

Application Number: 274 Version: 2 Printed By: doug.bartlett@kalamunda.wa.gov.au

**BLACK SPOT PROGRAM**

NOMINATION FORM

FY2023/24

Application Status: Submitted



Australian Government Black Spot Program:	No	State Black Spot Program:	Yes
Non-staged Project:	Yes		

Nominee Details

Title: Mr
 Given Name: Douglas Surname: Bartlett
 Organisation: City of Kalamunda
 Position Title/Occupation: Manager Asset Planning
 Postal Address: PO Box 42, Kalamunda

 State: WA Post Code: 6926
 Telephone No: 92579964

Contact Details

Contact Person: Doug Bartlett
 Organisation: City of Kalamunda
 Telephone No: 92579964
 Email Address: douglas.bartlett@kalamunda.wa.gov.au

Site Nomination

Date of Site Inspection: 5/07/2022 4:20 PM

Local Government in which site nomination is located: Kalamunda

Suburb (of site): Forrestfield Post Code (of Site): 6058

Site Description: Three way intersection with existing roundabout and minor pre-deflection on north and west legs. Moderate downhill gradient to the south. Surrounded by residential properties, with northern corner having a large wall that impedes sight lines for the northern leg traffic until the driver is at the holding line. Bus routes run through the intersection.

Intersection:

Primary Road	Intersecting Road Name	Intersection Number	
1020004: Hawtin Rd	HALE RD	45335	SLK: 0
1020004: Hawtin Rd	BERKSHIRE RD	45335	SLK: 0
1020004: Hawtin Rd	HALE RD	45335	SLK: 0
1020004: Hawtin Rd	BERKSHIRE RD	45335	SLK: 0

Predominant Crashes and Nature of Concern

Predominate crashes were three crashes involving colliding vehicle travelling from Berkshire to Hale crashing target vehicle travelling Hawtin to Hale. One rear end within roundabout from Hawtin approach, and two rear ends on Berkshire approach. All crashes are thought to arise from drivers approaching the intersection at too high speeds and not having time to react or slow down and give way safely.

Inspection Photos







Crash History

5-year Period for Measurement of Crashes:

Total Number of Crashes:	7
Total Number of Casualties:	1
Total Number of Fatal Crashes:	0
Total Number of Hospital Crashes:	1
Total Number of Medical Crashes:	0
Total Number of Property Damage Major Crashes:	4
Total Number of Property Damage Minor Crashes:	2

Crash Analysis

Seven crashes, with three being right angle, and three being rear end, all property damage only. One crash arising from a WA Police pursuit leading to hospitalisation. All crashes were on level grade, daylight, in dry conditions.

Nature of Concern Confirmed following Site Inspection:

Existing pre-deflection on north and west side is not sufficient to slow traffic. In crash history, three crashes right angle eastbound colliding with southbound vehicle, suggests southbound drivers are not slowing and giving way. Two rear end crashes for western approach vehicles suggest drivers aren't slowing sufficiently on approach to the roundabout. This last concern is not recognised by Crash Map as being treatable by speed cushions.

Crash Factor Matrix

Parameter	Value
Job ID	DA50A717-E2C1-4268-BEE6-EBABE915E737
From Date	2016-12-31T16:00:00.000Z
To Date	2021-12-30T16:00:00.000Z
Atmospheric Conditions	ALL
Accident Type	ALL
Severity	ALL
Horizontal Geometry	ALL
Vertical Geometry	ALL
Surface Type	ALL
Gender Of Driver	ALL
Road User Type	ALL
Crash Type	ALL
Rum Series	ALL
Crash Location	ALL
Traffic Control	ALL
Day of Week	ALL
Time of Day	ALL
Light Conditions	ALL
Hit Object Crashes	ALL
Approach Leg	ALL
Selected Areas	HALE RD & BERKSHIRE RD & HAWTIN RD (0 to 0)

