



Adopted 15 June 2009

Bridge & Major Culvert Asset Management Plan 2009 - 2013

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1 Executive Summary

The fundamental purpose of the Bridge & Major Culvert Asset Management Plan (BMCAMP) is to improve Latrobe City Council's long term strategic management of its bridges and major culverts in order to provide infrastructure that is sustainable, appropriate, accessible and responsive to the community.

This Asset Management Plan (AMP) has been developed in accordance with the Asset Management Strategy 2007 – 2011 and the Asset Management Policy.

A key objective of this AMP is to match the level of service provided by Latrobe City's asset stock to the expectations of the community within the available resources. This requires a clear understanding of the user needs and expectations.

To achieve and sustain acceptable standards for service for Latrobe City's assets requires an annual commitment of funds. These funds provide for regular and responsive maintenance and for timely renewal or replacement of the asset. The provision of adequate financial resources ensures that the network is appropriately managed and preserved. Financial provisions under minimum requirements impacts directly on community development and if prolonged, results in substantial needs for "catch up" expenditure imposed on ratepayers in the future. Additionally, deferred renewal results in increased and escalating reactive maintenance as aged assets deteriorate at increasing rates.

The levels of service documented in this BMCAMP reflect the current levels of service provided by Latrobe City Council, for the benefit of the community, in the context of the available financial and human resources.

This plan proposes that the minimum expenditure over the next five years is as follows:

2009/2010	2010/2011	2011/2012	2012/2013	2013/2014
\$543,000	\$2,050,000	\$706,000	\$560,000	\$493,000

2 Introduction

Roads and Bridges make a significant contribution to the quality of life in our communities. Improved access and mobility for all road users depends on a safe, reliable and sustainable road network with critical links being the bridges. If these critical links are not managed properly they can become an obstruction leading to increased economic costs and disruption to the community's way of life.

The fundamental purpose of the BMCAMP is to improve Latrobe City Council's long-term strategic management of its bridge structures in order to cater for the community's desired levels of service in the future. The BMCAMP achieves this by setting standards, service levels and programs which Latrobe City Council will develop and deliver. The standards and service levels have been set in accordance with Latrobe City Council's best interpretation of user needs, mandates and codes of regulations, current industry practice (2006) and legislative codes of practice in compliance with the requirements of the Road Management Act 2004.

The Asset Management Strategy 2007 – 2011 is the overarching document used in the development of this Asset Management Plan with the main objective being to develop a structured set of scheduled actions aimed at improved asset management to support services and provide infrastructure that is sustainable, appropriate, accessible and responsive to the community.

The IIMM (International Infrastructure Management Manual) states that the goal of infrastructure management is to meet a required level of service, in the most cost effective manner, through the management of assets for present and future customers. The key elements of Asset Management are:

- Taking a lifecycle approach;
- Developing cost effective management strategies for the long-term;
- Providing a defined level of service and monitoring performance;
- Understanding and meeting the impact of growth through demand management and infrastructure investment;
- Managing risks associated with the asset failures;
- Sustainable use of physical resources; and
- Continuous improvement in Asset Management (AM) practices.

A comprehensive data collection and assessment inspection of all Latrobe City Council's bridge and major culverts has been carried out.

The BCAMP conforms with Latrobe's 2021 vision of sustainability to develop and implement asset management strategies for Latrobe City and implement whole of life maintenance requirements. It will also enable accurate estimates of the valuations of assets in accordance with Australian Accounting Regulations.

Following the introduction of the Victorian Road Management Act 2004 (RMA), Latrobe City Council introduced the Latrobe City Road Management Plan (RMP) and has subsequently revised it in 2008 and 2009. This Bridge and Major Culvert Asset Management Plan (BMCAMP) has been developed to complement the Road Management Plan and adopts the inspection regimes from that plan.

All Asset Management Plans must be dynamic, reflecting and responding to changes over time. It is anticipated that a full review of the BMCAMP will take place every four years to document progress and set out proposals for the next five year period.

Specific elements considered in this AMP are:

- An assessment of the existing bridge asset stock and its capacity, condition and functional adequacy;
- Service Levels;
- Life Cycle Management; and
- Financial Planning.

The BMCAMP has been developed following the collection and organisation of significant engineering, financial and economic data related to Latrobe City Council's bridge network. This has provided a high degree of confidence in the actions and priorities documented in this plan.

In addition to the VicRoads standardised procedures, a weighted scoring system has been developed to prioritise bridge projects using factors that are intended to reflect community interests and are therefore relevant to Local Government.

During 2002 Latrobe City Council undertook a survey of the condition of bridges under its control using the procedures outlined in the current editions

of the VicRoads manuals. The survey identified many bridges in need of repairs and maintenance and provided a list of recommended treatments. Subsequently, estimates were prepared for the recommended treatments and all the information for each bridge compiled.

Some of these works were completed and some have been funded or are on the bridge replacement program. Some bridges had deteriorated to the extent that they needed replacement and along with other bridges that have timber components have been assessed for inclusion in the Bridge Upgrade and Replacement Program.

3 Scope of this Plan

The assets considered and included in this BMCAMP are those for which Latrobe City Council is the responsible authority and include:

- Vehicular bridges that form part of Latrobe City Council's road network;
- Footbridges that form part of Latrobe City Council's footpath network;
and
- Major pipe or box culverts that form part of Latrobe City Council's road or path networks. The culverts considered within this AMP are those with a waterway area of 3m² or larger than 1800mm in diameter as identified in the VicRoads Bridge Inspection Manual.

Latrobe City Council does not carry out maintenance, renewal or upgrade works on bridge structures that form part of the arterial road network owned and maintained by VicRoads or structures required for other purposes that are owned and maintained by other authorities, private companies or individuals.

This AMP also does not cover timber boardwalks or constructed fishing platforms. It is proposed that these structures will be assessed and mapped in the 2009/2010 financial year and may be included in a future BMCAMP.

The scope of this AMP also includes guardrails, barriers, special lighting and signage in addition to the normal structural components of a bridge. Accordingly the term "bridgeworks" includes all works that arise due to the presence of a bridge.

There are currently 71 bridges and 92 major culverts in the asset portfolio of Latrobe City Council which includes the Agnes Brereton pedestrian footbridge that will be constructed to replace the suspension bridge and also the Traralgon Creek Road bridge north of Goombala Road that was destroyed by fire in 2009. This bridge will also be replaced in 2009/2010.

4 Relationship of BMCAMP with other Latrobe City Council Documents

An Asset Management Policy was adopted by Council in March 2003 and an Asset Management Strategy was developed following the adoption of the Policy and was adopted by Council in April 2007. The need for a suite of asset management plans was identified and a program for development of the plans was adopted with the strategy.

Figure 1 - Relationship between the Bridge & Major Culvert Asset Management Plan and other Latrobe City Council Documents



The adoption of this AMP will further reinforce Latrobe City Council's organisational commitment towards the management of the community's assets to provide the desired level of service in the most cost effective manner for present and future generations.

5 Responsibility of Others

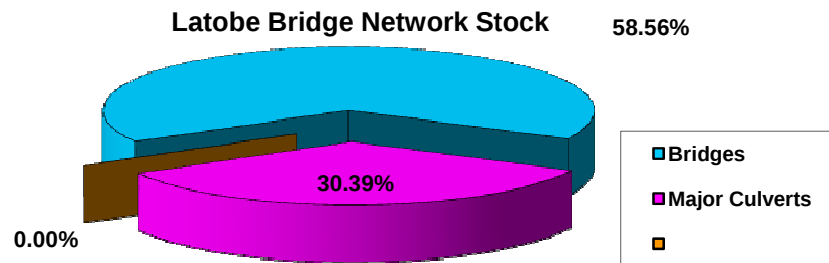
While it is acknowledged that Latrobe City Council has responsibilities under the RMA, it is also acknowledged that all road users have a duty of care under Section 106 of the RMA, with particular obligations prescribed in Section 17A of the Road Safety Act 1986 (RSA).

This obligation extends to road users to drive safely according to the prevailing conditions; to have regard to the rights of other road users, the community and infrastructure managers; and to avoid damaging infrastructure which includes not overloading vehicles, obeying bridge load limits and other restrictions which may be applied from time to time.

Latrobe City Council also has Boundary Road agreements with the neighbouring municipalities which includes bridge and culvert structures on the municipal boundary, some of which are maintained by Latrobe City and some by our neighbours.

6 Bridge Network Condition Analysis

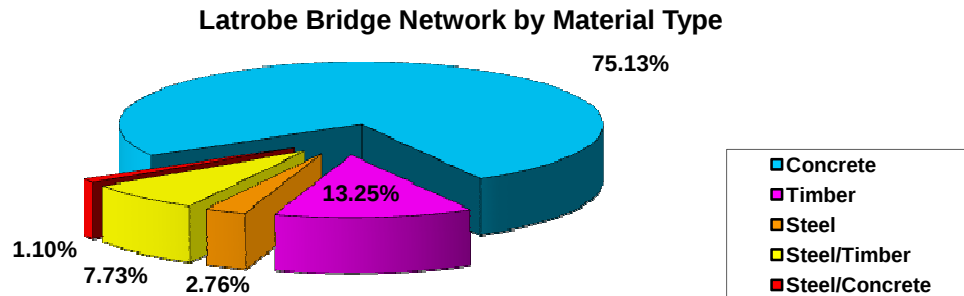
Latrobe City Council has a total bridge network of 163 structures. The bridge network comprises of 71 bridges, 92 major culverts (> 3m² water way area). These structures are constructed from a number of materials and in different styles. Refer to the graph below.



Bridges and major culverts deteriorate over time due to a number of factors. Their life spans are also related to design, material and construction methods and may be affected by the use of incompatible materials with respect to the surrounding environment. Timber bridges in particular deteriorate quicker than other bridge types. Bridges and major culverts can also deteriorate/fail due to overloading, accidents, vandalism and natural disasters.

