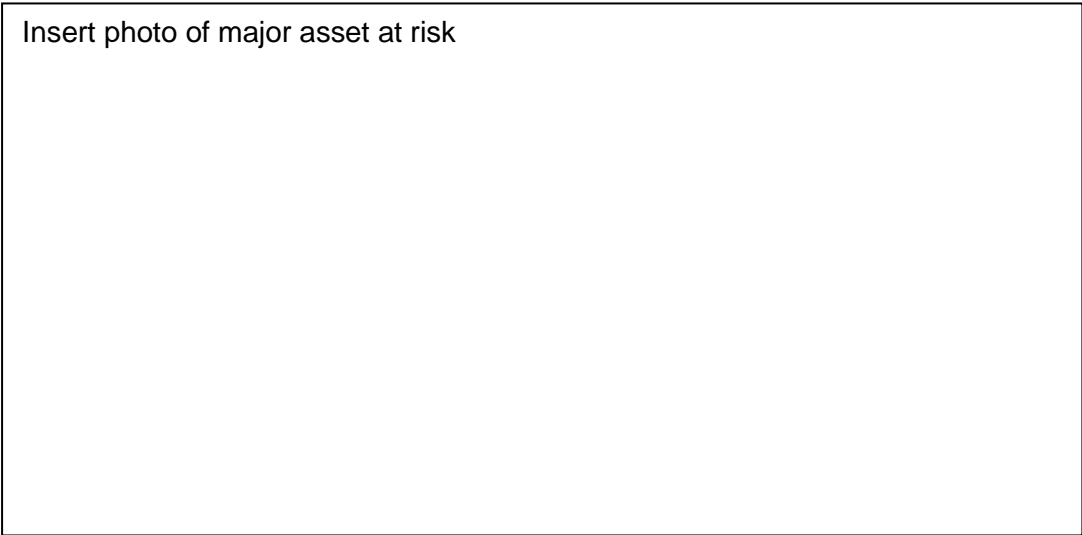


Berrigan Shire Council

'Core' Infrastructure Risk Management Plan

Sewer

Insert photo of major asset at risk



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1. INTRODUCTION

1.1 Aim

The purpose of this core infrastructure risk management plan is 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 Australian Standard for Risk Management, AS/NZS 4360; 2004.

Risk Management is defined in AS/NZS 4360; 2004 as: “the culture, processes and structures that are directed towards realising potential opportunities whilst managing adverse effects”¹.

1.2 Objectives

The objectives of the plan are:

- to identify risks to the Berrigan Shire 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 AS/NZS 4360:2004,
- 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 and Advanced 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 Australian Standard for Risk Management, AS/NZS 4360:2004.

Future revisions of this risk management plan will move toward more comprehensive documentation in accordance with Australian Standard for Risk Management, AS/NZS 4360:2004.

1.4 Scope

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

1.5 The Risk Management Context

Council has 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.

¹ p4

Council has assigned responsibilities for managing risks associated with sewer assets and service delivery to its Technical Services Department.

1.6 Risk Management Model

The risk management process used in this project is shown in Fig 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 Australian Standard AS/NZS 4360:2004, Risk Management.

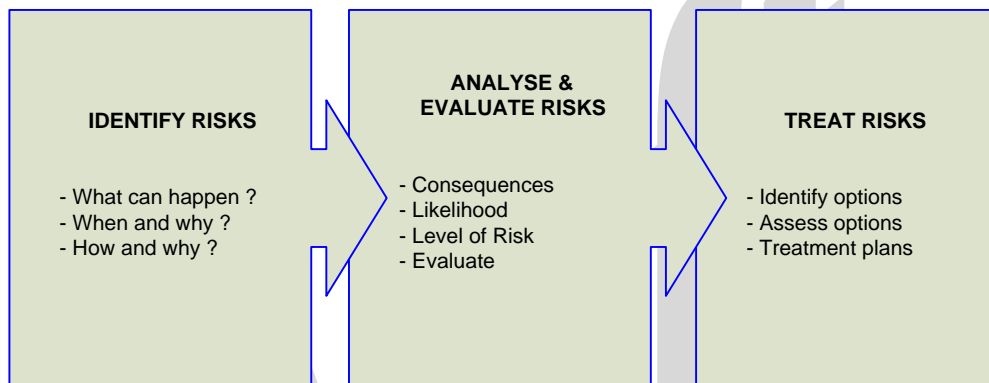


Fig 1.6. Risk Management Process – Abridged
Source: Adapted from AS/NZS 4360:2004, Fig 3.1 p 13

2. COMMUNICATION AND CONSULTATION

Risk communication is 'the interactive process of exchange of information and opinion involving multiple messages about the nature of risk and risk management'.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.'

