

Activity Management Plan 2021

Transportation Risk Management

Roading | July 2021



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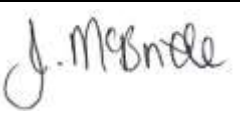
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1 Introduction

Risk is managed through the development and ongoing review of the risk register, as well as through emergency response planning, seismic screening of bridges, lifeline disaster resilience assessment, crash assessments, regular inspections, safety audits and detailed assessments of critical assets. The last major review of Waimakariri District risk was very much at a micro identification level, and focused on reviewing the large number of individual smaller issues identified in previous risk reviews and developing a means of monitoring them. While the risks identified were relevant and important, most involved relatively simple management processes that could be programmed and often managed and remedied within a single AMP period, if resources were available. The process of managing these risks works through identifying potential risks arising from the operation of the roading networks, the consequences and likelihood of those risks occurring, and the mitigations used to manage them. It also identifies whose responsibility it is to manage each of the identified risks.

In addition to the risks recognised in the Risk Register, there are several risks which can be viewed at a strategic level and tie into the Transport Outcomes Framework and the Government Policy Statement for Transport. Of particular concern are the key issues of Safety, Sustainability, Resilience and Integration of Planning and Roding.

2 Strategic Risks

2.1 Safety

General

Road safety is currently not identified in the corporate risk register because it does not affect whole communities simultaneously. However, it is nonetheless an ongoing risk to life and health within the District, and therefore needs to be considered at the Transportation risk register level. Around 20-30 people are killed or seriously injured in the District annually and the increased traffic volumes mean that this will keep increasing in the future. Safety is a risk to the residents of our community on a number of levels. It is a health issue, a financial issue, and a community quality of life issue, that is best solved with a multi-faceted, integrated approach.

Safety Management Systems

The process of considering safety issues, and ensuring that they are captured correctly, and then incorporated into future decisions is very complex. WDC were a party to the original Safety Management System (SMS) approach promoted by LTSA a number of years ago, however

while the SMS documentation provided a wealth of processes it did not provide an overall strategic direction and proved too complex for regular reference by all but the most dedicated. In addition, it did not reflect the changing priorities being given to measures to mitigate or eliminate the more severe outcomes of crashes.

Council’s current approach to updating its Safety Management System is to carry out a review of the existing system, guided by Road to Zero principles and incorporating current established and proven practices such as Safety Audits, monitoring of existing work, and gap analysis.

In addition, automated processes have been provided by Waka Kotahi NZTA to allow easy extraction of crash data from the Crash Analysis System and comparison with peers and nationally. These incorporate the One Network Road Classification system and the Performance Measurement Reporting Tool.

Trends

Since 2017, the numbers of crashes and injuries appear to have been decreasing. This appears to be generally across the board, with the exception of secondary collector roads. To ensure there is not a specific issue with these types of roads, it is proposed to investigate this area in greater detail to determine any potential causes and measures, to reverse this trend.

As with the rest of the country, a significant drop in crash numbers was recorded in 2020 primarily because of the limited travel during lockdown. However, there have been a number of fatalities in the District over the last few months, and so there remains a cause for concern.

