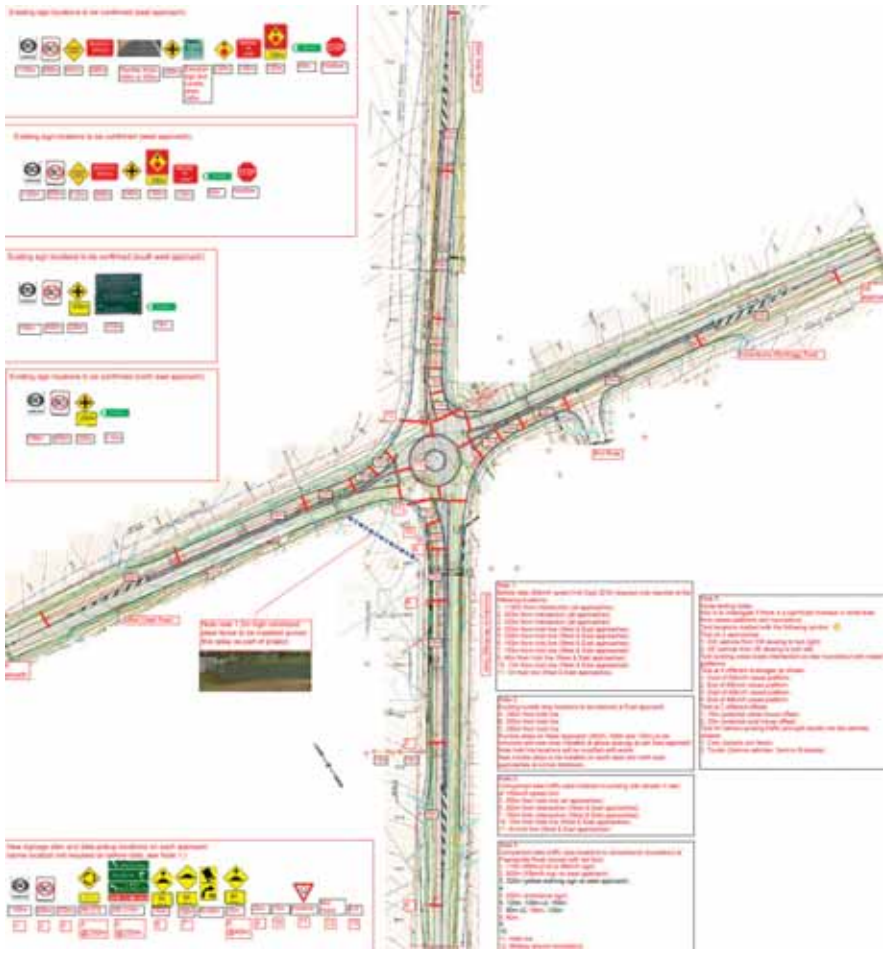

Safe System in Practice

Guidelines and Standards

Questions?

End of main presentation;
extra slides if time permits….

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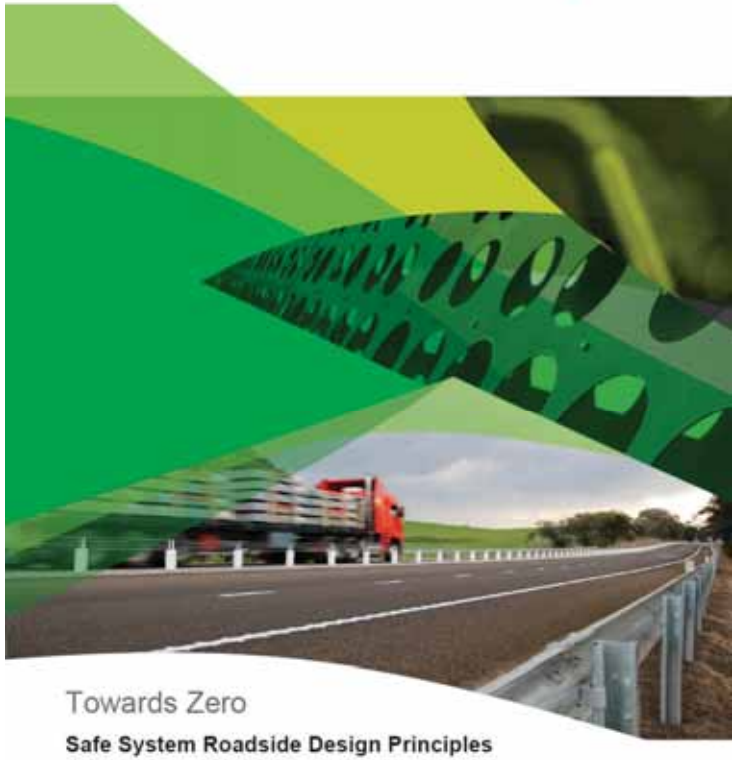

