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# **Strategy and Implementation Framework** Low Cost Urban Road Safety Program

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D22#24187 May 2022



Document No: D22#241878

Issue Date: May 2022

#### Strategy and Implementation Framework Low Cost Urban Road Safety Program

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#### Authorisation

As Executive Director Planning and Technical Services I authorise the issue and use of the Strategy and Implementation Framework for the Low Cost Urban Road Safety Program for the Local Road Network.

Signed by EDPTS on 02 May 2022 refer to D22#241878

EXECUTIVE DIRECTOR PLANNING TECHNICAL SERVICES Date: 02 / 05 / 2022

# **Document Control**

Owner	lan Thompson
Custodian	Principal Advisor – Low Cost Urban Road Safety Program
Document Number	D22#241878
Issue Date	
<b>Review Frequency</b>	

# Amendments

Revision No.	Revision Date	Description of Key Changes	Section/ Page No.
А	25 Nov 20	Initial draft document	All
В	18 May 21	Review of draft document	All
С	16 July 21	WALGA comments added	All
D	04 Aug 21	IPWEA comments added	All
E	21 Dec 21	Proof reading & editorial review	All
F	12 Apr 22	Review of document - Budget & Programming	All
G	02 May 22	Document approval EDPTS	All

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#### **1 EXECUTIVE SUMMARY**

A substantial proportion of all crash risks, including fatalities and serious injury crashes, are represented on local roads and intersections, which are funded and managed by Local Governments.

To improve the safety of these roads for local communities, the State Government is implementing a four-year Low Cost Urban Road Safety Program (Low Cost URSP). The program will deliver treatments to local roads, on an area-wide or whole-of-street basis, to reduce crash risks for drivers and vulnerable road users, such as pedestrians and cyclists.

The Low Cost URSP is fully-funded and supported by the Minister for Transport and the Minister for Road Safety through a \$16 million commitment via the Road Trauma Trust Account.

As the State Government agency leading the program, Main Roads Western Australia (Main Roads) is inviting Local Government to work in collaboration to implement the program.

Drawing on lessons learnt from pilot projects conducted in 2020/21, Main Roads will identify and prioritise the locations and treatments proposed, using criteria already established.

Main Roads will cover all design and construction costs, via reimbursement, while Local Government will be responsible for a range of activities, including the costs associated with those, including:

- community consultation;
- design drawing approvals;
- procurement of works;
- delivery of treatments (project management);
- evaluation (data collection pre and post treatment) and reporting; and
- ongoing maintenance.

Local Government **is not required to apply** to participate in the Low Cost URSP. However, authorities are encouraged to review this framework and consider the program parameters, including costs.

Main Roads will contact Local Government authorities as projects are identified and prioritised in each area, starting in February/March 2022 and then on an annual basis in around June each year until 2025.

It is intended that the safety benefits that extend from the initial program could promote and guide the extension of future programs.

#### Key contacts for further information

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#### **2 DEFINITIONS**

The key terminology and acronyms used within this framework are defined in Table 1.

Table 1: Key Terminology and Acronyms

Term	Definition
Access road	A road managed by Local Government to provide access to abutting properties.
Activity	Pedestrian and cyclist activity.
Casualty crash	A crash that results in death or injury of a person, involving a vehicle on a road and reported to the Western Australia Police Force.
Casualty crash risk	The risk or likelihood that a fatal or serious injury crash will occur at an intersection or mid-block, as determined by crash history and activity of adjacent land use.
Crash history	Fatality and serious injury crashes that occurred between vehicles and vulnerable road users, including property- only damage, as recorded in the Main Roads database.
District distributor A (DDA) road	A high-capacity road, managed by Local Government, to enable traffic movement between industrial, commercial and residential areas.
District distributor B (DDB) road	A road, managed by Local Government, with a lower capacity than a DDA but enabling high-traffic movements between industrial, commercial and residential areas.
Local distributor road	A road, managed by Local Government, that carries traffic to link to DDA and/or DDB roads.
Low-cost road safety treatment(s)	Physical treatment works constructed on a road.
Low Cost URSP	The Low Cost Urban Road Safety Program.
Local Government	A Local Government established under the <i>Local Government Act 1995</i> .
Local neighbourhood area (LN)	An area or street bounded by primary, regional DDA and/or DDB roads.
Local neighbourhood cell (LNC)	An area or street bounded by local distributor and/or accessroads.
Local road/ street	A road, managed by Local Government, primarily used to access abutting properties.
Main road	A road declared under the <i>Main Roads Act 1930</i> to be a main road.
Road Safety Commission (RSC)	Road Safety Commission.
Road Trauma Trust Account (RTTA)	Road Trauma Trust Account.
Vulnerable road user (VRU)	A pedestrian, cyclist, e-scooter,or mobility-impaired road user

#### **3 PURPOSE**

The purpose of this document is to provide an overview of the Low Cost Urban Road Safety Program (Low Cost URSP), including the structure and objectives of the program, and the road treatments that may be delivered to help reduce fatalities and serious injury crashes on local roads in Western Australia.

This document provides the framework that Main Roads will follow to implement the program in collaboration with Local Government.

#### 4 **PROGRAM OBJECTIVE**

"To implement low-cost road safety treatments on an area wide or whole-of-street approach to local intersections and roads to reduce fatalities and serious injury."

The Low Cost URSP aims to actively identify and prioritise local neighbourhood areas (LNs) and local neighbourhood cells (LNCs) with a higher than average casualty crash history and provide funding (through reimbursement of cost and payments) for the design and construction of road treatments that reduce fatalities and/or serious injury on an area wide or whole-of-street approach – bringing widespread safety benefits and amenity gains for the community.

#### **5 PRINCIPLES**

There are more than 51,000 intersections within the metropolitan area, of which in excess of 4,500 have had casualty crashes during the five years from 2015 to 2019. The majority of these intersections (more than 3,500) are located on local roads, managed by Local Government, and do not meet the criteria for funding under existing road safety programs. Many of the local roads were also designed decades ago and consequently are not in line with the latest Safe System road design principles.

The Low Cost URSP provides the opportunity to address these issues by implementing a road environment which, when combined with appropriate travel speeds, will reduce the number and severity of crashes.

To achieve this, Main Roads has developed a range of low-cost safety treatments that can be applied on established local roads. These will not only be applied to sites identified as high-risk but other sites with similar characteristics and potential to generate similar crash types and severity. For example, in:

- Residential areas (see Image 1) where long, straight local roads in grid street networks allow vehicles with priority to travel through four-way intersections at speed, often resulting in high severity crashes when collisions occur. These roads can typically be improved through minor intersection upgrades or mid-block treatments, which can also improve street and neighbourhood amenity.
- Commercial areas (including retail precincts) where concentrated crash risks, such as four-way intersections elicit frequent interactions



Image 1: Example Road Environment – Residential Road

between passenger cars, pedestrians, buses, light goods vehicles and other road users, that can lead to casualty crashes. The street environment of established commercial areas can be especially dangerous when intersections have not been designed to encourage lower travel speeds.

**Industrial areas** (see Image 2) – which, for the purpose of the Low Cost URSP, include areas of light industry and office premises. As with commercial industrial areas areas, have concentrated crash risks such as at a four-way intersection recording frequent interactions between trucks, light goods vehicles and passenger cars. Image 2 illustrates how the road environment of industrial areas can conceal intersections for a variety of reasons, including building setbacks being close to the verge, large intersection requirements and multiple driveways.



Image 2: Example Road Environment – Industrial Area

#### 5.1 Safe System Approach

The Low Cost URSP focusses on applying Safe System road design principles, which aim to prevent all road users from being seriously injured or killed in any crash. Safe System thinking recognises that all road users make mistakes and, accordingly, all elements of the road system should be designed to be forgiving when mistakes happen.

