
From: Mathew Tapscott [REDACTED]
Sent: Tuesday, 29 June 2021 10:59 AM
To: Prad Maha [REDACTED]
Cc: Marcia Carroll <[REDACTED]>
Subject: Nicholson - Rowley intersection Blackspot Application - CoA seeking Shire SJ support

Hi Prad

Following our recent discussion regarding the Nicholson Rd and Rowley intersections, I can now provide further details and I am seeking to receive written support from the Shire for the submission a blackspot application

Please see attached for all concept plans, costing and draft BS application.

There will be a 50/50 split of the non-funded portion between the City and the Shire (assuming State BS funding) – Should Federal funding be received or full state funding become available – this will eliminate the Shires contribution.

2022/23	SJ Shire 50% share Yr 1 – Design, Land Acq	25,250
2023/24	SJ Shire 50% share Yr 2 – Construction	256,570

It is proposed that the City will take the lead in design and construction, however we will ensure that the Shire is included in all major decision making and will provide regular updates.

Given that B/S applications are due on the 9th July, can you please provide your written support (email will do) prior to the 6th July.

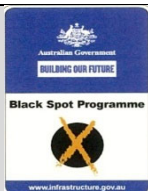
Kind Regards,

Mathew Tapscott
Manager Engineering Design
BEng (Env) MIEAust

City of Armadale
7 Orchard Avenue Armadale
Western Australia 6112

T: [REDACTED]
M:
0433
[REDACTED]
[REDACTED]





BLACK SPOT PROGRAM 2022 -23



NOMINATION FORM

Please tick ✓ the relevant program submissions: (Nominations can be submitted for consideration in both programs)

Australian Government Black Spot Program:



State Black Spot Program:



Non Staged Project:
Y/N

☐ Y

Staged Project Stage One:
Y/N

☐ N

Staged Project Stage Two:
Y/N

☐ N

Nominee Details

Reference No:
(Main Roads use only)

1. Title: Dr/Mr/Mrs/etc:

Mr

2. Surname:

Tapscott

3. Given Name:

Mathew

4. Organisation:

City of Armadale

5. Position Title/
Occupation:

Manager Engineering Design

6. Postal Address:

7 Orchard Ave

Armadale

7. State:

Western Australia

8. Postcode:

6112

9. Telephone Number:

[REDACTED]

10. Fax
Number:

[REDACTED]

11. Email Address:

[REDACTED]

12. Date of Submission:

/ /

Site Nomination

1. Local Government in which site nomination is located:

City of Armadale and Shire of Serpentine Jarrahdale

2. Suburb:

Forrestdale / Oakford

3. Postcode (of site):

6112 / 6121

4. Site Description: (e.g. intersection, 5 km road length, 20 km west of Smithville)

Staggered intersection of Forrestdale Road and Rowley Rd west and Rowley Rd east

5. Road Name(s):

Primary Road:

Nicholson Road (1010001 City of Armadale, 1080129 Shire of Serpentine Jarrahdale)

Intersecting Road:
(if applicable)

Rowley Road (1010038 City of Armadale, 1080302 Shire of Serpentine Jarrahdale)

6. Nature of Concern:

The configuration of the staggered intersection contributes to the prevalence of right angle and rear end crashes due to travel speeds and masking effect.

PLEASE FORWARD NOMINATION FORM TO YOUR LOCAL GOVERNMENT OR MAIN ROADS WESTERN AUSTRALIA FOR SITE ASSESSMENT AND TREATMENT PROPOSAL

ONLY TO BE COMPLETED BY STATE OR LOCAL GOVERNMENT ROAD AUTHORITIES

Site Assessment

1. Road Classification:

National Land Transport Network: ☐

State Road: ☐

Local Road: ☒

2. Geographic Location (Geocode):

1: X:

32°10'48.75"S

Y:

115°55'21.80"E

2: X:

Y:

3. Intersection Number or Road No's & SLK's of intersection:

Intersection 036178
Nicholson Road SLK 7.56
Rowley Road SLK 0.00
Intersection 054225
Nicholson Road SLK 0.05
Rowley Road SLK 0.00

OR Road No & Section SLK Start and SLK End:

4. Crash Analysis Form (CAF1) attached: Y/N

☐

5. Stick Diagram attached: Y/N

☐

6. Traffic Count Report attached: Y/N

☐

Traffic Count Date:

24/06/2018 11/02/2021

7. CARS Crash Factor Matrix attached: Y/N

☐

8. Measurement period of crashes (specify the 5 year period):

1 January 2016 to 31 December 2020

9. Total number of crashes:

37 crashes

10. Total number of casualties:

7 crashes (2 Hospital, 5 Medical)

11. Total number of property damage/other crashes:

30 crashes (24 PDO Major, 6 PDO Minor)

Treatment Proposal

1. Proposed Treatment: (please provide a detailed description including specific approach legs and directions of travel each countermeasure will be applied to)

Install a roundabout on Nicholson Road and both Rowley Road legs (City of Armadale and Shire of Serpentine Jarrahdale side)

Support of Nomination

1. This nomination is supported by:

Roads Safety Inspection (Y/N)

☐

Benefit Cost Ratio (BCR) calculation (Y/N)

☐

Road Safety Audit Supported Nominations

2. Is a copy of the relevant report (or section of the report) attached? (Y/N)

☐

Date of Road Safety Inspection

08/04/2021

Multiple Measure Modelling (BCR calculation) Supported Nominations

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

3. BCR/NPV calculations attached? Y/N (Printout from CARS or manual calculation)

4. Benefit Cost Ratio (BCR) (Total Estimated Cost to be used in calculating BCR)

5. Net Present Value:

\$

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

Estimated Cost

Australian Government Program (if applicable)

