SHIRE OF MOUNT MAGNET

Roads and Buildings

‘Core’ Infrastructure Risk Management Plan

Version 1

May 2013
<table>
<thead>
<tr>
<th>Rev No</th>
<th>Date</th>
<th>Revision Details</th>
<th>Author</th>
<th>Reviewer</th>
<th>Approver</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>May 2013</td>
<td>Plan development</td>
<td>C Anich</td>
<td>T McCarthy</td>
<td>S Bunting</td>
</tr>
</tbody>
</table>

Asset Management for Small, Rural or Remote Communities Practice Note

The Institute of Public Works Engineering Australia.

www.ipwea.org.au/AM4SRRC

© Copyright 2011 – All rights reserved.
TABLE OF CONTENTS

1. INTRODUCTION.................................................................................................................................................. 1
   1.1 Aim...................................................................................................................................................................... 1
   1.2 Objectives.......................................................................................................................................................... 1
   1.3 Core Infrastructure Risk Management ........................................................................................................ 1
   1.4 Scope ............................................................................................................................................................... 1
   1.5 The Risk Management Context ..................................................................................................................... 1
   1.6 Risk Management Process............................................................................................................................. 1
2. COMMUNICATION AND CONSULTATION........................................................................................................... 2
3. RISK IDENTIFICATION .......................................................................................................................................... 2
   3.1 General ............................................................................................................................................................. 2
4. RISK ANALYSIS ....................................................................................................................................................... 3
   4.1 General ............................................................................................................................................................. 3
   4.2 Likelihood .......................................................................................................................................................... 3
   4.3 Consequences ..................................................................................................................................................... 3
   4.4 Method ............................................................................................................................................................. 3
       4.4.1 Risk Assessment ....................................................................................................................................... 4
       4.4.2 Indicator of Risk Treatment ....................................................................................................................... 4
       4.4.3 Analysis of Risk ....................................................................................................................................... 4
   4.5 Risk Evaluation ................................................................................................................................................ 4
5. RISK TREATMENT PLANS ...................................................................................................................................... 5
   5.1 General ............................................................................................................................................................. 5
   5.2 Risk Treatment Options ................................................................................................................................... 6
   5.3 Risk Treatments ................................................................................................................................................ 6
   5.4 Risk Treatment Plans ..................................................................................................................................... 6
6. MONITORING AND REVIEW .............................................................................................................................. 6
7. REFERENCES ............................................................................................................................................................. 7
APPENDIX A RISK REGISTER ..................................................................................................................................... 8
1. INTRODUCTION

1.1 Aim

The purpose of this core infrastructure risk management plan is to document the results and recommendations resulting from periodic identification, assessment and treatment of risks associated with providing services to the community from infrastructure, using the fundamentals of International Standard ISO 31000:2009 Risk management – Principles and guidelines.

Risk Management is defined in ISO 31000:2009 as: “coordinated activities to direct and control an organisation with regard to risk” 1.

1.2 Objectives

The objectives of the plan are:

- to identify risks to the Shire of Mt Magnet that may impact the delivery of services from infrastructure
- to select credible risks for detailed analysis,
- to analyse and evaluate risks in accordance with ISO 31000:2009,
- to prioritise risks,
- to identify risks requiring treatment by management action,
- to develop risk treatment plans identifying the tasks required to manage the risks, the person responsible for each task, the resources required and the due completion date.

1.3 Core Infrastructure Risk Management

This core risk management plan has been designed to be read as a supporting document to the infrastructure and asset management plan. It has been prepared using the fundamentals of International Standard ISO 31000:2009 Risk management – Principles and guidelines.

1.4 Scope

This plan considers risks associated with delivery of services from infrastructure.

1.5 The Risk Management Context

We have implemented many management practices and procedures to identify and manage risks associated with providing services from infrastructure assets. These include:

- operating a reactive maintenance service for all assets and services,
- operating a planned maintenance system for key assets,
- monitoring condition and remaining service life of assets nearing the end of their service life,
- renewing and upgrading assets to maintain service delivery,
- closing and disposing of assets not providing the required service level, and
- acquiring or constructing new assets to provide new and improved services.

We have assigned responsibilities for managing risks associated with assets and service delivery to the following departments.

