

Attachment 5

Overview of the Risk Management Process

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Introduction

Council's assessment process for measuring risk associated with road and road-related assets involved two distinct phases:

- desktop risk assessment; and
- site based risk assessment:

The desktop risk assessment enabled Council to apply a risk-based approach to the management of Council's road maintenance budget. Comparisons between existing and desirable services allowed Council to prioritise services. Where possible, Council has aimed to provide funding for activities designed to reduce extreme and high risks in preference to activities which reduce lower risks. This assessment also provided a risk-based routine inspection regime and target timeframes for initial response to customer requests.

The site based risk assessment is intended to assist Council Officers in determining the appropriate maintenance response to asset defects identified within the municipality and to enable a consistent risk-based prioritisation of maintenance works.

Desktop Risk Assessment

The desktop risk assessment considered the likely risks, which may be encountered throughout the life of each road asset category using the process described below.

- a) Identification of risks associated with each asset category (eg Personal injury due to tripping on uneven footpath surfaces etc). This involved consideration of factors relating to: People, Environment, Financial, Technology, Safety, Operational Performance, Regulatory and Asset Management;
- b) Identification of the types of asset defects that would give rise to the above risks (eg vertical displacement >20mm, dislodged wedges/ loose / missing/ dislodged brick pavers, etc). These defect descriptions formed the basis for development of the hazard lists and intervention levels set out in the Road Maintenance Management Plan (RMMP) (**Attachment 4**);
- c) Allocation of a risk rating from Extreme to Low for each of the risks, identified in (a) above, This risk level was evaluated using the consequences and likelihood of a possible event (Steps 2A, 2B and 3 of the attached risk management process chart);
- d) Identification of currently funded and proposed maintenance activities that could address the risk, including a definition of appropriate intervention levels;
- e) Estimation of the impact of each current and proposed routine maintenance activity on Council's risk exposure, that is calculating the residual risk if the activity is undertaken (Steps 2A, 2B and 3 of the

attached risk management process chart). This approach recognises that the calculation of residual risk is only relevant to routine activities. Reactive maintenance work mitigates the local risk associated with a given defect but does not reduce Council's overall exposure to risk. For example, funding the repair of a single tripping hazard on the network does not reduce the likelihood or consequence of someone tripping on a footpath in the Municipality. It merely eliminates the risk at the specific location. In contrast, the commitment of funding for routine maintenance works - for example grinding tripping hazards at footpath interfaces – will, once the backlog of defects is reduced, reduce the likelihood of tripping, and in doing so, reduce Council's overall risk exposure.

- f) Each current and proposed activity within each asset category was then evaluated, costed and prioritised. Currently funded reactive and routine maintenance activities are detailed in the RMMP (**Attachment 4**);
- g) Allocation of routine hazard inspection cycles and timeframes for an initial response (site inspection/public safety risk assessment) as a result of a defect notified by customers (Step 4 of the attached risk management process chart).

RISK MANAGEMENT PROCESS CHART

(Based on the Knox Integrated Risk Management Process)

Step 1: Identify Sources of Risk



Step 2A: Analyse Risk Consequences

Consequence	People	Environment	Financial	Safety	Technology	Operational Performance	Regulatory	Asset Management
Critical	Essential service failure, or key revenue generating service removed.	Irreversible damage	Above \$1,000,000	Death	Major corruption or loss of data or failure of core systems for more than 1 day	Process is so inefficient or ineffective that it must be ceased immediately	Major breach where organisation faces criminal conviction	Condition of the asset poses a significant safety risk to users
Major	Service or provider needs to be replaced Widespread negative coverage in media including television and papers	Harm requiring restorative work	Up to \$1,000,000	Extensive injuries	Failure of core systems for less than a day or non core systems for more than 1 day	Process needs significant re engineering within short term (less than one month)	Major breach where organisation faces heavy penalties	Condition of the asset causes a significant damage to property
Moderate	Temporary, recoverable service failure up to 1 day Issue raised in local community newspapers	Residual pollution requiring clean up work	Up to \$250,000	Medical treatment	Failure to core systems up to half a day or non core system up to a day	Process failure impacts service up to 1 day or requires significant injection of resources to maintain	Breach of legislation where the organisation is put under notice to remedy by external body	Inability of the asset to perform its function (service risk)
Minor	Brief service interruption up to half a day Customer complaints are escalated	Remote, temporary pollution	Up to \$50,000	First Aid treatment	Failure of core systems for up to two hours or non core system up to half a day	Process failure impacts service up to half a day	Systemic non compliance with legislation that is identified and remedied in hours	Failure to preserve the ongoing value of the asset (investment risk)
Negligible	Negligible impact, brief reduction /loss of service up to 2 hours Customer complaints resolved in day-to-day management	Brief, non hazardous, transient pollution	Up to \$5,000	No injuries	Failure of non core system up to two hours	Brief interruption to process that has negligible impact on service	Non systemic incidents which are recognised and rectified during normal operations	Minor impact to the value of an asset at the end of its life cycle (investment risks)