1. Australian Government Program Contribution:

\$ XXXXXXXXX

2. Contribution by Others (specify):

\$ 0

3. Total Estimated Project Cost:

\$ XXXXXXXXX

State Black Spot Program (if applicable)

Non-Staged Projects

4. State Black Spot Program contribution:

\$

5. Local Government 1/3 contribution (only applies to Local Government nominations):

\$

6. Contribution by Others (specify):

\$

7. Total Estimated Project Cost:

\$

Staged Projects - total estimated cost of all stages:

\$ XXXXXXXXX

8. State Black Spot Program contribution:

\$ XXXXXXXXX

9. Local Government 1/3 contribution (only applies to Local Government nominations):

\$ XXXXXXXXX

10. Contribution by Others (specify):

\$ XXXXXXXXX

11. Total Estimated Project Cost:

\$ XXXXXXXXX

Estimated Cost of Stage One

12. State Black Spot Program contribution:

\$ XXXXXXXXX

13. Local Government 1/3 contribution (only applies to Local Government nominations):

\$ XXXXXXXXX

14. Contribution by Others (specify):

\$ XXXXXXXXX

15. Total Estimated Cost of Stage One:

\$ XXXXXXXXX

Estimated Cost of Stage Two

16. State Black Spot Program contribution:

\$ XXXXXXXXX

17. Local Government 1/3 contribution (only applies to Local Government nominations):

\$ XXXXXXXXX

18. Contribution by Others (specify):

\$ XXXXXXXXX

19. Total Estimated Cost of Stage Two:

\$ XXXXXXXXX

Note: This cost may be different to the original estimate when applying for stage Two funds (refer to the Guidelines)

Clearances and Utility Providers

1. Heritage clearances required? Y/N

N

2. Heritage clearances already obtained? Y/N

N/A

3. Environmental clearances required? Y/N

N

4. Environmental clearances already obtained? Y/N

N/A

5. Other clearances/permits required? Y/N

N

(Specify)

6. Other clearances/permits already obtained? Y/N

N/A

7. Works required by utility providers:

Western Power/Horizon Power: Y/N

N

Telecommunications: Y/N

N

Gas: Y/N

N

Water Corporation: Y/N

N

Others: Y/N

N

Contact Details

Contact Person:

Mr Mathew Tapscott

Organisation:

City of Armadale

Telephone Number:

08 9394 5000

Fax Number:

08 9394 5184

Email Address:

mtapscott@armadale.wa.gov.au

Print Name:

Mathew Tapscott

Position/Title:

Manager Engineering Design

Signature:

Date:

/ /

PLEASE FORWARD NOMINATION FORM TO YOUR REGIONAL ROAD GROUP OR MAIN ROADS WESTERN AUSTRALIA FOR ASSESSMENT

Sketch or Diagram
(Please indicate North)

DRAW UP A SKETCH

Additional Comments

NOMINATION CHECKLIST NON STAGED PROJECTS

All nominations for State and Australian Government Black Spot Programs must have this checklist completed and attached. Incomplete submissions will be returned.

- | | | | | | |
|----------------------------------|---|--|----------------------------------|----------------------------------|----------------------------------|
| 1. | Completed Nomination Form | <input checked="" type="checkbox"/> | | | |
| | <ul style="list-style-type: none">Select/tick the appropriate Black Spot Program submission box: AUST GOVT, STATE or both (nominations can be submitted for consideration in both programs)Nature of concern and proposed treatment must be filled in; refer to attachments and do not leave blanksEstimated Cost | | | | |
| 2. | Locality map (e.g. print-out of street map or regional map with location marked) | <input checked="" type="checkbox"/> | | | |
| 3. | Drawing/sketch of proposal
(for items such as shoulder sealing, skid resistant surface etc. provide sketch showing extent of work) | <input checked="" type="checkbox"/> | | | |
| 4. | Nomination Supplementary Form | <input checked="" type="checkbox"/> | | | |
| 5. | Crash Analysis Form (CAF1) | <input checked="" type="checkbox"/> | | | |
| 6. | Stick Diagram | <input checked="" type="checkbox"/> | | | |
| 7. | Evidence of MRWA approval (in principle) for regulatory devices
(e.g. traffic signals, STOP or GIVE WAY control etc.) | <input type="text" value="N/A"/> | | | |
| 8. | Heritage/environmental clearances (where applicable) | <input type="text" value="N/A"/> | | | |
| 9. | CARS Reports | | | | |
| | <ul style="list-style-type: none">Crash Factor Matrix (for all nominations)Network Average Crash comparisonMultiple Countermeasure Modelling (BCR/NPV calculations) | <table border="0"><tr><td><input type="text" value="N/A"/></td></tr><tr><td><input type="text" value="N/A"/></td></tr><tr><td><input type="text" value="N/A"/></td></tr></table> | <input type="text" value="N/A"/> | <input type="text" value="N/A"/> | <input type="text" value="N/A"/> |
| <input type="text" value="N/A"/> | | | | | |
| <input type="text" value="N/A"/> | | | | | |
| <input type="text" value="N/A"/> | | | | | |
| | OR | | | | |
| | Road Safety Inspection (by independent Senior Road Safety Auditor)
(proposed treatments must follow from the recommendations of the report) | <input checked="" type="checkbox"/> | | | |
| | AND Traffic count report (mandatory for Road Safety Inspection submissions) | <input checked="" type="checkbox"/> | | | |
| 10. | Both forms have been signed (Nomination Form and Nomination Checklist) | <input checked="" type="checkbox"/> | | | |

I confirm that the above items have been completed, checked and are attached to the submission, and that the contact person will be available during the submission evaluation period.

