



# The University of Queensland - ROOF SAFETY MANAGEMENT PLAN

A Property & Facilities Division / Occupational Health & Safety Unit publication



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## **1. INTRODUCTION**

The University has a legal obligation under Section 28 of the Queensland Workplace Health and Safety Act (1995), to ensure the health and safety of its workers, students and contractors at their workplace. The University also has an obligation to ensure the workplace health and safety of others (eg visitors) is not affected by the way they conduct their business.

In order to fulfil their legal obligation, the University has decided that the issue of unsafe work practices on roofs must be addressed. The University is aware that its employees and other parties need to gain access to roofs during the course of their normal work duties and expose themselves to certain health risks when conducting these type of activities. To this end, the University has determined that a management plan dealing specifically with roof safety be prepared and procedures written to provide guidance on commonly occurring roof safety issues.

The purpose of the Roof Safety Management Plan (RSMP) is to address the University's legal obligation

to ensure the health and safety of persons/parties at their workplaces under the Workplace Health and Safety Act. The RSMP is a working document designed to effectively manage and minimise health risks associated with working on roofs to personnel working on or visiting University work sites. The RSMP is to be read in conjunction with roof assessment reports prepared for University owned or leased property.

## **2. OBJECTIVES OF THE MANAGEMENT PLAN**

The overall aim of the RSMP is to minimise the potential harm to human health associated with working on roofs. This aim will be achieved by the implementation of both short and long-term goals as part of the overall roof safety management strategy.

It is the ultimate goal of the University to provide safe access to the roofs of all University properties and to provide a safe workplace on or around the roofs. This is a long-term goal and may take some time to achieve. In the meantime, the University intends to effectively manage those risks associated with working on roofs and minimise the potential for any harm to occur.

As part of the short-term management process, the University shall implement a programme of inspecting each roof belonging to the University and conducting a risk assessment within the next 12 months. The purpose of the risk assessment is to identify those roofs that pose a risk to human health and implement appropriate control measures. Information collected from the risk assessment shall also be used to prioritise remedial action that may be required.

Short-term remedial actions may include the installation of temporary fixtures and fittings such as anchor points to those roofs posing a significant risk to human health, as determined by the risk assessment. Other short-term control measures would include the provision of safety equipment and relevant training to personnel directly involved in working on roofs.

Long term goals include installing permanent fixtures and fittings, such as static lines and guard rails to existing buildings, relocating roof mounted plant and incorporating aspects of roof safety into new building designs.

## **3. SCOPE AND LIMITATIONS**

This document has been developed specifically for the University of Queensland and applies only to those properties and facilities that are either owned or maintained by the University. It does not apply to properties and facilities situated on University grounds unless they are either owned or maintained by the University.

The Roof Safety Management Plan has been developed to manage and minimise health risks associated with personnel accessing or working on roofs above 2.4 metres. The management plan applies to roofs only and does not apply to elevated work areas in general.

The RSMP must be read in conjunction with the risk assessment report prepared for each roof.

## **4. LEGISLATION**

The legislative requirements for the provision of safe access and work practices on roofs in Queensland are specified in the Workplace Health and Safety Act and Regulation, relevant Advisory standards, relevant Australian standards, the Building Code of Australia and Inhouse guidelines.

The Act and Regulation impose legal obligations on all parties to ensure the health and safety of all persons at work. The relevant standards, guidelines and the Building Code of Australia specify the minimum levels required for legal compliance and how the minimum standards can be achieved.

The following is a list of references that detail the legal requirements for safely accessing and working on roofs in Queensland.

- Workplace Health and Safety Act 1995
- Workplace Health and Safety Regulation 1997
- Advisory standard for work on roofs
- Advisory standard for falls from heights
- Advisory standard for falling objects
- Australian standards
  - 1418 Safety belts and harnesses
  - 1576 Scaffolding
  - 1577 Scaffolding planks
  - 1657 Fixed platforms, walkways, stairways and ladders – Design, construction and installation.
  - Industrial fall-arrest systems and devices
  - Portable ladders
  - Occupational protective footwear
  - Industrial safety belts and harnesses\_Selection, use and maintenance
  - Slip resistance of pedestrian surfaces
  - Guidelines for scaffolding
    - Industrial fall-arrest devices\_Selection, use and maintenance
    - Industrial rope access systems
- Draft Australian Standard 99040
- Draft International Standard ISO/DIS 14122
- Building Codes of Australia
- Inhouse Guidelines

## 5. RESPONSIBILITIES

Person	Responsibility
UQ OH& S Council	Approval of RSMP
Executive Manager OH&S	Ensure University wide compliance with RSMP Allocate funding for management of roof safety
Director P&F	Ensure application throughout P&F and all contractors working for P&F Allocate funding for management of roof safety
Construction Manager, Operations Manager, Site Planner, Services Manager, Engineering Manager	Ensure all staff and contractors working for them and their sections are aware of and comply with RSMP  Design roof s that people can construct and maintain, including maintenance of roof-based plant and equipment, without subjecting those people to a risk of falling. The roof design should provide a safe means of accessing and maintaining the roof and roof plant in a practical manner relative to the

<b>Person</b>	<b>Responsibility (cont'd)</b>
	frequency and type of work required (eg it is not considered practical to scaffold a building for cleaning gutters on a monthly basis).
Operations Manager	Develop and maintain RSMP Maintain roof register Provide training, information and awareness Provide PPE for staff Allocate funding for management of roof safety
Project Staff	Ensure project personnel/contractors are made aware and meet requirements of RSMP
Heads of Department	Ensure that all staff and students comply with requirements of RSMP.
Subcontractors, UQ Staff and Students	Minimise the risk of falling by following this Roof Safety Management Plan, other relevant standards, and work methods which minimises the risk of falling as far as is practicable.  Use PPE where the equipment is provided and intended for use.

## **6. HAZARD IDENTIFICATION**

### **6.1 Legal Requirements**

Section 22. (2) of the Workplace Health and Safety Act 1995 states “Workplace health and safety can generally be managed by:

- a) Identifying hazards;
- b) Assessing risks that may result because of the hazards;
- c) Deciding on control measures to prevent, or minimise the level of, the risks;
- d) Implementing control measures;
- e) Monitoring and reviewing the effectiveness of control measures.”

