Kyogle Council

Infrastructure

‘Core’ Infrastructure Risk Management Plan
<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>1.1</td>
<td>12/02/2012</td>
<td>Draft</td>
<td>AM</td>
<td>JR</td>
<td>JR</td>
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<tr>
<td>1.2</td>
<td>24/5/2012</td>
<td>Updated following Kyogle Council review</td>
<td>AM</td>
<td>JR/GK</td>
<td>JR</td>
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</table>
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1. INTRODUCTION

1.1 Aim

The purpose of this core 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 Kyogle Council that may impact of 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.

The asset categories that have been included in this risk plan are:

- Buildings and Community Facilities
- Transport
- Water Supply
- Sewerage Services
- Plant Equipment and Emergency Services
- Waste Management
- Stormwater and Flood Management
- Parks and Reserves

We have assigned responsibilities for managing risks associated with assets and service delivery to the relevant Director through the relevant Manager.

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.

\(^1\) ISO 31000:2009, p 2.
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 roles and responsibilities in risk treatment plans.

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

• General Manager
• Director Technical Services
• Director Community and Corporate Services
• Director Planning and Environmental Services
• Manager Asset Services
• Manager Works
• JRA Consulting

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.

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.

<p>| Table 4.4.1: Likelihood Qualitative Descriptors |</p>
<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>

<p>| Table 4.4.2: Consequences Qualitative Descriptors |</p>
<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>Over 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 4.4.1: Risk Assessment Matrix

<table>
<thead>
<tr>
<th>Likelihood</th>
<th>Consequences</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Insignificant</td>
</tr>
<tr>
<td>Rare</td>
<td>L</td>
</tr>
<tr>
<td>Unlikely</td>
<td>L</td>
</tr>
<tr>
<td>Possible</td>
<td>L</td>
</tr>
<tr>
<td>Likely</td>
<td>M</td>
</tr>
<tr>
<td>Almost Certain</td>
<td>M</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).

### Table 4.4.1: Risk Assessment Matrix

<table>
<thead>
<tr>
<th>Risk Rating</th>
<th>Action Required and Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>VH</td>
<td>Very High Risk</td>
</tr>
<tr>
<td>H</td>
<td>High Risk</td>
</tr>
<tr>
<td>M</td>
<td>Medium Risk</td>
</tr>
<tr>
<td>L</td>
<td>Low Risk</td>
</tr>
<tr>
<td></td>
<td>Immediate corrective action</td>
</tr>
<tr>
<td></td>
<td>Prioritised action required</td>
</tr>
<tr>
<td></td>
<td>Planned action required</td>
</tr>
<tr>
<td></td>
<td>Manage by routine procedures</td>
</tr>
</tbody>
</table>

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 benefit 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."°

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.°

5. RISK TREATMENT PLANS

5.1 General

The treatment of risk involves identifying the range of options for treating risk, evaluating those options,
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</td>
<td>Annual review by team with stakeholders and report to council</td>
</tr>
<tr>
<td>existing risks</td>
<td></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</td>
<td>Action plan tasks incorporated in council staff performance criteria with</td>
</tr>
<tr>
<td>Plan</td>
<td>regular performance reviews. Action plan tasks for other organisations</td>
</tr>
<tr>
<td></td>
<td>reviewed at annual team review meeting</td>
</tr>
</tbody>
</table>
7. REFERENCES


