



# **Coonamble Shire Council**

Road Management Plan 2009/2010

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## **Executive Summary**

### **Introduction**

In February 2005, Council adopted a Roads Management Plan in order to establish a rational, long term approach to the maintenance of the Shire's road assets and enable Council to minimise the risk of litigation through a systematic approach to the identification and rectification of hazards on our roads. Since then, the Roads Management Plan has become an integral part of Council's long term planning, with the annual review forming part of Council's overall Management Plan.

### **Overall Assessment**

Since the introduction of a Roads Management Plan, the sealed roads under Council's control have seen an overall improvement in their standard. This was shown in last years Management Plan as a reduction in narrow seal, failed pavement and rough roads. This improvement has come from a focus on reconstructing serious deteriorated pavement, shoulder widening prior to reseals, and a strong focus on asset management.

As a result, this Plan has identified a revised methodology for assessing our sealed roads. Whilst still based on the same "failure" criteria as previously used, it reviews the scoring and ranking process that is applied.

### **Roads and Bridges**

Council has over 1,600km of road within its boundaries. Of this, 114km are State Highway and maintained by Council under contract to the RTA. Another 255km, of which 204km are sealed, are Regional Road and are funded by the RTA Block Grant and REPAIR Program. The remaining 1,266km of Shire Roads are owned and maintained by Council using its own funding, as well as grant funds such as Roads to Recovery and RLR. Approximately 1,100km of these Shire Roads are unsealed, with 167km sealed.

The Shire has 21 major bridges and culverts, of which nine are timber. All nine of these timber bridges have been scheduled for replacement, with a contract awarded in late 2007 for this work. It is expected that these works will be complete late in 2008. Part of these works have been loan funded, and the repayment of the loan will require a continued allocation of funds to bridges in the medium term.

### **Maintenance System**

Roads maintenance can be broken into two main types

- routine maintenance - such as pothole patching, shoulder grading, unsealed road grading and maintenance of roadside furniture (signs, guideposts etc)
- major maintenance - consisting of road reconstruction and resealing.

Council has adopted a risk management approach to routine maintenance, where hazards are identified through scheduled inspections or complaints from the public. These hazards are assessed, ranked, and repaired in order of priority within budget constraints. Reloaming works are also assessed using this system, with the most needy sections of unsealed road being allocated funds within the identified budget constraints.

A similar process has been adopted for major maintenance of sealed roads, where roads are assessed based on their pavement quality, roughness and width, with reconstruction funds allocated in order of need. Reconstruction and resealing works are conducted on the expectation of a 30 year life, as this is the most cost effective regime for Council.

A five year Reconstruction Works Program, Resealing Works Program and Urban Street Works Program form part of this document, with works having been identified using the process above. These programs are reviewed annually following re-assessment of roads.

Through this process, there has been an identifiable improvement in the standard of sealed roads within the shire over the last three years. The result of this is that the assessment and allocation process should be reviewed to ensure that it is continuing to provide best value for Council's limited road maintenance budget. This review has been conducted as part of the development of this Plan.

### **Heavy Vehicle Overloading**

Heavy vehicle overloading has been identified as a hindrance to the implementation of this Plan. It is noted that heavy vehicles could be increasing the long term cost of maintaining roads within the Shire by \$500,000 per annum. For this reason it is recommended that Council continue every effort to enforce the legal loading of trucks on our roads through their association with the CENTROC Weight of Loads group.

### **Strategic Upgrades**

Due to the limited funding that is available for ongoing maintenance of roads, it has been recommended by senior engineering staff that Council do not seek to increase the amount of sealed road under its control.

### **Regional Road Funding**

An assessment has been made of available funding, and the allocation of these funds for road works. On Regional Roads, the only source of funds is the RTA's Block Grant and REPAIR Program, in total approximately \$1.5 million. It has been identified that this funding is inadequate for the long term maintenance of the existing asset. As a result, only critical maintenance works will be conducted on maintenance of bridges, causeways, culverts and roadside furniture. The major focus of Regional Road funding will be to prevent major pavement failure.

With the recent improvement in the sealed regional roads, it is proposed to reinstate a regional road re-loom program for the MR202, Quambone-Carinda. It is proposed that a sustainable program be developed, with 5km re-loomed annually at an estimated cost of \$90,000. This will be subject to achieving at least the budget income from the REPAIR Program. If this is not achieved, the sealed road maintenance will be supplemented by this sum.

### **Local Road Funding**

Council funds and a series of grants provide funding for maintenance of local roads. In total this funding is approximately \$2.5 million. Whilst this level of funding has been considered to be \$550,000 short of that required to maintain the existing road assets in the long term, the identifiable improvement in the standard of sealed road over the last three years suggests that the long term maintenance cost may have been slightly overestimated. Further investigation is required into this assessment, however pavement strength testing conducted in early 2007 appeared to support this. More detailed measurement and modelling over the next couple of years should provide Council with valuable information that will assist in their decision making.

In order to maximise the benefit of the existing funding for local roads only critical maintenance works will be conducted on bridges, kerb and gutter, culverts and roadside furniture. Funding will be adequate to provide the repayments required for the timber bridge replacement commitments already made by Council, and to ensure a sustainable 30 year reconstruction and resealing program on sealed roads.

Following the allocation of additional funds to re-loom in recent years, the re-loom program is nearing a sustainable level on the local roads (at least in the short term). This will be further assisted by the recent floods which have resulted in significant grant funding for reinstatement of damaged roads. If re-loom is continued in the medium term, this should prevent loam roads reverting to black soil formation.

It is unlikely that any significant improvements to urban streets will be achievable in the near future using existing funding, however the recent allocation of additional funds into this area should ensure that major defects are rectified over coming years. It will also be possible to divert additional funds into re-loom or urban streets upon repayment of Council's Bridge Loan to reduce the long term impact on these areas.