### **6.2 Scope**

In response to the above legal obligation and in recognition of the obvious hazards, the University intends to identify all of those hazards associated with accessing and working on roofs. The identification process will encompass all buildings and property that are owned, controlled or maintained by the University.

A hazard is defined as something that has the potential to harm. Based on this definition there are many situations at the University, and workplaces in general, that may be regarded as hazardous. Accessing and working on roofs is one such situation that is considered hazardous as it places people in danger of falling from elevated heights. In recognition of the serious nature (potentially fatal consequences may occur) and the risk (probability that harm may actually occur) associated with this activity, the University has determined that every roof above 2.4 metres high shall be inspected and assessed in terms of the risk it poses to human health.

### **6.3 Methodology**

The initial inspection of roofs shall be coordinated to coincide with programmed maintenance works. The

inspections will be undertaken by trained maintenance personnel who are required to work on, or around roofs during the course of their normal duties. Using a standard roof safety survey form (refer to Appendix A), the designated Inspectors shall note and record information pertaining to each separate roof. The information collected will then be used to assess the level of risk posed by each roof as part of the overall management strategy.

The information collected by the Inspectors will include a range of parameters relating to roof safety including height, pitch, structural integrity, access provisions and so on. This information will then be used to assess the level of risk posed by the roof.

The risk assessment shall be performed by trained personnel using a standard risk assessment form (refer to appendix B). Typically, the risk assessment team would include a member of the survey team and a representative of the University OHS department. The risk assessment will rank the level of risk (eg high, low, etc) by determining the probability of harm occurring, the frequency of exposure, and the consequences to health.

## **7. ROOF SAFETY SURVEY**

An integral part of the roof safety management plan is the roof safety survey. Personnel trained to undertake roof surveys shall physically inspect the roof and record information that may be relevant to the risk assessment. To assist the surveyor, a standard roof safety survey form will be used to record all relevant information (refer to Appendix A). Generally, the information recorded during the survey would include a factual description of the building/roof construction, safety aspects, nearby vegetation, plant and equipment, maintenance requirements, and any additional information such as photographs or sketches.

Upon completion of the roof safety survey, the roof survey form and any additional information will be submitted to the RSMP coordinator. The survey data will then be used to assess the level of risk posed by the roof, and to determine the appropriate control measures required to reduce the risk to an acceptable level.

The roof safety survey form illustrated in Figure 7.1 was completed during inspection of the Seddon South building roof. The Seddon South roof is pictured in Figures 1 and 2 over.

**Roof Safety Survey Form**

Inspection Date: 25/6/99

Inspecting Officer: A. Abbot

**Building Details**

Campus: St Lucia

Building Name: Seddon South

Building Code: 82

**Roof Access Details** (describe how roof access is achieved, taking into consideration transport of tools etc):  
Stairwell leads to a doorway which opens onto roof. Step over a 400mm rise and downward onto box gutter. Step upward 200mm onto flat deck roof. Walk up A/C plant. Carry tools manually

Roof Level: 4

200mm onto flat deck roof. Walk up A/C plant. Carry tools manually

**Roof Details**

**Structural Integrity** (e.g. condition, signs of rust) Uneven surfaces. Sound structure

**Height** 15 metres **Pitch** Flat/level **Material** Concrete

**Parapet Details** No parapet **Parapet Height** N/A

**Gutter Details/Location** Guttering on roof edge

**Vegetation** (e.g. overhanging trees) None

**Gutter Guard**  Yes  No **Comments:** \_\_\_\_\_

**Safety Harness Points**  Yes  No **Guard Rails**  Yes  No

**Static Lines**  Yes  No

**Roof Hazards** (e.g. tripping, insects/pests, power lines, plumbing fixtures) Tripping over uneven surfaces and plumbing fixtures in box gutter at access point

**Walk Platforms**  Yes  No **Comments:** \_\_\_\_\_

**Roof top plant details** (e.g. air conditioning, scrubbers etc) 1 air-conditioning unit

**Work Activity Details**

- maintain air conditioning plant  Yes  No Frequency/month Once/3 months
- regular gutter cleaning  Yes  No Frequency/month \_\_\_\_\_
- other routine maintenance  Yes  No Frequency/month \_\_\_\_\_

**General comments:** \_\_\_\_\_



Roof access



Air Conditioner on Roof Top

## 8. RISK ASSESSMENT

### 8.1 Description

Upon completion of the roof safety survey, the data collected shall then be used to assess the level of risk posed by the surveyed roof. The risk assessment shall be undertaken by trained personnel using a standard risk assessment form (refer Appendix B) in consultation with the University's OHS Department.

The risk assessment involves consideration of the probability, frequency and possible consequences of the hazard event, and an estimation of the level of risk. The risk assessment prepares for and facilitates judgement on the acceptability/non-acceptability of the risk compared with other risks.

The level of risk due to a recognised hazard is calculated by using a **Risk Score Calculator**. The Risk Score Calculator assumes that:

$$\text{Risk} = \text{Probability} \times \text{Frequency} \times \text{Severity of injury}$$

An explanation of the above terms is as follows:

**Probability:** The likelihood that once the hazard event occurs, an accident and consequences will follow. If a hazard occurs and the accident/consequences sequence is highly likely then a rating of almost certain may be given. A rating of conceivable but very unlikely will apply if there is a very low probability that the complete hazard/accident/consequence sequence will occur. A rating of practically impossible may be given if the hazard is completely removed.

**Frequency:** The frequency with which the hazard exposure occurs is rated from continuously through to lesser degrees, the least of which is very rare.

**Possible consequences:** This can be described as the most probable injury resulting from the hazard-accident event. Under possible consequences the severity of the injury is rated and ranges from requires first aid treatment through to numerous fatalities.

**Risk:** This is a measure which is responsive to probability, frequency and possible consequences ratings on the risk score calculator. The calculator is used to determine the level of risk and thereby indicates the level of priority which should be given to controlling a hazard for a specific activity. The scores range from risk perhaps acceptable through to very high risk.