APPENDIX A RISK REGISTER
<table>
<thead>
<tr>
<th>Risk No.</th>
<th>Risk</th>
<th>Description</th>
<th>When can it occur?</th>
<th>Possible cause</th>
<th>Existing controls</th>
<th>Is risk credible?</th>
<th>Likelihood</th>
<th>Consequences</th>
<th>Is risk acceptable?</th>
<th>Action required</th>
<th>Treatment option(s)</th>
<th>Residual risk</th>
<th>Risk treatment plan</th>
<th>Action(s)</th>
<th>Responsibility</th>
<th>Resources</th>
<th>Budget</th>
<th>Date due</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Building Maintenance</td>
<td>Maintenance costs increasing due to inadequate renewal program</td>
<td>Anytime in the future</td>
<td>Underfunding Inadequate information</td>
<td>Reactive maintenance works undertaken when identified</td>
<td>Yes</td>
<td>Unlikely</td>
<td>Moderate</td>
<td>Medium</td>
<td>Planned action required</td>
<td>No</td>
<td>Continue to improve data</td>
<td>Maintenance is managed appropriately at an operational level</td>
<td>Future planning improvements can be made by documented service level risks and utilisation of these in establishing future maintenance priorities</td>
<td>Remains but reduced</td>
<td>Continue to improve data</td>
<td>Maintenance is managed appropriately at an operational level</td>
<td>Future planning improvements can be made by documented service level risks and utilisation of these in establishing future maintenance priorities</td>
</tr>
<tr>
<td>2</td>
<td>Building Renewal</td>
<td>Buildings deteriorate to a lesser service standard and higher risk situation</td>
<td>Anytime in the future</td>
<td>Underfunding Inadequate information</td>
<td>Renewal works undertaken when identified or listed for works budget</td>
<td>Yes</td>
<td>Unlikely</td>
<td>Moderate</td>
<td>Medium</td>
<td>Planned action required</td>
<td>No</td>
<td>Continue to improve data</td>
<td>Future planning improvements can be made by further documented service level risks and utilisation of these in establishing future renewal priorities</td>
<td>Remains but reduced</td>
<td>Continue to improve data</td>
<td>Future planning improvements can be made by further documented service level risks and utilisation of these in establishing future renewal priorities</td>
<td>Implementation of regular condition assessments and documented maintenance inspections</td>
<td>Manager</td>
</tr>
<tr>
<td>3</td>
<td>Reduced building utilisation</td>
<td>Buildings not fully utilised</td>
<td>Anytime now</td>
<td>Buildings not suit the needs of service providers</td>
<td>Maintenance provided</td>
<td>Yes</td>
<td>Possible</td>
<td>Minor</td>
<td>Medium</td>
<td>Planned action required</td>
<td>No</td>
<td>Continue to monitor not only the condition of buildings, but how well they suit the needs of users</td>
<td>Consideration should be made to ensure sufficient ongoing operation and maintenance funds can be provided to support these additional assets</td>
<td>Remains but reduced</td>
<td>Continue to monitor not only the condition of buildings, but how well they suit the needs of users</td>
<td>Undertake functional and utilisation assessments of all structures</td>
<td>Manager</td>
<td>Staff</td>
</tr>
<tr>
<td>4</td>
<td>Building funding pressure</td>
<td>Increasing financial pressure to adequately maintain the building portfolio</td>
<td>Within 10 years</td>
<td>Growth in building portfolio due to provision of grants</td>
<td>Growth in portfolio managed</td>
<td>Yes</td>
<td>Possible</td>
<td>Minor</td>
<td>Medium</td>
<td>Planned action required</td>
<td>No</td>
<td>Consideration should be made to ensure sufficient ongoing operation and maintenance funds can be provided to support these additional assets</td>
<td>Undertake assessment of buildings portfolio with a view to identifying surplus assets for disposal</td>
<td>Manager</td>
<td>Staff</td>
<td>Nil</td>
<td>Jun-13</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Road maintenance levels</td>
<td>Decreasing frequency of maintenance</td>
<td>Within 5 years</td>
<td>Maintenance costs increasing due to inadequate renewal program</td>
<td>Maintenance is managed appropriately at an operational level</td>
<td>Yes</td>
<td>Possible</td>
<td>Moderate</td>
<td>High</td>
<td>Prioritised action required</td>
<td>No</td>
<td>Follow documented service level risk rating processes and prioritisation for establishing future maintenance works</td>
<td>Follow documented service level risk rating processes and prioritisation for establishing future maintenance works</td>
<td>Remains but reduced</td>
<td>Follow documented service level risk rating processes and prioritisation for establishing future maintenance works</td>
<td>Follow documented service level risk rating processes and prioritisation for establishing future maintenance works</td>
<td>Manager</td>
