Kyogle Council

Core Infrastructure Risk Management Plan 2019

Document Control	

Document ID: Kyogle_CIRMP_2019.doc					
Rev No	**Date**	**Revision Details**	**Author**	**Reviewer**	**Approver**
1.1	12/02/2012	Draft	AM	JR	JR
1.2	24/5/2012	Updated following Kyogle Council review	AM	JR/GAK	JR
2	1/8/2019	Review following update of all AMPs and Policy	MS	TL/SN	GAK

TABLE OF CONTENTS

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
- Roads
- Bridges
- Water
- Sewerage
- Stormwater

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 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.

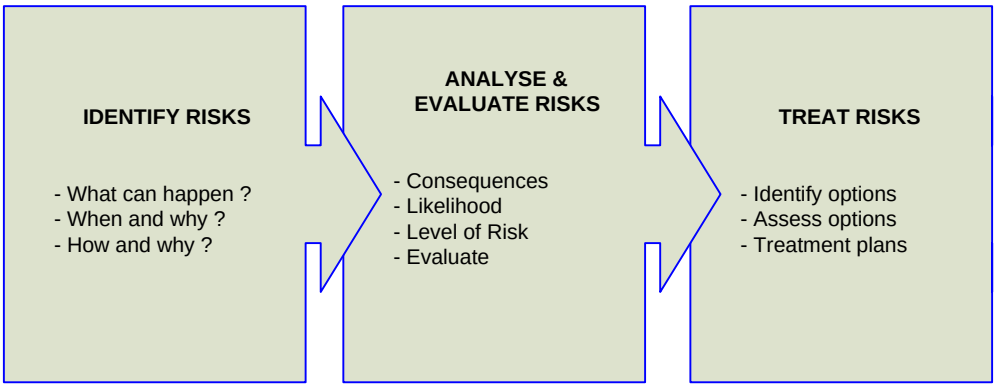

Fig 1: Risk Management Process – Abridged
Source: Adapted from ISO 31000:2009, Figure 1, p vii

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:

- General Manager
- Director Assets and Infrastructure Services
- Manager Infrastructure Works
- Manager Urban Services
- Asset and Design Coordinator
- Risk and Safety Coordinator

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 as outlined in Section 4 of this report. 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 Table 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 1 and 2.

Table 1: Likelihood Qualitative Descriptors

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

Table 2: Consequences Qualitative Descriptors

Consequence	Injury	Service Interruption	Environment	Finance	Reputation
Insignificant	Nil	< 4 hrs	Nil	< $20k	Nil
Minor	First Aid	Up to 1 day	Minor short term	$20k - $100k	Minor media
Moderate	Medical treatment	1 day – 1 week	Wide short term	$100k - $500k	Moderate media
Major	Disability	1 week – 1 month	Wide long term	$500k - $1M	High media
Catastrophic	Fatality	Over 1 month	Irreversible long term	> $1M	Censure/Inquiry

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 as outlined in Section 5 of this report.

Table 3: Risk Assessment Matrix

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.

4.4.2 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: Risk Assessment Matrix

Risk Rating		Action Required and Timing
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

4.4.3 Analysis of Risk

The team conducted an analysis of credible risks 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 5: Risk Evaluation Criteria

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 the organisation's existing and/or readily available technical resources.
Financial	Risks that cannot be treated within the organisation'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 significant or broad scale 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.

"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 that have been established."[4]

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

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.[5]

5.2 Risk Treatment Options

The risk treatment options selection process comprises 5 steps.

Step 1. Review causes and controls
The risk identification process 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 the actions and control measures to be implemented for managing each risk.

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 6: Monitoring and Review Program for Infrastructure Risk Management Plan

Activity	Review Process
Review of new risks and changes to existing risks	Annual review by team with stakeholders and any new risks or changes in risk rating reported to council as required.
Review of Risk Management Plan	5 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 regular performance reviews. Action plan tasks for other organisations reviewed at annual team review meeting.