- Chief Executive Officer

1.6 Risk Management Process

The risk management process used in this project is shown in Figure 1.6 below.

It is an analysis and problem solving technique designed to provide a logical process for the selection of treatment plans and management actions to protect the community against unacceptable risks.

The process is based on the fundamentals of International Standard ISO 31000:2009.

---

2. COMMUNICATION AND CONSULTATION

Risk communication and consultation is “continual and iterative processes that an organisation conducts to provide, share or obtain information and to engage in dialogue with stakeholders regarding the management of risk” 2.

‘Appropriate communication and consultation seeks to:

- Improve people’s understanding of risks and the risk management processes,
- Ensure that the varied views of stakeholders are considered, and
- Ensure that all participants are aware of their roles and responsibilities.’ 3

The development of this infrastructure risk management plan was undertaken using a consultative team approach to:-

- Identify stakeholders and specialist advisors who need to be involved in the risk management process,
- Discuss and take into account the views of stakeholder and specialist advisors, and
- Communicate the results of the risk management process to ensure that all stakeholders are aware of and understand their and roles and responsibilities in risk treatment plans.

Members of the team responsible for preparation of this risk management plan are:

- Initial development by Morrison Low for the CEO

- Still needs to be developed further and gain buy in from internal stakeholders

3. RISK IDENTIFICATION

3.1 General

Potential risks associated with providing services from infrastructure were identified at meetings of the organisation’s infrastructure risk management team.

Team members were asked to identify “what can happen, where and when” to the organisation’s various services, at the network level and for critical assets at the asset level, then to identify possible “why and how can it happen” as causes for each potential event together with any existing risk management controls.

Each risk was then tested for credibility to ensure that available resources were applied to those risks that the team considered were necessary to proceed with detailed risk analysis.

The assets at risk, what can happen, when, possible cause(s), existing controls and credibility are shown in Appendix A – Risk Register.

Credible risks are subjected to risk analysis in Section 4.4.5. Risks assessed as non-credible were not considered further and will be managed by routine procedures.

---

2 ISO 31000:2009, p 3
3 HB 436:2004, Sec 3.1, p 20
4. RISK ANALYSIS

4.1 General

Credible risks which have been identified during the risk identification stage were analysed. This process takes into account the ‘likelihood’ and the ‘consequences’ of the event. The objective of the analysis is to separate the minor acceptable risks from the major risks and to provide data to assist in the assessment and management of risks.

The risk analysis process is applied to all credible risks to determine levels of risk. The process acts as a filter by applying a reasoned and consistent process. Minor risks can be eliminated from further consideration and dealt with within standard operating procedures.

The remaining risks will therefore be of such significance as to consider the development of risk treatment options and plans.

4.2 Likelihood

Likelihood is a qualitative description of chance of an event occurring. The process of determining likelihood involves combining information about estimated or calculated probability, history or experience. Where possible it is based on past records, relevant experience, industry practice and experience, published literature or expert judgement.

4.3 Consequences

Consequences are a qualitative description of the outcome of an event affecting objectives. The process of determining consequences involved combining information about estimated or calculated effects, history and experience.

4.4 Method

The risk analysis method uses the risk rating chart shown in Section 4.4.3. This process uses a qualitative assessment of likelihood/probability and history/experience compared against a qualitative assessment of severity of consequences to derive a risk rating.

The qualitative descriptors for each assessment are shown in Tables 4.4.1 and 4.4.2.

<table>
<thead>
<tr>
<th>Likelihood</th>
<th>Descriptor</th>
<th>Probability of occurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rare</td>
<td>May occur only in exceptional circumstances</td>
<td>More than 20 years</td>
</tr>
<tr>
<td>Unlikely</td>
<td>Could occur at some time</td>
<td>Within 10-20 years</td>
</tr>
<tr>
<td>Possible</td>
<td>Might occur at some time</td>
<td>Within 3-5 years</td>
</tr>
<tr>
<td>Likely</td>
<td>Will probably occur in most circumstances</td>
<td>Within 2 years</td>
</tr>
<tr>
<td>Almost certain</td>
<td>Expected to occur in most circumstances</td>
<td>Within 1 year</td>
</tr>
</tbody>
</table>