<td>Staff</td>
</tr>
<tr>
<td>Risk No.</td>
<td>Asset at Risk</td>
<td>What can happen?</td>
<td>When can it occur?</td>
<td>Possible cause</td>
<td>Existing controls</td>
<td>Is risk credible?</td>
<td>Likelihood</td>
<td>Consequences</td>
<td>Risk rating</td>
<td>Action required</td>
<td>Residual risk</td>
<td>Risk treatment plan</td>
<td>Actions</td>
<td>Responsibility</td>
<td>Resources</td>
<td>Budget</td>
<td>Date due</td>
<td></td>
</tr>
<tr>
<td>---------</td>
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<td>----------</td>
<td>--------</td>
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<td></td>
</tr>
<tr>
<td>6</td>
<td>Road condition deterioration</td>
<td>Roads deteriorate to a lesser service standard and higher risk situation</td>
<td>Within 5 years</td>
<td>Inadequate renewal program</td>
<td>Required renewal of road components is being achieved in the short to medium term</td>
<td>Yes</td>
<td>Likely</td>
<td>Major</td>
<td>High</td>
<td>Prioritised action required</td>
<td>No</td>
<td>Future planning improvements can be made by further documented service level risks and utilisation of these in establishing future renewal priorities</td>
<td>Remains but reduced</td>
<td>Future planning improvements can be made by further documented service level risks and utilisation of these in establishing future renewal priorities</td>
<td>Manager</td>
<td>Staff</td>
<td>Nil</td>
<td>Jun-13</td>
</tr>
<tr>
<td>7</td>
<td>Roads storm and flood damage</td>
<td>Damage to roads as a result of major storm events</td>
<td>Anytime now</td>
<td>Extreme weather events</td>
<td>Natural disaster funding has enabled services to be maintained</td>
<td>Yes</td>
<td>Almost certain</td>
<td>Catastrophic</td>
<td>Very High</td>
<td>Immediate corrective action</td>
<td>No</td>
<td>Seek assistance from other tiers of government, which relies on Natural Disaster declarations</td>
<td>Remains but reduced</td>
<td>Seek assistance from other tiers of government, which relies on Natural Disaster declarations</td>
<td>Manager</td>
<td>Staff</td>
<td>Nil</td>
<td>Jun-13</td>
</tr>
<tr>
<td>8</td>
<td>Transport asset renewals not funded when required</td>
<td>Conditions will deteriorate and funding shortfall grows due to higher cost renewal treatments being required</td>
<td>Within 20 years</td>
<td>Funding insufficient</td>
<td>Gravel budget is approx $200k per year. For a 15 year sheeting cycle a budget of $1.2M is required. Seals budget is approx. $1.12k per year. For a cycle of 15 years a budget of $500k is required</td>
<td>Yes</td>
<td>Almost certain</td>
<td>Major</td>
<td>Very High</td>
<td>Immediate corrective action</td>
<td>No</td>
<td>High reliance on funding from other tiers of government. Reduction in funding from these sources will lead to a reduction in service level. Sealed roads may revert to gravel roads and gravel roads may become formed earth roads</td>
<td>Remains but reduced</td>
<td>Limited funding available needs to be directed to highest priority areas, by utilising traffic counts, accident data, insurance claims, and industry transport and bus route assessments</td>
<td>Manager</td>
<td>Staff</td>
<td>Nil</td>
<td>Jun-13</td>
</tr>
<tr>
<td>9</td>
<td>Bridges</td>
<td>Failure. Structural or functional.</td>
<td>Anytime now</td>
<td>Most timber bridges are at or past their useful life. Larger timber bridges are not being replaced due to large capital cost per bridge</td>
<td>Focus on replacing smaller timber bridges</td>
<td>Yes</td>
<td>Almost certain</td>
<td>Major</td>
<td>Very High</td>
<td>Immediate corrective action</td>
<td>No</td>
<td>Increase inspections, impose weight limits, Closures where required, identify non-critical structures for disposal</td>
<td>Remains but reduced</td>
<td>Limited funding available needs to be directed to highest priority areas, by utilising traffic counts, accident data, insurance claims, and industry transport and bus route assessments</td>
<td>Manager</td>
<td>Staff</td>
<td>Nil</td>
<td>Jun-13</td>
</tr>
<tr>
<td>10</td>
<td>Stormwater network</td>
<td>General deterioration of the network, resulting in structural and capacity failures</td>
<td>Within 20 years</td>
<td>Renewals not undertaken when required</td>
<td>Asessment of condition</td>
<td>Yes</td>
<td>Likely</td>
<td>Moderate</td>
<td>High</td>
<td>Prioritised action required</td>
<td>No</td>
<td>Assess adequacy of inspections, particularly in aged network areas, undertake CCTV inspections of areas of highest risk. Keep data up to date so that renewals can be planned</td>
<td>Remains but reduced</td>
<td>Assess adequacy of inspections, particularly in aged network areas. Keep data up to date so that renewals can be planned</td>
<td>Manager</td>
<td>Staff</td>
<td>Nil</td>
<td>Jun-13</td>
</tr>
</tbody>
</table>