Crash Factor Matrix

ROAD USE MOVEMENT (RUM) CODES

	0	1	2	3	4	5	6	7	8	9
	PEDESTRIAN on foot, in toy/pram	INTERSECTION vehicles from adjacent approaches	VEHICLES FROM OPPOSING DIRECTIONS	VEHICLES FROM ONE DIRECTION	MANOEUVRING	OVERTAKING	ON PATH	OFF STRAIGHT, ON STRAIGHT	OFF PATH, ON CURVE	PASSENGERS AND MISCELLANEOUS
1	 NEAR SIDE 1	 THRU-THRU 11	 SIDE SWIPE HEAD ON 21	 REAR END 31		 HEAD ON 51	 PARKED 61	 OFF CARRIAGEWAY TO LEFT 71	 OFF CARRIAGEWAY RIGHT BEND 81	 FELL IN/FROM VEHICLE 91
2	 EMERGING 2	 RIGHT-THRU 12	 THRU-RIGHT 22	 LEFT REAR 32	 LEAVING PARKING 42	 OUT OF CONTROL 52	 DOUBLE PARKED 62	 LEFT OFF CARRIAGEWAY INTO OBJECT/VEHICLE 72	 OFF RIGHT BEND INTO OBJECT/VEHICLE 82	 LOAD STRUCK VEHICLE 92
3	 FAR SIDE 3	 LEFT-THRU 13	 RIGHT LEFT 23	 RIGHT REAR 33	 PARKING 43	 PULLING OUT 53	 ACCIDENT OR BROKEN DOWN 63	 OFF CARRIAGEWAY TO RIGHT 73	 OFF LEFT BEND INTO OBJECT/VEHICLE 83	 STRUCK TRAIN 93
4	 PLAYING, WORKING LYING, STANDING ON CARRIAGEWAY 4	 THRU-RIGHT 14	 RIGHT RIGHT 24	 U TURN 34	 PARKING VEHICLES ONLY 44	 CUTTING IN 54	 CAR DOOR 64	 RIGHT OFF CARRIAGEWAY INTO OBJECT/VEHICLE 74	 OFF LEFT BEND INTO OBJECT/VEHICLE 84	 STRUCK RAILWAY XING FURNITURE 94
5	 WALKING WITH TRAFFIC 5	 RIGHT-RIGHT 15	 THRU LEFT 25	 LANE SIDE SWIPE 35	 REVERSING 45	 PULLING OUT REAR END 55	 PERMANENT OBSTRUCTION 65	 OUT OF CONTROL ON CARRIAGEWAY 75	 OUT OF CONTROL ON CARRIAGEWAY 85	 ANIMAL OFF CARRIAGEWAY 95
6	 FACING TRAFFIC 6	 LEFT-RIGHT 16	 LEFT LEFT 26	 LANE CHANGE RIGHT 36	 REVERSING INTO FIXED OBJECT 46	 O.T.-RT 56	 TEMPORARY ROADWORKS 66	 LEFT TURN 76		 PARKED CAR RAN AWAY 96
7	 DRIVEWAY 7	 THRU-LEFT 17	 U TURN 27	 LANE CHANGE LEFT 37	 LEAVING DRIVEWAY 47		 TEMPORARY OBJECT ON CARRIAGEWAY 67	 RIGHT TURN 77		 VEHICLE MOVEMENTS NOT KNOWN 97
8	 ON FOOTWAY 8	 RIGHT-LEFT 18		 RIGHT TURN S/S 38	 LOADING BAY 48					
9	 STRUCK WHILE BOARDING OR ALIGHTING 9	 LEFT-LEFT 19		 LEFT TURN S/S 39	 FROM FOOTWAY 49		 ON CARRIAGEWAY 69			
	OTHER 98	OTHER 10	OTHER 20	OTHER 30	OTHER 40	OTHER 50	OTHER 60 (MISSILE/ FLYING OBJECT)	OTHER 70	OTHER 80	OTHER 90