For local roads, proactively reducing impact speeds to below 30 kilometres per hour (km/h) ensures the safety of vulnerable road users, such as people who walk, cycle, ride motorcycles and occupants of vehicles. Achieving these lower speeds at intersections can improve safety outcomes for all road users. Figure 1 shows the threshold impact speeds for which severe outcomes are likely to occur for different collision types.

	Crash type	Critical impact speed threshold
-0 <sup>-</sup> 0-	Head on	70 km/h
	Rear end	55 km/r
	Side impact	50 km/h
	Side impact with a tree	30 km/h
	Impact with a pedestrian or cyclist	30 km/h

#### Figure 1: Typical Impact Speeds For Severe Outcome Collision Types

#### 5.2 Low-cost Options

As the name of the program suggests, the Low Cost URSP aims to install low-cost safety treatments on local roads, such as mini roundabouts, compact roundabouts, uncontrolled pedestrian crossing facilities, raised safety platforms, speed humps, entry statements and other minor road features and amendments. Investigations undertaken in preparation for the Low Cost URSP indicates the selected treatments can reduce crash risk. Appendix 2: Fact Sheets for Treatment Types includes more details of the treatment options, with a summary of the options outlined in Table 2.

Туре	Description	Example
Gateway treatments	Sometimes called threshold treatments, entry statements or perimeter treatments, these gateway treatments are used to mark a change in the speed environment. Treatments may include a combination of speed limit signs, pavement markings and other features (e.g. road narrowing and coloured pavement) to indicate that a threshold is being crossed. They are often installed at intersections or combined with mid- block treatments to support area-wide traffic calming. Place activation schemes often use these treatments to indicate increased pedestrian activity and encourage lower vehicle speeds.	
Low-cost compact roundabout	A slightly raised island can be installed within existing kerb lines in larger intersections to deliver similar safety and amenity benefits to mini roundabouts, while maintaining the ability for larger vehicles to easily navigate the intersection. All vehicles approaching the intersection have to approach with caution, giving way to any road user already in the roundabout.	
Low-cost traditional roundabout	A raised island, installed within existing kerb lines in larger intersections, can provide similar safety and amenity benefits to traditional, larger roundabouts, while maintaining the ability for larger vehicles to easily navigate the intersection.	

#### Table 2: Low-cost Treatment Types

Туре	Description	Example
Mid-block treatments	Mid-block treatments can include vertical displacements, such as speed cushions (see first example) or speed humps and horizontal displacements, such as chicanes (see second example) or central islands and visual character changing treatments, such as medians. Mid-block treatments are designed to reduce vehicle speeds and discourage non-local through traffic, while improving amenity.	
Mini roundabouts	Mini roundabouts can be installed within existing kerb lines where a traditional roundabout may require extensive intersection reconstruction. This treatment requires the vehicle driver to moderate their speed on approach to and through the intersection. As all vehicles approaching the intersection have to do so with caution, giving way to any road user already in the roundabout, mini roundabouts discourage vehicles from traveling in a straight line, which can reduce speed and crash severity by 78.9%.	
Pedestrian priority crossings	These include zebra crossings, wombat crossings (see example) and signalised crossings on local roads. By law, these crossings require vehicles to give way to pedestrians. These crossings can be combined with other low-cost treatments to lower vehicle speeds in pedestrian precincts.	
Raised safety platform	A slightly raised area across an intersection can reduce the speed vehicles can comfortably travel through an intersection on all approaches. Research undertaken for Main Roads confirms this treatment can lower vehicle speeds and the severity of right-angle crashes. The raised safety platform in the example shown has 'shark teeth' markings to signal to road users that there is a change in the height of the road surface.	

Туре	Description	Example
Road diet treatment	Road diet treatments match the road space to meet the requirements of all road users, for example by removing or narrowing travel lanes for other purposes, such as cycling (see first example). Typical treatments include turning lanes (see second example), pedestrian refuge islands, public transport stops, bike lanes, parking and/or landscaped areas.	

#### **5.3 Funding Alignment**

The program's objective, to deliver low-cost treatments that reduce casualty crash risk, will be core to all site location and treatment selection decisions. As such, complex and atypical costly sites treatments will be excluded.

The Low Cost URSP may complement existing and proposed Black Spot-funded treatments, however, the two programs must remain separate.

For the purposes of program, low cost will be typically in the order of \$15,000 to \$50,000 for the design and construction of a single treatment within an area-wide or whole-of-street precinct.

Where practicable, annual funding will be equitably distributed across the Perth metropolitan region in four quadrants – north-west, north-east, south-west and south-east – to deliver a broad casualty crash reduction across the metropolitan region.

Local Government will receive funding, via reimbursement, for design and construction costs of the treatment(s).

Local Government shall be responsible for any additional associated costs, such as community consultation, design drawing approvals, procurement costs for delivery and evaluation (including data collection both pre-treatment and post-treatment) and reporting.

In cases where, Local Government works fail to meet scheduled completion dates, design and construction costs may not be fully reimbursed.

#### 5.4 Area-wide or Whole-of-street Scale

Treatments will only be installed on an area-wide or whole-of-street basis, as changes are shown to enhance the fabric of the neighbourhood and the road environment, which research indicates encourages safe road user behaviour and improves amenity. This may result in the introduction of lower speed limits in some areas where treatments are installed.

#### 5.5 Risk Profile Driven

Low-cost treatments will be prioritised in areas where quantified crash risk analysis indicates higher than average crash risk in comparison to similar local neighbourhood areas or cells.

Unlike traditional road safety programs, where historical crash data is required prior to the allocation of funds, the Low Cost URSP will use baseline risk profiling to proactively identify crash risk locations. Further detail regarding this process is outlined in Figure 3.

#### **5.6 Pedestrians and Cyclists Considered**

Near-misses and minor incidents involving vulnerable road users, such as people who walk, cycle, ride motorcycles and are occupants of vehicles, are typically under-reported and do not feature in crash record data. To account for this, Main Roads will capture and consider the increased probability of pedestrian and cyclist activity around schools, shopping centres, parks and so on, as an overlay to the crash risk analysis that will inform project selection and prioritisation.

It is anticipated the Low Cost URSP will further benefit vulnerable road users by delivering reduced travel speeds on local roads and improving the perception of safety on an area-wide basis, which will encourage active transport use.

#### 5.7 Stakeholder Collaboration

Engagement with the community and key stakeholders is essential to ensure the program addresses road safety objectives, while also meeting community expectations.

Main Roads is already working with several key stakeholders as a result of the pilot program, including:

- Local Government
- Department of Transport
- Department of Fire and Emergency Services
- Western Australia Police Force
- St John Ambulance
- Public Transport Authority

Main Roads will continue to work collaboratively with stakeholders, especially Local Government, to ensure the objective of the program is met.

Local Government will be required to lead community engagement regarding proposed treatments and cover costs associated with the consultation process.

#### **6 ROLES AND RESPONSIBILITIES**

#### 6.1 Governance

The Low Cost URSP is administered, managed and evaluated independently by Main Roads.

Main Roads Director Budget & Investment Planning, Budget and Program Management has overall Managing Authority responsibility for administration and management of the Low Cost URSP.

Under the program, Main Roads will be responsible for identifying local neighbourhood areas (LNs) and local neighbourhood cell selections (LNCs) and ensuring the program is executed using an appropriately based engineering practice. Main Roads will make every effort to ensure site selection is aligned to the program's principles. However, where there are apparent safety benefits for the wider local community, Main Roads may consider implementing alternative area-wide or whole-of-street treatments that provide safer outcomes for the local community.

Treatment types to be delivered will be determined by Main Roads in liaison with Local Government. With funding only available and applied to those projects included within the program.