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<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>In risk credible?</th>
<th>Likelihood</th>
<th>Consequences</th>
<th>Risk rating</th>
<th>Action required</th>
<th>Treatment option(s)</th>
<th>Is risk acceptable?</th>
<th>Residual risk</th>
<th>Risk treatment plan</th>
<th>Risk treatment plan</th>
<th>Actions</th>
<th>Responsibility</th>
<th>Resources</th>
<th>Budget</th>
<th>Date due</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>Stormwater Network</td>
<td>Surcharges onto private property causing damage and nuisance</td>
<td>Anytime now</td>
<td>Undersized or poorly constructed local stormwater drainage system</td>
<td>Stormwater maintenance program in place, insurances</td>
<td>Yes</td>
<td>Almost certain</td>
<td>Moderate</td>
<td>High</td>
<td>Prioritised action required</td>
<td>No</td>
<td>Capital upgrades to existing systems where surcharges occur most frequently and with the most adverse impact</td>
<td>Remains but reduced</td>
<td>Assesses adequacy of capital works program, and prioritise improvements</td>
<td>Manager</td>
<td>Capital improvements required</td>
<td>Some limited funding available in the long term financial plan</td>
<td>Jun-13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Flood Management System</td>
<td>Flooding caused by inadequate or lack of stormwater or flood management systems</td>
<td>Anytime now</td>
<td>Natural hazards</td>
<td>Kyogle Floodplain Risk Management Plan and emergency response</td>
<td>Yes</td>
<td>Likely</td>
<td>Major</td>
<td>High</td>
<td>Prioritised action required</td>
<td>No</td>
<td>Implement Flood Modification Works in Kyogle and associated development controls and voluntary purchases</td>
<td>Service risk still remains, but works can be programmed with confidence based on corporate priorities</td>
<td>Investigate flood management options for other villages at risk</td>
<td>Manager</td>
<td>Staff</td>
<td>Nil</td>
<td>Jun-13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Private Property</td>
<td>Flooding caused by inadequate or lack of stormwater or flood management systems</td>
<td>Anytime now</td>
<td>Property in flood affected area</td>
<td>Kyogle Floodplain Risk Management Plan and emergency response</td>
<td>Yes</td>
<td>Likely</td>
<td>Major</td>
<td>High</td>
<td>Prioritised action required</td>
<td>No</td>
<td>Implement Flood Modification Works in Kyogle and associated development controls and voluntary purchases</td>
<td>Service risk still remains, but works can be programmed with confidence based on corporate priorities</td>
<td>Implement Kyogle Floodplain Risk Management Plan</td>
<td>Manager</td>
<td>Capital improvements required</td>
<td>Funding in the long term financial plan</td>
<td>Jun-15</td>
<td></td>
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</tr>
<tr>
<td>10</td>
<td>Detention of sewerage supply system</td>
<td>Blockages</td>
<td>Within 5 years</td>
<td>Tree root infiltration, soil movement, materials failures</td>
<td>CCTV inspections completed to identify extent of problems</td>
<td>Yes</td>
<td>Almost certain</td>
<td>Moderate</td>
<td>High</td>
<td>Prioritised action required</td>
<td>No</td>
<td>Required renewal of sewer system components is being achieved in the short to medium term</td>
<td>Remains but works can be prioritised</td>
<td>Continue to improve data by carrying out sample inspections on a regular basis</td>
<td>Manager</td>
<td>Staff</td>
<td>Within existing</td>
<td>Jun-13</td>
<td></td>
<td></td>
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</tbody>
</table>
### Kyogle Infrastructure Risk Register

