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Echelon Australia Pty Ltd

ABN 96 085 720 056

Coffs Harbour Office: PO Box 1150

Coffs Harbour NSW 2450

Tel: 02 6651 1499
Fax: 02 6652 4531
Email: suttn@jlta.com.au

BALLINA SHIRE COUNCIL

RISK ASSESSMENT
FOR
DALWOOD FALLS

Dalwood Road, Alstonville

June 2005

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SUMMARY

This report outlines a series of measures to respond to the hazards that are present at the site known as Dalwood Falls.

Determination of the most suitable measures to manage the risks associated with ownership of the site depends on Ballina Shire Council's view on public access to the site, and to what extent Council wishes to provide protection beyond that sufficient to address its legal responsibilities.

If Council does not require its ownership of the site to continue, and wishes to remove any legal or moral obligation for activities at the site, it is appropriate that the site be sold.

If Council wishes to retain ownership of the site, but to curtail the public use of the site, it is appropriate to securely fence the site and conduct regular inspections of such fencing.

If Council wishes to retain ownership of the site and allow public use of some or all of the site's features, it is necessary for Council to determine which measures from those included in the report (fencing of specific parts of the site, track improvement, garbage facilities, toilet facilities, regular inspections / policing, tree maintenance, additional signage) it wishes to adopt.

If Council is satisfied by addressing its legal responsibility to warn of hazards a review of the signage at the site is appropriate.