Table 4.4.2: Consequences Qualitative Descriptors

<table>
<thead>
<tr>
<th>Consequence</th>
<th>Injury</th>
<th>Service Interruption</th>
<th>Environment</th>
<th>Finance</th>
<th>Reputation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insignificant</td>
<td>Nil</td>
<td>&lt; 4 hrs</td>
<td>Nil</td>
<td>&lt; $20k</td>
<td>Nil</td>
</tr>
<tr>
<td>Minor</td>
<td>First Aid</td>
<td>Up to 1 day</td>
<td>Minor short term</td>
<td>$20k - $100k</td>
<td>Minor media</td>
</tr>
<tr>
<td>Moderate</td>
<td>Medical treatment</td>
<td>1 day – 1 week</td>
<td>Wide short term</td>
<td>$100k - $500k</td>
<td>Moderate media</td>
</tr>
<tr>
<td>Major</td>
<td>Disability</td>
<td>1 week – 1 month</td>
<td>Wide long term</td>
<td>$500k - $1M</td>
<td>High media</td>
</tr>
<tr>
<td>Catastrophic</td>
<td>Fatality</td>
<td>More than 1 month</td>
<td>Irreversible long term</td>
<td>&gt; $1M</td>
<td>Censure/Inquiry</td>
</tr>
</tbody>
</table>
4.4.1 Risk Assessment

The risk assessment process compares the likelihood of a risk event occurring against the consequences of the event occurring. In the risk rating table below, a risk event with a likelihood of ‘Possible’ and a consequence of ‘Major’ has a risk rating of ‘High’.

This rating is used to develop a typical risk treatment in Section 5.3.

<table>
<thead>
<tr>
<th>Likelihood</th>
<th>Risk Rating</th>
<th>Consequences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rare</td>
<td>Insignificant</td>
<td>Minor</td>
</tr>
<tr>
<td>Unlikely</td>
<td>Insignificant</td>
<td>Minor</td>
</tr>
<tr>
<td>Possible</td>
<td>Insignificant</td>
<td>Minor</td>
</tr>
<tr>
<td>Likely</td>
<td>Medium</td>
<td>Minor</td>
</tr>
<tr>
<td>Almost Certain</td>
<td>High</td>
<td>Medium</td>
</tr>
</tbody>
</table>


4.4.2 Indicator of Risk Treatment

The risk rating is used to determine risk treatments. Risk treatments can range from immediate corrective action (such as stop work or prevent use of the asset) for ‘Very High’ risks to manage by routine procedures for ‘Low’ risks.

An event with a ‘High Risk’ rating will require ‘Prioritised action’. This may include actions such as reducing the likelihood of the event occurring by physical methods (limiting usage to within the asset’s capacity, increasing monitoring and maintenance practices, etc), reducing consequences (limiting speed of use, preparing response plans, etc) and/or sharing the risk with others (insuring the organisation against the risk).

4.4.3 Analysis of Risk

The team conducted an analysis of credible risks identified in section 3.1 using the method described above to determine a risk rating for each credible risk.

The credible risks and risk ratings are shown in Appendix A – Risk Register.

4.5 Risk Evaluation

The risk management team evaluated the need for risk treatment plans using an overall assessment of the evaluation criteria shown in Table 4.5 to answer the question “is the risk acceptable?”
Table 4.5: Risk Evaluation Criteria

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Risk Evaluation Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operational</td>
<td>Risks that have the potential to reduce services for a period of time unacceptable to the community and/or adversely affect the council’s public image.</td>
</tr>
<tr>
<td>Technical</td>
<td>Risks that cannot be treated by the organisation’s existing and/or readily available technical resources.</td>
</tr>
<tr>
<td>Financial</td>
<td>Risks that cannot be treated within the organisation’s normal maintenance budgets or by reallocation of an annual capital works program.</td>
</tr>
<tr>
<td>Legal</td>
<td>Risks that have the potential to generate unacceptable exposure to litigation.</td>
</tr>
<tr>
<td>Social</td>
<td>Risks that have the potential to:</td>
</tr>
<tr>
<td></td>
<td>- cause personal injury or death and/or</td>
</tr>
<tr>
<td></td>
<td>- cause significant social/political disruption in the community.</td>
</tr>
<tr>
<td>Environmental</td>
<td>Risks that have the potential to cause environmental harm.</td>
</tr>
</tbody>
</table>

The evaluation criteria are to provide guidance to evaluate whether the risks are acceptable to the council and its stakeholders in providing services to the community. Risks that do not meet the evaluation criteria above are deemed to be unacceptable and risk treatment plans are required to be developed and documented in this Infrastructure Risk Management Plan, for consideration by Council.