**Risk Identification**

<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>Is risk credible?</th>
<th>Likelihood</th>
<th>Consequences</th>
<th>Risk rating</th>
<th>Action required</th>
<th>To risk acceptable?</th>
<th>Treatment option(s)</th>
<th>Residual risk</th>
<th>Risk treatment plan</th>
<th>Actions</th>
<th>Responsibility</th>
<th>Resources</th>
<th>Budget</th>
<th>Date due</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>Deterioration of sewerage supply system</td>
<td>Structural failures increased maintenance</td>
<td>Within 10 years</td>
<td>Underfunding of renewals in the future can have a significant impact on increased costs, environmental impacts, and compliance</td>
<td>Inspections</td>
<td>Yes</td>
<td>Possible</td>
<td>Major</td>
<td>High</td>
<td>Prioritised action required</td>
<td>No</td>
<td>Continue to undertake CCTV inspections to assess the condition of the reticulation assets to identify sections of main at risk of failure</td>
<td>Remains but reduced</td>
<td>Additional analysis of data inventory, assessment of useful lives will be critical to ensure the long term financial planning for sewer systems is reliable</td>
<td>Undertake further CCTV inspections on oldest mains</td>
<td>Manager</td>
<td>Staff</td>
<td>With existing</td>
<td>Jun-13</td>
</tr>
<tr>
<td>12</td>
<td>Deterioration of sewerage supply system asset components</td>
<td>Failures of transport and treatment systems</td>
<td>Within 10 years</td>
<td>Mechanical and electrical failures</td>
<td>Inspections</td>
<td>Yes</td>
<td>Possible</td>
<td>Major</td>
<td>High</td>
<td>Prioritised action required</td>
<td>No</td>
<td>Implement inspection and preventative maintenance program for sewer pumping stations and treatment works and associated mechanical and electrical components</td>
<td>Remains but reduced</td>
<td>Continue to develop the inspection and maintenance programs</td>
<td>Implementation of risk treatments</td>
<td>Manager</td>
<td>Staff</td>
<td>With existing</td>
<td>Jun-13</td>
</tr>
<tr>
<td>13</td>
<td>Sewer system not available</td>
<td>Public health or environmental issues</td>
<td>Within 5 years</td>
<td>System not provided</td>
<td>Works prioritised based on land use planning requirements</td>
<td>Yes</td>
<td>Likely</td>
<td>Moderate</td>
<td>High</td>
<td>Prioritised action required</td>
<td>No</td>
<td>Investigate unserviced areas and assess sewerage system requirements and land use planning requirements so that future needs can be anticipated</td>
<td>Remains but reduced</td>
<td>Ensure appropriate Development Controls and Land use planning provisions and in place</td>
<td>Undertake feasibility studies for providing sewerage services to existing and proposed village areas</td>
<td>Manager</td>
<td>Staff</td>
<td>With existing</td>
<td>Jun-13</td>
</tr>
<tr>
<td>14</td>
<td>Not meeting drinking water guidelines</td>
<td>Increase in taste and colour complaints, spread of illness and disease</td>
<td>Anytime now</td>
<td>Highly variable raw water can lead to poor final water quality</td>
<td>Regular testing and monitoring</td>
<td>Yes</td>
<td>Likely</td>
<td>Moderate</td>
<td>High</td>
<td>Prioritised action required</td>
<td>No</td>
<td>Develop a Drinking Water Quality Management Plan and complete the Kyogle Water Supply Augmentation</td>
<td>Remains but reduced</td>
<td>Develop a Drinking Water Quality Management Plan and complete the Kyogle Water Supply Augmentation</td>
<td>Develop a Drinking Water Quality Management Plan and complete the Kyogle Water Supply Augmentation</td>
<td>Manager</td>
<td>Staff</td>
<td>With existing</td>
<td>Jun-13</td>
</tr>
<tr>
<td>15</td>
<td>Deterioration of water supply system</td>