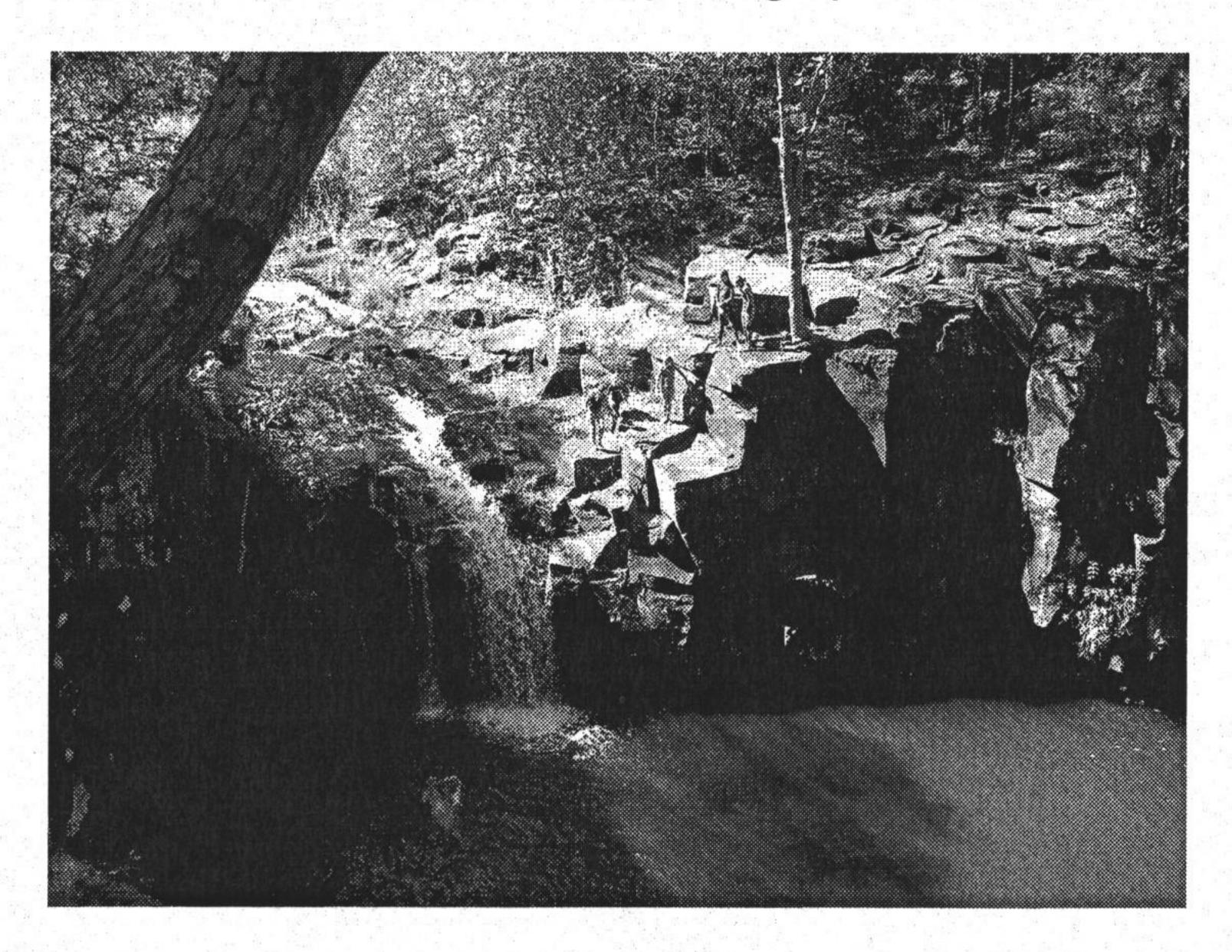


INTRODUCTION

Echelon Australia Pty Ltd was engaged by Ballina Shire Council in May 2005 to conduct a risk assessment of the area known as Dalwood Falls. The area is located on the southern side of Dalwood Road, Alstonville and occupies Lot 5 DP246371, Lots 64 & 146 DP755720 and Lot 1 DP580317, all of which are owned by Ballina Shire Council (this information taken from a valuation report by Bennett Frogley Valuers dated 15 October 2004, a copy of which was provided to Echelon by Council).

The main features on the properties are Gum Creek, which runs generally through the properties, a weir (originally constructed for water supply purposes), a waterfall (Dalwood Falls), a natural pool at the foot of the falls and the surrounding terrain which is generally heavily vegetated with walking tracks through various sections, mainly giving access to the creek and falls.

The falls and pool at their base are well-known locally for picnics with the prime aim of swimming in the pool at the foot of the falls. It is a common practice for people to jump from the cliffs into the pool below. On occasions the site was visited ropes were in place from which persons swing into the water and haul themselves from the water to repeat the experience, as shown in the photograph below.



Ballina Shire Council is concerned about the risk the site presents to Council. Previously Council has implemented measures to prevent vehicular access to the site and a sign has been erected at the entrance point prohibiting entry to the site and warning of cliff edges and uneven ground. It was as a result of this concern that Echelon was engaged to conduct this assessment.



METHODOLOGY

The process used to develop this report follows the steps identified in AS/NZS 4360:2004 Risk Management. The main features of this process are to:

- > establish the context of the project,
- identify the risks presented by the site,
- analyse those risks, including determination of the consequences and likelihood and hence level of each risk,
- > evaluate each risk, and
- identify treatments to be implemented to reduce either the likelihood or the consequence (or both) of the hazard being realised.
- discuss the merits (or otherwise) of the treatment options.

The process was conducted using Statewide's RiskeProfile Risk Profiling system. This system stores the information determined from the site inspections identifying the risks present at the site, and is used to analyse and evaluate each risk. Details of the assessment are provided in the attachments to this report.



RISK TYPES

The site exposes Council to a number of risk types. Those identified are:

- > Environmental risks environmental harm that can arise from human presence on the site.
- Public Liability risks in what ways could Council be responsible for personal harm that persons may experience through use of the site.
- Reputation risks Council's reputation and standing in the community may suffer as a result of actions by persons using the site.

HAZARDS IDENTIFIED

The site was inspected and hazards were identified for each risk type. Each of these hazards was assessed for likelihood and consequence using Statewide's RiskeProfile Risk Assessment software. Details of the assessment are provided in the attachments to this report, however the hazards identified as applying to each risk type are as follows:

> Environmental risks:

- Bushfire harm to environment and harm to persons from fire on the site, either caused by the persons using the site or entering from offsite,
- Litter harm to the environment and harm to persons from litter (especially broken glass) created by persons using the site,
- Pollution harm to the environment and harm to persons from the effects of human waste being deposited on site.