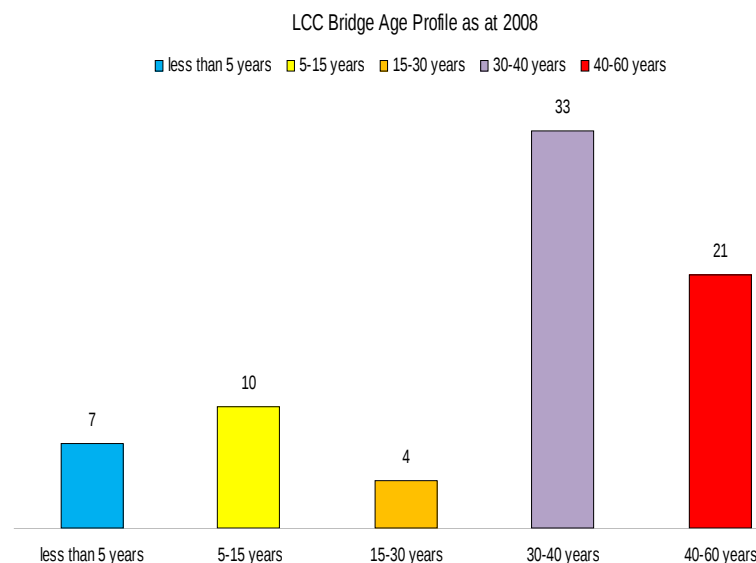
The life expectancy of these are estimated in the following table which is based on past performance data, benchmarked data with four other adjoining municipalities and documented in the document, Estimated Bridge Valuations for Latrobe City Council - 2008.

Bridge Hierarchy Type	Bridge Structure Type	Adopted Life (Years)
Bridges	Concrete	75
	Timber	60
	Steel	75
Major Culverts	Concrete	75



The above chart shows that concrete bridge structures comprise nearly three quarters of Latrobe City Council's total bridge asset stock.

The history of construction periods for Latrobe City Council's bridge asset stock is shown in the following graph. This data has been obtained from the Latrobe City Council Asset Management System. In cases where construction year is unknown, estimates have been made by Latrobe City Council's Bridge Assessment contractor based on the 2008 Level 2 Inspection Reports and from other available information. In other cases the known construction dates of similar bridge structures along the same road have been adopted.

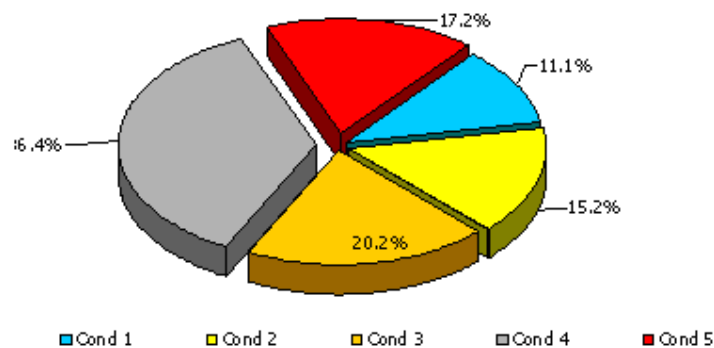


The above graph indicates that the majority of bridges recorded in the Asset Management System were constructed in the 1960's and 1970's and approximately 30% of the bridge asset stock is more than 50 years old. This graph shows the distribution of ages of the structures which indicates that the average age of construction for the bridge network is approximately 33 years. There are six road bridges that are beyond the age of 50 years old.

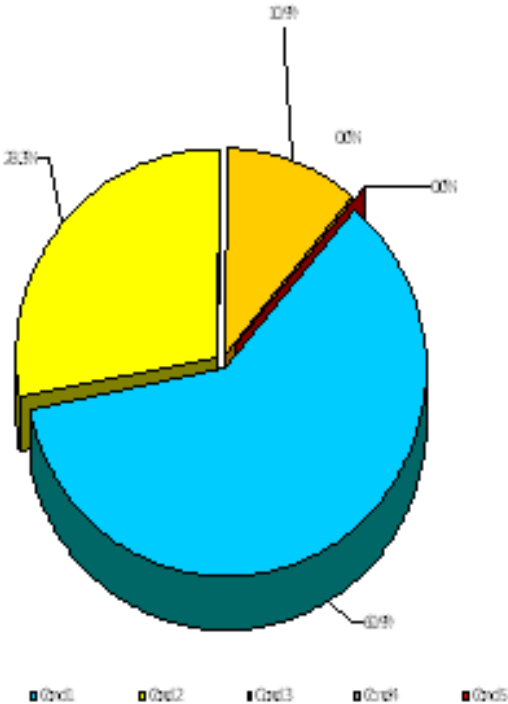
Latrobe City Council's bridge network is in generally good condition due to regular inspections that identify faults and repairs being completed in a timely manner. Where the cost of repairing the deterioration of the structure is significant and unprofitable, the option of renewing or replacing the bridge structure is taken.

In addition, Latrobe City Council engaged LMS Assessments in order to develop a four year bridge maintenance works program. The following chart shows the condition rating, with Condition 1 being the best through to Condition 6 being unserviceable. At the time of this assessment there were no Condition 6 bridges, although following the Churchill – Jeeralang Fires there is now one bridge in this category. This bridge is over the Traralgon Creek on the Traralgon Creek Road north of Goombala Road.

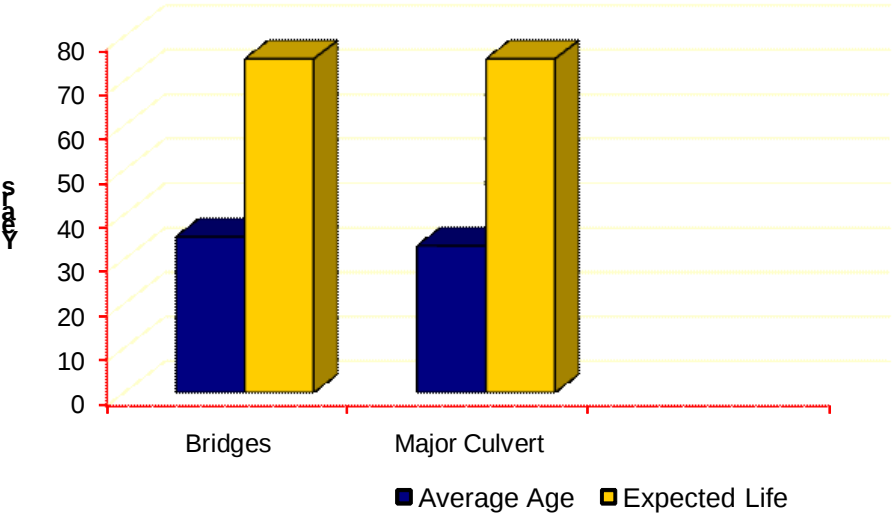
Status of Latrobe City Bridge Conditions as at 2008



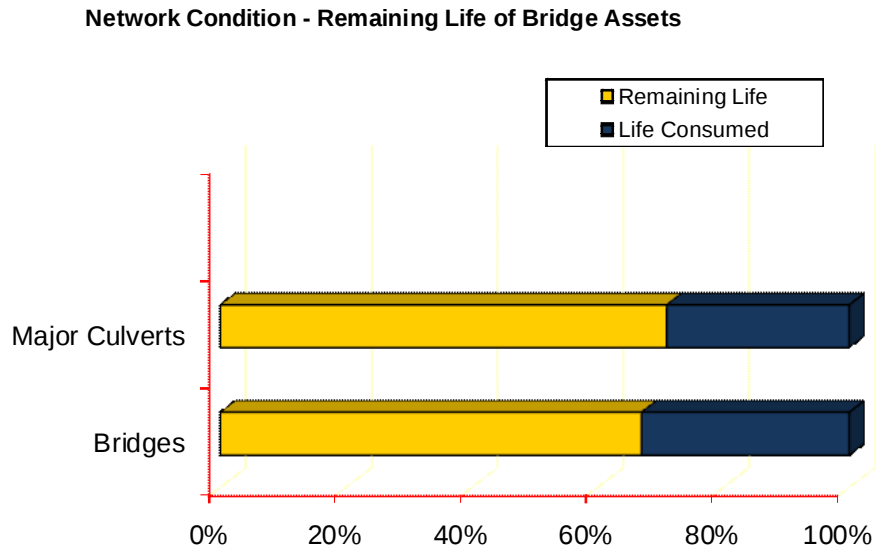
Status of Latrobe City Culvert Conditions at 2008



Average Age of Bridge Structure Vs. Expected Life



The following graph shows the average age of the bridge and culvert structures versus the expected life. This graph shows that asset consumption is approaching 50% of the total asset base.



7 Levels of Service

A key objective of this BMCAMP has been to match the level of service provided by Latrobe City Council's bridge asset stock to the expectations of the community within the availability of Latrobe City Council's resources. Service Levels are quality, performance, quantity and responsiveness standards which Latrobe City as the asset custodians aim to provide services.

The levels of service detailed in this BMCAMP reflect the current levels of service provided by Latrobe City Council.

1. Service relates to the end use or provision of the asset – e.g. Latrobe City Council will provide a transit route connecting the various corridors of Latrobe City Council.
2. Level relates to the quality and performance of the bridges and the responsiveness of Latrobe City Council to undertake repairs as soon as the service quality drops below a nominated level.

The following table details the strategic level of service adopted for this AMP:

Strategic Indicator	Level of Service	Specific Performance Measure	Performance Measurement Process
Bridge state	Replace existing timber with concrete elements for major structures over time. Provide steel equivalent replacements for pedestrian bridges over time.	Replace timber bridge with concrete when the long-term benefits/returns of reconstruction exceed the benefits from capital repairs.	Numbers of timber bridges replaced by concrete equivalent. Every timber structure, which reaches the intervention point where an alternate replacement is viable, should be replaced within 18 months.
Legislative Compliance	To ensure the bridge network complies with the Road Management Act 2004 and relevant other Acts and legislative	100% Compliance with Acts and legislative requirements	Audit will be conducted yearly, to ensure implementation of BMCAMP is being carried out

	requirements		
Cost effectiveness	To provide the required services (Response Times For Maintenance Safety Issues) in the most cost effective manner	Maintenance costs as a percentage of the bridge network replacement value (should be in the region of the recommended 2%)	Obtain information from budgets and asset management system. Relevant ratio will be compared with organisations providing similar services and will be internally monitored
CMP Public Liability / Professional Liability Report	To ensure that Latrobe City Council satisfies its insurance requirements	Obtain an overall rating score of 65% or better for the bridge component of this audit	Reports conducted by CMP every year
Maintenance and Risk responsiveness	Percentage of achievement of risk and maintenance standards attached in Appendix 1	100%	Maintenance delivery reporting on quarterly basis.

