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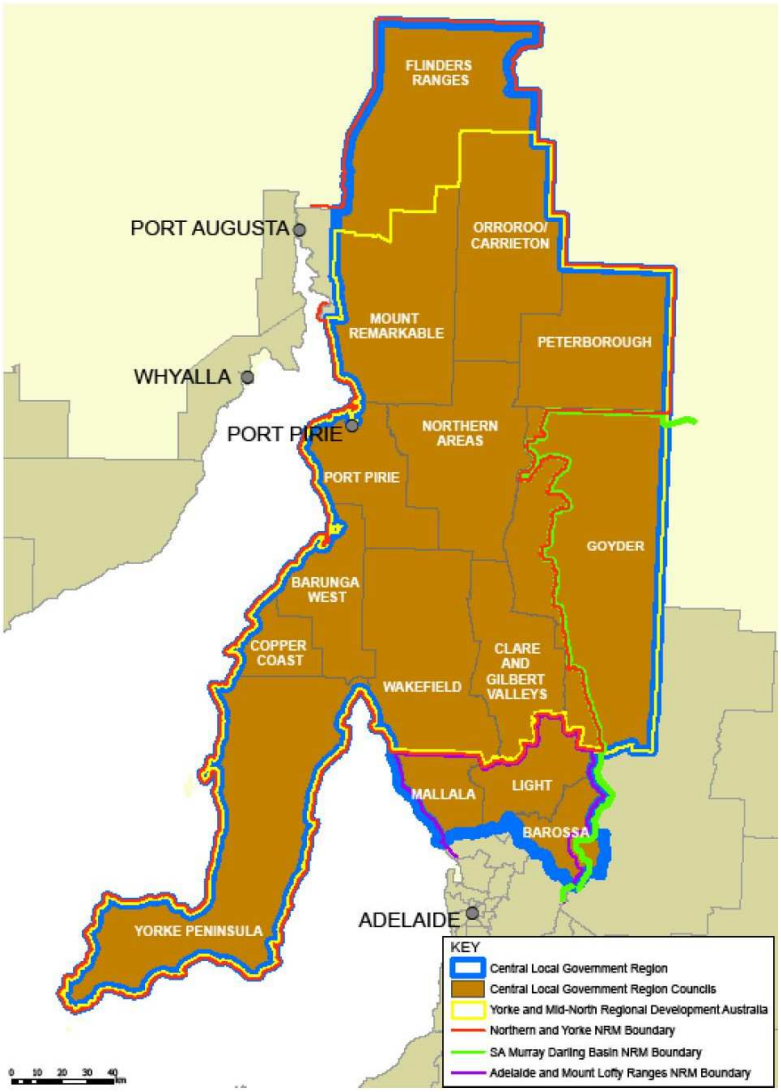
Desktop Assessment of Bridges and Culverts

Legatus Group, Local Government Authority Roads



LEGATUS GROUP

Contents

1.0 Project Overview

Mace Engineering Services was engaged by the Legatus Group in November 2021, to undertake a desktop assessment of bridge and culvert structures on Local Government Authority Roads within the Central Local Government Region, Legatus Group members. There are 15 Legatus Group Local Government Authorities, located in the Barossa, Mid North and Yorke Peninsula Regions of South Australia. The aim of the assessment is to identify bridge or culvert structures that may be suitable for funding under the Bridges Renewal Program, and for each structure, to find what information is available and what information would be required for the project proposal to be 'grant funding ready'.

The assessment of bridges and culverts project had a particular focus on structures on roads that comprise the Freight, Tourism and Community transport networks outlined in the Legatus Group 2030 Regional Transport Plan. However, other bridge and culvert structures were also considered, as in some instances, structures were located on roads which do not form part of these regionally significant networks, but would potentially be included if the bridge or culvert was of a sufficient standard and significance to the associated Council.

The assessment will assist with the Regions efforts to achieve the strategic objectives of improved safety, productivity, connectivity and efficiency in the transport of goods via heavy vehicles and for tourism and community needs.

The assessment included a review of currently available literature reflecting state level strategic planning, regional planning and local transport plans. This included the "Legatus Group 2030 Regional Transport Plan" by HDS Australia, the "Integrated Transport & Land Use Plan" and, where available, each LGA's Development Plans, Strategic Plans and Asset Management Plans.

In many cases, the Asset Management Plans provided specific information regarding the bridge and culvert structures, including anticipated remaining life, required maintenance and upgrade or replacement priorities. Where available, bridge condition assessment reports were also reviewed.

2.0 Bridges Renewal Program

2.1 Introduction

The Bridges Renewal Program (BRP) is an initiative of the Australian Federal Government to fund the upgrade and replacement of bridges to enhance access for local communities and facilitate higher productivity vehicle access. The Australian Government is providing more than $760 million over the 10 years from 2015-16 to 2024-25, with an ongoing commitment of $85 million per year from 2025-26 for the BRP.

The Bridges Renewal Program is run side by side with the Heavy Vehicle Safety and Productivity Program (HVSPP) which is an Australian Government initiative to fund infrastructure projects that improve the productivity and safety outcomes of heavy vehicle operations across Australia. The Australian Government is providing $607 million over the 13 years from 2013-14 to 2024-25, with an ongoing commitment $65 million per year from 2025-26 for the HVSPP.

The assessment of Bridges and Culverts on Legatus LGA roads is focused on the Bridges Renewal Program, rather than the Heavy Vehicle Safety and Productivity Program, to ensure that structures of regional significant for community access and tourism are considered in addition to heavy vehicle freight.

2.2 Bridges Renewal Program – What's New?

There are several important changes for the BRP from 2025 from previous funding rounds. The changes include:

- Both the BRP and the HVSPP programs will be open all the time and will run in parallel so applicants can access the right program, for the right project at the right time. Applications will be assessed on an ongoing basis and provided to the Minister at regular intervals for decision.
- Rural and regional projects can now apply for and receive an Australian Government Contribution of up to 80%.
- Applications can include funding requests for eligible pre-construction activities. Successful applications that include approved pre-construction costs will have up to 36 months to complete delivery (24 month delivery if pre-construction activities are not funded).
- A new strategic need criterion had been added to the assessment criteria allowing the programs to support applications that fit national and local strategic needs as they change over time.
- There are no limits on the number of projects that can be submitted by an applicant.
- Submitting engineering reports with applications is now optional, rather than mandatory.
- Co-funding cannot come from other Australian Government sources.
- Maximum funding is $5,000,000 per project

2.3 Application Criteria

Applications can only be made by a state/territory government, or local government entities eligible for Roads to Recovery funding.

To be eligible, the project must meet the following requirements:

- **Must be an improvement, not maintenance:** Projects must be an improvement to an existing road asset. The programs support projects which improve existing publicly owned road assets.
    - Improvement is an overall test. Project outcomes are considered as a whole. For example, a culvert could replace a bridge, if the culvert improved access and maintenance.
    - Improvement can include both upgrade and replacement of an existing asset.
- **New:** The programs are designed to support new projects, where construction is additional to applicants' existing program of works and which would not have been possible without funding support. Therefore projects must not have started. Applications should not be made for projects where tenders have been awarded, construction has already commenced or is likely to commence ahead of a decision being made on the application. Existing funded projects that are submitting an application as part of a changed scope, timeframe or cost are not required to meet the requirement that a project is new.
- **Accessible:** - the programs aim to improve community access and productivity. Therefore applications should only be made for projects which are accessible to the public and associated with a public road. Projects where the final construction will be privately owned or located on a private road are ineligible.

- **Road based:** - the primary purpose of each application must be to improve accessibility, safety and productivity of road-based projects. The only non road-based elements which are eligible under the program are those which support the primary road based purpose. Examples of eligible non road-based activities include:
    - a road bridge project which includes a separate pedestrian bridge where the primary aim is to improve the road bridge
    - a rest stop with functional elements such as toilets or shade areas.

  Examples of ineligible non road-based activities include:
    - rail bridges, where the rail line passes over a roadway.
    - improvement to livestock marshalling areas because they are not associated with a road.
- **Whole and Complete:** - Related projects can be grouped for consideration where the total costs do not exceed the per project funding limit. This may include multiple construction elements where the combination enhances the overall outcome. For example, replacement of three bridges on a single route, which would enable the mass limit for the entire route to be increased would be deemed eligible as single project. However, artificial divisions of a larger project to fit under the project funding limits will be deemed ineligible. For example, a project to seal a length of road cannot be sub-divided into smaller projects to seal two or more smaller sections of the same road.
- **One Program only:** - A single project may only be submitted for funding under either the BRP or HVSPP and cannot be submitted for both. Projects where bridge related components are less than 40% of the total project cost must be submitted under the HVSPP. Projects where the bridge related components are more than 40% must be submitted under the BRP.

The following types of projects are ineligible:

- Projects where the majority of funding is not for road based transport.
- Inspections and structural assessments.
- Project which are for maintenance purposes.
- Design only projects.

2.4 Applications

All applications must be submitted on an application form with all mandatory items complete. Applications must be submitted through the Department's online portal.

Applications require:

- Information about project
- A project budget
- Traffic Counts for the project location
- Evidence of co-contributions from other contributors
- Engineering Report (optional)
- Consultation Summary (optional)
- Risk assessment or project timeline (optional)

Applications assessment:

- Eligibility Assessment
    - Meet all of the requirements of these Guidelines, including applicant and funding requirements and;
    - Contain in the application all mandatory information.
- Merit Assessment
    - Structural Improvements Contributing to productivity and safety (eg increasing load limits, improving safety, reducing detours, improving longevity
    - Quantified benefits – what economic and social benefits will result from the project (reduction in trip times, decreased injuries and fatalities, increased community access)
    - Construction readiness and risk – the likelihood that the project will be delivered on time, scope and budget
    - Strategic need
    - State and Territory input (for Council projects only) and assessment of the four key criteria listed above.
- Ministerial consideration

Refer to https://investment.infrastructure.gov.au/resources/brp-hvspp/index.aspx for detailed information regarding the BRP or the HVSPP.