“Decisions on managing risk should take account of the wider context of the risk and include consideration of the tolerance of the risks borne by parties, other than the organisation that benefits from the risk. Decisions should be made in accordance with legal, regulatory and other requirements.

In some circumstances, the risk evaluation can lead to a decision to undertake further analysis. The risk evaluation can also lead to a decision not to treat the risk in any way other than maintaining existing controls. This decision will be influenced by the organisation’s risk attitudes and the risk criteria than have been established.”

5. RISK TREATMENT PLANS

5.1 General

The treatment of risk involves identifying the range of options for treating risk, evaluating those options, preparing risk treatment plans and implementing those plans. This includes reviewing existing guides for treating that particular risk, such as Australian and State legislation and regulations, International and Standards and Best Practice Guides.

Developing risk treatment options starts with understanding how risks arise, understanding the immediate causes and the underlying factors that influence whether the proposed treatment will be effective.

One treatment option is to remove the risk completely by discontinuing the provision of the service.

Risk treatment options can include:

a) avoiding the risk by deciding not to start or continue with the activity that give rise to the risk,
b) taking or increasing the risk in order to pursue an opportunity,
c) removing the risk source,
d) changing the likelihood,
e) changing the consequences,
f) sharing the risk with another party or parties (including contracts and risk financing),
g) retaining the risk by informed decision.

---

4 ISO 3100:2009, Sec 5.4.4, p 18.

5 ISO 3100:2009, Sec 5.5.1, p 19
5.2 Risk Treatment Options

The risk treatment options selection process comprises 5 steps.

Step 1. Review causes and controls

The risk identification process documented in Section 3 included identifying possible causes and documenting existing controls.

Step 2. Develop treatment options

Treatment options include those that eliminate risk, reduce the likelihood or the risk event occurring, reducing the consequences should the risk event occur, sharing of the risk with others and accepting the risk.

Step 3. Assess risk treatment options against costs and residual risk

The method of assessment of risk treatment options can range from an assessment by a local group of stakeholders and practitioners experienced in operation and management of the assets/service to detailed risk cost and risk reduction cost/benefit analysis involving assessment of the likelihood and consequences to determine the residual risk and analysis of the reduction in risk against the costs for each treatment option.

Step 4. Select optimum risk treatment

Step 5. Develop risk treatment plans

5.3 Risk Treatments

The risk treatments identified for non-acceptable risks are detailed in Appendix A – Risk Register.

5.4 Risk Treatment Plans

From each of the risk treatments identified in Appendix A – Risk Register, risk treatment plans were developed.

The risk treatment plans identify for each non-acceptable risk:

1. Proposed action
2. Responsibility
3. Resource requirement/budget
4. Timing
5. Reporting and monitoring required

The risk treatment plan is shown in Appendix A – Risk Register.

6. MONITORING AND REVIEW

The program for monitoring and review of the infrastructure risk management plan is shown in Table 6.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Review Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review of new risks and changes to existing risks</td>
<td>Annual review by team with stakeholders and report to council</td>
</tr>
<tr>
<td>Review of Risk Management Plan</td>
<td>3 yearly review and re-write by team and report to council</td>
</tr>
<tr>
<td>Performance review of Risk Treatment Plan</td>
<td>Action plan tasks incorporated in council staff performance criteria with 6 monthly performance reviews. Action plan tasks for other organisations reviewed at annual team review meeting</td>
</tr>
</tbody>
</table>
7. REFERENCES