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:

- Fred Exton – Director Technical Services
- Muneeb Sunna – Environmental Engineer
- Garry Graham – Technical Officer Water and Sewer
- Michelle Koopman – Enterprise Risk Manager
- Tony Davis – Technical Officer Assets
- Arlena Pyle – Finance Officer

3. RISK IDENTIFICATION

3.1 General

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

Team members were asked to identify "What can happen, where and when" to the various council services and then to identify possible "Why and how can it happen" as causes for each potential event.

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 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 probability 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 effect of the event. 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 below.

4.4.1 Likelihood

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

4.4.2 Consequences

Consequences	Description
Insignificant	No injuries, low financial loss (less than \$10,000)
Minor	First aid treatment, on-site release immediately contained, medium financial loss (\$10,000 - \$50,000)
Moderate	Medical treatment required, on-site release contained with outside assistance, high financial loss (\$50,000 - \$200,000)
Major	Extensive injuries, loss of production capacity, off-site release with no detrimental effects, major financial loss (\$200,000 - \$1,000,000)
Catastrophic	Deaths, toxic release off-site with detrimental effect, huge financial loss (more than \$1M)

4.4.3 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.

Risk Rating					
Likelihood	Consequences				
	Insignificant	Minor	Moderate	Major	Catastrophic
Rare	L	L	M	M	H
Unlikely	L	L	M	M	H
Possible	L	M	H	H	H
Likely	M	M	H	H	VH
Almost Certain	M	H	H	VH	VH

Ref: HB 436:2004, Risk Management Guidelines, Table. 6.6 p 55.

4.4.4 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).

Risk Rating	Action Required
VH	Very High Risk Immediate corrective action
H	High Risk Prioritised action required
M	Medium Risk Planned action required
L	Low Risk Manage by routine procedures

4.4.5 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 following evaluation criteria to answer the question “is the risk acceptable?”

Criterion	Risk Evaluation Notes
Operational	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.
Technical	Risks that cannot be treated by council's existing and/or readily available technical resources.
Financial	Risks that cannot be treated within council's normal maintenance budgets or by reallocation of an annual capital works program.
Legal	Risks that have the potential to generate unacceptable exposure to litigation.
Social	Risks that have the potential to: - cause personal injury or death and/or - cause significant social/political disruption in the community.
Environmental	Risks that have the potential to cause environmental harm.

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.

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, Australian 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.

Other options include risk reduction by reducing the likelihood and/or the consequences of the risk.

5.2 Risk Treatment Process

The risk treatment 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.

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 plan will be monitored and reviewed as follows.

Activity	Review Process
Review of new risks and changes to existing risks	Annual review by team with stakeholders and report to council
Review of Risk Management Plan	3 yearly review and re-write by team and report to council
Performance review of Risk Treatment Plan	Action plan tasks incorporated in council staff performance criteria with 6 monthly performance review. Action plan tasks for other organisations reviewed at annual team review meeting

7. REFERENCES

AS/NZS 4360:2004, Australian/New Zealand Standard, Risk Management, Standards Australia, Sydney.

HB 436:2004, Risk Management Guidelines, Companion to AS/NZS 4360:2004, Standards Australia, Sydney.

International Infrastructure Management Manual, 2006, Institute of Public ~Works Engineering Australia, Sydney, 2006 www.ipwea.org.au

APPENDIX A RISK REGISTER

RISK IDENTIFICATION							RISK ANALYSIS					RISK TREATMENT			RISK TREATMENT PLAN				
Risk No.	Asset at Risk	What can happen?	When can it occur?	Possible cause	Existing controls	Is risk credible?	Likelihood	Consequences	Risk rating	Action required	Is risk acceptable?	Treatment option(s)	Residual risk	Risk treatment plan	Actions	Responsibility	Resources	Budget	Date due
1	Sewer Treatment Plants	Overflow to environment or reduction to water treatment due to power failure	Anytime now	Mains power failure	Bypass arrangements and pond system to buffer water quality	Yes	Unlikely	Minor	Low	Manage by routine procedures	Yes								
2	Sewer Treatment Plants	Overflow to environment or reduction to water treatment due to component failure	Anytime now	Failure of mechanical/electrical components of pumps	Scheduled inspection of plant components and completion of required maintenance	Yes	Possible	Minor	Medium	Planned action required	Yes								
3	Sewer Mains	Overflow to environment due to sewer blockage	Anytime now	Blockage by tree roots or other foreign objects	Incident response and repair	Yes	Likely	Minor	Medium	Planned action required	Yes								
4	Effluent Ponds	Overtopping of ponds	Within 2-3 years	Exceptionally wet season	Monitoring of pond levels and transfer of water	Yes	Unlikely	Moderate	Medium	Planned action required	Yes								