### **Recommendations**

Finally, the Plan makes a series of detailed recommendations to Council. These recommendations will form input into Councils 2009/2010 Management Plan. They include:

1. More detailed assessment and analysis of the existing road network to more accurately determine the optimum road investment strategy
2. Continuing to use of a risk management approach to the management of both routine and major maintenance works

3. Proposed allocation of funds toward routine maintenance, re-lining, reconstruction and resealing works, and the finalisation of the timber bridge replacement on both Regional and Shire Roads
4. The continued enforcement of legal loads on heavy vehicles within the Shire
5. Lobbying both the State and Federal Government for additional funds for road maintenance

## 1. Introduction

Council's Roads Management Plan was developed in order to achieve an orderly, long-term maintenance program on roads within Coonamble. This Plan is now reviewed annually as part of Council's Management Planning process.

## 2. Roads Overview

### 2.1. Road Types

#### 2.1.1. *Descriptions*

An existing system of road classification is currently in use. For the purposes of maintaining roads within the Shire all rural roads are categorised into 1 of 8 Types and urban streets into 1 of 3 Types as described below.

| <b>Type</b>          | <b>Description</b>  |
|----------------------|---|
| <b>Rural Roads</b>   |   |
| <b>1</b>             | SH18 is the only road Type 1 road within the shire. It is Maintained for the RTA under the Single Invitation Maintenance Contract and will not be managed under this Management Plan. |
| <b>2</b>             | All Regional roads within the shire   |
| <b>3</b>             | All Local Arterial Roads  |
| <b>4</b>             | Roads of high local traffic not being defined as Local Arterial roads. Includes all school bus routes not include in type 3 roads   |
| <b>5</b>             | Roads servicing less than 30 properties   |
| <b>6</b>             | Roads Servicing Less than 10 properties   |
| <b>7</b>             | Roads Servicing Less than 5 properties that are graded when approval given by council on written request  |
| <b>8</b>             | Unformed roads not maintained by council (lengths unknown)  |
| <b>Urban Streets</b> |   |
| <b>U1</b>            | The 8m carriageway of streets that are on a the route of a Type 1 or 2 Road   |
| <b>U2</b>            | All sealed streets not classified as Type U1  |
| <b>U3</b>            | All lanes and unsealed streets within town and village boundaries   |

### 2.1.2. Road Register Summary

Below is a brief summary of council's road register. Within the Shire there are 144 roads of which:-

- The only Type 1 road is State Highway (SH18 114.62km)
- 111 roads are maintained by council (incl SH18 1636.12km)
- 16 have some type of bitumen seal (373.15km exc SH18)
- 106 have some type of formed unsealed surface (1148.35km)
- 33 are not formed (Type 8)

A summary of roads by category is given below:

| Type                | Sealed                          |              | Unsealed                   |               | Total                         |               |
|---------------------|---------------------------------|--------------|----------------------------|---------------|-------------------------------|---------------|
|                     | No of Roads/<br>Part Roads      | Length<br>Km | No of Roads/<br>Part Roads | Length<br>Km  | No of<br>Roads/<br>Part Roads | Length<br>Km  |
| <b>Rural Roads</b>  |                                 |              |                            |               |                               |               |
| <b>1</b>            | 1                               | 114.62       | 0                          | 0             | 1                             | 114.61        |
| <b>2</b>            | 5                               | 204.21       | 1                          | 51.47         | 5                             | 255.68        |
| <b>3</b>            | 4                               | 150.68       | 3                          | 84.63         | 4                             | 235.31        |
| <b>4</b>            | 5                               | 16.93        | 36                         | 523.7         | 36                            | 540.63        |
| <b>5</b>            | 0                               | 0            | 29                         | 225.12        | 29                            | 225.12        |
| <b>6</b>            | 1                               | 1.34         | 40                         | 220.97        | 41                            | 222.31        |
| <b>7</b>            | 0                               | 0            | 13                         | 42.46         | 13                            | 42.46         |
| <b>8</b>            | 0                               | 0            | 0                          | 0             | 33                            | 0             |
| <b>Total</b>        | <b>16</b>                       | <b>482.8</b> | <b>123</b>                 | <b>1153.3</b> | <b>162</b>                    | <b>1636.1</b> |
| <b>Town Streets</b> |                                 |              |                            |               |                               |               |
| <b>U1</b>           | Data still<br>being<br>collated |              | N/A                        |               |                               |               |
| <b>U2</b>           |                                 |              | N/A                        |               |                               |               |
| <b>U3</b>           |                                 |              |                            |               |                               |               |

### 2.1.3. Funding

Council uses several different funding sources to maintain the roads within the Shire.

| Type         | Funding Source   |  |
|--------------|--|--|
|              | Routine Maintenance  | Major Maintenance<br>(reconstruction/resealing)  |
| <b>1</b>     | RTA SIMC Lump Sum Amount. Council funds are not required for this road   | RTA individually priced work orders for each project. Council funds are not required for this road   |
| <b>2</b>     | RTA Block Grant. Council funds are generally not required for these roads.   | RTA funded Repair Program (50%) matched with 50% from the Block Grant. Council funds are generally not required for these roads.   |
| <b>3-7</b>   | Councils General Revenue including grants applicable for use in this area (ie RLR).  | Councils General Revenue including grants applicable for use in this area (ie RLR and R2R).  |
| <b>8</b>     | No work carried out on these roads hence no funds are required.  | No work carried out on these roads hence no funds are required.  |
| <b>U1</b>    | RTA SIMC or Block Grant. Council funds are required when work needs to be completed outside the 8m carriageway that is the route of a Regional Road. | SIMC or RTA funded Repair Program (50%) matched with 50% from the Block Grant. Council funds are required when work needs to be completed outside the 8m carriageway that is the route of a Regional Road. |
| <b>U2-U3</b> | Councils General Revenue including grants applicable for use in this area (ie RLR).  | Councils General Revenue including grants applicable for use in this area (ie RLR and R2R).  |