3.0 Legatus Group Local Government Authorities – Bridge and Culvert Structures

3.1 Adelaide Plains Council

The Adelaide Plains Council covers an area of approximately 926 km^2, and is located just north of greater metropolitan Adelaide. Land uses in the Adelaide Plains Council region include primary production, horticulture, animal keeping, livestock sale yards, quarries and coastal reserves. There are also large residential land divisions near Two Wells, and extensive rural living holdings in the southern Council area.

Both the Light River and Gawler River pass through the Council district, and much of the area is located within the flood plains of these rivers. The general topography of the Adelaide Plains Council area ranges from slightly undulating to relatively flat, with the general fall of the land being towards the Light River and Gawler River and St Vincent Gulf.

Adelaide Plains Council have identified two bridge structures that require upgrading in the near future that may be suitable for Bridges Renewal Funding.

3.1.1 Wasleys Bridge

Wasleys Bridge is located on Wasleys Road, which is listed in the 2030 Regional Transport Plan for Freight. The bridge was constructed in 1913 with a steel framed superstructure and concrete deck. The bridge is heritage listed. Wasleys Bridge crosses the Light River.

A recent condition assessment found that Wasleys Bridge is in very poor condition. The bridge deck had major spalling of the concrete with exposed and rusting reinforcement. The structural steel superstructure was also in poor condition with significant rusting. A load assessment report resulted in a 6.5 tonne load limit being recommended. It has been recommended that a more detailed condition

assessment report including invasive testing to determine residual material thickness for both the concrete and steel be undertaken.

Photo 3.1.1 Wasleys Bridge

Table 3.1.1A – Wasleys Bridge – Eligibility Criteria

Eligibility Criteria	Does the Structure Meet the Eligibility Criteria? (Yes or No)	Comments
Improvement not Maintenance	Yes	The proposed works are to upgrade the existing structure, which is an improvement.
New	Yes	The proposed upgrade is additional to current program of works and is not possible without funding support
Accessible	Yes	The existing 6 tonne load limit is very restrictive with only passenger vehicles and very small commercial vehicles permitted across the structure. Upgrading the structure will improve accessibility for heavier vehicles.
Road Based	Yes	
Whole and Complete	Yes	
One program - BRP or HVSPP	Yes	Bridges Renewal Program

Table 3.1.1B – Wasleys Bridge – Merit Criteria

Merit Assessment Criteria	Comments
Structural improvements contributing to productivity and safety	Structural improvements will increase load limits, reduce detours, and improve the longevity of the heritage listed structure.
Quantified benefits	Benefits will include increased community access, reduction in trip times for heavy vehicles.
Construction Readiness and Risk	Information may be available but has not been provided during this review.
Strategic Need	Wasleys Road is listed in the 2030 Regional Transport Plan for freight. It links the townships of Mallala and Wasleys
State and Territory input	Input from DIT is required.

Table 3.1.1C – Wasleys Bridge – Submission Requirements

Submission Requirements	Comments
Information about project	Not provided for this review, however APC will need to provide for BRP submission
Project budget	Not provided for this review however APC will need to provide for BRP submission
Traffic Counts	Recent traffic counts are available and APC will need to provide for BRP submission
Evidence of Co-contributions from other contributors	Not provided for this review however APC will need to provide for BRP submission
Engineering Report (optional)	A recent engineering report from 2021 is available
Consultation Summary (optional)	Not provided for this review
Risk Assessment or project timeline (optional)	Not provided for this review

3.1.2 Salt Creek Culvert

Salt Creek culvert is located on Old Port Wakefield Road, which is listed in the 2030 Regional Transport Plan for Freight, Community Access and Tourism. The Salt Creek Culvert is an insitu concrete culvert structure and crosses Salt Creek near Two Wells.

A recent Level 2 condition assessment report found that Salt Creek culvert is in a deteriorated condition. The guardrail in non-compliant and there is major spalling of the concrete with exposed and rusting reinforcement. The condition assessment report recommended some repair work be undertaken and that replacement of the structure should be completed by 2031.

Photo 3.1.2 Salt Creek Culvert

Table 3.1.2A – Salt Creek Culvert – Eligibility Criteria

Eligibility Criteria	Does the Structure Meet the Eligibility Criteria (Yes or No)	Comments
Improvement not Maintenance	Yes	The proposed works are to replace the existing structure, which is an upgrade and improvement
New	Yes	The proposed upgrade is additional to current program of works and is not possible without funding support
Accessible	Yes	Upgrading the structure will improve accessibility and safety for heavy vehicles and pedestrians
Road Based	Yes	
Whole and Complete	Yes	
One program - BRP or HVSPP	Yes	Bridges Renewal Program

Table 3.1.2B – Salt Creek Culvert – Merit Criteria

Merit Assessment Criteria	Comments
Structural improvements contributing to productivity and safety	Structural improvements will improve pedestrian and vehicle safety.

Quantified benefits	Benefits will include increased community access and improved safety.
Construction Readiness and Risk	Information may be available but has not been provided during this review.
Strategic Need	Old Port Wakefield Road is listed in the 2030 Regional Transport Plan for freight, community access and tourism. The Salt Creek culvert is located just south of the Two Wells township. Old Port Wakefield Road provides access to Two Wells for a significant number of rural living residential allotments to the south and east of Two Wells.
State and Territory input	Input from DIT is required.

Table 3.1.2C – Salt Creek Culvert – Submission Requirements

Submission Requirements	Comments
Information about project	Not provided for this review, however APC will need to provide for BRP submission
Project budget	Not provided for this review however APC will need to provide for BRP submission
Traffic Counts	Not provided for this review however APC will need to provide for BRP submission
Evidence of Co-contributions from other contributors	Not provided for this review however APC will need to provide for BRP submission
Engineering Report (optional)	A recent engineering report from 2021 is available
Consultation Summary (optional)	Not provided for this review
Risk Assessment or project timeline (optional)	Not provided for this review

3.2 Barossa Council

The Barossa Council covers an area of approximately 912 km^2 and is located to the north east of greater metropolitan Adelaide. Land uses in the Barossa Council region include primary production, viticulture, horticulture, and tourism. There are large residential centres within the Council district including Nuriootpa and Tanunda, with many smaller towns also within the council area.

The Barossa Valley is part of the Mount Lofty Ranges and hence the topography is undulating and hilly. The North Para River passes through the Barossa Council area, and there are many creeks and tributaries of the river with road crossings.

Barossa Council have identified two bridge structures that require upgrading in the near future that may be suitable for Bridges Renewal Funding.

3.2.1 Moculta Road Bridge

Moculta Road Bridge is located on Moculta Road, which is listed in the 2030 Regional Transport Plan for Community Access. The bridge was constructed in 1975 and has a recommended reconstruction date of 2025 due to its poor and deteriorated condition.

A condition assessment report was undertaken in 2017 which identified that the bridge barriers and abutments were in poor condition with significant concrete spalling and exposed and rusting reinforcement. The bridge is also relatively narrow for two way traffic, with a width of 7.0m.

Photo 3.2.1 Moculta Road Bridge

Table 3.2.1A – Moculta Road Bridge – Eligibility Criteria

Eligibility Criteria	Does the Structure Meet the Eligibility Criteria (Yes or No)	Comments
Improvement not Maintenance	Yes	The proposed works are to replace the existing structure, which is an upgrade and improvement.
New	Yes	The proposed upgrade is additional to current program of works and is not possible without funding support
Accessible	Yes	Upgrading the structure will improve accessibility and safety for vehicles.
Road Based	Yes	
Whole and Complete	Yes	
One program - BRP or HVSPP	Yes	Bridges Renewal Program

Table 3.2.1B – Moculta Road Bridge – Merit Criteria

Merit Assessment Criteria	Comments
Structural improvements contributing to productivity and safety	Structural improvements will improve pedestrian and vehicle safety.
Quantified benefits	Benefits will include increased community access and safety.
Construction Readiness and Risk	Detailed design and independent costings have been completed
Strategic Need	Moculta Road Bridge is listed in the 2030 Regional Transport Plan for community access. It links the township of Moculta with the larger towns of Angaston and Nuriootpa.
State and Territory input	Input from DIT is required.

Table 3.2.1C – Moculta Road Bridge – Submission Requirements

Submission Requirements	Comments
Information about project	Not provided for this review, however Barossa Council will need to provide for BRP submission
Project budget	Yes, an independent cost estimate was undertaken in 2021 but should be revisited for recent construction cost increases.
Traffic Counts	Not provided for this review, however Barossa Council will need to provide for BRP submission
Evidence of Co-contributions from other contributors	Not provided for this review, however Barossa Council will need to provide for BRP submission
Engineering Report (optional)	An engineering report and detailed design is available.
Consultation Summary (optional)	Not provided for this review
Risk Assessment or project timeline (optional)	Not provided for this review

3.2.2 Bethany Road Ford

Bethany Road Ford is located on Bethany Road, which is listed in the 2030 Regional Transport Plan for Tourism and Community Access. The Bethany Road Ford crosses the Tanunda Creek.

The Bethany Road Ford is partially heritage listed, with the stone wall on the down stream end listed as being of local heritage significance.