RISK IDENTIFICATION							RISK ANALYSIS					RISK TREATMENT			RISK TREATMENT PLAN				
Risk No.	Asset at Risk	What can happen?	When can it occur?	Possible cause	Existing controls	Is risk credible?	Likelihood	Consequences	Risk rating	Action required	Is risk acceptable?	Treatment option(s)	Residual risk	Risk treatment plan	Actions	Responsibility	Resources	Budget	Date due
5	Sewer Pump Stations	Overflow to environment due to power failure	Anytime now	Mains power failure	Minimum 6 hr storage	Yes	Possible	Minor	Medium	Planned action required	No	Modification of pumpstation switch boards to allow direct coupling of a standby generator	Risk remains if generator unavailable	Program modification of switchboards over 5 years	Engage contractor to modify switchboards for sewer pumps to allow direct coupling of a standby generator	EE	External Electrical Contractor	\$50,000	Jun-14
6	Sewer Pump Stations	Overflow to environment due to pump failure	Anytime now	Failure of mechanical/electrical components of pumps	Scheduled inspection of pumps and completion of required maintenance/back up pumps available	Yes	Possible	Minor	Medium	Planned action required	Yes								

RISK IDENTIFICATION							RISK ANALYSIS					RISK TREATMENT			RISK TREATMENT PLAN				
Risk No.	Asset at Risk	What can happen?	When can it occur?	Possible cause	Existing controls	Is risk credible?	Likelihood	Consequences	Risk rating	Action required	Is risk acceptable?	Treatment option(s)	Residual risk	Risk treatment plan	Actions	Responsibility	Resources	Budget	Date due
7	Tocumwal Recycle Pond	Overtopping of ponds	Within 2-3 years	Extended wet conditions	Monitoring of pond levels and transfer of water	Yes	Unlikely	Minor	Low	Manage by routine procedures	Yes								

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RISK IDENTIFICATION							RISK ANALYSIS					RISK TREATMENT			RISK TREATMENT PLAN				
Risk No.	Asset at Risk	What can happen?	When can it occur?	Possible cause	Existing controls	Is risk credible?	Likelihood	Consequences	Risk rating	Action required	Is risk acceptable?	Treatment option(s)	Residual risk	Risk treatment plan	Actions	Responsibility	Resources	Budget	Date due
8	Tocumwal & Finley Golf Courses, Berrigan Race Track	Poor quality effluent delivered for reuse system	Anytime in the future	Failure of chlorination system	Scheduled inspection of chlorination unit and maintenance of unit and monitoring and changing of gas bottles	Yes	Possible	Major	High	Prioritised action required	No	Operational Environmental Management Plans prepared for end use sites that provide controls on exposure to effluent	Risk can be controlled but not eliminated	Prepare and implement OEMP's for all sites that receive treated effluent for reuse	12.1 Prepare OEMPs 12.2 Implement OEMPs including response activities and controls	EE	Council Staff Responsible from venues receiving recycled effluent	\$10,000/annum/plant for additional operational activities required to manage reuse	Jun-09
9	Effluent Quality	Ingress of stormwater into system	Anytime now	Incident weather combined with illegal connections and poor maintenance	Scheduled inspection of reticulation and repairs. Inspection of new building connections.	Yes	Likely	Minor	Medium	Planned action required	Yes								

RISK IDENTIFICATION							RISK ANALYSIS					RISK TREATMENT			RISK TREATMENT PLAN				
Risk No.	Asset at Risk	What can happen?	When can it occur?	Possible cause	Existing controls	Is risk credible?	Likelihood	Consequences	Risk rating	Action required	Is risk acceptable?	Treatment option(s)	Residual risk	Risk treatment plan	Actions	Responsibility	Resources	Budget	Date due
10	Reticulation System	Collapse of pipes or manholes	Anytime in the future	Erosion of pipes and structures due to age and corrosive nature of sewerage	Reactive maintenance	Yes	Possible	Moderate	High	Prioritised action required	No	Carry out internal inspections of pipes and manholes and program replacement / refurbishment of faulty components	Risk will remain until sufficient resources to inspect all retic and complete required repairs	Carry out CCTV inspections of all sewer retic and repair all structural defects	14.1 Arrange for CCTV inspections of sewer retic. 14.2 Record and document all inspections and attach to BizeAssets 14.3 Prioritize structural defects and budget for repair 14.4 Repair structural defects	EE	Council Staff and Contractors	14.1 - \$200,000 14.3 - Unknwn 14.4 - Allow \$150,000/ann for 5 years	14.1 - Jun 2010 14.3 - Jun 2014

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