Crash Factor Matrix																																					
HALE RD & BERKSHIRE RD & HAWTIN RD (0 to 0)																																					
ROAD USER MOVEMENT CODE	Number of Crashes by Year						Severity					Surface			Light Condition						Day of Week							Time of Day									
	2017	2018	2019	2020	2021	Total	Fatal	Hospital	Medical	PDO Major	PDO Minor	Dry	Wet	Not Specified	Day	Dusk/Dawn	Dark lights On	Dark lights off	Dark no lights	Not Specified	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	00:00 - 02:59	03:00 - 05:59	06:00 - 08:59	09:00 - 11:59	12:00 - 14:59	15:00 - 17:59	18:00 - 20:59	21:00 - 23:59	Not Specified	
10 Series : INTERSECTION																																					
12 - Right - Thru		1	1		1	3				2	1	3			3						1				1	1					2	1					
10 Series Total		1	1		1	3				2	1	3			3						1				1	1					2	1					
30 Series : VEHICLES FROM ONE DIRECTION																																					
31 - Same Lane Rear End		1		1		2				2		2			2										2							2					
33 - Same Lane Right Rear		1				1					1	1			1											1				1							
30 Series Total		2		1		3				2	1	3			3										2	1					1		2				
70 Series : OFF PATH, ON STRAIGHT																																					
77 - Right Turn - Intx					1	1		1				1			1								1										1				
70 Series Total					1	1		1				1			1								1										1				
All RUM Codes	0	3	1	1	2	7	0	1	0	4	2	7	0	0	7	0	0	0	0	0	1	0	1	0	3	2	0	0	0	0	3	1	3	0	0	0	

Crash Patterns Report

Parameter	Value
Road Description	Intersection of Major road / major road in a built up area
Job ID	27F5D42E-BD2C-4638-A939-093B9CC75528
From Date	2016-12-31T16:00:00.000Z
To Date	2021-12-30T16:00:00.000Z
Atmospheric Conditions	ALL
Accident Type	ALL
Severity	ALL
Horizontal Geometry	ALL
Vertical Geometry	ALL
Surface Type	ALL
Gender Of Driver	ALL
Road User Type	ALL
Crash Type	ALL
Rum Series	ALL
Crash Location	ALL
Traffic Control	ALL
Day of Week	ALL
Time of Day	ALL
Light Conditions	ALL
Hit Object Crashes	ALL
Approach Leg	ALL
Selected Areas	HALE RD & BERKSHIRE RD & HAWTIN RD (0 to 0)

Crash Patterns Report

Crash Grouping		RUM Codes	This Study Area (%)	Network Average	Flag
Crash Nature	Rear End	30,31,32,33,53,55,61,62	43	57	Under-represented
	Head On	21,51	0	0	
	Sideswipe Opposite Dirn	23,24,25,26,34,43,50,54	0	0	
	Sideswipe Same Dirn	35,36,37,38,39,42,56,64	0	7	
	Right Angle	10,11,12,13,14,15,16,17,18,19,47,48,49	43	14	Significantly over-represented
	Right Turn Thru	22,27	0	14	Under-represented
	Hit Pedestrian	01,02,03,04,05,06,07,08,09,98	0	0	
	Hit Animal	69,95	0	0	
	Hit Object	46,60,63,65,66,67,70,72,74,80,82,84,93,94	0	5	
	Non Collision	52,71,73,75,76,77,81,83,85	14	1	Over-represented
	Not Known		0	2	
Lighting	Daylight		100	76	Significantly over-represented
	Dawn Or Dusk		0	5	
	Dark - Street Lights On		0	16	Under-represented
	Dark - Street Lights Off		0	0	
	Dark - Street Lights Not Provided		0	0	
	Not Known		0	3	
Grade	Level		71	73	
	Crest Of Hill		0	16	Under-represented
	Slope		29	3	Significantly over-represented
	Not Known		0	8	
Road Condition	Wet		0	20	Significantly under-represented
	Dry		100	78	Significantly over-represented
	Not Known		0	2	
Crash Severity	Fatal		0	0	
	Hospital		14	4	Over-represented
	Medical		0	16	Under-represented
	PDO Major		57	61	
	PDO Minor		29	19	Over-represented
Alignment	Curve		57	21	Significantly over-represented
	Straight		43	69	Significantly under-represented
	Not Known		0	10	Under-represented

Note: Use the comparison of crash patterns at a selected site with network average values as a rough indicator of problems at a location. Moderate variances between the figures should not be given undue weight, as the crash population is generally very small for intersections or small roads.