Figure 1: All crashes 2010 - 2020

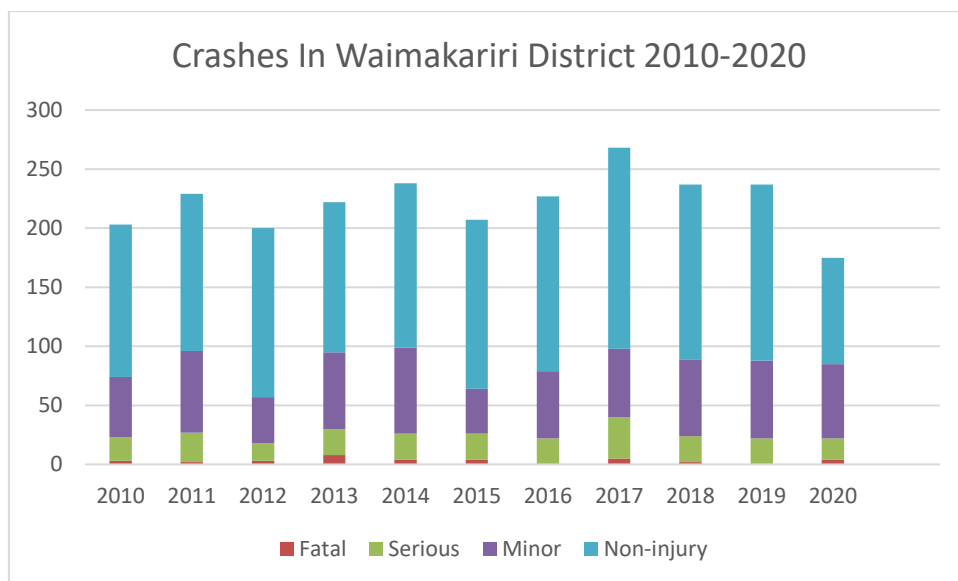


Figure 2: Fatal and serious crashes 2010 - 2020

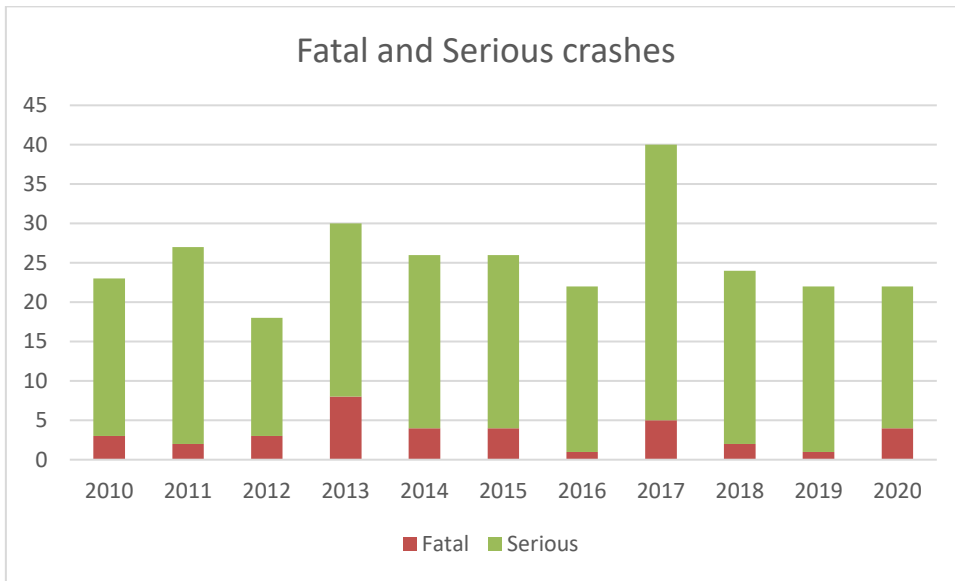
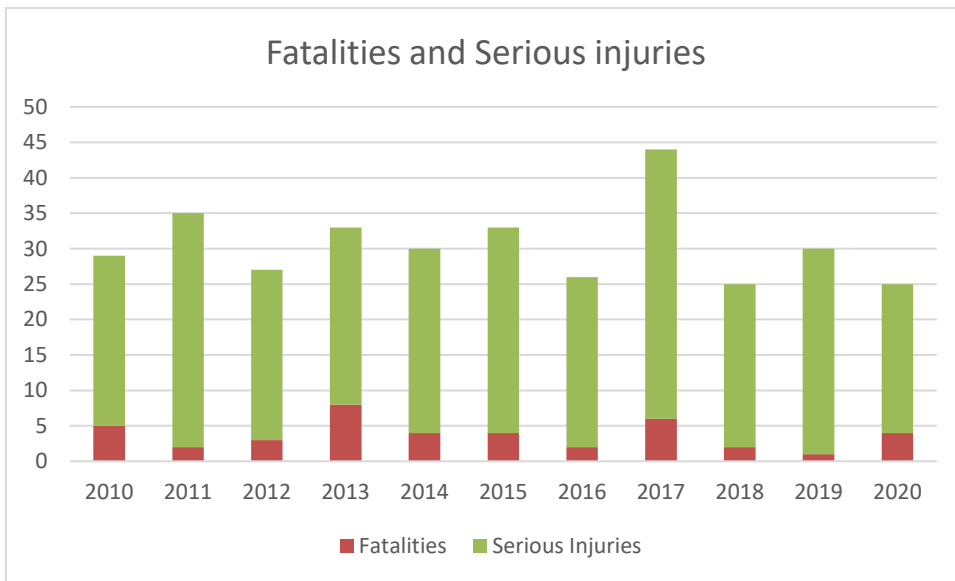