The Bethany Road Ford is in relatively poor condition with cracked pipe culverts and cracking of the concrete ford. It is also likely that the culverts are undersized, and the ford likely overtops regularly. There does not appear to be any pedestrian access over the ford, despite the structure forming part of the Heysen Trail.

Photo 3.2.2 Bethany Road Ford

Table 3.2.2A – Bethany Road Ford – Eligibility Criteria

Eligibility Criteria	Does the Structure Meet the Eligibility Criteria (Yes or No)	Comments
Improvement not Maintenance	Yes	The proposed works are an upgrade to the structure, which is an improvement.
New	Yes	The proposed upgrade is additional to current program of works and is not possible without funding support
Accessible	Yes	The upgrade would improve accessibility particularly for pedestrians
Road Based	Yes	
Whole and Complete	Yes	
One program - BRP or HVSPP	Yes	Bridges Renewal Program

Table 3.2.2B – Bethany Road Ford– Merit Criteria

Merit Assessment Criteria	Comments
Structural improvements contributing to productivity and safety	Structural improvements will improve the longevity of the heritage listed structure and reduce the duration of road closures during large storm events due to the floodway over topping.
Quantified benefits	Benefits will include increased community and pedestrian access and reduce detours and trip times when ford overtops.
Construction Readiness and Risk	A concept design has been prepared, however detailed designs will be required for construction.

Strategic Need	Bethany Road is listed in the Regional Transport Plan for Community Access and Tourism. The ford is also located at the Heysen Trail.
State and Territory input	Input from DIT is required.

Table 3.2.2C – Bethany Road Ford – Submission Requirements

Submission Requirements	Comments
Information about project	Not provided for this review, however Barossa Council will need to provide for BRP submission
Project budget	Yes, a cost estimate has been provided for a concept design.
Traffic Counts	Traffic counts for 2005 are available but should be updated.
Evidence of Co-contributions from other contributors	Not provided for this review, however Barossa Council will need to provide for BRP submission
Engineering Report (optional)	Not provided for this review
Consultation Summary (optional)	Not provided for this review
Risk Assessment or project timeline (optional)	Not provided for this review

3.3 District Council of Barunga West

The District Council of Barunga West is located in the Mid North Region of South Australia, interfacing with the top of the Yorke Peninsula. It covers an area of approximately 1528 km^2

Land uses in the Barunga West Council region consist mainly of primary productive activities, particularly cropping and livestock. There are also coastal reserves and tourist areas along the coast.

The general topography of the Barunga West Council area ranges from slightly undulating to relatively flat. There are no major rivers passing through the Council district, with only a few small watercourses present.

The District Council of Barunga West have indicated that they have no major bridge or culvert structures that they consider to be of regional significance and in need of upgrade.

3.4 Clare and Gilbert Valleys Council

The Clare and Gilbert Valleys Council covers an area of approximately 4904 km^2 and is located in the mid north of South Australia. Land uses in the Clare and Gilbert Valleys Council region include primary production, viticulture, and tourism. There are large residential holdings within the townships of Clare, Riverton and Saddleworth and there are many smaller towns also within the Council area.

The Clare Valley is located in the northern Mount Lofty Ranges, and the terrain is generally undulating and hilly. The Hutt River, Gilbert River, Light River and Wakefield River pass through the Council area, with all rivers having numerous tributaries.

Clare and Gilbert Valleys Council have identified two bridge structures that require upgrading in the near future that may be suitable for Bridges Renewal Funding.

3.4.1 Bruce Road Bridge, Riverton

The Bruce Road Bridge is located on Bruce Road, just to the east of the Riverton township. Bruce Road is not listed in the 2030 Regional Transport Plan as being a road of regional significance, however Bruce Road is a gazetted for B-Double Commodity freight.

The bridge crosses the Gilbert River and has a reinforced concrete deck supported by triple span simply supported steel girders, and has an overall length of 21.7m.

A condition assessment report was undertaken in 2017 which identified that the bridge structure is significantly overstressed in bending. The condition of the structure is average, with cracking in the wingwalls and spalling of the concrete facing of the stone piers. The barrier is also in very poor condition. Of concern is also the lack of safe pedestrian access across the bridge structure, with no provisions for pedestrians and a relatively narrow width for two way traffic of 7.32m. There is a recent land division to the eastern side of the Riverton township and pedestrians from this area would need to cross the bridge to access the town centre.

Photo 3.4.1 Bruce Road Bridge, Riverton

Table 3.4.1A – Bruce Road Bridge – Eligibility Criteria

Eligibility Criteria	Does the Structure Meet the Eligibility Criteria (Yes or No)	Comments
Improvement not Maintenance	Yes	Proposed works would be to upgrade the structure, which is an improvement.
New	Yes	An upgrade would be additional to current program of works and would not be possible without funding support
Accessible	Yes	The upgrade would improve accessibility particularly for pedestrians
Road Based	Yes	
Whole and Complete	Yes	
One program - BRP or HVSPP	Yes	Bridges Renewal Program

Table 3.4.1B – Bruce Road Bridge – Merit Criteria

Merit Assessment Criteria	Comments
Structural improvements contributing to productivity and safety	Strengthening or upgrading the structure would ensure it is not overstressed and could safely cater for B-Double commodity freight. Improvements would also improve pedestrian safety.
Quantified benefits	Benefits would include increased community and pedestrian access. Bruce Road could potentially be used as a detour if the Barrier Highway was closed which would reduce detours and trip times.
Construction Readiness and Risk	There are no current designs available. Detailed designs would be required to adequately scope and cost the upgrade.
Strategic Need	Bruce Road is not listed in the 2030 Regional Transport Plan, however could be used as a detour if the Barrier Highway was closed.
State and Territory input	Input from DIT is required.

Table 3.4.1C – Bruce Road Bridge – Submission Requirements

Submission Requirements	Comments
Information about project	Not provided for this review, however Clare & Gilbert Valleys Council will need to provide for BRP submission
Project budget	Not provided for this review, however Clare & Gilbert Valleys Council will need to provide for BRP submission
Traffic Counts	Not provided for this review, however Clare & Gilbert Valleys Council will need to provide for BRP submission
Evidence of Co-contributions from other contributors	Not provided for this review, however Clare & Gilbert Valleys Council will provide for BRP submission
Engineering Report (optional)	A condition assessment report from 2017 is available but should be updated

Consultation Summary (optional)	Not provided for this review
Risk Assessment or project timeline (optional)	Not provided for this review

3.4.2 Ayliffes Bridge, Stockport

The Ayliffes Bridge is located on Ayliffes Bridge Road, Stockport. Ayliffes Bridge Road is not listed in the 2030 Regional Transport Plan as being a road of regional significance and is not gazetted for restricted access vehicles. The Ayliffes Road Bridge is located on the Council Boundary between the Clare and Gilbert Valleys Council and Light Regional Council.

The bridge crosses the Light River and is a four span simply supported structure with riveted steel plate girders supporting steel transverse girders and a reinforced concrete deck. The structure has an overall length of 48.3m and is a narrow one lane structure with a trafficable width of 4.88m. The bridge has a ten tonne load limit signed on both approaches. The southern approach from the Light Regional Council area is sealed, and has priority traffic movements over the structure. The Clare and Gilbert Valleys Council approach is unsealed, and is signed with a give way sign.

A condition assessment report was undertaken in 2017 which identified that the bridge structure is significantly overstressed in bending and shear. The condition of the structure is poor to average, with significant spalling of the concrete deck and erosion around the base of the piers and abutments. The barrier is also in very poor condition.

Photo 3.4.2 Ayliffes Bridge, Stockport

Table 3.4.2A – Ayliffes Bridge – Eligibility Criteria

Eligibility Criteria	Does the Structure Meet the Eligibility Criteria (Yes or No)	Comments
Improvement not Maintenance	Yes	Proposed works would be an upgrade to the structure, which is an improvement.
New	Yes	A proposed upgrade would be additional to current program of works and would not be possible without funding support
Accessible	Yes	The existing 10 tonne load limit is very restrictive with only passenger vehicles and very small commercial vehicles permitted across the structure. Upgrading the structure will improve accessibility for heavier vehicles.
Road Based	Yes	
Whole and Complete	Yes	
One program - BRP or HVSPP	Yes	Bridges Renewal Program

Table 3.4.2B – Ayliffes Bridge – Merit Criteria

Merit Assessment Criteria	Comments
Structural improvements contributing to productivity and safety	Strengthening or upgrading the structure would ensure it is not overstressed and could safely cater for general access vehicles.
Quantified benefits	Benefits will include increased community access and potentially allow the gazettal of the road for commodity freight.
Construction Readiness and Risk	There are no current designs available. Detailed designs would be required to adequately scope and cost the upgrade.
Strategic Need	Ayliffes Bridge Road is not listed in the 2030 Regional Transport Plan, however both Clare and Gilbert Valleys Council and Light Regional Council have acknowledged that this bridge requires an upgrade.
State and Territory input	Input from DIT is required.

Table 3.4.2C – Ayliffes Bridge – Submission Requirements

Submission Requirements	Comments
Information about project	Not provided for this review, however Clare & Gilbert Valleys Council will need to provide for BRP submission
Project budget	Not provided for this review, however Clare & Gilbert Valleys Council will need to provide for BRP submission
Traffic Counts	Not provided for this review, however Clare & Gilbert Valleys Council will need to provide for BRP submission

Evidence of Co-contributions from other contributors	Not provided for this review, however Clare & Gilbert Valleys Council will provide for BRP submission
Engineering Report (optional)	A condition assessment report from 2017 is available but should be updated
Consultation Summary (optional)	Not provided for this review
Risk Assessment or project timeline (optional)	Not provided for this review

3.5 Copper Coast Council

The Copper Coast Council area is located at the northern end of the Yorke Peninsula and covers an area of approximately 773 km^2

Primary production is the predominant land use in the Copper Coast Council region. There are also popular tourist areas along the coastline. Major town centres include Kadina, Wallaroo and Moonta, all of which have significant residential holdings.