In the report, a variance of less 10 is not flagged. A variance between 10 and 19 is flagged as “Under-represented” or “Over-represented”. A variance of 20 or more is flagged as “Significantly under-represented” or “Significantly over-represented”

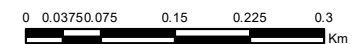
For selections of fewer than 6 crashes, the report will not provide a flag.

Treatment Proposal

Collision Diagrams



Collision Diagram for Treatment 3



Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Doug Bartlett

7/5/2022

Treatment Summary

3	Modify roundabout approaches to achieve safe operating speeds (e.g. pre-deflection or raised wombat crossings on approach legs)
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Description of Treatments

This is the detailed description including specific approach legs and directions of travel which each of the countermeasure will be applied to.

Proposed speed cushion on northern approach leg only. Crash Map does not recognise the benefits of a speed cushion on the western or southern legs due to the crash types. The City will therefore be installing speed cushions on the western and southern approach legs separate to the Black Spot grant.

Support of Nomination

This nomination is supported by: Federal Benefit Cost Ratio (BCR) calculation: No

Road Safety Inspection: No State Benefit Cost Ratio (BCR) calculation: Yes

Multiple Measure Modelling (BCR calculation) Supported Nominations

For Staged Projects BCR is to be calculated for the total estimated project cost.

Benefit Cost Ratio (BCR): 1.34

Net Present Value: \$21019.00

(This is the difference between the present value of benefits and the present value of costs)

BCR Calculation

Region: Metropolitan

Speed Limit: Nature – Built Up

Black Spot Discount : 5%

Longest Project Life: 30 years (discounting 15.37)

Treatment	Capital Project Cost	Yearly Operating Cost	Total Operating Costs (PV)	Total Treatment Cost
Modify roundabout approaches to achieve safe operating speeds (e.g. pre-deflection or raised wombat crossings on approach legs)	\$41230.00	\$1300.00	\$19984.19	\$61214.19