Figure 3: Fatalities and serious casualties 2010 - 2020



Action

The Council considers safety to be the most important risk associated with its roading asset. To this end, it is placing the highest importance in considering options to reduce this risk. In particular a number of interventions are proposed for the next ten years. These include:

- Preparation of a Road Safety Action Plan, which includes enforcement and education initiatives
- Preparation and regular review of a Hazard Register
- Ongoing Safety Audits of individual projects

- Development of a Speed Management Plan
- Ongoing Crash investigations studies (black spot/route/crash type)
- Ongoing Network Safety inspections by staff and the contractor, both day and night-time
- Serious and Fatal Crash investigations (immediately following a serious crash or fatality)
- Engineering measures such as:
 - School safety improvements
 - Deficiency Database projects
 - Route improvements, particularly key growth areas such as Flaxton / Fernside / Skewbridge Roads route, and Tram Road
- A number of improvements on key routes through the Road to Zero programme, including RIAWS (Rural Intersection Activated Warning Signs), and the lowering of speed limits where appropriate.

For the other Risks, as detailed below, Council has provided a comprehensive list of actions for the Infrastructure Strategy, as seen in Section 3. Although the Infrastructure Strategy is a 30+ year document, most of the actions have either already been achieved or are due to be completed within the period of this AMP.

2.2 Sustainability

Sustainability is the ability for an asset or activity to be maintained at a certain rate or level. In the transportation sector, it includes financial, environmental and asset sustainability.

It is becoming recognised by the world that Climate Change is a real issue which threatens society and which we should all be playing our part in mitigating. As a wider organisation, the Council is more involved with understanding and preparing for climate change, across all of its activities. The sustainability of our transport activity is a key part of this.

To assist in mitigation, WDC is endeavouring to provide greater access to alternative transport modes which in turn will lead to lower greenhouse gases. This includes improved public transport, improved Walking and Cycling facilities, provision of Park and Ride facilities and ensuring sustainability is considered in all future planning decisions.

However, it is also recognised that even with international change in behaviour that some form of sea level rise is inevitable and must be accommodated going forward. Waimakariri District Council has a number of coastal communities potentially affected by inundation, and also low lying areas where ground water level rise will affect the liveability. This also affects ability for

groundwater to drain away during and after a flood event. This in turn leads to pavements weakened or overtopped, and in extreme cases, washed away.

At this stage of the Council's maturity in this area, there is a large amount of uncertainty in this area. The Council is actively involved with its regional neighbours to share information and experience, however this will not provide definitive answers in the short to medium term. Therefore, for the period of this AMP, Council proposes to investigate the extent of the problem and develop potential solutions. This will be done in conjunction with other departments so that there is a cohesive and consistent approach to long term land-use planning, and infrastructural planning (whether it be drainage, water or transportation).