The risk score allows comparisons to be made between activities which are being considered. This will assist in the prioritisation of remedial action plans.

### 8.2 Example Risk Assessment

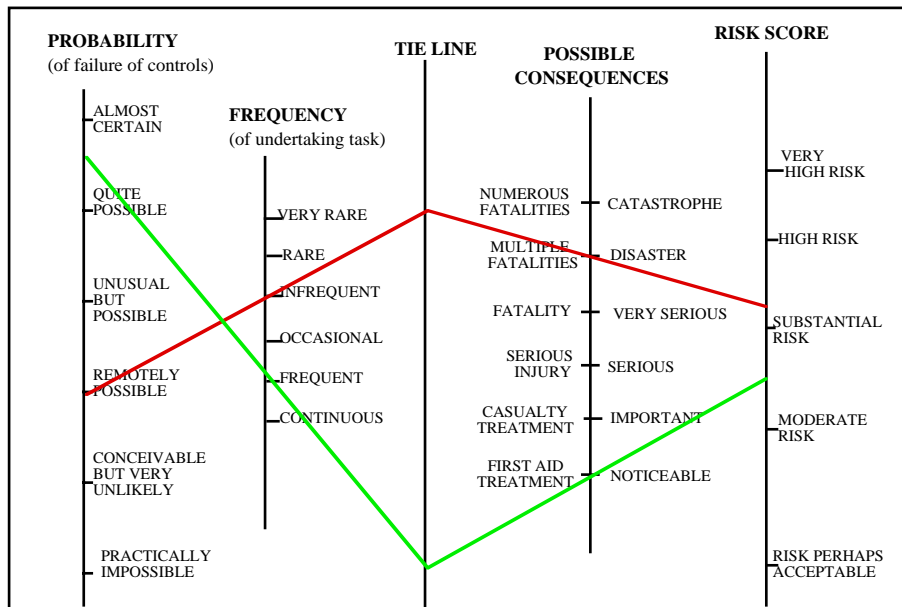
#### 8.2.1 Using the Risk Score Calculator

Continuing on with the example used in Section 7, Roof Safety Survey, the data for the Seddon South roof has been used to undertake a risk assessment. The risk score calculator illustrated in Figure 8.1 below has been used to determine the level of risk for access and work on the roof.

The probability and frequency are rated and marked on their respective lines, and a straight line is then drawn through these marks across the tie line. From the point at which this line cuts the tie line another

straight line is drawn through the value assigned on the consequences line and extended to the risk score line. The point at which the second line cuts the risk line is the risk to be assigned to the work activity.

The continuous line on the calculator represents the initial assessment of risk. The broken line represents the assessment of risk following implementation of control measures.



**Figure 8.1 Sample Risk Score Calculator**

**8.2.2 Description of Roof Access and Work Activity (Refer to Figure 7.1 photographs):**

An air conditioning unit which is on the roof top requires maintenance. Roof access through the doorway involves stepping over a 400mm rise and downward onto a box gutter. The next step required is 200mm upward onto the flat deck roof. The tradespersons vision of the uneven surfaces may be obstructed by tools or spare parts which are being carried. The edge of the roof is unguarded.

The tradesperson carries tools and spare parts across the roof to the site of the air conditioning unit, and then performs repair work on the unit. The unit is close to the edge of the roof and does not have a safe working area around its perimeter.

**Hazard:** Falling off the roof whilst accessing the roof and working on the roof top air- conditioner.

**Probability:** It is considered quite possible that the worker will fall from the roof and sustain a very serious injury when accessing the roof and working on the roof top air conditioning unit. Variables such as the size of the load being carried, footwear, knowledge of the access area, and the component of the unit requiring repair influence the likelihood of the worker falling over the roof edge.

**Frequency:** Although the requirement for plant maintenance on this roof is occasional, the frequency with which the hazard exposure occurs during roof access and air conditioning maintenance tasks is rated as frequent.

**Possible consequences:** Falling over the roof edge would result in serious injury or fatality, and the rating is placed in between these ranks on the risk calculator.

**Risk score:** Very high risk.

## 8.2.3 Risk Control Strategies

### 1. Elimination

Relocation of the air conditioner within the building and not on the roof, will eliminate the need to access the roof for the purpose of air conditioner maintenance. Elimination is usually the most effective risk control measure for the control of hazards.

In the case of a small air conditioning unit it will be possible to relocate it with minimal expense, however the cost of relocating an large air conditioning system may be prohibitive in the immediate term. Therefore, in the immediate term, we may need to consider the less costly risk reduction measure of design.

### 2. Design

The following design solutions should be considered for risk reduction in the immediate term:

Remove 400mm high barrier at the access doorway and construct a walkway which leads from the point of access to the plant on the roof. The Australian Standard for *Fixed platforms, walkways, stairways and ladders - Design, construction and installation (AS 1657 - 1992)* should be referred to in this instance. Accordingly, the walkway design should have the following features:

- Guardrailing on the sides of and ends of the walkway, except at points of access from a stairway or ladder, or where there is a permanent structure not more than 100mm distance from the edge of the platform or walkway which will give protection equal to or greater than that prescribed in the Standard.
- The guardrailing should have a top rail supported by posts, parallel to the floor or slope of the walkway at a vertical height not less than 900mm nor more than 1100mm above the standing level of such platform or walkway. At least one or more intermediate rails should be provided parallel with the top rail and the floor having a maximum distance of 450mm between rails or between the lowest rail and the top of the toe board where fitted. Where a toeboard is not fitted, the maximum distance between the lowest rail and the floor shall not be greater than 560mm.
- Guardrail systems should be constructed using the materials and dimensions given in Appendix A of AS1657.
- The design of the floor should comply with clause 3.3 of AS1657.
- The width of the walkway should comply with clause 3.1.5 of AS1657.

A worker who stands on top of the air conditioner during maintenance work would be at risk of falling over a guard rail which is the same height as the walkway guard rail. A parapet or guard rail which are high enough to prevent a tall man from falling over the roof edge, when standing on top of the air conditioner is required here. The guard rail or parapet should enclose the air conditioner and should allow access to the sides of the unit.