PRINT NAME:	<input type="text" value="Mathew Tapscott"/>
POSITION:	<input type="text" value="Manager Engineering Design"/>
SIGNATURE:	<input type="text"/>
DATE:	<input type="text" value=" / /"/>

NOMINATION CHECKLIST STAGE ONE

All nominations for State and Australian Government Black Spot Programs must have this checklist completed and attached. Incomplete submissions will be returned.

1. Completed Nomination Form ☐
 - Select/tick the appropriate Black Spot Program submission box: AUST GOVT, STATE or both (nominations can be submitted for consideration in both programs)
 - Nature of concern and proposed treatment must be filled in; refer to attachments and do not leave blanks
 - Estimated Cost
2. Locality map (e.g. print-out of street map or regional map with location marked) ☐
3. Drawing/sketch of proposal ☐
(for items such as shoulder sealing, skid resistant surface etc. provide sketch showing extent of work)
4. Nomination Supplementary Form ☐
5. Crash Analysis Form (CAF1) ☐
6. Stick Diagram ☐
7. Evidence of MRWA approval (in principle) for regulatory devices (e.g. traffic signals, STOP or GIVE WAY control etc.) ☐
8. Heritage/environmental clearances (where applicable) ☐
9. CARS Reports
 - Crash Factor Matrix (for all nominations) ☐
 - Network Average Crash comparison ☐
 - Multiple Countermeasure Modelling (BCR/NPV calculations) ☐
- OR**
- Road Safety Inspection (by independent Senior Road Safety Auditor)
(proposed treatments must follow from the recommendations of the report) ☐
- AND** Traffic count report (mandatory for Road Safety Inspection submissions) ☐
10. Both forms have been signed (Nomination Form and Nomination Checklist) ☐

I confirm that the above items have been completed, checked and are attached to the submission, and that the contact person will be available during the submission evaluation period.

PRINT NAME:

\$ XXXXXXXXX

POSITION:

SIGNATURE:

DATE:

____ / ____ / ____

NOMINATION CHECKLIST STAGE TWO

***All nominations for State and Australian Government Black Spot Programs must have this checklist completed and attached.
Incomplete submissions will be returned.***

- | | | |
|-----|---|--------------------------|
| 1. | Completed nomination form | <input type="checkbox"/> |
| 2. | Select/tick the appropriate Black Spot Program submission box: AUST GOVT, STATE | <input type="checkbox"/> |
| 3. | Nature of concern and proposed treatment filled in, including any relevant drawings | <input type="checkbox"/> |
| 4. | Nomination Supplementary Form | <input type="checkbox"/> |
| 5. | Evidence of heritage clearances (if applicable) | <input type="checkbox"/> |
| 6. | Evidence of environmental clearances (if applicable) | <input type="checkbox"/> |
| 7. | Evidence of other clearance (if applicable) | <input type="checkbox"/> |
| 8. | Confirmation of deliverability of works required to be completed by utility providers (if applicable) | |
| 9. | Evidence of progress towards land purchase/resumption (if applicable) | <input type="checkbox"/> |
| 10. | Evidence of MRWA approval (in principle) for regulatory devices for the more detail design | <input type="checkbox"/> |
| 11. | Both forms have been signed (Nomination Form and Nomination Checklist) | <input type="checkbox"/> |

I confirm that the above items have been completed, checked and are attached to the submission, and that the contact person will be available during the submission evaluation period.

PRINT NAME:

\$ XXXXXXXXX

POSITION:

SIGNATURE:

DATE:

____/____/____

CRASH ANALYSIS FORM [CAF1]

Location:	Intersection of Nicholson Road and Rowley Road in Forrestdale / Oakford
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Crash History Period:	2016-2020	Total No. Reported Crashes:	37
Number of Casualty Crashes: (Severity: fatal / hospital / medical)	7	Number of KSI Crashes: (KSI: Killed or Seriously Injured)	2

Crash Summary: (produce a crash summary using the crash information provided in the detailed crash report, grouping crashes by crash type also identifying crash severity, directions of travel and conditions at the time of each crash)

16 right angle crashes:

- 8 crashes involving vehicles turning right from Rowley Road west colliding with northbound vehicles on Nicholson Road, dry, 3 at dark, 2 Hospital, 1 Medical, 5 PDO Major
- 4 crashes involving vehicles turning right from Rowley Road east colliding with southbound vehicles on Nicholson Road, 2 on wet, 4 at dark, 1 Medical, 2 PDO Major, 1 PDO Minor
- 2 crashes involving vehicles turning right from Rowley Road east colliding with northbound vehicles on Nicholson Road, dry, daylight, 1 Medical, 1 PDO Major
- 1 crash involving a vehicle turning left from Rowley Road west colliding with a northbound vehicle on Nicholson Road, wet, dark, PDO Major
- 1 crash involving an out of control vehicle on Rowley Road west colliding with a northbound vehicle on Nicholson Road, dark, PDO Major

19 rear end crashes:

- 6 crashes involving vehicles turning left from Rowley Road west on Nicholson Road, dry, daylight, 4 PDO Major, 2 PDO Minor
- 5 crashes involving vehicles turning right from Rowley Road west on Nicholson Road, dry, 1 dark, 5 PDO Major
- 5 crashes involving vehicles approaching the intersection from Rowley Road west without a specified turning direction on Nicholson Road, 1 wet, daylight, 1 Medical, 3 PDO Major, 1 PDO Minor
- 1 crash involving vehicles turning right from Rowley Road east on Nicholson Road, dry, daylight, Medical
- 1 crash involving vehicles turning left from Rowley Road east on Nicholson Road, dry, daylight, PDO Major
- 1 crash involving a vehicle turning left and a vehicle turning right from Rowley Road east on Nicholson Road, daylight, PDO Major

1 run off the road crash involving a northbound vehicle on Nicholson Road, dry, dark, PDO Minor

1 sideswipe crash involving a southbound vehicle on Nicholson Road colliding with a vehicle turning left onto Rowley Road east, wet, daylight, PDO Minor

Predominant Crashes: (identify the prominent crash patterns by referring to the details of the crash summary)

Right angle crashes

- There is a pattern of 8 right angle crashes between vehicles turning right from Rowley Road west colliding with northbound vehicles on Nicholson Road
- There is a pattern of 4 crashes involving vehicles turning right from Rowley Road east colliding with southbound vehicles on Nicholson Road

Rear end crashes

- There is a pattern of 16 rear end crashes involving vehicles approaching the intersection on Rowley Road west

**ATTACHMENT- TABLE 7
NOMINATION SUPPLEMENTARY FORM**

Nominee:	City of Armadale		
Location (Including Road No and SLK):	Intersection of Nicholson Road and Rowley Road in Forrestdale / Oakford		
Date of Submission:	/ /		
Item	Estimate (\$)	Estimate (\$)	Estimate (\$)
	Non Staged Project	Staged Project Stage One	Staged Project Stage Two
<u>Pre-Construction Works</u>			
Project Management			
Design (includes survey, traffic analyses)			
Environmental, Heritage and Aboriginal Clearances/Requirements			
<u>Construction Works</u>			
Contract Management			
Traffic Control (Roadwork traffic management, etc)			
Clearing			
Service Relocations (e.g.: Telstra, Water Corporation requirements)			
Drainage Installation			
Earthworks			
Pavements			
Concrete Works (e.g.: kerbing, islands, paths)			
Signs			
Pavement Markings			
Lighting			
Traffic Signals			
Landscaping			
<u>Road Safety Audit Cost</u>			
Initial Road Safety Inspection*			N/A
Estimated cost of Design Audit			
Estimated cost of Pre-opening Audit			
<u>Other</u>			
Total			
Staged Project: Total Cost			
TOTAL			

*Note: Cost of Road Safety Inspection is not an eligible cost under the Australian Government Program

City of Armadale - Technical Services
Civil Works - PROJECT IDENTIFICATION

Project Title	Nicholson - Rowley Road Roundabout
Project Description	
Project Reference	
Budget Program	Blackspot
Activity	Upgrade

Project Goals

Reduce high crash rate at staggered T- Intersection

Project Scope

1. Construct Roundabout
2. Install Street lighting

Project Background

Project Risks

City of Armadale - Technical Services
Civil Works - PROJECT IDENTIFICATION

Strategic Alignment

Project Funding

Proposed Project Expenditure

Year	Activity	Expenditure
1	Design	151,500
2	Construction	1,539,420
3		
3		
Total Expenditure		1,690,920