> Public Liability risks:

- Cliffs persons falling or jumping over cliffs being injured,
- Gum Creek persons attempting to cross the creek being swept away by the flow in the creek and being injured,
- ❖ Pedestrian hazard slipping, tripping or falling over uneven paths when walking through the site and being injured,
- ❖ Falling vegetation persons being injured if struck by falling tree limbs,
- ❖ Weir and pool under falls the presence of the weir and the water stored by it and the pool at the foot of the falls presents the hazard of drowning for persons using the site.

> Reputation risks:

Community perception that Council is irresponsible or uncaring in its response to incidents and circumstances at the site.



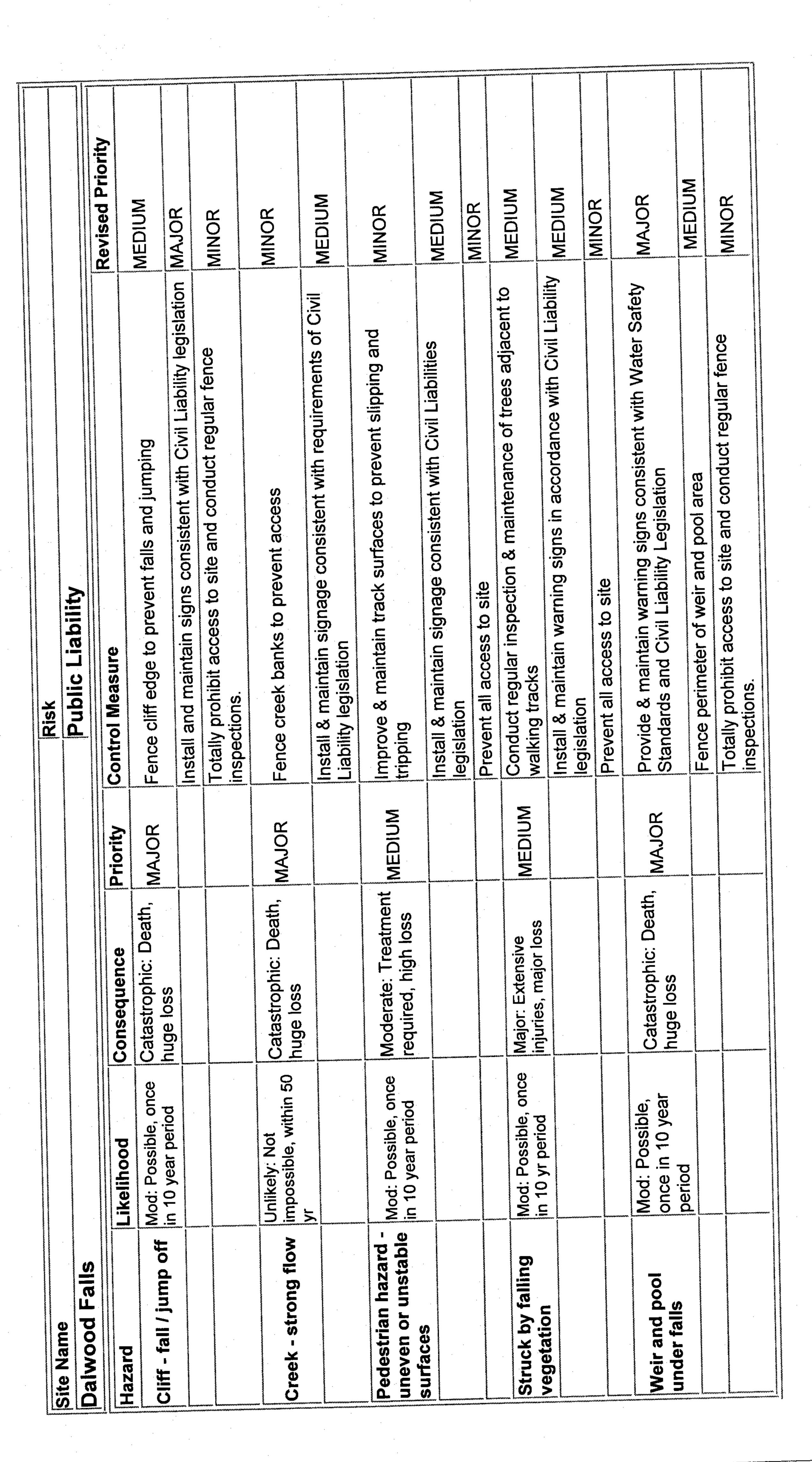
RISK CONTROL / TREATMENT

Control measures have been identified for each hazard, and the revised priority assuming implementation of the control schedule. In some instances the treatments identified may have an impact on either likelihood of consequence of a hazard, but the effect is not sufficient to changethe priority rating of the hazard.

attachments: Details of the impact of each control measure proposed are included in the

Site Name				Risk	
				Environmental	
Hazard	Likelihood	Consequence	Priority	Control Measure	Revised Priority
Bushfire	Unlikely: Not impossible, within 50 yrs	Moderate: Treatment required, high loss	MEDIUM	Prohibit access	MINOR
Litter - broken glass	Mod: Possible, once in 10 year period	Moderate: Treatment required, high loss	MEDIUM	Provide garbage receptacles	MEDIUM
				Carry out site clean-up	MINOR
Pollution - Waste runoff	Mod: Possible, once in 10 year period	Minor: First aid, medium loss	MINOR	Provide toilet facilities	MOM

echelon





DISCUSSION OF TREATMENT OPTIONS

Council must determine whether it is satisfied with managing its legal liability alone, or whether a higher degree of control / treatment and protection is desired.

The treatment options identified in the preceding sections have been assessed in terms of their impact on controlling the respective hazards identified at the site. For some options the assessment shows negligible effect in reducing the risk rating, even though the treatment may be sufficient to reduce Council's legal liability if the harm is realised. An example of this is the erection of signs consistent with the Civil Liability legislation. This treatment option has been assessed as having minimal change to the rating of the hazard, as there is a reasonable likelihood that any warning signs will be ignored by some sections of the public (as is already happening at the site at present) and as a consequence such persons continue to be exposed to the hazard.