2.3 Integration of Planning and Roothing

Waimakariri has been one of the highest growing Districts in New Zealand over the past decade. Even as growth slows, it is still ranked 15th highest in the country. This growth has placed considerable strain on maintaining the network, and providing safe and effective linkages for people wanting to move around the District. It is important that the whole transportation network (including cycling, walking and public transport) enhance the quality of life for its residents.

It is important to of integrate district land use and transport to ensure that any future growth occurs in conjunction with the appropriate transportation infrastructure. This ensures that existing residents are not detrimentally affected by growth (due to congestion, loss of opportunity, and drop in Level of Service), and that future residents are properly catered for on their arrival.

In order to ensure that this happens, Waimakariri is part of the Greater Christchurch partnership of Christchurch, Selwyn and Waimakariri which seeks to manage growth in a planned and logical manner, and provide integrated regional-wide solutions to that growth.

In addition, the Council planning department and roading department maintain close working relationships as transportation strategies are prepared, new growth areas are planned, programmes are prepared, costs are allocated, and development occurs.

2.4 Resilience

Resilience is the capacity to recover quickly from difficulties, and in the transport context, refers in particular to recovery from natural hazard events.

Large scale risks to the network include earthquakes, floods, snow events, fires and strong winds. WDC has proven its ability to deal with these through a high degree of planning and networking. Mitigation measures include the Civil Defence and Emergency Management

structures, participation in the Canterbury Lifelines Group, the Council’s Business Continuity Plan, and the maintenance contractor’s Response Plan which includes a list of critical infrastructure to which access must be maintained, such as pump stations, Mainpower headquarters etc.

However it is acknowledged that there is an ongoing risk and Council must continue to improve its processes and planning to prepare for events, minimise the disruption and improve the recovery outcomes.

An improvement for the next 3 years will be to compare the outcomes of the Lifelines group to the contractor list to determine if any assets have not been considered.

3 Transport Related Infrastructure Strategy interventions

1. Providing appropriately for growth

Issue	Council’s Response
Predicting level and distribution of growth and using this to inform infrastructure planning	<p>Adopting a corporate growth model, including changing demographic projections, that informs Council decision making</p> <p>Adopting strategies, such as the District Development strategy, that signal directions for growth and implementing these through the District Plan review</p> <p>Integrating land-use planning and infrastructure provision, especially for transport services by adopting a multi-modal approach to deliver sustainable solutions</p> <p>Designing infrastructure on a minimum 50 year planning horizon</p> <p>Preparing/refreshing strategies for community facilities, aquatics, walking and cycling, sports fields, access and Age Friendly to determine future requirements</p>

2. Responding nimbly to a changing operating environment

2.1 Covid-19 (Resilience)

Issue	Council’s Response
Addressing rates affordability	Keeping rates increases to a minimum by smoothing rates via a combination of loan funding, implementing austerity measures and deferring some large infrastructure projects to later years.

2.2 Changing government priorities and legislative environment (Environmental Sustainability)

Issue	Council's Response
Meeting Land and Water Regional Plan requirements for urban stormwater discharge standards by 2025	<p>Securing consents for all urban discharges</p> <p>Assessing the improvement programme (capital, operational and educational) required to enhance and improve discharges to waterways</p> <p>Develop and consult on a long term plan of work and associated budget provision to give effect to the programme</p> <p>Monitor and evaluate network and system performance and continue to work collaboratively with partners, particularly mana whenua, to develop affordable and viable solutions to meet the consent conditions</p>
Expectations that higher standards of flood protection will be provided in high rainfall events	<p>Extensive flood modelling work has been completed, and will continue to be refined, to identify at-risk areas and influence where further network upgrades should occur, and inform decisions about future development and building proposals</p> <p>Implementing an ongoing programme of flood improvement works in Ohoka and Rangiora in response to 2014 and 2017 storm events</p> <p>Carrying out a major upgrade of the stormwater systems in Kaiapoi, utilising shovel-ready funding from the government</p>