There are no major rivers or watercourses passing through the Council district, with many internally drained catchments which discharge through evaporation and infiltration. The general topography of the Copper Coast Council area is slightly undulating and relatively flat.

The Copper Coast Council have indicated that they have recently upgraded a number of culvert structures during the Bay Road and Frances Terrace upgrade projects.. They do not have any bridges or culverts that they consider to be of regional significance and in need of upgrade.

3.6 Flinders Ranges Council

The Flinders Ranges Council area covers an area of approximately 4198 km^2. It includes the townships of Hawker and Quorn and is bordered to the north by the unincorporated pastoral area of South Australia.

Land uses in the Flinders Ranges Council region typically consists of primary production, particularly livestock grazing, and the National Parks and tourist area of the southern Flinders Ranges.

The general topography of the Flinders Ranges Council area is mountainous, with the Southern Flinders Ranges extending through the Council district. There are many small watercourse crossings, however Flinders Ranges Council have not identified any major bridge or culvert structures. The nature of the rainfall events in this area is that they are generally of high intensity and short duration, resulting in significant runoff for short periods Hence, the majority of the watercourse crossings have low flow culverts and flood ways, allowing run off to overtop the drainage structures without causing significant damage.

The Flinders Ranges Council have indicated that they do not have any bridges or culvert structures that they consider to be of regional significance and in need of upgrade.

3.7 Regional Council of Goyder

The Regional Council of Goyder covers an area of approximately 6719 km^2 and is located in the mid north of South Australia. Land uses in the Regional Council of Goyder region include primary production, mining, broad acre pastoral farming and tourism. There are residential holdings within the townships of Burra and Eudunda, and there are many smaller towns also within the Council area.

The township of Burra is located in the northern Mount Lofty Ranges, and the terrain is generally undulating and hilly. The Burra Creek passes through the Burra Township and Pine Creek passes near Eudunda. There are no other major rivers within the Council area.

The Regional Council of Goyder have identified one culvert structure that requires upgrading in the near future that may be suitable for Bridges Renewal Funding.

3.7.1 West Street Culvert, Burra

The West Street Culvert is located on West Street, Burra. West Street forms part of the Burra Heavy Vehicle bypass and is listed in the 2030 Regional Transport Plan as being a road of regional significance for freight. West Street is gazetted for restricted access vehicles including higher mass limit 36.5m road trains. The Burra Bypass links two sections of the Barrier Highway west of the Burra township so that heavy vehicles do not need to pass through Burra.

The culvert crosses the Burra Creek and consists of a low flow culvert with a concrete floodway. The major issue with the culvert is that the drainage structure is undersized, hence overtopping of the floodway structure occurs regularly. The overtopping of the floodway results in the Burra Bypass being closed, and the road can remain closed for many days which is a significant inconvenience for restricted access vehicles. An upgrade to increase the size of the culverts would reduce the frequency and duration of road closures, however significant works would be required on the road approaches to facilitate this.

Photo 3.7.1 West Street Culvert, Burra

Table 3.7.1A – West Street Culvert – Eligibility Criteria

Eligibility Criteria	Does the Structure Meet the Eligibility Criteria (Yes or No)	Comments
Improvement not Maintenance	Yes	Proposed works would be an upgrade to the structure, which is an improvement.
New	Yes	An upgrade would be additional to current program of works and would not be possible without funding support
Accessible	Yes	The upgrade works would improve accessibility by reducing the amount of time for which the road is closed due to the floodway overtopping. Upgrading the structure will improve accessibility for restricted access vehicles and for general traffic.
Road Based	Yes	
Whole and Complete	Yes	
One program - BRP or HVSPP	Yes	

Table 3.7.1B – West Street Culvert – Merit Criteria

Merit Assessment Criteria	Comments
Structural improvements contributing to productivity and safety	Upgrading the structure would ensure that the culverts are of sufficient size to convey the majority of rainfall events without the floodway overtopping and the road being closed
Quantified benefits	Benefits will include increased freight and community access during rainfall events. It would reduce detours during these times and ensure restricted access vehicles do not pass through the Burra township.
Construction Readiness and Risk	There are no detailed designs currently available but will need to undertaken to develop accurate scope of works and project budgets.
Strategic Need	The Burra Bypass (West Street and Copperhouse Road) are listed in the 2030 Regional Transport Plan for freight. It links the Barrier Highway, which is one of the few roads gazetted for 36.5m road trains.
State and Territory input	Input from DIT is required.

Table 3.7.1C – West Street Culvert – Submission Requirements

Submission Requirements	Comments
Information about project	Not provided for this review, however Regional Council of Goyder will need to provide for BRP submission

Project budget	Not provided for this review, however Regional Council of Goyder will need to provide for BRP submission
Traffic Counts	Not provided for this review, however Regional Council of Goyder will need to provide for BRP submission
Evidence of Co-contributions from other contributors	Not provided for this review, however Regional Council of Goyder will provide for BRP submission
Engineering Report (optional)	There is no current engineering report or concept design available for the structure.
Consultation Summary (optional)	Not provided for this review
Risk Assessment or project timeline (optional)	Not provided for this review

3.8 Light Regional Council

The Light Regional Council covers an area of approximately 1279 km^2 and is located to the north of greater metropolitan Adelaide. Land uses in the Light Regional Council region include primary production, viticulture, horticulture, and tourism. There are large residential centres within the Council district including the towns of Kapunda, Freeling, Roseworthy and many smaller towns also within the council area.

Much of the Light Regional Council area is part of the Mount Lofty Ranges and hence the topography in the north and east of the Council area is undulating and hilly. The western Council area is flatter and includes sections of floodplains of the Light River.

Light Regional Council have identified three bridge structures that require upgrading in the near future that may be suitable for Bridges Renewal Funding.

3.8.1 Rosedale Bridge

The Rosedale Bridge is located on Turretfield Road, which is listed in the 2030 Regional Transport Plan as a road of regional significance for freight and community access. Rosedale Road is gazetted for B-Double general freight on the Light Regional Council side of the bridge, however is not a gazetted RAV route on the Barossa Council side. The bridge was constructed in 1918, and is a narrow, one lane structure with a width of 6.25m. It has been load limited to 8 tonne. The bridge is located on the boundary between Light Regional Council and Barossa Council. The bridge passes in an east – west direction through the Rosedale township and over the North Para River. It has an overall length of approximately 48.5m.

A condition assessment report was undertaken in 2018 which identified that the bridge was in good condition, however, as it is too narrow for two way traffic and is significantly overstressed, Light Regional Council plan to upgrade the structure.

Photo 3.8.1 Rosedale Bridge, Rosedale

Table 3.8.1A – Rosedale Bridge – Eligibility Criteria

Eligibility Criteria	Does the Structure Meet the Eligibility Criteria (Yes or No)	Comments
Improvement not Maintenance	Yes	Proposed works would be an upgrade to the structure with either replacement or strengthening and widening undertaken, which is an improvement.
New	Yes	A proposed upgrade would be additional to current program of works and would not be possible without funding support
Accessible	Yes	The existing 8 tonne load limit is very restrictive with only passenger vehicles and very small commercial vehicles permitted across the structure. Upgrading the structure will improve accessibility for heavier vehicles.
Road Based	Yes	
Whole and Complete	Yes	
One program - BRP or HVSPP	Yes	Bridges Renewal Program

Table 3.8.1B – Rosedale Bridge – Merit Criteria

Merit Assessment Criteria	Comments
Structural improvements contributing to productivity and safety	Strengthening or upgrading the structure would ensure it is not overstressed and could safely cater for general access vehicles.
Quantified benefits	Benefits will include increased community access and potentially allow the gazettal of the road for RAVs.
Construction Readiness and Risk	There are no current designs available. Detailed designs would be required to adequately scope and cost the upgrade.
Strategic Need	Rosedale Road is listed in the 2030 Regional Transport Plan. An upgrade of Rosedale Bridge would benefit both Light Regional Council and Barossa Council, as the bridge is located at the property boundary.
State and Territory input	Input from DIT is required.

Table 3.8.1C – Rosedale Bridge – Submission Requirements

Submission Requirements	Comments
Information about project	Not provided for this review, however Light Regional Council will need to provide for BRP submission
Project budget	Not provided for this review, however Light Regional Council will need to provide for BRP submission
Traffic Counts	Not provided for this review, however Light Regional Council will need to provide for BRP submission
Evidence of Co-contributions from other contributors	Not provided for this review, however Light Regional Council will provide for BRP submission
Engineering Report (optional)	There is no current engineering report or concept design available for the structure.
Consultation Summary (optional)	Not provided for this review
Risk Assessment or project timeline (optional)	Not provided for this review

3.8.2 Ayliffes Bridge, Stockport

The Ayliffes Bridge is located on Ayliffes Bridge Road, Stockport. Ayliffes Bridge Road is not listed in the 2030 Regional Transport Plan as being a road of regional significance and is not gazette for restricted access vehicles. The Ayliffes Road Bridge is located on the Council Boundary between the Clare and Gilbert Valleys Council and Light Regional Council.

Refer to Section 3.4.2 for further information regarding this structure. This upgrade is recognized as important to both Light Regional Council and Clare and Gilbert Valleys Council.