[5] ISO 3100:2009, Sec 5.5.1, p 19

7. REFERENCES

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

IPWEA, 2011, *Asset Management for Small, Rural or Remote Communities Practice Note*, Institute of Public Works Engineering Australia, Sydney, www.ipwea.org.au/AM4SRRC.

ISO, 2009, *ISO 31000:2009, Risk management – Principles and guidelines*, Standards Australia, Sydney.

Standards Australia, 2004, *AS/NZS 4360:2004, Australian/New Zealand Standard, Risk Management*, Sydney (superseded by ISO 31000:2009).

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

APPENDIX A RISK REGISTER

Kyogle Council Infrastructure Risk Register 2019

RISK IDENTIFICATION						INITIAL RISK ANALYSIS				RISK TREATMENT PLAN	RESIDUAL RISK			RISK TREATMENT PLAN
Risk No.	Asset at Risk	What can happen?	When can it occur?	Possible cause	Existing controls	Likelihood	Consequences	Risk rating	Is risk acceptable?	Risk treatment plan	Likelihood	Consequences	Risk rating	Actions
1	Building Maintenance	Maintenance costs increasing due to inadequate renewal program	Anytime in the future	Underfunding Inadequate condition information	Reactive maintenance works undertaken when identified	Possible	Moderate	High	No	Continue to improve condition data Implement proactive inspection and maintenance regime Maintenance is managed appropriately at an operational level, within allocated budgets	Unlikely	Moderate	Medium	Implementation of regular condition assessments and inspections Monitor change in building condition overtime and look for opportunity for increased funding if required.
2	Building Renewal	Buildings deteriorate to a lesser service standard and higher risk situation	Anytime in the future	Underfunding Inadequate condition information	Renewal works undertaken when identified or listed for works budget	Possible	Moderate	High	No	Continue to improve condition data Implement proactive inspection and renewal prioritisation regime within allocated budgets	Unlikely	Moderate	Medium	Implementation of regular condition assessments and inspections Monitor change in building condition overtime and look for opportunity for increased funding if required.
3	Reduced building utilisation	Buildings not fully utilised	Anytime now	Buildings not suiting the needs of service providers	Maintenance provided and buildings being renewed / upgraded / disposal	Likely	Minor	Medium	Yes	Continue to monitor not only the condition of buildings, but how well they suit the needs of users Increase / promote profile of community facilities and their accessibility	Possible	Minor	Medium	Continue to proactively gather community feedback in relation to community building and facilities
4	Building funding pressure	Increasing financial pressure to adequately maintain buildings in the portfolio	Within 10 years	Growth in building portfolio due to provision of grants	Growth in portfolio managed	Possible	Minor	Medium	Yes	Consideration should be made to ensure sufficient ongoing operation and maintenance funds can be provided to support these additional assets Disposal of surplus / underutilised assets	Possible	Minor	Medium	Each new identified building should be accompanied by a business case
5	Road maintenance levels of service	Decreasing frequency of maintenance	Within 5 years	Maintenance costs increasing due to inadequate renewal program or increased traffic	Maintenance is managed appropriately at an operational level	Possible	Moderate	High	No	Follow documented service level risk rating processes for prioritisation of maintenance works, within existing budget allocations	Possible	Moderate	High	Ongoing continuous improvement of the inspection and maintenance regime
6	Road condition deterioration	Roads deteriorate to a lesser service standard and higher risk situation	Within 5 years	Inadequate renewal program	Required renewal of road components is being achieved in the short to medium term	Possible	Moderate	High	No	Follow documented service level risk rating processes for prioritisation of renewals, within existing budget allocations	Possible	Moderate	High	Monitor change in condition overtime and look for opportunity for increased funding if required.
7	Roads storm and flood damage restoration unable to be funded	Damage to roads as a result of major storm events	Anytime now	Extreme weather events	Natural disaster funding has enabled services to be maintained and assets restored	Unlikely	Catastrophic	High	No	Ongoing inspection and network condition capture is undertaken to ensure there is evidence of current pre-disaster condition of assets	Unlikely	Moderate	Medium	Proactively seek assistance from other tiers of government for Natural Disaster declarations
8	Bridges	Failure. Structural or functional.	Anytime now	High number of timber bridges are at or past their useful life	Accelerated renewal program in place, monitoring bridge component conditions, imposing load limits as required, ongoing inspections	Almost certain	Major	Extreme	No	Continue inspection regime Keep data up to date so that renewals can be prioritised within existing budget Continue to deliver the accelerated capital works program thereby reducing the number of structures at risk	Possible	Major	High	Monitor change in condition overtime and proactively seek additional external funding to allow continuation of the accelerated renewal program.