Legal Liability

The Civil Liability Amendment (Personal Responsibility) Act 2002 No 92 specifically refers to recreational activities. In Division 5 of the Act, Section 5K defines recreational activity to include "any pursuit or activity engaged in for enjoyment, relaxation or leisure" and a dangerous recreational activity is "a recreational activity that involves a significant risk of physical harm". Section 5L of the Act states:

- (1) A person (the defendant) is not liable in negligence for harm suffered by another person (the plaintiff) as a result of the materialisation of an obvious risk of a dangerous recreational activity engaged in by the plaintiff.
- (2) This section applies whether or not the plaintiff was aware of the risk.

Section 5M of the Act states:

- (1) A person (the defendant) does not owe a duty of care to another person who engages in a recreational activity (the plaintiff) to take care in respect of a risk of the activity if the risk was the subject of a risk warning to the plaintiff.
- (2) If the person who suffers harm is an incapable person, the defendant may rely on a risk warning only if:
- (a) the incapable person was under the control of or accompanied by another person (who is not an incapable person and not the defendant) and the risk was the subject of a risk warning to that other person, or
- (b) the risk was the subject of a risk warning to a parent of the incapable person (whether or not the incapable person was under the control of or accompanied by the parent).
- (3) For the purposes of subsections (1) and (2), a risk warning to a person in relation to a recreational activity is a warning that is given in a manner that is reasonably likely to result in people being warned of the risk before engaging in the recreational activity. The defendant is not required to establish that the person received or understood the warning or was capable of receiving or understanding the warning.
- (4) A risk warning can be given orally or in writing (including by means of a sign or otherwise).



(5) A risk warning need not be specific to the particular risk and can be a general warning of risks that include the particular risk concerned (so long as the risk warning warns of the general nature of the particular risk).

The current activities carried out at Dalwood Falls would be considered recreational activities or dangerous recreational activities, so signs to warn of the hazards that may be encountered on the site would address Council's legal responsibility as site owner.