3.8.3 Lyndoch Bridge, Lyndoch

The Lyndoch Bridge is located on Hermann Thumm Drive / Lyndoch Road, adjacent to the historic Chaeatu Yuldara. Lyndoch Road is listed in the 2030 Regional Transport Plan as a road of regional significance for freight and tourism access. However, Lyndoch Road is not gazetted for Restricted Access Vehicles at the bridge location or on the approaches. The bridge is located on the boundary between Light Regional Council and Barossa Council over the North Para River.

The current bridge consists of a floodway with low flow culverts. The structure regularly overtops and the road can be closed for reasonable periods of time. The current condition of the structure is not known, as a condition assessment report has not been provided for this structure.

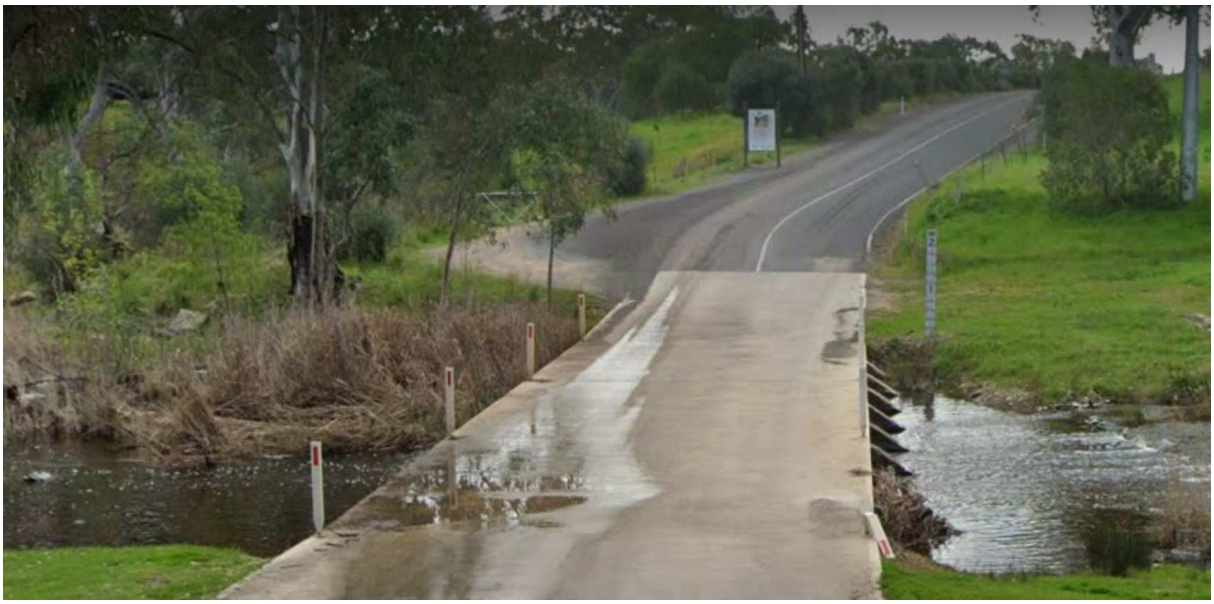


Photo 3.8.3 Lyndoch Bridge, Rosedale

Table 3.8.3A – Lyndoch Bridge – Eligibility Criteria

Eligibility Criteria	Does the Structure Meet the Eligibility Criteria (Yes or No)	Comments
Improvement not Maintenance	Yes	Proposed works would be an upgrade to the structure with replacing the existing floodway and low flow culverts with an arched bridge structure. This would be an improvement to the existing floodway which regularly overtops. .
New	Yes	A proposed upgrade would be additional to current program of works and would not be possible without funding support
Accessible	Yes	The upgrade would improve accessibility by reducing the frequency of road closures associated with the floodway overtopping.
Road Based	Yes	
Whole and Complete	Yes	
One program - BRP or HVSPP	Yes	Bridge Renewal Program

Table 3.8.3B – Lyndoch Bridge – Merit Criteria

Merit Assessment Criteria	Comments
Structural improvements contributing to productivity and safety	Upgrading the structure would reduce the frequency of the floodway overtopping, which would reduce road closures.
Quantified benefits	Benefits will include increased community access and potentially allow the gazettal of the road for RAVs.
Construction Readiness and Risk	A concept design has been undertaken. Detailed designs would be required to adequately scope and cost the upgrade.

Strategic Need	Lyndoch Road is listed in the 2030 Regional Transport Plan. An upgrade of Lyndoch Bridge would benefit both Light Regional Council and Barossa Council, as the bridge is located at the property boundary.
State and Territory input	Input from DIT is required.

Table 3.8.3C – Lyndoch Bridge – Submission Requirements

Submission Requirements	Comments
Information about project	Not provided for this review, however Light Regional Council will need to provide for BRP submission
Project budget	Not provided for this review, however Light Regional Council will need to provide for BRP submission
Traffic Counts	Not provided for this review, however Light Regional Council will need to provide for BRP submission
Evidence of Co-contributions from other contributors	Not provided for this review, however Light Regional Council will provide for BRP submission
Engineering Report (optional)	A concept design has been undertaken, however detailed designs would be required for construction.
Consultation Summary (optional)	Not provided for this review
Risk Assessment or project timeline (optional)	Not provided for this review

3.9 District Council of Mount Remarkable

The District Council of Mount Remarkable is located at the northern end of the Spencer Gulf, between the coast and the southern Flinders Ranges. It covers an area of approximately 3424.5 km^2

Land use in the District Council of Mount Remarkable region typically consists of primary production, with a mixture of cropping and livestock grazing. There are also National Parks and coastal reserves, with the coastal town of Port Germein located within the Council area.

The general topography is undulating and hilly in the central and eastern Council area, transitioning to coastal plains in the west. There are numerous watercourse crossings with bridges and culverts, and there are also some watercourse crossings with low flow culverts and floodways.

District Council of Mount Remarkable have identified one bridge structure that may require upgrading and may be suitable for Bridges Renewal Funding. The District Council of Mount Remarkable did not provide an Asset Management Plan for Bridges and Culverts for this review, and only provided details of bridges located on roads listed in the 2030 Regional Transport Plan. Hence, it is likely that there are additional structures within the Council district which may be better suited for Bridges Renewal Program funding. The District Council of Mount Remarkable also strongly support the upgrade of the Pine Creek Bridge structure located within the Northern Areas Council, as many of the residents and primary producers in the Mount Remarkable Council district regularly use the Laura – Appila Road.

3.9.1 Wilmington Road Bridge, Wilmington

The Wilmington Road Bridge is located on Wilmington Road, to the north east of the Wilmington township. Wilmington Road is listed in the 2030 Regional Transport Plan as being a road of regional significance for freight.

The bridge crosses the Willochra Creek and has a reinforced concrete deck supported by steel girders and has a width of 7.2m

A level 2 condition assessment report was undertaken which identified that the bridge structure is generally in good condition. However, it was identified that the bridge railing consists of concrete posts and steel railing. This type of guardrail does not meet current standards and would be ineffective in restraining an errant vehicle. The concrete posts were also in relatively poor condition, with spalling concrete.

The District Council of Mount Remarkable have no immediate plans to upgrade the structure, however the road may be re-sheeted soon which could increase the quantity and type of vehicles that use this route.

Photo 3.9.1 Wilmington Road Bridge, Wilmington

Table 3.9.1A – Wilmington Road Bridge – Eligibility Criteria

Eligibility Criteria	Does the Structure Meet the Eligibility Criteria (Yes or No)	Comments
Improvement not Maintenance	Yes	A safety barrier upgrade would be an improvement
New	Yes	An upgrade would be additional to current program of works and would not be possible without funding support
Accessible	Yes	The upgrade works would improve accessibility by improving vehicle safety over the structure
Road Based	Yes	
Whole and Complete	Yes	
One program - BRP or HVSPP	Yes	Bridges Renewal Program

Table 3.9.1B – Wilmington Road Bridge – Merit Criteria

Merit Assessment Criteria	Comments
Structural improvements contributing to productivity and safety	A structural upgrade of the guard railing would improve vehicle safety.
Quantified benefits	Benefits will include increased vehicle safety
Construction Readiness and Risk	There are no current designs available. Detailed designs would be required to adequately scope and cost the upgrade.
Strategic Need	Wilmington Road is listed in the 2030 Regional Transport plan for freight.
State and Territory input	Input from DIT is required.

Table 3.9.1C – Wilmington Road Bridge – Submission Requirements

Submission Requirements	Comments
Information about project	Not provided for this review, however District Council of Mount Remarkable will need to provide for BRP submission
Project budget	Not provided for this review, however District Council of Mount Remarkable will need to provide for BRP submission
Traffic Counts	Not provided for this review, however District Council of Mount Remarkable will need to provide for BRP submission
Evidence of Co-contributions from other contributors	Not provided for this review, however District Council of Mount Remarkable will provide for BRP submission
Engineering Report (optional)	There is a Level 2 condition assessment report available by no concept design are available for the structure.
Consultation Summary (optional)	Not provided for this review
Risk Assessment or project timeline (optional)	Not provided for this review

3.10 Northern Areas Council

The Northern Areas Council is located mid north, at the northern end of the Mount Lofty Ranges. It covers an area of approximately 3070 km^2

Land use in the Northern Areas Council region typically consists of primary production, with a mixture of cropping and livestock grazing. There is also forestry with Bundeleer Forest and water catchment reservoirs including Beetaloo Reservoir and Bundaleer Reservoir within the Council area.

The general topography is undulating and hilly. There are numerous watercourse crossings with bridges and culverts, and towards the northern Council area there are also watercourse crossings with low flow culverts and flood ways. The Broughton River, Hutt River and associated catchments pass through the Northern Areas Council region.