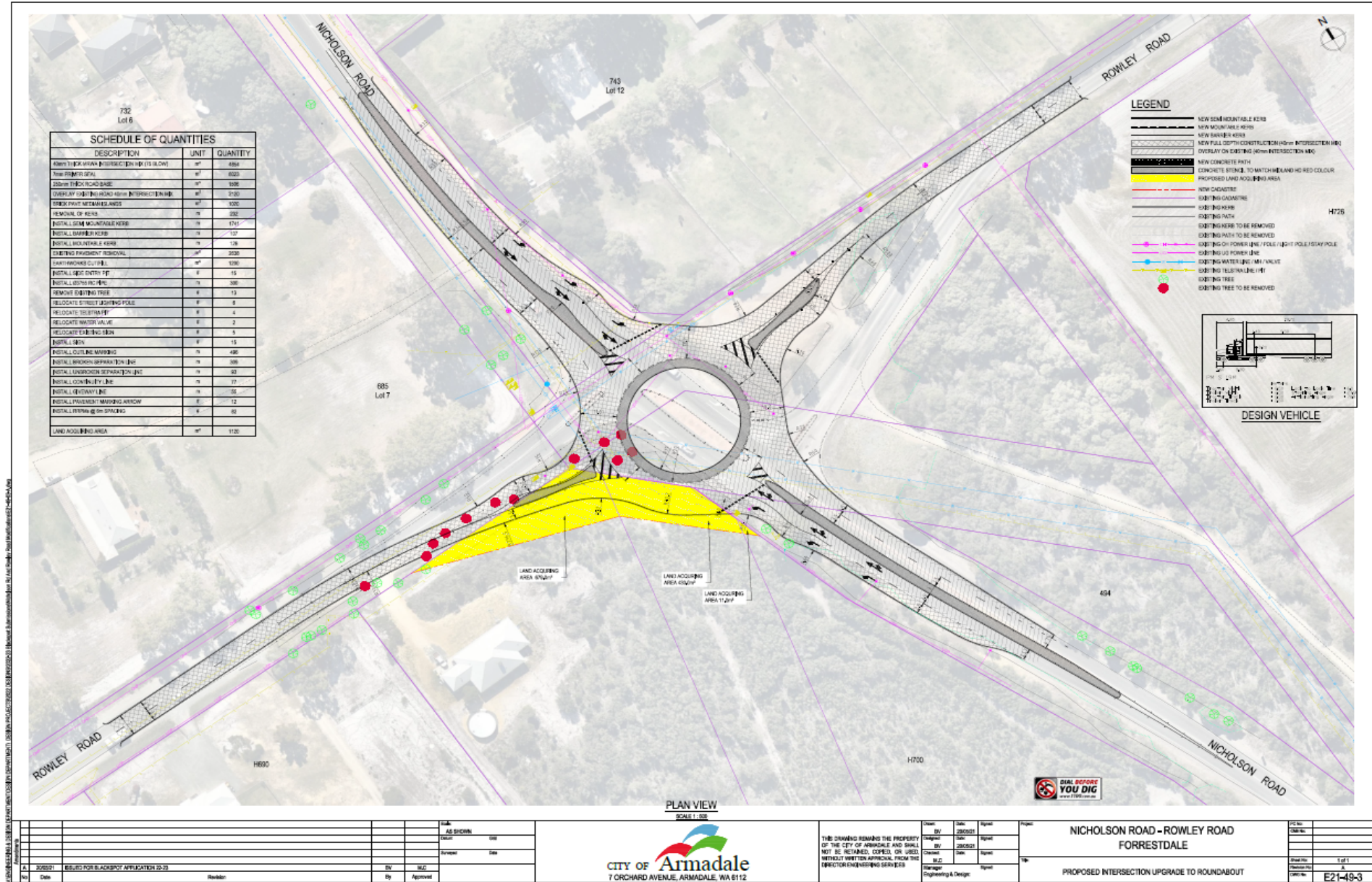
Proposed Project Revenue

Year	Revenue Source	Revenue
1	State Blackspot Yr 1	101,000
2	State Blackspot Yr 2	1,026,280
1	SJ Shire 50% share Yr 1	25,250
2	SJ Shire 50% share Yr 2	256,570
Total Revenue		1,409,100

Project Planning References

E21-49-3	Concept Plan	

Project Prerequisite



Nominee:	City of Armadale		
Location (Including Road No and SLK):	Nicholson & Rowley Road Roundabout		
Date of Submission:			
Item	Estimate (\$)	Estimate (\$)	Estimate (\$)
	Non Staged Project	Staged Project Stage One	Staged Project Stage Two
<u>Pre-Construction Works</u>			
Project Management	\$ 15,000	\$ -	\$ -
Design (includes survey, traffic analyses)	\$ 107,500	\$ -	\$ -
Environmental, Heritage and Aboriginal Clearances/Requirements	\$ 28,000	\$ -	\$ -
<u>Construction Works</u>			
Contract Management	\$ -	\$ 18,500	\$ -
Traffic Control (Roadwork traffic management, etc)	\$ -	\$ 127,500	\$ -
Clearing	\$ -	\$ 20,000	\$ -
Service Relocations	\$ -	\$ 488,720	\$ -
Drainage Installation	\$ -	\$ 125,000	\$ -
Earthworks	\$ -	\$ 87,500	\$ -
Pavements	\$ -	\$ 434,200	\$ -
Concrete Works (e.g.: kerbing, islands, paths)	\$ -	\$ 120,000	\$ -
Signs	\$ -	\$ 9,000	\$ -
Pavement Markings	\$ -	\$ 3,000	\$ -
Lighting	\$ -	\$ 50,000	\$ -
Traffic Signals	\$ -	\$ -	\$ -
Landscaping	\$ -	\$ 55,000	\$ -
<u>Road Safety Audit Cost</u>			
Initial Road Safety Inspection*	\$ -	\$ -	\$ -
Estimated cost of Design Audit	\$ 1,000	\$ -	\$ -
Estimated cost of Pre-opening Audit	\$ -	\$ 1,000	\$ -
<u>Other</u>			
Total	\$ 151,500	\$ 1,539,420	
Staged Project: Total Cost			
TOTAL			

*Note: Cost of Road Safety Inspection is not an eligible cost under the Australian Government Program

City of Armadale - Technical Services
Civil Works - PROJECT IDENTIFICATION

Cost Overview

Item Code	Cost Area	Project Cost	% of Works
1	Design and Preliminaries	\$ 125,000	7.4%
2	Survey & Testing	\$ 10,000	0.6%
3	Management and Supervision	\$ 33,500	2.0%
4	Site Mobilisation	\$ 52,500	3.1%
5	Traffic Control	\$ 127,500	7.5%
6	Environmental Management	\$ 23,500	1.4%
7	Demolition & Earthworks	\$ 55,000	3.3%
8	Retaining Walls	\$ -	
9	Drainage & Subsoil	\$ 125,000	7.4%
10	Road - Pavement	\$ 259,200	15.3%
11	Road -Wearing Course	\$ 175,000	10.3%
12	Roadworks - Kerbing	\$ 116,500	6.9%
13	Paths	\$ 3,500	0.2%
14	Line Marking	\$ 11,000	0.7%
15	Street Lighting	\$ 50,000	3.0%
16	Underground Power	\$ 120,000	7.1%
17	Service Alterations	\$ 200,000	11.8%
18	Landscaping	\$ 50,000	3.0%
19	Project Unquie Costs	\$ -	
20	Contingency	\$ 153,720	9.1%
Total Project Costs		\$ 1,690,920	