8 Inspection Schedules

Inspections of bridges and major culverts are programmed in accordance with the VicRoads Bridge Inspection Manual for all structures with a single span or diameter of 1.8m or greater or have a waterway area of 3 m² or greater.

This manual provides a standardised approach for bridge inspections and the required treatments are carried out in accordance with the VicRoads Bridge Maintenance Repair and Strengthening Manual.

The Bridge Inspection Manual describes three levels of bridge inspection:

Level 1 - Inspections are carried out two times per year. Inspectors check the general serviceability of the structure for the safety of road users and identify any problems that may have been created in the accessible bridge members. This type of inspection will also include checking the approaches and waterway area.

These inspections are also carried out within 20 days of flood events and other natural disasters, accidents, incidence reports or overloading. These inspections may also trigger a level 2 or level 3 inspection.

Level 2 - Inspections are carried out on new structures within twelve months and then on a three yearly cycle. Level 2 inspections are carried out by qualified personnel and are a thorough assessment and at present are carried out in Latrobe City by an experienced consultant.

Level 3 - Inspections are carried out on the recommendation of a Level 1 or 2 inspection. These are detailed engineering inspections undertaken by qualified personnel using specialised devices and techniques to assess the structural condition of the structure to estimate the need for rehabilitation, strengthening and / or replacement.

As this is a specialist task, an appropriate bridge engineering consultant is typically engaged to conduct the inspection. Level 3 inspections provide detailed information on the condition of the structure and its load carrying capacity.

The inspections provide five options for the treatment of defects:

1. Do nothing
2. Maintain bridge member
3. Repair bridge member

4. Strengthen bridge member
5. Replacement or new installation

There are also five levels of urgency for treatments judged to be necessary:

1. Repairs required immediately due to failure or high risk of failure
2. Repairs required within 6 to 12 months due to a moderate risk of failure
3. Repairs required within 1 to 2 years with small risk of failure
4. Repairs are cosmetic but strengthening may be required in 3 to 5 years
5. Repairs are solely cosmetic

Level 2 inspections of Latrobe City Council bridges were undertaken in 2003, 2005 and 2008 and are due for inspection in 2011.

9 Priority Assessment of Bridges

The priority for each bridge requiring maintenance or replacement is determined using a weighted scoring system with eight categories of comparative measures that provide the basis for choosing one project over another. The categories are as follows:

	CATEGORY	WEIGHTING
1	LEVEL OF SERVICE	8
2	SAFETY FACTORS	10
3	COST FACTORS	7
4	EXTERNAL FUNDING	10
5	SECONDARY BENEFITS	7
6	VISUAL IMPACTS	6
7	ENVIRONMENTAL IMPACTS	6
8	COMMUNITY ACCEPTANCE	5

These categories address various issues and are weighed against each other and given a score out of ten to determine the relative importance of each. Suggested weightings are shown in the above table.

Projects are then individually assessed and given a score out of ten for each category. The product of the score out of ten and the weighting gives the value for each category. Finally the sum of the eight values determined for each project yields a total score that is used to assess priority. The higher the total score the higher the priority.

The following guidelines are used in the scoring:

1. Level of Service – Vehicles or pedestrians per day.

SCORE	MEASURE PER DAY			
10	More than	10,000		
9	More than	5,000	but less than	10,000
8	More than	3,000	but less than	5,000
7	More than	2,000	but less than	3,000
6	More than	1,000	but less than	2,000
5	More than	500	but less than	1,000
4	More than	300	but less than	500

3	More than	200	but less than	300
2	More than	100	but less than	200
1			less than	100

2. Safety Factors - This score relates to the urgency of repairs identified in the Level 2 inspection.

SCORE	DESCRIPTION
10	Bridge closed due to high risks
9	Bridge partially closed due to high risks
8	Temporary treatments in place to keep bridge in service
7	Restrictive load limit in place
6	Less restrictive load limit in place
5	Damaged railings, barriers and/or embankments
4	Low risk conditions affecting structural members
3	Low risk conditions affecting non structural members
2	Low level of risks
1	Very Low level of risks

3. Cost Factors - The estimate of the cost to repair for the benefit received.

SCORE	COST/BENEFICIARY RATIO
10	10 OR LESS
9	RANGE 10 TO 20
8	RANGE 20 TO 30
7	RANGE 30 TO 40
6	RANGE 40 TO 50
5	RANGE 50 TO 60
4	RANGE 60 TO 70
3	RANGE 70 TO 80
2	RANGE 80 TO 90
1	RANGE 90 TO 100
0	MORE THAN 100

4. External Funding – One point scored for each 10% of project cost being available from external sources (eg Developer contributions or Special Grants)
5. Secondary Benefits – One point scored for each type of secondary benefit identified with a maximum score of 10.
6. Visual Factors – While subjective it is desirable to get some consideration to visual factors like the graffiti treatments or assessing a decorative bridge at the Kernot Lake.

Score 5 for no impact, score higher for positive impacts and score less for negative impacts with a minimum score of 0 and a maximum of 10.
7. Environmental Factors – As with the Visual Assessment, score 5 for no impact, score higher for positive impacts and score less for negative impacts with a minimum score of 0 and a maximum of 10.
8. Level of Community Acceptance – Another subjective assessment but one that should take into account the desire of the community to have or maintain the structure. Score 5 for no impact, score higher for positive impacts and score less for negative impacts with a minimum score of 0 and a maximum of 10.

10 Condition Monitoring and Asset Valuation

The introduction of the Australian Accounting Standard AAS27 in 1993, introduced accrual accounting principles and practices to local governments and specified the form and content of local government's general purpose financial reports.

AAS27 required that Councils report the service potential and consumption of their infrastructure assets in Council's Annual Financial Statements. The service potential of Council assets is reported by current replacement cost and depreciated replacement cost of the asset. Asset consumption is reported as depreciation expense.

AAS27 has been superseded by the International Accounting Standards AASB 1041 Revaluation of Non-Current Assets and AASB 116 Property Plant and Equipment.

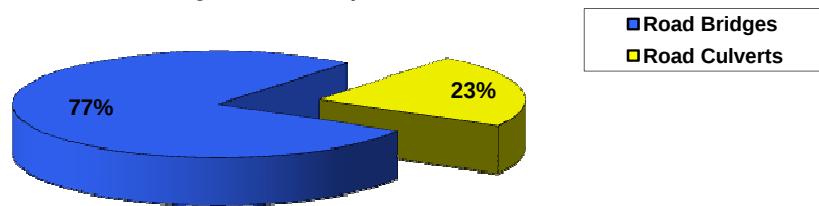
Latrobe City Council's accepted practice of asset valuations is based on 'fair-value' method covering replacement cost, useful life and depreciation of Latrobe City Council's assets, in conformity with current International Accounting Standards as applicable to Australia. Under current accounting guidelines, all bridge assets owned and maintained by Latrobe City Council, are valued on the basis of 'replacement cost of the asset's future economic benefits'.

The current bridge and culvert valuations indicate an annual depreciation of approximately \$500,000. Depreciation is an indicator of long-term consumption and not an indicator of immediate funding needs. However, it should be noted that the current bridge prediction model shows an optimal expenditure of approximately \$700,000 million per annum is required to preserve the bridge stock at the current condition level. This figure comprises capital upgrades and renewals.

Valuation Summary Based on Replacement Costs – 2008

BRIDGES	Replacement Cost	Written Down Value	Annual Depreciation
Bridges	\$ 30,420,000	\$ 20,850,000	\$ 411,000
Major Culverts	\$ 5,200,000	\$ 3,121,000	\$ 70,000

Latrobe Bridge Network Replacement Cost

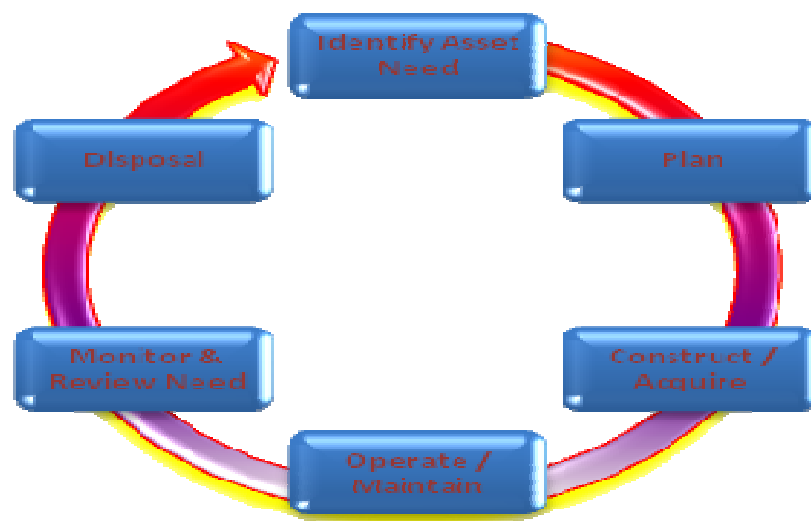


Lifecycle Management

Life Cycle Management is an essential component of an AMP. The BMCAMP provides details of Latrobe City Council's data and processes required to effectively manage, maintain, renew and upgrade Latrobe City's bridge network. It also documents the analysis that Latrobe City Council undertakes regularly to predict and monitor expected future expenditure required to effectively manage Latrobe City Council's bridge network.

To undertake lifecycle asset management, means considering all management options and strategies as part of the asset lifecycle, from planning to disposal. The objective of managing the assets in this manner is to look at long-term cost impacts (or savings) when making asset management decisions.

The diagram below provides a graphical representation of the asset lifecycle including each of the stages an asset passes through during its life.



Future Funding Analysis

Future Funding analyses have been based on an assessment of Latrobe City Council's asset conditions and prediction modelling to determine costs of preserving the bridge stock. The condition assessment is based on bridge condition scores using the Level 2 VicRoads Bridge Inspection Manual.

The following table shows capital and maintenance expenditure on bridges for the last five years.