Northern Areas Council have identified two bridge structures that require upgrading in the near future that may be suitable for Bridges Renewal Funding.

3.10.1 Pine Creek Bridge, Caltowie West

The Pine Creek Bridge is located on Laura – Appila Road, to the north east of the Laura township. The Laura to Appila Road is listed in the 2030 Regional Transport Plan as being a road of regional

significance for freight. It is also a gazetted B-Double RAV route, however, there is a restriction over the Pine Creek Bridge, with a load limit of 30 tonnes.

The bridge crosses Pine Creek and has a reinforced concrete deck supported by steel girders with a narrow width for two way traffic of 6.4m.

Structural assessments have been undertaken which have identified that the bridge is overstressed. However, much of the structure is in sound condition and has many years left of serviceable life. The proposed upgrade involves the widening and strengthening of the existing bridge structure so that B-Doubles can be accommodated.

Photo 3.10.1 Pine Creek Bridge, Caltowie West

Table 3.10.1A – Pine Creek Bridge, Caltowie West – Eligibility Criteria

Eligibility Criteria	Does the Structure Meet the Eligibility Criteria (Yes or No)	Comments
Improvement not Maintenance	Yes	The proposed widening and strengthening works are an upgrade to the structure, which is an improvement.
New	Yes	The proposed upgrade is additional to current program of works and is not possible without funding support
Accessible	Yes	The existing 30 tonne load limit is restrictive for freight movements. The widening of the structure will improve vehicle safety. Upgrading the structure will improve accessibility for heavier vehicles.
Road Based	Yes	
Whole and Complete	Yes	
One program - BRP or HVSPP	Yes	Bridges Renewal Program

Table 3.10.1B – Pine Creek Bridge, Caltowie West – Merit Criteria

Merit Assessment Criteria	Comments
Structural improvements contributing to productivity and safety	Structural improvements will increase load limits, reduce detours, and improve the longevity structure.
Quantified benefits	Benefits will include increased freight access, a reduction in detours and a reduction in trip times for heavy vehicles.
Construction Readiness and Risk	A preliminary design has been undertaken. Other information may be available but has not been provided during this review.
Strategic Need	The Laura – Appila Road is listed in the 2030 Regional Transport Plan for freight. This project is supported by two Local Government Authorities.
State and Territory input	Input from DIT is required.

Table 3.10.1C – Pine Creek Bridge, Caltowie West – Submission Requirements

Submission Requirements	Comments
Information about project	Not provided for this review, however Northern Areas Council will need to provide for BRP submission
Project budget	Yes, an independent cost estimate was undertaken in 2021.
Traffic Counts	Yes, recent traffic counts are available.
Evidence of Co-contributions from other contributors	Not provided for this review, however Northern Areas Council will need to provide for BRP submission
Engineering Report (optional)	An engineering report and concept design is available.
Consultation Summary (optional)	Not provided for this review
Risk Assessment or project timeline (optional)	Not provided for this review

3.10.2 Hill River Road Bridge, Spalding

The Hill River Road Bridge is located on Hill River Road, to the south east of the Spalding township. Hill River Road is listed in the 2030 Regional Transport Plan as being a road of regional significance for freight. It is also a gazetted B-Double RAV route. Hill River Road links the highly productive cropping area of Andrews and Hilltown with the Goyder Highway.

The bridge crosses the Broughton River and was originally constructed in 1891 with a 4 inch jarrah plank deck, supported a steel superstructure. In 1945, the deck was upgraded to a reinforced concrete deck. The majority of the original steel structure is still in service, with some further strengthening works designed in 1997. The bridge is 75m long with a relatively narrow width for two way traffic of 6.5m.

Structural and condition assessments have been undertaken which have identified that the bridge has spalling of the concrete deck and corrosion of the steel beams. A recent assessment recommended invasive material testing to determine residual thicknesses, and indicated that the structure may be suitable for heavy vehicles under single lane operation, but is likely to be overstressed for two way traffic.

Photo 3.10.2 Hill River Bridge, Spalding

Table 3.10.2A – Hill River Road Bridge, Spalding – Eligibility Criteria

Eligibility Criteria	Does the Structure Meet the Eligibility Criteria (Yes or No)	Comments
Improvement not Maintenance	Yes	An upgrade of the structure would likely include either replacement or strengthening and widening which would be an improvement to the structure.
New	Yes	An upgrade would be additional to current program of works and would not be possible without funding support
Accessible	Yes	The narrow width is restrictive for freight movements. The widening of the structure will improve vehicle safety. Upgrading the structure will improve accessibility for heavier vehicles.
Road Based	Yes	
Whole and Complete	Yes	
One program - BRP or HVSPP	Yes	Bridges Renewal Program

Table 3.10.2B – Hill River Road Bridge, Spalding – Merit Criteria

Merit Assessment Criteria	Comments
Structural improvements contributing to productivity and safety	Structural improvements would improve load carrying capacity, and improve the longevity structure.
Quantified benefits	Benefits would include increased freight access, and a potential reduction in trip times for heavy vehicles.
Construction Readiness and Risk	There are no current designs available. Detailed designs would be required to adequately scope and cost the upgrade.
Strategic Need	The Hill River Road is listed in the 2030 Regional Transport Plan for freight.
State and Territory input	Input from DIT is required.

Table 3.10.2C – Hill River Road Bridge, Spalding – Submission Requirements

Submission Requirements	Comments
Information about project	Not provided for this review, however Northern Areas Council will need to provide for BRP submission
Project budget	Not provided for this review, however Northern Areas Council will need to provide for BRP submission
Traffic Counts	Not provided for this review, however Northern Areas Council will need to provide for BRP submission
Evidence of Co-contributions from other contributors	Not provided for this review, however Northern Areas Council will need to provide for BRP submission
Engineering Report (optional)	An engineering report has been undertaken but designs for upgrades have not yet been completed.
Consultation Summary (optional)	Not provided for this review
Risk Assessment or project timeline (optional)	Not provided for this review

3.11 District Council of Orroroo Carrieton

The District Council of Orroroo Carrieton area is located at the northern end of the Mid North region and covers an area of approximately 3300 km^2

Land use in the District Council of Orroroo Carrieton region typically consists of primary production, with a mixture of cropping and livestock grazing in the southern council region and pastoral grazing to the north of Goyder's line which passes through the Council district.

There are some tourist areas, with the Southern Flinders Ranges passing through the Council district. Hence, the general topography is undulating and hilly. There are numerous small watercourse crossings, however there are no major bridge or culvert structures identified during this review.

The nature of rain events in this area is that they are generally of high intensity and short duration, resulting in significant runoff for short periods. Hence, the majority of the watercourse crossings have low flow culverts and flood ways, allowing run off to overtop the drainage structures and without causing significant damage.

The District Council of Orroroo Carrieton have indicated that they do not have any bridges or culvert structures that they consider to be of regional significance and in need of upgrade.

3.12 District Council of Peterborough

The District Council of Peterborough council area is located at the northern end of the Mid North region and covers an area of approximately 3020 km^2

Land use in the District Council of Peterborough region typically consists of broad acre pastoral grazing with Goyder's line passing to the south of the Peterborough township. Peterborough was historically an important railway town, with a four-way junction for narrow gauge trains. Road transport was constructed around the railways, with the Petersburg Road linking the Barrier Highway and RM Williams Way near Peterborough.

There railways have since closed, and the population of Peterborough has diminished along with work availability. However, there are still a few industrial enterprises including a slaughterhouse and the recent opening of a satellite ground station to support space industries.

The topography of the area is slightly undulating and relatively flat, with no major rivers or watercourses passing through the Council area. The nature of rain events in this area is that they are generally of high intensity and short duration, resulting in significant runoff for short periods. Hence, most of the watercourse crossings have low flow culverts and floodways, allowing run off to overtop the drainage structures without causing significant damage.

District Council of Peterborough has identified five culvert structures along one road that require upgrading in the near future that may be suitable for Bridges Renewal Funding.

3.12.1 George Street Culverts, Peterborough

The George Street Culverts are located on the eastern side of George Street, Peterborough. There is a drain which conveys a local stormwater catchment from the north of Peterborough to the south, and has five road crossings along the length of George Street. George Street is a local road and is not listed in the 2030 Regional Transport Plan as being a road of regional significance. However, it is a busy local road within the Peterborough township.

The culverts are narrow and have no appropriate guard railing or pedestrian access. The District Council of Peterborough propose to upgrade the culverts to increase the trafficable width and to provide appropriate pedestrian access.

Photo 3.12.1 George Street Culverts, Peterborough

Table 3.12.1A – George Street Drain Culverts – Eligibility Criteria

Eligibility Criteria	Does the Structure Meet the Eligibility Criteria (Yes or No)	Comments
Improvement not Maintenance	Yes	The proposed works are an upgrade to the structures, which is an improvement.
New	Yes	The proposed upgrade is additional to current program of works and is not possible without funding support
Accessible	Yes	The upgrade works would improve accessibility by increasing the trafficable width of the culvert structures and providing appropriate pedestrian access. Upgrading the structures will improve accessibility for general access vehicles.
Road Based	Yes	
Whole and Complete	Yes	
One program - BRP or HVSPP	Yes	Bridges Renewal Program

Table 3.12.1B – George Street Drain Culverts – Merit Criteria

Merit Assessment Criteria	Comments
Structural improvements contributing to productivity and safety	Structural improvements will improve the traffic and pedestrian safety of the structures by increasing the trafficable width and providing appropriate pedestrian access.
Quantified benefits	Benefits will include increased community and pedestrian access.
Construction Readiness and Risk	The District Council of Peterborough are in the process of having engineering designs completed for the upgrade.
Strategic Need	George Street is not listed in the 2030 Regional Transport Plan however it is a busy road located within the Peterborough township.
State and Territory input	Input from DIT is required.