Total Project Costs: \$61214.19

Crash Cost Savings: \$5350.00

Total Crash Cost Benefits: \$82242.61















BCR: 1.34








NPV: \$21019.00

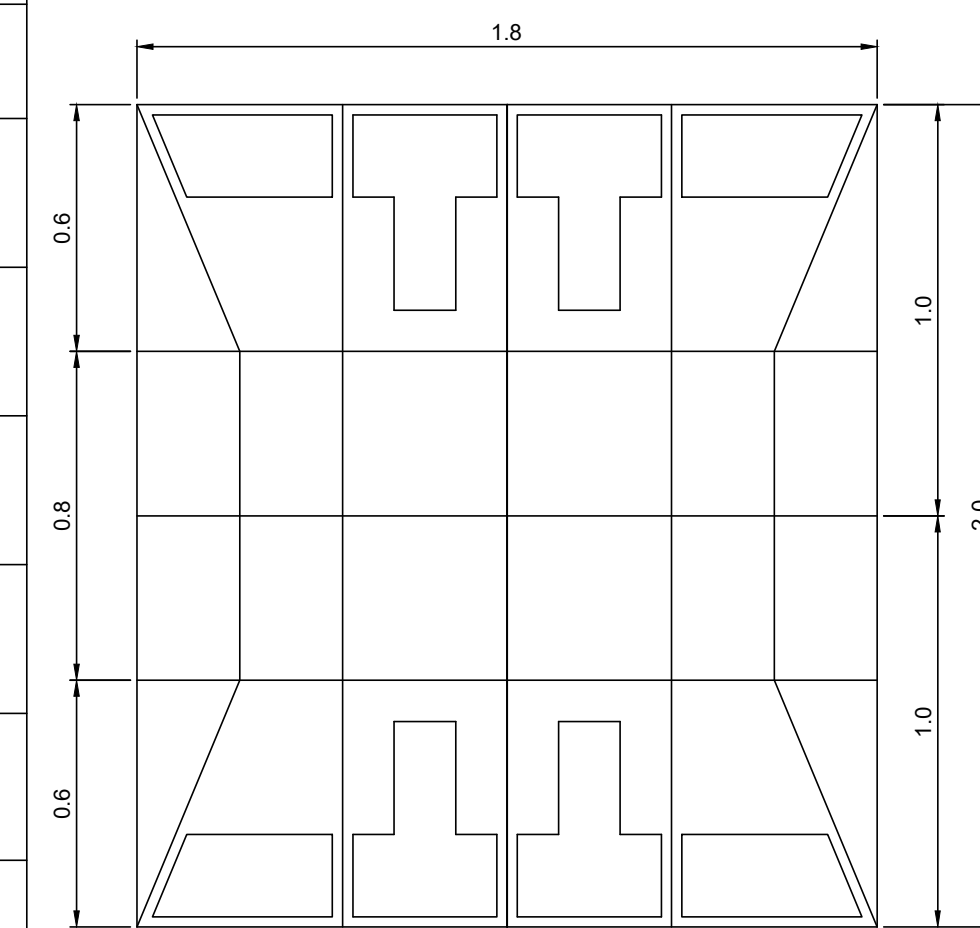
This aerial map illustrates a proposed traffic sign and speed cushion project at the intersection of Berkshire Road, Hawtin Road, and Hale Road. The map includes the following details:

- Roads:** BERKSHIRE ROAD, HAWTIN ROAD, and HALE ROAD are labeled in red text.
- Proposed Signs:**
 - Yellow diamond signs with a black silhouette of a vehicle and the text "W3-4B", "W8-17-2B", and "NEXT 30m".
 - Yellow diamond signs with a black silhouette of a vehicle and the text "MR-WD0-1B".
 - Yellow diamond signs with a black silhouette of a vehicle and the text "30 km/h".
 - White rectangular signs with a black border and the text "KEEP LEFT".
- Existing Signs:**
 - Red circular signs with a white border and the text "60".
 - Red triangular signs with a white border and the text "R1-3".
- Speed Cushions:**
 - White rectangular signs with a black border and the text "CITY TO INSTALL SPEED CUSHION. (1.8m WIDE x 2m LONG x 75mm HIGH WITH INLAY PIANO KEYS) SEE NOTE 4".
- Other Features:**
 - Orange dashed lines indicating the proposed speed cushion locations.
 - Black dashed lines indicating the proposed sign locations.
 - Black solid lines indicating the existing sign locations.
 - Black solid lines indicating the existing speed cushion locations.
 - Black solid lines indicating the existing road layout.
 - Black solid lines indicating the existing road layout.
 - Black solid lines indicating the existing road layout.

[illegible]

LEGEND		
EXISTING		PROPOSED
	TREE	
	EDGE LINE	
	EDGE OF BITUMEN	
	GIVE WAY LINE	
	SEMI-MOUNTABLE KERB	
	FLUSH KERB	
	ROAD SIGNS	
	SPEED CUSHION	
	POWERPOLE WITH LIGHT	
	SIDE ENTRY PIT/ GULLY	
	TELECOM SERVICE	
	WATER SERVICE	
	GAS SERVICE	

SIGNAGE LEGEND			
EXISTING		PROPOSED	NUMBER
	D4-1-2A		1
	MR-WDO-1B		3
	R2-3A(L)		3
	W3-4B		3
	W8-17-2B		3
	R1-3		3
	MR-RS-23		1