Other Controls / Treatments

The other control measures identified to address the major areas of risk include fencing of the specific components of the site (weir, creek banks and cliff edge around the falls and pool), total exclusion of the public from the site (through fencing the site) or disposal of the site so Council no longer has any responsibility as owner.

The measures to address Medium and Minor priority hazards were more specific to the hazard itself. They include provision of garbage receptacles and collection services, toilet facilities, surface improvement to walking tracks, a system of inspecting trees to remove limbs likely to fall, implementation of patrols to police regulations and measures to increase public awareness of the hazards and restrictions placed on use of the site.

If Council intends to ensure no public use is made of the area the most effective measures would be to fence the site perimeter in a manner more effective than at present (sections of fence are in poor repair), and implement periodic inspections of the fences and site generally, both the maintain the fences and to police access prohibition.

If the intention is to remove all potential for responsibility (legal or moral) for care of the public, sale of the properties is the most appropriate measure.

If it is accepted that the public will continue to use the area in some manner, and Council prefers to retain ownership of the site, those measures that create the greatest reduction in risk level should be implemented.



Risk Type: Reputation

Hazard: Community perception that Council irresponsible / uncaring

Original Risk Assessment

Consequences: Moderate: Treatment required, high loss (C)

Likelihood: Likely: Once per year (B)

Priority: MEDIUM

Control: Secure site to physically prevent access and routinely

inspect to ensure effectiveness

Adjusted Risk Assessment (if Control implemented)

Consequences: Insignificant: No injuries, low loss (E)

Likelihood: Almost Certain (A)

Priority: MINOR

Site: Dalwood Falls

Risk Type: Reputation

Hazard: Community perception that Council irresponsible / uncaring

Original Risk Assessment

Consequences: Moderate: Treatment required, high loss (C)

Likelihood: Likely: Once per year (B)

Priority: MEDIUM

Control: Dispose of site - remove ownership responsibility

Adjusted Risk Assessment (if Control implemented)

Consequences: Insignificant: No injuries, low loss (E)

Likelihood: Almost Certain (A)



2. Site Photographs



Current entry point with previously installed vehicle barrier



Existing sign at entry.

Note: No Entry requirement is being ignored to come extent.



Pathway between entry and falls. Tree roots present tripping hazard and soil is very slippery when moist.





The weir - spillway



Gum Creek between the weir and the falls – crossing point to get to the opposite side of the falls from the walking path.



Pool from above the falls





The falls, with kids climbing up and getting ready to jump into the pool.



Looking from the cliff edge to the downstream end of the pool, showing the rope swing used from this location.



Dalwood Road, with the current entry point in the shaded area behing the parked car (left side of road).





Vegetation and remnants of barbed wire fencing on western (uphill) side of entry point.



Vegetation on eastern (downhill) side of entry point.





3. Evaluation of existing signs

Assessment of the minimum signage suitable for the site (if a decision is taken to allow access to the site) has been made considering the Statewide Best Practice Manual – Signs as Remote Supervision and the Civil Liability Amendment (Personal Responsibility) Act 2002 No 92.

Using the Best Practice Manual procedure for Reserves:

Development Rating for the site (Table 1: river, dam, cliff > 3m)	5
Population Use Rating (Table 4: 5 to 50 people at a time)	2
Frequency of Use (Table 5: weekly basis)	3
Frequency Visitation Rate ([Dev x Pop] + Freq)	13

Table 6 of the manual indicates all regulations and the two dominant hazards be identified on the sign.

Section 5M(1) and (5) of the Act refer to the provision of warnings and the need to generally warn of risks including particular risks. It is appropriate that a sign at the entry to the site identify the following warnings:

Cliff Edge

Uneven Ground

Deep Water

Slippery Surface

Submerged Rocks

Falling Branches

Any Prohibitions to be included on the sign must be considered with the level of enforcement Council is prepared to commit to providing.



RISK ANALYSIS AND EVALUATION

The following report derived from RiskeProfile lists the identified risks, hazards and the rating of each hazard. This evaluation derives from the consequence and likelihood assessments shown later in the report.