Kyogle Council Infrastructure Risk Register 2019

RISK IDENTIFICATION						INITIAL RISK ANALYSIS				RISK TREATMENT PLAN	RESIDUAL RISK			RISK TREATMENT PLAN
Risk No.	Asset at Risk	What can happen?	When can it occur?	Possible cause	Existing controls	Likelihood	Consequences	Risk rating	Is risk acceptable?	Risk treatment plan	Likelihood	Consequences	Risk rating	Actions
9	Stormwater Network	General deterioration of the network resulting in structural and capacity failures	Within 20 years	Renewals not undertaken when required	Assessment of condition	Likely	Moderate	High	No	Continue inspection regime Keep data up to date so that renewals can be prioritised within existing budget	Possible	Moderate	High	Monitor change in condition overtime and look for opportunity for increased funding if required.
10	Stormwater Network	Surcharges onto private property causing damage and nuisance	Anytime now	Undersized or poorly constructed local stormwater drainage system	Stormwater upgrade program in place, maintenance, insurances	Likely	Moderate	High	No	Deliver capital works upgrades; identify and prioritise further improvements within existing budget	Unlikely	Minor	Low	Assess adequacy of capital works program, and prioritise improvements
11	Flood prone areas	Flooding caused by inadequate or lack of stormwater or flood management systems	Anytime now	Property built in flood affected area	Kyogle FRMP, emergency response plans, Kyogle flood mitigation works, Kyogle voluntary house purchasing	Possible	Moderate	High	No	Continue to implement Kyogle FRMP Finalise and implement Tabulam FRMP Undertake further FRMPs at Bonalbo and Woodenbong	Possible	Minor	Medium	Seek funding for Bonalbo and Woodenbong FRMPs and further voluntary house purchases
12	Deterioration of sewerage supply system	Blockages, structural failures, increased maintenance	Within 5-10 years	Tree root infiltration, soil movement, environmental impacts, materials failures	CCTV inspections completed to identify extent of problems, renewal and relining program in place	Likely	Moderate	High	No	Continue to improve data by carrying out inspections on a regular basis Continue to implement sewer mains renewal and relining program, within allocated budgets Continue ongoing maintenance program and utilise maintenance data to assist in prioritising renewals and preventative maintenance	Possible	Moderate	High	Monitor change in condition overtime and look for opportunity for increased funding if required.
13	Deterioration of sewerage supply system asset components	Failures of transport and treatment systems	Within 10 years	mechanical and electrical failures, increased compliance requirements	Inspections, telemetry monitoring, effluent testing	Unlikely	Moderate	Medium	Yes	Continue to develop the inspection and maintenance programs Develop and implement proactive maintenance and inspection regime for sewage pumping stations and treatment plants	Unlikely	Moderate	Medium	Implementation of risk treatments
14	Sewer system not available	Public health or environmental issues	Within 5 years	System not provided	Feasibility studies undertaken for Wiangaree, Old Bonalbo, Mallanganee and Tabulam	Almost Certain	Moderate	High	No	Ensure appropriate Development Controls and Land use planning provisions and in place for on-site sewerage management systems Prioritise design and development of new sewerage schemes for the villages of Tabulam, Mallanganee and Wiangaree	Almost Certain	Moderate	High	Actively seek external funding for the design and construction of these three new sewerage scheme
15	Water supplies not meeting drinking water guidelines	Increase in taste and odour complaints, spread of illness and disease	Anytime in the future	Failure of treatment system, breach of closed system	Regular testing and monitoring, PLC controls, operator training and awareness, inspections of reservoirs	Unlikely	Moderate	Medium	Yes	Continue to implement and review Drinking Water Quality Management Plan and associated procedures for existing Kyogle, Bonalbo and Urbenville/Muli Muli/Woodenbong water supplies	Unlikely	Moderate	Medium	Investigate options for new water supply to service the village of Tabulam
16	Deterioration of water supply system	High numbers of main breaks leaving customers without water	Within 10 years	Deterioration of pipelines at a greater rate than expected or inadequate renewal funding	Reactive repairs and renewals program	Likely	Minor	Medium	Yes	Improve records for water mains breakage locations and use data to prioritise water mains renewals	Likely	Minor	Medium	Monitor change in condition overtime and look for opportunity for increased funding if required.