Towards Zero

Safe System Roadside Design Principles

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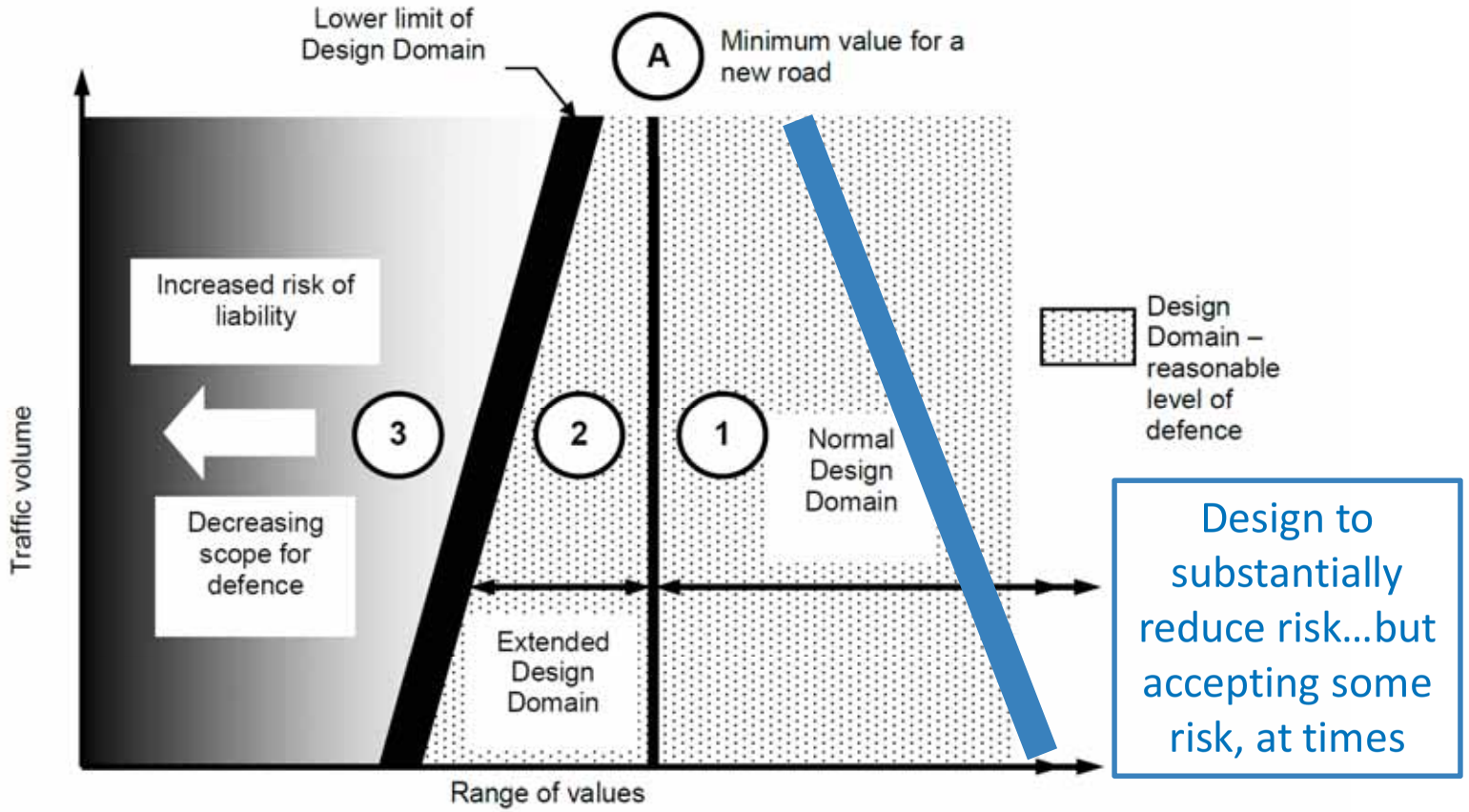
State Government