3. Ensuring resilient infrastructure (Resilience)

4. Issue	Council's Response
Adopting a risk-based renewals and investment strategy	Ensuring renewals investment is prioritised to the most vulnerable and critical infrastructure so that the overall resilience of the infrastructure networks are continually enhanced
Identifying climate change and natural hazard risks	<p>Preparing an annual stocktake of Council's climate change issues and response since 2018.</p> <p>Completing in 2020, comprehensive flooding modelling to assess potential flood impacts and where further land development should occur</p>

4. Issue	Council's Response
	<p>Incorporating results from flood and reticulation network modelling into AMP's and the District plan Review</p> <p>Completing and consulting on natural hazards risk assessment in 2020 as part of the District Plan review</p> <p>Completing in 2020 a set of RCP 8.5 climate scenario maps for the District using NIWI's Canterbury Region dataset</p> <p>Carrying out risk assessments for essential infrastructure</p>
<p>Setting a strategic framework in place for climate change mitigation and adaptation</p>	<p>Adopting a Sustainability Strategy in 2020</p> <p>Adopting a Climate Change Policy in 2020</p> <p>Developing a WDC Climate Change Scenario in 2020/21</p> <p>Developing a Climate Change Response Strategy in 2021</p> <p>Developing a community based sustainability strategy in 2021/22</p>
<p>Increasing the resilience of Council infrastructure and the wider community to natural disasters and climate change</p>	<p>Adopting design and modelling standards for infrastructure that reflect the latest climate change predictions (e.g. rainfall patterns) and are built using materials and best-practice technologies to improve resilience allowing for the implications of sea level rise and changing weather patterns in asset management planning</p> <p>Making appropriate District Plan provisions in relation to known active faults, flooding and sea level rise</p>
<p>Increasing governance and collaboration</p>	<p>Participating in the national and regional climate change forums to influence and ensure best-practice is developed and implemented</p> <p>Participating in the Regional Natural Hazards Working Group</p> <p>Establishing a Climate Change Coordination Group to ensure Council's climate change response efforts is co-ordinated across the Council</p>

5. Transitioning to a sustainable future (Environmental Sustainability)

Issue	Council's Response
Measuring and monitoring greenhouse gas emissions	Undertaking regular emission assessments, utilising the 2017/18 base-line assessment to enable the Council to set emissions targets and assess progress
Reducing the organisation's carbon footprint	<p>Reviewing and revising the adopted Corporate Sustainability Strategy and ensuring action plans are implemented</p> <p>Implementing initiatives to embed sustainability practices in the organisation such as sustainable purchasing policies and practices, flexible working policies and investigating sustainable energy efficiency opportunities</p>
Developing a more sustainable District	<p>Developing a community-based sustainability strategy in 2021/22</p> <p>Introducing and maintaining sustainable solutions as kerbside recycling, electric vehicle charging stations, enabling and encouraging alternative transport solutions such public transport, cycling and walking alternatives</p> <p>Implementing education programmes for schools and the community that increase awareness and opportunities to be more sustainable</p>

4 Key Decisions

Key Decision	Indicative Timeframe
Within the first three years	
Confirming the funding and timing decisions needed to implement the Rangiora town centre strategy, in particular with regard to CBD parking, and the Blakett St – Keir St linkage	Within a year (2021)
Considering safe solutions to Mulcocks Rd and Fernside Rd (East) railway crossings	

Key Decision	Indicative Timeframe
Determining location for the Ravenswood Park and Ride site	
Identifying and communicating an appropriate climate change response for low lying coastal areas	Within 1 to 2 years
Investigating long term options for Southbrook Rd	Within 3 years
Within four to ten years	
Determining an appropriate solution for Rangiora Woodend Rd / Boys Rd intersection	
Identifying the route for the Kaiapoi to Woodend cycleway	Within 6 years (2027)
Determining when Skewbridge realignment/replacement should proceed if NZTA funding is not available	Within 7 years (2028)
Within eleven to thirty years	
Confirming the need for the eastern arterial route	Within 14 years (2035)
Deciding on the replacement of the old Waimakariri Bridge	Within 21 years (2042)

5 Operational Risk Management

5.1 Objectives

Council strives to manage risk in a responsible manner to enable business objectives to be consistently met recognising social, cultural, environmental and economic impacts of its activities.