<td>High numbers of main breaks leaving customers without water</td>
<td>Within 10 years</td>
<td>Deterioration of pipelines at a greater rate than expected</td>
<td>Reactive repairs and renewals program</td>
<td>Yes</td>
<td>Likely</td>
<td>Major</td>
<td>High</td>
<td>Prioritised action required</td>
<td>No</td>
<td>Improve records for water mains breakage locations and use data to prioritise water mains renewals</td>
<td>Remains but reduced</td>
<td>Improve records for water mains breakage locations and use data to prioritise water mains renewals</td>
<td>Improve records for water mains breakage locations and use data to prioritise water mains renewals</td>
<td>Manager</td>
<td>Staff</td>
<td>With existing</td>
<td>Jun-13</td>
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<tr>
<td>Risk No.</td>
<td>Asset at Risk</td>
<td>What can happen?</td>
<td>When can it occur?</td>
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<td>Existing controls</td>
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</tr>
<tr>
<td>16</td>
<td>Deterioration of water supply system</td>
<td>Underfunding of renewals leading to frequent failures and higher operating and maintenance costs</td>
<td>Within 10 years</td>
<td>Caused by inadequate renewal funding Works required are identified and included in works programs</td>
<td>Yes</td>
<td>Likely</td>
<td>Major</td>
<td>High</td>
<td>Prioritised action required</td>
<td>No</td>
<td>Ensure funding for renewals is provided in the medium and long term, and implement preventative maintenance programs for all mechanical and electrical components</td>
<td>Implement preventative maintenance programs for all mechanical and electrical components</td>
<td>Implement preventative maintenance programs for all mechanical and electrical components</td>
<td>Manager</td>
<td>Staff</td>
<td>Within existing</td>
<td>Jun-13</td>
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<tr>
<td>17</td>
<td>Drought Failure of a Water Supply</td>
<td>Failure of a water supply to a community</td>
<td>Within 10 years</td>
<td>Lack of available water sources to meet demand Drought Management Plan, and use of water restrictions</td>
<td>Yes</td>
<td>Likely</td>
<td>Major</td>
<td>High</td>
<td>Prioritised action required</td>
<td>No</td>
<td>Continue to implement drought management plan and involvement in regional strategies</td>
<td>Continue to implement drought management plan and involvement in regional strategies</td>
<td>Continue involvement in regional water supply strategy</td>
<td>Manager</td>
<td>Staff</td>
<td>Within existing</td>
<td>Jun-13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Parks and Reserves not to standard</td>
<td>Accidents and injuries to users</td>
<td>Anytime in the future</td>
<td>Sub standard or poorly maintained components Inspected and monitored</td>
<td>Yes</td>
<td>Likely</td>
<td>Moderate</td>
<td>High</td>
<td>Prioritised action required</td>
<td>No</td>
<td>Continue to inspect facilities so their standard is known. Monitor industry changes so that potential changes to regulatory standards can be anticipated</td>
<td>Establish procedures for assessing inspection results and prioritising maintenance and repairs</td>
<td>Establish procedures for assessing inspection results and prioritising maintenance and repairs</td>
<td>Manager</td>
<td>Staff</td>
<td>Within existing</td>
<td>Jun-13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Parks and Reserves do not meet user requirements</td>
<td>User levels decrease, wasted resources</td>
<td>Anytime in the future</td>
<td>Substandard or obsolete assets, aging population, change in sporting trends</td>
<td>None</td>
<td>Yes</td>
<td>Possible</td>
<td>Moderate</td>