#### 6.1 Agreements

To facilitate the delivery of the Low Cost URSP, a formal written notification (i.e. e-mail) will be prepared to confirm the arrangements between Main Roads and the relevant Local Government. This will outline project:

- 1. Scope and objectives
- 2. Roles and responsibilities (of Main Roads and the relevant Local Government)
- 3. Funding, cost and financial risk management
- 4. Community information, data collection and branding
- 5. Design and technical approvals
- 6. Timing of delivery and scheduling considerations
- 7. Schedules, including but not limited to:
  - Overview of scope
  - List of sites and budget estimate
  - Typical sketch(es).

#### 6.2 **Program Definition and Delivery**

The roles and responsibilities of Main Roads and Local Government in delivering the Low Cost URSP are outlined in Figure 2: Low Cost URSP Process.

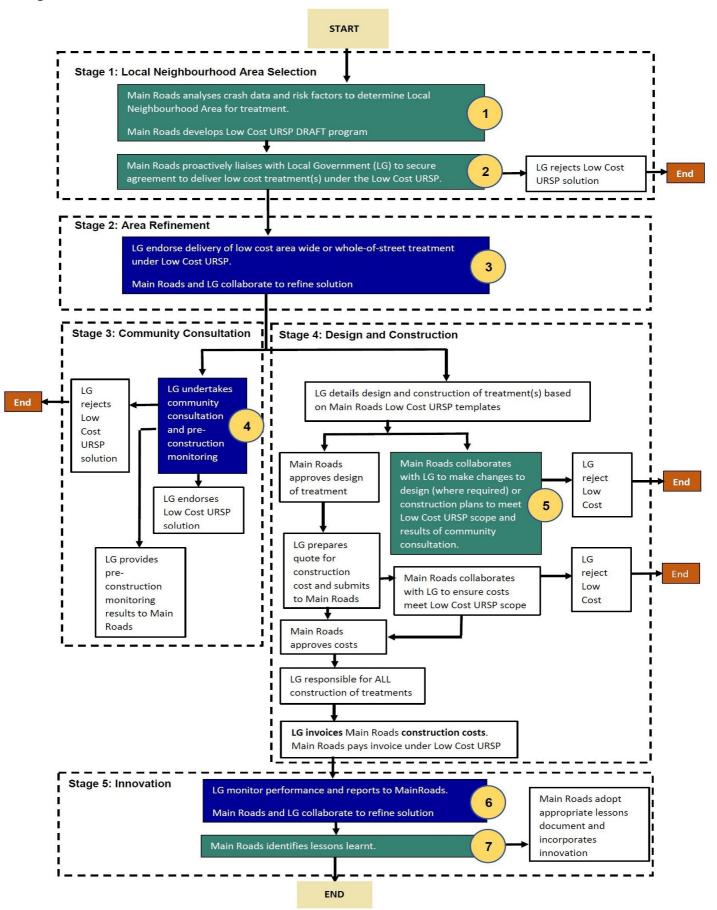
to

The process involves seven key steps, referenced

These steps fall within the five stages of the Low Cost URSP delivery process:

- 1. Local neighbourhood area selection
- 2. Area refinement
- 3. Community consultation (and pre-construction monitoring data)
- 4. Design and construction
- 5. Innovation (and post-construction monitoring data).

#### Figure 2: Low Cost URSP Process



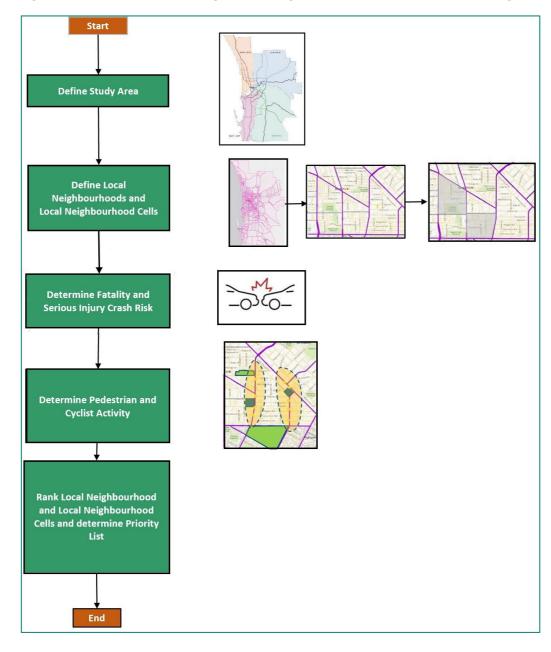
#### 7 TREATMENT SELECTION STAGE

1

#### 7.1 Stage 1. Local Neighbourhood (LN) Area Selection

Main Roads will determine and prioritise sites annually, in around May each year, over the life of the program. Identification of sites will follow a five-step process that, first, defines the LNs and LNCs and, then, considers the relative crash risk of each LN and LNC (see Figures 4a and 4b).

Crash risk will be determined by considering both historical crash data and potential pedestrian and cyclist activity in the area. This quantified risk rating will be reviewed annually, in around April when the prior calendar year's crash records are available, to ensure the most current data informs the site selection and assessment process. Potential pedestrian and cyclist activity may also be reviewed at this time if there has been, or is likely to be, significant changes to nodes of activity in the LN.



#### Figure 3: Method for Ranking Local Neighbourhood Area and Local Neighbourhood Cells

#### 7.1.1 Step 1. Define Study Area

1

NORTH WEST NORTH EAST

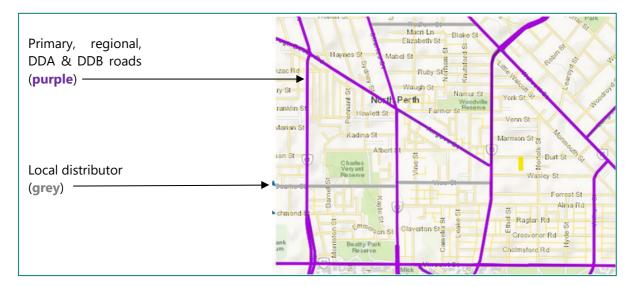
Image 3: Perth Metropolitan Region

#### 7.1.2 Step 2. Define Local Neighbourhood Area and Local Neighbourhood Cells

The Low Cost URSP will apply road safety treatments to local roads on an area-wide or wholeof-street basis to reduce the casualty crash risk in a LN. To enable a quantitative assessment of risk, the Perth Metropolitan Region has been partitioned into areas of approximately equivalent extents of road network, bounded by major roads. Each LN is defined by higher order roads (i.e. primary, regional, DDA and DDB, which are shown in Figure 4a) and further refined into smaller LNCs (Figure 4b), which are defined by local distributor road(s) and access roads.

The Low Cost URSP will address sites within the Perth Metropolitan Region's four quadrants

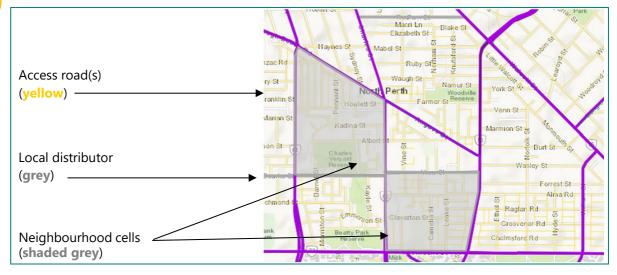
- north-west, north-east, south-west and south-east - as defined by Main Roads.



#### Figure 4a: Local Neighbourhood Area (LN) Example

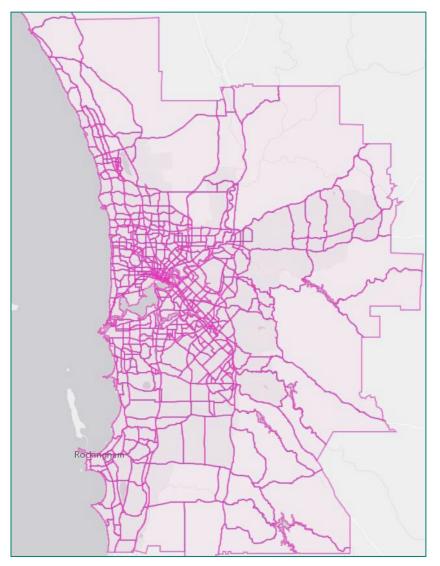
#### Figure 4b: Local Neighbourhood Cells Example

1



For the purposes of the Low Cost URSP, 674 LNs have been identified across the Perth Metropolitan Region, each with a similar number of intersections and characteristics (as shown in Figure 5).