RISKS REDOT	
Site: Dalwood Falls	
Description	Priority
Environmental	
Bushfire	Medium
Litter - broken glass	Medium
Pollution - Waste runoff	Minor
Public Liability	
Cliff - fall / jump off	Major
Creek - strong flow	Major
Pedestrian hazard - uneven or unstable surfaces	Medium
Struck by falling vegetation	Medium
Weir and pool under falls	Major
Reputation	
Community perception that Council irresponsible / uncaring	Medium



ATTACHMENTS

1. Detailed Control Reports

Control Report

Site: Dalwood Falls

Risk Type: Environmental

Hazard: Bushfire

Original Risk Assessment

Consequences: Moderate: Treatment required, high loss (C)

Likelihood: Unlikely: Not impossible, within 50 yrs (D)

Priority: MEDIUM

Control: Prohibit access

Adjusted Risk Assessment (if Control implemented)

Consequences: Insignificant: No injuries, low loss (E)

Likelihood: Unlikely: Not impossible, within 50 yrs (D)

Priority: MINOR

Site: Dalwood Falls

Risk Type: Environmental

Hazard: Litter - broken glass

Original Risk Assessment

Consequences: Moderate: Treatment required, high loss (C)

Likelihood: Mod: Possible, once in 10 year period (C)

Priority: MEDIUM

Control: Provide garbage receptacles

Adjusted Risk Assessment (if Control implemented)

Consequences: Moderate: Treatment required, high loss (C)

Likelihood: Mod: Possible, once in 10 year period (C)

Priority: MEDIUM



Risk Type: Environmental

Hazard: Litter - broken glass

Original Risk Assessment

Consequences: Moderate: Treatment required, high loss (C)

Likelihood: Mod: Possible, once in 10 year period (C)

Priority: MEDIUM

Control: Carry out site clean-up

Adjusted Risk Assessment (if Control implemented)

Consequences: Minor: First aid, medium loss (D)

Likelihood: Mod: Possible, once in 10 year period (C)

Priority: MINOR

Site: Dalwood Falls

Risk Type: Environmental

Hazard: Pollution - Waste runoff

Original Risk Assessment

Consequences: Minor: First aid, medium loss (D)

Likelihood: Mod: Possible, once in 10 year period (C)

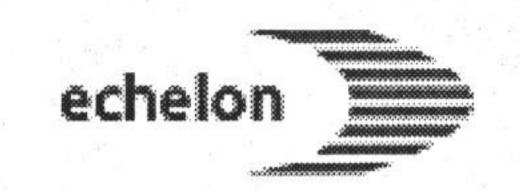
Priority: MINOR

Control: Provide toilet facilities

Adjusted Risk Assessment (if Control implemented)

Consequences: Insignificant: No injuries, low loss (E)

Likelihood: Unlikely: Not impossible, within 50 yrs (D)



Risk Type: Public Liability

Hazard: Weir and pool under falls

Original Risk Assessment

Consequences: Catastrophic: Death, huge loss (A)

Likelihood: Mod: Possible, once in 10 year period (C)

Priority: MAJOR

Control: Provide and maintain warning signs consistent with Water

Safety Standards and Civil Liability Legislation

Adjusted Risk Assessment (if Control implemented)

Consequences: Catastrophic: Death, huge loss (A)

Likelihood: Unlikely: Not impossible, within 50 yrs (D)

Priority: MAJOR

Site: Dalwood Falls

Risk Type: Public Liability

Hazard: Weir and pool under falls

Original Risk Assessment

Consequences: Catastrophic: Death, huge loss (A)

Likelihood: Mod: Possible, once in 10 year period (C)

Priority: MAJOR

Control: Fence perimeter of weir and pool area

Adjusted Risk Assessment (if Control implemented)

Consequences: Catastrophic: Death, huge loss (A)

Likelihood: Rare: Unlikely within 50 years (E)

Priority: MEDIUM



Risk Type: Public Liability

Hazard: Weir and pool under falls

Original Risk Assessment

Consequences: Catastrophic: Death, huge loss (A)

Likelihood: Mod: Possible, once in 10 year period (C)

Priority: MAJOR

Control: Totally prohibit access to site and conduct regular

inspections of fencing.