Expenditure	2004/05	2005/06	2006/07	2007/08	2007/08
Capital	\$445,000	\$351,000	\$281,000	\$515,000	\$389,000
Maintenance	\$54,000	\$24,000	\$54,000	\$24,000	\$32,000

The following table highlights the minimum per annum funding required to maintain the bridge network over the next twenty years.

BRIDGES – 20 Year Funding Needs				
	2009/14	2014/19	2019/24	2024/29
Capital Renewals inc maintenance	\$870,000 pa indexed	\$920,000 pa indexed	\$1,116,000 pa indexed	\$1,357,000 pa indexed

These summary figures have been derived from the data and model in the AMS. Generally they only allow for capital renewals in a like for like manner, however the figures for the 2009/2014 years are based on the known works planned which includes the Franklin Street bridge.

The following table contains the raw data from the AMS and model. These figures do not allow for upgrades but are based on like for like capital improvements. The first five years differs from the table above as it is known that two bridges will be reconstructed to a higher standard to improve amenity and service, rather than be brought back to original condition.

Year	Capital (inclusive of special upgrades)	Maintenance
2009/2010	\$ 633,333.33	\$ 52,777.78
2010/2011	\$ 652,333.33	\$ 54,361.11
2011/2012	\$ 671,903.33	\$ 55,991.94
2012/2013	\$ 722,559.70	\$ 60,213.31
2013/2014	\$ 751,462.09	\$ 62,621.84
2014/2015	\$ 781,520.57	\$ 65,126.71
2015/2016	\$ 812,781.39	\$ 67,731.78
2016/2017	\$ 845,292.65	\$ 70,441.05
2017/2018	\$ 879,104.35	\$ 73,258.70
2018/2019	\$ 914,268.53	\$ 76,189.04
2019/2020	\$ 950,839.27	\$ 79,236.61
2020/2021	\$ 988,872.84	\$ 82,406.07
2021/2022	\$ 1,028,427.75	\$ 85,702.31
2022/2023	\$ 1,069,564.86	\$ 89,130.41
2023/2024	\$ 1,112,347.46	\$ 92,695.62
2024/2025	\$ 1,156,841.36	\$ 96,403.45
2025/2026	\$ 1,203,115.01	\$ 100,259.58
2026/2027	\$ 1,251,239.61	\$ 104,269.97
2027/2028	\$ 1,301,289.20	\$ 108,440.77
2028/2029	\$ 1,353,340.76	\$ 112,778.40
Average annualised	\$ 954,021.87	\$ 79,501.82

It should be noted that these figures will need further reviewing and the bridge structures identified that would benefit from total reconstructions as opposed to capital renewals.

11 Maintenance Standards

The objective of routine bridge maintenance is to ensure the operational safety of the structures and to address minor defects that have been identified which may affect the long-term serviceability of the structure. The following are undertaken (but not limited to) activities such as:

- Clearing of waterway area;
- Erosion Control;
- Localised repairs of the road surface / bridge deck;
- Localised repairs of the bridge balustrade / approach rails;
- Replacing, cleaning and adjusting deck joints;
- Repairs as a result of damage; 4
- Graffiti removal;
- Painting of the steel components to avoid rust / deterioration;
- Applying protective coatings and impregnates to concrete components to slow down the effects of carbonation; and
- Repairs to spalled / cracked concrete components to avoid rusting of the reinforcement.

Bridge renewal or replacement of components ensures that the bridge maintains its intended level of service by restoring the structure to its original functional condition. This treatment generally involves replacing failed components with like components or replacing the entire structure with like materials and design profiles. This type of treatment is typically expensive. Inability to carry out bridge renewal / replacement works when required often leads to the imposition of load limits on the bridge structure with consequent economic costs or possible damage to the structure if the limits are not adhered to.

The upgrading of a bridge structure is not required as a result of failure of the structure, but because the bridge structure is no longer fit for its intended purpose. Significant increases in road transport efficiency are being achieved through increasing the loads that are carried on our road system. Vehicle mass limits have more than tripled over the past sixty years and the volumes

of traffic have significantly increased. This treatment option will generally involve replacing structural components of the bridge to allow it to carry higher load limits and/or widening the bridge structure to cater for additional traffic lanes.

In developing the Bridge Maintenance Program the opportunity has been taken to consider alternative treatments to those recommended by the Level 2 Bridge Inspection reports.

The alternative treatments can arise due to the need to apply Bridge Infrastructure Planning Strategies that have the underlying aim to provide bridges that have standards that meet local needs and legal vehicle loadings where possible.

The planning strategies address the following:

- Bridge capacity needs
- Durability of bridge components
- Existing programs for bridges

Bridge Capacity Needs

The Level 2 Bridge Inspection treatment recommendations do not take into account the current and future bridge capacity needs. These bridge management options should be also be considered:

- Removal of the bridge where the cost of maintenance is not warranted due to very low use as has occurred in the upper reaches of the Morwell River, Middle Creek and Traralgon Creeks.
- Reduction in the width of a bridge due to low traffic volumes with a corresponding saving in construction and maintenance costs.
- Strengthening of a bridge to improve the durability of its components.
- Widening and strengthening of a bridge to meet increased capacity demands.
- Upgrading of a bridge from a low level to a high level to avoid road closures during high flood flows, eg Franklin Street, Traralgon.

Durability of Bridge Components

The Level 2 Bridge Inspection recommendations generally assume that existing components are replaced like for like, with the exception of bridge railing/barriers where there is a state-wide campaign for them to be upgraded to the new standard.

However, Bridge Management Options have traditionally provided for the upgrading of components to more durable materials and as a result there are now many hybrid bridges made up of a mixture of concrete, steel and timber.

In Gippsland the timber components of bridges only achieve the minimum life spans shown in the following table due to effects of the local climate.

With reasonably durable new timber:

- | | |
|------------------|-------------|
| • Piles | 40-60 years |
| • Stringers | 40-60 years |
| • Cross beams | 30-40 years |
| • Long decking | 15-20 years |
| • Cross decking | 15-20 years |
| • Running planks | 5 years |

By comparison steel components have much longer life spans when used in the Gippsland climate depending on the quality of the protective coatings they have. Properly applied protective coatings have a life expectancy of 50 years.

It is critical that the protective coatings for steel are applied properly. In the long term achieving this in the field can be quite difficult and expensive where scaffolding, protective clothing and means to prevent pollution are required.

Reinforced concrete components usually have the best durability as can be seen by the low occurrence rate for maintenance in the Level 2 Bridge Inspection treatment recommendations. Away from the coast it is unusual for concrete components to be affected by the Gippsland climate.

12 Future Considerations

This BMCAMP is intended to be a dynamic document and as such there is a need for regular reviews, refinement and improvement. This will ensure that the BMCAMP remains relevant and also in accord with responsible asset management practices. It will need to reflect changing legislation and technology and in particular reflect Council and community requirements and expectations.

It is proposed that every three years, following a network wide Level 2 condition audit, that the BMCAMP will be revised and amended to reflect changes in condition, funding, new asset creation, new technologies, service levels and changes to supporting documents.

The next version of the BMCAMP should include the constructed boardwalks and fishing platforms.

- Asset performance following delivery of maintenance program;
- The level of achievement of asset management strategies against the expected benefits to bridge users, stakeholders and the community; and
- The consideration of any external factors that is likely to influence the contents of this BMCAMP.

13 Glossary

AMP	Asset Management Plan
BMCAMP	Bridge & Major Culvert Asset Management Plan
RMA	Road Management Act (2004)
RSA	Road Safety Act (1986)

14 References

- Latrobe City Maintenance Activity Manual
- Latrobe City Road Management Plan
- Road Safety Strategy
- Victorian Road Management Act 2004
- Codes of Practice released by State Government under the RMA
- Latrobe City Council Road Management Plan
- Latrobe City Council Annual Plan
- Latrobe City Council Plan 2004-08
- Latrobe City Council Maintenance Manual
- Latrobe City Council – Inspection Plan
- Estimated Bridge Valuations for Latrobe City Council – 2008
- CMP Audit Proforma
- Boundary Road Agreements with Baw Baw Shire Council, Wellington Shire Council and South Gippsland Council.
- Estimated Bridge Valuations for Latrobe City Council – ARRB Consulting 2005
- Bridge Management System and Assessments Report undertaken by ARRB Consulting in 2005.
- Bridge Management System and Assessments – LMS 2005
- Local Roads Bridge Management Manual. ARRB Transport Research (2000).
- Bridge Inspection Manual, VicRoads (2000)