APPENDIX A RISK REGISTER
<table>
<thead>
<tr>
<th>Risk No.</th>
<th>Asset at Risk</th>
<th>What can happen?</th>
<th>When can it occur?</th>
<th>Possible cause</th>
<th>Existing controls</th>
<th>Likelihood</th>
<th>Consequences</th>
<th>Risk rating</th>
<th>Action required</th>
<th>Is risk acceptable?</th>
<th>Treatment option(s)</th>
<th>Residual risk</th>
<th>Risk treatment plan</th>
<th>Action</th>
<th>Responsibility</th>
<th>Resources</th>
<th>Budget</th>
<th>Date due</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Road infrastructure assets</td>
<td>Cannot plan long term for road assets</td>
<td>Anytime now</td>
<td>No council process for recording asset changes, no formal process or timetables for valuation</td>
<td>Reactive valuation programme</td>
<td>Likely</td>
<td>Moderate</td>
<td>High</td>
<td>Prioritised action required</td>
<td>No</td>
<td>Develop valuation programme for road asset group, undertake data audit and collection programme</td>
<td>High</td>
<td>Develop roads valuation programme</td>
<td>Report on formal project plan for formal roads asset valuation</td>
<td>Deputy Chief Executive Officer</td>
<td>Staff time</td>
<td>To be confirmed</td>
<td>Dec-13</td>
</tr>
<tr>
<td>2</td>
<td>Buildings</td>
<td>Health issues from buildings</td>
<td>Anytime now</td>
<td>Historical building materials</td>
<td>Completed preliminary building assessment with 2012 asset valuation, identified public toilets with asbestos material now programmed for replacement</td>
<td>Possible</td>
<td>Moderate</td>
<td>High</td>
<td>Prioritised action required</td>
<td>No</td>
<td>Implement programme to remove asbestos from buildings, close buildings with asbestos material, and dispose buildings with asbestos material</td>
<td>High</td>
<td>Implement programme to remove asbestos from buildings, review building usage and long term sustainability including disposal</td>
<td>Report progress to council annually and any buildings to be considered for closure and/or disposal</td>
<td>Chief Executive Officer</td>
<td>Staff time</td>
<td>$650,000 for public toilet replacement for 2013 to 2015</td>
<td>Dec-13</td>
</tr>
<tr>
<td>3</td>
<td>All infrastructure assets</td>
<td>Overall asset condition decreases due to basic maintenance programmes</td>
<td>Anytime in the future</td>
<td>Limited or no condition assessments to date, limited funding for maintenance</td>
<td>The emerging AMP will identify the required levels of investment to maintain asset condition</td>
<td>Likely</td>
<td>Major</td>
<td>High</td>
<td>Prioritised action required</td>
<td>No</td>
<td>Determine renewal priorities based on lifecycle costs and effects on service, quantify problem beyond anecdotal evidence, and identify asset for disposal so residual portfolio is manageable</td>
<td>High</td>
<td>Determine renewal priorities for each asset group and across asset groups</td>
<td>Complete review of renewal priorities for each asset group and report to Council</td>
<td>Chief Executive Officer</td>
<td>Staff time</td>
<td>To be confirmed</td>
<td>Dec-13</td>
</tr>
<tr>
<td>4</td>
<td>All infrastructure assets</td>
<td>Decline in Shire population</td>
<td>Anytime in the future</td>
<td>People leaving farming as difficult with climate change (less rainfall)</td>
<td>Monitoring population trends and weather patterns especially rainfall</td>
<td>Possible</td>
<td>Moderate</td>
<td>High</td>
<td>Prioritised action required</td>
<td>Yes</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>5</td>
<td>All infrastructure assets</td>
<td>Unexpected failure of critical assets</td>
<td>Within 5 years</td>
<td>Incomplete asset inventories, incomplete knowledge of condition and remaining life of critical infrastructure, insufficient renewal and maintenance funding</td>
<td>Routine inspections of assets by field staff, potential implications of funding shortfalls to be identified in this AMP</td>
<td>Possible</td>
<td>Moderate</td>
<td>High</td>
<td>Prioritised action required</td>
<td>No</td>
<td>Start monitoring the condition of critical assets, review inspection frequencies to align with critically, identify funding needs to maintain levels of service</td>
<td>High</td>
<td>Start monitoring the condition of critical assets</td>
<td>Complete asset condition assessment of critical assets</td>
<td>Chief Executive Officer</td>
<td>Staff time</td>
<td>To be confirmed</td>
<td>Jun-14</td>
</tr>
</tbody>
</table>