Adjusted Risk Assessment (if Control implemented)

Consequences: Minor: First aid, medium loss (D)

Likelihood: Mod: Possible, once in 10 year period (C)

Priority: MINOR

Site: Dalwood Falls

Risk Type: Public Liability

Hazard: Cliff - fall / jump off

Original Risk Assessment

Consequences: Catastrophic: Death, huge loss (A)

Likelihood: Mod: Possible, once in 10 year period (C)

Priority: MAJOR

Control: Install and maintain signs consistent with Civil Liability

legislation

Adjusted Risk Assessment (if Control implemented)

Consequences: Catastrophic: Death, huge loss (A)

Likelihood: Mod: Possible, once in 10 year period (C)

Priority: MAJOR



Risk Type: Public Liability

Hazard: Cliff - fall / jump off

Original Risk Assessment

Consequences: Catastrophic: Death, huge loss (A)

Likelihood: Mod: Possible, once in 10 year period (C)

Priority: MAJOR

Control: Fence cliff edge to prevent falls and jumping

Adjusted Risk Assessment (if Control implemented)

Consequences: Catastrophic: Death, huge loss (A)

Likelihood: Rare: Unlikely within 50 years (E)

Priority: MEDIUM

Site: Dalwood Falls

Risk Type: Public Liability

Hazard: Cliff - fall / jump off

Original Risk Assessment

Consequences: Catastrophic: Death, huge loss (A)

Likelihood: Mod: Possible, once in 10 year period (C)

Priority: MAJOR

Control: Totally prohibit access to site and conduct regular

inspections of fencing.

Adjusted Risk Assessment (if Control implemented)

Consequences: Minor: First aid, medium loss (D)

Likelihood: Mod: Possible, once in 10 year period (C)



Risk Type: Public Liability

Hazard: Creek - strong flow

Original Risk Assessment

Consequences: Catastrophic: Death, huge loss (A)

Likelihood: Unlikely: Not impossible, within 50 yrs (D)

Priority: MAJOR

Control: Install and maintain signage consistent with requirements

of Civil Liability legislation

Adjusted Risk Assessment (if Control implemented)

Consequences: Catastrophic: Death, huge loss (A)

Likelihood: Rare: Unlikely within 50 years (E)

Priority: MEDIUM

Site: Dalwood Falls

Risk Type: Public Liability

Hazard: Creek - strong flow

Original Risk Assessment

Consequences: Catastrophic: Death, huge loss (A)

Likelihood: Unlikely: Not impossible, within 50 yrs (D)

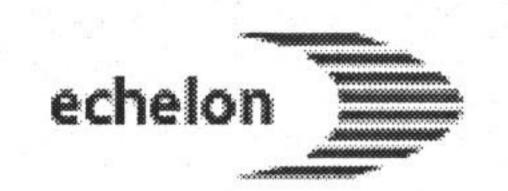
Priority: MAJOR

Control: Fence creek banks to prevent access

Adjusted Risk Assessment (if Control implemented)

Consequences: Insignificant: No injuries, low loss (E)

Likelihood: Likely: Once per year (B)



Risk Type: Public Liability

Hazard: Pedestrian hazard - uneven or unstable surfaces

Original Risk Assessment

Consequences: Moderate: Treatment req'rd, high loss (C)

Likelihood: Mod: Possible, once in 10 year period (C)

Priority: MEDIUM

Control: Install and maintain signage consistent with Civil Liabilities

legislation

Adjusted Risk Assessment (if Control implemented)

Consequences: Moderate: Treatment required, high loss (C)

Likelihood: Mod: Possible, once in 10 year period (C)

Priority: MEDIUM

Site: Dalwood Falls

Risk Type: Public Liability

Hazard: Pedestrian hazard - uneven or unstable surfaces

Original Risk Assessment

Consequences: Moderate: Treatment required, high loss (C)