Table 3.12.1C – George Street Culverts – Submission Requirements

Submission Requirements	Comments
Information about project	Not provided for this review, however District Council of Peterborough will need to provide for BRP submission
Project budget	Not provided for this review, however District Council of Peterborough will need to provide for BRP submission
Traffic Counts	Not provided for this review, however District Council of Peterborough will need to provide for BRP submission
Evidence of Co-contributions from other contributors	Not provided for this review, however District Council of Peterborough will need to provide for BRP submission
Engineering Report (optional)	A condition assessment report is not currently available. The District Council of Peterborough are in the process of having engineering designs completed for the upgrades of the structures.
Consultation Summary (optional)	Not provided for this review
Risk Assessment or project timeline (optional)	Not provided for this review

3.13 Port Pirie Regional Council

The Port Pirie Regional Council covers an area of approximately 1761km^2, and is located at the top of the Yorke Peninsula. Land uses in the Port Pirie Regional Council area are generally agricultural primary production, and there is a lead smelter based at Port Pirie providing significant employment in the region. The city of Port Pirie is the largest residential and commercial hub within the district, with smaller towns including Crystal Brook, Koolunga, Redhill and Napperby.

The Rocky River, Broughton River and the tidal salt water inlet of the Pirie River pass through the Council district. The general topography of the Council area ranges from undulating and hilly in the east, with the southern Flinders Ranges passing to the east of the Port Pirie township, transitioning to coastal plains in the west.

Port Pirie Regional Council have identified two bridge structures that require upgrading in the near future that may be suitable for Bridges Renewal Funding.

3.13.1 Sims Hill Bridge, Koolunga

The Sims Hill Bridge is located on the Narridy to Koolunga Road, Koolunga. The Narridy – Koolunga Road is not listed in the 2030 Regional Transport Plan as being a road of regional significance however it is a B-Double commodity freight route.

The bridge was constructed in 1925, and it is recommended that is replaced by 2035, however this may need to be expediated due to the condition of the bridge. The bridge crosses the Browns Creek, which is part of the Rocky River and Broughton River catchments. It is a composite bridge structure, with steel girders, a concrete deck and concrete abutments. The structure has an overall length of 9.1m and is a narrow one lane structure with a trafficable width of 4.6m. The bridge has a ten tonne load limit signed on both approaches. The southern approach has a give way sign.

A condition assessment report was undertaken in 2019 which identified that the bridge structure is in relatively poor condition. There is significant spalling of the concrete deck, corrosion of the steel girders and spalling and drumminess of the concrete on the abutments and wingwalls. There is also erosion around the base of the piers and abutments. Port Pirie Regional Council are investigating replacing the bridge with a culvert.

Photo 3.13.1 Sims Hills Bridge, Koolunga

Table 3.13.1A – Sims Hill Bridge, Koolunga – Eligibility Criteria

Eligibility Criteria	Does the Structure Meet the Eligibility Criteria (Yes or No)	Comments
Improvement not Maintenance	Yes	The proposed works would involve replacing the existing bridge structure with a culvert which is an improvement.
New	Yes	The proposed replacement of the structure is additional to current

		program of works and is possible not without funding support
Accessible	Yes	The existing 10 tonne load limit is very restrictive with only passenger vehicles and very small commercial vehicles permitted across the structure. Upgrading the structure will improve accessibility for heavier vehicles.
Road Based	Yes	
Whole and Complete	Yes	
One program - BRP or HVSPP	Yes	Bridges Renewal Program

Table 3.13.1B – Sims Hill Bridge, Koolunga – Merit Criteria

Merit Assessment Criteria	Comments
Structural improvements contributing to productivity and safety	Replacing the existing bridge structure with a culvert would ensure it is not overstressed and could safely cater for general access vehicles, and B-Double commodity freight
Quantified benefits	Benefits will include increased community access and potentially allow the gazettal of the road for general freight.
Construction Readiness and Risk	There are no current designs available. Detailed designs would be required to adequately scope and cost the upgrade.
Strategic Need	The Narridy-Koolunga Road is not listed in the 2030 Regional Transport Plan, however it does provide an important link from the southern Council area to the Goyder Highway, and the upgrade of this structure would potentially allow this route to be gazetted for restricted access vehicles.
State and Territory input	Input from DIT is required.

Table 3.13.1C – Sims Hill Bridge, Koolunga – Submission Requirements

Submission Requirements	Comments
Information about project	Not provided for this review, however Port Pirie Regional Council will need to provide for BRP submission
Project budget	Not provided for this review, however Port Pirie Regional Council will need to provide for BRP submission
Traffic Counts	Not provided for this review, however Port Pirie Regional Council will need to provide for BRP submission
Evidence of Co-contributions from other contributors	Not provided for this review, however Port Pirie Regional Council will need to provide for BRP submission
Engineering Report (optional)	A condition assessment report was undertaken in 2017, however it is recommended that this is updated for a BRP application. is not currently available. Detailed designs are not currently available.
Consultation Summary (optional)	Not provided for this review
Risk Assessment or project timeline (optional)	Not provided for this review

3.13.2 Redhill Bridge, Redhill

The Redhill Bridge is located on Main Road, Redhill, which is listed in the 2030 Regional Transport Plan for Community Access. The road and bridge structure also form part of a gazetted B-Double general freight route. The bridge crosses the Broughton River and was constructed in 1958.

The structure is a composite structure withs steel girders and a concrete deck. A condition assessment report was undertaken in 2019 which identified that the bridge is in sound condition for its age, however, is likely overstressed. The barriers are non-complying. There has been some settlement of the road pavement on the road approaches which was caused by flood damage. Although this has been repaired, there has been further settlement. There is some separation between the wingwalls and the abutments.

Port Pirie Regional Council have no immediate plans to upgrade the structure. However, if the Augusta Highway was duplicated, or if there was an accident along the Augusta Highway, Main Road and Cattletrack could potentially be used as a detour route if the bridge had a suitable load carrying capacity.

Photo 3.13.2 Redhill Bridge, Redhill

Table 3.13.2A – Redhill Bridge, Redhill – Eligibility Criteria

Eligibility Criteria	Does the Structure Meet the Eligibility Criteria (Yes or No)	Comments
Improvement not Maintenance	Yes	Potential upgrades could include strengthening of the structure and improving safety by upgrading the guardrail.

New	Yes	Upgrades would be additional to the current program of works and would not be possible without funding support
Accessible	Yes	A strengthening upgrade would improve accessibility particularly for heavy vehicles if the Augusta Highway was closed.
Road Based	Yes	
Whole and Complete	Yes	
One program - BRP or HVSPP	Yes	Bridges Renewal Program

Table 3.13.2B – Redhill Bridge, Redhill – Merit Criteria

Merit Assessment Criteria	Comments
Structural improvements contributing to productivity and safety	Upgrading or strengthening the existing bridge structure would ensure it is not overstressed and could safely cater for general access vehicles, and B-Double restricted access vehicles. A safety barrier upgrade would also improve vehicle safety.
Quantified benefits	Benefits will include increased freight access and improved vehicle safety.
Construction Readiness and Risk	There are no current plans to upgrade the structure, therefore engineering designs would be require
Strategic Need	Main Road is listed in the 2030 Regional Transport Plan for Community Access. A strengthening upgrade would potentially allow this route to be used as a detour for the Augusta Highway. It is also a gazetted RAV route for B-Double general freight.
State and Territory input	Input from DIT is required.

Table 3.13.2C – Redhill Bridge, Redhill – Submission Requirements

Submission Requirements	Comments
Information about project	Not provided for this review, however Port Pirie Regional Council will need to provide for BRP submission
Project budget	Not provided for this review, however Port Pirie Regional Council will need to provide for BRP submission
Traffic Counts	Not provided for this review, however Port Pirie Regional Council will provide for BRP submission
Evidence of Co-contributions from other contributors	Not provided for this review, however Port Pirie Regional Council will need to provide for BRP submission
Engineering Report (optional)	A condition assessment report was undertaken in 2017, however it is recommended that this is updated for a BRP application. Engineering designs are not currently available.
Consultation Summary (optional)	Not provided for this review
Risk Assessment or project timeline (optional)	Not provided for this review

3.14 Wakefield Regional Council

The Wakefield Regional Council covers an area of approximately 3469 km^2, in the mid north area of South Australia. Land uses in the Wakefield Regional Council area include primary production, animal keeping, abattoirs and coastal reserves. There are a number of towns in the Council district including Blyth, Brinkworth, Hamley Bridge, Lochiel, Owen, Port Wakefield and Snowtown

The Wakefield River passes through the Council district, however the general topography of the Council area ranges from slightly undulating to relatively flat, with some sections of hills around Lochiel.

Wakefield Regional Council have identified one bridge structure that requires upgrading in the near future that may be suitable for Bridges Renewal Funding.

3.14.1 Kybunga Top Road Bridge, Blyth

The Kybunga Top Road Bridge was submitted for Round 5 of the Bridges Renewal Program but was unsuccessful with the funding application. A copy of the application has been provided for this review. Kybunga Top Road is not listed in the 2030 Regional Transport Plan as being a road of regional significance, however, it does provide an important link between Muanu Road and Blyth Road. Muanu Road is listed in the 2030 Regional Transport Plan for freight, as it provides access to a large feedlot.