The overall objectives of a risk management process are to ensure that:

- All significant operational and organisational risks are understood and identified
- The highest risks that should be addressed in the short to medium term are identified
- Risk reduction treatments which best meet business needs are applied
- Responsibilities for managing risk are allocated to specific staff.

5.2 Risk Assessment Process

The adopted roading network risk management process is consistent with Australian New Zealand Standard AS/NZS ISO 31000:2009 and the IIMM (2011), to ensure that risks are managed on a consistent basis.

Figure 4: Risk Management Process



A series of risk identification workshops were conducted involving the Council roading team and Sicon, the network maintenance contractor, to develop and review the current roading risk register. These workshops included the whole of the roading infrastructure to:

- Identify the risk events relevant to each risk type using Table 1
- Evaluate of the likelihood of the risk event occurrence using Table 2
- Evaluate the consequence of the risk event using Table 3
- Determine the risk priority using Table 4
- Determine the treatment strategy using Table 5

5.3 Risks Context

The key risk criteria adopted for WDC for assessing the consequences identified risks are:

- Health and Safety
- Environmental/ Sustainability
- Business/ economics
- Technological Image/ Cultural/ Spiritual

5.4 Identify Risks

The Potential risk events were identified and categorised into four areas, as shown in the table below:

Table 1: Risk Types

Risk Type	Descriptions
Planning Risks	Events generated by events outside the control of the organisation such as the effects of natural events, either long term such as climate change or sudden (earthquakes), , change in legislation, change in network demand where influenced by neighbouring councils growth and decision making
Management Risks	Events associated with incomplete planning information and processes, lack of resources, financial restraints.
Delivery Risks	Events largely caused by breakdown of operational processes such as inadequate inspection, lack of communication, inadequate quality system, health and safety.
Physical Asset Risks	Events mainly associated with the failure of the assets due to loading characteristics, material and equipment failure.

5.5 Analysis of Risks

The likelihood and impact ratings used to determine initial risk ratings are defined in the tables below:

Table 2: Risk Likelihood Ratings

Level	Likelihood	AS/NZS ISO 31000:2009 Definition
5	Almost certain	The event is expected to occur in most circumstances
4	Likely	The event will probably occur in most circumstances
3	Possible	The event would not be very surprised if the event was experienced
2	Unlikely	The event could occur at some time
1	Rare	The event may occur only in exceptional circumstances

Table 3: Measures of consequences of failure

Level	Consequences	AS/NZS ISO 31000:2009 Definition	Health & Safety (TNZ descriptors in bold)	Environmental/ sustainability	Business/ economic	Technological	Image/ cultural/ spiritual	Delays
5	Catastrophic	Death, toxic release off-site with detrimental effect, huge financial loss	Multiple fatalities and/or widespread serious acute or chronic health effects	Widespread irreparable environmental damage, national concern, high profile legal challenge	Loss of revenue or opportunity and working-days lost in excess of \$10 million	Catastrophic failure of systems to perform as intended.	Major concerns at an international media cover , significant media attention, impact on reputation of industry as a whole	Several years
4	Major	Extensive injuries, loss of production capability, off-site release with no detrimental effects, major financial loss	Multiple serious or a fatality - Single fatality, some chronic health effects or localised serious acute health effects	Localised long lasting environmental damage, community outrage, potential for legal action	Loss of revenue or opportunity and working-days lost \$1 million to \$10 million	High complex, extensive or novel buildability or operational requirements resulting in significant under performance of system.	Major concerns at a regional level, sustained national adverse media coverage , major implications within industry	Year
3	Moderate	Medical treatment required, on-site release contained with outside assistance, high financial loss	Serious Injuries - Serious health impacts to several people, requiring hospital attention	Significant rectifiable environmental damage or persistent small-scale effects, major local concerns, significant economic sanctions	Loss of revenue or opportunity and working-days lost \$100,000 to \$1 million	Complex buildability or operational issues that result in failing to meet operational or performance targets.	Regional media cover or short term national - Significant local concerns and opposition, temporary loss of image.	Months