### **3. Personal Protective Equipment**

It is not practicable to wear a harness whilst maintaining the air conditioner due to a restriction of movement which would be caused by the harness. Appropriate slip resistant safety shoes should be worn.

### **4. Safe work procedures for the access and provide training**

**New Risk Score following implementation of control measures :** Redesign of the access point and working area surrounding the air conditioner, use of personal protective equipment and training in safe working procedures will reduce the risk score to substantial risk. This level of risk is greatly improved, however is not acceptable. Therefore priority must be given to funding the relocation of the air conditioning unit to below the roof top and thereby eliminate the risk.

The previous example is a detailed outline of risk assessment for work on roofs. Figure 8.2 illustrates a completed Risk Assessment Form for this example. The form provided in Appendix B should be used to record pertinent information regarding the roof access and work activity; the risk assessment calculator result; and the short term and long term risk control measures.

## Appendix B

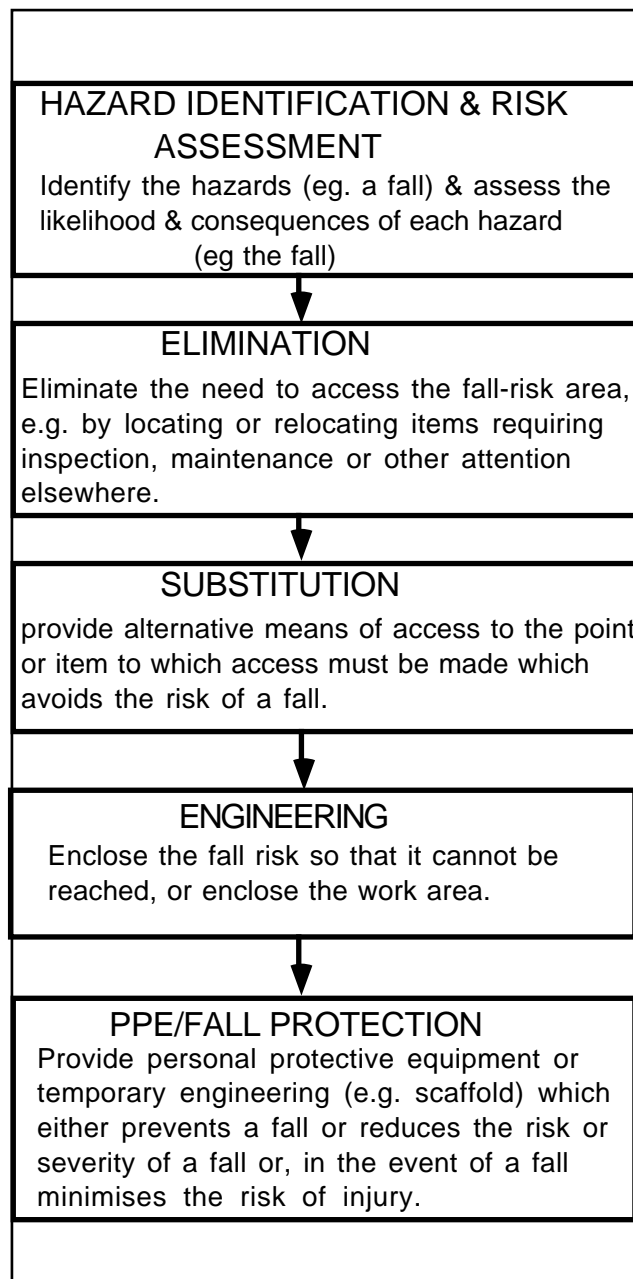
<b>Roof Safety Risk Assessment Form</b>	
Assessment Date: Assessing Officer:	26/6/99
<b>Building Details</b>	
Campus:	St Lucia
Building Name:	Seddon South
Building Code:	
Known Facts:	(Information from example will be recorded here for final copy)  Enter roof via doorway. Uneven walking surfaces at access point. The edge of the flat roof is unguarded. There is one air conditioner on the roof, which is close to the edge and does not have a safe working area around it.
Assumptions:	(Information from example will be recorded here for final copy) Dry, clear conditions. No high wind. Slip resistant safety shoes. Tradesperson accessing roof via doorway to perform air conditioning maintenance.
Risk Assessment Calculator	Hazard: falling 10 metres from roof when accessing working on roof. Probability: Quite possible that worker will fall from roof given the absence of even walking surfaces, guardrails or parapets; and the position of the air conditioning unit close to the edge of the roof. Variables such as the size of the tool box being carried, knowledge of the access area and the part of the air conditioning unit that requires repair influence the likelihood of falling over the roof edge. Possible consequences: Serious injury or fatality. Risk score: very high risk.
*Short Term Risk Controls:	Construct walkway leading from access point to air conditioning unit, in accordance with AS1657 (1992). Guardrailing and walkway dimensions in particular should comply. Guardrailing around perimeter of air conditioning unit.
*Long Term Risk Controls:	Relocation of airconditioning uit within the building will eliminate the hazard.