Appendix 1 – Bridge Register

Appendix 2 – Culvert Register

Appendix 3 – Bridge Photographs

**Appendix 4 - Bridge Replacement & Upgrade Program
2009 – 2014**

Appendix 5 - Bridge Treatments

Appendix 6 – Levels of Service

Appendix 1 - Bridge Register

Asset ID	Asset Name	Locality	Location	Crossing	Deck	Material
LTB003	BASSETTS LANE (GLENGARRY)	GLENGARRY	BASSETTS LANE (GLENGARRY)	EAGLEHAWK CREEK	TIMBER	STEEL/TIMBER
LTB005	BECKS BRIDGE ROAD (NEWBOROUGH)	NEWBOROUGH	BECKS BRIDGE ROAD (NEWBOROUGH)	LATROBE RIVER	CONCRETE	CONCRETE
LTB011	CALLIGNEE SOUTH ROAD (CALLIGNEE)	CALLIGNEE	CALLIGNEE STH RD (DAWSONS BRIDGE)	FLYNNS CREEK	CONCRETE	STEEL/CONCRETE
LTB020	COALVILLE ROAD (MOE SOUTH)	MOE SOUTH	COALVILLE RD BRIDGE	NARRACAN CREEK	CONCRETE	CONCRETE
LTB030	CREAMERY ROAD (YINNAR & DELBURN)	YINNAR & DELBURN	CREAMERY RD BRIDGE AT MORWELL RIVER	MORWELL RIVER	CONCRETE	CONCRETE
LTB035	CRINIGAN ROAD (MORWELL)	MORWELL	CRINIGAN RD AT CRINIGAN PARK	WATERCOURSE	CONCRETE	CONCRETE
LTB040	CRINIGAN ROAD (MORWELL)	MORWELL	CRINIGAN RD BRIDGE AT WATERHOLE CREEK	WATERHOLE CREEK	CONCRETE	CONCRETE
LTB045	DARLIMURLA RD (DARLIMURLA)	DARLIMURLA	DARLIMURLA RD AT LA TROBE BOUNDARY	WATERCOURSE	CONCRETE	STEEL/CONCRETE
LTB050	DOWNIES LANE (TRARALGON SOUTH)	TRARALGON SOUTH	DOWNIES LANE BRIDGE AT TRARALGON CREEK	TRARALGON CREEK	TIMBER	STEEL/TIMBER
LTB060	FOX & FANCKES ROAD (BOOLARRA SOUTH)	BOOLARRA SOUTH	FOX AND FANCKES RD BRIDGE AT M'WELL RIVER	MORWELL RIVER	CONCRETE	STEEL/CONCRETE
LTB070	FRANKLIN STREET (TRARALGON)	TRARALGON	FRANKLIN ST BRIDGE OVER TRARALGON CREEK	TRARALGON CREEK	STEEL	STEEL
LTB080	GLENDONALD ROAD (CHURCHILL)	CHURCHILL	GLENDONALD RD BRIDGE AT BENNETTS CK	BENNETTS CREEK	CONCRETE	STEEL/CONCRETE
LTB085	GLENGARRY NORTH ROAD (GLENGARRY NORTH)	GLENGARRY NORTH	GLENGARRY NTH RD	EAGLEHAWK CREEK	CONCRETE	CONCRETE
LTB090	HAIGH STREET (MOE & NEWBOROUGH)	MOE & NEWBOROUGH	HAIGH ST OVER NARRACAN CREEK	NARRACAN CREEK	CONCRETE	CONCRETE
LTB095	HAZELWOOD DRIVE (MORWELL)	MORWELL	HAZELWOOD DVE BRIDGE (MORWELL IND. ESTATE)	UN-NAMED WATERCOURSE	CONCRETE	CONCRETE
LTB100	HIRSTS ROAD (BOOLARRA)	BOOLARRA	HIRST RD BRIDGE AT MORWELL RIVER	LITTLE MORWELL RIVER	CONCRETE	STEEL/CONCRETE
LTB120	JONES ROAD (TRARALGON SOUTH)	TRARALGON SOUTH	JONES ROAD BRIDGE AT TRARALGON CREEK	TRARALGON CREEK	CONCRETE	STEEL/CONCRETE
LTB125	JUMBUK ROAD (YINNAR- GRAND RIDGE)	YINNAR- GRAND RIDGE	JUMBUK ROAD BRIDGE	UN-NAMED WATERCOURSE	CONCRETE	CONCRETE
LTB140	KENYONS LANE (TRARALGON EAST)	TRARALGON EAST	KENYONS LANE BRIDGE #1	FLOODWAY	TIMBER	STEEL/TIMBER
LTB150	KENYONS LANE (TRARALGON EAST)	TRARALGON EAST	KENYONS LANE BRIDGE #2	FLOODWAY	CONCRETE	STEEL/CONCRETE
LTB160	KENYONS LANE (TRARALGON EAST)	TRARALGON EAST	KENYONS LANE BRIDGE #3	FLOODWAY	CONCRETE	STEEL/CONCRETE
LTB170	KENYONS LANE (TRARALGON EAST)	TRARALGON EAST	KENYONS LANE BRIDGE #4	FLOODWAY	CONCRETE	STEEL/CONCRETE
LTB180	LEWIS'S ROAD (YINNAR)	YINNAR	LEWIS RD AT BELBROOK CK	BELBROOK CREEK	TIMBER	STEEL/TIMBER
LTB190	LIMONITE ROAD (BOOLARRA)	BOOLARRA	LIMONITE ROAD BRIDGE AT O'GRADY CK	O'GRADY CREEK	CONCRETE	CONCRETE
LTB200	LIVINGSTON ROAD (BOOLARRA SOUTH)	BOOLARRA SOUTH	LIVINGSTON RD BRIDGE AT MORWELL RIVER	MORWELL RIVER	CONCRETE	CONCRETE
LTB220	MORWELL RIVER ROAD (BOOLARRA)	BOOLARRA	M'WELL RIVER RD NEAR RADBURNS RD	MORWELL RIVER	CONCRETE	STEEL/CONCRETE
LTB230	MACKEYS ROAD (CHURCHILL)	CHURCHILL	MACKEYS RD AT BENNETTS CREEK	BENNETTS CREEK	CONCRETE	STEEL/CONCRETE
LTB240	UPPER MIDDLE CREEK ROAD (BUDGEREE)	BUDGEREE	UPPER MIDDLE CREEK RD BRIDGE AT COLLEGE CREEK	COLLEGE CREEK	CONCRETE	STEEL/CONCRETE
LTB250	GILBERTS ROAD (YINNAR SOUTH)	YINNAR SOUTH	GILBERTS ROAD BRIDGE AT MIDDLE CK	MIDDLE CREEK	CONCRETE	CONCRETE
LTB260	MORWELL RIVER ROAD (BOOLARRA)	BOOLARRA	MORWELL RIVER RD BRIDGE #1 AT M'WELL RIVER	MORWELL RIVER	CONCRETE	CONCRETE
LTB270	MORWELL RIVER ROAD (BOOLARRA)	BOOLARRA	MORWELL RIVER RD BRIDGE #2 -M'WELL RIVER	MORWELL RIVER	CONCRETE	STEEL/CONCRETE
LTB280	NADENBOUSCHS ROAD (HAZELWOOD)	HAZELWOOD	NADENBOUSH'S RD BRIDGE AT EEL HOLE CREEK	EEL HOLE CREEK	CONCRETE	CONCRETE
LTB290	NUTTALLS ROAD (YINNAR)	YINNAR	NUTTALLS RD AT MORWELL RIVER	MORWELL RIVER	CONCRETE	STEEL/CONCRETE
LTB295	OLD MELBOURNE ROAD (TRARALGON)	TRARALGON	OLD MELBOURNE RD AT WATERHOLE CREEK	WATERHOLE CREEK	CONCRETE	CONCRETE
LTB300	OLD SALE ROAD (MOE & NEWBOROUGH)	MOE & NEWBOROUGH	OLD SALE RD OVER EX YALLOURN RAILWAY LINE	RAILWAY LINE	CONCRETE	STEEL/CONCRETE
LTB310	OLSENS ROAD (BOOLARRA SOUTH)	BOOLARRA SOUTH	OLSENS RD AT M'WELL RIVER WEST BRANCH	MORWELL RIVER WEST BRANCH	CONCRETE	STEEL/CONCRETE
LTB320	OLSENS ROAD (BOOLARRA SOUTH)	BOOLARRA SOUTH	OLSENS RD AT MORWELL RIVER	MORWELL RIVER	CONCRETE	STEEL/CONCRETE
LTB330	AGNES BRERETON PARK (TRARALGON)	TRARALGON	PED BGE AT AGNES BRERETON PARK	TRARALGON CREEK	CONCRETE	STEEL/CONCRETE
LTB340	BOTANIC GARDENS (NEWBOROUGH)	NEWBOROUGH	PED BGE AT BOTANIC GARDENS NTH	NARRACAN CREEK	CONCRETE	STEEL/CONCRETE
LTB350	BOTANIC GARDENS (NEWBOROUGH)	NEWBOROUGH	PED BGE AT BOTANIC GARDENS STH	NARRACAN CREEK	TIMBER	TIMBER
LTB360	LAKE KERNOT (MORWELL)	MORWELL	PED BGE AT LAKE KERNOT	LAKE KERNOT	CONCRETE	CONCRETE
LTB370	MORWELL TENNIS COMPLEX (MORWELL)	MORWELL	PED BGE AT MORWELL TENNIS COMPLEX	WATERHOLE CREEK	TIMBER	STEEL/TIMBER
LTB380	VICTORY PARK (TRARALGON)	TRARALGON	PED BGE AT VICTORY PARK (NTH)	TRARALGON CREEK	CONCRETE	STEEL/CONCRETE
LTB390	WRIGHT STREET (TRARALGON)	TRARALGON	PED BGE AT WRIGHT ST	TRARALGON CREEK	TIMBER	STEEL/TIMBER
LTB400	YINNAR ROAD (YINNAR & HAZELWOOD)	YINNAR & HAZELWOOD	PED BGE AT YINNAR RD NTH OF CREAMERY RD	MORWELL RIVER	CONCRETE	STEEL/CONCRETE
LTB410	WARATAH DRIVE (MORWELL)	MORWELL	PED BGE B/W BEATTIE CRS AND WARATAH DVE	WATERHOLE CREEK	CONCRETE	STEEL/CONCRETE
LTB420	WARATAH DRIVE (MORWELL)	MORWELL	PED BGE B/W BURNSIDE DVE AND WARATAH DVE	WATERHOLE CREEK	CONCRETE	STEEL/CONCRETE
LTB425	EASTERN AVENUE (NEWBOROUGH)	NEWBOROUGH	PED BRIDGE B/W EASTERN AVE AND TAFE	SANDY CREEK	CONCRETE	STEEL/CONCRETE
LTB430	THE BOULEVARD (MORWELL)	MORWELL	PED BGE B/W THE BOULEVARD AND BRISBANE ST	WATERHOLE CREEK	CONCRETE	STEEL/CONCRETE
LTB440	LAKE KERNOT (MORWELL)	MORWELL	PED BGE B/W WEST VALE DVE AND LAKE KERNOT	WATERHOLE CREEK	TIMBER	STEEL/TIMBER
LTB450	BOTANIC GARDENS (NEWBOROUGH)	NEWBOROUGH	PED BGE OLD YALLN R/W BGE AT BOTANIC GARDENS	RAILWAY LINE	CONCRETE	STEEL/CONCRETE
LTB460	VICTORY PARK (TRARALGON)	TRARALGON	PED BRG AT VICTORY PARK (STH)	TRARALGON CREEK	CONCRETE	STEEL/CONCRETE
LTB475	SERVICE ROAD NORTH (MOE)	MOE	SERVICE ROAD NORTH	WIRRAWAY STREET	CONCRETE	STEEL/CONCRETE
LTB477	SERVICE ROAD SOUTH (MOE)	MOE	SERVICE ROAD SOUTH	WIRRAWAY STREET	CONCRETE	STEEL/CONCRETE
LTB480	SPEARGRASS ROAD (YINNAR SOUTH)	YINNAR SOUTH	SPEARGRASS RD AT MIDDLE CREEK	MIDDLE CREEK	TIMBER	STEEL/TIMBER
LTB510	TRARALGON CREEK RD (TRARALGON)	TRARALGON	T'GON CK RD AT STONEY CREEK	STONEY CREEK	CONCRETE	CONCRETE
LTB520	TRARALGON CREEK RD (TRARALGON)	TRARALGON	T'GON CK RD (KOORNALLA)	TRARALGON CREEK	CONCRETE	STEEL/CONCRETE