<td>Prioritised action required</td>
<td>No</td>
<td>Monitor utilisation so that user requirements are anticipated</td>
<td>Monitor utilisation so that user requirements are anticipated</td>
<td>Monitor utilisation so that user requirements are anticipated</td>
<td>Manager</td>
<td>Staff</td>
<td>Within existing</td>
<td>Jun-13</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Parks and Reserves deteriorate</td>
<td>Parks and Reserves not funded to meet requirements for maintenance and upkeep</td>
<td>Anytime in the future</td>
<td>Insufficient maintenance or renewal due to insufficient funds</td>
<td>None</td>
<td>Yes</td>
<td>Possible</td>
<td>Moderate</td>
<td>Prioritised action required</td>
<td>No</td>
<td>Continue to monitor costs Regularly review, update and improve the Parks and Reserves Asset Management Plan to monitor trends</td>
<td>Continue to monitor costs Regularly review, update and improve the Parks and Reserves Asset Management Plan to monitor trends</td>
<td>Continue to monitor costs Regularly review, update and improve the Parks and Reserves Asset Management Plan to monitor trends</td>
<td>Manager</td>
<td>Staff</td>
<td>Within existing</td>
<td>Jun-13</td>
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<tr>
<td>Risk No.</td>
<td>Asset at Risk</td>
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<td>Likelihood</td>
<td>Consequences</td>
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<td>Is risk acceptable?</td>
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</tr>
<tr>
<td>18</td>
<td>Aging plant and equipment Technical Obsolescence</td>
<td>High incidence of breakdowns</td>
<td>Within 10 years</td>
<td>Caused by inadequate renewal funding</td>
<td>Plant requirements are identified and included in the plant replacement program</td>
<td>Yes</td>
<td>Possible</td>
<td>Moderate</td>
<td>High</td>
<td>Prioritised action required</td>
<td>No</td>
<td>Service in accordance with manufacturers requirements Investigate and replace equipment at optimum time to give the lowest lifecycle cost Regular condition assessment of key equipment to assist in predicting maintenance and renewal needs Maintenance is managed appropriately at an operational level</td>
<td>Remains but reduced</td>
<td>Service in accordance with manufacturers requirements Investigate and replace equipment at optimum time to give the lowest lifecycle cost Regular condition assessment of key equipment to assist in predicting maintenance and renewal needs Maintenance is managed appropriately at an operational level</td>
<td>Implementation of risk treatments</td>
<td>Manager</td>
<td>Staff</td>
<td>Nil</td>
<td>Jun-13</td>
</tr>
<tr>
<td>19</td>
<td>Plant and Equipment Reduced Safety</td>
<td>Underfunding of renewals in the future</td>
<td>Within 5 years</td>
<td>Caused by inadequate renewal funding and/or servicing</td>
<td>Plant requirements are identified and included in the plant replacement program</td>
<td>Yes</td>
<td>Possible</td>
<td>Moderate</td>
<td>High</td>
<td>Prioritised action required</td>
<td>No</td>
<td>Investigate and replace equipment at optimum time to give the lowest lifecycle cost and improved safety</td>
<td>Remains but reduced</td>
<td>Investigate and replace equipment at optimum time to give the lowest lifecycle cost and improved safety</td>
<td>Implementation of risk treatments</td>
<td>Manager</td>
<td>Staff</td>
<td>Nil</td>
<td>Jun-13</td>
</tr>
<tr>
<td>20</td>
<td>Decline in Plant and Equipment efficiency</td>
<td>Increased costs, environmental impacts and low efficiency</td>
<td>Within 5 years</td>
<td>Underfunding of replacement and maintenance</td>
<td>Plant requirements are identified and included in the plant replacement program</td>