Step 2B: Analyse Risk Likelihood

Likelihood	Description
Almost Certain	The event is expected to occur in most circumstances
Likely	The event will probably occur in most circumstances possible
Possible	The event should occur at some time
Unlikely	The event could occur at some time
Rare	The event may occur only in exceptional circumstances

Step 3: Evaluate the Risk

Consequence	Negligible	Minor	Moderate	Major	Critical
Likelihood					
Almost Certain	Medium	Medium	High	High	Extreme
Likely	Low	Medium	Medium	High	Extreme
Possible	Low	Low	Medium	High	High
Unlikely	Low	Low	Medium	Medium	High
Rare	Low	Low	Low	Medium	Medium

Step 4: Treat the Risk

Extreme Risks Hazard Inspection - 6 month cycle; Initial response to customer - 2 days
High Risks Hazard Inspection - 1 year cycle; Initial response to customer - 3 days
Medium Risks Hazard Inspection - 2 year cycle; Initial response to customer - 5 days
Low Risks Hazard inspection – none; Initial response to customer -10 days

Site Based Risk Assessment

This assessment recognises the need for Council to address extreme and high public safety risks regardless of whether the defect is described in the RMMP or whether the relevant maintenance activity is funded. It also recognises the importance of rectifying higher risk defects ahead of lower risk defects when managing day-to-day maintenance responsibilities. The resultant risks are documented within Council's Works Order System and actioned within an appropriate response timeframe. Refer to **Attachment 9**.

The site based assessments are undertaken on site by:

- ❖ Council's hazard inspectors as part of the routine hazard inspections undertaken in accordance with Part 2 of the RMMP; and/or
- ❖ Other Council Officers when potential hazards are brought to their attention via internal or external customer requests. These may be logged into Council's customer response system (Pathway) or document management system (Dataworks).

Officers use the process outlined in Figure 2 to assess both the likelihood and consequence of public safety risks for all potential hazards identified. The officers then assign the risk level to the relevant Works Order. This risk level is used to determine whether temporary protection works are required and to create prioritised schedules for rectification works with the objective of ensuring that the rectification timeframes as set out in the RMMP are met and that the high risks are addressed by Council ahead of lower public safety risks.