Level	Consequences	AS/NZS ISO 31000:2009 Definition	Health & Safety (TNZ descriptors in bold)	Environmental/ sustainability	Business/ economic	Technological	Image/ cultural/ spiritual	Delays
2	Minor	First aid treatment, on-site release immediately contained, medium financial loss	Minor Injuries - Single serious health effect and/or several minor health effects - requiring medical attention	Significant localised short-term effects, significant breach of consents, open to fines	Loss of revenue or opportunity and working-days lost \$10,000 to \$100,000	Complex or significant buildability or operational issues that require special ways of working	Some local media cover , difficulties and concerns.	Weeks
1	Insignificant	No injuries, low financial loss	Slight injuries - Short term health effects - first aid attention only	Short term environmental effects, minor infringements of consent	Loss of revenue or opportunity and working-days lost less than \$10,000	Minor technological issue that can be relatively easily overcome	Possible local media cover - No significant issues as regards image, cultural or spiritual aspects	Days

5.6 Evaluate Risks

After the likelihood and consequence factors have been determined, the level of risk is calculated by multiplying the Likelihood of Occurrence (Table 4.3) and the Consequence Rating (Table 4.4).

Risk = the likelihood of an event occurring X the consequence of such an event.

The final outcome is a risk rating as shown in the table below. Four risk categories have been used: Extreme, High, Moderate, and Low risk.

Table 4: Risks Priority Rating Matrix

Likelihood of Occurrence	Almost Certain 5	5	10	15	20	25
	Likely 4	4	8	12	16	20
	Possible 3	3	6	9	12	15
	Unlikely 2	2	4	6	8	10
	Rare 1	1	2	3	4	5
		Insignificant 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
		Severity of Outcomes				

This allows all assets and corporate risks to be compared and ranked. The risk policy specifies the following broad treatment strategy for the level of risks:

Table 5: Risk Evaluation and Treatment Strategy Summary

Risk Severity	Treatment Strategy
Low Risk	Manage by routine procedures
Medium Risk	Management responsibility must be specified and risk control annually reviewed
High Risk	Treatment options must be reviewed and additional action taken to manage risk
Extreme Risk	Immediate action required to reduce risk

5.7 Manage Risks

Once the risks have been assessed and rated, along with the management option, they have been included in the improvement plan.

The Risk Register for the roading and transport network is included in **Appendix E**. This identifies individual risk, description of the risk, the gross and net risk, current mitigation strategy, define responsibility and management options.

6 Monitor and Review

An action plan needs to be developed to ensure that risk management is actioned, monitored, reported on and reviewed regularly. It is important to identify and constantly review the following:

- The nominated person responsible for ensuring that risks are managed and improvements carried out in accordance with the programme.
- The best practices that should ideally be carried out to manage risks to an acceptable level
- The date of entries and revisions, target date for actions to be taken and actual task completion dates

Most of the time, the risks identified will remain the same and reviews will occur in the context of these risks. However, it will be important to recognise when a new risk arises, or an existing risk changes in nature. In the latter case, the Initial risk also needs to be re-evaluated.

7 Key Improvement initiatives

Key improvement initiatives relating to the Risk Management include the following:

Table 6: Key Risk Management Improvement Initiatives

Section References	Improvement action	Priority	Proposed Completion date	Owner and Key Staff
Section 5: Risk Management				
5.1	Analyse effects of changes to key assumptions (from 2015 Peer review) (Section 7, Financial Summary)	Medium	Mar 2022	APE