### 2.1.4. Design Criteria

The following are road design criteria that are to be achieved on new projects that are carried out on each type of road. With the limited resources that the community has available it is not reasonable to expect that all roads labelled as a particular type currently meet the design criteria. These design criteria will be used for all future Council works.

| Type      | Design Criteria  |  |
|-----------|--|--|
|           | Sealed   | Unsealed   |
| <b>1</b>  | Pavement Width – As per RTA corridor<br>Seal Width – As per RTA corridor<br>Line Marking – As per RTA corridor   | N/A  |
| <b>2</b>  | Pavement Width – 8<br>Seal Width – 7<br>Line Marking – centre  | Pavement Width – 9.5<br>Pavement Type – Loam       |
| <b>3</b>  | Pavement Width – 8<br>Seal Width – 7<br>Line Marking – centre  | Pavement Width – 7.5<br>Pavement Type – Loam       |
| <b>4</b>  | Pavement Width – 8<br>Seal Width – 7<br>Line Marking – none  | Pavement Width – 6.5<br>Pavement Type – Loam       |
| <b>5</b>  | N/A  | Pavement Width – 5.5<br>Pavement Type – Black Soil |
| <b>6</b>  | N/A  | Pavement Width – 5.5<br>Pavement Type – Black Soil |
| <b>7</b>  | N/A  | Pavement Width – 5.5<br>Pavement Type – Black Soil |
| <b>8</b>  | N/A  | Unformed   |
| <b>U1</b> | Pavement Width – 8m minimum but subject to local requirements<br>Seal Width – 8m minimum but subject to local requirements<br>Line Marking – SH18 only | N/A  |
| <b>U2</b> | Pavement Width – 8m minimum but subject to local requirements<br>Seal Width – 8m minimum but subject to local requirements<br>Line Marking – none      | N/A  |
| <b>U3</b> | Pavement Width – 3m minimum but subject to local requirements<br>Seal Width – 3m minimum but subject to local requirements<br>Line Marking – none      | Pavement Width – 7.5<br>Pavement Type – Loam       |

## 2.2. Bridge & Culvert Types

### 2.2.1. *Bridge Register Summary*

A Bridge Register is maintained for all bridges, causeways and culverts. The register maintains all data on the existing structures to allow for their correct and efficient management. A brief summary of bridges from the register is shown below with data provided assuming completion of the existing bridge replacement contract. It should be noted that upon completion of that contract, Coonamble Shire will have no timber bridges on its local or regional roads.

| Road Type                       | Sealed Road<br>No of Bridges |                               | Unsealed Road<br>No of Bridges |                               |
|---------------------------------|------------------------------|-------------------------------|--------------------------------|-------------------------------|
|                                 | Timber Bridge                | Concrete (Bridges & Culverts) | Timber Bridge                  | Concrete (Bridges & Culverts) |
| 1                               | 0                            | 7                             | N/A                            | N/A                           |
| 2                               | 0                            | 7                             | 0                              | 0                             |
| 3                               | 0                            | 4                             | 0                              | 1                             |
| 4                               | 0                            | 1                             | 0                              | 11                            |
| 5                               | 0                            | 0                             | 0                              | 3                             |
| 6                               | 0                            | 0                             | 0                              | 5                             |
| 7                               | 0                            | 0                             | 0                              | 0                             |
| <b>Total Council Maintained</b> | <b>0</b>                     | <b>12</b>                     | <b>0</b>                       | <b>20</b>                     |

Note: Above data assumes completion of existing bridge replacement contract.

### 2.2.2. *Funding*

Council has several different avenues of funding to maintain the bridges within the Shire.

| Type | Funding Source  |   |
|------|---|---|
|      | Routine Maintenance   | Major Maintenance (includes reconstruction)   |
| 1    | RTA SIMC Lump Sum Amount for items associated with the pavement. Council funds are not required for these bridges | The RTA or its subcontractors carry out any major works. No council funds are required on these bridges   |
| 2    | RTA Block Grant. Council funds are generally not required for these bridges.                                      | RTA funded Regional Roads Timber Bridge Replacement Program to fund bridge replacement. This grant will be matched by Council funds on a dollar for dollar basis. |
| 3-7  | Councils General Revenue including grants applicable for use in this area ie RLR.                                 | Councils General Revenue including grants applicable for use in this area ie RLR and R2R.   |

### 2.2.3. Design Criteria

The bridge design criteria below will be used for all future bridge construction and are required pavement widths after installation of all drainage structures. The figures presume that the clear zones on all approaches will be enforced or appropriate barrier protection will be constructed.

| Type | Design Criteria                |          |
|------|--------------------------------|----------|
|      | Sealed                         | Unsealed |
| 1    | RTA Design Office requirements | N/A      |
| 2    | 8.0m                           | 8.0m     |
| 3    | 8.0m                           | 8.0m     |
| 4    | 6.5m                           | 6.5m     |
| 5    | N/A                            | 6.5m     |
| 6    | N/A                            | 6.5m     |
| 7    | N/A                            | N/A      |
| 8    | N/A                            | N/A      |

Note that 6.5m bridges are prescribed for minor roads for the purpose of allowing most major farm machinery to traverse the bridge.

## 3. Maintenance Management Systems

### 3.1. Management Discussion

#### 3.1.1. Routine Maintenance

Efforts have been made to automate the routine maintenance system over the last few years with limited success. It is hoped that the purchase of asset management software during 2008/2009 may assist in this.