Figure C7 1: Conceptual diagram

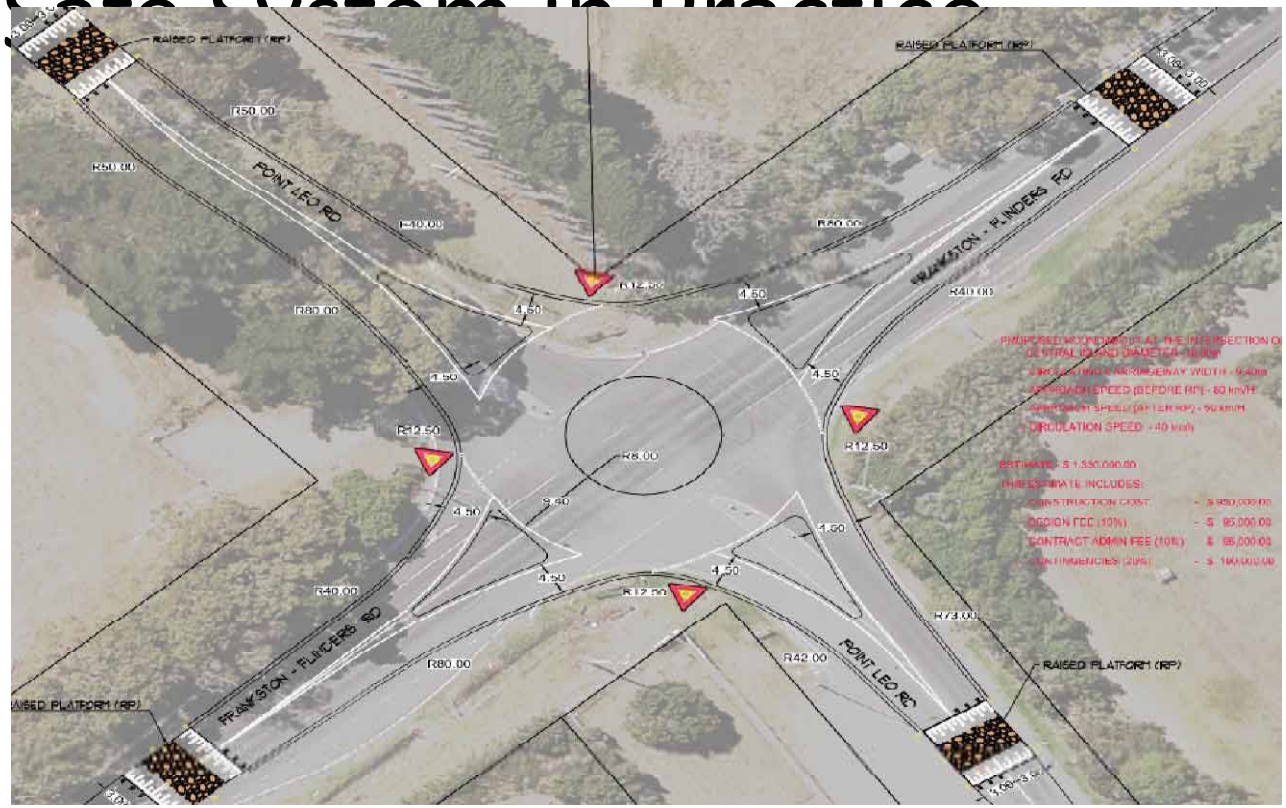


Source: Department of Transport and Main Roads (2013).