1. CADASTRAL INFORMATION APPROXIMATE ONLY.
2. ALL SIGNS AND PAVEMENT LINE MARKING AND LINE TYPES TO CONFORM WITH MRWA DRAWING NO 200931-0005-2
3. PIANO MARKINGS ARE TO BE INCORPORATED INTO THE SPEED CUSHION AND NOT ONTO THE PRECEDING ASPHALT. (FOR FURTHER DETAILS REFER TO AS1742:13)
4. SPEED CUSHION SHOULD BE LOCATED A MINIMUM OF 20m and A MAXIMUM OF 50m FROM THE START OF THE STREET OR INTERSECTIONS. WHERE APPROACH SPEED IS LOW, A TREATMENT SUCH AS AN ENTRY STATEMENT MAY BE PROVIDED TO REGULATE APPROACH SPEEDS.

WARNING
SERVICES AND CADASTRAL BOUNDARY LOCATIONS ARE ONLY INDICATIVE AND MUST NOT BE USED FOR EXCAVATION. THE "ONE CALL 1100" SYSTEM SHALL BE USED TO OBTAIN ACCURATE SERVICE LOCATIONS.



City of
Kalamunda

ASSET SERVICES

SPEED CUSHION
HALE-HAWTIN-BERKSHIRE RD
ROUNDABOUT
FORRESTFIELD

CONSTRUCTION PLANS

DRAWING-NO.	-SHEET	/REVISION	ORIGINAL DRG. SIZE
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4626-01/0 A1

BLACKSPOT PROGRAM

NOMINATION FORM

Estimated Cost**State Black Spot Program****Non-Staged Project**

State Black Spot Program Contribution:	\$27,200.00
Local Government 1/3 Contribution:	\$14,030.00
Contribution by others:	\$0.00
 Total Estimated Project Cost:	 \$41,230.00

Other Information

Clearances / Permits / Surveys required No

Details

Traffic Control Signals Installation / Modification: No

LGA Nominations Only:

Project located near or at MRWA Road Reserve No

Note: Completed Application to Undertake Works Within Road Reserve is not required with this Nomination

Submission Note

In the crash history, three crashes right angle eastbound colliding with southbound vehicle, suggests southbound drivers are not slowing and giving way. Two rear end crashes for western approach vehicles suggest drivers aren't slowing sufficiently on approach to the roundabout. This last concern is not recognised by Crash Map as being treatable by speed cushions.

The single roundabout handles high traffic volumes with southern road (Hale) 9,800 AADT (2021), northern road (Hawtin) 7,100 AADT (2021), western road (Berkshire) 4,800 AADT (2021). There are no known congestion problems. Familiar drivers may be complacent with being able to enter the roundabout at speed. Bus routes are in all legs.

The underlying cause is believed to be high approach speeds, with the proposed treatment being speed cushions on all legs.

BLACK SPOT PROGRAM

NOMINATION FORM

FY2023/24

Nominee: Mr Douglas Bartlett

Project Location: Road name / Intersection:

1020004: Hawtin Rd (1020004)

Project Number: 274

Non-Staged Project

Item	Estimate (\$)
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Pre-Construction Works

Project Managment	\$0.00
Design	\$940.00
Environmental, Heritage and Aborgiinal Clearances / Requirements	\$0.00
Land Cost	\$0.00

Construction Works

Contract Managment	\$750.00
Traffic control (Roadwork traffic Managment, etc)	\$15,000.00
Clearing	\$0.00
Service Relocations (e.g. Telstra, Water Corporation Requirements)	\$4,800.00
Drainage Installation	\$0.00
Earthworks	\$0.00
Pavements	\$0.00
Concrete Works (e.g. kerbing, islands, paths)	\$0.00
Signs	\$4,320.00
Pavement Markings	\$600.00
Bituminous Surfacing	\$12,820.00

Lighting	\$0.00
Safety Barriers	\$0.00
Fencing	\$0.00
Traffic Signals	\$0.00
Landscaping	\$0.00
Road Safety Audit Cost	
Initial Road Safety Inspection *	\$0.00
Estimated cost of Design Audit	\$2,000.00
Estimated cost of Pre-opening Audit	\$0.00
Other	
Total	\$41,230.00