The maintenance system manages council's responsibility using the following techniques -:

- Identify & Analyse Risks through an Inspection procedure along with customer complaints.
- Any defects raised will be prioritised on a work schedule by previously determined factors.
- Document any action taken

Council is then be able to address the prioritised work schedule within our limited budget & resources, each work activity having a budget determined on previous years and an estimate of the quantity of work required. A summary of the defect assessment procedure can be found in section 3.2.1 *Routine Maintenance*

#### 3.1.2. Major Maintenance

Council's engineering staff have recently conducted a design review and determined that all future reconstruction should utilise the stabilisation of the black clay subgrade with lime to form an adequate foundation for the base.

Through this process, a pavement thickness in excess of 500mm will be reliably achieved, with an anticipated life of 30 years, possibly up to 40 years.

In addition, construction techniques are used that ensure the best quality material (quarried road base) is used as the layer immediately under the seal. Finally, prime seals are to be used on all jobs to provide a minimum of one year of wear before the final seal is applied. In this way, any areas that fail prematurely will be able to be repaired prior to the completion of the final seal.

Through the use of this construction method, the pavement will be adequate for future rehabilitation at the completion of its usable life. This rehabilitation will be cheaper than full reconstruction due to the use of alternative techniques such as stabilisation and/or overlay. This will reduce the long term replacement cost of the road by approximately \$2,000 per kilometre per annum.

An important point to remember in this section and later in section 6.0 *Funding* is that the planned life of bituminous seals used in this costing analysis is beyond best practice, however more detailed review of our existing processes may result in changes to this practice in the future.

#### Reconstruction Cost

| Year | Item  | Cost per km     |
|------|---|-----------------|
|      |   | <b>Total</b>    |
| 0    | Reconstruction (including sub-base stabilisation) | \$ 124,200      |
| 0    | 7mm Primer Seal                                   | \$ 13,000       |
| 1    | 14 mm Seal  | \$ 24,800       |
| 15   | 10 mm Seal  | \$ 17,250       |
|      | Total Cost  | \$ 179,250      |
|      | <b>\$ per year per km (based on 30 year life)</b> | <b>\$ 5,975</b> |

#### Reconstruction Cost

| Year | Item  | Cost per km     |
|------|---|-----------------|
|      |   | <b>Total</b>    |
| 0    | Reconstruction (including sub-base stabilisation) | \$ 124,200      |
| 0    | 7mm Primer Seal                                   | \$ 13,000       |
| 1    | 14 mm Seal  | \$ 24,800       |
| 15   | 10 mm Seal  | \$ 17,250       |
| 28   | 14 mm Seal  | \$ 24,800       |
|      | Total Cost  | \$ 204,050      |
|      | <b>\$ per year per km (based on 40 year life)</b> | <b>\$ 5,101</b> |

**Rehabilitation (Stabilisation or Overlay) Cost**

| <b>Year</b> | <b>Item</b>   | <b>Cost per km</b> |
|-------------|---|--------------------|
|             |   | <b>Total</b>       |
| <b>0</b>    | Stabilise or Overlay Existing Base                            | \$ 71,300          |
| <b>0</b>    | 7mm Primer Seal   | \$ 12,300          |
| <b>2</b>    | 14 mm Seal  | \$ 24,840          |
| <b>15</b>   | 10 mm Seal  | \$ 17,250          |
|             | Total Cost  | \$ 126,690         |
|             | <b>\$ per year per km (based on 30 year life for overlay)</b> | <b>\$ 4190</b>     |

Note: this treatment subject to existing pavement being adequate width and structure.

As noted in earlier Roads Management Plans, a 30 year life cycle offers the best level of service to road users whilst providing the most benefit to the community and also follows sound engineering principle. Detailed review of the structural capacity of our existing roads suggests that a life of 40 years or more may be able to be achieved through the use of high quality pavement. This will reduce the long term cost of road maintenance and improve the standard of the road network. Further assessment of this will be undertaken during 2009/10.

The above 30 year life cycle has been structured on a full reconstruction at \$124,200 per km plus sealing works. To determine the level of reconstruction required each segment on a works program will be investigated. If the existing pavement is in good condition, but the width is narrow, then the level of reconstruction may be significantly reduced. This could result in a life cycle cost as little as \$3,000 per kilometre per annum, however is dependant on the strength of the central section.

**3.1.3. Unsealed Roads**

Council currently loams roads to allow better access in wet weather. In previous years council has loamed roads with flood damage money and a re-loaming program. In recent years council has funded a re-loaming program at approximately 50% of the long term sustainable level. If council were to establish a re-loaming program aimed at a 10 year cycle for the Type 3-4 roads (old priority 1) then the following funding would be required. Some type 5 roads also have sections of loam, but are not included in these figures.

610 km roads over 10 years = 61km per year @ \$14,950/km = **\$911,950 pa**

The current budget does not allow this level of funding to be allocated in this area. As a result a lesser amount of money is allocated, however it is clear that the length of loamed road is not sustainable and that loamed roads will deteriorate to become black soil over time. A detailed review of the sealed road maintenance may allow some additional funding to be allocated toward re-loaming in the future, but will be subject to maintaining a sustainable sealed road network. It is also possible that additional funds may be allocated to re-

loaming upon repayment of the Timber Bridge loan which will bring the re-loaming program towards a sustainable level.

The proposed funding discussed in Section 6 allows \$330,000 for re-loaming in 2009/10, with lesser amounts in subsequent years. This will result in at least 300kms of Type 3 – 4 Roads not being re-loamed in the medium term. The re-loaming of roads is dealt with by allocating council's limited resources to the highest priority sections first.

Whilst the majority of the re-loaming funds will be spent on Type 3-4 roads, a small amount (approximately \$15,000) may be allocated to low cost localised repairs on Type 5, 6 and 7 roads if the minor repair will significantly improve property access.