Likelihood: Mod: Possible, once in 10 year period (C)

Priority: MEDIUM

Control: Improve and maintain track surfaces to prevent slipping

and tripping

Adjusted Risk Assessment (if Control implemented)

Consequences: Moderate: Treatment required, high loss (C)

Likelihood: Rare: Unlikely within 50 years (E)



Risk Type: Public Liability

Hazard: Struck by falling vegetation

Original Risk Assessment

Consequences: Major: Extensive injuries, major loss (B)

Likelihood: Mod: Possible, once in 10 year period (C)

Priority: MEDIUM

Control: Conduct regular inspection and maintenance of trees

adjacent to walking tracks

Adjusted Risk Assessment (if Control implemented)

Consequences: Moderate: Treatment required, high loss (C)

Likelihood: Unlikely: Not impossible, within 50 yrs (D)

Priority: MEDIUM

Site: Dalwood Falls

Risk Type: Public Liability

Hazard: Struck by falling vegetation

Original Risk Assessment

Consequences: Major: Extensive injuries, major loss (B)

Likelihood: Mod: Possible, once in 10 year period (C)

Priority: MEDIUM

Control: Prevent all access to site

Adjusted Risk Assessment (if Control implemented)

Consequences: Insignificant: No injuries, low loss (E)

Likelihood: Almost Certain (A)



Risk Type: Reputation

Hazard: Community perception that Council irresponsible / uncaring

Original Risk Assessment

Consequences: Moderate: Treatment required, high loss (C)

Likelihood: Likely: Once per year (B)

Priority: MEDIUM

Control: Implement patrols of site at times with highest levels of

use.

Adjusted Risk Assessment (if Control implemented)

Consequences: Moderate: Treatment required, high loss (C)

Likelihood: Unlikely: Not impossible, within 50 yrs (D)

Priority: MEDIUM

Site: Dalwood Falls

Risk Type: Reputation

Hazard: Community perception that Council irresponsible / uncaring

Original Risk Assessment

Consequences: Moderate: Treatment required, high loss (C)

Likelihood: Likely: Once per year (B)

Priority: MEDIUM

Control: Promote awareness of land status to discourage use by

public

Adjusted Risk Assessment (if Control implemented)

Consequences: Moderate: Treatment required, high loss (C)

Likelihood: Unlikely: Not impossible, within 50 yrs (D)

Priority: MEDIUM



- Company	NACO CONTRA DE C			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
Dalwood Falls				Reputation	
Hazard	Likelihood	Consequence	Priority	Control Measure Control Measure	ontrol Status
Community perception that Council irresponsible / uncaring	Likely: Once per year	Moderate: Treatment required, high loss	MEDIUM	Dispose of site - remove ownership responsibility	NOR
				Secure site to physically prevent access and routinely inspect to learning	INOR
					EDIUM
				Promote awareness of land status to discourage use by public M	Ш

The table above shows that for one was assessed as Minor.

after the control options have been implemented shows that all identified hazards can be ne or other of the identified treatment / control measures. Reassessment of the hazards subject to implementation of or



Risk Type: Public Liability

Hazard: Pedestrian hazard - uneven or unstable surfaces

Original Risk Assessment

Consequences: Moderate: Treatment required, high loss (C)

Likelihood: Mod: Possible, once in 10 year period (C)

Priority: MEDIUM

Control: Prevent all access to site

Adjusted Risk Assessment (if Control implemented)

Consequences: Insignificant: No injuries, low loss (E)

Likelihood: Almost Certain (A)

Priority: MINOR

Site: Dalwood Falls

Risk Type: Public Liability

Hazard: Struck by falling vegetation

Original Risk Assessment

Consequences: Major: Extensive injuries, major loss (B)

Likelihood: Mod: Possible, once in 10 year period (C)

Priority: MEDIUM

Control: Install and maintain warning signs in accordance with Civil

Liability legislation

Adjusted Risk Assessment (if Control implemented)

Consequences: Major: Extensive injuries, major loss (B)

Likelihood: Unlikely: Not impossible, within 50 yrs (D)

Priority: MEDIUM