**Figure 8.2 - Sample Roof Safety Assessment Form**

## 9. CONTROL MEASURES

### 9.1 Hierarchy of Control

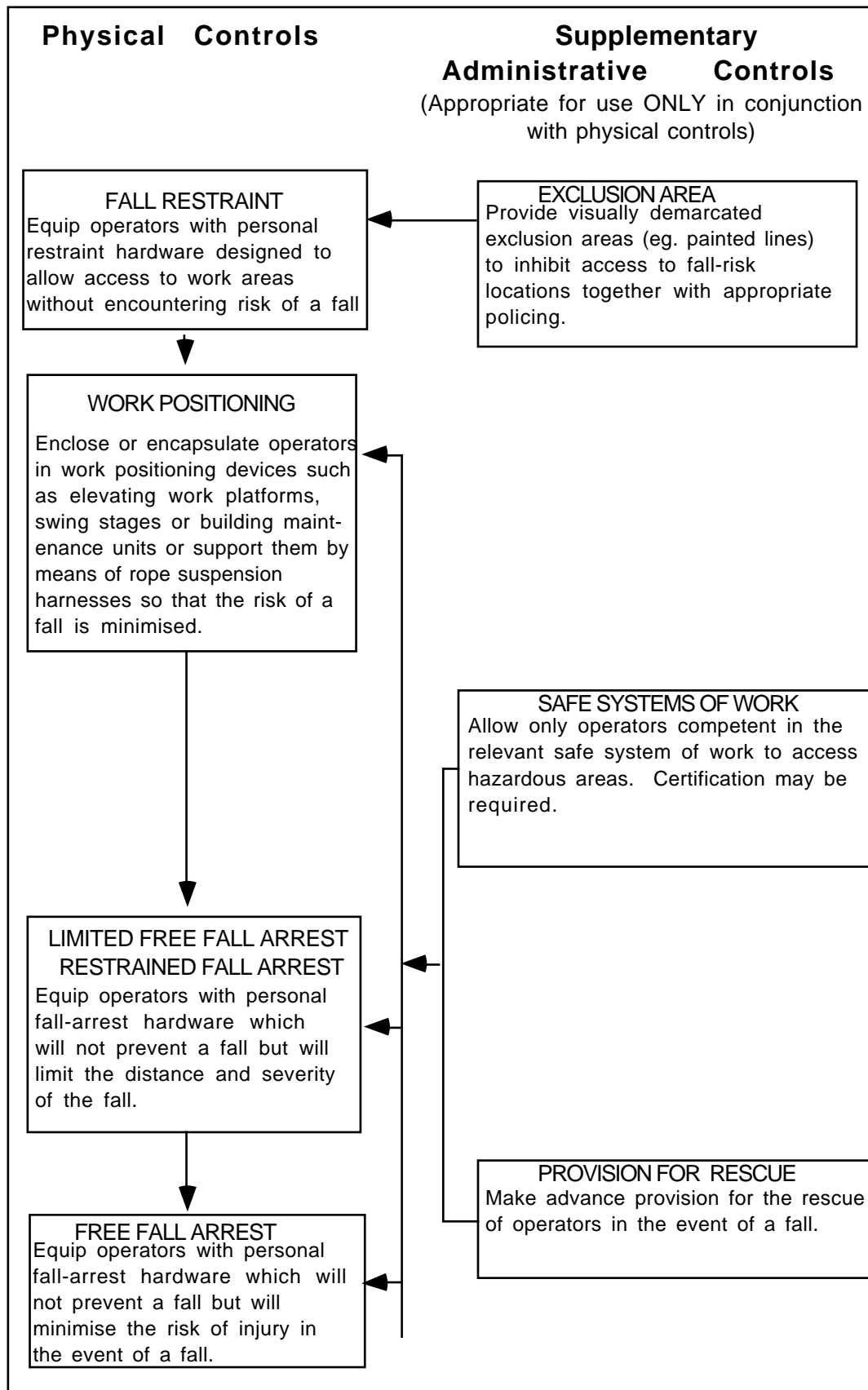
The hierarchy of control represents the type of risk reduction solution that should be strived for in order to best control the risk. The model provided in Figure 9.1 illustrates this concept. The most effective solution is complete elimination of the hazard. Control measure effectiveness decreases as progression is made down the model. For example it is better to eliminate the risk of servicing a roof based plant by relocating it inside the building, than to provide workers with PPE, as PPE does nothing about the hazard. When reviewing options the hierarchy of control should be considered to assist in prioritising the best option.



**Figure 9.1 - Hierarchy of control for work on roofs**

## 9.2 Hierarchy of Fall Protection Options

Users of fall arrest systems need to be aware as to where these systems are placed in the hierarchy of control of fall protection, so that an assessment can be made as to whether the highest practicable level of protection is being used in a particular case. Figure 9.2 illustrates how this assessment process may be carried out.



**Figure 9.2 - Hierarchy of Fall Protection Options**

### 9.3 Short and Long Term Control Options

The following list in no way represents all options of controlling a roof hazard, however is intended as a point of reference upon which to place consideration. Please endeavour to find all possible solutions before consideration is given.

Short Term Options	Long Term Options
<ul style="list-style-type: none"> <li>Remove the need to access the roof by removing gutters, or have gutters that don't require cleaning (gutter guard perhaps)</li> </ul>	<ul style="list-style-type: none"> <li>Remove the need to access the roof by relocating plant, remove gutters, have gutters that don't require cleaning, and windows that can be cleaned from the inside. Remove problem vegetation. Redesign/replace troublesome roof elements.</li> </ul>
<ul style="list-style-type: none"> <li>Restrict access to high-risk areas</li> </ul>	<ul style="list-style-type: none"> <li>Restrict access to high-risk areas</li> </ul>
<ul style="list-style-type: none"> <li>Create a temporary enclosed environment e.g. guard railing, scaffolding when working on high-risk roofs.</li> </ul>	<ul style="list-style-type: none"> <li>Create an enclosed environment where it is not possible to fall off the roof e.g. guard-railing, means of access to comply with standards, safety mesh.</li> </ul>
<ul style="list-style-type: none"> <li>Use restrained, limited, and free fall restraint devices as existing.</li> </ul>	<ul style="list-style-type: none"> <li>Install part of the above methods where total enclosed environment is not practicable.</li> </ul>
<ul style="list-style-type: none"> <li>Install fixing points for ladders</li> </ul>	<ul style="list-style-type: none"> <li>Install Total Restraint Fall Arrest Systems, which don't physically permit a person to reach a fall-risk position e.g. Latchways Mansafe.</li> </ul>
<ul style="list-style-type: none"> <li>Provide training on legislation, standards, equipment and its use</li> </ul>	<ul style="list-style-type: none"> <li>Install and use restrained, limited, and free fall restraint devices where an enclosed environment or Total Restraint System is not practicable.</li> </ul>
<ul style="list-style-type: none"> <li>Assess and record competencies of workers.</li> </ul>	<ul style="list-style-type: none"> <li>Implement Design Standards for new roofs to comply with standards.</li> </ul>
<ul style="list-style-type: none"> <li>Audit roofs, assess risks, and plan longer term solutions.</li> </ul>	<ul style="list-style-type: none"> <li>Install fixing points for ladders</li> </ul>
<ul style="list-style-type: none"> <li>Seek funding for long-term solutions.</li> </ul>	<ul style="list-style-type: none"> <li>Provide training on legislation, standards, equipment and its use.</li> </ul>
<ul style="list-style-type: none"> <li>Change Work Practices</li> </ul>	<ul style="list-style-type: none"> <li>Assess and record competencies of workers.</li> </ul>
<ul style="list-style-type: none"> <li>Use scaffold, elevating work platforms, crawl ladders.</li> </ul>	<ul style="list-style-type: none"> <li>Ongoing planning of project to implement initiatives.</li> </ul>
<ul style="list-style-type: none"> <li>Zone areas of roofs into risk classifications.</li> </ul>	<ul style="list-style-type: none"> <li>Zone areas of roofs into risk classifications.</li> </ul>