It should be noted that a number of unsealed sections have been stabilised with lime as an alternative to re-loaming. Although no detailed assessment has been done as to the success of this process, it would appear that there may be some merit in this approach. A more thorough assessment will be carried out over the next year as to the anticipated life of this treatment so that the long term strategy can be determined.

#### **3.1.4. Urban Streets**

As can be seen in 2.1.2 – *Road Register Summary* a full review of Urban Assets is yet to be completed. The following estimates have been made:

- Total Surface area 555,300 sq.m
- Only 7 & 10mm seals will be used to limit road noise

An estimate for 30-year life is as follows

| <b>Year</b> | <b>Item</b>                 | <b>Cost per km</b> |
|-------------|-----------------------------|--------------------|
|             |                             | <b>Total</b>       |
| <b>0</b>    | Reconstruction / sq.m       | \$ 14.05           |
| <b>0</b>    | 7mm Primer Seal /sq.m       | \$ 1.76            |
| <b>1</b>    | 10mm Seal /sq.m             | \$ 2.17            |
| <b>13</b>   | 7 mm Seal /sq.m             | \$ 1.45            |
|             | Total Cost /sq.m            | \$ 19.43           |
|             | <b>\$ per year per sq.m</b> | <b>\$ 0.65</b>     |

This life cycle results in a total cost of approximately \$310,000 p.a., excluding routine maintenance. In recent years funding has been approaching this amount, allowing routine maintenance and some reconstruction works. This is not currently a sustainable level of funding and has been utilising Council reserves. Clearly other sources of funds will need to be sought in the near future to prevent deterioration of urban streets.

#### **3.1.5. Bridges**

The major focus for bridges within the Shire is the replacement of the existing timber bridges to concrete structures. This will be completed at the end of 2008. This is expected to significantly reduce the bridge maintenance

requirement, as well as reducing the risk of failure and increasing the level of service. A maintenance program, involving regular monitoring of Councils concrete bridges will need to be developed over the next couple of years to ensure that the anticipated life of the concrete bridges is achieved. The asset management software purchased during 2008/2009 will assist in this process.

### **3.2. Road Assessment**

As detailed in Section 2.1.3 & 2.2.3 *Funding*, Type 2 – Regional roads and Type 3-7 Local roads are funded from different areas. Both types of roads will be managed using the same systems, however the budgets are completely separate. Thus priorities will be addressed if there is adequate funding for each particular type of road.

#### **3.2.1. *Routine Maintenance***

This section is a brief summary of the defect assessment procedure and the items of work that it encompasses.

Hazards (defects) are identified by:

- i) formal scheduled inspections of council roads
- ii) isolated inspections undertaken by Council officers authorised to undertake roads inspections
- iii) complaints/advice received from the community, road users and employees (other than Council officers authorised to undertake roads inspections). All of these are to be treated as Customer Service Requests.

Each hazard is to be inspected by an authorised officer, assessed against risk criteria. A Road Risk Rating is then created for each Hazard through the following formula. Weighting is given to the road type score to allow for the increased traffic on more major roads. Works are then undertaken based on this rating.

#### **3.2.2. *Major Maintenance (Reconstruction Works)***

For the purpose of prioritising major road works, the road will be surveyed in segments of uniform condition. Average scores will be used for each section, however as the assessment process develops in subsequent years, further break down of sections may be required to allow optimisation of the works program.

Over the last few years roads have are to be scored using four indicators, these being:

1. Roughness
2. Pavement Condition
3. Seal Width
4. Formation Width

It is proposed to include two new criteria to add to the assessment, these being Pavement Strength (based on deflection testing) and Rutting.

Scores will generally be allocated between one and four for each of the indicators, with the exception of Pavement Condition and Pavement Strength, which will be more heavily weighted if the pavement is very badly cracked and failure is imminent. Through this scoring system, all sections of sealed road will be allocated a total score, the higher the score, the worse the condition of that section of road.

All Segments and their respective total scores will then be placed in descending order with the largest, being of the highest priority for reconstruction. This list will be used as the basis for a Reconstruction Works Program.

All roads will be surveyed once a year to ensure that a segment previously scoring low has not begun to fail in the previous 12 months. It is however presumed that the general order of the list once established will remain much the same, with most roads deteriorating at an equivalent rate. This prioritised list of major works will then be costed and adjusted to become a 5-year works plan.

### **3.2.3. Major Maintenance (Resealing Works)**

A Resealing program will be established for all of Sealed roads Type 2 – 7. Type 1 roads are resealed as per the RTA sealing program. As discussed in Section 3.1.2 *Major Maintenance (Management Discussion)* a minimum 30-year life will be adopted for our roads.

With the seasonal heavy vehicles on the shires roads it is recommended that 7mm seals are not used on rural roads. By using only seals with larger stone it is expected that instances of bleeding and stripping will be avoided and pavement life will be extended.

Due to some of council's previous practices that included not having a structured resealing program, a backlog of resealing works exists within the shire. Segments that have a low priority on the reconstruction works program and will obviously not be reconstructed for a considerable length of time (>10 years), are the main focus of the Resealing Works Program.

Any segment with an existing seal greater than 10 years old and a low pavement score or total score will not be resealed. The segment will be left until failure, receiving only routine maintenance until it is reconstructed under the works program.

## **3.3. Works Program**

### **3.3.1. Reconstruction Works**

Detailed assessment of Type 2-3 Roads has been planned for April 2009. The result of this assessment will assist in the determination of reconstruction work priorities. Category 4-7 roads do not form part of the Reconstruction Works Program as their maintenance will be managed through the routine maintenance management system.

### **3.3.2. Resealing Works Program**

Detailed assessment of Type 2-3 Roads has been planned for April 2009. The result of this assessment will assist in the determination of resealing work priorities.