#### Figure 5: LNs in the Perth Metropolitan Region



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#### 7.1.3 Step 3. Determine Fatality and Serious Injury Risk (Casualty Crash Risk)

1

A crash involving someone who is killed, hospitalised or received medical treatment is classified as a casualty crash. These crashes are, on the whole, always reported to the WA Police Force and crash history data is available to Main Roads.

Interpreting the crash history data for intersection(s) types and lengths of road in a LN enables a metric for the likelihood for a casualty crash in that area to be developed. Main Roads will compare this likelihood metric with the recorded number of casualty crashes over a five-year period (e.g. 2016-2020) to identify LNs with unusually high crash records. From this analysis, Main Roads will pinpoint LNs where the risk of a crash is greater than the metropolitan average. This will guide implementation of the Low Cost URSP.

#### 7.1.4 Step 4. Determine Pedestrian and Cyclist Activity (With Land Use Destinations)

Crashes between vehicles and pedestrians/ cyclists are more likely to result in fatalities and serious injuries and are a key consideration for the Low Cost URSP. To assess risk for these vulnerable road users in each LN, local facilities and land use(s) that are common destinations for pedestrian and cycling activity – such as transport hubs, schools, shops, local parks and shared paths – will be identified by Main Roads.

#### 7.1.5 Step 5. Determine Ranking

2 Each of the identified Local Neighbourhoods in the Perth Metropolitan Region will be ranked by Main Roads in terms of crash risk and activity volume. The sum of these metrics will be used to determine a final rank for each area. In addition, within each quadrant of the Perth Metropolitan Region, LNs will be ranked and prioritised, as the Low Cost URSP aims to disperse projects as much as possible to deliver a broad casualty crash reduction within the metropolitan region, while still ensuring priority improvements are made in areas with the highest risk.

Main Roads will work collaboratively with Local Governments to consider how any proposed works align with each authority's priorities.

#### 7.2 Stage 2. Area Refinement

Main Roads will produce an annual program of LNs identified for treatment under the Low Cost URSP and develop a scheme of treatments that align with Safe Systems principles to reduce the casualty crash risks within those LNs.

**3** Progress to Stage 3 will only occur where Local Government supports the identified locations and treatments.

#### 7.3 Stage 3. Community Consultation and Pre-construction Monitoring Data

4 Main Roads has developed community consultation material to assist Local Government in liaising with the community and measuring community support for proposed sites and treatments (see Appendices).

Local Government will be required to fund and commence pre-construction monitoring of the traffic and active transport activity at each location under the terms of the Low Cost URSP.

Local Government will also be required to provide the results of the pre-construction monitoring to Main Roads for approval.

#### 7.4 Stage 4. Design, Cost Estimations and Construction

5

Main Roads and Local Government will work collaboratively to agree the treatment(s).

In many instances, a scheme design will be developed to ensure the treatment(s) derive the safety outcomes required for a specific location. Any scheme design with site-specific considerations that deviate from Main Roads Standards will require Main Roads' approval prior to commencement of construction.

Prior to approval Main Roads will obtain benchmark costings for treatment designs to inform annual planning priorities. However, Local Government will be required to obtain cost estimates for the final planned works. If those cost estimates exceed Main Roads' benchmarked costs, Main Roads will work with Local Government, where required to refine the scope of proposed works and in agreement with Main Roads' make the necessary adjustments to the benchmark costings.

Local Government will be required to construct the scheme of treatments in keeping with the agreed construction schedule and, Main Roads will reimburse Local Government at the agreed Milestones (set out in Table 3) for construction and design costs incurred. Local Government will fund and monitor traffic and active transport activity at each location after construction of the treatment(s), under the terms of the Low Cost URSP.

#### 7.4.1 **Project Variations**

The Low Cost URSP is a fully funded program without allowance for cost or scope variation. However, where there is a variation in scope and/or difference in the estimated cost of the project compared to the original scope and allocated budget, Main Roads Principal Advisor URSP must be advised immediately in order to obtain the appropriate approval, for the scope variation and/or budget adjustments including any reprogramming that may be required is undertaken.

#### 7.5 Stage 5. Innovation and Post-construction Monitoring Data

6 Main Roads seeks to apply innovative low-cost road safety treatments that leverage the latest research, globally and locally, in the delivery of the Low Cost URSP. To achieve this, feedback and lessons learnt through program and ongoing assessment (measurable and perceived) will be collated and considered.



Pre and post-construction monitoring data will need to be provided, and funded, by Local Government. This will be the primary source of evidence for Main Roads to measure the safety performance of treatments.

Main Roads' Road Safety Branch will also arrange an independent evaluation of sites to identify the actual safety performance of completed area-wide or whole-of-street treatments.

Lessons learn't will be incorporated as part of the annual review of the Low Cost URSP and multi-year forward works planning for the program.

#### 7.6 Program Approval

Recommendation, endorsement and approval of projects for the Low Cost URSP will be in accordance with requirements of Main Roads.

The Low Cost URSP, to be approved by, Main Roads Director Budget & Investment Planning, Budget and Program Management.

#### 7.7 Application of Scheme Treatment

Main Roads has developed a tool to assess each LN in terms of its suitability for treatment. LN's will be proactively selected by Main Roads, which will then initiate Low Cost URSP activities by working in collaboration with Local Government.

Site selection will follow the stages and methodology outlined in Section 7, considering the following:

- measured community outcomes;
- associated programs or road safety schemes ongoing within the Local Government area; and
- a Local Government's ability to fund community consultation, cost estimates and pre and post-construction data collection.

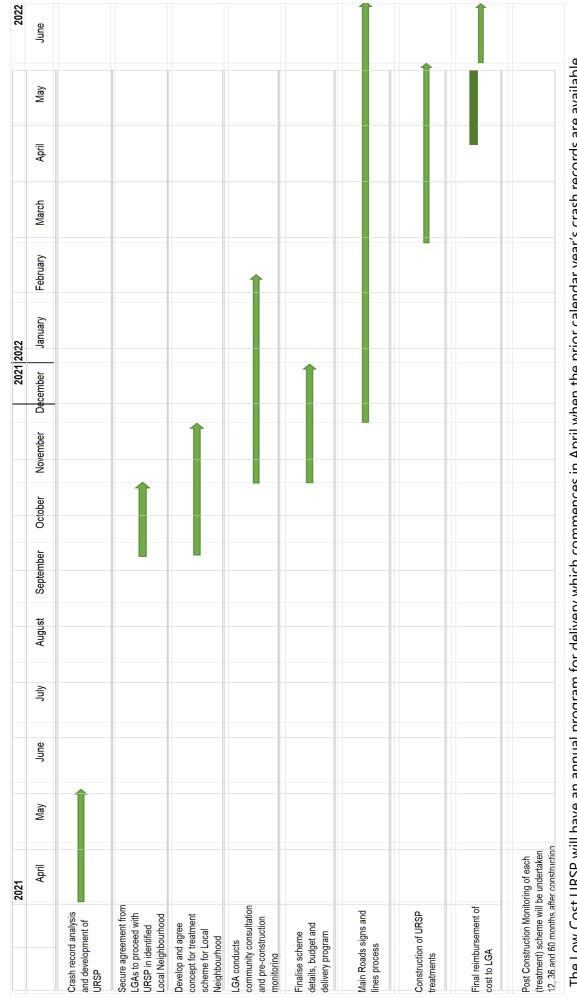
Every effort will be undertaken by Main Roads to ensure that site selection is aligned to these principles.