Appendix 1 - Bridge Register

LTB530	TRARALGON CREEK RD (TRARALGON)	TRARALGON	T'GON CK RD (O'MEARS)	TRARALGON CREEK	CONCRETE	STEEL/CONCRETE
LTB540	TRARALGON CREEK RD (TRARALGON)	TRARALGON	T'GON CK RD (HOGGS)	TRARALGON CREEK	CONCRETE	STEEL/CONCRETE
LTB550	TRARALGON CREEK RD (TRARALGON)	TRARALGON	T'GON CK ROAD NTH OF GOOMBALA INT	WATERCOURSE	CONCRETE	STEEL/CONCRETE
LTB560	TRARALGON CREEK RD (TRARALGON)	TRARALGON	T'GON CK RD (CALDWELLS)	WATERCOURSE	CONCRETE	CONCRETE
LTB570	TAYLORS ROAD (KOORNALLA)	KOORNALLA	TAYLORS RD AT TRARALGON CREEK	TRARALGON CREEK	CONCRETE	STEEL/CONCRETE
LTB575	TOONGABBIE-COWWARR RD (TOONGABBIE)	TOONGABBIE	TOONGABBIE COWWARR ROAD	FELLS CREEK	CONCRETE	CONCRETE
LTB577	TRARALGON RECREATION RESERVE (TRARALGON)	TRARALGON	TRARALGON RECREATION RESERVE	DRAIN	CONCRETE	STEEL/CONCRETE
LTB579	TYERS RECREATION RESERVE (TYERS)	TYERS	TYERS RECREATION RESERVE	DRAIN	CONCRETE	CONCRETE
LTB580	VAGGS ROAD (YINNAR)	YINNAR	VAGGS RD BGE AT M'WELL RIVER	MORWELL RIVER	CONCRETE	CONCRETE
LTB600	WALSHS ROAD (YINNAR & HAZELWOOD)	YINNAR & HAZELWOOD	WALSH'S RD BRIDGE AT BILLY CREEK	BILLY CREEK	CONCRETE	STEEL/CONCRETE
LTB605	XUEREBS OULET (BOOLARRA)	BOOLARRA	XEREBS OUTLET BRIDGE	MORWELL RIVER ROAD	CONCRETE	CONCRETE
LTB611	YINNAR ROAD (YINNAR & HAZELWOOD)	YINNAR & HAZELWOOD	YINNAR RD AT MIDDLE CREEK	MIDDLE CREEK	CONCRETE	CONCRETE
LTB620	YINNAR ROAD (YINNAR & HAZELWOOD)	YINNAR & HAZELWOOD	YINNAR RD BRIDGE	FLOODWAY	CONCRETE	CONCRETE
LTB630	YINNAR - DRIFFIELD ROAD (DRIFFIELD)	DRIFFIELD	YINNAR- DRIFFIELD RD BRIDGE AT MORWELL RIV	MORWELL RIVER	CONCRETE	CONCRETE

Appendix 2 - Culvert Register

Asset ID	Asset Name	Locality	Location	Crossing	Material
LTC002	HUMPHREY ROAD (TOONGABBIE)	TOONGABBIE		TOONGABBIE CREEK	CONCRETE
LTC003	YINNAR - DRIFFIELD ROAD (DRIFFIELD)	DRIFFIELD	CH 3.9 KM	FLOODWAY	CONCRETE
LTC005	BLACK TANK ROAD (GLENGARRY)	GLENGARRY		WATERCOURSE	CONCRETE
LTC007	CAIRNBROOK ROAD (GLENGARRY)	GLENGARRY		EAGLEHAWK CREEK	CORRUGATED STEEL
LTC010	BRIDLE ROAD (MORWELL)	MORWELL		WATERCOURSE	CONCRETE
LTC011	RIVER ROAD (TOONGABBIE)	TOONGABBIE		TOONGABBIE CREEK	CONCRETE
LTC012	HALLIDAY ROAD (GLENGARRY WEST)	GLENGARRY WEST	CH 0.20 KM FROM BURNET PARK RD,	WATERCOURSE	CONCRETE
LTC013	SCALES ROAD (FLYNN'S CREEK)	FLYNN'S CREEK	CH 2.64 KM FROM HYLAND H.WAY	WATERCOURSE	CONCRETE
LTC014	TRARALGON CREEK RD (TRARALGON)	TRARALGON	CH 3.9 KM FROM GOOMBALA INTERSECTION	WATERCOURSE	STEEL
LTC015	WHITTAKERS ROAD (TRARALGON)	TRARALGON	CH 0.10 KM FROM H.WAY	TRARALGON CREEK	CONCRETE
LTC016	HOWITT STREET (TRARALGON)	TRARALGON	CH 0.250 KM FROM WHITTAKERS	FLOODWAY	CONCRETE
LTC017	SHAKESPEARE STREET (TRARALGON)	TRARALGON	CH 0.150 KM FROM WHITTAKERS	FLOODWAY	CONCRETE
LTC018	HOVEN DRIVE (TRARALGON)	TRARALGON	CH 0.30 KM	WATERCOURSE	CONCRETE
LTC019	ANDERSONS ROAD (YALLOURN NORTH)	YALLOURN NORTH	CH 1.55 KM FROM HUNTER RD	WATERCOURSE	CONCRETE
LTC020	STRETTONS TRACK (YALLOURN NORTH)	YALLOURN NORTH	CH 2.4 KM FROM QUARRY RD,	WATERCOURSE	CONCRETE
LTC021	HAIGH STREET (MOE & NEWBOROUGH)	MOE & NEWBOROUGH	CH 1.130 KM FROM OLD SALE RD	WATERCOURSE	CONCRETE
LTC022	JUMBUK ROAD (YINNAR- GRAND RIDGE)	YINNAR- GRAND RIDGE	CH 0.45 KM, FROM MAIN ST	WATERCOURSE	CONCRETE
LTC023	TRAMWAY ROAD (CHURCHILL - MORWELL)	CHURCHILL - MORWELL	CH 0.7 KM	WATERCOURSE	CONCRETE
LTC024	SPEARGRASS ROAD (YINNAR SOUTH)	YINNAR SOUTH	CH 2.7 KM,	WATERCOURSE	CONCRETE
LTC025	BUDGEREE ROAD (BUDGEREE)	BUDGEREE	CH 0.3 KM	WATERCOURSE	CONCRETE
LTC026	MORROWS ROAD (BOOLARRA)	BOOLARRA	CH 0.08 KM,	O'GRADY CREEK	CONCRETE
LTC027	LIMONITE ROAD (BOOLARRA)	BOOLARRA	CH 1.45 KM	WATERCOURSE	CONCRETE
LTC040	BURNETS ROAD (TRARALGON EAST)	TRARALGON EAST		LOY YANG CREEK	CONCRETE
LTC043	CAIRNBROOK ROAD (GLENGARRY)	GLENGARRY		WATERCOURSE	CONCRETE
LTC050	CHURCH ROAD (HAZELWOOD NORTH)	HAZELWOOD NORTH	EAST OF BLACK DUCK	WATERCOURSE	CONCRETE
LTC060	CHURCH ROAD (HAZELWOOD NORTH)	HAZELWOOD NORTH	CH 2.45 KM EAST OF TITREE ROAD	WATERCOURSE	CONCRETE
LTC090	CLEAR CREEK ROAD (MIRBOO)	MIRBOO	CH 2.34 KM	BLUSHERS CREEK	CONCRETE
LTC110	HOURLIGAN ROAD (MORWELL)	MORWELL		WATERHOLE CREEK	CONCRETE
LTC125	CREAMERY ROAD (YINNAR & DELBURN)	YINNAR & DELBURN	CH 5.6 KM	WATERCOURSE	CONCRETE
LTC130	JUNCTION ROAD (JEERALANG JUNCTION)	JEERALANG JUNCTION	CH 1.6 KM	BILLYS CREEK	CONCRETE
LTC160	DRANES ROAD (TRARALGON EAST)	TRARALGON EAST		WATERCOURSE	CONCRETE
LTC180	FISHERS ROAD (BOOLARRA SOUTH)	BOOLARRA SOUTH	CH 2.64 KM	WATERCOURSE	CONCRETE
LTC190	FISHERS ROAD (BOOLARRA SOUTH)	BOOLARRA SOUTH	CH 4.08 KM	WATERCOURSE	CONCRETE
LTC200	FRASERS ROAD (HAZELWOOD)	HAZELWOOD	CH 2.1KM FROM SWITCHBACK ROAD	BILLYS CREEK	CONCRETE
LTC220	GROPPY ROAD (HAZELWOOD NORTH)	HAZELWOOD NORTH		WATERCOURSE	CONCRETE
LTC230	IKARA WAY (CHURCHILL)	CHURCHILL		EEL HOLE CREEK	CONCRETE
LTC240	JEERALANG NORTH ROAD (JEERALANG)	JEERALANG		WATERCOURSE	CONCRETE
LTC250	JUMBUK ROAD (YINNAR- GRAND RIDGE)	YINNAR- GRAND RIDGE	CH 1.80 KM	CATTLE UNDERPASS	CONCRETE
LTC251	HAZELWOOD ESTATE ROAD (HAZELWOOD)	HAZELWOOD		CATTLE UNDERPASS	CONCRETE
LTC252	JUMBUK ROAD (YINNAR- GRAND RIDGE)	YINNAR- GRAND RIDGE		CATTLE UNDERPASS	CONCRETE
LTC253	SPEARGRASS ROAD (YINNAR SOUTH)	YINNAR SOUTH		CATTLE UNDERPASS	CONCRETE
LTC254	MILL ROAD (YALLOURN NORTH)	YALLOURN NORTH		CATTLE UNDERPASS	CONCRETE
LTC255	LIMONITE ROAD (BOOLARRA)	BOOLARRA		CATTLE UNDERPASS	CONCRETE
LTC256	QUARRY ROAD (YALLOURN NORTH)	YALLOURN NORTH		CATTLE UNDERPASS	CONCRETE
LTC270	KERRY STREET (TRARALGON SOUTH)	TRARALGON SOUTH		STONY CREEK	CONCRETE
LTC275	LAWLESS ROAD (CHURCHILL)	CHURCHILL	CH 1.33 KM FROM NORTHWAYS	BENNETTS CREEK	CONCRETE
LTC290	LIMONITE ROAD (BOOLARRA)	BOOLARRA	CH 5.35 KM	WATERCOURSE	CONCRETE
LTC295	LIVINGSTON ROAD (BOOLARRA SOUTH)	BOOLARRA SOUTH	CH 2.15 KM	WATERCOURSE	CONCRETE
LTC310	MACKEYS ROAD (CHURCHILL)	CHURCHILL		EEL HOLE CREEK	CONCRETE
LTC320	MCDONALD WAY (CHURCHILL)	CHURCHILL	CH 1.35KM FROM MACKEY'S ROAD	EEL HOLE CREEK	CONCRETE
LTC340	MIDDLE CREEK ROAD (YINNAR SOUTH)	YINNAR SOUTH	CH 3.45 KM	WATERCOURSE	CONCRETE
LTC360	MIDDLE CREEK ROAD (YINNAR SOUTH)	YINNAR SOUTH	CH 2.18 KM	VAGGS CREEK	CONCRETE
LTC435	MURRAY ROAD (YALLOURN NORTH)	YALLOURN NORTH		ANDERSON CREEK	CONCRETE
LTC460	NORTHWAYS ROAD (CHURCHILL)	CHURCHILL		EEL HOLE CREEK	CONCRETE