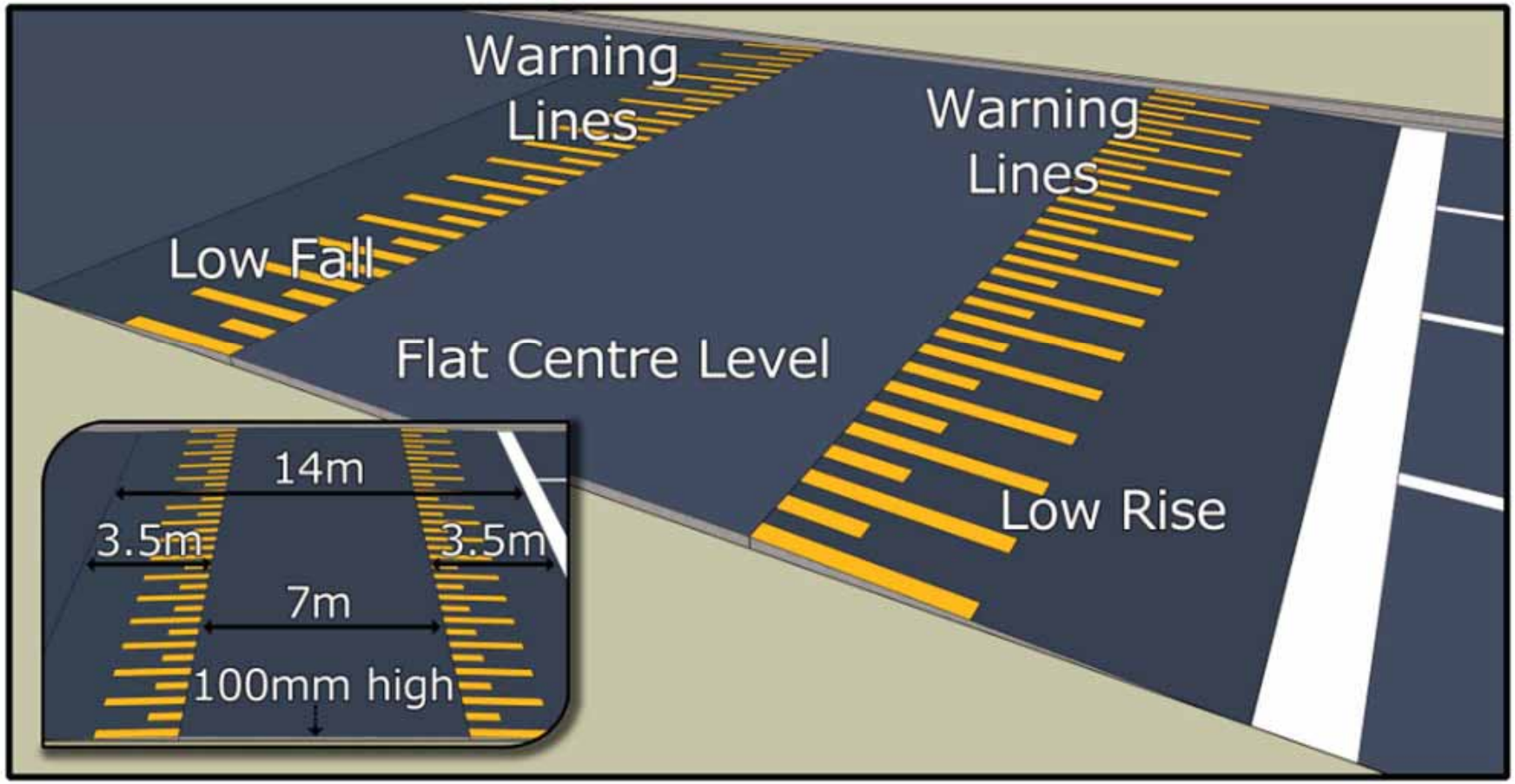
Safe System in Practice

Flow on…..