While Local Government's cannot independently assess LN's or other areas for inclusion in the Low Cost URSP, they can install treatments developed by Main Roads for the purposes for the program under their normal works programs.

#### 7.8 Signage - Low Cost URSP

Signage for the Low Cost URSP is not required.

However, if Local Government consider they would like to sign the project, they *shall* be required to seek written approval from Main Roads Western Australia (MRWA). If approved, any signs will be required to acknowledge the support of the Minister for Transport, Minister for Road Safety, and the Road Safety Commission.



**PROGRAM DELIVERY TIMETABLE 2021-22** 

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The Low Cost URSP will have an annual program for delivery which commences in April when the prior calendar year's crash records are available.

#### 8 FUNDING GUIDELINES

#### 8.1 Reimbursement of Design and Construction Costs

Main Roads will administer the Low Cost URSP and reimburse costs associated with the construction and design of the road treatments.

The treatments are considered to be low in complexity and, therefore, Local Governments are expected to be able to deliver the design of these components within existing in-house resources and/or contractor(s).

Local Governments seeking to claim expenditure from the Low Cost URSP may claim funds as set out in Table 3 below. On completion, a project completion report must be submitted to Main Roads, which will trigger the payment of the final installment.

#### **Table 3: Reimbursement Percentages and Milestones**

Milestone	Payment Percentage
Commencement of project	20%
Progress towards completion 1 (undertaking of design)	20%
Progress towards completion 2 (design/construction)	20%
Progress towards completion 3 (undertaking of construction)	20%
Project completion (noting, a report must be submitted before the final payment is made)	20%

Every endeavour, must be made by Local Government to expend funds in the year of allocation.

Projects that are not fully completed in the year of allocation will be assessed for consideration for re-programming.

#### 8.2 Local Government Funding Contribution

Local Government will fund:

- community consultation;
- design drawing approvals;
- procurement of works;
- delivery of treatments (project management);
- evaluation (data collection pre and post treatment) and reporting; and
- ongoing maintenance.

Sites that present an unduly high cost, will be excluded from the Low Cost URSP, as they do not meet the core objective of the program.

#### 8.3 Funding Governance ```

The Low Cost URSP will be delivered under the conditions and reporting mechanisms of the *Road Trauma Trust Account Funding Agreement*, established between Main Roads and the Road Safety Commission.

#### 9 PERFORMANCE MONITORING PROTOCOLS

#### 9.1 Evaluation of Low Cost URSP Post Construction

Evaluation of the treatments installed under the Low Cost URSP is key to be able to effectively measure the outcomes and success of the program.

Pre and post-evaluation of all treated areas will occur via a common method developed by Main Roads. Local Government will be required to undertake, and fund, the monitoring/evaluation process within this common method and provide findings and data to Main Roads in the agreed format and timeline(s), in accordance with the agreement signed at the start of the program.

The evaluation process will draw on multiple data sources, including observed behaviour and metrics gathered through traffic counters and classifiers, such as traffic volume, speed and vehicle type. Other data sources may include peer-reviewed research. Using multiple data sources will enable Main Roads to triangulate findings from time, cost and quality metrics to enable the most effective evaluation conclusions to be drawn and lessons learnt applied to future programs.

Key elements that Main Roads expects to be able to measure and report as a result of the evaluation protocol include:

- effectiveness in reducing crashes;
- effectiveness in meeting low costs;
- community perception of safety through increased activity (i.e. cycling / walking); and
- diversity of construction treatments applied.

Using its newly developed crash map tool, combined with project completion dates, Main Roads will review crash data three years post-installation of the treatments to gain a holistic picture of the Low Cost URSP.

Lessons learnt through the evaluation process will be incorporated into individual treatment designs and the Low Cost URSP overall as it progresses.

#### 9.2 **Program Audit**

Main Roads may arrange for independent auditing of a sample of projects funded under the Low Cost URSP This may include:

- site inspections of treatments and any variations of work. Councils are required to keep records of project papers for auditing, if required; and
- financial audit of reimbursement claims, variations and payments.

#### **10 CONSULTATION SUPPORT**

Communication tools have been developed and designed for use by Local Governments to streamline the delivery timeframe and minimise costs associated with consultation for the Low Cost URSP.

Main Roads will continue to manage development of template consultation materials (See Appendix 1 and 2).

#### **11 REFERENCES AND RELATED DOCUMENTS**

Document Number	Main Roads Description
D20#999462	Memo 1 - Road Safety Platforms
D20#999470	Memo 2 - Gateway Treatments
D20#999478	Memo 3 - Roundabout Design
D20#999487	Memo 4 - Midblock Treatments
D20#999489	Memo 5 - Pedestrian Treatments
D20#999494	Memo 6 - Road Diet Treatments

#### **12 APPENDICES**

Appendix	Title	
Appendix 1	Community Engagement Templates	
Appendix 2	Fact Sheets:	
	Urban Road Safety Program - Road Diet Treatments	
	Urban Road Safety Program - Gateway Treatments	
	<ul> <li>Urban Road Safety Program - Compact and Mini Roundabouts</li> </ul>	
	Urban Road Safety Program - Mid-Block Treatments	
	Urban Road Safety Program - Pedestrian Treatments	
	Urban Road Safety Program - Raised Safety Platforms	
Appendix 3	Project Definition, Completion Report, Progress Payment and Completion Certificates - Templates	

#### **Appendix 1: Community Engagement Templates**

Enquiries:\_\_\_\_\_\_– (08) \_\_\_\_\_

«Date»

«Owners» «ServAddrLine1» «ServAddrLine2» «ServAddrLine3»

Dear Owner/ Occupier

#### **URBAN ROAD SAFETY PROGRAM**

The [Local Government Name] and Main Roads Western Australia are working collaboratively on a new road safety initiative – the Low Cost Urban Road Safety Program (Low Cost URSP) – to reduce the likelihood of fatal and serious injury crashes on local roads across the metropolitan area.

The program involves installing low-cost road treatments that can improve the safety of roads and intersections and reduce crashes that impact our community.

[Two] locations in the [Local Government Name] have been selected under the new program.

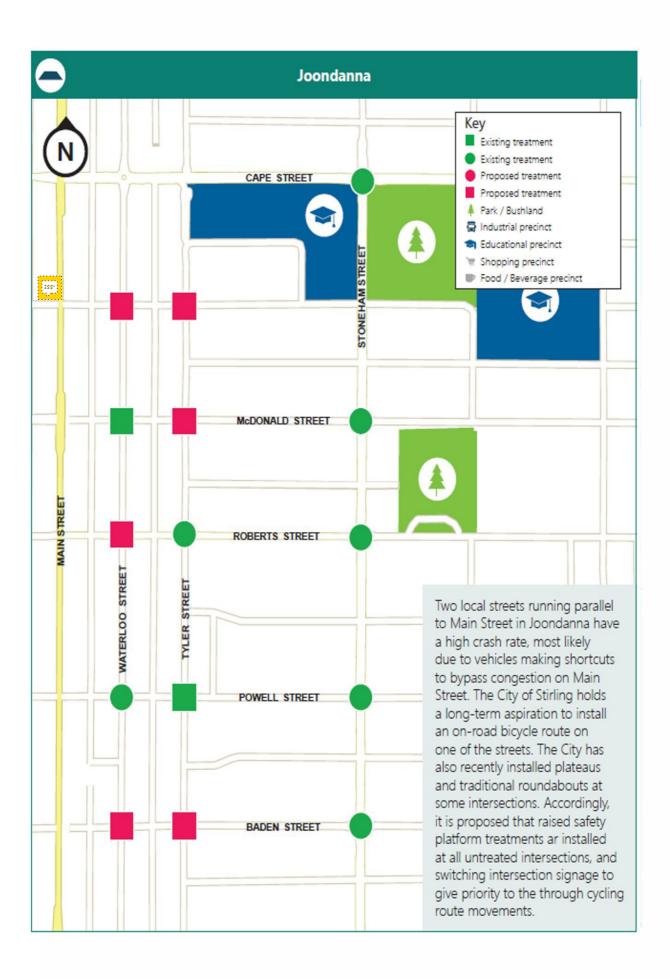
[Insert locations, e.g. Tyler Street and Waterloo Street in Joondanna, between Green Street and Cape Street] have [insert details, e.g. several four-way intersections, which will be treated through the installation of speed plateaus] at the locations shown on the enclosed location plan. These treatments (depicted by the red squares) will improve safety by reducing vehicle speeds and improving the visibility of the intersections to motorists.