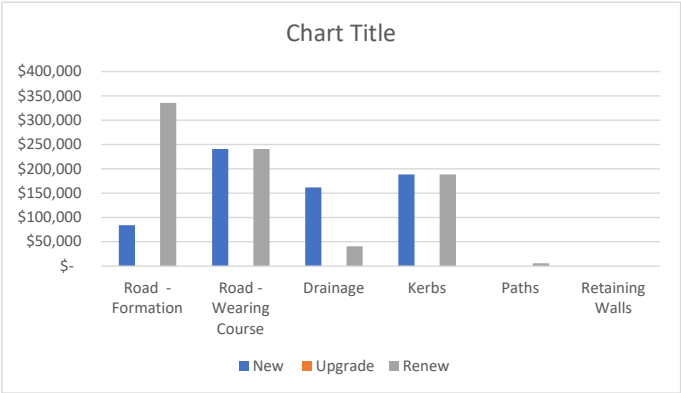
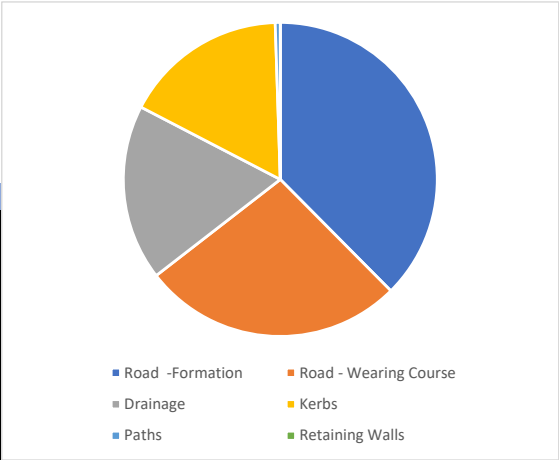
Blackspot Cost Breakdown

Column1	Column2	Yr 1	Y2	Y3
1	Project Management	15,000		
2	Design (includes survey, traffic analyses)	107,500		
3	Environmental, Heritage and Aboriginal Clearances/Requirements	28,000		
4	Contract Management		18,500	
5	Traffic Control (Roadwork traffic management, etc)		127,500	
6	Clearing		20,000	
7	Service Relocations (e.g.: Telstra, Water Corporation requirements)		488,720	
9	Drainage Installation		125,000	
10	Earthworks		87,500	
11	Pavements		434,200	
12	Concrete Works (e.g.: kerbing, islands, paths)		120,000	
13	Signs		9,000	
14	Pavement Markings		3,000	
15	Lighting		50,000	
16	Traffic Signals			
17	Landscaping		55,000	
18	Initial Road Safety Inspection*			
19	Estimated cost of Design Audit	1,000		
20	Estimated cost of Pre-opening Audit		1,000	
Total		151,500	1,539,420	

Asset	Direct Costs	Direct Costs %	Non Direct Capital C	Total Capitalisation	% New	% Upgrade	% Renew	New	Upgrade	Renew
Road -Formation	\$ 259,200	38%	\$ 160,357.00	\$ 419,557.00	20%		80%	\$ 83,911	\$ -	\$ 335,646
Road - Wearing Course	\$ 186,000	27%	\$ 115,070.99	\$ 301,070.99	80%		80%	\$ 240,857	\$ -	\$ 240,857
Drainage	\$ 125,000	18%	\$ 77,332.66	\$ 202,332.66	80%		20%	\$ 161,866	\$ -	\$ 40,467
Kerbs	\$ 116,500	17%	\$ 72,074.04	\$ 188,574.04	100%		100%	\$ 188,574	\$ -	\$ 188,574
Paths	\$ 3,500	1%	\$ 2,165.31	\$ 5,665.31	100%		100%	\$ -	\$ -	\$ 5,665
Retaining Walls	\$ -	0%	\$ -	\$ -				\$ -	\$ -	\$ -
Total								\$ 675,208	\$ -	\$ 811,208

Total	\$ 690,200
Non Direct Capitalised Costs	\$ 427,000
Non Capitalised Costs	\$ 370,000
Landscaping	\$ 50,000