### **3.3.3. Urban Streets**

Council have allocated of additional funding to urban streets in recent years. As a result, some significant repairs have been undertaken on Urban Streets. Council have indicated that they would like to see the Dubbo St/Aberford St intersection upgraded as part of the 2009/10 program, with the major drainage channel reshaped and the Dubbo St shoulders sealed. This will be the major focus of the Urban Street Reconstruction Program for 2009/10.

### **3.3.4. Bridges**

Upon completion of the existing bridge replacement contract there will be no timber bridges within the Coonamble Shire. The repayment of the loan associated with these works will take several years to repay. As such, no further major bridge works are anticipated within the life of this Plan.

There is a small bridge on Carinda Rd (SR86) that is being narrower than required to comply with standards for a two lane road. The existing structure is only 5m wide, whereas a two lane bridge is generally a minimum of 8m wide. As the bridge is only 6m long, its estimated replacement cost is \$60-70,000. This cost should be planned as a future bridge replacement program upon completion of loan repayments. Until it is replaced, this bridge will be sign posted as a single lane bridge.

## **4. Additional Strategies**

This section of the Plan aims to identify additional management techniques and or directions that council should investigate further to improve the management of the communities' assets and resources.

### **4.1. Heavy Vehicle Overloading**

It is common place that heavy vehicles within the Shire are overloaded especially at harvest time. Council is a member of Centroc Weight of Loads who attempt to control the weights of vehicles through compliance monitoring. Even with the threat of possible heavy fines heavy vehicle operators still regularly overload with the lure of increased monetary returns.

Not only are overloaded heavy vehicles a danger to the community on the road with increased braking distances, they cause severe damage to the communities' assets. It is estimated that overloaded vehicles cost Coonamble Shire in the order of \$500,000 per annum in pavement damage due to the shortened life of the asset.

## **4.2. Line Marking**

Council committed to a program of linemarking in 2005/2006. This provides a safer environment for road users as well as ensuring more even wear on the road surface. This program will be finalised in 2009/2010, with routine maintenance of this linemarking then required into the future.

## **5. Potential Upgrade of Strategic Roads**

### **5.1. Shire Road 2 - Tooraweenah Road**

Shire Road 2, the Tooraweenah Road, links Coonamble to Coonabarabran via the Warrumbungle's. Within the Coonabarabran Shire, the road is sealed. The section within Gilgandra Shire has a small unsealed section. Within the Coonamble Shire, there is approximately 40km unsealed. The 25km closest to the town of Coonamble is sealed.

The Tooraweenah Road is a local road, and as such is maintained using Council funds and other government grants. The funds available to extend the seal of this road are limited, with insufficient funds currently available for sustainable management of existing infrastructure.

With the road being a route that is of interest to tourists using the Warrumbungle's, an upgrade would be expected to significantly benefit the town of Coonamble, with additional tourist traffic then likely to explore beyond the limits of the national park. This would be of some interest not only to Coonamble, but also Gilgandra and Coonabarabran.

It would be of interest to Coonamble Shire to improve the quality of Tooraweenah Road, including extending the seal if funds permitted. It is unlikely that additional funds would be available until the repayment of the timber bridge replacement program.

### **5.2. Shire Road 86 - Carinda Road**

Carinda Road, Shire Road 86, is the longest sealed local road within the Coonamble Shire. Whilst of limited strategic benefit in terms of tourism (there is no significant tourist attraction serviced by this road) or through traffic (Carinda is a small village), the road is the major feeder road servicing the north west sector of the Shire.

Whilst there has been some progress at sealing the remainder of this road in the past, the benefit of continuing this work is debatable. This is particularly the case given that it is highly unlikely that Walgett Shire will continue the seal all the way to Carinda, and that the existing unsealed section of the road only services approximately 15 properties within Coonamble Shire.

It is considered that any further sealing of Carinda Road would be of lower priority than the Tooraweenah Road, and on this basis no additional sealing works should be considered for this road for the life of this plan.

### **5.3. Shire Road 19 - Bourbah Road**

Bourbah Road, Shire Road 19, is sealed for approximately 25km from Gulargambone towards Quambone. Whilst the 20km section between Gulargambone and Bourbah provides a link to Main Road 7515 to Warren, the remainder of the road north to Quambone is of limited strategic benefit to the Shire apart from servicing numerous properties.

Whilst there has been some progress at sealing the remainder of this road in the past, the benefit of continuing this work is debatable. It is considered that maintaining a reasonable quality unsealed road for property access is adequate for the section of the road north of Bourbah. It is however recommended that the existing sealed section of the road should continue to be maintained.

On this basis, it is considered that any further sealing of Bourbah Road would be of lower priority than the Tooraweenah Road, and as such no additional sealing works should be considered for this road for the life of this plan.

### **5.4. Other Roads**

There are a number of other significant roads within the Shire that provide the main feeder road into Coonamble from surrounding properties. Most of these are classified as Category 3 or 4 and are unsealed. Given the limited resources of the Council to maintain sealed roads with their existing resources, it is considered unwise to attempt any further sealing works in the immediate future unless they provided significant growth opportunities through tourism or the development of industry.

On this basis, it is felt that these Category 3 and 4 roads should be kept unsealed, but that every effort be made to ensure that they are maintained at a reasonable standard to provide a safe, efficient access to the surrounding properties.

### **5.5. Conclusion and Recommendations**

It is recommended that Council continue to strive to improve the standard of Tooraweenah Rd. Whilst it is unlikely that significant funding will be available to achieve this in the immediate future, future reviews may enable some funding upon repayment of the Timber Bridge Replacement Program.

As the existing budget is insufficient to ensure the long term sustainable maintenance of the existing road network it is recommended that no further seal extensions be implemented using existing sources of funds until the existing roads meet the recommended service levels from this plan. In the event that additional funds come available from other sources Council may seek to divert some funds into improvement works.