The Kybunga Top Road Bridge crosses Carter Creek. A condition assessment report was undertaken in 2019, which identified that the bridge is in poor condition with significant structural defects. The deck has significant concrete spalling and there is evidence of tension cracking. Some of the steel girders have corrosion. The Wakefield Regional Council Bridge Asset Management Plan has the bridge scheduled for replacement in 2024 – 2025 financial year. Traffic counts were undertaken in 2014, which indicated that there is a high percentage of commercial vehicles, however, these traffic counts should be updated for future Bridges Renewal Program applications.

Photo 3.14.1 – Kybunga Top Road Bridge, Blyth

Table 3.14.1A – Kybunga Top Road Bridge, Blyth – Eligibility Criteria

Eligibility Criteria	Does the Structure Meet the Eligibility Criteria (Yes or No)	Comments
Improvement not Maintenance	Yes	The existing bridge structure would be demolished and replaced with a new culvert structure which would be an improvement.

New	Yes	The proposed upgrade is additional to current program of works and would not be possible without funding support
Accessible	Yes	The existing structure is not load limited (but potentially should be) and upgrade works would improve accessibility by ensuring that the culvert structure has sufficient load carrying capacity for restricted access vehicles.
Road Based	Yes	
Whole and Complete	Yes	
One program - BRP or HVSPP	Yes	Bridges Renewal Program

Table 3.14.1B – Kybunga Top Road Bridge, Blyth – Merit Criteria

Merit Assessment Criteria	Comments
Structural improvements contributing to productivity and safety	Structural improvements will increase load limits, reduce detours, and improve vehicle safety.
Quantified benefits	Benefits will include increased freight access and a reduction in trip times for heavy vehicles.
Construction Readiness and Risk	Concept designs have been completed however detailed designs would be required to develop an accurate scope of works and project budget.
Strategic Need	Kybunga Top Road is not listed in the 2030 Regional Transport Plan. However, it links Muanu Road with Blyth Road. Muanu Road is listed in the 2030 Regional Transport Plan and provides access to a large feedlot.
State and Territory input	Input from DIT is required.

Table 3.14.1C – Kybunga Top Road Bridge, Blyth – Submission Requirements

Submission Requirements	Comments
Information about project	Brief information have been provided, however it would be beneficial for Wakefield Regional Council to expand the information provided, with a greater focus on the benefits of the upgrade.
Project budget	A project budget was provided for previous BRP submission, however it should be updated , however Wakefield Regional Council should update the budget for recent construction price increases.
Traffic Counts	Traffic counts from 2014 have been provided, however these should be updated for BRP submission
Evidence of Co-contributions from other contributors	Not provided for this review, however Wakefield Regional Council will need to provide for BRP submission
Engineering Report (optional)	A condition assessment report was undertaken in 2019. An engineering design has not been undertaken, and it is recommended that a detailed design is prepared.
Consultation Summary (optional)	Not provided for this review
Risk Assessment or project timeline (optional)	Not provided for this review

3.15 Yorke Peninsula Council

The Yorke Peninsula Council area covers the majority of the Yorke Peninsula and with an area of approximately 5834km^2

Primary production is the predominant land use in the Yorke Peninsula Council region. There are also popular tourist areas along the coastline. Major town centres include Maitland, Ardrossan, Minlaton and Stansbury all of which have significant residential holdings. There are many small coastal settlements, and large areas of National Parks, particularly towards the southern end of the Yorke Peninsula.

There are no major rivers or watercourses passing through the Council district, with many internally drained catchments which discharge through evaporation and infiltration. The general topography of the Yorke Peninsula Council area is slightly undulating and relatively flat.

The Yorke Peninsula Council have indicated that the majority of their culverts are in good condition. They only have one bridge structure near the Ardrossan township. There are no recent condition assessment reports on this structure, and no plans to upgrade it in the near future.

4.0 Summary of Bridge and Culvertg Structures on Legatus LGA Roads

Sixteen bridge and culvert structures located on Legatus Group LGA Roads have had a desktop study of available information undertaken, to determine if an upgrade of the structure might be suitable for funding under the Bridges Renewal Program. Many of the structures are located on roads that are noted as regionally significant for freight, community access and tourism in the 2030 Regional Transport Plan, however some of the structures are located on other roads that the Local Government Authority has considered important.

The following table provides a summary of the bridge and culvert structures, with suggested priorities based on regional significance, potential benefits and construction readiness. This should be considered as a preliminary recommendation, as this was developed from a desktop review and priorities may change as Local Government Authorities update condition assessment reports, and as regional communities experience population and emerging industry growth.

Local Government Authority	Structure	Comments
Adelaide Plains Council	Wasleys Bridge	Heritage listed structure Existing structure is in poor condition Regionally significant route for freight BRP application close to complete
Northern Areas Council	Pine Creek Bridge	Regionally significant route for freight Load limit of 30 tonnes, not currently suitable for RAVs BRP application close to complete Engineering design and independent costings have been completed Upgrade supported by 2 LGA's
Goyder Council	West Street Culvert	Regionally significant route for freight

		Significant productivity costs associated with frequent road closures due to floodway overtopping
Light Regional Council	Rosedale Bridge	Regionally significant route for freight and community access Existing structure load limited at 8 tonnes Existing structure is narrow, 1 lane Upgrade would have significant freight productivity and safety benefits
Barossa Council	Moculta Road Bridge	Regionally significant route for community access Existing structure is in poor condition Engineering design and independent costings have been completed
Wakefield Regional Council	Kybunga Top Road Bridge	Important road for freight Structure at end of life and in very poor condition BRP application close to complete Detailed engineering design and independent costings required
Port Pirie Council	Sims Hill Bridge	Important road for freight Structure at end of life and in very poor condition Upgrade would have freight productivity and safety benefits
Adelaide Plains Council	Salt Creek Culvert	Regionally significant route for freight, community access and tourism Existing structure has sub-standard pedestrian access Existing structure in poor condition Upgrade would have freight productivity and safety benefits
Northern Areas Council	Hill River Road Bridge	Regionally significant route for freight Existing structure is narrow, 1 lane Existing structure in poor condition Upgrade would have freight productivity and safety benefits
Clare and Gilbert Valleys Council and Light Regional Council	Ayliffes Bridge	Existing structure load limited at 10 tonnes Existing structure is narrow, 1 lane Existing structure in poor condition Upgrade would have freight productivity and safety benefits Upgrade supported by 2 LGA's
Light Regional Council	Lyndoch Bridge	Regionally significant route for freight and tourism Existing structure regularly overtops resulting in road closures Productivity and safety benefits associated with a reduction road closures due to floodway overtopping if structure was upgraded.

District Council of Mount Remarkable	Wilmington Road Bridge	Regionally significant route for freight Existing structure is in good condition Safety barrier is poor An upgrade of the safety barrier would have safety benefits
Port Pirie Regional Council	Redhill Bridge	Regionally significant route for community access, however is also a gazetted RAV route Existing structure is in fair condition but likely overstressed Main Road / Cattletrack could potentially be used as a detour for Augusta Highway
Barossa Council	Bethany Road Ford	Regionally significant route for tourism and community access Existing structure regularly overtops resulting in road closures Productivity and safety benefits associated with a reduction road closures due to floodway overtopping if structure was upgraded.
Clare and Gilbert Valleys Council	Bruce Road	Locally important road Existing structure is in fair condition but is overstressed Could potentially be used as a detour for Barrier Highway
District Council of Peterborough	George Street Culverts	Locally important road Existing structures are in poor condition

5.0 Recommendations and Conclusion

Mace Engineering Services have undertaken a desktop assessment of bridge and culvert structures on Local Government Authority Roads for Legatus Group Councils. The assessment has identified bridge or culvert structures that may be suitable for funding under the Bridges Renewal Program.

The assessment of bridges and culverts project had a particular focus on structures on roads that comprise the Freight, Tourism and Community transport networks outlined in the Legatus Group 2030 Regional Transport Plan. However, other bridge and culvert structures were also considered, as in some instances, structures were located on roads which do not form part of these regionally significant networks, but would potentially be included if the bridge or culvert was of a sufficient standard and significance to the associated Council.

The assessment resulted in sixteen structures from ten local government authorities being considered. For each structure, available information provided by the Council was reviewed. The level of information provided varied, making direct comparisons difficult. Most structures require additional information to be considered to be in a position to be ready to submit for funding opportunities under the Bridges Renewal Program.

The review resulting in the following recommendations:

- That Local Government Authorities invest in survey and detailed design for potential future bridge and culvert upgrades. As a minimum, a survey and preliminary design should be

completed to allow the development of a reasonable project budget and for a benefit cost analysis to be undertaken.

- That Local Government Authorities commit to undertaking all maintenance works detailed in condition assessment reports, unless the upgrade of the structure is in the programmed scheduled of works within the next few years and the project has an allocated budget.
- Traffic counters should be positioned in the field during normal traffic conditions, and also during peak periods such as harvest, vintage, or holiday periods. Traffic counters should be positioned on the road with the bridge or culvert structure, and also strategically within the surrounding road network to gain an understanding of the number of vehicles which may be detouring the structure.
- The project description needs to highlight the benefits of the project and paint a picture of the importance of structure within the region and to the local community.
- Local Government Authorities should liaise with Regional Development Australia, Department for Infrastructure and Transport (DIT), other local government authorities, local industry and the local community during project development and construction.
- LGA's should consider undertaking benefit cost analysis to support the application, particularly for projects where there is a high capital cost.

This is a preliminary overview of the bridges and culverts on Local Government Authority roads within the Legatus group. It is recommended that a review of available information is undertaken regularly, as the LGA's update their condition assessments report and Asset Management Plans to reflect the current condition of assets. Regional significance may also change over time, due to population growth and industry development.

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