Kyogle Council Infrastructure Risk Register 2019

RISK IDENTIFICATION						INITIAL RISK ANALYSIS				RISK TREATMENT PLAN	RESIDUAL RISK			RISK TREATMENT PLAN
Risk No.	Asset at Risk	What can happen?	When can it occur?	Possible cause	Existing controls	Likelihood	Consequences	Risk rating	Is risk acceptable?	Risk treatment plan	Likelihood	Consequences	Risk rating	Actions
17	Drought Failure of a Water Supply	Failure of a water supply to a community	Within 10 years	Lack of available water sources to meet demand	Drought Management Plan, and use of water restrictions, completion of augmentations of existing systems to meet secure yield requirements	Unlikely	Major	Medium	Yes	Continue to implement drought management plan and water restrictions for existing supplies Review Integrated Water Cycle Management Strategy and investigate options for improved security where cost effective	Unlikely	Major	Medium	Continued involvement in regional water supply strategic processes to ensure the long term security of supply Investigate options for new water supply to service the village of Tabulam
18	Parks and Reserves not to standard	Accidents and injuries to users	Anytime in the future	Sub standard or poorly maintained components	Inspected and monitored and reactive maintenance program	Possible	Moderate	High	No	Continue procedures for assessing inspection results and prioritising maintenance and repairs	Possible	Moderate	High	Improve the procedures for assessing inspection results and prioritising maintenance and repairs
19	Parks and Reserves do not meet user requirements	User levels decrease, wasted resources	Anytime in the future	Substandard or obsolete assets, aging population, change in sporting trends	Capital renewals program	Unlikely	Moderate	Medium	Yes	Implement open spaces planning process to ensure that user requirements are anticipated and met Prioritise capital works based on open spaces planning outcomes	Rare	Minor	Low	Prepare Plans of Management for community lands and key open spaces
20	Parks and Reserves deteriorate	Parks and Reserves not funded to meet requirements for maintenance and upkeep	Anytime in the future	Insufficient maintenance or renewal due to insufficient funds	Operational and capital renewal budgets	Unlikely	Moderate	Medium	Yes	Continue procedures for assessing condition and use results to prioritise renewals	Unlikely	Moderate	Medium	Monitor change in condition overtime and look for opportunity for increased funding if required.
21	Pathways	Pedestrian, cycle injuries; claims etc.	Anytime now	Substandard pathways surfaces, uneven surfaces	Regular inspections, maintenance and repairs	Almost certain	Moderate	High	No	Continue regular inspections Prioritise pathway renewals and repairs based on risk, within existing budgets	Almost certain	Moderate	High	Look for opportunity to increase funding for pathway renewals. Update PAMP.