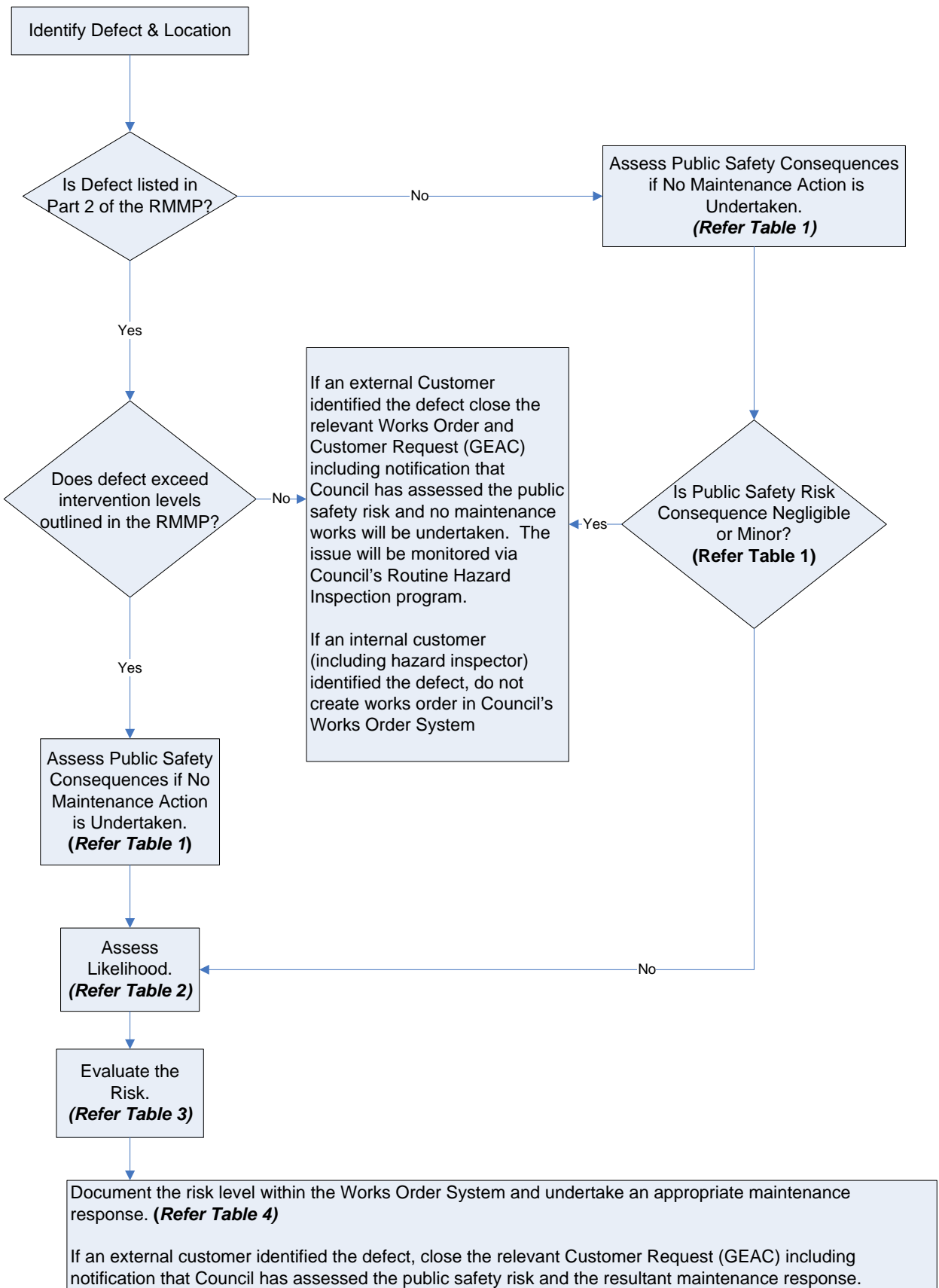


Figure 2 – Public Safety Risk Assessment

CONSEQUENCE	DESCRIPTION
CRITICAL	An incident caused by the defect is likely to result in death
MAJOR	An incident caused by the defect is likely to result in extensive injuries that require admission to hospital
MODERATE	An incident caused by the defect is likely to result in medical treatment required. Injured person will need to visit a doctor or hospital casualty ward
MINOR	An incident caused by the defect is likely to result in first aid treatment required
NEGLIGIBLE	An incident caused by the defect is likely to result in no injuries

Table 1: Assess the Potential Public Safety Consequences

Note, the above negative public safety consequences are based on the consequences identified in the Knox Integrated Risk Management Process

LIKELIHOOD	DESCRIPTION
ALMOST CERTAIN	<p>A negative public safety consequence is expected to occur in most circumstances</p> <ul style="list-style-type: none"> • The size/ extent of the defect is at the intervention level specified in the RMMP or greater • Defect is in an area with poor visibility • Road user has little or no opportunity to avoid the defect (there is insufficient clear space to avoid it) • Grade is steep • Speed is not restricted (ie speed limit > 50km/hr) • Traffic is constant • The footpath is designated as a Key or Commercial Access Route • High usage of the asset by frail individuals including the elderly/ children/ disabled
LIKELY	<p>A negative public safety consequence will probably occur in most circumstances</p> <ul style="list-style-type: none"> • The size/ extent of the defect is at the intervention level specified in the RMMP or greater • Defect is in an area with poor visibility • Road user has minimal opportunity to avoid the defect (there is sufficient clear space to avoid it) • Grade is not steep • Speed is not restricted (ie speed limit = 50km/hr) • Traffic is occasional • The footpath is designated as a Key or Commercial Access Route • Moderate to high usage of the asset by frail individuals including the elderly/ children/ disabled