Appendix 2 - Culvert Register

Asset ID	Asset Name	Locality	Location	Crossing	Material
LTC470	REDHILL ROAD (CALLIGNEE & KOORNALLA)	CALLIGNEE & KOORNALLA		STONE CREEK	STEEL
LTC500	OLD MAFFRA ROAD (TYERS)	TYERS		WATERCOURSE	STEEL
LTC510	OLD MELBOURNE ROAD (TRARALGON)	TRARALGON		PLOUGH CREEK	CONCRETE
LTC520	OLD MELBOURNE ROAD (TRARALGON)	TRARALGON		WATERCOURSE	CONCRETE
LTC530	OLD MELBOURNE ROAD (TRARALGON)	TRARALGON		WATERCOURSE	CONCRETE
LTC540	OLD MELBOURNE ROAD WEST (MORWELL)	MORWELL	PAST RIFLE CLUB	WATERCOURSE	CONCRETE
LTC550	OLD MELBOURNE ROAD (TRARALGON)	TRARALGON		WATERCOURSE	CONCRETE
LTC570	PETERKIN STREET (TRARALGON)	TRARALGON		FLOODWAY	CONCRETE
LTC590	PROSPER VALLEY ROAD (BUDGEREE)	BUDGEREE		WATERCOURSE	CONCRETE
LTC600	ROMUALD ROAD (HAZELWOOD NORTH)	HAZELWOOD NORTH		WATERCOURSE	CONCRETE
LTC610	ROYS ROAD (BUDGEREE)	BUDGEREE	CH 1.8 KM	WATERCOURSE	CONCRETE
LTC640	SCRUBBY LANE (TRARALGON & MARYVALE)	TRARALGON & MARYVALE		WATERCOURSE	STEEL
LTC650	SHIELDS ROAD (TRARALGON EAST)	TRARALGON EAST		FLOODWAY	CONCRETE
LTC660	SHIELDS ROAD (TRARALGON EAST)	TRARALGON EAST		FLOODWAY	CONCRETE
LTC690	STUCKEYS LANE (FLYNN)	FLYNN		WATERCOURSE	CONCRETE
LTC695	TANNERS ROAD (HAZELWOOD NORTH)	HAZELWOOD NORTH		WATERCOURSE	CONCRETE
LTC730	THE MILL ROAD (BUDGEREE)	BUDGEREE	CH 0.4 KM,	WATERCOURSE	CONCRETE
LTC740	TI TREE ROAD (HAZELWOOD NORTH)	HAZELWOOD NORTH		WATERCOURSE	CONCRETE
LTC745	TOONGABBIE-COWWARR RD (TOONGABBIE)	TOONGABBIE		FELLS CREEK	CONCRETE
LTC760	TRAMWAY ROAD (CHURCHILL - MORWELL)	CHURCHILL - MORWELL	CH 0.2 KM	WATERHOLE CREEK	CONCRETE
LTC770	VAGGS ROAD (YINNAR)	YINNAR	CH 1.42 KM	WATERCOURSE	CONCRETE
LTC780	WALSH & GIBSON ROAD (DRIFFIELD)	DRIFFIELD		WILDERNESS CREEK	CONCRETE
LTC790	YINNAR ROAD (YINNAR & HAZELWOOD)	YINNAR & HAZELWOOD		WATERCOURSE	CONCRETE
LTC800	YINNAR ROAD (YINNAR & HAZELWOOD)	YINNAR & HAZELWOOD		WATERCOURSE	CONCRETE

Appendix 3

LTB003 – Bassetts Lane GLENGARRY



LTB005 Becks Bridge Road NEWBOROUGH



LTB011 Callignee South Road CALLIGNEE



LTB020 Coalville Road MOE SOUTH



LTB030 Creamery Road YINNAR



LTB035 Crinigan Road MORWELL



LTB040 Crinigan Road MORWELL



LTB045 Darlimurla Road DARLIMURLA



LTB050 Downies Lane TRARALGON SOUTH



LTB060 Fox & Fanckes Rd BOOLARRA STH



LTB070 Franklin Street TRARALGON



LTB100 Hirsts Road BOOLARRA



LTB080 Glendonald Road CHURCHILL



LTB120 Jones Road TRARALGON SOUTH



LTB085 Glengarry North Road GLENGARRY NORTH



LTB125 Jumbuck Road YINNAR



LTB090 Haigh Street MOE



LTB140 Kenyons Lane TRARALGON EAST



LTB095 Hazelwood Drive MORWELL



LTB150 Kenyons Lane TRARALGON EAST



LTB160 Kenyons Lane TRARALGON EAST



LTB230 Mackeys Road CHURCHILL



LTB170 Kenyons Lane TRARALGON EAST



LTB180 Lewis Road YINNAR



LTB240 Upper Middle Creek Road
BUDGEREE



LTB190 Limonite Road BOOLARRA



LTB250 Gilberts Road YINNAR SOUTH



LTB200 Livingston Road BOOLARRA
SOUTH



LTB260 Morwell River Road BOOLARRA



LTB220 Morwell River Road BOOLARRA

LTB270 Morwell River Road BOOLARRA



LTB310 Olsens Road BOOLARRA SOUTH



LTB280 Nadenbouschs Road HAZELWOOD



LTB320 Olsens Road BOOLARRA SOUTH



LTB290 Nutalls Road YINNAR



LTB330 Agnes Brereton Park TRARALGON

**TO BE
REPLACED
2009/2010**

LTB295 Old Melbourne Road TRARALGON



LTB340 Botanic Gardens NEWBOROUGH



LTB300 Old Sale Road NEWBOROUGH



LTB350 Botanic Gardens NEWBOROUGH



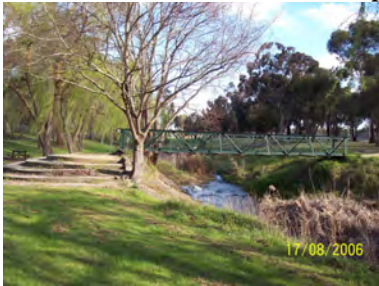
LTB360 Lake Kernot MORWELL



LTB410 Waratah Drive MORWELL



LTB370 Morwell Tennis Complex MORWELL



LTB420 Waratah Drive MORWELL



LTB380 Victory Park TRARALGON



LTB425 Eastern Avenue NEWBOROUGH



LTB390 Wright Street TRARALGON



LTB430 The Boulevard MORWELL



LTB400 Main Street YINNAR



LTB440 Lake Kernot MORWELL



LTB450 Botanic Gardens NEWBOROUGH



LTB460 Victory Park TRARALGON



LTB520 Traralgon Creek Road TRARALGON SOUTH



LTB475 Service Road North MOE



LTB530 Traralgon Creek Road KOORNALLA



LTB477 Service Road South MOE



LTB 540 Traralgon Creek Road KOORNALLA



LTB480 Speargrass Road YINNAR SOUTH



LTB510 Traralgon Creek Road TRARALGON SOUTH

LTB550 Traralgon Creek Road GOOMBALA

**DESTROYED BY
2009
GLENDONALD
FIRE TO BE
REPLACED
2009/2010**

LTB560 Traralgon Creek Road GOOMBALA



LTB579 Tyers Recreation Reserve TYERS



LTB570 Taylors Road KOORNALLA



LTB580 Vaggs Road YINNAR



LTB 575 Toongabbie-Cowwarr Road
TOONGABBIE



LTB600 Walshs Road HAZELWOOD



LTB577 Traralgon Recreation Reserve
TRARALGON

**DAMAGED BY
FLOODS
TO BE
REPLACED
2009**

LTB605 Xuerubs Outlet BOOLARRA



LTB611 Yinnar Road YINNAR



LTB620 Yinnar Road YINNAR



LTB630 Yinnar Driffield Road YINARR



APPENDIX 4 - BRIDGE UPGRADE & REPLACEMENT PROGRAM 2009 - 2014

BRIDGE	CURRENT YEAR	YEAR 2 (2010/2011)	YEAR 3 (2011/2012)	YEAR 4 (2012/2013)	YEAR 5 (2013/2014)
LTB 003 Bassetts Lane Replacement (Joint Wellington Shire)	\$190,000				
LTB 070 Franklin Street High Level Bridge Option	\$300,000	\$1,600,000			
LTB 390 Wright Street Bridge Replacement		\$400,000			
LTB 480 Speargrass Road Deck Replacement			\$250,000		
LTB 050 Downies Lane Bridge Replacement			\$400,000		
LTB 180 Lewis Road Bridge Replacement				\$100,000	
LTB 370 Morwell Tennis Centre Bridge Replacement				\$400,000	
LTB 140 Kenyons Lane Deck & Abutments Replacement					\$380,000
LTB 440 Kernot Lake - West Vale Drive Deck Replacement					\$50,000
TOTALS	\$490,000	\$2,000,000	\$650,000	\$500,000	\$430,000