The footprint of these raised intersection plateaus will be considerably smaller than typical raised intersection type plateaus and an example is provided.

Construction of these projects is scheduled to begin in [insert date], with works expected to be completed by the end of the financial year [insert date].

The [Local Government] welcomes any questions or comments about this project, which can be directed to our Transport Services team on or by email to

Yours sincerely







Enquiries:

XXXXXXXXXXX - (08) \_\_\_\_\_

1 February 2021

«Owners» «ServAddrLine1» «ServAddrLine2» «ServAddrLine3»

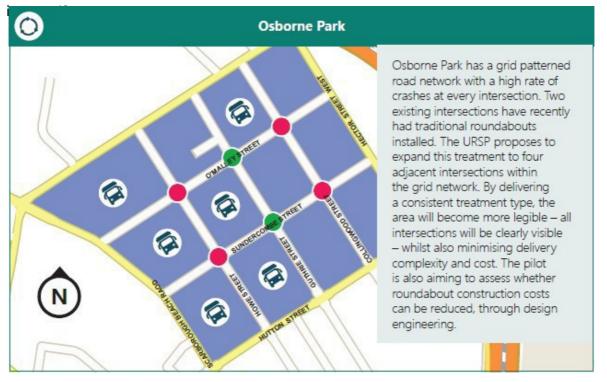
Dear Owner/ Occupier

#### **URBAN ROAD SAFETY PROGRAM**

The [Local Government Name] and Main Roads Western Australia are working collaboratively on a new road safety initiative – the Low Cost Urban Road Safety Program (Low Cost URSP) – to reduce the likelihood of fatal and serious injury crashes on local roads across the metropolitan area.

The program involves installing low-cost road treatments that can improve the safety of roads and intersections and reduce crashes that impact our community.

An area in [insert details, e.g. Osborne Park, bounded by Scarborough Beach Road, Hutton Street, Hector Street and King Edward Road, has been selected under the new program. It will have four additional mini roundabouts constructed at the locations shown below (in pink circles). These will be similar to existing roundabouts located at the O'Malley Street/Guthrie Street and Sundercombe Street/Guthrie Street intersections (shown



In addition to the road safety benefits, the treatments will improve traffic flow at these intersections.

Importantly, the proposed treatments involve no kerb modifications and road widening works, which will reduce construction time and minimise impacts on adjoining businesses.



An example of similar treatment, used in an urban setting, can be seen below.

Construction of the treatments is scheduled to begin in [insert date], with works expected to be completed by the end of the financialyear [insert date].

The City welcomes any questions or comments about this project, which can be directed to our TransportServices team on\_\_\_\_or by email at

Yours sincerely

#### **Appendix 2: Fact Sheets**

FACT SHEET December 2021



### Urban Road Safety Program Road Diet Treatments

#### What is a road diet treatment?

A road diet treatment involves reconfiguring existing road space to better service all road users. This is particularly suitable where the existing road space exceeds vehicle traffic demand, and there is a mix of road users, including cyclists.

When redistributing and optimising the road space, specific attention is given to reducing and eliminating crash conflicts and, thereby, improving safety.

#### Why are they used?

Road diet treatments improve safety as they:

- encourage vehicles to reduce speed;
- reduce queues associated with cross-traffic turning; and
- Improve pedestrian and cycling environments.

#### What do they look like?

Central shared turning lane with bike lane



Realignment with kerb extensions



Image source: NACTO

www.mainroads.wa.gov.au



Bike and parking lanes



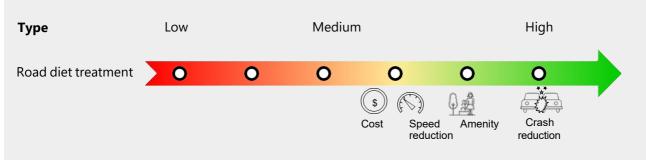
Kerb extensions with bike lanes





#### What impact do they have?

Road diet treatments are a medium cost treatment but one that can have high positive crash reduction results. They are especially suited to improving amenity in a local area.



#### What benefits do they offer?

Safe System road design principles aim to prevent crashes by recognising that all road users make mistakes and, accordingly, all elements of a road system should be designed to be forgiving when mistakes happen.

Road diet treatments align with Safe System principles and benefit communities because they can:

- separate bike and vehicle traffic through different lanes;
- feature lane narrowing and kerb extensions for slower speeds;
- include in-carriageway bike lanes;
- deliver central turning lanes; and/or
- remove overtaking opportunities by reducing the road to one through lane in each direction.

#### What design features need to be considered?

The configuration of a road diet treatment is determined based on the requirements of each location, underpinned by the overarching aim to redistribute space to suit the needs of the area. Crash and speed reduction is achieved through lane narrowing, separation of turning vehicles and the presence of active transport modes (e.g. cycling lanes or pedestrian paths), which change the character and purpose of the street.

Road diet treatments with central turning lanes include pedestrian refuges and diagonal white line marking that discourage drivers from remaining in a centre lane, as well as additional signage cues to help drivers understand how to safely interact with these lanes.

Multiple, small, road diet treatments along a road corridor, or a reasonable length of treatment, achieve traffic calming results and reduce vehicle speeds, lessening the severity of crashes.

#### Where can I find further information?

Road diet treatments are just one of the treatments being constructed on local government-managed roads as part of the Low Cost Urban Road Safety Program, funded by the State Government.

For further information on the program, visit Main Roads website at: <u>https://www.mainroads.wa.gov.au/technical-commercial/local-government-funding/road-safety-programs/</u>

You can also contact us on 138 138 or via: enquiries@mainroads.wa.gov.au

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# Urban Road Safety Program Gateway Treatments

#### What are gateway treatments?

Gateway treatments are measures that help reduce speeds when road users transition between different road environments, such as residential and commercial areas or local and main roads. They often include:

- entry signage;
- coloured/textured pavements (as seen in left image below);
- pavement markings (as seen in both images below);
- lane narrowing (as seen in left image below); and/or
- raised entries (as seen in right image below).

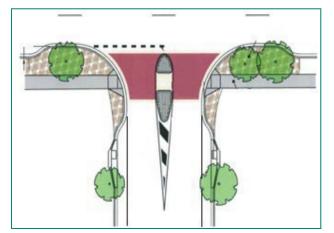


Image source: Moreton Bay Region Council

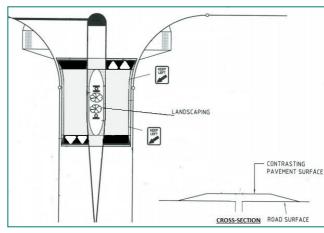


Image source: Main Roads

#### Where are they used?

A gateway treatment can be suitable:

- at boundaries between different classifications of streets;
- at boundaries between different land uses;
- at boundaries of local area speed limits; and/ or
- where there is a need to reduce the capacity of an intersection as part of a Local Area Traffic Management Scheme.

Gateway treatments require adequate sight distance to provide time for drivers to modify their behaviour on approach to the road transition area.