## 10. REGISTER OF ROOFS

### 10.1 Introduction

The information from the Roof Safety Checklist and the Roof Risk Assessment shall be entered into a Register of Roofs (Refer to Appendix C). The register is to be used to prioritise the work that needs to be done to make each roof safe. It is anticipated that the register will also be used by management to budget for work that needs to be done on each campus.

### 10.2 Register of Roof Field Descriptions

<u>Campus</u>	Campus or site location of building
<u>Building</u>	Identifying building code or number
<u>Name</u>	Full name of building
<u>Level</u>	The level or section of roof that the data refers to. Note that many buildings have more than one roof level or section.
<u>Inspect Date</u>	Actual date that the roof was surveyed
<u>Inspection Off.</u>	Initials of person who carried out the inspection
<u>Roof Access Details</u>	Describe how the roof is normally accessed (e.g. by moveable ladder, roof top access hatch etc). Provide sufficient detail so that the means of access is clear. Identify any areas of concern or design deficiencies.
<u>Roof Details</u>	<ul style="list-style-type: none"><li>• Material - e.g. colourbond, fibrous membrane, super 6 etc</li><li>• Height - the height in metres that the roof is above ground</li><li>• Pitch - the pitch of the roof in degrees</li><li>• Parapet Height - if a parapet exists, the height of the parapet on all sides.</li></ul>
<u>Plant and Equipment</u>	Identify if any plant and equipment is located on the roof e.g. mechanical plant, communications equipment etc. This information will be used to assess the frequency of access to the roof and associated hazards.
<u>Existing Controls</u>	Identify any existing controls on the roof including controls for access (e.g. walk platforms, handrails, enclosed fixed ladders, static lines etc).
<u>Roof Hazards</u>	Identify any hazards that need to be removed to make the roof a safe place to work.
<u>Risk</u>	The risk score from the Risk Assessment calculation for the roof.
<u>Control Measures</u>	Recommended controls that can be used to minimise risk to people accessing the roof. This may include short and long term controls and take into consideration funding availability.

<u>Status</u>	Current status of the control measure (codes).
<u>Rectification</u>	<ul style="list-style-type: none"> <li>• Programme Date - date that the control measures are expected to be completed by.</li> <li>• Priority - rate each control option so that they can be programmed on priority and within financial constraints.</li> <li>• Budget (\$) - Estimate of costs for the proposed control measure.</li> <li>• Completion Date - date work fully completed.</li> </ul>

## 11. SAFE WORK PRACTICES

### 11.1 General/Minimum Requirements

1. Do not access or work on roof unless trained appropriately.
2. Consult the Roof Register to ensure a proper risk assessment has been completed before accessing and/or commencing any work on roofs.
3. Ensure an additional roof risk assessment has been completed when accessing/working on roof during adverse weather conditions ie. wind, rain, excessive heat.
4. Ensure you wear the following personal protective equipment at all times: roof shoes, sunscreen, sunglasses.
5. Ensure a Maintenance supervisor or similar is aware of your presence/work on the roof and the expected time frame.
6. Do not work on roof alone – work in pairs.
7. Ensure you have a form of communication link with security officers.
8. Keep roof areas tidy and clean, regularly remove rubbish, do not store or stack materials where they interfere with access to work.
9. Ensure there is a safe method of access to the roof and that this method is used. Ensure all ladders are safe and any scaffolding is certified and safe and erected by licensed persons if required. (Refer also to 11.2 Temporary Access)
10. Ensure there is a safe method of transporting equipment to the roof work area.
11. Ensure there is contact between the roof workers and a trained First Aider.
12. Ensure manual handling is minimised while working on roofs.
13. Make sure of the structural soundness of the roof and frame before a person walks on a roof.
14. Perform a check for insects or pests in the access and work area before commencing

task ie. bees, possums, wasps etc.

15. Be familiar with the Emergency Rescue Response Procedure
16. If anchorage point/s are needed and there is none, temporary anchorage points are to be installed. If possible to postpone the work then do so until permanent points are installed.
17. Flat Roofs: Persons working on roofs shall not proceed to within 2.5 metres of the edge. If work is to be done within 2.5 metres of the edge appropriate safety precautions shall be taken to minimise the risk of falling i.e. Elevating work platform, Scaffolding, Guardrailing, Fall Arrest System.
18. Pitched Roofs: If a roof has a pitch that if someone fell they would roll off the roof, or the roof is deemed to be too slippery to work from, or too fragile, then work should only be carried out by use of one or more of the following to comply with the relevant Advisory Standards: Elevating Work Platform, Scaffolding, Guardrailing (not appropriate for pitches exceeding 45 degrees), Roof Ladder (in conjunction with other devices e.g. fall arrest system).

## **11.2 Temporary Access**

A safe and satisfactory means of access should be used to reach a roof, particularly when other roofs need to be crossed to reach an area for work. Where fixed or permanent access is not available, it may be necessary to use temporary access such as mobile work platforms or ladders.