Total Capitalisation of Project	\$ 1,117,200.00
Total Capitalisation %	66%



Budget Estimate - Concept

Item	Cost Area	Item Code	BS Code	Description	Estimate	Comments
1.1	Design & Preliminaries	1	2	Conduct Preliminary Studies, Surveys and testing	35,000	Geotechnical and Feature Survey required ; Sidra Modelling of Intersection also requires; Service Locating required for Design
1.2	Design & Preliminaries	1	2	Conduct Environmental Survey, Reports and submit Clearing Applications	1,500	Vegetation Survey will be required - Possible Native Vegetation Clearing Application required
1.3	Design & Preliminaries	1	2	Conduct Road Saftey Audit (Pre - Design)	-	Pre- Design RSA already completed
1.4	Design & Preliminaries	1	2	Conduct Pre-Design Public Consultation	1,000	PS for public consultation (SJ Shire may have specific requirements)
1.5	Design & Preliminaries	1	2	Prepare Plans for Construction	15,000	
1.6	Design & Preliminaries	1	19	Conduct Road Saftey Audit (Post Design)	1,000	
1.7	Design & Preliminaries	1	20	Conduct Road Safety Audit (Pre Opening)	1,000	
1.8	Design & Preliminaries	1	2	Prepare for and Conduct Land Acquisition	45,000	679 m2 of land acq required @ \$45/mplus applications and legal costs
1.9	Design & Preliminaries	1	2	[Add additional itmes]		
2.1	Survey & Testing	2	2	Conduct pre-construction setout	3,500	
2.2	Survey & Testing	2	2	Pre construction Dial before you dig & Service Locating	1,500	\$30,000 included for full Service location survey in 1.1 (signigificant amounts of services in the project area)
2.3	Survey & Testing	2	2	Prepare As-constructed plans	4,500	
2.5	Survey & Testing	2	2	Conduct Dilapidation Surverys	500	One Property in close proximity
2.6	Survey & Testing	2	2	[Add additional itmes]		
3.1	Management & Supervision	3	4	Conduct Project Procurement	3,500	Large project - Tender
3.2	Management & Supervision	3	1	Conduct Project Management	15,000	
3.3	Management & Supervision	3	4	Provide Construction Superintendant	15,000	
3.4	Management & Supervision		4	[Add additional itmes]		
4.1	Site Mobilisation	4	10	Provision of Site Facilities	45,000	Estimated construction time of 14 weeks
4.2	Site Mobilisation	4	10	Supply and Storage of construction water	2,500	
4.3	Site Mobilisation	4	10	Prepare preliminary construction management plans	5,000	
4.4	Site Mobilisation	4	10	[Add additional itmes]		
5.1	Traffic Management	5	5	Prepare Traffic Management Plan	2,500	
5.2	Traffic Management	5	5	Provide Traffic Management for Construction	125,000	
5.3	Traffic Management	5	5	[Add additional itmes]		
6.1	Environmental Management	1	3	Prepare Construction Environmental Management Plan	4,500	Provision for fencing IAW AS for adjacent vegetation
6.2	Environmental Management	6	3	Provide Tree Protection fencing	3,500	
6.3	Environmental Management	6	3	Implement Erosion and Sediment Management	20,000	No environmentally sensitive receiving water bodies - low E&S risk
6.4	Environmental Management	6	3	Implement Noise and Vibration Monitoring	-	Rural setting- considered not nesesary
6.5	Environmental Management	6	3	Implement Environmental Monitoring (Air Quality / Water Quality)	-	
6.6	Environmental Management	6	3	Dewartering and Acid Sulphate Soil Management	-	Groundwater not expected to be encountered
6.7	Environmental Management	6	3	[Add additional itmes]		
7.1	Demolition & Earthworks	7	6	Remove large trees	15,000	15 Large trees within project footprint
7.2	Demolition & Earthworks	7	6	Clear scrub and remove from site	5,000	
7.3	Demolition & Earthworks	7	10	Prepare site for construction works (bulk earthworks)	10,000	Site relatively flat with limited works or import materials required
7.4	Demolition & Earthworks	7	10	Dispose of materials	25,000	Removal of approx 2640m2 of redundant pavment
7.5	Demolition & Earthworks	7	6	[Add additional itmes]		
8.1	Retaining Walls	1	12	Retaining wall design & structural certification	-	
8.2	Retaining Walls	8	12	Construct Retaining Walls	-	
8.3	Retaining Walls	8	12	[Add additional itmes]		
9.1	Drainage & Subsoil	9	9	Install stormwater conveyance infrastructure(pits and pipes)	125,000	
9.2	Drainage & Subsoil	9	9	Install subsoil infrastructure	-	
9.3	Drainage & Subsoil	9	9	Construct stormwater storage infrastructure	-	
9.4	Drainage & Subsoil	9	9	Construct water quality improvement infrastructure	-	
9.5	Drainage & Subsoil	9	9	[Add additional itmes]		
10.1	Road - Pavement	10	11	Construct new pavement from subgrade	109,200	1560 m2 of new pavement 400 mm @ ~\$70/m
10.2	Road - Pavement	10	11	Stabalise or improve existing pavement	150,000	PS - Pending geotechnical report on pavement strength for future traffic volumes
10.3	Road - Pavement	10	11	[Add additional itmes]		
11.1	Road - Wearing Course	11	11	Supply and installation of ashpalitic concrete	175,000	~7000m2 40mm intersection mix + Primer Seal
11.2	Road - Wearing Course	11	11	Supply and installation of Spray Seal treatment	-	
11.3	Road - Wearing Course	11	11	[Add additional itmes]		
12.1	Road - Kerbing	12	12	Installation of kerbing	40,000	
12.2	Road - Kerbing	12	12	installation of median concrete		
12.3	Road - Kerbing	12	12	installation of median paving	76,500	1010m2 at \$75/m Brick paving to medians (could swap for faux brickpaving for similar cost)
12.4	Road - Kerbing	12	12	[Add additional itmes]		
13.1	Paths	13	12	Construction of Concrete paths inc pram ramps		
13.2	Paths	13	12	Construction of Asphalt paths		
13.3	Paths	13	12	Install or replace residential crossover	3,500	One Property in close proximity
13.4	Paths	13	12	[Add additional itmes]		
14.1	Line Marking & Signs	1	13	Prepare Linemakring Plans (Approved by MRWA)	1,000	
14.2	Line Marking	14	13	Prepare site for line marking (spotting)	1,500	
14.3	Line Marking	14	13	Installation of line marking	6,500	
14.4	Line Marking	14	14	Installation of Signs	3,000	
14.5	Line Marking	14	13	[Add additional itmes]		
15.1	Street Lighting	15	15	Street lighting assessment and Design	5,000	
15.2	Street Lighting	15	15	Installation or upgrade of Street lighting	45,000	