Safe System in Practice



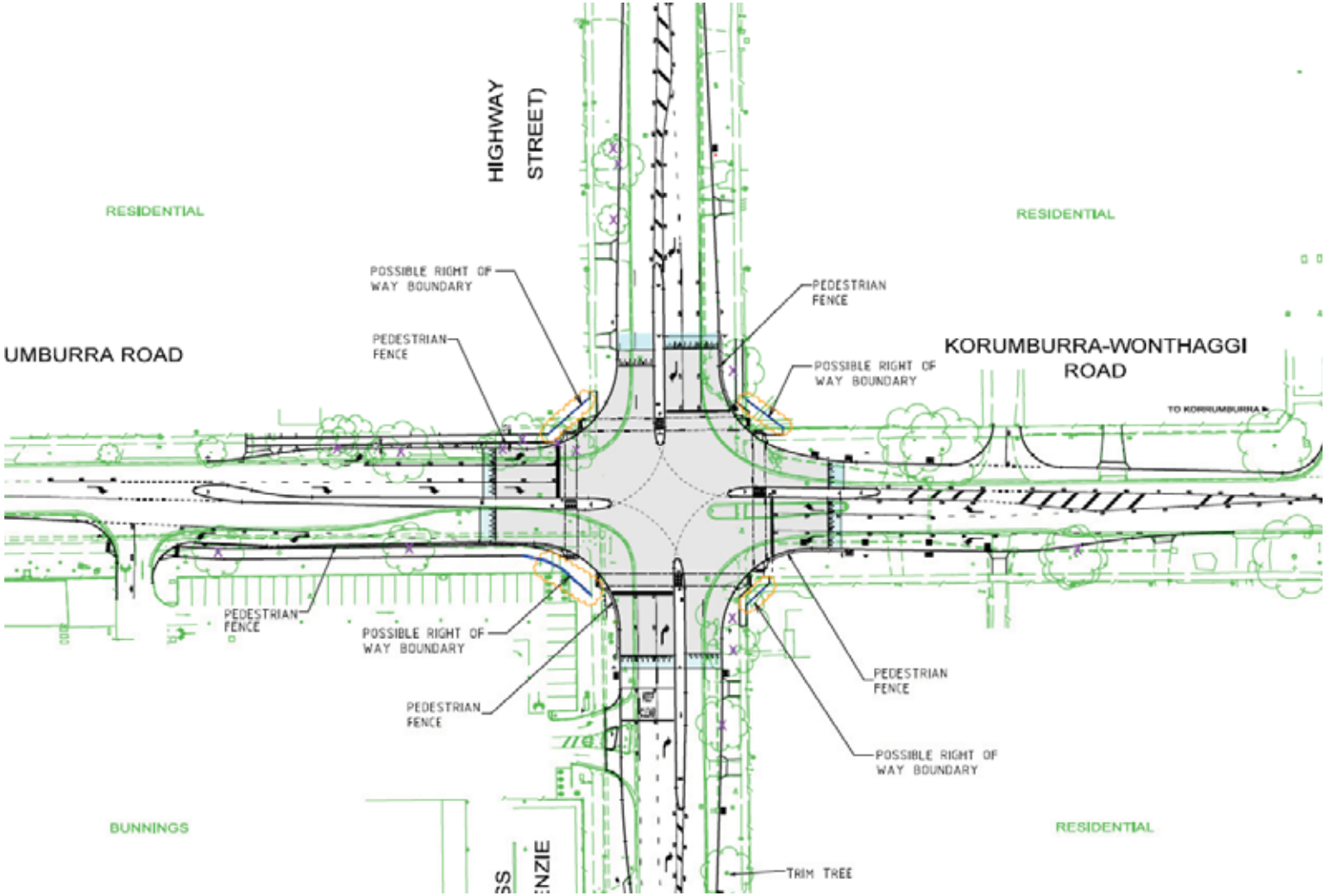
RAISED Safety Platform




McHARRY'S

Examples


50
50


HIGHWAY
STREET)
RESIDENTIAL
RESIDENTIAL
POSSIBLE RIGHT OF WAY BOUNDARY
PEDESTRIAN FENCE
PEDESTRIAN FENCE
POSSIBLE RIGHT OF WAY BOUNDARY
UMBURRA ROAD
KORUMBURRA-WONTHAGGI ROAD
TO KORRUMBURRA
PEDESTRIAN FENCE
POSSIBLE RIGHT OF WAY BOUNDARY
PEDESTRIAN FENCE
PEDESTRIAN FENCE
POSSIBLE RIGHT OF WAY BOUNDARY
BUNNINGS
RESIDENTIAL
TRIM TREE

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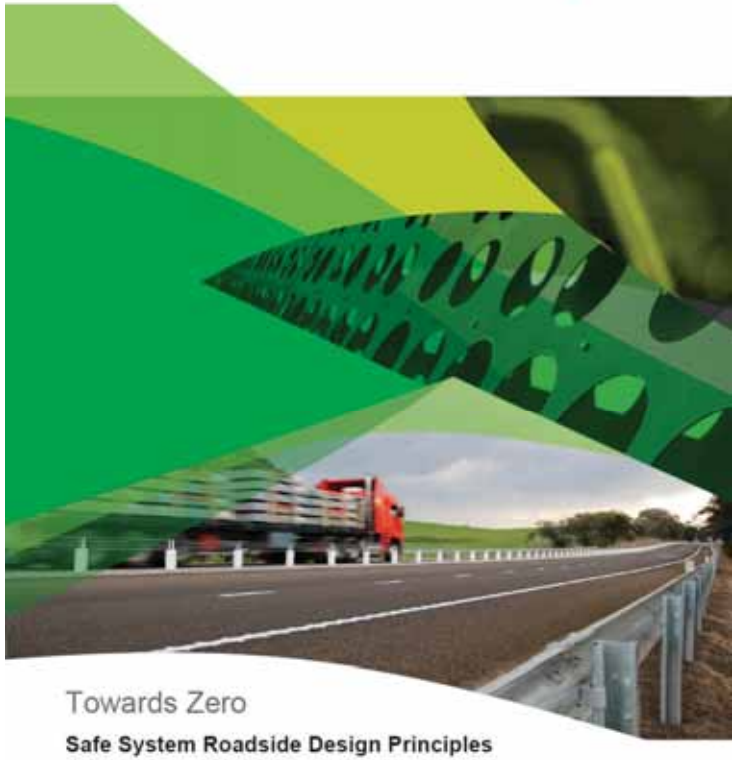

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Safe System in Practice

Raised Safety Platforms

(Network Program)

Safe System in Practice

Examples

Safe System in Practice

Clear Zones

Clear Zone Design Guides

Conventional Run off Road Treatments

Trees close to road edge

Wire Rope Safety Barriers

Greenfield Site- Conventional Design

Safe System in Practice

Speed (km/h)	110		**100**		80		60		50	
Reaction Time (sec)	1.2	2.5	1.2	**2.5**	1.2	2.5	1.2	2.5	1.2	2.5
Hazard location distances for Safe System compliance (m)										
~~100% chance of death*~~	~~27~~	~~37~~	~~19~~	~~**30**~~	~~6.8~~	~~15~~	~~5~~	~~11~~	4	~~9~~
~~50km/h impact speed#~~	~~37~~	~~48~~	~~30~~	~~**40**~~	~~18~~	~~25~~	~~7~~	~~14~~	4	~~9~~
Safe System^	**40**	**50**	**33**	**42**	**20**	**27**	**10**	**16**	**7**	**11**