### **Power operated mobile work platforms:**

1. Must comply with AS 1418.10
2. Shall not be operated by unlicensed personnel
3. Be secured against uplift or displacement
4. Be fitted with edge protection systems
5. Be sufficiently large and strong enough to support materials, tools and personnel
6. Person's body should not protrude from the confines of the platform while it is moving
7. Should not be used in windy conditions
8. Should not be less than 450 mm in width or length

### **Tower scaffolds and other scaffolds:**

1. Must comply with AS 1576
2. Mobile scaffolds should not be moved while people are on the scaffold

### **Ladders:**

1. Are the least preferred means of access to a roof
2. Should only be used after an assessment has been made of their suitability
3. Should only be used when minimal access is anticipated and no gear is required
4. Light weight ladders intended for domestic use should not be used on roofs
5. Should not be used in access areas or within the arc of swinging doors
6. Should not be used on working platforms to gain additional height
7. Should not be used to support a working platform
8. Must be marked "Industrial use only"
9. Must be designed and constructed to have a load rating of not less than 120 kg

### **11.3 Handling Materials And Tools On And Around Roofs**

1. Do a proper risk assessment and hazard identification before commencing any type of work on roofs.
2. Ensure manual handling is minimised while working on roofs.
3. Make sure of the structural soundness of the roof and frame before a person walks on or a load is placed on a roof.
4. Awkward or heavy loads should always be craned.
5. Provide the right sling arrangement for the particular lift.
6. Provide lift boxes and cages to contain items from falling.
7. Secure loads to crane hoist.
8. Consult with relevant people on suitable lifting methods
9. Provide where possible a mechanical or manual winching system to for lifting items on and off roofs.

10. Make sure the handling device is well capable of lifting or moving the load required.
11. Provide walkways on the roof for easier access to plant that needs to be worked on or serviced.
12. Barricade out and around areas where materials are being lifted and loaded on and off roofs. Make sure people are out well out of the loading area.
13. Ensure the area under the lifting system is hoarded or a gantry is provided where required.
14. Do not carry tools or materials while climbing up and down ladders.
15. Provide control measures to prevent falling objects: containment sheeting, toeboards, lanyards secured to tools exclusion zones, hoardings, gantries, catch platforms, signs and warning devices, barricades, and traffic controllers.
16. If the only option is using a rope to lift tools or small sized materials on to and off roofs, a rail or some type of restraining device shall be provided to keep the person loading onto the roof away from the roof's edge.
17. Keep roof areas tidy and clean, regularly remove rubbish, do not store or stack materials where they interfere with access to work.

#### **11.4 Gutter Cleaning**

1. An initial risk assessment should be conducted on gutters requiring cleaning (in conjunction with cleaning schedule).
2. After initial risk assessment is completed, hazard identification should be carried out prior to conducting service each time cleaning is scheduled.
3. Develop gutter cleaning schedule via a roof register and abide by the time frames so as less build up occurs and job becomes quicker, easier and safer.
4. Tie or secure any tools being used so they will not fall below causing possible injury.
5. Always use approved harness points or safety systems if they exist on the roof.
6. Maintain overhanging trees to ensure less build up in gutters.
7. Note difficulties, damaged gutters or any other unsafe condition and report back to supervisor for immediate action.
8. Do not over extend or over-reach during cleaning. This will introduce instability or over-balance.

9. Rubbish removed from gutters will be cleaned up after job is complete if in a public area, building confine or thoroughfare.
10. Where mechanical blowers are used, care is to be taken to ensure no disruption to Campus community takes place in the immediate area. Seek advice from immediate area as to staff, student and class movements.

## **12. EMERGENCY RESPONSE PROCEDURES**

### **12.1 Roof Workers**

In the event of an emergency situation, Security should be contacted immediately on 3365 3333. All other queries should be directed to 3365 1234.

### **12.2 Proposed Emergency Response Procedure**

#### **Communications Security Monitoring System (CSMS)**

1. Advised of the emergency
2. Dispatch emergency vehicle to area of emergency
3. Telephone 000 and request assistance from:
  - a. Qld Fire and Rescue Authority Vertical Rescue Officer
  - b. Ambulance
4. Advise Duty SS, FSO, MS, OM, Health Service and Director OH&S

#### **Emergency Vehicle**

1. Acknowledge radio call of emergency
2. Proceed to site, assess situation and advise CSMS/SS
3. Administer First Aid as necessary

#### **Security Supervisor**

1. Acknowledge radio call of emergency
2. Proceed to Information Booth, escort Emergency Service Vehicles as required

#### **Area Security Officer**

1. Acknowledge radio call or emergency
2. Proceed to area of emergency and assist vehicle as necessary

#### **Fire Safety Officer**

1. Acknowledge radio call of emergency

2. Proceed to area of emergency and assist emergency vehicle as required.

## **13. TRAINING**

### **13.1 Introduction**

Falling from a roof is likely to result in serious injury and possibly even death. Where it is not possible to prevent a fall occurring, it is essential that personnel exposed to such risks are trained to follow safe work practices which will reduce the potential for falling.

### **13.2 Types of Training**

Training will be provided for a number of activities related to accessing and working on roofs including the following:

- Overview of the RSMP;
- Roof safety surveyor training;
- Risk assessment training;
- Induction training;
- Roof access and elevated work platforms; and
- Installation, removal and maintenance of fall protection systems.

#### **Overview of the RSMP**

A brief overview of the contents of the RSMP will be given to all maintenance personnel and project staff working at each campus. The primary aim of the overview is to make participants aware of the roof safety management plan and how it applies to them. The overview will emphasise the legal obligations aspect, the register of roofs and the safe working practices.

#### **Roof Safety Surveyor Training**

Training will be provided to all personnel responsible for undertaking roof safety surveys. This type of training will deal specifically with hazard identification and the recording of information using the standard roof safety survey forms. Typically, this type of training will be given to maintenance personnel who are expected to work on roofs as part of their normal duties.

#### **Risk Assessment Training**

Personnel responsible for undertaking risk assessments will be provided with specific training in the use and application of the risk assessment model adopted by the University for the assessment of roofs. It is likely that those persons selected to undertake roof safety surveys will also be responsible for participating in the risk assessment process and will be trained accordingly.

## **Induction Training**

It is the University's intention that every contractor is inducted prior to them commencing work on site. As part of the induction training, participants will be made aware of the roof safety management plan and the University's policy in respect of this matter.

## **Roof Access and Elevated Work Platforms**

It may be necessary to provide specialised training to persons who are required to erect temporary roof accesses (eg scaffolding,), or who may be required to operate elevated work platforms (eg scissor lifts). In these instances, specialised trainers who are licensed and approved would be asked by the University to conduct such training.