15.3	Street Lighting	15	15	[Add additional itmes]		
16.1	Underground Power	1	7	Underground Power Design	15,000	
16.2	Underground Power	16	7	Installation of U/G Power and associated infrastructure	120,000	
16.3	Underground Power	16	7	[Add additional itmes]		
17.1	Service Alterations	17	7	Amendment or relocation of gas mainservices	25,000	
17.2	Service Alterations	17	7	Amendment or relocation of water services	125,000	
17.3	Service Alterations	17	7	Amendment or relocation of sewer services		
17.4	Service Alterations	17	7	Amendment or relocation of communications services	50,000	
17.5	Service Alterations	17	7	[Add additional itmes]		
18.1	Landscaping	1	17	Design of Landscaping	5,000	
18.2	Landscaping	18	17	Installation of Landscaping	50,000	
19.1	Project Unique Costs	19	7	[Add Project Unique costs]		
19.2	Project Unique Costs	19	7	[Add Project Unique costs]		
19.3	Project Unique Costs	19	7	[Add Project Unique costs]		
20.1	Project Contingency	20	7	Project Contingency	153,720	10% Contingency

Cost Area	(All)
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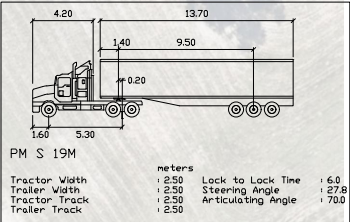
Row Labels	Sum of Estimate
1	125,000
2	10,000
3	33,500
4	52,500
5	127,500
6	23,500
7	55,000
8	-
9	125,000
10	259,200
11	175,000
12	116,500
13	3,500
14	11,000
15	50,000
16	120,000
17	200,000
18	50,000
19	
20	153,720
(blank)	
Grand Total	1,690,920

Blackspot Codes

Row Labels	Sum of Estimate
1	15,000
2	107,500
3	28,000
5	127,500
6	20,000
7	488,720
9	125,000
10	87,500
11	434,200
12	120,000
13	9,000
14	3,000
15	50,000
17	55,000
19	1,000
20	1,000
4	18,500
Grand Total	1,690,920

SCHEDULE OF QUANTITIES		
DESCRIPTION	UNIT	QUANTITY
40mm THICK MRWA INTERSECTION MIX (75 BLOW)	m²	4854
7mm PRIMER SEAL	m²	6023
250mm THICK ROAD BASE	m³	1506
OVERLAY EXISTING ROAD 40mm INTERSECTION MIX	m²	2120
BRICK PAVE MEDIAN ISLANDS	m²	1020
REMOVAL OF KERB	m	232
INSTALL SEMI MOUNTABLE KERB	m	1741
INSTALL BARRIER KERB	m	107
INSTALL MOUNTABLE KERB	m	126
EXISTING PAVEMENT REMOVAL	m²	2638
EARTHWORKS CUT/FILL	m³	1200
INSTALL SIDE ENTRY PIT	#	15
INSTALL Ø3755 RC PIPE	m	300
REMOVE EXISTING TREE	#	13
RELOCATE STREET LIGHTING POLE	#	6
RELOCATE TELSTRA PIT	#	4
RELOCATE WATER VALVE	#	2
RELOCATE EXISTING SIGN	#	5
INSTALL SIGN	#	15
INSTALL OUTLINE MARKING	m	496
INSTALL BROKEN SEPARATION LINE	m	309
INSTALL UNBROKEN SEPARATION LINE	m	93
INSTALL CONTINUITY LINE	m	77
INSTALL GIVEWAY LINE	m	55
INSTALL PAVEMENT MARKING ARROW	#	12
INSTALL RRPMS @ 6m SPACING	#	82
LAND ACQUIRING AREA	m²	1120

LEGEND	
	NEW SEMI MOUNTABLE KERB
	NEW MOUNTABLE KERB
	NEW BARRIER KERB
	NEW FULL DEPTH CONSTRUCTION (40mm INTERSECTION MIX)
	OVERLAY ON EXISTING (40mm INTERSECTION MIX)
	NEW CONCRETE PATH
	CONCRETE STENCIL TO MATCH MIDLAND HD RED COLOUR
	PROPOSED LAND ACQUIRING AREA
	NEW CADASTRE
	EXISTING CADASTRE
	EXISTING KERB
	EXISTING PATH
	EXISTING KERB TO BE REMOVED
	EXISTING PATH TO BE REMOVED
	EXISTING OH POWER LINE / POLE / LIGHT POLE / STAY POLE
	EXISTING UG POWER LINE
	EXISTING WATER LINE / MH / VALVE
	EXISTING TELSTRA LINE / PIT
	EXISTING TREE
	EXISTING TREE TO BE REMOVED



DESIGN VEHICLE

PLAN VIEW
SCALE 1:500



V:\ENGINEERING & DESIGN\DESIGN DEPARTMENT\DESIGN PROJECTS\2022\BLACKSPOT SUBMISSIONS\Nicholson Rd And Rowley Road Modifications\21-49-03-4.dwg

Amendments		Scale:		AS SHOWN	
		Datum:		Grid	
		Surveyed		Date	
A	20/05/21	ISSUED FOR BLACKSPOT APPLICATION 22-23	BV	M.C	
No	Date	Revision	By	Approved	



THIS DRAWING REMAINS THE PROPERTY OF THE CITY OF ARMADALE AND SHALL NOT BE RETAINED, COPIED, OR USED WITHOUT WRITTEN APPROVAL FROM THE DIRECTOR ENGINEERING SERVICES		Drawn: BV Designed: BV Checked: M.C	Date: 20/05/21 Date: 20/05/21 Date:	Signed:	Project: NICHOLSON ROAD - ROWLEY ROAD FORRESTDALE	PC No: CMB No:
Manager Engineering & Design:		Signed:			Title: PROPOSED INTERSECTION UPGRADE TO ROUNDABOUT	Sheet No: 1 of 1 Revision No: A DWG No: E21-49-3