Appendix 5 – Bridge Treatments

Code	Description
M01	Scuppers extending or new
M02	Spot painting steelwork
M03	Crack repair of asphalt
M04	U-Slab bolt tightening
M05	Batter stabilisation
M06	Scour prevention in streams
M07	Retaining road embankment
M08	Raising bridge approaches
M09	Installing approach guardrail
M10	Repair of timber railing
M11	Repair of steel railing
M12	Repair of concrete railing
M13	Unblocking silted culverts
M14	Sealing potholes and gravel edges on bridge decks
M15	Bridge Footpath and kerb repair
M16	Retightening loose connections
M17	Sealing timber endgrain
M98	Monitor at Level 1 inspections
M99	Replace or supply new components
R01	Basic concrete patch repair
R02	Epoxy injection of cracks
R03	Surface sealing live cracks
R04	Water washed concrete surfaces
R05	Protective coating of concrete
R06	Shear crack repair
R07	Fibreglass wrapping PSC piles
R08	Concrete encasing columns
R09	Sacrificial anodes
R10	I/C Cathodic protection
R11	AAR affected concrete repairs
R12	Guniting large spalled areas
R13	U-Slab shear key repair
R14	Major RC beam repair
R15	Pourable repair of columns
R16	Undermined footings
R17	Retightening tensioning rods
R18	Additional bearing support
R19	Repair spot rusted paintwork
R20	Remove paint and repainting
R21	Bituminous wrap of girders
R22	Rivet/Bolt replacement
R23	Cracked plates & welds
R24	Replacing plates & sections
R25	Macadam or weak concrete

Code	Description
R26	Repair of cracked stonework
R27	Repointing stonework
R28	Retaining side wall bulging
R29	Concrete capping of stonework
R30	Repair deteriorated stonework
R31	Stabilizing abut/wing movements
R32	Banding split timber piles
R33	Repairing split timber stringers
R34	Relieving timber stringers
R35	Repair split & rotted corbels
R36	Corbel replacement
R37	Spiking planks
R38	Replacing timber crossheads
R39	Strengthening timber crossheads
R40	Additional RSJ support
R41	Timber pile splicing
R42	Strapping timber piles
R43	RC splicing timber piles
R44	RC sleeving timber piles
R45	Replacing walers & crossbracing
R46	Replacing abutment sheeting
R47	Lateral bracing of steel beams
R48	Timber crossbeams
R49	Timber longdecking
R50	Timber crossdecking
R51	Timber running planks
R52	Steel trough decking
R53	Timber kerbs
R54	Timber post & railing
R55	Bridge railing repair
R56	Repair laminated pine deck
R57	Stress laminated pine decks
R58	Waldren precast RC decking
R59	Transfloor precast RC units
R60	Bridgewood laminated sheets
R61	Small expansion joints
R62	Medium expansion joints
R63	Repair of steel angled joints
R64	Large expansion joints
R65	Repair joint nosings
R66	Repair of asphalt joints
R67	Mortar bearing repair
R68	Replace mortar bearings
R69	Bearing replacement
R70	Resetting bearings
R71	Guardrail with concrete rails
R72	Guardrail with steel tubes

Code	Description
R73	Guardrail with timber rails
R74	Repair culvert alignment
R75	Large metal pipes
R76	Replace culvert units
R77	Cut off walls
R78	Wingwall movement
R79	Additional timber crosshead support
R80	Adding additional guardrail posts
R81	Precast RC sheeting
R82	Upgrading mesh fence railing on old bridges
R83	New culvert wings and endwalls
R84	Sealing fixed joints on old prestress slab bridges
S01	Composite RC overlays
S02	Asphalt/fibreglass grid overlay
S03	External post tensioning
S04	Steel plate - moment strength
S05	Steel plate - shear capacity
S06	Carbon fibre strips/sheets
S07	Concrete section enlargement
S08	Welding plates for moment
S09	Flattened masonry arches
S10	Crosshead strengthening of old RC piers

Appendix 6 – Levels of Service

Bridge Service Standards									
Service Level Activity	Reason for Activity	Intervention Level	Hierarchy	Frequency / Responsiveness	Performance Indicator	Performance Measurement	Performance Target	Current Performance	Actions Required to meet Targets
Level 1 Inspections Regime (for proactive maintenance)	Adhering to the Road Management Act 2004 - Identifying Work Needs to assist in maintenance program	N/A	Concrete Bridges	12 months	Frequency of inspections	Track % of actual inspections carried out, against inspection regime	90%	Currently, performance tracking does not exist and will be developed through the implementation of this BMCAMP	To be piloted with improvements through Council's customer request system or through a temporary spreadsheet based process
			Timber Bridges	6 months					
			Culverts	12 months					
			Pedestrian Bridges	6 months	Quality of Activity	An audit of all inspected bridges will be carried out to ensure that the defect data has been correctly & consistently identified			

Bridge Service Standards									
Service Level Activity	Reason for Activity	Intervention Level	Hierarchy	Frequency / Responsiveness	Performance Indicator	Performance Measurement	Performance Target	Current Performance	Actions Required to meet Targets
Level 2 and 3 inspections	To assess the structural integrity and capacity of the bridge substructure and superstructure. Inspections will be carried out in accordance with VicRoads Bridge Inspection Manual.	Level 1 inspection report or frequency as detailed for Level 2 inspections. Level 3 will be triggered by a level 2 inspection if required or by a catastrophic event – fire, flood etc.	Concrete Bridges	48 months	Quality of Activity	An audit of all inspected bridges will be carried out to ensure that the defect data has been correctly & consistently identified	90%	Currently, performance tracking does not exist and will be developed through the implementation of this BMCAMP	To be piloted with improvements through Council's customer request system or through a temporary spreadsheet based process
			Timber Bridges	24 months					
			Culverts	48 months					
			Pedestrian Bridges	24 months					

Bridge Service Standards									
Service Level Activity	Reason for Activity	Intervention Level	Hierarchy	Frequency / Responsiveness	Performance Indicator	Performance Measurement	Performance Target	Current Performance	Actions Required to meet Targets
M04, M13, M14, M98	General bolt tightening, sealing potholes / gravel edges on bridge decks etc	Council's level 1 inspections. As documented in VicRoads bridge inspection manual.	Concrete Bridges	Annual Program, ranked according to risk	All maintenance carried out as per annual works program	Managing and meeting the schedule program	90%	Currently, performance tracking does not exist and will be developed through the implementation of this BMCAMP	To be piloted with improvements through Council's customer request system or through a temporary spreadsheet based process
			Timber Bridges						
			Culverts	Annual Program, ranked according to risk					
			Pedestrian Bridges	Annual Program, ranked according to risk					

Bridge Service Standards									
Service Level Activity	Reason for Activity	Intervention Level	Hierarchy	Frequency / Responsiveness	Performance Indicator	Performance Measurement	Performance Target	Current Performance	Actions Required to meet Targets
M01, M02, M03, M10, M11, M15, M16, M17, R01 R13, R18, R22, R32, R34, R37, R39, R45, R48, R49, R50, R51, R53, R54, R55, R61, R66, R67, R68, R69, R70, R77, R78, R80, R80, R84	Minor repairs as per VicRoads Manual for unscheduled maintenance e.g painting handrails, replace handrails, replacement of bolts, replacing missing signs, localised decking replacement etc.	As documented in VicRoads bridge inspection manual and risk levels based on level 2 inspections.	Concrete Bridges Timber Bridges Culverts Pedestrian Bridges	5 year priority program, ranked according to output from Bridge Management System's risk assessments	All repairs are carried out as per schedule and ranking.	Managing and meeting the schedule program	90%	Currently, performance tracking does not exist and will be developed through the implementation of this BMCAMP	To be piloted with improvements through Council's customer request system or through a temporary spreadsheet based process

Bridge Service Standards									
Service Level Activity	Reason for Activity	Intervention Level	Hierarchy	Frequency / Responsiveness	Performance Indicator	Performance Measurement	Performance Target	Current Performance	Actions Required to meet Targets
M05, M06, M07, M08, M09, M12, M99, R02, R03, R04, R05, R06, R07, R08, R09, R10, R11, R12, R14, R15, R16, R17, R19, R20, R21, R23, R24, R25, R26, R27, R28, R29, R30, R31, R33, R35, R36, R38, R40, R41, R42, R43, R44, R46, R47, R52, R56, R57, R58, R59, R60, R62,	Major repairs as per VicRoads Manual for unscheduled capital e.g replacing, super-structure, sub-structure, pile replacement etc.	As documented in VicRoads bridge inspection manual and risk levels based on level 2 and level 3 inspections.	Concrete Bridges Timber Bridges Culverts Pedestrian Bridges	5 year priority program, ranked according to output from Bridge Management System's risk assessments	All repairs are carried out as per schedule and ranking.	Managing and meeting the schedule program	90%	Currently, performance tracking does not exist and will be developed through the implementation of this BMCAMP	To be piloted with improvements through Council's customer request system or through a temporary spreadsheet based process

R63, R64, R65, R71, R72, R73, R74, R75, R76, R79, R82, R83, S01, S02, S03, S04, S04, S06, S07, S08, S09,									
Hazard to bridge users	To ensure that emergency works are performed to remove dangerous hazards to bridge users	Notification of hazard	All	4 hours	All emergency works including barricades and bridge closures conducted within 4 hours of notification	Works conducted within 4 hours	100%	Currently, performance tracking does not exist and will be developed through the implementation of this BMCAMP	Use of customer request system and works management system to track