Table 1 - Summary of hazard location distances for Safe System compliance

a)*impact at the speeds predicted at these distances have a probability of death of 100%
b)#frontal collisions at 50km/h above which the risk of fatality increases rapidly
c)^deemed operationally low risk

Safe System in Practice

Early Successes…continuous safety barrier

2014 South Gippsland Highway 14km $4.5M

2013 Bass Highway 10km $5M

Statewide Program $165M

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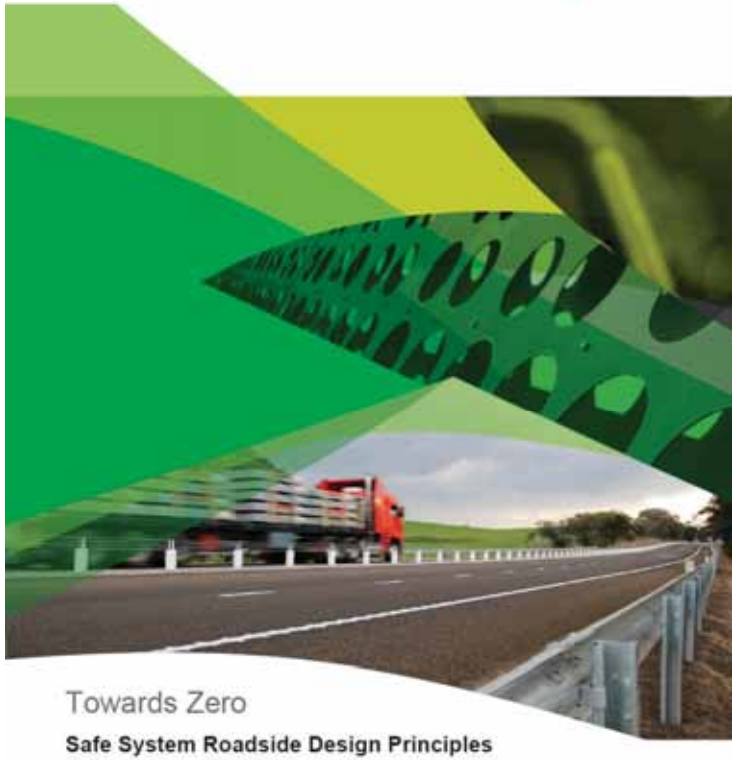

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Safe System in Practice

Motorcyclists

9000
8950
8900
8850
8800
8750
8700
8650
8600
R252
R117
4

Safe System in Practice

Safe System in Practice

Curve tightens sign

Safe System in Practice

Safe System in Practice

Motorcycle speed reductions

Safe System in Practice

LH or RH curves

Which one is more dangerous?

Safe System in Practice

Exit to LH curves – barrier placement


05/02/2007


40


40
km/h

Safe System in Practice

Systems and Processes

Safe System in Practice

Developments

Intersection Design

VicRoads has adopted the safe systems initiative in its approach to intersection designs. This needs be noted within the body of text and be reflective for any proposed treatment or design. It must also be noted that VicRoads in ensuring the safe and efficient movement of freight considers the use of

absolute minimums in any design on the arterial road is not acceptable. Please ensure that any reference to designs on the arterial roads is to be to VicRoads satisfaction.