## 6. Funding

Council accesses several different avenues of funding to maintain the roads within the shire.

### 6.1. Regional Roads (Type 2)

#### 6.1.1. *Available Funding*

Council has available a number of RTA administered funds that must be spent on regional roads. Approximate values are:

|                                      |                    |
|--------------------------------------|--------------------|
| Regional Roads Block Grant           | \$1,055,000        |
| <u>Regional Roads REPAIR Program</u> | <u>\$400,000</u>   |
| <b>Total Available Funds</b>         | <b>\$1,455,000</b> |

REPAIR Program funds are allocated on the basis of need from a pool of funds. Each Council may receive up to \$400,000 per annum from this program, but they may also receive nothing. The maximum funds per Council is currently under review and likely to be increased in coming years. For budgeting purposes, it has been assumed that Coonamble Shire receives 75% of the maximum every year.

Coonamble Shire has been quite successful over many years at obtaining funds under this program, and the current low standard of our Regional Roads is likely to result in that continuing. It is recommended that Council continue to bid for at least the full available funding each year in an effort to maximise the potential for reconstruction works.

The total level of funding for Regional Roads is well below what will achieve a reasonable level of maintenance over the life of the asset, which is estimated to cost approximately \$1.5million per annum.

As no other funding is available then the roads must be managed with the allocated funds. This is done with the risk management systems that are outlined in this management plan.

The following sections detail the proposed management process that will be used to allow for the inadequate funds.

#### 6.1.2. *Routine Maintenance*

Due to limited available funds for Regional Road maintenance, a routine maintenance budget will provide for only nominal maintenance of bridges, causeways, culverts and the roadside. The focus will be kept on saving pavement and ensuring that it is safe for traffic.

| <b>Item</b>                    | <b>Quantity</b> | <b>Estimate</b>  |
|--------------------------------|-----------------|------------------|
| Sealed Pavement Maintenance    | 52 days/ truck  | \$161,000        |
| Unsealed Shoulder Maintenance  | 5km/year        | \$59,225         |
| Culvert Maintenance            |                 | \$52,900         |
| Roadside Furniture Maintenance |                 | \$17,940         |
| Vegetation Maintenance         |                 | \$13,800         |
| Grading                        |                 | \$41,400         |
| Causeway Resheeting            |                 | \$9,775          |
| Bridge Maintenance             |                 | \$17,250         |
| Reloaming                      | 5km             | \$74,750         |
| <b>Total</b>                   |                 | <b>\$448,040</b> |

### **6.1.3. Major Maintenance**

The required budget to adopt the 30-year reconstruction program is \$5,197 km/year for 204km of sealed regional roads. A 30-year cycle requires 6.8km/year to be reconstructed & sealed as well as 6.8km/year to be resealed. Breakdowns of the costs are:

|   |                    |
|---|--------------------|
| Reconstruction costs including prime seal<br>(6.8km/yr @ \$137,195) | \$ 932,926         |
| Reseal costs (13.6km/yr @ \$21,045)                                 | \$ 286,215         |
| <b>Total</b>  | <b>\$1,219,138</b> |

This level of funding is not available for reconstruction works. As a result, a limited works program will be programmed.

|                          |                    |
|--------------------------|--------------------|
| Total Allocated funds    | \$1,455,000        |
| Routine Maintenance      | <u>\$ 448,040</u>  |
| <b>Major Maintenance</b> | <b>\$1,006,960</b> |

This is 87% of the funds needed for a sustainable 30 year reconstruction program, and will provide for the reconstruction of 5.9km of road per year, and resealing of 11.8km per annum as detailed below:

|                                     |                    |
|-------------------------------------|--------------------|
| Reconstruction costs Repair Program | \$800,600          |
| Final seal & Reseals                | <u>\$206,360</u>   |
| <b>Total</b>                        | <b>\$1,006,960</b> |

Cheaper construction techniques will be used where possible.

### **6.1.4. Bridges**

Council has replaced all bridges under the Regional Road Timber Bridge Replacement Program. During 2009/2010 Council will be undertaking major culvert maintenance as required.

## 6.2. Local Roads (Type 3-8)

### 6.2.1. *Available Funding*

Below is an approximation of the funding that is available for Shire roads in future years (note no indexation applied).

| Program                  | Source  | Amount (\$,000's) |                |                |                |                |
|--------------------------|---------|-------------------|----------------|----------------|----------------|----------------|
|                          |         | 2009/10           | 2009/10        | 2010/11        | 2011/12        | 2012/13        |
| RLR                      | Grant   | \$1,188           | \$1,235        | \$1,285        | \$1,336        | \$1,389        |
| R2R                      | Grant   | \$664             | \$644          | \$672          | \$634          | \$663          |
| R2R<br>Supplementary     | Grant   | \$                |                |                |                |                |
| General<br>Revenue       | Council | \$429             | \$630          | \$630          | \$630          | \$630          |
| Urban Street<br>Reserves | Council | \$156             |                |                |                |                |
| Other<br>Reserves        | Council |                   |                |                |                |                |
| <b>Total</b>             |         | <b>\$2,437</b>    | <b>\$2,235</b> | <b>\$2,235</b> | <b>\$2,235</b> | <b>\$2,235</b> |

The above table is based upon the continuation of the Roads to Recovery Program which provides approximately 25% of Councils local road funding. Without a renewal of this program in 2009/2010, Council's local roads will be severely underfunded.

### 6.2.2. *Routine Maintenance*

Due to limited funds being available for Shire road maintenance, a budget will be allowed that provides basic routine maintenance of kerb and gutter, drainage, causeways and bridges. The focus will be on ensuring that pavement is maintained to a standard that is safe for traffic.