POSSIBLE	<p>A negative public safety consequence should occur at some time</p> <ul style="list-style-type: none"> • The size/ extent of the defect is at the intervention level specified in the RMMP or greater • Defect is in an area with variable/ restricted visibility • Road user has some opportunity to avoid the defect (there is sufficient clear space to avoid it) • Grade is variable • Speed is restricted (ie speed limit ≤ 50km/hr) • Traffic is occasional • The footpath is designated as a Key, Commercial or Reserve Access Route • Moderate usage of the asset by frail individuals including the elderly/ children/ disabled
UNLIKELY	<p>A negative public safety consequence could occur at some time</p> <ul style="list-style-type: none"> • The size/ extent of the defect is at the intervention level specified in the RMMP or slightly greater • Defect is in an area with good visibility • Road user can easily avoid the defect (there is an alternate route and/or sufficient clear space to avoid it) • Grade is flat • Speed is restricted (ie speed limit < 50km/hr) • Traffic is infrequent • The footpath is designated as an Industrial or Local Access Route • Occasional usage of the asset by frail individuals including the elderly/ children/ disabled
RARE	<p>A negative public safety consequence may only occur in exceptional circumstances</p> <ul style="list-style-type: none"> • The size/ extent of the defect is at the intervention level specified in the RMMP • Defect is in an area with good visibility • Defect is avoidable (there is an alternate route and sufficient clear space to avoid it) • Grade is flat • Speed is restricted • Traffic is infrequent • The footpath is designated as an Industrial or Local Access Route • Rare usage of the asset by frail individuals including the elderly/ children/ disabled

Table2: Assess the Likelihood

Note: the above likelihood descriptions are based on those identified in the Knox Integrated Risk Management Process. They have been expanded to assist Council officers when making an assessment of risk. They are not intended to be prescriptive

and will evolve over time as Council’s understanding of the factors that contribute to negative events improves. Officers using these tables are expected to select the most appropriate description for the defect observed and to err on the conservative side when unsure.

LIKELIHOOD	CONSEQUENCE				
	NEGLIGIBLE	MINOR	MODERATE	MAJOR	CRITICAL
ALMOST CERTAIN	MEDIUM	MEDIUM	HIGH	HIGH	EXTREME
LIKELY	LOW	MEDIUM	MEDIUM	HIGH	EXTREME
POSSIBLE	LOW	LOW	MEDIUM	HIGH	HIGH
UNLIKELY	LOW	LOW	MEDIUM	MEDIUM	HIGH
RARE	LOW	LOW	LOW	MEDIUM	MEDIUM

Table3: Evaluate the Risk

RISK LEVEL	MAINTENANCE RESPONSE
EXTREME	<p>Temporary protection works required within 1 day to reduce risk.</p> <p>Address defect as specified in the RMMP within designated rectification timeframe. If rectification timeframes can not be met, reason is to be noted in Council’s Works Order System;</p> <p>or</p> <p>If no activity is specified in the RMMP, collect data to support future funding of the required maintenance activity</p>
HIGH	<p>Temporary protection works required within 5 days to reduce risk.</p> <p>Address defect as specified in the RMMP within designated rectification timeframe. If rectification timeframes can not be met, reason is to be noted in Council’s Works Order System;</p> <p>or</p> <p>If no activity is specified in the RMMP, collect data to support future funding of the required maintenance activity</p>
MEDIUM OR LOW	<p>No temporary protection works required.</p> <p>Address defect as specified in the RMMP within designated rectification timeframe. If rectification timeframes can not be met, reason is to be noted in Council’s Works Order System;</p> <p>or</p> <p>If no activity is specified in the RMMP collect data to support future funding of the required maintenance activity</p>

Table 4: Treat the Risk