<td>Yes</td>
<td>Possible</td>
<td>Moderate</td>
<td>High</td>
<td>Prioritised action required</td>
<td>No</td>
<td>Continue to develop the detail of the costs to manage the major plant and equipment so that a strong case can be made for adequate funding</td>
<td>Remains but reduced</td>
<td>Continue to develop the detail of the costs to manage the major plant and equipment so that a strong case can be made for adequate funding</td>
<td>Implementation of risk treatments</td>
<td>Manager</td>
<td>Staff</td>
<td>Nil</td>
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<td>Consequences</td>
<td>Risk rating</td>
<td>Action required</td>
<td>Treatment option(s)</td>
<td>Risk treatment plan</td>
<td>Is risk acceptable?</td>
<td>Treatment option(s)</td>
<td>Risk treatment plan</td>
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<tr>
<td>22</td>
<td>Aging waste services plant and equipment</td>
<td>High incidence of breakdowns</td>
<td>Within 10 years</td>
<td>Caused by inadequate renewal funding</td>
<td>Plant and equipment requirements are identified and included in the plant replacement program</td>
<td>Yes</td>
<td>Possible</td>
<td>Moderate</td>
<td>High</td>
<td>Prioritised action required</td>
<td>Service in accordance with manufacturers requirements</td>
<td>Investigate and replace equipment at optimum time to give the lowest lifecycle cost</td>
<td>Regular condition assessment of key equipment to assist in predicting maintenance and renewal needs</td>
<td>Maintenance is managed appropriately at an operational level</td>
<td>Remains but reduced</td>
<td>Service in accordance with manufacturers requirements</td>
<td>Investigate and replace equipment at optimum time to give the lowest lifecycle cost</td>
<td>Regular condition assessment of key equipment to assist in predicting maintenance and renewal needs</td>
<td>Maintenance is managed appropriately at an operational level</td>
</tr>
<tr>
<td>23</td>
<td>Waste Customer Safety Risks</td>
<td>Injury to member of the public using waste facilities</td>
<td>Anytime now</td>
<td>Poorly planned and constructed facilities</td>
<td>Requirements are identified and included in the waste services replacement program</td>
<td>Yes</td>
<td>Possible</td>
<td>Moderate</td>
<td>High</td>
<td>Prioritised action required</td>
<td>Audit of current facilities, and upgrade to facilities</td>
<td>Audit of current facilities, and upgrade to facilities</td>
<td>Audit of current facilities, and upgrade to facilities</td>
<td>Audits of all facilities, upgrade to facilities</td>
<td>Manager</td>
<td>Staff</td>
<td>Nil</td>
<td>Jun-13</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>Decline in efficiency of waste services</td>
<td>Increased costs, environmental impacts and lower service levels</td>
<td>Within 5 years</td>
<td>Lack of forward planning for waste services</td>
<td>Requirements are identified and included in the waste services replacement program</td>
<td>Yes</td>
<td>Possible</td>
<td>Moderate</td>
<td>High</td>
<td>Prioritised action required</td>
<td>Undertake detailed financial assessment of waste operations area to establish the long term asset needs and service levels that can be delivered</td>
<td>Undertake detailed financial assessment of waste operations area to establish the long term asset needs and service levels that can be delivered</td>
<td>Undertake detailed financial assessment of waste operations area to establish the long term asset needs and service levels that can be delivered</td>
<td>Manager</td>
<td>Staff</td>
<td>Nil</td>
<td>Jun-13</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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