## Urban Streets

### Sealed Urban Streets

| Item                              | Estimate        |
|-----------------------------------|-----------------|
| Sealed Pavement Maintenance       | \$54,050        |
| Drainage Maintenance              | \$5,750         |
| Street side Furniture Maintenance | \$5,750         |
| K & G maintenance                 | \$5,750         |
| <b>Total</b>                      | <b>\$71,300</b> |

### Unsealed Urban Streets

| Item                   | Estimate        |
|------------------------|-----------------|
| Vegetation Maintenance | \$690           |
| Grading                | \$16,100        |
| Re-sheeting            | \$12,650        |
| <b>Total</b>           | <b>\$29,440</b> |

## **Rural Roads**

### **Sealed Rural Roads**

| <b>Item</b>                    | <b>Estimate</b>  |
|--------------------------------|------------------|
| Weight of Loads                | \$29,900         |
| Sealed Pavement Maintenance    | \$158,700        |
| Heavy Patch                    | \$23,000         |
| Unsealed Shoulder Maintenance  | \$36,800         |
| Drainage Maintenance           | \$17,825         |
| Roadside Furniture Maintenance | \$14,375         |
| Vegetation Maintenance         | \$12,075         |
| <b>Total</b>                   | <b>\$292,675</b> |

### **Unsealed Rural Roads**

| <b>Item</b>          | <b>Estimate</b>  |
|----------------------|------------------|
| Drainage Maintenance | \$24,725         |
| Grading              | \$546,250        |
| Causeway Resheeting  | \$24,725         |
| <b>Total</b>         | <b>\$595,700</b> |

### **Bridges**

| <b>Item</b>        | <b>Estimate</b> |
|--------------------|-----------------|
| Bridge Maintenance | \$15,000        |
| <b>Total</b>       | <b>\$15,000</b> |

## **6.2.3. Major Maintenance**

### **Reloaming**

With the recent decision by Council to free up reserves for the purpose of road works, and the introduction of the Roads to Recovery Supplementary Program, Council are able to implement a significant reloaming program. Whilst funding is not yet at a sustainable level, problem areas are now being addressed. Projected reloaming expenditure is provided below.

| <b>2009/10</b> | <b>2010/11</b> | <b>2011/12</b> | <b>2012/13</b> | <b>2013/14</b> |
|----------------|----------------|----------------|----------------|----------------|
| \$200          | \$200          | \$200          | \$200          | \$200          |

The continuation of the existing reloaming program is dependant upon the continuation of the Roads to Recovery Program. Without that program, the projected expenditure on reloaming for 2009/10 and beyond would be zero.

### **Urban Streets**

It is estimated that \$311,000 per annum is required to provide a sustainable maintenance regime for the Shires urban streets. This level of funding has

historically not been achieved, however a recent injection of funds from Council reserves and the Roads to Recovery Program has resulted in significant funding for the last couple of years. Projected expenditures are shown below.

| 2009/10 | 2010/11 | 2011/12 | 20/12 | 2012/13 |
|---------|---------|---------|-------|---------|
| \$276   | \$50    | \$50    | 50    | 50      |

The existing urban street program is dependant upon the continuation of the Roads to Recovery Program. Without that program, the projected expenditure on urban streets for 2009/10 and beyond would be zero

### **Rural Roads**

To allow a 30-year life cycle then Council needs to allow \$5,197 km/year for 165km of sealed local roads, this being \$857,450. The available funding for 2007/08 will allow 100% of the life cycle cost. This level of funding will allow 5.5 km/year reconstructed & sealed, and 5.5 km/year to be resealed. The break-down of these costs are:

|   |                  |
|---|------------------|
| Reconstruction costs including prime seal<br>(5.5km/yr @ \$137,195) | \$755,000        |
| Final Seal costs<br>(5.5km/yr @ \$24,840)                           | \$137,000        |
| Reseal costs<br>(5.5km/yr @ \$17,250)                               | <u>\$ 95,000</u> |
| <b>Total</b>  | <b>\$987,000</b> |

It should be noted that this level of funding is dependant upon the continuation of the Roads to Recovery program beyond 2009/10.

| 2009/10 | 2010/11 | 2011/12 | 2012/13 | 2013/14 |
|---------|---------|---------|---------|---------|
| \$987   | \$987   | \$987   | \$987   | \$987   |

### **6.2.4. Bridges**

As noted earlier, Council's bridge replacement program has been accelerated in order to attract grant funds from the RTA for regional road bridges as well as providing an improved road network for ratepayers. As a result all nine of the remaining timber bridges have been replaced during 2008. Whilst the majority of this work was reserve funded, approximately \$1.6million was provided using a loan.

## **7. Conclusion and Recommendations**

This Plan constitutes a review and update of the 2008/09 Roads Management Plan. This Plan continues Council efforts to achieve a long term approach to road maintenance.

### **7.1. Routine Maintenance**

**It is recommended that Council:**

1. provide future funding allocations for maintenance as shown in Sections 6.1 and 6.2.

### **7.2. Major Maintenance**

**It is recommended that Council:**

2. provide future funding allocations for reconstruction as shown in Sections 6.1. and 6.2.
3. Apply for REPAIR Grant funding for Regional Roads each year to the maximum possible.
4. develop a Reconstruction Works Program upon completion of the road sealed assessments in April 2009.
5. develop a Resealing Works Program upon completion of the sealed road assessments in April 2009.

### **7.3. Strategic Road Upgrades**

**It is recommended that Council:**

6. undertake no further extension of sealed local roads using existing funding sources until after 2009/2010

### **7.4. Other**

**It is recommended that Council:**

7. continue every effort to enforce the legal loading of heavy vehicles within the Shire
8. lobby the State Government for additional funds for maintenance of Regional Roads