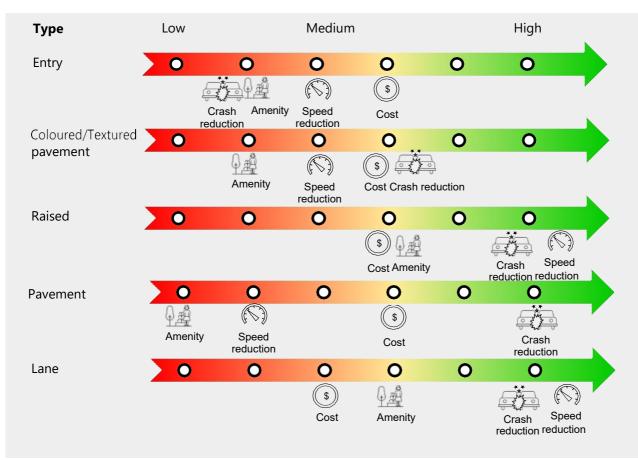
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#### What impact do they have?

Gateway treatments are generally a medium cost treatment that can have major benefits in terms of speed and crash reduction. In addition to improving safety, gateway treatments can improve the amenity of an area when combined with planting, signage and lighting (but generally not when provided as a road safety treatment only).



#### What are the key features?

The key features of gateway treatments include:

- coloured pavements that reduce speed and create a visual transition between spaces;
- signage and pavement markings that alert drivers to the treatment from a distance; and/or
- road narrowing that reduces speed and crash likelihood.

Combining the above features delivers a road safety solution that can reduce speed and crash risk, as well as the severity of crashes should they occur.

#### Where can I find further information?

Gateway treatments are just one of the treatments being constructed on local government-managed roads as part of the Low Cost Urban Road Safety Program, funded by the State Government.

For further information on the program, visit Main Roads website at:

https://www.mainroads.wa.gov.au/technical-commercial/local-government-funding/road-safety-programs/

You can also contact us on 138 138 or via: enquiries@mainroads.wa.gov.au

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# Urban Road Safety Program Compact and Mini Roundabouts

#### What are compact and mini roundabouts?

Roundabouts are effective in reducing crashes resulting in death or serious injury as they reduce vehicle speed on approach and, therefore, the occurrence of high-severity right-angle collisions. However, roundabouts are often expensive to construct as they require substantial construction work, and occasionally land acquisition, as well as being more likely to impacts services and other street infrastructure. Roundabouts can also be unpopular with pedestrians and cyclists, who can find them difficult to navigate.

In urban environments, compact and mini roundabouts can overcome these limitations. They often fit within existing kerb lines, reducing construction costs and time, and thereby minimising disruption to services, while still delivering road safety improvements.

Mini roundabouts are used where available space prohibits the use of a compact roundabout.

#### What do they look like?

Compact roundabout



Image source: Main Roads



Mini roundabout



Image source: Google Maps

Mini roundabout Image source: Main Roads

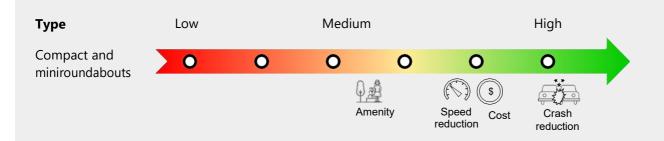
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#### What impact do they have?

Compact and mini roundabouts general cost more than many other low-cost road treatments but they have a comparatively higher impact on speed and crash reduction, as well as local amenity.



#### What benefits do they offer?

These treatments offer high-impact, low-cost solutions for existing urban local road intersections on lower-order, lower-speed roads. Mini roundabouts, in particular, can be installed as part of an area-wide program at low cost.

Implementation costs can be kept low by:

- selecting sites with appropriate geometry, requiring minimal changes to the existing road configuration;
- using a standardised design without the need for additional design costs;
- using painted, rather than physical, splitter islands; and /or
- installing low or mountable kerbs (being mindful of asphalt overlays), reducing or eliminating any height variation.

#### Where can I find further information?

Compact and mini roundabouts are just one of the treatments being constructed on local governmentmanaged roads as part of the Low Cost Urban Road Safety Program, funded by the State Government.

For further information on the program, visit Main Roads website at:

https://www.mainroads.wa.gov.au/technical-commercial/local-government-funding/road-safety-programs/

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# Urban Road Safety Program Mid-block Treatments

#### What are mid-block treatments?

Mid-block treatments take a variety of forms but commonly aim to reduce vehicle speed and discourage non-local through traffic, while improving amenity. Mid-block treatments require adequate sight distance along a roadway to provide time for road users to modify their behaviour, such as slowing down on approach.

Mid-block treatments are most effective when applied in sets, as the repetition along a road corridor reinforces their traffic calming impact.

These treatments may incorporate pedestrian crossings or refuges, and carefully considered design and appropriate signage is essential to ensure road users understand who has priority in each situation.

#### What do they look like?

#### Speed cushions



Deviation islands



Images source: NACTO Global Street Design Guide

#### Speed humps



Centre blister islands



Chicanes



Median islands



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#### What impact do they have?

Mid-block treatments are typically of medium to higher cost than other low-cost road treatments but they can have a high positive impact on crash and speed reduction, as well as local amenity.



#### What design features need to be considered?

The spacing of treatments is critical to minimise speed fluctuations along a street. This is achieved by delivering a series of treatments at regular intervals, with the closer the treatments the lower the speed profile achieved, thereby reducing the likelihood of a severe crash outcome.

Mid-block treatments must also be designed to allow for either the safe passage of a cyclist and a vehicle side-by-side (3.7 metres or more) or the passage of a vehicle or cyclists only (3.0 metres or less). Widths in between these two levels create squeeze points and result in conflict between road users.

#### Where can I find further information?

This is just one of the treatments being constructed on local government-managed roads as part of the Low Cost Urban Road Safety Program, funded by the State Government.

For further information on the program, visit Main Roads website at: <u>https://www.mainroads.wa.gov.au/technical-commercial/local-government-funding/road-safety-programs/</u>

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# Urban Road Safety Program Pedestrian Treatments

#### What are pedestrian treatments?

Pedestrian treatments are installed where there is a high level of pedestrian movements across roads and where a managed speed environment can be maintained through the delivery of multiple treatments along a road corridor.

If it takes a person more than three minutes to walk to a pedestrian crossing, they are more likely to cross at a direct, but unsafe, point. Therefore, distances of more than 200 metres between pedestrian crossings should be avoided and regularly spaced crossings should be delivered to improve opportunities for pedestrians to cross roads safely.

It is important that pedestrian crossings are constructed, marked and signed correctly, as crashes can occur if there is confusion about priority between vehicles and pedestrians.

#### What do they look like?

Pedestrian raised crossing



Pedestrian refuge island

Zebra crossing



Images source: NACTO Global Street Design Guide

Pedestrian raised crossings, refuge islands and kerb extensions are crossings where the priority is assigned to vehicle to maintain traffic flow. Wombat and zebra crossings are other types of pedestrian crossings that, by law, require vehicles to give way to pedestrians.

Pedestrian treatments can be further enhanced through the addition of signage, lighting, physical barriers or a combination of multiple treatments.

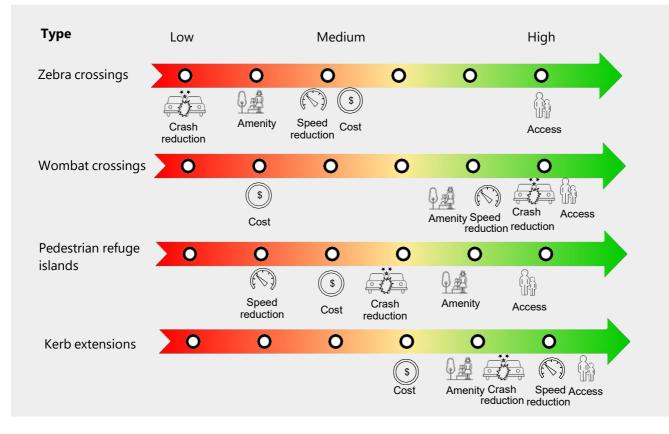
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#### What impact do they have?