## **Installation, Removal and Maintenance of Fall Protection Systems**

Where a person is required to wear personal protective equipment such as a fall protection system, training shall be provided to the individual prior to its use. Depending on the type of personal protective equipment, specialised trainers may be required that are licensed and approved to provide such training. This type of training is likely to be given to a range of personnel including maintenance personnel or anyone else who may be required to wear PPE in order to obtain access to a roof.

## **14. RSMP ACTION PLAN / FUTURE INITIATIVES**

1. Seek endorsement of RSMP by University OH&S Council.
2. Implement training and awareness programme as outlined in Section 13.
3. Implement roof survey programme.
4. Develop and implement roof gutter cleaning contract.
5. Review of architectural designs of proposed works to reduce or prevent risk (including landscape architecture).
6. Development of roof safety guidelines for new structures.
7. Purchase appropriate PPE and other safety equipment. Set up appropriate maintenance procedures for this relevant safety equipment.
8. Develop electronic database for "Register of Roofs".
9. Develop programmes of retrofit work and source associated funding.
10. Develop Key Performance Indicators to measure effectiveness of RSMP.

**Roof Safety Survey Form**

**Inspection Date:** ..... **Inspecting Officer:** \_\_\_\_\_

**Building Details:**

Campus: .....  
 Building Name: .....  
 Building Code: .....  
 Roof Level: .....

**Roof Access Details** (describe how roof access is achieved, taking into consideration transport of tools etc)

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**Roof Details**

Structural Integrity (e.g. condition, signs of rust) \_\_\_\_\_

Height \_\_\_\_\_ Pitch \_\_\_\_\_ Material \_\_\_\_\_

Parapet Details \_\_\_\_\_ Parapet Height \_\_\_\_\_

Gutter Details/Location \_\_\_\_\_

Vegetation (e.g. overhanging trees) \_\_\_\_\_

Gutter Guard  Yes  No Comments: \_\_\_\_\_  
 Safety Harness Points  Yes  No Guard Rails  Yes  No  
 Static Lines  Yes  No

Roof Hazards (e.g tripping, insects/pests, power lines, plumbing fixtures) \_\_\_\_\_

\_\_\_\_\_  
 \_\_\_\_\_

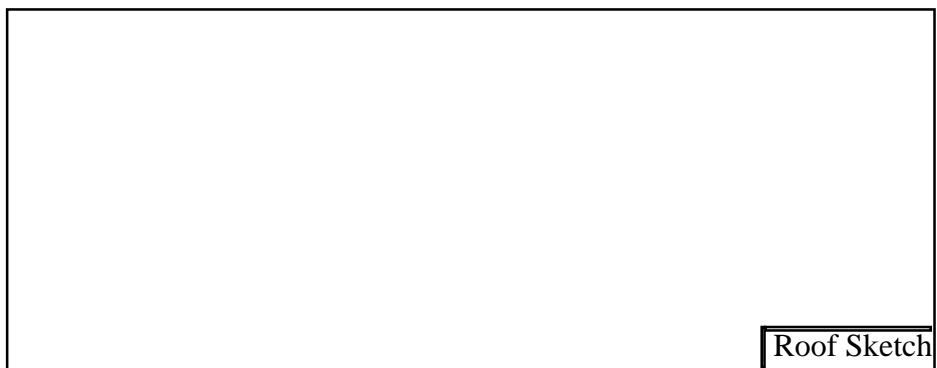
Walk Platforms  Yes  No Comments: \_\_\_\_\_

Roof top plant details (e.g. air conditioning, scrubbers etc) \_\_\_\_\_

Work Activity Details

- maintain air conditioning plant  Yes  No Frequency/month
- regular gutter cleaning  Yes  No Frequency/month
- other routine maintenance  Yes  No Frequency/month

General Comments \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_



Roof Sketch

### Risk Assessment Form

**Building Details - Name/No:** \_\_\_\_\_ **Date:** \_\_\_\_\_

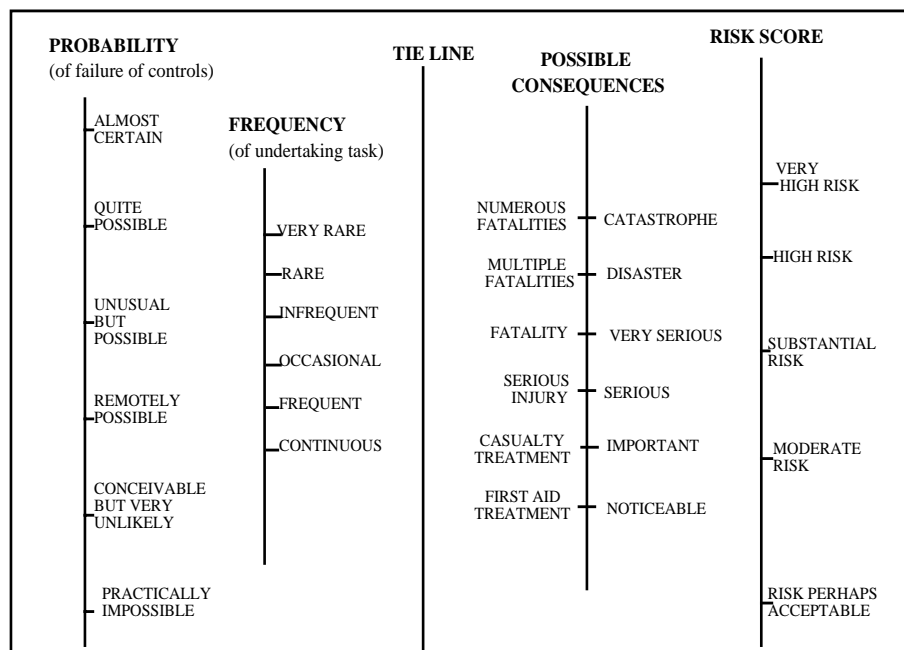
**Known Facts:**

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

**Assumptions:**

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

**Risk Assessment:**



Risk Score:

**Recommendations**

- **Short Term:** \_\_\_\_\_
- **Long Term:** \_\_\_\_\_