Safe System in Practice

Median Barriers

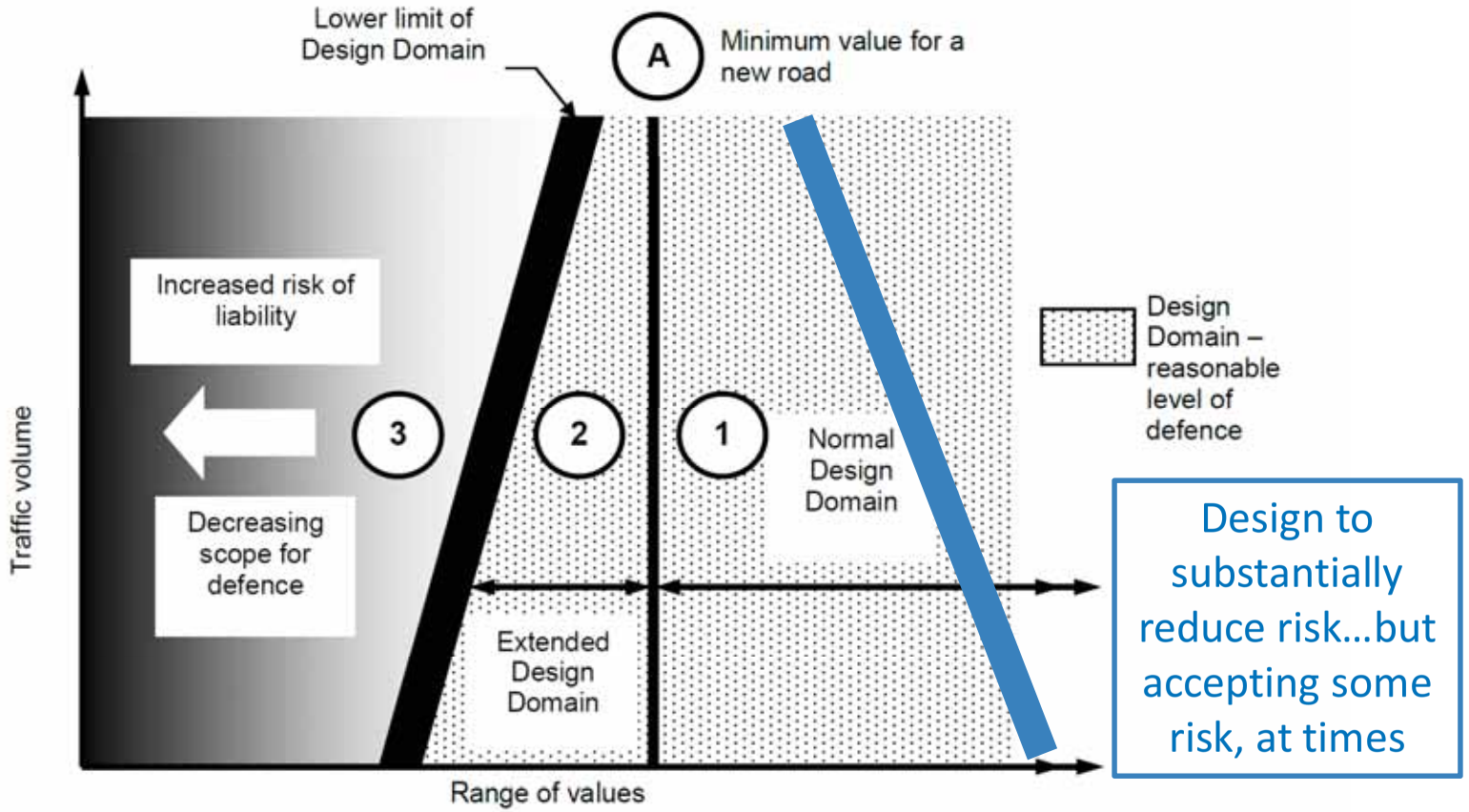
Examples

- M

Safe System in Practice

Cross Sections

Figure C7 1: Conceptual diagram



Source: Department of Transport and Main Roads (2013).

Questions?

Safe System in Practice

Extra’s

Safe System in Practice

Storey (Cabinet)


05/02/2007


06/07/2011 09:42


04/07/2011 14:50


411

END