Pedestrian treatments are typically a low to medium cost option that have a high positive impact on amenity. They provide particularly positive benefits in terms of accessibility for a variety of road users.



#### What design features need to be considered?

The placement and design of pedestrian treatments consider demand and the type of people who will be using the treatments, including their likely age and mobility.

A combination of pedestrian treatments, such as zebra crossings with pedestrian refuges or wombat crossings with kerb extensions, can reduce vehicle speed and crash risk, as well as the likely severity of any collisions, especially when compared with treatments applied in isolation.

#### Where can I find further information?

This is just one of the treatments that will be constructed on local government-managed roads as part of the Low Cost Urban Road Safety Program, funded by the State Government.

For further information on the program, visit Main Roads website at:

https://www.mainroads.wa.gov.au/technical-commercial/local-government-funding/road-safety-programs/

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# Urban Road Safety Program Raised Safety Platforms

#### What are raised safety platforms?

Raised safety platforms are often applied at 'simple' intersections with stop or give way controls on lower-order roads (e.g. in residential areas) that have the potential for right-angle crashes.

The platforms reduce the speed of vehicles travelling through an intersection to keep speeds below serious collision thresholds (i.e. the point at which those involved in an accident would be killed or seriously injured should a collision occur).

For pedestrians and cyclists, raised safety platforms can improve safety and perceived ease of crossing.

For vehicles with long-wheel bases, such as buses, raised safety platforms can be designed to minimise vehicle occupant discomfort while moving over the platforms while still reducing operating speeds through an intersection.

#### What do they look like?

Raised safety platform

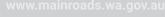


Raised safety platform with 'shark teeth'



Image source: NACTO Global Street Design Guide

Image source: Main Roads

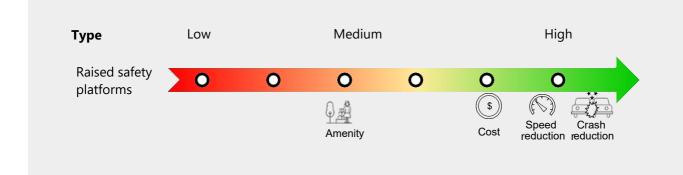






#### What impact do they have?

Raised safety platforms are costly but have high positive impacts on speed reduction and crash reduction, with some benefit to amenity in an area.



#### What design features need to be considered?

Main Roads has a standard raised safety platform design that is well suited for a range of applications. However, less extensively engineered designs are available that can be delivered at a lower cost, in particular areas and particular circumstances, while still delivering safety benefits. These include raised safety platforms that are shorter length to sit clear of existing pedestrian crossings and/or platforms that utilise or enable the retention of existing kerbing, pram ramps and drainage.

Raised safety platforms are also more cost effective where an island is not required as part of the design and the site is not constrained by utilities (e.g. power, water or gas pipes) that need to be relocated or accommodated in the design.

#### Where can I find further information?

Raised safety platforms are just one of the treatments being constructed on local government-managed roads as part of the Low Cost Urban Road Safety Program, funded by the State Government.

For further information on the program, visit Main Roads website at: <u>https://www.mainroads.wa.gov.au/technical-commercial/local-government-funding/road-safety-programs/</u>

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# **Appendix 3: Project Definition, Completion Report, Progress Payment and Completion Certificates - Templates**

ATTACHMENT 1: LOW COST - URBAN ROADSAFETY PROGRAM - PROJECT DEFINITION FORM



LOW COST - URSP

1. Program Year	
2. Local Government	
3. Area-wide / Whole-of- street Treatment Area	
4. Project Name	
5. Project Description	
6. Project Location (map)	
7. Project Scope	
8. Purpose / Objective	
9. Project Deliverables	
10. Proposed Start Date	11. Proposed Completion Date
12. Project Justification	
13. Project Estimated Cost	

#### Additional Comments:

Contact Details

Name							
Position							
Contact Information							
Date of Submission							
PLEASE FORWARD FORM TO PRINCIPAL ADVISOR URSP							



#### ATTACHMENT 2: LOW COST URBAN ROAD SAFETY PROGRAM - COMPLETION REPORT

	Low Cost URSP COMPLETION REPORT							
Organisation (Name and Addre	ess)							
Project Name and Location								
Project Reference Number (e.g.	211xxxxx)							
Description of the Works								
Record of Photographs - Before	and After Construction							
Site Commencement Date								
Practical Completion Date								
Final Completion Date								
Total Estimated Cost (TEC) App	roved Allocation							
Description and Value of Approv	ed Variations							
Final Cost (Actual Cost)								
Treatments (As Applicable)								
Road diet								
Gateway								
Raised safety platforms								
Pedestrian treatments								
Compact and mini rounda	abouts							
Mid-block treatments								
Other measures								
Other measures								
Signage								
Line marking								
Guide posts								
Completed by (Position and Nar	ne)							
incurred to complete the works.	n completed and that the final cost of Council accepts responsibility for en and any claims arising from the exec nsiderations identified.	vironment o	consequences,					
Signature	Date							
Name(Chief Executive Office	er)							

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# PROGRESS PAYMENT CERTIFICATE – LOW COST URSP

A separate certifi	ficate must be used for e	each claim on each project (	A separate certificate must be used for each claim on each project (A Progress Payment Certificate is not required for the final claim)	ired for the final claim)
[Please indicate ]</td <td></td> <td></td> <td>[Please indicate <math>\checkmark</math>]</td> <td></td>			[Please indicate $\checkmark$ ]	
Low Cost Urban Road Safety Project	safety Project		Claim No	
		Project Details	Details	
Local Government:			Financial Year:	
Road Name:			Proposal / Job No.:	No.:
Work Description:			Section (Slks):	to
Apr	Approved Project Allocations	Suo	Mandatory Information	lation
Total Project Allocation	State Contribution (FULL)		Project's estimated or actual commencement date	ent date / /
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Previous Claim/s	Current Claim	I otal Funds Claimed		
\$	\$	\$		
Notes:			I certify that the information provided within this Progress Certificate is correct and supported by Local Government records.	s Progress Certificate is correct and
a -	Claim can only be made for incurred expenditure for construction and design Government	for construction and design	,	
			Signature	Name
			Chief Executive Officer	
				Date

WESTERN AUSTRALIA

# CERTIFICATE of COMPLETION LOW COST URSP

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Low Cost Urban Road Safety Project (URSP)

	Financial Year:	Proposal / Job No.:	Section (Slks): to	Einal Designet Part	State Contribution (Full)	\$	Actual State Contribution cannot exceed the Approved	<ul> <li>State Contribution.</li> <li>Additional Information (if applicable)</li> </ul>				I declare that the details provided within this Certificate of Completion are correct and acknowledge that Main Roads Western Australia can access the Council's financial records to verify this claim.	Name	er
Project Details					Final Total Project Cost	S		Total Funds Claimed			\$	I declare that the details provided within this C correct and acknowledge that Main Roads W Council's financial records to verify this claim.	Signature	Chief Executive Officer
						\$	Claimed State Contributions	Claim No. 3	S	Claim No. 6 – Final Claim	\$	ncil and that the total funds project.		
					State Contribution (Full)	S	Claimed S	Claim No. 2	S	Claim No. 5	\$	een completed by the Cour een fully expended on this	Name	ineer Date
	Local Government:	Road Name:	Description of Completed Works:		Total Project Allocation	S		Claim No. 1	S	Claim No. 4	θ	I certify that the works have been completed by the Council and that the total funds claimed for the project have been fully expended on this project.	Signature	Works Supervisor/Engineer